

Overseeding Creeping Bentgrass Following Summer-Applied MON 44951

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Background/Objective:

MON 44951 will be recommended for control of *Poa trivialis* in creeping bentgrass fairways. Control of *Poa trivialis* may result in areas that need to be overseeded to maintain quality. The objective of this study is to determine the interval required between applications of MON 44591 and seeding of creeping bentgrass

Site Information

Location:	W.H. Daniel Research and Diagnostic Center
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Soil Organic Matter (%):	NA
Turfgrass Species:	'Penncross' creeping bentgrass
Turf Condition:	Good
Turf Management:	
Mowing Height cm (in):	1.25 (0.5)
Fertilization:	NA
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	Phytotoxicity
Growth Stage:	Seedling

Application Information

Application Date:	8 June	15 June	25 June	29 June
Application Time:	8:30am	8:30am	2:00pm	8:15am
Air Temperature C⁰(F⁰):	26.3 (79)	28.4 (83)	19.4 (67)	20.3 (69)
Relative Humidity(%):	77	68	50	65
Wind Speed m s⁻¹ (mph):	0.9-1.8 (2-4)	0.4-0.9 (1-2)	0.9-2.7 (2-6)	0.4-0.9 (1-2)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	22.2 (72)	23.9 (75)	22.5 (73)	18.9 (66)
Soil Moisture:	moist	moist	moist	moist
Application Date:	9 July	14 July	20 July	26 July
Application Time:	9:30am	8:00am	9:00am	8:00am
Air Temperature C⁰(F⁰):	22.2 (72)	23.1 (74)	25.7 (78)	17.9 (64)
Relative Humidity(%):	72	67	70	81
Wind Speed m s⁻¹ (mph):	0.9-1.8 (2-4)	1.3-3.1 (3-7)	0.9-2.7 (2-6)	1.8-2.7 (4-6)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	22.8 (73)	23.9 (75)	25 (77)	18.9 (66)
Soil Moisture:	moist	moist	moist	moist
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	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:

- There was no effect of multiple applications on bentgrass germination, probably due to the relatively short half life on MON 44951 in the soil (Table 1).
- Regardless of the number of applications, the final application reduced germination (rated 15 or 17 Aug) when it was made either 3, 2, or 1 week prior to seeding.
- There was no effect of multiple applications on bentgrass cover compared to single application, probably due to the relatively short half life on MON 44951 in the soil (Table 2).
- Regardless of the number of applications, the final application reduced bentgrass cover until 31 Aug when it was made either 3, 2, or 1 week prior to seeding.
- When cover was rated on 30 Sep and 28 Oct, only applications made 1 week prior to seeding reduced bentgrass cover.
- Bentgrass reseeding should be conservatively delayed for at least three weeks after the final application of MON 44591.

Table 1. Germination of creeping bentgrass seeded after up to three applications of MON 44951

Treatment ^b	Rate of application	Final app before seeding ^c	Germination ^a			
			9 Aug	11 Aug	15 Aug	17 Aug
	oz prod/A	weeks				
One application ^d						
MON 44951	0.25	4	3.3	4.0	8.0	9.0
MON 44951	0.25	3	2.0	3.0	4.7	5.3
MON 44951	0.25	2	2.3	2.7	4.3	4.0
MON 44951	0.25	1	1.0	2.3	2.0	2.3
Two applications						
MON 44951	0.25	4	2.7	3.7	8.0	8.0
MON 44951	0.25	3	3.0	2.7	4.0	4.0
MON 44951	0.25	2	2.7	3.0	3.7	4.0
MON 44951	0.25	1	1.7	2.3	2.7	2.0
Three applications						
MON 44951	0.25	4	2.7	4.0	8.0	7.3
MON 44951	0.25	3	2.3	2.3	3.3	4.7
MON 44951	0.25	2	2.0	2.3	4.7	4.0
MON 44951	0.25	1	1.3	2.0	2.0	2.3
Check			2.0	3.0	8.0	7.7
LSD (0.05)			1.1	1.2	2.2	1.7

^a Germination was rated on a scale of 1 to 9 where 1 = no germination and 9 = complete germination.

^b All treatments included MON 0818 at 0.25% volume per volume.

^c Number of weeks last application was made prior to seeding of the plots 2 Aug.

^d Number of sequential applications made on a two week interval.

Table 2. Cover^c of creeping bentgrass seeded after up to three applications of MON 44951

Treatment ^a	Rate of application	Final app before seeding ^b	16 Aug	24 Aug	31 Aug	30 Sept	28 Oct
	oz prod/A	weeks	-----%-----				
One application ^d							
MON 44951	0.25	4	36.7	70.0	93.3	97.3	96.7
MON 44951	0.25	3	16.7	41.7	71.7	96.3	96.7
MON 44951	0.25	2	11.7	33.3	65.0	92.0	93.7
MON 44951	0.25	1	2.3	6.7	18.3	76.7	88.3
Two applications							
MON 44951	0.25	4	33.3	70.0	95.0	96.7	96.3
MON 44951	0.25	3	13.3	38.3	73.3	94.7	95.0
MON 44951	0.25	2	10.0	31.7	61.7	93.3	95.0
MON 44951	0.25	1	3.0	5.0	11.7	53.3	83.3
Three applications							
MON 44951	0.25	4	33.3	71.7	96.7	97.0	97.0
MON 44951	0.25	3	13.3	36.7	80.0	96.0	96.0
MON 44951	0.25	2	12.7	23.3	61.7	91.7	91.7
MON 44951	0.25	1	4.0	8.3	13.3	66.7	83.3
Check			35.0	68.3	96.7	97.7	97.3
LSD (0.05)			8.1	15.8	16.1	9.2	3.0

^a All treatments included MON 0818 at 0.25% volume per volume.

^b Number of weeks last application was made prior to seeding of plots 2 Aug.

^c Percent of the plot covered by 'Penncross' creeping bentgrass.

^d Number of sequential applications made on a two week interval.