

2006 Crabgrass Control: Preemergence Herbicides Applied Prior to Emergence or Postemergence Herbicides Applied at 1-2 Tiller Stage
Zac Reicher and Dan Weisenberger

Background/Objective: Determine crabgrass control by commercially available and experimental herbicides when applied prior to germination and/or at 1 to 2 tiller growth stage.

Site Information

Location:	William H. Daniel Research and Diagnostic Center
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Turfgrass Species:	Kentucky bluegrass blend
Turf Condition:	fair
Turf Management: Mowing Height cm (in):	1.3 (1)
Fertilization:	1 lb N/M/YR
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	none
Target Pest:	Crabgrass (<i>Digitaria</i> sp.)
Growth Stage:	Preemergent and 1 to 2 tiller

Application Information

Application Date:	20 April	31 May	27 June
Application Time:	9:00 a.m.	9:00 a.m.	10:30 a.m.
Air Temperature C⁰(F⁰):	15.8 (60)	23.5 (74)	22.1 (72)
Relative Humidity(%):	61	84	57
Wind Speed m s⁻¹ (mph):	1.3 (3)	1.8 (5)	2.2 (4)
Soil Temperature(7.6 cm depth) C⁰(F⁰):	12.8 (55)	23.9 (75)	22.2 (72)
Soil Moisture:	moist	moist	dry
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	813 (2)		
Spray Pressure:	30psi		
Spray Nozzle:	8001.5		
Spray Equipment:	CO ₂ backpack and shaker bottle		
Irrigation After Application:	None		
Experimental Design:	Randomized complete block		
Replications:	3		
Plot Size m (ft):	1.5 X 1.5 (5 X 5)		

Report:

- This was a difficult test for crabgrass control with Kentucky bluegrass mowed at 1" and an unusually warm and wet July conducive to late crabgrass germination. This is reflected in the results where crabgrass exceeded 25% cover in our standard treatments like Dimension or Pendimethalin 60WDG (Table 1).
- The best performing FMC treatment was F6875 applied at 0.75 lb ai/A .
- Though the same product applied at 0.57 resulted in only 14.3% crabgrass cover by 15 Sep, this was statistically similar to cover in the check plot.
- The split applications of Pendulum provided the lowest amount of crabgrass cover by Aug and Sept. The unusually hot and humid weather in late July and early August caused a late flush of crabgrass germination and development and the residual concentration of the single April application was probably too low concentration to be effective.
- All three Pendulum treatments including sequentials provided statistically equivalent cover.
- Only Pendulum at 1.5+1.5 provided lower cover than the check by Sept.
- Mesotrione alone applied preemergence resulted in minimal crabgrass reduction by Aug or Sept.
- Adding Barricade to mesotrione for the preemergence application resulted in only 6% crabgrass cover by 15 Sep.
- Single preemergence applications of EXC1054 and 1055 provided 6% or less crabgrass coverage by 15 Sept.
- There was little benefit of halving the rate of EXC1054 and 1055 and making sequential applications.
- Mesotrione 4SC at 0.25 and Barricade 4FL applied by themselves at the 1-2 tiller stage resulted in a maximum of 5% crabgrass cover by 15 Sept. However, when tank-mixed, this combination resulted in 33% cover and suggests antagonism.
- Though preemergence applications of Dimension performed poorly, the single application of Dimension Ultra 40WP applied at the 1-2 tiller stage was extremely effective in reducing crabgrass cover.
- No phytotoxicity was observed at any time from any of the treatments.

Table 1. Percent^a crabgrass cover following application of herbicides prior to germination and/or at the 1 to 2 tiller stage of growth.

Treatment	Rate of application	28 June	2 Aug	15 Sept
	lb a.i./A			
Dismiss 4F	0.125	4.3	71.7	71.7
Dismiss 4F	0.19	5.7	60.0	41.7
Dismiss 4F	0.25	2.3	65.0	48.3
F6875 L	0.375	1.0	46.7	53.3
F6875 L	0.57	3.7	30.0	30.3
F6875 L	0.75	2.0	29.7	24.3
F6875 .3G	0.375	2.3	41.7	31.7
F6875 .3G	0.57	1.3	23.3	14.3
F6875 .3G	0.75	3.7	10.0	5.0
Dimension Ultra 40WP	0.5	1.3	46.7	44.3
Pendimethalin 60WDG	3.0	13.7	35.0	25.0
Dimension 1EC	0.5	2.0	51.7	45.0
Barricade 4FL	0.5	1.3	15.0	9.3
Dimension Ultra 40WP ^b	0.5	1.7	3.7	3.0
Check		7.7	40.0	43.3
LSD (0.05)		NS	32.5	34.4

^a Percent of the plot area covered by crabgrass.

^b Application was made at the 1 to 2 tiller stage of crabgrass growth on 27 June.

Table 1. Percent^a crabgrass cover following application of herbicides prior to germination and/or at the 1 to 2 tiller stage of growth.

Treatment	Rate of application	28 June	2 Aug	15 Sept
	lb a.i./A			
Pendulum 3.8CS	3.0	3.3	50.0	24.7
Pendulum 3.8CS ^b	1.5	12.0	18.3	7.7
Pendulum 3.8CS	1.5			
Pendulum 3.8CS ^b	2.0	1.3	21.7	14.3
Pendulum 3.8CS	1.5			
Pendulum 3.8CS ^b	1.5	0.7	26.3	16.0
Pendulum 3.8CS	2.0			
Dimension Ultra 40WP	0.5	1.3	46.7	44.3
Pendimethalin 60WDG	3.0	13.7	35.0	25.0
Dimension 1EC	0.5	2.0	51.7	45.0
Barricade 4FL	0.5	1.3	15.0	9.3
Dimension Ultra 40WP ^c	0.5	1.7	3.7	3.0
Check		7.7	40.0	43.3
LSD (0.05)		NS	32.5	34.4

^a Percent of the plot area covered by crabgrass.

^b Indicates a split application with the first application 20 April and the second 31 May.

^c Application was made at the 1 to 2 tiller stage of crabgrass growth on 27 June.

Table 1. Percent^a crabgrass cover following application of herbicides prior to germination and/or at the 1 to 2 tiller stage of growth.

Treatment	Rate of application	28 June	2 Aug	15 Sept
	lb a.i./A			
Mesotrione 4SC ^b	0.187	1.7	35.0	18.3
Mesotrione 4SC ^b	0.25	1.3	26.7	24.7
Mesotrione 4SC ^{bc}	0.25	1.0	7.7	6.0
Barricade 4FL	0.75			
EXC1054 SC ^b	0.725	7.3	5.3	3.3
EXC1055 SC ^b	0.9	10.3	3.7	5.0
Mesotrione 4SC ^{bcd}	0.25	1.0	24.3	33.3
Barricade 4FL	0.75			
Mesotrione 4SC ^{bd}	0.187	1.7	19.7	21.7
Mesotrione 4SC ^{bd}	0.25	5.0	4.3	5.0
Barricade 4FL ^d	0.75	10.3	8.3	3.7
EXC1054 SC ^b	0.3875	7.0	3.0	3.3
EXC1054 SC ^{bd}	0.3875			
EXC1055 SC ^b	0.45	7.0	1.7	0.7
EXC1055 SC ^{bd}	0.45			
Dimension Ultra 40WP	0.5	1.3	46.7	44.3
Pendimethalin 60WDG	3.0	13.7	35.0	25.0
Dimension 1EC	0.5	2.0	51.7	45.0
Barricade 4FL	0.5	1.3	15.0	9.3
Dimension Ultra 40WP ^d	0.5	1.7	3.7	3.0
Check		7.7	40.0	43.3
LSD (0.05)		NS	32.5	34.4

^a Percent of the plot area covered by crabgrass.

^b Application included a NIS at the rate of 0.25 percent volume per volume.

^c Products were applied as a tank mix.

^d Application was made at the 1 to 2 tiller stage of crabgrass growth on 27 June.

Table 1. Percent^a crabgrass cover following application of herbicides prior to germination and/or at the 1 to 2 tiller stage of growth.

Treatment	Rate of application	28 June	2 Aug	15 Sept
	lb a.i./A			
Dimension Ultra 40WP	0.5	1.3	46.7	44.3
Pendimethalin 60WDG	3.0	13.7	35.0	25.0
Dimension 1EC	0.5	2.0	51.7	45.0
Barricade 4FL	0.5	1.3	15.0	9.3
Dimension Ultra 40WP ^b	0.5	1.7	3.7	3.0
Mesotrione 4SC ^{bc}	0.25	5.0	4.3	5.0
Check		7.7	40.0	43.3
LSD (0.05)		NS	32.5	34.4

^a Percent of the plot area covered by crabgrass.

^b Application was made at the 1 to 2 tiller stage of crabgrass growth on 27 June.

^c Application included a NIS at the rate of 0.25 percent volume per volume.