The Seed Head
Fact sheet # 29

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Effects of Cirpreme XC and Cirpreme XC + MCPA Ester on Established Creeping Red Fescue 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 creeping red fescue seed crop to Cirpreme XC with and without the addition of MCPA Ester.

Methods

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 Sexsmith, harvesting was done by collecting samples from two rows by the length of the plot using a Japanese rice binder. The harvested area was 6 m^2. 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 Zurn 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 m^2. Samples were dried, cleaned and weighed to determine seed yield and dockage. Germinations and 1000 SWT assessments were completed on seed from the 2018, 2019 and 2020 trials. Data were statistically analyzed using ANOVA means separation (p=0.05, Student-Newman-Keuls).

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Swathing creeping red fescue (Whitemud, 2022).

Table 1. Herbicide treatments applied to established creeping red fescue in the spring

Treatment	Active Ingredient (AI)	Concentration	AI Rate (kg/ha)	Product Rate
Cirpreme XC + Agral 90 1x (Cirpreme XC 1x)	halauxifen florasulam clopyralid Agral 90	20% 20% 600 g/l	0.005 0.005 0.075 0.25% v/v	25 g/ha 125 ml/ha 250 ml/ha
Cirpreme XC + Agral 90 2x (Cirpreme XC 2x)	halauxifen florasulam clopyralid Agral 90	20% 20% 600 g/l	0.01 0.01 0.15 0.25% v/v	50 g/ha 250 ml/ha 250 ml/ha
Cirpreme XC + MCPA Ester 1x (Cirpreme XC + MCPA 1x)	halauxifen florasulam clopyralid MCPA Ester	20% 20% 600 g/l 600 g/l	0.005 0.005 0.075 0.350	25 g/ha 125 ml/ha 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 Sexsmith	1	2018-05-29	Shot blade	2018-07-28	6
2019 Valleyview	1	2019-05-23	Shot blade	2019-08-13	15
2020 Whitemud	1	2020-05-26	Stem elongation	2020-08-11	15
2021 Eaglesham	1	2021-05-24	Shot blade	2021-07-23	15
2022 Whitemud	1	2022-05-26	Stem elongation	2022-07-29	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 creeping red fescue 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 dockage, germination or 1000 SWTs were observed when compared to the check. No significantly different seed yields were observed when compared to the check at four of the five sites. In Whitemud 2022, Cirpreme XC at both rates significantly reduced seed yields by 8 percent when compared to the check.

Table 4. Visual crop tolerance ratings, seed yield, germination and 1000 SWT of creeping red fescue following herbicide applications, 2018 Sexsmith

Treatment	Visible Injury 9 DAT	Visible Injury 17 DAT	Visible Injury 58 DAT	Seed Yield (kg/ha)	Germination (%)	1000 SWT (g)
Cirpreme XC 1x	0	0	0	682	81.5	1.205
Cirpreme XC 2x	0	0	0	700	77.5	1.286
Cirpreme XC + MCPA 1x	0	0	0	637	86.0	1.279
Check	0	0	0	643	82.3	1.251
CV%	-	-	-	15.9	7.9	3.9
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 creeping red fescue following herbicide applications, 2019 Valleyview

Treatment	Visible Injury 7 DAT	Visible Injury 20 DAT	Visible Injury 69 DAT	Seed Yield (kg/ha)	Dockage (%)	Germination (%)	1000 SWT (g)
Cirpreme XC 1x	0	0	0	1214	11.3	97.0	1.200
Cirpreme XC 2x	0	0	0	1194	12.3	93.5	1.177
Cirpreme XC + MCPA 1x	0	0	0	1234	12.1	98.0	1.189
Check	0	0	0	1262	13.1	96.0	1.184
CV%	-	-	-	5.8	15.8	2.2	2.9
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, dockage, germination and 1000 SWT of creeping red fescue following herbicide applications, 2020 Whitemud

Treatment	Visible Injury 8 DAT	Visible Injury 30 DAT	Visible Injury 65 DAT	Seed Yield (kg/ha)	Dockage (%)	Germination (%)	1000 SWT (g)
Cirpreme XC 1x	0	0	0	1231	9.5	96.0	1.551
Cirpreme XC 2x	0	0	0	1197	10.3	96.3	1.458
Cirpreme XC + MCPA 1x	0	0	0	1066	10.7	96.5	1.474
Check	0	0	0	1199	10.5	95.0	1.440
CV%	-	-	-	13.3	13.9	2.2	4.5
LSD (p=0.05)	-	-	-	NSD	NSD	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 creeping red fescue following herbicide applications, 2021 Eaglesham

Treatment	Visible Injury 8 DAT	Visible Injury 23 DAT	Visible Injury 50 DAT	Seed Yield (kg/ha)	Dockage (%)
Cirpreme XC 1x	0	0	0	822	7.5
Cirpreme XC 2x	0	0	0	770	7.5
Cirpreme XC + MCPA 1x	0	0	0	783	7.5
Check	0	0	0	744	7.7
CV%	-	-	-	13.1	15.5
LSD (p=0.05)	-	-	-	NSD	NSD

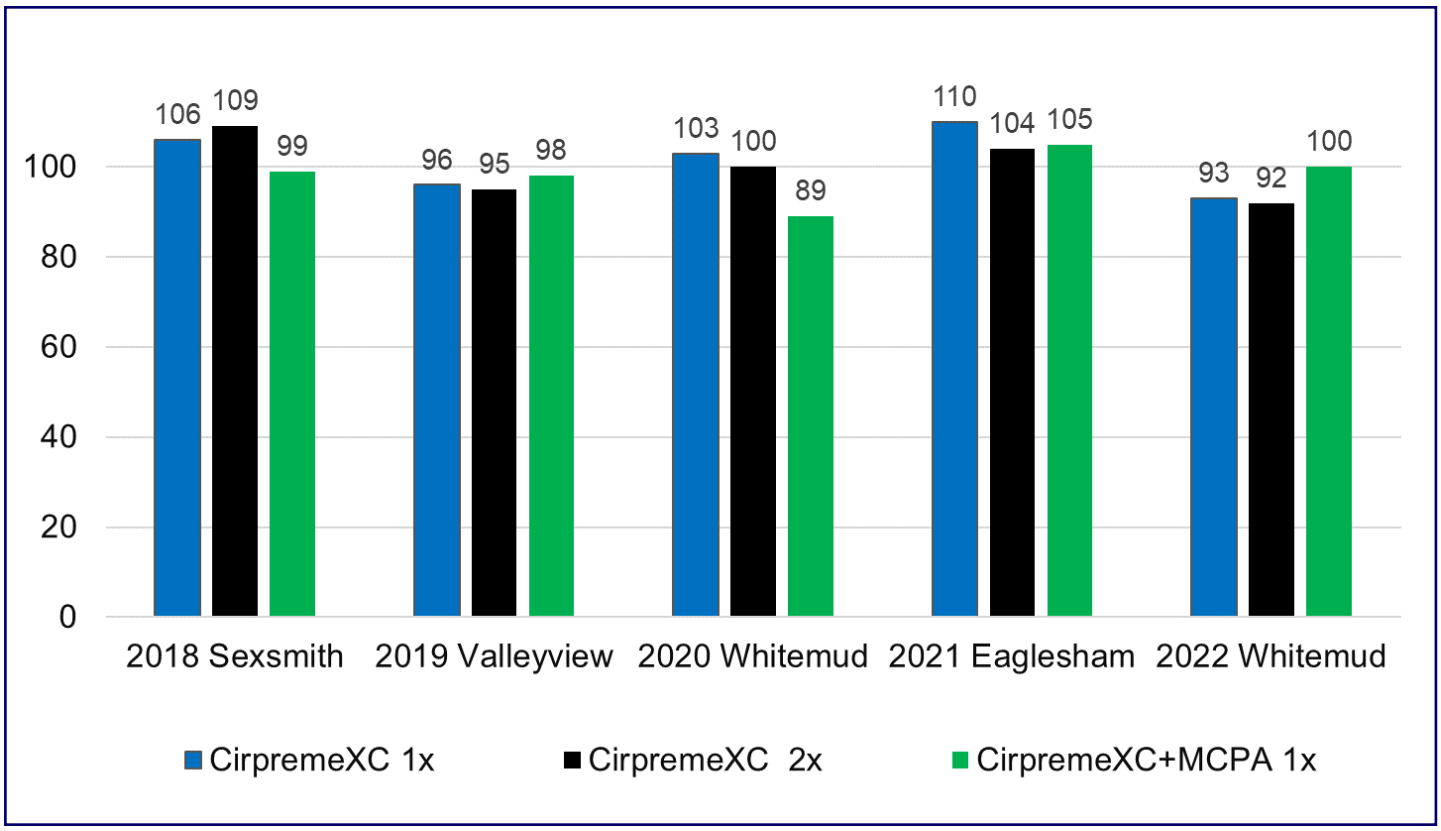
CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Table 8. Visual crop tolerance ratings, seed yield and dockage of creeping red fescue following herbicide applications, 2022 Whitemud

Treatment	Visible Injury 8 DAT	Visible Injury 20 DAT	Visible Injury 60 DAT	Seed Yield (kg/ha)	Dockage (%)
Cirpreme XC 1x	0	0	0	1489 b	8.5
Cirpreme XC 2x	0	0	0	1485 b	8.6
Cirpreme XC + MCPA 1x	0	0	0	1607 a	8.7
Check	0	0	0	1606 a	8.6
CV%	-	-	-	3.5	6.0
LSD (p=0.05)	-	-	-	79	NSD

CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different
a,b - results followed by the same letter do not significantly differ (p = 0.05, Student-Newman-Keuls)

Figure 1. Tolerance of established creeping red fescue 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 creeping red fescue did not result in any visual injury or statistically significant reductions in germination or 1000 SWTs. Germination and 1000 SWT assessments were conducted on three of the five trials.
- Statistically significant differences in creeping red fescue seed yields between the check and both rates of the Cirpreme XC treatments were not observed, with the exception of 2022 Whitemud, where Cirpreme XC treatments at both rates significantly reduced seed yields by 8 percent as compared to the check.
- Statistically significant differences in seed yields between the Cirpreme XC + MCPA Ester 1x and the check were not identified; however, non-significant variations were observed at all five sites.
- Cirpreme XC alone or tank-mixed with MCPA Ester shows good potential for use on established creeping red fescue grown for seed production and should be considered for a URMULE.

References

Yoder, C., and SARDA. 2018. *Tolerance of Established Creeping Red Fescue to Infinity FX and Cirpreme XC, 2018 Sexsmith. ARM DAT File.*
Yoder, C., and SARDA. 2019. *Tolerance of Established Creeping Red Fescue to Infinity FX and Cirpreme XC, 2019 Valleyview. ARM DAT File.*
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Yoder, C., and SARDA. 2022. *Tolerance of Established Creeping Red Fescue to Prominex and Cirpreme XC, 2022 Whitemud. ARM DAT File.*
Corteva Agriscience Canada. Cirpreme XC Label

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