

## **Evaluation of Pre-Emergent Herbicide Residual Duration Programs in Field Corn at Rochester, MN in 2018.**

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The objective of this trial was to evaluate herbicide duration programs in field corn in southeastern Minnesota. The research site was a loamy sand series with a pH of 6.7, O.M. of 2.1%, and soil test P and K levels of 29 ppm and 167 ppm, respectively. Spring fertilizer was broadcast on April 30, 2018 at a rate of 120-52-120-24 lbs/A. The field was disked and field cultivated once prior to planting. The previous crop was soybean. The corn hybrid, DEKALB DKC51-38RIB, was planted May 7, 2018 at a depth of 1.5 inches in 30-inch rows at a rate of 32,000 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi using TTI-110015 tips. Evaluations of the plots were taken May 29, June 7, June 14, and August 30, 2018. The center two rows of each plot were machine harvested on November 1, 2018. Application dates, environmental conditions and weed stages can be found in Table 1. Performance ratings for giant ragweed, common lambsquarters and common waterhemp control are in Tables 2 through 4, respectively. No differences were observed for grass control among all herbicide treatments and no crop injury was observed, data not shown.

### **DISCUSSION**

Control of common lambsquarters, common waterhemp, and grasses were excellent for all treatments throughout the season. The only differences observed were for giant ragweed control, where Breakfree NXT LITE at 1.8 qt/a and Surestart II at 1 qt/a + Aatrex at 24 fl oz/a provided significantly lower control at initial ratings, which diminished with time to 66% and 76% control, respectively, by August 30 rating, Table 2. Even though adequate moisture was received throughout the growing season, there were no flushes of common lambsquarters, common waterhemp or grasses later in the season, thus control remained excellent for these three weed species. (University of Minnesota Extension Regional Office, Rochester.)

**Table 1. Application timing, plant stage, environmental conditions.**

<b>Date</b>	<b>5/8</b>
<b>Treatment</b>	PRE (A)
<b>Temperature (F)</b>	
Air	70
Soil	60.1
<b>Relative Humidity (%)</b>	37
<b>Wind (mph)</b>	18
<b>Soil Moisture</b>	Normal
<b>Giant Ragweed</b>	
Weed Density (ft <sup>2</sup> )	4
<b>Common Waterhemp</b>	
Weed Density (ft <sup>2</sup> )	23
<b>Common Lambsquarter</b>	
Weed Density (ft <sup>2</sup> )	8
<b>Grass</b>	
Weed Density (ft <sup>2</sup> )	2
<b>Rainfall after each application (inch)</b>	
Week 1	2.33
Week 2	0.35
Week 3	0.77

**Table 2. Giant ragweed control in pre-emergence herbicide programs for field corn at Rochester MN in 2018.**

Pest Code				AMATA								YIELD Nov-1-2018	
				GIANT RAGWEED									
Rating Date				May-29-2018		Jun-7-2018		Jun-14-2018		Aug-30-2018		bu/a	
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)									
1	UNTREATED CHECK			0	f	0	e	0	d	0	e	10.2	f
<b>PRE (5/8/18)</b>													
2	SOA 2,5,15,27			97	bc	98	ab	97	ab	98	ab	170.3	abc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	WARRANT	2	qt/a	A									
3	SOA 2,5,15,27			98	abc	99	ab	98	a	99	ab	158.5	bc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	DUAL II MAGNUM	1.67	pt/a	A									
4	SOA 2,5,15,27			97	abc	97	b	95	ab	96	ab	157.2	c
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	OUTLOOK	16	fl oz/a	A									
5	SOA 2,5,15,27			98	abc	98	ab	98	a	99	ab	177.9	ab
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	ZIDUA	2.5	oz wt/a	A									
6	SOA 5,15,27			98	abc	99	ab	98	ab	99	ab	184.0	a
	ACURON	2.5	qt/a	A									
7	SOA 5,15,27			99	ab	99	ab	98	ab	99	a	184.6	a
	LUMAX EZ	2.7	qt/a	A									
8	SOA 4,5,15,27			99	a	99	a	99	a	99	ab	189.9	a
	RESICORE	2.5	qt/a	A									
	AAtrex	24	fl oz/a	A									
9	SOA 5,15,27			97	c	97	ab	95	b	95	b	173.2	abc
	HARNESS MAX	2	qt/a	A									
	AAtrex	24	fl oz/a	A									
10	SOA 5,15			83	e	79	d	74	c	66	d	63.6	e
	BREAKFREE NXT LITE	1.8	qt/a	A									
11	SOA 2,4,5,15			86	d	83	c	77	c	76	c	97.5	d
	SURESTART II	1	qt/a	A									
	AAtrex	24	fl oz/a	A									
12	SOA 5,14,15			99	ab	98	ab	98	ab	98	ab	160.1	bc
	VERDICT	16	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
LSD P=.10				2.0		2.5		3.5		3.9		20.8	

Means followed by same letter or symbol do not significantly differ (P=.10, LSD).

**Table 3. Common lambsquarters control in pre-emergence herbicide programs for field corn at Rochester MN in 2018.**

Pest Code				CHEAL COMMON LAMBSQUARTERS								YIELD Nov-1-2018	
				May-29-2018		Jun-7-2018		Jun-14-2018		Aug-30-2018			
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)								Bu/a	
1	UNTREATED CHECK			0	b	0	b	0	b	0	b	10.2	f
<b>PRE (5/8/18)</b>													
2	SOA 2,5,15,27			99	a	99	a	99	a	99	a	170.3	abc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	WARRANT	2	qt/a	A									
3	SOA 2,5,15,27			99	a	99	a	99	a	99	a	158.5	bc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	DUAL II MAGNUM	1.67	pt/a	A									
4	SOA 2,5,15,27			99	a	99	a	99	a	99	a	157.2	c
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	OUTLOOK	16	fl oz/a	A									
5	SOA 2,5,15,27			99	a	99	a	99	a	99	a	177.9	ab
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	ZIDUA	2.5	oz wt/a	A									
6	SOA 5,15,27			99	a	99	a	99	a	99	a	184.0	a
	ACURON	2.5	qt/a	A									
7	SOA 5,15,27			99	a	99	a	99	a	99	a	184.6	a
	LUMAX EZ	2.7	qt/a	A									
8	SOA 4,5,15,27			99	a	99	a	99	a	99	a	189.9	a
	RESICORE	2.5	qt/a	A									
	AAtrex	24	fl oz/a	A									
9	SOA 5,15,27			99	a	99	a	99	a	99	a	173.2	abc
	HARNESS MAX	2	qt/a	A									
	AAtrex	24	fl oz/a	A									
10	SOA 5,15			99	a	99	a	99	a	99	a	63.6	e
	BREAKFREE NXT LITE	1.8	qt/a	A									
11	SOA 2,4,5,15			99	a	99	a	99	a	99	a	97.5	d
	SURESTART II	1	qt/a	A									
	AAtrex	24	fl oz/a	A									
12	SOA 5,14,15			99	a	99	a	99	a	99	a	160.1	bc
	VERDICT	16	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
LSD P=.10											20.8		

Means followed by same letter or symbol do not significantly differ (P=.10, LSD).

**Table 4. Common waterhemp control in pre-emergence herbicide programs for field corn at Rochester MN in 2018.**

Pest Code	AMATA COMMON WATERHEMP								YIELD Nov-1-2018				
	Rating Date		May-29-2018	Jun-7-2018	Jun-14-2018	Aug-30-2018							
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)						Bu/a			
1	UNTREATED CHECK			0	b	0	c	0	c	0	c	10.2	f
<b>PRE (5/8/18)</b>													
2	SOA 2,5,15,27			99	a	99	a	99	a	99	a	170.3	abc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	WARRANT	2	qt/a	A									
3	SOA 2,5,15,27			99	a	99	a	99	a	99	a	158.5	bc
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	DUAL II MAGNUM	1.67	pt/a	A									
4	SOA 2,5,15,27			99	a	99	a	99	a	99	a	157.2	c
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	OUTLOOK	16	fl oz/a	A									
5	SOA 2,5,15,27			99	a	99	a	99	a	99	a	177.9	ab
	CORVUS	5.6	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
	ZIDUA	2.5	oz wt/a	A									
6	SOA 5,15,27			99	a	99	a	99	a	99	a	184.0	a
	ACURON	2.5	qt/a	A									
7	SOA 5,15,27			99	a	99	a	99	b	99	a	184.6	a
	LUMAX EZ	2.7	qt/a	A									
8	SOA 4,5,15,27			99	a	99	a	99	a	99	a	189.9	a
	RESICORE	2.5	qt/a	A									
	AAtrex	24	fl oz/a	A									
9	SOA 5,15,27			99	a	99	a	99	a	99	a	173.2	abc
	HARNESS MAX	2	qt/a	A									
	AAtrex	24	fl oz/a	A									
10	SOA 5,15			99	a	99	a	99	a	99	a	63.6	e
	BREAKFREE NXT LITE	1.8	qt/a	A									
11	SOA 2,4,5,15			99	a	99	a	99	a	99	a	97.5	d
	SURESTART II	1	qt/a	A									
	AAtrex	24	fl oz/a	A									
12	SOA 5,14,15			99	a	99	b	99	b	99	b	160.1	bc
	VERDICT	16	fl oz/a	A									
	AAtrex	24	fl oz/a	A									
LSD P=.10				.		0.2		0.2		0.2		20.8	

Means followed by same letter or symbol do not significantly differ (P=.10, LSD).