

## Tall Fescue Control Following Applications of MON 44951

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### Background/Objective:

Previous work has shown that MON 44951 will control tall fescue in bermuagrass without any injury to the bermudagrass. Limited work has shown that tall fescue can be controlled in Kentucky bluegrass and this study further evaluates that potential.

### Site Information

<b>Location:</b>	William H. Daniel Research and Diagnostic Center, W. Lafayette, IN.
<b>Soil Type:</b>	Starks-Fincastle silt loam
<b>Soil pH:</b>	7.2
<b>Soil Organic Matter (%):</b>	6.0
<b>Turfgrass Species:</b>	Kentucky bluegrass and tall fescue
<b>Turf Condition:</b>	Good
<b>Turf Management: Mowing Height cm (in):</b>	6.35 (2.5)
<b>Fertilization:</b>	121kg N/ha/yr (2.5 lbs/1000 ft <sup>2</sup> /yr)
<b>Irrigation:</b>	To prevent moisture stress
<b>Testing on Site Previous Year:</b>	None
<b>Target Pest:</b>	Tall fescue
<b>Growth Stage:</b>	Mature

### Application Information

<b>Application Date:</b>	5 June	27 June	17 July
<b>Application Time:</b>	7:30	8:00	9:30
<b>Air Temperature C<sup>0</sup>(F<sup>0</sup>):</b>	14.2 (58)	16.8 (62)	29.5 (85)
<b>Relative Humidity(%):</b>	77	71	41
<b>Wind Speed m s<sup>-1</sup> (mph):</b>	2.2 (5)	Calm	1.3 (3)
<b>Soil Temperature(7.6 cm depth) C<sup>0</sup>(F<sup>0</sup>):</b>	10.6 (51)	18.3 (65)	23.9 (75)
<b>Soil Moisture:</b>	Moist	Moist	Moist
<b>Spray Volume L ha<sup>-1</sup> (gal 1000 ft<sup>-2</sup>):</b>	814 (2)		
<b>Spray Pressure:</b>	35psi		
<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:**

All treatments caused phytotoxicity to tall fescue after the first and second application (Table 1). No phytotoxicity was seen on Kentucky bluegrass (Table 2) demonstrating the safety of MON44951 on lawn height Kentucky bluegrass. The most aggressive applications of MON 44951 (3 applications at 0.15 or 0.30 oz/A) reduced tall fescue cover up to 32% by 31 July, but tall fescue rebounded to 97% or greater cover by 30 Aug. Under the conditions of our study, MON44951 shows little promise for selectively controlling tall fescue in Kentucky bluegrass.

Table 1. Phytotoxicity<sup>a</sup> to tall fescue.

Treatment	Rate of application	Days after application	20 June	2 July	18 July	31 July	28 Aug
	oz/A						
MON 44951	0.15	0	6.3	7.3	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	5.3	6.0	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	0	6.7	5.7	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	6.7	4.7	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	0	6.0	5.7	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	42					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	5.7	4.3	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	42					
NIS	0.25 <sup>b</sup>						
MON 44951 <sup>c</sup>	0.15	0	7.3	8.3	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
MON 44951 <sup>c</sup>	0.3	0	6.3	6.3	9.0	9.0	9.0
NIS	0.25 <sup>b</sup>						
Check			9.0	9.0	9.0	9.0	9.0
LSD (0.05)			1.3	0.9	NS	NS	NS

<sup>a</sup> Phytotoxicity was rated on a scale of 1 to 9 where 1 = completely brown turf, 7 = acceptable damage, and 9 = no phytotoxicity.

<sup>b</sup> Rate of application was percent volume per volume.

<sup>c</sup> Treatment was watered in with the equivalent of 0.2 inches.

Table 2. Phytotoxicity<sup>a</sup> to Kentucky bluegrass

Treatment	Rate of application	Days after application	20 June	2 July	18 July	31 July	28 Aug
	oz/A						
MON 44951	0.15	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.15	42					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	21					
NIS	0.25 <sup>b</sup>						
MON 44951	0.3	42					
NIS	0.25 <sup>b</sup>						
MON 44951 <sup>c</sup>	0.15	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
MON 44951 <sup>c</sup>	0.3	0	9	9	9	9	9
NIS	0.25 <sup>b</sup>						
Check			9	9	9	9	9
LSD (0.05)			NS	NS	NS	NS	NS

<sup>a</sup> Phytotoxicity was rated on a scale of 1 to 9 where 1 = completely brown turf, 7 = acceptable damage, and 9 = no phytotoxicity.

<sup>b</sup> Rate of application was percent volume per volume.

<sup>c</sup> Treatment was watered in with the equivalent of 0.2 inches.

Table 3. Percent cover<sup>a</sup> of tall fescue.

Treatment	Rate of application	Days after application	18 July	31 July	30 Aug
	oz/A				
MON 44951	0.15	0	98.7	98.0	99.0
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	0	96.7	98.0	99.0
NIS	0.25 <sup>b</sup>				
MON 44951	0.15	0	88.3	97.0	99.0
NIS	0.25 <sup>b</sup>				
MON 44951	0.15	21			
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	0	68.3	93.3	99.0
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	21			
NIS	0.25 <sup>b</sup>				
MON 44951	0.15	0	85.0	71.7	97.3
NIS	0.25 <sup>b</sup>				
MON 44951	0.15	21			
NIS	0.25 <sup>b</sup>				
MON 44951	0.15	42			
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	0	65.0	56.7	97.0
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	21			
NIS	0.25 <sup>b</sup>				
MON 44951	0.3	42			
NIS	0.25 <sup>b</sup>				
MON 44951 <sup>c</sup>	0.15	0	98.0	98.7	99.0
NIS	0.25 <sup>b</sup>				
MON 44951 <sup>c</sup>	0.3	0	98.7	98.7	99.0
NIS	0.25 <sup>b</sup>				
Check			97.3	98.3	99.0
LSD (0.05)			8.5	8.1	0.7

<sup>a</sup> Percent of the plot area covered by tall fescue.

<sup>b</sup> Rate of application was percent volume per volume.

<sup>c</sup> Treatment was watered in with the equivalent of 0.2 inches.