

Mestrione 4SC Safety when Applied at Seeding and Newly-Emerged Fine Fescue
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Background/Objective: In past university trials Mesotrione has shown efficacy on broadleaf weeds. Mesotrione timing of application needs to be determined in conjunction with seeding new turf stands. The objective of this study is to determine safety of mesotrione at day of seeding and on newly emerged turf.

Site Information

Location:	William H. Daniel Research and Diagnostic Center
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Turfgrass Species:	‘Spartan’ Hard Fescue
Turf Condition:	NA
Mowing Height cm (in):	6.4 (2.5)
Fertilization:	1.5# P ₂ O ₅ 9 May using 6-24-24 1.0# P ₂ O ₅ 30 May using 6-24-24 0.75# N 22 June using 25-5-15
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	none
Target Pest:	Safety
Growth Stage:	seeding to mature
Seeding Date	9 May
Emergence	28 May

Application Information

	At seeding	+ 3 weeks	1 st mow	+ 3 weeks	2 nd mow	+ 3 weeks
Application Date:	9 May	30 May	23 June	10 July	28 June	17 July
Application Time:	12:30 p.m.	9:00 a.m.	1:30 p.m.	9:00 a.m.	9:30 a.m.	8:30 a.m.
Air Temperature C⁰(F⁰):	21.7 (71)	24.7 (76)	26 (79)	23.2 (74)	22 (72)	24.1 (75)
Relative Humidity(%):	45	73	54	74	66	78
Wind Speed m s⁻¹ (mph):	2.2 (5)	1.1 (2.5)	1.8 (4)	0.4 (1)	1.8 (4)	calm
Soil Temperature(7.6 cm depth) C⁰(F⁰):	21.1 (70)	22.2 (72)	28.9 (84)	22.2 (72)	21.1 (70)	24.4 (76)
Soil Moisture:	dry	moist	moist	moist	moist	moist
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	814 (2)					
Spray Pressure:	30psi					
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:

- Initial applications on day of seeding had no effect on fine fescue that germinated about 3 weeks after application (Table 1).
- However, split applications made three weeks after the initial application caused significant injury which lasted for 2-3 weeks. These applications were applied to newly germinating fine fescue.
- Applications made immediately after the first or second mowing also caused injury and this injury lasted less than a month.
- Sequential applications after the first or second mowing were injurious with visible damage lasting to 27 July.
- In spite of visible injury, there was no decrease in density from any of the treatments as rated on June 30 (Table 2). The variability in density is typical of a spring seeding of the relatively poorly adapted fine fescue in Indiana.
- Though there were no statistical differences in *Poa annua* cover, there was a general trend for less *Poa annua* in plots treated with single or sequential applications of 0.25 lbs/A.
- From these results, our recommendation is to apply mesotrione at seeding of fine fescue or at least after the third mowing.

Table 1. Injury^a to seedling fine fescue with herbicides applied at seeding or shortly after emergence.

Treatment ^b	Rate of application	7 June	12 June	23 June	30 June	6 July	27 July
	lb ai/A						
Day of seeding (9 May)							
Mesotrione 4SC	0.187	9.0	9.0	9.0	9.0	9.0	9.0
Mesotrione 4SC	0.25	9.0	9.0	9.0	9.0	9.0	9.0
Mesotrione 4SC	0.187	3.7	6.7	9.0	9.0	9.0	9.0
Mesotrione 4SC ^c	0.187						
Mesotrione 4SC	0.25	2.3	4.7	9.0	9.0	9.0	9.0
Mesotrione 4SC ^c	0.25						
Siduron 50WP	6.0	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
1 st mowing (22 June)							
Mesotrione 4SC	0.187	-	-	-	7.7	8.0	9.0
Mesotrione 4SC	0.25	-	-	-	7.0	7.0	9.0
Mesotrione 4SC	0.187	-	-	-	8.0	8.3	8.7
Mesotrione 4SC ^c	0.187						
Mesotrione 4SC	0.25	-	-	-	7.0	7.3	7.7
Mesotrione 4SC ^c	0.25						
Siduron 50WP	6.0	-	-	-	9.0	9.0	9.0
Check		-	-	-	9.0	9.0	9.0
2 nd mowing (27 June)							
Mesotrione 4SC	0.187	-	-	-	-	7.7	9.0
Mesotrione 4SC	0.25	-	-	-	-	7.7	9.0
Mesotrione 4SC	0.187	-	-	-	-	8.3	9.0
Mesotrione 4SC ^c	0.187						
Mesotrione 4SC	0.25	-	-	-	-	7.3	8.3
Mesotrione 4SC ^c	0.25						
Siduron 50WP	6.0	-	-	-	-	9.0	9.0
Check		-	-	-	-	9.0	9.0
LSD (0.05)		0.3	0.6	NS	0.8	0.7	0.6

^a Injury was rated on a scale of 1 to 9 where 1 = total white and/or brown, 7 = acceptable damage, and 9 = no injury.

^b Mesotrione treatment included NIS at 0.25 percent volume per volume.

^c Indicates a second application three weeks later.

Table 2. Density^a of fine fescue and *Poa annua* cover after application of mesotrione at seeding or shortly after emergence of fine fescue.

Treatment ^b	Rate of application	Fine fescue density 30 June	Poa annua cover 29 Aug
	lb ai/A		
Day of seeding (9 May)			
Mesotrione 4SC	0.187	7.0	43.3
Mesotrione 4SC	0.25	6.3	65.0
Mesotrione 4SC	0.187	5.0	38.3
Mesotrione 4SC ^c	0.187		
Mesotrione 4SC	0.25	4.3	25.0
Mesotrione 4SC ^c	0.25		
Siduron 50WP	6.0	6.3	73.3
Check		6.3	66.7
1 st mowing (22 June)			
Mesotrione 4SC	0.187	5.7	60.0
Mesotrione 4SC	0.25	6.7	18.3
Mesotrione 4SC	0.187	6.7	41.7
Mesotrione 4SC ^c	0.187		
Mesotrione 4SC	0.25	5.7	21.7
Mesotrione 4SC ^c	0.25		
Siduron 50WP	6.0	7.0	56.7
Check		5.3	63.3
2 nd mowing (27 June)			
Mesotrione 4SC	0.187	7.0	41.7
Mesotrione 4SC	0.25	7.0	38.3
Mesotrione 4SC	0.187	6.7	50.0
Mesotrione 4SC ^c	0.187		
Mesotrione 4SC	0.25	7.3	25.0
Mesotrione 4SC ^c	0.25		
Siduron 50WP	6.0	7.3	58.3
Check		6.3	76.7
LSD (0.05)		NS	NS

^a Plot density was rated on a scale of 1 to 9 where 9 = maximum density.

^b Mesotrione treatment included NIS at 0.25 percent volume per volume.

^c Indicates a second application three weeks later.