

Mesotrione Application Timing for Bentgrass Control

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Background/Objective:

To determine the best interval between applications for control 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:	3 lbs N/1000 ft ² /yr
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	creeping bentgrass (<i>Agrostis palustris</i>)
Growth Stage:	Mature

Application Information

Application Time:	8:30am	2:00pm	9:50am	7:00am	9:30am	9:00am
Application Date:	12 Aug	19 Aug	26 Aug	2 Sep	9 Sep	23 Sep
Air Temperature C⁰(F⁰):	14.2 (58)	20.1 (68)	22.6 (73)	18.6 (65)	17.3 (63)	20.8 (69)
Relative Humidity(%):	65	83	86	82	78	65
Wind Speed m s⁻¹ (mph):	1.8 (4)	2.2 (5)	2.7 (6)	0.7 (1.6)	2.2 (5)	Calm
Soil Temperature(7.6 cm depth) C⁰(F⁰):	15.6 (60)	21.7 (71)	21.1 (70)	18.3 (65)	17.8 (64)	18.3 (65)
Soil Moisture:	moist	moist	wet	wet	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:

- The one and two week interval treatments resulted in the most consistent phytotoxicity to creeping bentgrass (Table 1).
- The 3 week application interval allowed bentgrass recovery between applications.
- The one and two week interval resulted in the best control of creeping bentgrass, reducing cover to 2% compared to 98% in the check plots (Table 2).
- Though the three week interval reduced creeping bentgrass, it was not as effective as the one and two week intervals.
- For quickest control of creeping bentgrass mesotrione should be applied no more than two weeks apart.

Table 1. Phytotoxicity^a to creeping bentgrass following application of mesotrione.

Treatment ^b	Rate of application	Application interval	19 Aug	26 Aug	2 Sept	9 Sept	17 Sept	23 Sept	30 Sept
	lb a.i./A	weeks							
Mesotrione 4SC + NIS ^c	0.166	1	3.0	1.0	1.0	1.0	1.0	1.0	1.0
Mesotrione 4SC + NIS	0.166	2	3.0	3.3	1.0	1.0	1.0	1.0	1.0
Mesotrione 4SC + NIS	0.166	3	3.0	3.3	4.3	1.0	2.7	5.3	3.3
Check			9.0	9.0	9.0	9.0	9.0	9.0	9.0
LSD (0.05)			0	0.7	0.6	0	0.6	0.6	0.6

^a Phytotoxicity was rated on a 1 to 9 scale where 1 = completely brown turf, 5 = acceptable damage, and 9 = no phytotoxicity.

^b All treatments received three applications totaling 4.98 lb a.i./A.

^c NIS is nonionic surfactant with application rate being 0.25% volume per volume.

Table 2. Percent cover^a of creeping bentgrass following application of mesotrione.

Treatment ^b	Rate of application	Application interval	9 Sept	17 Sept	7 Oct	17 Oct
	lb a.i./A	weeks	-----%-----			
Mesotrione 4SC + NIS ^c	0.166	1	0.0	0.0	4.0	2.3
Mesotrione 4SC + NIS	0.166	2	0.0	0.7	2.3	2.0
Mesotrione 4SC + NIS	0.166	3	4.0	16.7	6.3	13.3
Check			98.0	98.7	98.3	98.7
LSD (0.05)			1.5	10.4	3.5	3.0

^a Percent of the plot area covered by creeping bentgrass.

^b All treatments received three applications totaling 4.98 lb a.i./A.

^c NIS is nonionic surfactant with application rate being 0.25% volume per volume.