

Table 1: Pre Crabgrass Control – Echelon Split Apps. – 2008

Treatment	Rate (LB A/A)	June 9	June 23	July 2	July 10	July 30	August 26
		40 DAT-A	54 DAT-A 13 DAT-B	63 DAT-A 22 DAT-B	71 DAT-A 30 DAT-B	91 DAT-A 50 DAT-B	118 DAT-A 77 DAT-B
crabgrass centers							
Echelon	A 0.75	0.3 c	0.3 b	0.7 b	0.7 b	1.7 c	10.3 c
Echelon	A 0.375	3 c	0.3 b	2 b	1.7 b	2 c	10 c
Echelon	B 0.375						
Echelon	A 0.563	0 c	0 b	0.7 b	0.7 b	0.7 c	3.7 c
Echelon	B 0.187						
Echelon 0.3G*	A 0.75	2 c	5 b	6.3 b	6.3 b	8.7 c	21.7 c
Echelon 0.3G	A 0.375	50.7 b	34 b	26 b	26.7 b	56.3 b	73.3 b
Echelon 0.3G	B 0.375						
Echelon 0.3G	A 0.563	5.7 c	7.7 b	9.7 b	8.3 b	16.3 c	26 c
Echelon 0.3G	B 0.187						
Dimension	A 0.5	0 c	0 b	0 b	0 b	0.7 c	6 c
Fertilizer*	A	116 a	130 a	150 a	149 a	118 a	181 a
Untreated		94.3 a	109.3 a	128 a	127.3 a	128 a	169.7 a
LSD (p=0.05)		35.93	35.38	32.36	29.32	36.21	30.24

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

* Granular Echelon was on a fertilizer; the fertilizer treatment was similar in N rate to the granular Echelon treatments.

Table 2: The Pre/Post Crabgrass Control – Mesotrione/Prodiamine Premix Trial - 2008

Treatment	Rate	App Time	Jun/9/08	Jun/23/08	Jul/2/08	Jul/9/08	Jul/25/08	Aug/26/08
			2-4 LF 40 DA-A	2-4 LF 13 DA-B	1-2 TL 8 DA-C	1-2 TL 15 DA-C	3-5 TL 31 DA-C	3-5 TL 63 DA-C
crabgrass centers								
A15879	1 LB A/A	A	0.3 b	5.3 c	5.0 c	4.7 c	10.7 c	11.3 c
A12738	0.25 LB A/A	A	0.7 b	1.0 c	1.0 c	1.3 c	3.3 c	3.7 c
A12333	0.75 LB A/A	A	0.7 b	1.0 c	1.0 c	1.3 c	3.3 c	3.7 c
DIMENSION 2EW	0.25 LB A/A	A	0.7 b	1.3 c	1.3 c	1.7 c	3.3 c	4.0 c
A15879	1 LB A/A	B	84.7 a	15.0 c	1.3 c	0.0 c	0.7 c	1.3 c
ACTIVATOR 90	0.25 % V/V	B	62.0 a	63.3 b	37.7 b	46.3 b	70.3 b	83.7 b
DIMENSION 2EW	0.25 LB A/A	B	62.0 a	63.3 b	37.7 b	46.3 b	70.3 b	83.7 b
ACTIVATOR 90	0.25 % V/V	B	62.0 a	63.3 b	37.7 b	46.3 b	70.3 b	83.7 b
A15879	0.38 LB A/A	A	8.3 b	13.3 c	10.0 c	10.7 c	11.7 c	10.0 c
A12738	0.125 LB A/A	C	8.3 b	13.3 c	10.0 c	10.7 c	11.7 c	10.0 c
ACTIVATOR 90	0.25 % V/V	C	8.3 b	13.3 c	10.0 c	10.7 c	11.7 c	10.0 c
A12738	0.125 LB A/A	A	2.3 b	5.0 c	3.0 c	3.7 c	2.0 c	0.7 c
A12333	0.38 LB A/A	A	2.3 b	5.0 c	3.0 c	3.7 c	2.0 c	0.7 c
A12738	0.125 LB A/A	C	2.3 b	5.0 c	3.0 c	3.7 c	2.0 c	0.7 c
A12333	0.38 LB A/A	C	2.3 b	5.0 c	3.0 c	3.7 c	2.0 c	0.7 c
ACTIVATOR 90	0.25 % V/V	C	2.3 b	5.0 c	3.0 c	3.7 c	2.0 c	0.7 c
A15879	0.5 LB A/A	A	3.7 b	7.0 c	4.0 c	5.3 c	1.7 c	1.7 c
A15879	0.5 LB A/A	C	3.7 b	7.0 c	4.0 c	5.3 c	1.7 c	1.7 c
ACTIVATOR 90	0.25 % V/V	C	3.7 b	7.0 c	4.0 c	5.3 c	1.7 c	1.7 c
DIMENSION 2EW	0.25 LB A/A	A	0.0 b	0.3 c	0.0 c	0.0 c	0.0 c	1.0 c
ACCLAIM EC	20 FL OZ/A	C	0.0 b	0.3 c	0.0 c	0.0 c	0.0 c	1.0 c
ACTIVATOR 90	0.25 % V/V	C	0.0 b	0.3 c	0.0 c	0.0 c	0.0 c	1.0 c
UNTREATED			90.3 a	104.3 a	106.3 a	111.7 a	136.7 a	145.3 a
LSD (P=.05)			33.86	32.08	25.83	23.87	39.94	40.65

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

Table 3: Post Crabgrass Control – Dimension + Acclaim or Drive – 2008

			July 2	July 9	July 16	July 25	August 27
Treatment		Rate (lb ai/A)	14 DAT-A	21 DAT-A	28 DAT-A	37 DAT-A 8 DAT-B	70 DAT-A 41 DAT-B
			percent control				
Dimension	A	0.18 lb A/A	8.6 c	11.3 c	48.2 c	0 f	0 f
Dimension	A	0.25 lb A/A	36.5 b	38.7 b	62.6 b	8.2 ef	7.6 f
Acclaim Extra	A	28 fl oz/A	100 a	100 a	100 a	99.1 a	95.4 a
Drive*	A	1 lb/A	99.4 a	100 a	98.3 a	93.1 abc	81.2 bc
Dimension Acclaim Extra	A	0.125 lb A/A 14 fl oz/A	97.9 a	96.1 a	100 a	96 ab	97.9 a
Dimension Acclaim Extra	A	0.125 lb A/A 20 fl oz/A	99 a	100 a	100 a	100 a	98.9 a
Dimension Drive*	A	0.125 lb A/A 0.5 lb/A	97.6 a	96.4 a	90.9 a	62 d	50.5 d
Dimension Drive*	A	0.125 lb A/A 0.75 lb/A	98.9 a	100 a	95.9 a	84.4 bc	85.5 abc
Dimension	B	0.18 lb A/A				7.6 ef	4.5 f
Dimension	B	0.25 lb A/A				12.6 e	32.4 e
Acclaim Extra	B	28 fl oz/A				94.1 abc	98.2 a
Drive*	B	1 lb/A				95.4 abc	88.7 abc
Dimension Acclaim Extra	B	0.125 lb A/A 14 fl oz/A				91.6 abc	94.9 ab
Dimension Acclaim Extra	B	0.125 lb A/A 20 fl oz/A				88.2 abc	98.2 a
Dimension Drive*	B	0.125 lb A/A 0.5 lb/A				83.2 c	56.4 d
Dimension Drive*	B	0.125 lb A/A 0.75 lb/A				91.7 abc	77.4 c
Untreated 1			3.9 cd	7.1 c	6.1 d	3.4 ef	3.4 f
Untreated 2			1.4 d	4.0 c	3.5 d	1.1 ef	0.9 f
LSD (p=0.05)			6.75	11.47	9.90	12.19	13.68

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

NS indicates not significant.

* MSO was included with each treatment containing Drive at 1.5 pt/A.

** Dimension 2EW and Drive 75DF were used in this trial.

Table 4: Post Crabgrass Control – Dimension & Barricade – 2008

		July 2	July 9	July 25	September 11
Treatment		22 DAT-A	29 DAT-A	45 DAT-A	93 DAT-A
		8 DAT-B	15 DAT-B	31 DAT-B	79 DAT-B
				8 DAT-C	56 DAT-C
percent control					
Dimension	A	66.3 a	52.5 a	25.8 b	22.3
Barricade	A	38.1 b	28.6 b	11.4 bc	26.1
Dimension	B	11.7 c	19.6 b	50.8 a	54
Barricade	B	4.2 c	0 c	15.3 bc	23.3
Dimension	C			0.3 c	32.7
Barricade	C			0 c	19.2
Untreated		0 c	0 c	0 c	0
LSD (p=0.05)		23.17	15.08	17.75	NS

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

NS indicates not significant.

* Dimension 2EW and Barricade 65WG applied at 0.38 and 0.75 lb A/A, respectively.

Table 5: Postemergence Crabgrass Control – QP (Quali Pro) Quinclorac and QP Dithiopyr – 2008

Treatment	Rate	Jun/23/08	Jul/2/08	Jul/9/08	Jul/30/08	Aug/27/08
		13 DA-A	22 DA-A	29 DA-A	50 DA-A	78 DA-A
		percent control				
QP QUIN	1 LB/A	98.1 a	92.3 a	93.4 a	86.6 a	88.8 a
QP DITHIOPYR	1.25 LB/A	23.9 b	19.9 b	30.7 b	41.9 b	39.7 b
QP QUIN QP DITHIOPYR	1 LB/A 0.312 LB/A	99.8 a	99.3 a	99.3 a	98.9 a	95.7 a
QP QUIN QP DITHIOPYR	1 LB/A 0.625 LB/A	99.5 a	98.0 a	99.7 a	99.8 a	97.3 a
QP QUIN QP DITHIOPYR	1 LB/A 1.25 LB/A	100.0 a	100.0 a	100.0 a	98.7 a	97.6 a
UNTREATED		0.0 c	0.0 c	0.0 c	0.0 c	0.0 c
LSD (P=.05)		16.67	16.64	20.45	29.04	15.85

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

Table 6: 2008 Postemergence Broadleaf Plantain and 2-5 Tiller Crabgrass Control
MSU Pavilion, East Lansing, MI

Treatment	Rate	Broadleaf Plantain	Crabgrass
		September 1, 2008 40 DAT	
		percent control	
DRIVE XLR8 MSO	1.5 FL OZ/M 0.25 % V/V	0.0 c	94.5 a
DRIVE 75DF MSO	0.37 OZ/M 0.25 % V/V	0.0 c	94.8 a
ACCLAIM EXTRA	13 FL OZ/A	0.0 c	90.8 a
QUINSTAR MSO	0.75 LB A/A 0.25 % V/V	6.7 c	94.6 a
TENACITY	5 FL OZ/A	57.5 b	41.7 b
ONETIME	48 FL OZ/A	0.0 c	86.8 a
ONETIME	64 FL OZ/A	19.4 c	87.1 a
Q4	3 FL OZ/M	90.3 a	84.5 a
UNTREATED		0.0 c	0.0 c
LSD (P=.05)		32.24	20.80

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

Table 7: 2008 Postemergence Buckhorn Plantain Control Trial
 Evergreen Cemetery, East Lansing, MI

Treatment	Rate	Buckhorn Plantain September 1, 2008 40 DAT
		percent control
DRIVE XLR8 MSO	1.5 FL OZ/M 0.25 % V/V	61.9 c
DRIVE 75DF MSO	0.37 OZ/M 0.25 % V/V	61.8 c
ACCLAIM EXTRA	13 FL OZ/A	0.0 e
QUINSTAR MSO	0.75 LB A/A 0.25 % V/V	38.2 d
TENACITY	5 FL OZ/A	71.2 bc
ONETIME	48 FL OZ/A	82.4 ab
ONETIME	64 FL OZ/A	92.0 a
Q4	3 FL OZ/M	96.5 a
UNTREATED		0.0 e
LSD (P=.05)		20.12

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

2008 Crabgrass Control

2008 was a good year for crabgrass. Adequate rainfall in the spring and early summer facilitated high amounts of crabgrass germination. Lack of rainfall late in the summer slowed the growth of crabgrass and killed much of it. However, in 2008, all of the trials conducted at the HTRC were irrigated when necessary. This area was also treated with Roundup in the early spring and was seeded with a half rate of perennial ryegrass seed to facilitate a dense stand of crabgrass. The following is a summary of 6 trials which evaluated post and/or preemergence crabgrass control.

Preemergence Crabgrass Control

Two preemergence crabgrass trials were conducted at the HTRC in East Lansing, MI, south of the MSU campus. Trials were initiated in late-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 2008 Pre Crabgrass Control – Echelon Split Apps. Trial was treated on April 30 (A) and June 10 (B). Echelon is a relatively new combination product containing sulfentrazone and proflumicafone – it has preemergence activity on crabgrass and pre/post activity on yellow nutsedge. Crabgrass species (large and smooth) were well represented throughout the trial area. Table 1 contains the complete treatment list and results for this trial evaluated by counting crabgrass centers.

Forty days after treatment A (DAT-A), all treatments, except for Echelon 0.3G at 0.375 + 0.375 LB A/A and the fertilizer treatment, were providing excellent control of crabgrass. Even 91 and 118 DAT-A, there were no differences between treatments, except for the aforementioned treatments, which provided only moderate control. Echelon at 0.563 + 0.187 LB A/A and Dimension provided the very best control of crabgrass throughout the summer, although they did not statistically differ from other treatments.

The 2008 Pre/Post Crabgrass Control – Mesotrione/Prodiamine Premix Trial was treated on April 30 (A), June 10 (B), and June 24 (C), 2008, before crabgrass had germinated, when it was in the 2-4 leaf stage, and the 1-2 tiller stage, respectively. Crabgrass species (large and smooth) were well represented throughout the trial area. Table 2 contains the complete treatment list and results for this trial evaluated by counting crabgrass centers.

All treatments provided good to excellent control of crabgrass by the last evaluation on August 26, except for Dimension 2EW + Activator 90 applied at timing B. However, it is important to note the crabgrass was well established by June 10, when the aforementioned treatment was applied, and the crabgrass was in the 2-4 leaf stage, when Dimension starts to lose postemergence activity on crabgrass.

Postemergence Crabgrass Control

The 2008 Post Crabgrass Control – Dimension + Acclaim or Drive Trial was treated on June 18 and July 17, when crabgrass was in the 1-3 and 3-5 tiller stage, respectively. This trial was conducted at the HTRC where crabgrass species (large and smooth) were well represented throughout the trial area. Percent control was determined for crabgrass using the Henderson-Tilton pre-count/post-count method. Table 3 contains the complete treatment list and results for this trial.

All early treatments (1-3 tiller), except for Dimension alone regardless of rate, provided excellent control of crabgrass 14, 21, and 28 DAT-A. However, 37 and 70 DAT-A, Dimension + Drive (low rate) were losing ground and provided inadequate control, while Dimension + Drive (high rate) and Drive alone provided moderate control at this point. The results were very similar for treatments made during the 3-5 tiller stage – Dimension alone failed to control crabgrass while all other treatments, except Dimension + Drive (low rate) started out strong 8 DAT-B. Forty-one DAT-B, both Dimension + Drive treatments continued to lose control, while the other tank-mix treatments continued to provide good to excellent control of crabgrass.

Turf injury was not noticed in any plot for the duration of the trial.

The 2008 Post Crabgrass Control – Dimension and Barricade Trial was treated on June 10 (A), June 24 (B), and July 17 (C), when crabgrass was in the 1-3 leaf, 1 tiller, and 2-5 tiller stages, respectively. This trial was conducted at the HTRC where crabgrass species (large and smooth) were well represented throughout the trial area. Percent control was determined for crabgrass using the Henderson-Tilton pre-count/post-count method. Table 4 contains the complete treatment list and results for this trial.

Dimension applied when crabgrass was in the 1-2 leaf and 1 tiller stages were the only treatments that provided at least moderate control of crabgrass. However, Dimension failed to provide any control when applied to 2-5 tiller crabgrass. All other treatments provided inadequate control of crabgrass.

The 2008 Postemergence Crabgrass Control – QP (Quali Pro) Quinclorac and QP Dithiopyr was treated on June 10, 2008. This trial was conducted at the HTRC where crabgrass species (large and smooth) were well represented throughout the trial area. Percent control was determined for crabgrass using the Henderson-Tilton pre-count/post-count method. Table 5 contains the complete treatment list and results for this trial.

All tankmixes of QP Quinclorac and QP Dithiopyr provided excellent control of crabgrass even 78 DAT. QP Quinclorac alone provided good control, 89%, even 78 DAT, while QP Dithiopyr provided poor control of crabgrass throughout the trial as expected when applied to 2-4 leaf crabgrass.

One trial was split into two, that follow, to facilitate the different crabgrass stages of crabgrass requested in the protocol. A trial was conducted on 2-5 tiller crabgrass (*Digitaria* sp.) and broadleaf plantain (*Plantago major*) at the MSU Pavilion across the street from the Hancock Turfgrass Research Center (HTRC) in East Lansing, MI. A second trial was conducted at Evergreen Cemetery one mile west of the HTRC on 1-3 leaf crabgrass, dandelion (*Taraxacum*

officinale), and buckhorn plantain (*Plantago lanceolata*). I was unable to irrigate either of these sites which caused some problems. The young crabgrass and dandelion at Evergreen cemetery did not survive the hottest part of the year in 2008 (late July – mid August), which happened with very little moisture. Therefore, 2-5 tiller crabgrass and broadleaf plantain data from the Pavilion and buckhorn plantain data from Evergreen Cemetery will be presented.

The **2008 Postemergence Broadleaf Plantain and 2-5 Tiller Crabgrass Control Trial** was treated on July 23. Individual plant counts were performed for broadleaf plantain populations while crabgrass populations were evaluated as percent plot cover. Crabgrass and broadleaf plantain were well represented in the trial area. Percent control was determined on September 1 (40 DAT [days after treatment]) for each species using the Henderson-Tilton pre-count/post-count method. Table 6 contains the complete treatment list and results for this trial.

Crabgrass: All treatments, except Tenacity, provided 84% or better control of crabgrass at the 2-5 tiller stage - excellent.

Broadleaf Plantain: Only two treatments differed from the untreated pots – Tenacity provided moderate control, while Q4 provided excellent control (Table 1).

No turf injury was noticed during the trial period.

The **2008 Postemergence Buckhorn Plantain Control Trial** was treated on July 23. Buckhorn plantain plants were individually counted in each plot for population evaluations. Individual plant counts were performed for dandelion and white clover populations were evaluated as percent cover. Buckhorn plantain was very well represented in the trial area. Percent control was determined on September 1 (40 DAT) using the Henderson-Tilton pre-count/post-count method. Table 7 contains the complete treatment list and results for this trial.

Buckhorn Plantain: Q4 and Onetime at the high rate provided excellent control of buckhorn plantain, while the low rate of Onetime, Tenacity, Drive XLR8, and Drive 75DF provided

moderate control. Quinstar provided very little control and Acclaim Extra did not differ from the untreated.

No turf injury was noticed during the trial period.

For postemergence control of crabgrass, Tenacity did not compare to Acclaim Extra or any herbicide containing quinclorac. Q4 provided a little better control of the broadleaf weeds than Onetime.