

Timing and Rate of Mesotrione Applications for Fall Bentgrass Control

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Background/Objective: Some previous work indicated that control might be limited by how late in the fall application were made. Also previous work indicated that lower rates might work for late fall applications. So the objective of this study was to fine tune the rate of application and the late fall timing of applications to obtain control of creeping bentgrass.

Site Information

Location:	William H. Daniel Research and Diagnostic Center
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Soil Organic Matter (%):	
Turfgrass Species:	NA
Turf Condition:	NA
Turf Management: Mowing Height cm (in):	2.5 (1)
Fertilization:	
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	none
Target Pest:	Agrostis palustris (creeping bentgrass)
Growth Stage:	mature

Application Information

Application Date:	12 Oct	18 Oct	24 Oct	2 Nov	11 Nov	18 Nov	21 Nov
Application Time:	9:30 am	8:00 am	11:30 am		9:30 am	10:00 am	11:00 am
Air Temperature C⁰(F⁰):	15.5 (60)		11.6 (53)		9.7 (49)	9.8 (50)	7.3 (45)
Relative Humidity(%):	4.5 (40)						
Wind Speed m s⁻¹ (mph):	88	66	70	61	53	45	62
Soil Temperature(7.6 cm depth) C⁰(F⁰):	1.3 (3)	0.4 (1)	1.8 (4)	0.9 (2)	2.2 (5)	3.1 (7)	1.3 (3)
Soil Moisture:	15 (59)	12.8 (55)		10.6 (51)		7.8 (46)	7.2 (45)
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	1.7 (35)						
Spray Pressure:	moist	moist	moist	moist	moist	moist	moist
Spray Nozzle:	407 (1)						
Spray Equipment:	30psi						
Irrigation After Application:	8001						
Experimental Design:	CO ₂ backpack						
Replications:	None						
Plot Size m (ft):	Randomized complete block						
	3						
	1.5 X 1.5 (5 X 5)						

Report:

Applications begun on 12 Oct gave superior bentgrass burn back (Table 1) and long term bentgrass control measured in Spring 2006 (Table 2). Three applications of mesotrione at 0.1 or 0.15 provided superior control compared to three applications at 0.05 lbs ai/A (Table 2).

Table 1. Injury^a to creeping bentgrass following applications of mesotrione at three initial timings and three rates.

Treatment ^{bc}	Rate of application	18 Oct	25 Oct	2 Nov	11 Nov	18 Nov	21 Nov	30 Nov	27 Dec
	lb ai/A								
Early ^d									
Mesotrione 4SC	0.05	7.0	4.3	2.0	1.3	2.0	1.3	1.0	1.0
Mesotrione 4SC	0.1	7.0	4.3	2.0	1.0	1.3	1.0	1.0	1.0
Mesotrione 4SC	0.15	7.0	4.0	2.0	1.0	1.0	1.0	1.0	1.0
Mid ^d									
Mesotrione 4SC	0.05	9.0	9.0	8.7	4.0	3.7	2.3	2.0	1.7
Mesotrione 4SC	0.1	9.0	9.0	8.3	3.3	2.3	2.3	1.7	1.0
Mesotrione 4SC	0.15	9.0	9.0	8.3	3.3	2.7	2.0	1.3	1.3
Late ^d									
Mesotrione 4SC	0.05	9.0	9.0	9.0	9.0	9.0	8.0	4.3	2.7
Mesotrione 4SC	0.1	9.0	9.0	9.0	9.0	9.0	7.7	4.3	2.7
Mesotrione 4SC	0.15	9.0	9.0	9.0	9.0	8.7	7.7	3.7	2.3
Check		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
LSD (0.05)		0.0	0.7	0.5	0.6	0.7	0.7	0.7	0.7

^a Injury was rated on a scale of 1 to 9 where 1 = completely brown turf and 9 = no injury.

^b All treatments included NIS at the rate of 0.25 percent volume per volume.

^c All treatments were three applications of the same rate at one week intervals.

^d Indicates timing of initial application with early being 12 Oct, mid being 24 Oct, and late being 11 Nov.

Table 2. Percent^a cover of creeping bentgrass following applications of mesotrione at three initial timings and three rates.

Treatment ^{bc}	Rate of application	10 Apr
	lb ai/A	
Early ^d		
Mesotrione 4SC	0.05	16.3
Mesotrione 4SC	0.1	3.7
Mesotrione 4SC	0.15	3.7
Mid ^d		
Mesotrione 4SC	0.05	65.0
Mesotrione 4SC	0.1	61.7
Mesotrione 4SC	0.15	51.7
Late ^d		
Mesotrione 4SC	0.05	83.3
Mesotrione 4SC	0.1	81.7
Mesotrione 4SC	0.15	85.0
Check		90.0
LSD (0.05)		22.9

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

^b All treatments included NIS at the rate of 0.25 percent volume per volume.

^c All treatments were three applications of the same rate at one week intervals.

^d Indicates timing of initial application with early being 12 Oct, mid being 24 Oct, and late being 11 Nov.