2007 Turfgrass Weed Control Summary – Crabgrass

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Crabgrass populations were moderate to low in 2007 due to inconsistent spring temperature. March ended unseasonably warm but was followed by an extended cold temperatures in April. Daily temperature averages reached 28°F and below from April 5-8. Even though temperatures moved back into normal ranges and even above normal, temperatures again dropped in mid-May reaching below 30°F on the morning of May 13. A moderate drought followed the spring in the mid-summer (mid-June to Late-July) and wet stormy weather ended August. Although the temperatures were high enough to facilitate crabgrass establishment in turf, many crabgrass plants may have germinated but failed to establish during the volatile spring. Abnormally droughty summer conditions in Michigan inhibited late germination and establishment of crabgrass. Because of these conditions, early-season crabgrass counts are extremely low and increase by mid- to late- August. The following is a summary of 6 trials that evaluated Postemergence and/or preemergence crabgrass control.

Preemergence Crabgrass Control

Three preemergence crabgrass trials were conducted at Evergreen Cemetery in Lansing, MI in 2007. Trials were initiated in mid-April so that preemergence barriers were in place before crabgrass germinated. Crabgrass populations were evaluated in each plot by counting crabgrass centers (1-inch radius).

The 2007 Preemergence Crabgrass Control with Dimension and Experimental Trial was treated on April 19. Table 1 contains the complete treatment list and results for this trial. On July 3, 75 DAT, all treatments were providing excellent control of crabgrass. On July 26, most crabgrass was either dead or was not visible in the 3 inch turf cover due to the lack of rainfall on a site that has no irrigation. The low rate of Dimension Ultra exhibited some breakthrough of crabgrass on August 14, 117 DAT, but still displayed moderate control of crabgrass. On this

date, all of the other treatments, except Experimental at 0.250 lb ai/A, did not significantly differ from each other and were providing good control of crabgrass. No turf injury was noticed in any plot for the duration of the trial.

The 2007 Preemergence Crabgrass Control with Wet and Dry Turf Trial was treated April 19. The 'wet turf' treatment was applied first in early morning while heavy dew was present and the 'dry turf' treatment was applied 7 hours later when the turf was dry. Table 2 contains the complete treatment list and results for this trial. On August 14, 117 DAT, both Echelon treatments applied to dry turf were still providing excellent crabgrass control, while only the high rate of Echelon applied to wet turf provided comparable control. The low rate of Echelon on wet turf provided moderate control. Prodiamine Granular on dry and wet turf and Echelon on a fertilizer carrier on wet turf provided moderate control of crabgrass also. All other treatments did not differ from the untreated 117 DAT. No turf injury was noticed in the trial area.

The 2007 Preemergence Crabgrass Control with Split Applications Trial applications A and B were treated on April 18 and June 11, respectively. Table 3 contains the complete treatment list and results for this trial. Echelon Gran provided excellent crabgrass control even 118 DAT-A at 0.570 lb ai/A, 0.750 lb ai/A, and 0.375 lb ai/A split, comparable to Barricade and Dimension. Echelon also provided excellent crabgrass control, but only at 0.750 lb ai/A. The lower two Echelon rates and Echelon Gran Fert provided moderate control of crabgrass 118 DAT-A. All other treatments did not differ from the untreated 118 DAT-A. No turf injury was noticed in the trial area.

Preemergence and Postemergence Crabgrass Control

In 2007, quinclorac, dithiopyr, and prodiamine became available as post-patent formulations. This creates new opportunities to build products that have pre and post activity on crabgrass. Dithiopyr has been successful, in part, because it can accomplish pre and post control of crabgrass in a single application. Trials evaluating combinations of post-patent

crabgrass herbicides were conducted either at Evergreen Cemetery in Lansing, MI or the Hancock Turfgrass Research Center (HTRC) in East Lansing, MI.

The 2007 Pre/Post Crabgrass Control at Varying Growth Stages Trial was treated on April 18 (Pre - A), July 5 (1-4 leaf - B), and August 15 (1-2 tiller - C). However, the timing C (2 tiller) treatments were applied on August 15, when crabgrass had finally begun to tiller after getting a late start in 2007. We were unable to collect a postemergence evaluation on 2 tiller crabgrass control. By the end of August and early September, crabgrass was already at the end of its natural summer annual life cycle and had begun to desiccate in treated and untreated plot. Overall, there was so little crabgrass pressure in 2007 that useful evaluations were very difficult to come by even in an area that historically has high crabgrass pressure. The results gathered from the preemergence and 1-4 leaf postemergence crabgrass portion of the trial are presented in Table 4. In this table, the C treatments were not included in the statistical analysis although the treatments are shown. Also, the first rating date, July 2, only includes statistics from the data collected for treatment A because neither treatment B or C had yet been applied.

On July 2, 75 DAT-A, every preemergence treatment, except Dismiss, provided excellent crabgrass control. However, by 118 DAT-A, Echelon Gran and Barricade were still providing excellent preemergence crabgrass control, while Echelon and Echelon Gran Fert had lost some ground but still providing good control. None of these products applied postemergence to 1-3 leaf crabgrass provided any control and did not differ from the untreated.

Dithiopyr provided excellent preemergence crabgrass control in 2007 regardless of formulation or manufacturer. Even sub-optimum rates (0.125 lb ai/A) resulted in good control of crabgrass for the duration of the season. However, rates above 0.125 lb ai/A provided good-to-excellent control in all trials. Dithiopyr, applied as Dimension, performed extremely well in the early postemergence crabgrass trial (Table 5). Echelon Granular (sulfentrazone + prodiamine) applied to wet or dry turf at 0.75 lb ai/A and Echelon Granular with fertilizer

applied to wet turf at 0.75 lb ai/A provided excellent preemergence control of crabgrass. Overall, the sprayable and granular formulations of Echelon performed better than the fertilizer granular formulation in 2007. The crabgrass trial area is very low maintenance. Poorly timed fertilizer application may favor crabgrass development during an abnormally warm summer when the cool-season grasses are not actively growing. Prodiamine, applied as Barricade or post-patent provided excellent preemergence crabgrass control in all but one trial in 2007.

The Advan Pre/Post Crabgrass Trial timing A treatments were applied on April 19, a typical preemergence timing in Michigan, and the timing B treatments were applied on August 15, when crabgrass had finally begun to tiller after getting a late start in 2007. The first crabgrass population evaluation was not made until August 3, 106 DAT-A, and a second was made on August 14, 117 DAT-A. Postemergence evaluation of crabgrass control was not possible in 2007. Preemergence results from this trial are presented in Table 5.

On August 3, all the treated plots displayed excellent preemergence control of crabgrass, although, as seen by the untreated crabgrass center means, the crabgrass pressure was very low. These treatments seemed to maintain excellent crabgrass control; however, a large amount of variability caused these treatments to be statistically comparable to the untreated.

The 2007 Quali-Pro Quinclorac + Dithiopyr Pre/Post Crabgrass Control Trial was treated on July 25. Percent crabgrass control was determined on August 10, 28, and September 25 using the Henderson-Tilton pre-count/post-count method. Results from this trial are shown in Table 6. On the last two evaluation dates, all treatment provided excellent control of crabgrass. In 2007, there was no benefit for crabgrass control due to the addition of dithiopyr to quinclorac. This is not to say that this would be the case every year. However, crabgrass seemed to germinate and flourish late in the summer in 2007 because it was so dry early in the summer. No turf injury was noticed for the duration of the trial.

Table 1: Preemergence Crabgrass Control – Dimension & Experimental – 2007
Evergreen Cemetery, Lansing, MI

Treatment	Rate (lb ai/A)	Crabgrass		
		July 3	July 26	August 14
		75 DAT	98 DAT	117 DAT
		crabgrass centers		
Dimension Ultra	0.125	2.0 b	0.0	12.3 b
Dimension Ultra	0.250	1.0 b	0.0	1.7 d
Dimension Ultra	0.380	1.0 b	0.0	2.3 d
Dimension Ultra	0.500	0.7 b	0.0	3.0 cd
Experimental	0.125	2.0 b	0.0	7.3 bcd
Experimental	0.250	2.3 b	1.0	11.0 bc
Experimental	0.380	0.3 b	0.0	5.3 bcd
Experimental	0.500	1.3 b	0.0	8.3 bcd
Dimension Ultra T&O	0.125	1.3 b	0.0	5.7 bcd
Dimension Ultra T&O	0.250	0.3 b	0.0	2.7 cd
Dimension Ultra T&O	0.380	0.0 b	0.0	1.3 d
Dimension Ultra T&O	0.500	0.0 b	0.0	3.3 cd
Untreated		11.7 a	1.7	28.0 a
LSD (p=0.05)		2.69	NS	8.52

† Means followed by same letter do not significantly differ (P=0.05, LSD).

NS indicates not significant.

Table 2: Preemergence Crabgrass Control with Wet and Dry Turf - 2007
Evergreen Cemetery, Lansing, MI

Treatment	Rate (lb ai/A)	Turf	Crabgrass		
			9 June	20 June	12 July
			49 DAT	60 DAT	82 DAT
			crabgrass centers		
Echelon	0.375	Dry	1 c	0	8 de
Echelon	0.750	Dry	0 c	0	5 e
Echelon Fert	0.375	Dry	5 a	7	35 a
Echelon Fert	0.750	Dry	1 bc	0	21 bc
Prodiamine Gran	0.500	Dry	1 bc	0	12 cde
Echelon	0.375	Wet	1 bc	0	18 cd
Echelon	0.750	Wet	1 c	0	4 e
Echelon Fert	0.375	Wet	4 a	2	21 bc
Echelon Fert	0.750	Wet	1 c	0	15 cd
Prodiamine Gran	0.500	Wet	1 bc	0	16 cd
UNTREATED			3 ab	4	31 ab
LSD (p=0.05)			2.4	NS	10.5

†Means in a column followed by the same letter do not significantly differ (P=0.05, LSD).
NS indicates not significant.

Table 3: Preemergence Crabgrass Control with Split Applications - 2007
Evergreen Cemetery, Lansing, MI

Treatment	Rate (lb ai/A)	App. Timing	Crabgrass July 2 75 DAT-A 21 DAT-B	July 26 99 DAT-A 35 DAT-B	August 14 118 DAT-A 104 DAT-B
			crabgrass centers		
Dismiss	0.188	A	4	1	26 abc
Echelon	0.375	A	2	0	14 c-f
Echelon	0.570	A	1	2	18 b-e
Echelon	0.750	A	1	0	9 def
Echelon Echelon	0.375 0.375	A B	2	3	29 abc
Echelon Gran	0.375	A	1	0	22 a-d
Echelon Gran	0.570	A	1	0	8 def
Echelon Gran	0.750	A	1	0	6 ef
Echelon Gran Echelon Gran	0.375 0.375	A B	1	0	8 def
Echelon Gran Fert	0.375	A	2	2	27 abc
Echelon Gran Fert	0.570	A	3	1	32 ab
Echelon Gran Fert	0.750	A	1	0	15 c-f
Echelon Gran Fert Echelon Gran Fert	0.375 0.375	A B	0	0	21 a-d
Barricade	0.500	A	1	0	5 ef
Dimension	0.500	A	0	0	1 f
Untreated			6	0	33 a
LSD (p=0.05)			NS	NS	15

†Means in a column followed by the same letter do not significantly differ (P=0.05, LSD).
NS indicates not significant.

Table 4: Pre/Post Crabgrass Control at Varying Growth Stages - 2007
Evergreen Cemetery, Lansing, MI

Treatment	Rate (lb ai/A)	App. Timing	Crabgrass		
			July 2 75 DAT-A	July 26 99 DAT-A 21 DAT-B	August 14 118 DAT-A 40 DAT-B
			crabgrass centers		
Dismiss	0.25	A	15.0 ab	6.0	32.3 a-d
Echelon	0.75	A	1.3 b	0.0	9.0 de
Echelon Gran	0.75	A	0.3 b	0.0	2.7 e
Echelon Gran Fert	0.75	A	1.3 b	0.0	14.3 cde
Barricade	0.50	A	1.0 b	0.3	8.0 e
Dismiss	0.25	B		5.3	47.3 a
Echelon	0.75	B		10.0	33.7 abc
Echelon Gran	0.75	B		3.3	20.3 b-e
Echelon Gran Fert	0.75	B		0.0	21.7 b-e
Barricade	0.50	B		1.3	26.7 a-e
Dismiss	0.25	C			
Echelon	0.75	C			
Echelon Gran	0.75	C			
Echelon Gran Fert	0.75	C			
Barricade	0.50	C			
Untreated			24.3 a	3.7	44.0 ab
LSD (p=0.05)			16.6	NS	24.2

†Means in a column followed by the same letter do not significantly differ (P=0.05, LSD).
NS indicates not significant.

Table 5: Advan Pre/Post Crabgrass Control - 2007
Evergreen Cemetery, Lansing, MI

Treatment	Rate	App. Timing	Crabgrass	
			August 3 106 DAT	August 14 117 DAT
			centers	
ADV-4001	3 lb/A	A	0.3 b	1.0
ADV-4001*	3 lb/A	B	5.0 a	17.0
Barricade	1 lb/A	A	0.0 b	0.0
Dimension	1.5 pt/A	A	0.0 b	0.7
Drive*	1 lb/A	B	4.7 a	7.3
Untreated			7.7 a	12.0
LSD (p=0.05)			4.2	NS

†Means followed by same letter do not significantly differ (P=0.05, LSD).
NS indicates not significant.
*Treatments not yet applied for either evaluation date and, therefore, represent untreated.

Table 1: Pre/Post Crabgrass Control with Quinclorac + Dithiopyr - 2007
HTRC, East Lansing, MI, Michigan State University

Treatment	Rate	August 10	August 28	September 25
		16 DAT	34 DAT	62 DAT
		percent control		
Quinclorac	0.75 lb ai/A	96 a	93 a	98 a
Quinclorac Dithiopyr	0.75 lb ai/A 0.175 lb ai/A	95 a	94 a	100 a
Quinclorac Dithiopyr	0.75 lb ai/A 0.2125 lb ai/A	99 a	94 a	100 a
Quinclorac Dithiopyr	0.75 lb ai/A 0.250 lb ai/A	99 a	90 a	99 a
Quinclorac Dithiopyr	0.75 lb ai/A 0.375 lb ai/A	92 a	88 a	100 a
Quinclorac Dithiopyr	0.75 lb ai/A 0.500 lb ai/A	63 b	87 a	97 a
Untreated		0 c	0 b	0 b
LSD (p=.05)		27.3	8.7	5.4

†Means followed by same letter do not significantly differ (P=0.05, LSD).