

Safety of Eagle Fungicide on Creeping Bentgrass

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Background/Objective

Eagle is a proven fungicide and new formulation technology has created that need evaluation in turf for potential negative effects. Formulations of the active ingredient possible. These formulations need to be look at in turf situations to evaluate their effect on desired species.

Site Information

Location:	William H. Daniel Research and Diagnostic Center, W. Lafayette, IN.
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Soil Organic Matter (%):	NA
Turfgrass Species:	'Pennlinks' Creeping bentgrass
Turf Condition:	good
Turf Management: Mowing Height cm (in):	0.39 (0.156)
Fertilization:	4-6 lbs N/M/yr
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	NA
Growth Stage:	NA

Application Information

Application Date:	3 July	17 July	1 Aug
Application Time:	7:30 AM	7:30 AM	7:30 AM
Air Temperature C⁰(F⁰):	28.1 (82.6)	24.3 (75.8)	25.8 (78.5)
Relative Humidity(%):	75	86	89
Wind Speed m s⁻¹ (mph):	Calm	Calm	Calm
Soil Temperature(7.6 cm depth) C⁰(F⁰):	26.7 (80)	22.8 (73)	23.9 (75)
Soil Moisture:	Moist	Moist	Wet
Spray Volume L ha⁻¹ (gal 1000 ft²):	814 (2)		
Spray Pressure:	35psi		
Spray Nozzle:	8001.5		
Spray Equipment:	CO ₂ backpack		
Irrigation After Application:	None		
Experimental Design:	Randomized complete block		
Replications:	3		
Plot Size m (ft):	1.5 X 1.5 (5 X 5)		

Results

USGA Green:

- No phytotoxicity observed from any of the treatments.
- No significant decrease in turf quality from the treatments other than on 23 Aug where the 4.8 oz/M rate of both formulations reduced quality.

- No significant decrease in turf density from the treatments other than on 23 Aug when 40WP at 2.4 oz/M and 20EW at 4.8 oz/M decreased density

Soil Green:

- No phytotoxicity observed from any of the treatments.
- No significant decrease in turf quality from any of the treatments.
- No significant decrease in turf density from any of the treatments.

Summary

The 40WP and 20 EW formulations appear equally safe on ‘Pennlinks’ creeping bentgrass at green height (0.156”), However, either formulation may cause noticeable negative effects when applied three or more times at 4.8 oz/M on sand based greens.

Table 1. Phytotoxicity^a on USGA specification green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	6 July	10 July	18 July	20 July	26 July	5 Aug	9 Aug	15 Aug	23 Aug
	oz product/M									
Eagle 40WP	0.6	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	1.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	2.4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	4.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	1.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	2.4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	3.6	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	4.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Check		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
LSD (0.05)		NS	NS	NS	NS	NS	NS	NS	NS	NS

^a Phytotoxicity rated on a 1 to 9 scale where 1=dead turf, 7=acceptable, and 9=no damage.

Table 2. Turf quality^a on a USGA specification green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	10 July	26 July	9 Aug	23 Aug
	oz product/M				
Eagle 40WP	0.6	8.0	7.7	7.0	7.0
Eagle 40WP	1.2	8.0	7.7	7.0	7.0
Eagle 40WP	2.4	8.0	7.3	7.0	6.3
Eagle 40WP	4.8	8.0	6.7	7.0	6.0
Eagle 20EW	1.2	8.0	8.0	7.0	7.0
Eagle 20EW	2.4	8.0	8.0	7.0	6.7
Eagle 20EW	3.6	8.0	7.3	7.0	6.7
Eagle 20EW	4.8	8.0	7.3	7.0	6.0
Check		8.0	7.7	7.0	6.7
LSD (0.05)		NS	NS	NS	0.7

^a Quality rated on a 1 to 9 scale where 1=dead turf, 5=acceptable, and 9=perfect.

Table 3. Creeping bentgrass density^a on a USGA specification green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	10 July	26 July	9 Aug	23 Aug
	oz product/M				
Eagle 40WP	0.6	7.0	7.7	7.0	7.0
Eagle 40WP	1.2	7.0	7.7	7.0	6.7
Eagle 40WP	2.4	7.0	7.0	7.0	6.0
Eagle 40WP	4.8	7.0	6.7	7.0	6.3
Eagle 20EW	1.2	7.0	7.7	7.0	7.0
Eagle 20EW	2.4	7.0	8.0	7.0	6.3
Eagle 20EW	3.6	7.0	7.0	7.0	7.0
Eagle 20EW	4.8	7.0	7.3	7.0	6.0
Check		7.0	8.0	7.0	6.7
LSD (0.05)		NS	NS	NS	0.7

^a Density rated on a 1 to 9 scale where 9=highest density possible.

Table 4. Phytotoxicity^a on native soil green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	6 July	10 July	18 July	20 July	26 July	5 Aug	9 Aug	15 Aug	23 Aug
	oz product/M									
Eagle 40WP	0.6	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	1.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	2.4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 40WP	4.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	1.2	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	2.4	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	3.6	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Eagle 20EW	4.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Check		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
LSD (0.05)		NS	NS	NS	NS	NS	NS	NS	NS	NS

^a Phytotoxicity rated on a 1 to 9 scale where 1=dead turf, 7=acceptable, and 9=no damage.

Table 5. Turf quality^a on a native soil green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	10 July	26 July	9 Aug	23 Aug
	oz product/M				
Eagle 40WP	0.6	7.0	7.0	8.0	7.3
Eagle 40WP	1.2	7.0	7.0	8.0	7.3
Eagle 40WP	2.4	7.0	6.7	8.0	7.3
Eagle 40WP	4.8	7.0	6.7	8.0	7.0
Eagle 20EW	1.2	7.0	7.0	8.0	7.7
Eagle 20EW	2.4	7.0	6.7	8.0	7.7
Eagle 20EW	3.6	7.0	7.0	8.0	7.3
Eagle 20EW	4.8	7.0	7.0	8.0	7.7
Check		7.0	7.3	8.0	8.0
LSD (0.05)		NS	NS	NS	NS

^a Quality rated on a 1 to 9 scale where 1=dead turf, 5=acceptable, and 9=perfect.

Table 6. Creeping bentgrass density^a on a native soil green from Eagle applied 3 July, 17 July, and 1 August.

Treatment	Rate of application	10 July	26 July	9 Aug	23 Aug
	oz product/M				
Eagle 40WP	0.6	6.0	7.3	7.0	8.0
Eagle 40WP	1.2	6.0	6.7	7.0	7.7
Eagle 40WP	2.4	6.0	7.0	7.0	7.7
Eagle 40WP	4.8	6.0	6.7	7.0	7.0
Eagle 20EW	1.2	6.0	7.3	7.0	8.0
Eagle 20EW	2.4	6.0	7.0	7.0	7.3
Eagle 20EW	3.6	6.0	7.0	7.0	7.7
Eagle 20EW	4.8	6.0	7.0	7.0	7.3
Check		6.0	8.0	7.0	8.0
LSD (0.05)		NS	0.6	NS	NS

^a Density rated on a 1 to 9 scale where 9=highest density possible.