

Tolerance of Cool-Season Turfgrass to Carfentrazone

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Background/Objective

To determine the tolerance of Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue to F8426 (carfentrazone) when used alone or in combination with other post-emergence herbicides.

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:	Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescue
Condition of Turf Areas:	Good
Turf Management: Mowing Height cm (in):	6.35 (2.5)
Fertilization:	2.6 lb N/M/YR (K. bluegrass and tall fescue) 3.6 lb N/M/YR (P. ryegrass and fine fescue)
Irrigation:	To prevent moisture stress on all but tall fescue which received rainfall only
Testing on Site Previous Year:	None
Target Pest:	NA
Growth Stage:	Actively growing

Application Information

Application Date:	October 5, 2002
Application Time:	7:30 AM
Air Temperature C⁰(F⁰):	17 (62.6)
Relative Humidity(%):	58
Wind Speed m s⁻¹ (mph):	0.5-2.2 (1-5)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	17.8 (64)
Soil Moisture:	Mod Wet
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	814 (2)
Spray Pressure:	35psi
Spray Nozzle:	8002
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:

Only one treatment, F8426 at 0.2 oz/M, caused significant phytotoxicity and that was only noticeable on tall fescue for less than a week. F8426 is safe on Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue when applied in Fall under the conditions of our study.

Table 1. Turfgrass injury due to herbicide application on Kentucky bluegrass.

Treatment	Rate of application ^b (fl oz/M)	Turfgrass injury ^a					
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	30 DAT
F8426	0.05	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
F8426	0.2	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
Trimec Classic	3.0						
F8426	0.1	0	0	0	0	0	0
Eliminate	2.2						
F8426	0.1	0	0	0	0	0	0
Chaser 2 Amine	1.9						
F8426	0.1	0	0	0	0	0	0
Turflon Ester	1.5						
Trimec Classic	1.5	0	0	0	0	0	0
Eliminate	1.1	0	0	0	0	0	0
Check	0	0	0	0	0	0	0
LSD (0.05)		NS	NS	NS	NS	NS	NS

^a Turfgrass injury was rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^b Rate of application expressed as fluid ounces product/1000 ft².

Table 2. Turfgrass injury due to herbicide application on perennial ryegrass.

Treatment	Rate of application ^b (fl oz/M)	Turfgrass injury ^a					
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	30 DAT
F8426	0.05	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
F8426	0.2	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
Trimec Classic	3.0						
F8426	0.1	0	0	0	0	0	0
Eliminate	2.2						
F8426	0.1	0	0	0	0	0	0
Chaser 2 Amine	1.9						
F8426	0.1	0	0	0	0	0	0
Turflon Ester	1.5						
Trimec Classic	1.5	0	0	0	0	0	0
Eliminate	1.1	0	0	0	0	0	0
Check	0	0	0	0	0	0	0
LSD (0.05)		NS	NS	NS	NS	NS	NS

^a Turfgrass injury was rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^b Rate of application expressed as fluid ounces product/1000 ft².

Table 3. Turfgrass injury due to herbicide application on turf type tall fescue.

Treatment	Rate of application ^b (fl oz/M)	Turfgrass injury ^a					
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	30 DAT
F8426	0.05	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0.3 ^c	0
F8426	0.2	0	0	0	0	2.7	0
F8426	0.1	0	0	0	0	0	0
Trimec Classic	3.0						
F8426	0.1	0	0	0	0	0	0
Eliminate	2.2						
F8426	0.1	0	0	0	0	0	0
Chaser 2 Amine	1.9						
F8426	0.1	0	0	0	0	0	0
Turflon Ester	1.5						
Trimec Classic	1.5	0	0	0	0	0	0
Eliminate	1.1	0	0	0	0	0	0
Check	0	0	0	0	0	0	0
LSD (0.05)		NS	NS	NS	NS	0.5	NS

^a Turfgrass injury was rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^b Rate of application expressed as fluid ounces product/1000 ft².

^c Injury was observed as stunting and discoloration resembling that of drought stress.

Table 4. Turfgrass injury due to herbicide application on fine fescue.

Treatment	Rate of application ^b (fl oz/M)	Turfgrass injury ^a					
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	30 DAT
F8426	0.05	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
F8426	0.2	0	0	0	0	0	0
F8426	0.1	0	0	0	0	0	0
Trimec Classic	3.0						
F8426	0.1	0	0	0	0	0	0
Eliminate	2.2						
F8426	0.1	0	0	0	0	0	0
Chaser 2 Amine	1.9						
F8426	0.1	0	0	0	0	0	0
Turflon Ester	1.5						
Trimec Classic	1.5	0	0	0	0	0	0
Eliminate	1.1	0	0	0	0	0	0
Check	0	0	0	0	0	0	0
LSD (0.05)		NS	NS	NS	NS	NS	NS

^a Turfgrass injury was rated on a scale of 0 to 10 where 0 = no injury, 3 is acceptable and 10 = full expression of injury.

^b Rate of application expressed as fluid ounces product/1000 ft².