

**2007 Turfgrass Weed Control Summary - Annual Bluegrass Management**  
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Ten studies for evaluation of annual bluegrass control were conducted in 2007 – 3 of these trials were initiated for observational purposes only. One study for evaluation of annual bluegrass seedhead suppression was conducted in 2007. These studies were conducted at the Hancock Turfgrass Research Center (HTRC), except for the 3 observational studies.

### **Annual Bluegrass Control**

HM9930 (a.i. cumyluron) has performed well when applied to remove annual bluegrass from creeping bentgrass fairways in previous research at the HTRC. HM9930 has exhibited excellent safety on most turfgrass species other than annual bluegrass. In 2006 and 2007, HM9930 was used in three real world situations to observationally evaluate its ability to remove annual bluegrass from other turfgrasses. In October and November, 2006 and April, 2007, HM9930 was applied at 4.7 fl oz per 1000 sq. ft. to the creeping bentgrass practice putting green at Kalamazoo Country Club (KCC) and Forest Akers West Golf Course (FAWGC). HM9930 was also applied to the Kentucky bluegrass infield of Oldsmobile Park in Lansing, MI in Spring of 2006, November 2006, and November 2007 – in November 2007 the entire field received an HM9930 application at a 2.4 fl oz per 1000 sq. ft. In the summer of 2007, the treated portions of the KCC and FAWGC putting greens exhibited traumatic loss of annual bluegrass, this injury was evident coming out of winter and became more so as the growing season progressed. The control of annual bluegrass was not at all subtle like the control we had previously seen at the HTRC, however, creeping bentgrass was uninjured. Contrary to the golf courses, dead spots and injury was not noticed at Oldsmobile Park. We have seen extremely less annual bluegrass persistence in the treated infield relative to the untreated outfield, but the activity was very subtle. The Kentucky bluegrass was also visually uninjured at Oldsmobile Park. The entire field was treated in 2007 to try to control the increased annual bluegrass invasion and will be visually

monitored. Forest Akers West practice putting green will receive another HM9930 application in the spring of 2008 and, again, be visually monitored in the summer of 2008.

Creeping bentgrass and annual bluegrass are difficult to distinguish especially when the turf stand is continuously fertilized and irrigated, which is typical of fairways and putting greens. Although an attempt to quantify the 2 species is visually made throughout each trial period, more energy is spent in the early spring to quantify each species because it is a time when the colors of the 2 species are most distinguishable. Starting in the spring of 2008, each trial dealing with annual bluegrass control will receive further species population evaluation by means of photography. Photos will be taken of each plot of each trial at a close range and compared in order to increase objectivity.

The Programs Approach for Annual Bluegrass Control Trial was conducted on a fairway seeded to 'Penncross' creeping bentgrass on September 26, 2006. The idea of this trial is to evaluate the effectiveness of many different and mixed techniques for annual bluegrass control: postemergence (Velocity), preemergence (Dimension, HM9930), and plant growth regulation (Cutless, Trimmit). The fairway was seeded in an area previously maintained as an annual bluegrass fairway, so we are assured of heavy annual bluegrass pressure. Treatments programs began in the spring of 2007. The premise of the trial is the prevention of annual bluegrass before it becomes a prominent constituent in the turf stand. The annual bluegrass population will be evaluated in the spring of 2008. Throughout the summer of 2008, close-up photos of the treated plots will be taken and compared in an attempt to collect more objective turf population data. A complete treatment list is provided in Table 1.

The HM9930 Preemergence Annual Bluegrass Control on a Fairway Trial was treated on March 26 and September 13, 2007. This trial is being conducted on a creeping bentgrass fairway, which is infested with roughly 20% annual bluegrass. The HM9930 Preemergence Annual Bluegrass Control on a Putting Green Trial was treated on April 24 and September 13,

2007. This trial is also being conducted on a creeping bentgrass stand and untreated areas are infested with roughly 25% annual bluegrass. Both trials not only investigate the differences in application rates of HM9930, but also the addition of irrigation following the treatments. It is believed that the activity is increased when it is watered in directly after treatment. No creeping bentgrass or annual bluegrass injury has been noticed on either study, which is typical of all of our HM9930 research conducted at the HTRC. However, our previous research did result in significant decreases in annual bluegrass in the turf stand, but the transition was transparent. The aforementioned is, again, in stark contrast to our observational studies. In the spring of 2008 we will have a better understanding of the change in population dynamics. No data is presented, but the treatment lists for the fairway and putting green trials are presented in Tables 2 and 3, respectively.

The Velocity Field Time-lapse Trial was conducted on the creeping bentgrass fairway. This fairway was infested by roughly 20% annual bluegrass. This trial was conducted to evaluate Velocity annual bluegrass control efficacy and to visually document this and creeping bentgrass injury by taking photos at nearly bi-weekly intervals for treatment comparison. This is a difficult task because lighting is constantly changing outside and because the color difference between creeping bentgrass and annual bluegrass is, many times, indistinguishable due to plant height in the fairway and color masking by nitrogen fertilization. For this reason, close-up photos will also be taken of each treatment in this trial in the spring of 2008. No data is presented for this trial, but the treatment list is presented in Table 4.

Cutless 50W & SP5075 Evaluation for Poa Control Trial was also conducted on the creeping bentgrass fairway infested by roughly 20% annual bluegrass. Cutless (flurprimidol) is being evaluated as a tool for control of annual bluegrass in a fairway setting, but it can cause considerable injury to creeping bentgrass at higher rates. SP5075 is a premix combination of flurprimidol and trinexcapac-ethyl and will be sold under the trade name Legacy. A label expected sometime in 2008. SP5075 is being evaluated for annual bluegrass control with the

hopes that injury will be reduced and efficacy increased from that of flurprimidol alone. All treatment started on June 20, 2007 and continued every 21 days until September 13, 2007. No data is presented for this trial, but the treatment list is presented in Table 5.

The Prograss Formulation and Generic Comparison Trial was treated on October 2 (A) and 25 (B), 2007 for annual bluegrass control evaluation. This Kentucky bluegrass turf stand was mowed at 3 inches and was infested by 5 to 25% annual bluegrass. Application C and population evaluations will be made in the spring of 2008. The complete treatment list is presented in Table 6.

The Bayer Test Compound 1 for Annual Bluegrass Control Trial was October 2, 25 and November 10, 2007. This trial is being conducted on Kentucky bluegrass mowed at 3 inches and was infested by 5 to 25 % annual bluegrass. Application D and population evaluations will be made in the spring of 2008. The complete treatment list is presented in Table 7.

### **Annual Bluegrass Seedhead Suppression**

The Primo/Proxy Seedhead Suppression on a Putting Green Trial was conducted on a 100% annual bluegrass putting green mowed at 1/8 of an inch. Four initial treatments for Primo/Proxy applications were made March 30 (A), April 10 (B), 13 (C), and 20 (D), 2007 with repeat applications applied 21 days after each initial treatment. A complete treatment list and results are presented in Table 8.

The latest applied repeat applications (D and 21 DAT) of Primo + Proxy only differed from the untreated on the last two evaluation dates. Every other treatment provided good seedhead suppression and never differed from each other. This data confirms our standing recommendation to make initial applications of Primo + Proxy earlier rather than later.

**Table 1: The Programs Approach for Annual Bluegrass Control Trial – 2007**  
Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code
1	NO PRE NO PGR NO POST						AB C D
2	NO PRE NO PGR VELOCITY	17.6	WG	10	g ai/a		AB C D
3	NO PRE CUTLESS (FL) NO POST	50	WP	0.375	lb ai/a		AB C D
4	NO PRE CUTLESS (FL) VELOCITY	50 17.6	WP WG	0.375	lb ai/a 10 g ai/a		AB C D
5	NO PRE TRIMMIT (PB) NO POST	2	SC	0.375	lb ai/a		AB C D
6	NO PRE TRIMMIT (PB) VELOCITY	2 17.6	SC WG	0.375	lb ai/a 10 g ai/a		AB C D
7	DIMENSION NO PGR NO POST	2	EW	0.375	lb ai/a		AB C D
8	DIMENSION NO PGR VELOCITY	2 17.6	EW WG	0.375	lb ai/a 10 g ai/a		AB C D
9	DIMENSION CUTLESS (FL) NO POST	2 50	EW WP	0.375	lb ai/a 0.375 lb ai/a		AB C D
10	DIMENSION CUTLESS (FL) VELOCITY	2 50 17.6	EW WP WG	0.375	lb ai/a 0.375 lb ai/a 10 g ai/a		AB C D
11	DIMENSION TRIMMIT (PB) NO POST	2 2	EW SC	0.375	lb ai/a 0.375 lb ai/a		AB C D
12	DIMENSION TRIMMIT (PB) VELOCITY	2 2 17.6	EW SC WG	0.375	lb ai/a 0.375 lb ai/a 10 g ai/a		AB C D
13	HM9930 (CUMYLURON) NO PGR NO POST		FL	4.5	fl oz/1000 ft2		AB C D
14	HM9930 (CUMYLURON) NO PGR VELOCITY		FL WG	4.5	fl oz/1000 ft2 10 g ai/a		AB C D
15	HM9930 (CUMYLURON) CUTLESS (FL) NO POST		FL WP	4.5	fl oz/1000 ft2 0.375 lb ai/a		AB C D
16	HM9930 (CUMYLURON) CUTLESS (FL) VELOCITY		FL WP WG	4.5	fl oz/1000 ft2 0.375 lb ai/a 10 g ai/a		AB C D
17	HM9930 (CUMYLURON) TRIMMIT (PB) NO POST		FL SC	4.5	fl oz/1000 ft2 0.375 lb ai/a		AB C D
18	HM9930 (CUMYLURON) TRIMMIT (PB) VELOCITY		FL SC WG	4.5	fl oz/1000 ft2 0.375 lb ai/a 10 g ai/a		AB C D

**Table 2: The HM9930 Preemergence Annual Bluegrass Control on a Fairway Trial - 2007**  
Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Appl Code
1	HM9930		FL	3	fl oz/1000 ft2	A
	HM9930		FL	3	fl oz/1000 ft2	B
2	HM9930		FL	3	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	3	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
3	HM9930		FL	3	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	3	fl oz/1000 ft2	B
	IRRIGATION					B
4	HM9930		FL	4.5	fl oz/1000 ft2	A
	HM9930		FL	4.5	fl oz/1000 ft2	B
5	HM9930		FL	4.5	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	4.5	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
6	HM9930		FL	4.5	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	4.5	fl oz/1000 ft2	B
	IRRIGATION					B
7	HM9930		FL	6	fl oz/1000 ft2	A
	HM9930		FL	6	fl oz/1000 ft2	B
8	HM9930		FL	6	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	6	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
9	HM9930		FL	6	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	6	fl oz/1000 ft2	B
	IRRIGATION					B
10	UNTREATED					

**Table 3: The HM9930 Preemergence Annual Bluegrass Control on a Putting Green Trial - 2007**  
Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Appl Code
1	HM9930		FL	1.5	fl oz/1000 ft2	A
	HM9930		FL	1.5	fl oz/1000 ft2	B
2	HM9930		FL	1.5	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	1.5	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
3	HM9930		FL	1.5	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	1.5	fl oz/1000 ft2	B
	IRRIGATION					B
4	HM9930		FL	3	fl oz/1000 ft2	A
	HM9930		FL	3	fl oz/1000 ft2	B
5	HM9930		FL	3	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	3	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
6	HM9930		FL	3	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	3	fl oz/1000 ft2	B
	IRRIGATION					B
7	HM9930		FL	4.5	fl oz/1000 ft2	A
	HM9930		FL	4.5	fl oz/1000 ft2	B
8	HM9930		FL	4.5	fl oz/1000 ft2	A
	HM0716 ADJ		L	0.25	% v/v	A
	HM9930		FL	4.5	fl oz/1000 ft2	B
	HM0716 ADJ		L	0.25	% v/v	B
9	HM9930		FL	4.5	fl oz/1000 ft2	A
	IRRIGATION					A
	HM9930		FL	4.5	fl oz/1000 ft2	B
	IRRIGATION					B
10	UNTREATED					

**Table 4: Velocity Field Time-Lapse Trial – 2007**

Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Appl Code
1	VELOCITY (JUNE 15)	17.6	SG	10	g ai/a	A
	VELOCITY 7DAI	17.6	SG	10	g ai/a	B
	VELOCITY 14 DAI	17.6	SG	10	g ai/a	C
	VELOCITY 21 DAI	17.6	SG	10	g ai/a	D
	VELOCITY 28 DAI	17.6	SG	10	g ai/a	E
	VELOCITY 35 DAI	17.6	SG	10	g ai/a	F
2	VELOCITY (JUNE 15)	17.6	SG	10	g ai/a	A
	VELOCITY 7 DAI	17.6	SG	10	g ai/a	B
	VELOCITY 14 DAI	17.6	SG	10	g ai/a	B
	VELOCITY 21 DAI	17.6	SG	10	g ai/a	D
	VELOCITY 28 DAI	17.6	SG	10	g ai/a	E
	VELOCITY 35 DAI	17.6	SG	10	g ai/a	F
	VELOCITY 42 DAI	17.6	SG	10	g ai/a	G
	VELOCITY 49 DAI	17.6	SG	10	g ai/a	H
3	VELOCITY (JUNE15)	17.6	SG	30	g ai/a	A
	VELOCITY 14 DAI	17.6	SG	30	g ai/a	C
	VELOCITY 28 DAI	17.6	SG	30	g ai/a	E
4	VELOCITY (JUNE 15)	17.6	SG	30	g ai/a	A
	VELOCITY 14 DAI	17.6	SG	30	g ai/a	C
	VELOCITY 28 DAI	17.6	SG	30	g ai/a	E
	VELOCITY (SEPT 29)	17.6	SG	30	g ai/a	J
5	VELOCITY (JUNE 15)	17.6	SG	10	g ai/a	A
	VELOCITY (JUNE 28)	17.6	SG	10	g ai/a	C
	VELOCITY (SEPT 14)	17.6	SG	10	g ai/a	I
	VELOCITY (SEPT 28)	17.6	SG	10	g ai/a	J
6	UNTREATED					



**Table 5: Cutless 50W & SP5075 Evaluation for Annual Bluegrass Control Trial – 2007**  
Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit
1	CUTLESS (21 DA)	50	WP	8	oz/a
2	CUTLESS (21 DA)	50	WP	16	oz/a
3	CUTLESS (21 DA)	50	WP	24	oz/a
4	SP5075 (21 DA)		L	7.35	fl oz/a
5	SP5075 (21 DA)		L	14.7	fl oz/a
6	SP5075 (21 DA)		L	22.05	fl oz/a
7	TRIMMIT (21 DA)	2	SC	8	fl oz/a
8	TRIMMIT (21 DA)	2	SC	16	fl oz/a
9	TRIMMIT (21 DA)	2	SC	24	fl oz/a
10	UNTREATED				

**Table 6: Progress Formulation and Generic Comparison Trial - 2007**

Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Appl Code
1	PROGRASS		EC	1.5	oz/1000 ft2	A
	PROGRASS		EC	1.5	oz/1000 ft2	B
2	PROGRASS		EC	3	oz/1000 ft2	A
	PROGRASS		EC	3	oz/1000 ft2	B
3	PROGRASS SC		SC	0.563	oz/1000 ft2	A
	PROGRASS SC		SC	0.563	oz/1000 ft2	B
4	PROGRASS SC		SC	1.13	oz/1000 ft2	A
	PROGRASS SC		SC	1.13	oz/1000 ft2	B
5	PROGRASS SC		SC	0.563	oz/1000 ft2	A
	MSO		L	1	qt/a	A
	PROGRASS SC		SC	0.563	oz/1000 ft2	B
	MSO		L	1	qt/a	B
6	PROGRASS SC		SC	1.13	oz/1000 ft2	A
	MSO		L	1	qt/a	A
	PROGRASS SC		SC	1.13	oz/1000 ft2	B
	MSO		L	1	qt/a	B
7	POACONSTRICTOR		EC	0.563	oz/1000 ft2	A
	POACONSTRICTOR		EC	0.563	oz/1000 ft2	B
8	POACONSTRICTOR		EC	1.13	oz/1000 ft2	A
	POACONSTRICTOR		EC	1.13	oz/1000 ft2	B
9	HM9930		SC	6	oz/1000 ft2	A
	HM9930		SC	6	oz/1000 ft2	C
10	UNTREATED					

**Table 7: Bayer Test Compound 1 for Annual Bluegrass Control Trial – 2007**  
Treatment List

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code
1	TEST COMPOUND		DG	12.14	g/a	A
2	TEST COMPOUND		DG	24.28	g/a	A
3	TEST COMPOUND		DG	12.14	g/a	A
4	TEST COMPOUND		DG	24.28	g/a	A
5	TEST COMPOUND		DG	12.14	g/a	A
	TEST COMPOUND		DG	12.14	g/a	C
6	BARRICADE	4	FL	0.74	oz/1000 ft2	A
7	PROGRASS EC		EC	1.5	oz/1000 ft2	A
	PROGRASS EC		EC	1.5	oz/1000 ft2	B
8	PROGRASS EC		EC	3	oz/1000 ft2	A
	PROGRASS EC		EC	3	oz/1000 ft2	B
9	HM9930		SC	6	oz/1000 ft2	A
	HM9930		SC	6	oz/1000 ft2	D
10	UNTREATED					
11	TEST COMPOUND		DG	12.14	g/a	C
12	TEST COMPOUND		DG	24.28	g/a	C

**Table 8: The Primo/Proxy Seedhead Suppression on a Putting Green Trial – 2007**

Seedhead Suppression

Treatment	Rate (fl oz/M)	App. Timing	Seedhead Suppression							
			April 24 25 DA-A	May 2 33 DA-A	May 8 39 DA-A	May 11 42 DA-A	May 17 48 DA-A	May 23 54 DA-A	May 30 61 DA-A	June 8 70 DA-A
			percent seedheads							
Primo	0.125	A	7.7 a	6.0 b	10.0 b	1.3 b	3.0 a	3.0 b	1.0 c	2.0 b
Proxy	5									
Primo 21 DAT	0.125	B	12.3 a	8.3 b	11.7 b	2.0 b	3.0 a	3.0 b	1.0 c	1.7 b
Proxy 21 DAT	5									
Primo	0.125	C	8.0 a	8.0 b	11.7 b	3.7 b	5.0 a	2.7 b	1.0 c	1.7 b
Proxy	5									
Primo 21 DAT	0.125	D	10.0 a	12.3 a	19.7 a	9.3 a	8.0 a	8.0 a	7.3 b	5.3 b
Proxy 21 DAT	5									
Untreated			10.7 a	15.0 a	21.3 a	10.7 a	9.0 a	8.0 a	9.3 a	10.0 a
LSD (p≤0.05)			NS	3.84	3.63	3.49	NS	4.54	1.46	4.29

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

NS indicates not significant.

‡Repeat applications were made 21 days after each initial application.