

## Evaluation of Pre Emergence and Very Early Post Emergence Corn Herbicide Programs in Field Corn at Rochester, MN in 2017

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The objective of this trial was to evaluate preemergence and very early postemergence herbicide programs in field corn in southeastern Minnesota. The evaluation focused on early season herbicide performance and duration of weed control at different rates. The research site was a loamy sand series with a pH of 6.4, O.M. of 2.1%, and soil test P and K levels of 35 ppm and 245 ppm, respectively. Fall fertilizer was broadcast on November 3, 2016 at a rate of 0-46-180-0 lbs/A. Fertilizer was also applied in the spring, ahead of a planting, on April 19, 2017 at a rate of 127-13-30-24 (N-P-K-S) lbs/A. Additional nitrogen was applied on June 12 (~60 lbs/A). The field was disked and field cultivated once prior to planting. The previous crop was soybean. The corn hybrid, DEKALB DKC47-27RIB, was planted May 4, 2017 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) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 30 psi using TTI-11002 tips. Evaluations of the plots were taken May 21, May 30, June 5, June 13, and October 26. The center two rows of each plot were machine harvested on November 6, 2017. Application dates, environmental conditions and weed stages can be found in Table 1. Performance ratings for giant ragweed, common lambsquarters, common waterhemp and grass control can be found in Tables 2 through 5 respectively.

### DISCUSSION:

Giant ragweed control was marginal at the beginning of the growing season for most of the PRE treatments. Activation rates varied by product and once rainfall was received and temperatures warmed control improved for several PRE herbicides. For example, giant ragweed control with Acuron at 80 fl oz/a was only 40% on May 21, but increased to 68% on May 30 and 90% by June 5, Table 1. Control was also impacted by rate of herbicide applied with higher rates of Corvus + Aatrex and Resicore providing greater control by July 14 and Oct 26 rating dates. Very early POST treatments applied on May 15, or 10 days after planting, provided good to excellent control of giant ragweed. (University of Minnesota Extension Regional Office, Rochester.)

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

Date	5/5	5/15
<b>Treatment</b>	PRE (A)	POST I (B)
<b>Temperature (F)</b>		
Air	63	73
Soil	55.0	68.5
<b>Relative Humidity (%)</b>	35	55
<b>Wind (mph)</b>	7	12
<b>Soil Moisture</b>	Normal	Normal
<b>Corn</b>		
Stage		1-collar
Height (in)		2.0
<b>Giant Ragweed</b>		
Weed Density (ft <sup>2</sup> )		21
Height (in)	0.0	0.8
<b>Common Waterhemp</b>		
Weed Density (ft <sup>2</sup> )		
Height (in)	0.0	0.1
<b>Common Lambsquarter</b>		
Weed Density (ft <sup>2</sup> )		
Height (in)	0.0	0.3
<b>Grass</b>		
Weed Density (ft <sup>2</sup> )		
Height (in)	0.0	0.2
<b>Rainfall after each application (inch)</b>		
Week 1	0.16	1.98
Week 2	1.98	1.17
Week 3	1.17	0.18

**Table 2. Giant Ragweed control in Pre-emergence herbicide programs for field corn at Rochester MN in 2017.**

Pest Code	Pest Name	Rating Date	Rating Type	AMBTR										YIELD			
				Giant ragweed										Nov-6-2018			
				May-21-2017	May-30-2017	Jun-5-2017	Jun-13-2017	Jul-14-2017	Oct-26-2017								
Trt	Treatment	Rate	Appl	PERCENT										BU/A			
11	UNTREATED CHECK			0	g	0	e	0	g	0	g	0	f	0	g	3	h
<b>PRE (5/5/17)</b>																	
1	SOA 2, 27, 5 CORVUS AAtrex	4 fl oz/a 16 fl oz/a	A A	39	ef	57	d	69	ef	84	e	81	d	80	e	114	f
2	SOA 2, 27, 5 CORVUS AAtrex	5.6 fl oz/a 16 fl oz/a	A A	34	ef	60	d	71	ef	88	b-e	89	abc	87	bcd	131	ef
4	SOA 5,15, 27 ACURON	57 fl oz/a	A	31	f	60	cd	73	de	87	cde	86	bcd	84	cde	124	ed
5	SOA 5,15,27 ACURON	80 fl oz/a	A	40	e	68	b	81	bc	90	bcd	90	ab	90	abc	148	de
7	SOA 4,15,27,5 RESICORE AAtrex	57 fl oz/a 16 fl oz/a	A A	55	d	68	b	78	cd	86	de	84	cd	82	de	126	ef
8	SOA 4,15,27,5 RESICORE AAtrex	80 fl oz/a 16 fl oz/a	A A	65	bc	80	a	87	ab	90	bc	92	ab	92	ab	172	cd
10	SOA 14, 15, 5 VERDICT AAtrex	14 fl oz/a 16 fl oz/a	A A	71	b	66	bc	66	f	74	f	68	e	63	f	49	g
<b>POST I (5/15/17) 2-4 Inch Weeds</b>																	
3	SOA 2,27,9,5 CORVUS ROUNDUP POWERMAX AAtrex	4 fl oz/a 22 fl oz/a 16 fl oz/a	B B B	62	cd	71	b	83	abc	92	ab	91	ab	90	abc	207	ab
6	SOA 5,15,27,9 ACURON ROUNDUP POWERMAX	57 fl oz/a 22 fl oz/a	B B	63	cd	69	b	88	a	94	a	94	a	95	a	210	a
9	SOA 4,15,27,9,5 RESICORE ROUNDUP POWERMAX AAtrex	57 fl oz/a 22 fl oz/a 16 fl oz/a	B B B	81	a	85	a	89	a	94	a	94	a	96	a	179	bc
LSD P=.10				8		6		6		4		6		6		29	

**Table 3. Common Lambsquarter control in Pre-emergence herbicide programs for field corn at Rochester MN in 2017.**

Pest Name	Pest Code	Rating Date	Rating Type	CHEAL										YIELD			
				Common Lambsquarters										Nov-6-2018			
				May-30-2017	Jun-5-2017	Jun-13-2017	Jul-14-2017	Oct-26-2017									
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)										BU/A			
11	UNTREATED CHECK			0	b	0	c	0	c	0	c	0	c	0	c	3	h
<b>PRE (5/5/17)</b>																	
1	SOA 2, 27, 5 CORVUS AAtrex	4fl oz/a 16fl oz/a	A A	99	a	98	b	99	a	99	a	99	a	99	a	114	f
2	SOA 2, 27, 5 CORVUS AAtrex	5.6fl oz/a 16fl oz/a	A A	99	a	98	b	99	ab	99	ab	99	ab	99	ab	131	ef
4	SOA 5,15, 27 ACURON	57fl oz/a	A	99	a	99	a	99	a	99	a	99	ab	99	ab	124	ed
5	SOA 5,15,27 ACURON	80fl oz/a	A	99	a	99	a	99	a	99	a	99	ab	99	ab	148	de
7	SOA 4,15,27,5 RESICORE AAtrex	57fl oz/a 16fl oz/a	A A	99	a	99	a	99	a	99	a	99	a	99	a	126	ef
8	SOA 4,15,27,5 RESICORE AAtrex	80fl oz/a 16fl oz/a	A A	99	a	99	a	99	a	99	a	99	a	99	a	172	cd
10	SOA 14, 15, 5 VERDICT AAtrex	14fl oz/a 16fl oz/a	A A	99	a	99	a	98	b	98	b	98	b	98	b	49	g
<b>POST I (5/15/17) 2-4 Inch Weeds</b>																	
3	SOA 2,27,9,5 CORVUS ROUNDUP POWERMAX AAtrex	4fl oz/a 22fl oz/a 16fl oz/a	B B B	99	a	99	a	99	a	99	a	99	a	99	a	207	ab
6	SOA 5,15,27,9 ACURON ROUNDUP POWERMAX	57fl oz/a 22fl oz/a	B B	99	a	99	a	99	a	99	a	99	a	99	a	210	a
9	SOA 4,15,27,9,5 RESICORE ROUNDUP POWERMAX AAtrex	57fl oz/a 22fl oz/a 16fl oz/a	B B B	99	a	99	a	99	a	99	a	99	a	99	a	179	bc
LSD P=.10						1.0		0.5		0.7		0.7			29		
LSD P=.20															29		

