

## Mesotrione 4SC Safety to Turf-type Tall Fescue when Applied to Seeding and Newly Emerged Turf

Zac Reicher and Dan Weisenberger

**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

<b>Location:</b>	William H. Daniel Research and Diagnostic Center
<b>Soil Type:</b>	Starks-Fincastle silt loam
<b>Soil pH:</b>	7.2
<b>Turfgrass Species:</b>	'Regement II' turf-type tall fescue
<b>Turf Condition:</b>	NA
<b>Turf Management:</b>	
<b>Mowing Height cm (in):</b>	6.4 (2.5)
<b>Fertilization:</b>	1.5# P <sub>2</sub> O <sub>5</sub> 9 May using 6-24-24 1.0# P <sub>2</sub> O <sub>5</sub> 30 May using 6-24-24 0.75# N 22 June using 25-5-15
<b>Irrigation:</b>	To prevent moisture stress
<b>Testing on Site Previous Year:</b>	none
<b>Target Pest:</b>	Safety
<b>Growth Stage:</b>	seeding to mature
<b>Seeding Date</b>	9 May
<b>Emergence</b>	22 May

### Application Information

	At seeding	+3 weeks	1 <sup>st</sup> mow	+3 weeks	2 <sup>nd</sup> mow	+3 weeks
<b>Application Date:</b>	8 May	30 May	13 June	23 June	5 July	10 July
<b>Application Time:</b>	4:45 pm	9:00 am	2:00 pm	1:30 pm	11:00 am	9:00 am
<b>Air Temperature C<sup>o</sup>(F<sup>o</sup>):</b>	26.4 (80)	24.7 (76)	22.5 (72)	26 (79)	21 (70)	23.2 (74)
<b>Relative Humidity(%):</b>	28	73	43	54	47	74
<b>Wind Speed m s<sup>-1</sup> (mph):</b>	0.9 (2)	1.3 (3)	0.9 (2)	1.8 (4)	2.7 (6)	0.4 (1)
<b>Soil Temperature(7.6 cm depth) C<sup>o</sup>(F<sup>o</sup>):</b>	21.1 (70)	22.2 (72)	23.9 (75)	28.9 (84)	23.3 (74)	22.2 (72)
<b>Soil Moisture:</b>	dry	moist	moist	moist	moist	moist
<b>Spray Volume L ha<sup>-1</sup> (gal 1000 ft<sup>-2</sup>):</b>	814 (2)					
<b>Spray Pressure:</b>	30psi					
<b>Spray Nozzle:</b>	8001.5					
<b>Spray Equipment:</b>	CO <sub>2</sub> backpack					
<b>Irrigation After Application:</b>	None					
<b>Experimental Design:</b>	Randomized complete block					
<b>Replications:</b>	3					
<b>Plot Size m (ft):</b>	1.5 X 1.5 (5 X 5)					

**Results:**

- Initial applications on day of seeding had no effect on tall fescue that germinated about 2 weeks after application (Table 1).
- However, split applications made three weeks after the initial application caused significant injury which lasted until 12 June. These applications were made to only 20 day old seedlings . As expected, 0.25+0.25 lbs ai/A was more damaging than 0.187+0.187 lbs ai/A.
- Applications made immediately after the first mowing also caused injury, but this injury lasted only two weeks.
- Applications made immediately after the second mowing were also injurious lasting at least 2 weeks.
- Sequential applications made after the first or second mowing did not extend the injury compared to a single application.
- In spite of visible injury, there was no decrease in density from any of the treatments as rated on June 30.
- From these results, our recommendation is to apply a single application at the time of seeding for the least negative effect on tall fescue seedlings. Applications made 8 days after emergence or at the first or second mowing will cause similar phytotoxicity, but no long-term thinning. In areas of heavy crabgrass pressure, applications of mesotrione could begin as early as 8 days after emergence of tall fescue in spring. Since tall fescue on an adjacent plot was seriously damaged by mesotrione when applied at the same time as brown patch symptoms, applications made earlier in the summer might minimize the chances of this occurring.

**Table 1.** Injury to and percent cover of tall fescue after applications of mesotrione or Drive at or shortly after seeding.

Treatment	Rate of application	Injury <sup>a</sup>						Cover 30 June
		7 June	12 June	22 June	30 June	6 July	27 July	
	a.i./A							%
Day of seeding								
Mesotrione 4SC <sup>b</sup>	0.187	9.0	9.0	9.0	9.0	9.0	9.0	98.7
Mesotrione 4SC	0.25	9.0	9.0	9.0	9.0	9.0	9.0	97.3
Mesotrione 4SC	0.187	5.3	8.0	9.0	9.0	9.0	9.0	94.0
Mesotrione 4SC <sup>d</sup>	0.187							
Mesotrione 4SC	0.25	4.3	7.3	9.0	9.0	9.0	9.0	89.7
Mesotrione 4SC <sup>d</sup>	0.25							
Siduron 50WP	6.0	9.0	9.0	9.0	9.0	9.0	9.0	97.0
Drive 75DF	0.75	9.0	9.0	9.0	9.0	9.0	9.0	97.0
Check		9.0	9.0	9.0	9.0	9.0	9.0	90.3
1 <sup>st</sup> mowing								
Mesotrione 4SC	0.187	-	-	7.0	8.7	9.0	9.0	89.0
Mesotrione 4SC	0.25	-	-	6.0	8.3	9.0	9.0	94.0
Mesotrione 4SC	0.187	-	-	7.3	8.7	9.0	9.0	95.0
Mesotrione 4SC <sup>d</sup>	0.187							
Mesotrione 4SC	0.25	-	-	7.3	8.0	9.0	9.0	94.0
Mesotrione 4SC <sup>d</sup>	0.25							
Siduron 50WP	6.0	-	-	9.0	9.0	9.0	9.0	94.7
Drive 75DF <sup>c</sup>	0.75	-	-	8.7	9.0	9.0	9.0	93.0
Check		-	-	9.0	9.0	9.0	9.0	93.0
2 <sup>nd</sup> mowing								
Mesotrione 4SC	0.187	-	-	-	6.0	6.3	9.0	97.3
Mesotrione 4SC	0.25	-	-	-	6.0	6.3	9.0	98.3
Mesotrione 4SC	0.187	-	-	-	6.3	6.3	9.0	94.3
Mesotrione 4SC <sup>d</sup>	0.187							
Mesotrione 4SC	0.25	-	-	-	5.7	6.3	9.0	95.3
Mesotrione 4SC <sup>d</sup>	0.25							
Siduron 50WP	6.0	-	-	-	9.0	9.0	9.0	98.0
Drive 75DF <sup>c</sup>	0.75	-	-	-	9.0	9.0	9.0	95.7
Check		-	-	-	9.0	9.0	9.0	91.0
LSD (0.05)		0.3	0.2	0.7	0.6	0.4	NS	NS

<sup>a</sup> Injury was rated on a scale of 1 to 9 with 1 = totally white tissue, 7 = acceptable injury and 9 = no injury.

<sup>b</sup> Mesotrione 4SC applications included NIS at the rate of 0.25% v/v.

<sup>c</sup> Drive 75DF applications at 1<sup>st</sup> mowing and 2<sup>nd</sup> mowing included MSO at the rate of 1% v/v.

<sup>d</sup> Indicates a split application with the second application being 3 weeks later.