

# Response of Creeping Red Fescue Seed Crops to the Fungicide Nexicor

## The Seed Head Fact Sheet #32

February, 2024

### Introduction

Fungicides are used regularly on grass seed crops in the main grass seed growing areas throughout the world but are generally not in use in the Peace Region of western Canada. Diseases on grass seed crops are present when conditions are favourable for development. A survey conducted on Peace Region grass seed crops done in 2017 and 2018 showed several diseases in creeping red fescue seed fields (Khanal & Klein-Gebbinck, 2019). Major diseases included: anthracnose caused by *Colletotricum graminicola* (Ces.) G.W.Wilson., stem eyespot caused by *Didymella festucae* (Weg.) Holm, leaf rust caused by *Puccinia recondite* Rob ex Desm., chlorotic grey spots on fescue stems and snow mold caused by diverse fungal pathogens (Figures 1 - 3).

Nexicor is a fungicide registered on cereals for controlling broad-spectrum cereal leaf diseases. It is distributed by BASF. Nexicor contains three active ingredients: propiconazole, fluxapyroxad and pyraclostrobin. The Nexicor Technology Sheet also states Nexicor builds on the proven benefits of AgCelence® to increase growth efficiency and help better manage minor stress, leading to greater yield potential. AgCelence benefits refer to products that contain the active ingredient pyraclostrobin (BASF - Nexicor Fungicide Technology Sheet). The registered rate of Nexicor is 200 ml/acre and SRP price in 2023 was \$14.25/acre. **Currently there are no grass seed crops on the Nexicor label.**

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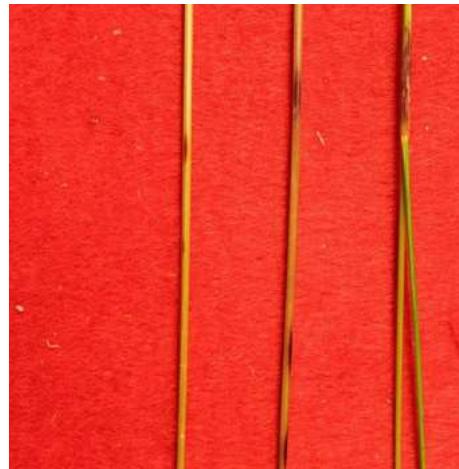
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**Figure 1. Anthracnose on creeping red fescue leaves**



**Figure 2. Stem eyespot on creeping red fescue stem**



**Figure 3. Rust on creeping red fescue plant in the fall**

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## Methods

Trials were conducted on grower fields from 2020 to 2023 to evaluate the effects of Nexicor applied at two different stages on creeping red fescue seed crops. Areas with very uniform plant stands were selected within each field. Eight fields were used with five being first year fields and three being second year fields. Plots were staked to an area of 3 m wide by 10 m long. Experimental design was a randomized complete block with four replications. Nexicor was applied with a 2 m wide handheld boom (4 nozzle TeeJet 80001) 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.

Nexicor was applied at two different growth stages at the rate of 200 ml/acre as registered for cereals. Stage 1 ranged from 2-node to 3-node stage, while Stage 2 ranged

from very early heading to full head emergence. Stage 1 was generally about one week after growers had sprayed their fields with an herbicide. Stages of application were made a minimum of 7 days apart.

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. Harvested area was 15 m<sup>2</sup>. Samples were dried, cleaned and weighed to determine seed yield and dockage. Germination, thousand-seed weight and bushel weight were determined for several of the sites. Only bushel weight data is provided. No disease assessment was conducted on the treatments or sites. Site, application and harvest details are presented in Table 1.

**Table 1. Site and spray information for Nexicor fungicide trials on creeping red fescue**

Location	Year	Crop Stage and Application Date		Swathed	Combined	Crop Year	Fall Fertilizer (N-P-K-S kg/ha)
		2-3 Node	Heading				
Whitemud	2020a	June 2	June 12	August 4	August 10	1	55-0-0-0
Whitemud	2020b	June 2	June 12	August 4	August 10	1	80-0-0-0
Whitemud	2022	May 30	June 9	July 27	August 5	1	80-0-0-0
Hythe	2022a	June 1	June 12	July 28	August 8	1	50-15-0-7
Hythe	2022b	June 2	June 12	July 28	August 8	1	50-15-0-7
Valhalla	2022	June 2	June 12	July 28	August 8	2	40-0-0-0
Beaverlodge	2023	May 25	June 6	July 16	July 21	2	50-0-0-0
Eaglesham	2023	May 18	June 1	July 16	July 22	1	80-0-0-24

## Results

Weather conditions in 2020 were extremely wet with above average precipitation for the Peace Region. Extremely dry and warm weather conditions prevailed in 2021 and 2023, whereas in 2022 precipitation and temperatures were similar to the long-term average. The contrasting weather patterns led to high variation in seed yield over the trial years. Table 2 shows seed yield data collected from the sites. Figure 4 presents seed yield responses to Nexicor applied at two different growth stages compared to check across the sites.

Although all Nexicor treated plots showed small to moderate increases in seed yields over the check, Nexicor applied at heading significantly increased seed yield at four site-years (Table 2). Application at heading presumably protects the stems from girdling stem eyespot infections during the seed fill stage (Klein-Gebbinck et al., 2020). Differences between sites is attributed to soil conditions, and between years to the variable weather conditions, particularly precipitation.

**Table 2. Seed yield (kg/ha) of creeping red fescue following applications of Nexicor at two different growth stages across a number of sites and years.**

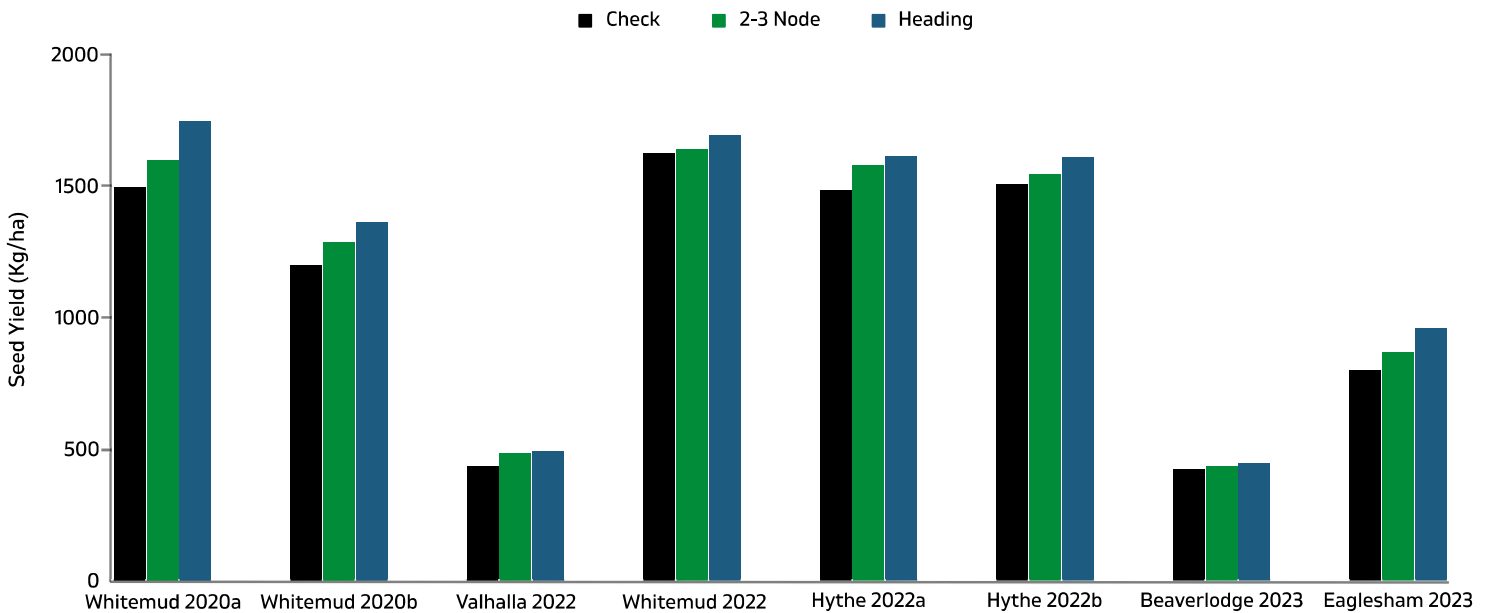
Treatment stage	Whitemud 2020a	Whitemud 2020b	Whitemud 2022	Hythe 2022a	Hythe 2022b	Valhalla 2022	Beaverlodge 2023	Eaglesham 2023
Check	1497b	1198b	1625	1484b	1507	435	421	799b
2-3-node	1598ab	1284ab	1638	1578ab	1545	485	435	868ab
Heading	1748a	1360a	1693	1629a	1608	490	444	959a
CV%	5.9	6	3.3	3.5	3.9	16.1	13.4	5.8
LSD P=.05	157	127	NSD	87	NSD	NSD	NSD	79.9

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)

**Results (continued)**

Visual assessments on diseases were not made and presence or absence of disease may also have contributed to variability across the sites. Although not significant, there was a strong trend for Nexicor to increase creeping red fescue seed yields at most of the sites and also a strong trend for higher seed yields when applications at

the heading stage were made as compared to the earlier stage of application (Figure 4 and Table 3). There was a strong trend for increased bushel weight by the application of Nexicor, although at one site (Eaglesham 2023) the early application reduced bushel weight (Table 4).



**Figure 4. Effect of fungicide Nexicor applied at two growth stages (2-3 node and heading) on creeping red fescue seed yields (kg/ha).**

**Table 3. Creeping red fescue seed yield responses following the application of Nexicor applied at two different growth stages.**

Stage	Sites	Average increase in seed yield over untreated check		Range of increase in seed yield over untreated check	
		kg/ha	%	kg/ha	%
2-3 node	8	58	106	14-101	101-112
Heading	8	120	111	23-251	104-120

**Table 4. Bushel weights (lbs/bu) of creeping red fescue seed following applications of Nexicor at two different growth stages across a number of sites and years.**

Treatment stage	Whitemud 2022	Hythe 2022a	Hythe 2022b	Valhalla 2022	Beaverlodge 2023	Eaglesham 2023
Check	15.4	15.6	15.6c	18.5	19.2b	18.0bc
2-3-node	15.4	16.3	16.5ab	18.2	19.4b	17.7c
Heading	16.0	15.7	16.4ab	18.7	20.1a	18.6ab
CV%	3.7	2.5	2.5	2.8	1.3	1.9
LSD P=.05	NSD	NSD	0.6	NSD	0.4	0.5

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

## Summary and Recommendations

- Creeping red fescue seed crops responded well to the application of Nexicor, particularly at sites where precipitation was well above average. The response varied among years which was likely related to the amount of precipitation received during the growing season and presence of disease. Note that disease assessments were not conducted in the study. Disease assessments should be done on future trials.
- Creeping red fescue seed yields were higher when Nexicor was applied at the heading stage as compared to the earlier (2-3 node) stage.
- Creeping red fescue seed yield increases following the application of Nexicor at most sites were high enough to justify the cost of application (data not shown).
- A URMULE should be considered to add creeping red fescue seed crop to the Nexicor label.

## References

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