

Effects of Cirpreme XC and Cirpreme XC + MCPA Ester on Established Timothy 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 herbicide company does not assume any responsibility if there is damage to the crop from using the herbicide. URMULE is useful to inform growers, seed companies and agronomists what herbicides are available for use on minor crops.

Introduction

Controlling broadleaf weeds in established grasses grown for seed production is necessary to ensure the higher yield and quality of produced seed. 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 submit a User Requested Minor Use Label Expansion (URMULE) as long as the herbicide company selling the product agrees to it.

Cirpreme XC (florasulam+halauxifen+ clopyralid) is a Corteva Agriscience herbicide for annual and perennial broadleaf weed control in wheat and barley. Cirpreme XC is a mixture of two Group 4 (halauxifen+clopyralid) and one Group 2 (florasulam) active ingredients providing a wide spectrum of weed control. The active ingredient halauxifen works well across variable weather conditions and weed stages. It is particularly strong on cleavers even at later growth stages. Cirpreme XC provides control of many hard-to-kill broadleaf weeds including Canada thistle and scentless chamomile, and also provides suppression of night-flowering catchfly and white cockle. The addition of MCPA Ester to Cirpreme XC increases the number of broadleaf weeds controlled. Cirpreme XC has some grassy weed activity as it provides control of barnyard grass and because of this it should not be assumed that Cirpreme XC would be safe on all grass seed crops.

Trials were initiated in 2018 to evaluate the tolerance of established timothy seed crops to spring-applied Cirpreme XC with and without the addition of MCPA Ester.

Methods

In 2018, the trial was conducted at the AAFC Beaverlodge Experimental Farm. All other trials were conducted on growers' fields. 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 3 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 completed 7 days after treatment (DAT), 28 DAT and prior to harvest. Visual crop tolerance ratings are done using the scale shown in Table 3.

For the 2018 trial conducted at AAFC Beaverlodge, harvesting was done by collecting samples from two rows by the length of the plot using a Japanese rice binder. The harvested area was 4.8 m². Samples were placed in cotton bags, dried and later thrashed with a stationary thrasher. In 2019, 2020, 2021 and 2022, harvesting was done by swathing down the middle of each plot with a Zum 540 High Clearance Tool Carrier and then thrashed with a WinterSteiger plot combine with a pickup header generally a week after swathing. The harvested area was 15 m². Samples were dried, cleaned and weighed to determine seed yield and dockage. Germinations and 1000 SWT assessments were completed on seed from the 2018 and 2019 trials. Data were statistically analyzed using ANOVA means separation (p=0.05, Student-Newman-Keuls).



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Swathing timothy trials (2022)

Table 1. Herbicide treatments applied to established timothy in the spring

Treatment	Active Ingredient (AI)	Concentration	AI Rate (kg/ha)	Product Rate
Cirpreme XC + Agral 90 1x (Cirpreme XC 1x)	halauxifen	20%	0.005	25 g/ha
	florasulam	20%	0.005	
	clopyralid	600 g/l	0.075	125 ml/ha
	Agral 90		0.25% v/v	250 ml/ha
Cirpreme XC + Agral 90 2x (Cirpreme XC 2x)	halauxifen	20%	0.01	50 g/ha
	florasulam	20%	0.01	
	clopyralid	600 g/l	0.15	250 ml/ha
	Agral 90		0.25% v/v	250 ml/ha
Cirpreme XC + MCPA Ester 1x (Cirpreme XC + MCPA 1x)	halauxifen	20%	0.005	25 g/ha
	florasulam	20%	0.005	
	clopyralid	600 g/l	0.075	125 ml/ha
	MCPA Ester	600 g/l	0.350	580 ml/ha

Table 2. Site and application information

Site	Age of Stand (years)	Application Date	Crop Stage	Harvest Date	Harvest Area (m ²)
2018 Beaverlodge	2	2018-05-23	Early stem elongation	2018-08-08	4.8
2019 Sunset House	3	2019-05-23	Early stem elongation	2019-08-30	15
2020 Sunset House	2	2020-05-28	Early stem elongation	2020-08-28	15
2021 Sunset House	3	2021-05-31	Early stem elongation	2021-08-10	15
2022 Sunset House	4	2022-05-26	Prior to stem elongation	2022-08-23	15

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 8 show results from five trials evaluating the effects of Cirpreme XC with and without MCPA Ester on timothy seed crops. Figure 1 summarizes yields from treatments as a percent of check at all sites. No visual crop injury was observed during the trials. No significantly different dockage, germination or 1000 SWT values were observed when compared to the check. No significantly different seed yields were observed when compared to the check; however, there was a strong trend for reduced seed yields with the addition of MCPA Ester to Cirpreme XC at three of the four sites tested.

Table 4. Visual crop tolerance ratings, seed yield, germination and 1000 SWT of timothy following herbicide applications, 2018 Beaverlodge

Treatment	Visible Injury 8 DAT	Visible Injury 14 DAT	Visible Injury 37 DAT	Seed Yield (kg/ha)	Germination (%)	1000 SWT (g)
Cirpreme XC 1x	0	0	0	570	99.0	0.456
Cirpreme XC 2x	0	0	0	557	98.8	0.439
Check	0	0	0	556	98.3	0.469
CV%	-	-	-	13.5	1.0	3.3
LSD (p=0.05)	-	-	-	NSD	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 69 DAT	Seed Yield (kg/ha)	Dockage (%)	Germination (%)	1000 SWT (g)
Cirpreme XC 1x	0	0	0	546	11.7	96.8	0.448
Cirpreme XC 2x	0	0	0	537	11.9	94.0	0.444
Cirpreme XC + MCPA 1x	0	0	0	517	11.0	93.8	0.460
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 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 (%)
Cirpreme XC 1x	0	0	0	602	7.5
Cirpreme XC 2x	0	0	0	531	7.8
Cirpreme XC + MCPA 1x	0	0	0	560	7.0
Check	0	0	0	565	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 7. Visual crop tolerance ratings, seed yield and dockage of timothy following herbicide applications, 2021 Sunset House

Treatment	Visible Injury 8 DAT	Visible Injury 23 DAT	Visible Injury 64 DAT	Seed Yield (kg/ha)	Dockage (%)
Cirpreme XC 1x	0	0	0	273	7.8
Cirpreme XC 2x	0	0	0	268	8.5
Cirpreme XC + MCPA 1x	0	0	0	230	9.7
Check	0	0	0	268	8.0
CV%	-	-	-	8.5	16.2
LSD (p=0.05)	-	-	-	NSD	NSD

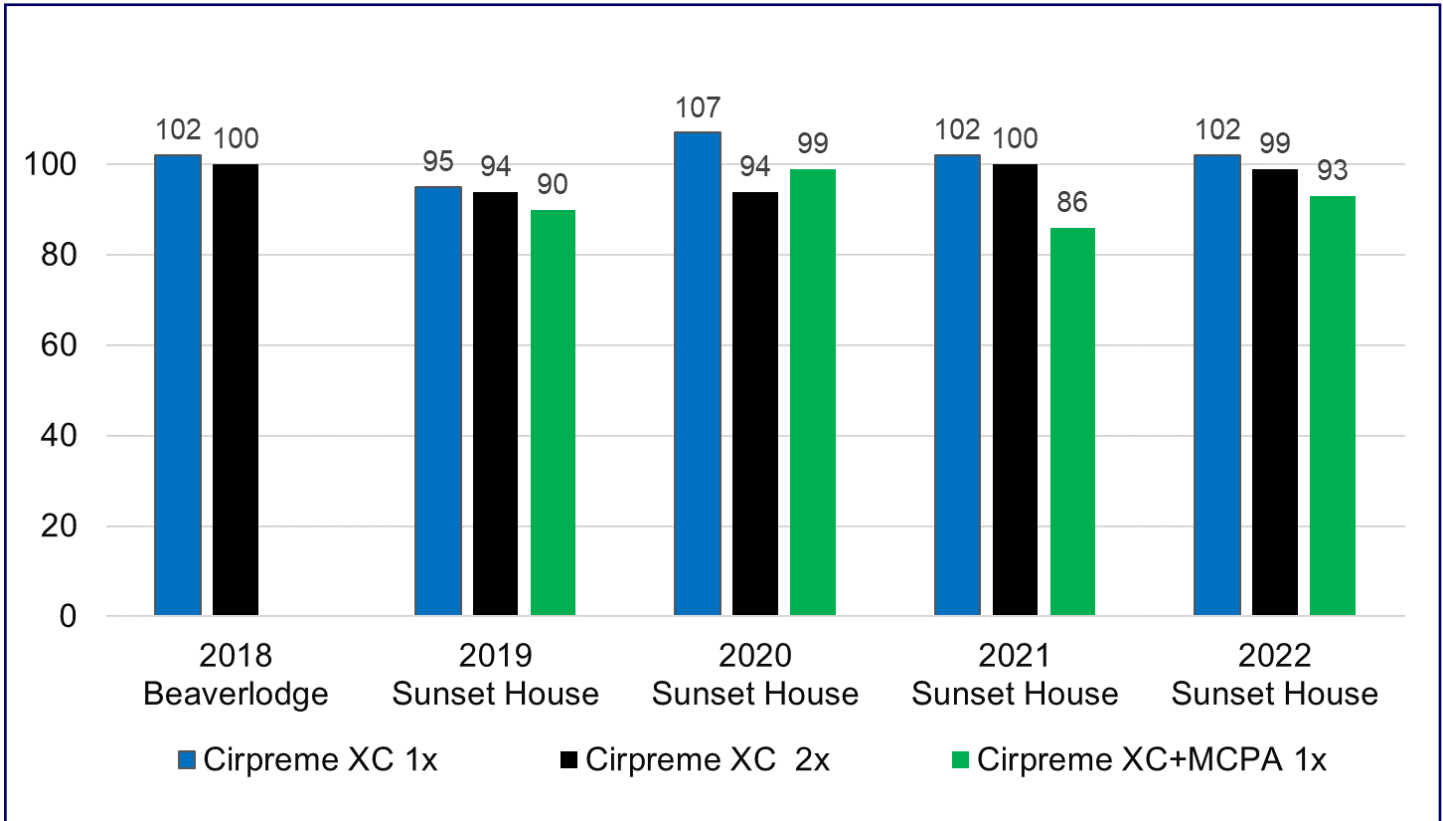
CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Table 8. Visual crop tolerance ratings, seed yield and dockage of timothy following herbicide applications, 2022 Sunset House

Treatment	Visible Injury 6 DAT	Visible Injury 23 DAT	Visible Injury 77 DAT	Seed Yield (kg/ha)	Dockage (%)
Cirpreme XC 1x	0	0	0	531	9.8
Cirpreme XC 2x	0	0	0	513	9.4
Cirpreme XC + MCPA 1x	0	0	0	483	9.8
Check	0	0	0	519	11.2
CV%	-	-	-	6.6	8.3
LSD (p=0.05)	-	-	-	NSD	NSD

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

Figure 1. Tolerance of established timothy seed crops to spring-applied Cirpreme XC with and without MCPA Ester (% seed yield of check)



Summary

- Spring-applied Cirpreme XC at 1x and 2x the recommended rates used in wheat and barley crops, with and without MCPA Ester, applied to established timothy did not result in any visual injury or statistically significant reductions in germination or 1000 SWTs. Germination and 1000 SWT assessments were conducted at two of the five sites.
- No statistically significant differences in timothy seed yields between the check and both rates of the Cirpreme XC treatments with or without MCPA Ester were observed.
- There was a strong trend for the addition of MCPA Ester to Cirpreme XC to reduce seed yields at three of the four sites tested when compared to the check. A Cirpreme XC with MCPA Ester treatment was not applied to the fifth site.
- Cirpreme XC alone shows good potential for use on established timothy grown for seed production and should be considered for a URMULE. The addition of MCPA Ester to Cirpreme XC appeared to slightly reduce timothy seed yields.

References

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