

Potential of Mesotrione to Control Dallisgrass

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Background/Objective:

Determine if mesotrione has activity on dallisgrass.

Site Information

Location:	Bloomington, IN
Turfgrass Species:	Kentucky bluegrass blend
Turf Condition:	Poor
Turf Management:	
Mowing Height cm (in):	2 inches
Fertilization:	0
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	Dallisgrass (<i>Paspalum dilatatum</i>)
Growth Stage:	

Application Information

Application Date:	22 June	13 July
Application Time:	9:00am	9:00am
Air Temperature C⁰(F⁰):	25.5 (78)	28.4 (83)
Relative Humidity(%):	56	65
Wind Speed m s⁻¹ (mph):	1.3 (3.0)	0.8 (1.9)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	24.4 (76)	27.8 (82)
Soil Moisture:	moist	moist
Spray Volume L ha⁻¹ (gal 1000 ft²):	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:

- Dallisgrass in this study was mature and tillering at the time of initial application. Therefore, excellent control would not be expected from any treatments.
- Though all treatments caused phytotoxicity in dallisgrass, Target(MSMA) caused the quickest and most extensive phytotoxicity to dallisgrass (Table 1). However, MSMA also causes significant phytotoxicity in Kentucky bluegrass, but this could not be determined accurately on this low maintenance turf stand.
- Single and repeated applications of Target were most effective controlling dallisgrass, with two applications virtually eliminating dallisgrass by 16 Sep (Table 2).
- Two applications of mesotrione were also effective, reducing dallisgrass cover to 17% compared to 85% in the check plots.
- Mesotrione shows potential to control dallisgrass with better safety on Kentucky bluegrass than MSMA.
- Next year's study will focus on up to 3 applications of mesotrione, made earlier to less mature dallisgrass.

Table 1. Phytotoxicity^a to dallisgrass from one or two applications of various herbicides.

Treatment	Rate of application	30 June	13 July	22 July
	lb a.i./A			
Mesotrione 4SC	0.25	6.0	4.0	4.0
NIS	0.25 ^b			
Mesotrione 4SC	0.5	4.7	3.0	3.0
NIS	0.25 ^b			
Target 6.6L	2.25	2.3	1.0	2.0
NIS	0.1 ^b			
Turflon Ester 4L	1.0	8.7	5.3	4.3
Mesotrione 4SC	0.25	5.0	4.7	2.7
NIS	0.25 ^b			
Mesotrione 4SC ^c	0.25			
NIS	0.25 ^b			
Mesotrione 4SC	0.5	5.7	3.0	2.3
NIS	0.25 ^b			
Mesotrione 4SC ^c	0.5			
NIS	0.25 ^b			
Target 6.6L	2.25	2.3	1.0	1.0
NIS	0.1 ^b			
Target 6.6L ^c	2.25			
NIS	0.1 ^b			
Turflon Ester 4L	1.0	7.3	4.3	3.0
Turflon Ester 4L ^c	1.0			
Check		8.7	9.0	9.0
LSD (0.05)		1.9	0.8	1.0

^a Phytotoxicity was rated on a scale of 1 to 9 where 1 = completely white or brown tissue, 7 = acceptable damage, and 9 = no phytotoxicity.

^b Rate of application was per cent volume per volume.

^c Indicates a sequential application, first application June 22, and sequential application July 13.

Table 2. Percent cover^a of dallisgrass after one or two applications of various herbicides.

Treatment	Rate of application	13 July	22 July	5 Aug	16 Sep
	lb a.i./A	-----%			
Mesotrione 4SC	0.25	30.0	40.0	53.3	65.0
NIS	0.25 ^b				
Mesotrione 4SC	0.5	25.0	16.7	41.7	60.0
NIS	0.25 ^b				
Target 6.6L	2.25	2.3	1.7	3.7	11.0
NIS	0.1 ^b				
Turflon Ester 4L	1.0	40.0	35.0	51.7	75.0
Mesotrione 4SC	0.25	43.3	20.0	31.7	56.7
NIS	0.25 ^b				
Mesotrione 4SC ^c	0.25				
NIS	0.25 ^b				
Mesotrione 4SC	0.5	21.7	11.3	2.3	11.7
NIS	0.25 ^b				
Mesotrione 4SC ^c	0.5				
NIS	0.25 ^b				
Target 6.6L	2.25	4.7	0.3	0.0	0.7
NIS	0.1 ^b				
Target 6.6L ^c	2.25				
NIS	0.1 ^b				
Turflon Ester 4L	1.0	41.7	11.7	20.0	66.7
Turflon Ester 4L ^c	1.0				
Check		80.0	98.3	85.0	85.0
LSD (0.05)		12.6	9.7	21.1	29.9

^a Percent of plot covered by healthy dallisgrass.

^b Rate of application was per cent volume per volume.

^c Indicates a sequential application, first application June 22, and sequential application July 13.