

Evaluation of Crabgrass Control with Various Dimension Formulations and Corn Gluten Meal

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SUMMARY: Crabgrass (*Digitaria* spp.) is often considered to be the most problematic weed in lawns. Crabgrass is a summer annual grassy weed that typically germinates in April in the Midwest (early April in southern areas and late-April in northern areas). The best approach to controlling crabgrass is using a preemergence herbicide such as dithiopyr (Dimension), pendimethalin (Pendulum), prodiamine (Barricade), sulfentrazone + prodiamine (Echelon), and others. The objective of this experiment was to evaluate how Dimension 2EW compares to Dimension granular formulations (Dimension on a fertilizer carrier) for crabgrass control in northern turfgrass and to evaluate the efficacy of corn gluten meal compared to commercial herbicides. All Dimension treatments had less crabgrass coverage than the untreated check and corn gluten meal on all rating dates (Table 1). All rates of Dimension on fertilizer and Dimension 2EW at 0.5 and 0.25 + 0.25 (spilt application) lbs ai per acre provided the same results on all rating dates. Plots treated with Dimension 2EW at 0.38 lbs ai/A had more crabgrass when rated 5 August than plots treated at 0.38 lbs ai/A with Dimension 0.21G. Although some have reported crabgrass control with corn gluten meal, our study in 2011 is consistent with our previous work with corn gluten meal in Indiana that shows little to no efficacy for preemergence crabgrass control.

Large crabgrass (*Digitaria sanguinalis*) and smooth crabgrass (*Digitaria ischaemum*) are both species of crabgrass found in the Midwest that are collectively referred to as crabgrass. Crabgrass is often considered to be the most problematic weed in lawns. Crabgrass is a summer annual grassy weed that typically germinates in April in the Midwest (early April in southern areas and late-April in northern areas). Proper mowing (higher mowing heights), proper fertilization (some rather than none to improve turf density), irrigation to prevent summer dormancy during drought, and aerification of compacted areas to improve turf health are all cultural practices that can be used to reduce crabgrass. Despite

proper cultural practices, crabgrass may still remain problematic in certain “hot spots” such as next to sidewalks and driveways as well as sunny turf areas. The best approach to controlling crabgrass is using a preemergence herbicide such as dithiopyr (Dimension), pendimethalin (Pendulum), prodiamine (Barricade), sulfentrazone + prodiamine (Echelon), and others. These herbicides inhibit cell division and prevent crabgrass seeds from properly emerging. Since these herbicides work on germinating seeds, they must be applied prior to germination with the exception of dithiopyr which controls crabgrass after germination until it reaches one tiller.

An increased demand for organic lawn care products has also increased the use of organic alternatives to traditional pesticides. The predominant organic herbicide used in turfgrass systems is corn gluten meal for preemergence control of crabgrass. This product has shown to be effective in northern states in Kentucky bluegrass lawns as an organic solution to weed control (Christians, 1993). The objective of this experiment was to evaluate how Dimension 2EW compares to Dimension granular formulations (Dimension on a fertilizer carrier)

ADDITIONAL INDEX WORDS:
dithiopyr, preemergence.

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for crabgrass control in northern turfgrass and to evaluate the efficacy of corn gluten meal compared to commercial herbicides.

MATERIALS AND METHODS

The experiment was conducted at the W.H. Daniel Research and Diagnostic Center in West Lafayette, IN. The site was a Kentucky bluegrass blend with a uniform cover by crabgrass. Experimental design was randomized complete block with three replications and an individual plot size of 25 ft². Plots were mown at 2 inches as needed. Plots were treated with herbicides 13 April and 13 June (table 1). Herbicides were applied in 87 gpa water with a CO₂-pressurized sprayer at 30 psi. An untreated check was included for comparison. Crabgrass coverage was visually rated. All data were analyzed using SAS (SAS Institute, Inc). Means were separated using Fisher’s protected least significant difference when F tests were significant at α=0.05.

RESULTS AND DISCUSSION

All Dimension treatments had less crabgrass coverage than the untreated check and corn gluten meal on all rating dates (Table 1). Statistically, all rates of Dimension on fertilizer and Dimension

2EW at 0.5 and 0.25 + 0.25 lbs ai per acre provided the same results on all rating dates. Plots treated with Dimension 2EW at 0.38 lbs ai/A had more crabgrass when rated 5 August than plots treated at 0.38 lbs ai/A with Dimension 0.21G. Although some have reported crabgrass control with corn gluten meal (Christians, 1993), our study in 2011 is consistent with our previous work with corn gluten meal in Indiana that shows little to no efficacy for preemergence crabgrass control (Reicher and Weisenberger, 1994).

REFERENCES

Christians, N. E. 1993. The use of corn gluten meal as a natural preemergence weed control in turf. Int. Turfgrass Soc. Res. J. 7:284-290.
 Reicher, Z., and D. Weisenberger. 2004. Annual grass control with experimental and commercially available products. Annu. Rep. Purdue Univ. Turfgrass Sci. Program. p.121-122.

Table 1. Herbicide effects on crabgrass coverage

Treatment	Rate	Application date	Crabgrass coverage		
			9 June	8 July	5 August
	lbs ai/A		%		
Dimension 2EW	0.38	13 April	0 b ^a	6 b	33 b
Dimension 2EW	0.5	13 April	0 b	3 b	23 bc
Dimension 2EW	0.25	13 April	0 b	2 b	18 c
Dimension 2EW	0.25	13 June			
Dimension on fert 0.21G ^b	0.38	13 April	0 b	2 b	15 c
Dimension on fert 0.21G ^b	0.5	13 April	0 b	2 b	11 c
Dimension on fert 0.10G ^b	0.25	13 April	0 b	2 b	12 c
Dimension on fert 0.10G ^b	0.25	13 June			
Corn Gluten Meal	20 ^c	13 April	5 a	58 a	98 a
Untreated		13 April	8 a	68 a	98 a
P-value			0.003	<0.0001	<0.0001

^a Means followed by the sample letter are not significantly different.
^b 0-0-7 was the fertilizer carrier used for Dimension granular applications.
^c Rate of application was lbs product per 1000 ft².