## *Evaluation of Pre/Post compared to Very Early POST Corn Herbicide Programs in Field Corn at Rochester, MN in 2017* Behnken, Lisa M., Fritz R. Breitenbach, Amelia Welter and Annette Kyllo

The objective of this trial was to evaluate pre emergence herbicide programs in field corn in southeastern Minnesota. 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. (University of Minnesota Extension Regional Office, Rochester.)

## DISCUSSION

The herbicide systems evaluated at this location demonstrate the need for effective giant ragweed control to achieve satisfactory corn yields. Giant ragweed control was marginal at the beginning of the growing season for 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 Corvus at 5.6 fl oz was only 38% on May 21, but increased to 60% by May 30 and 88% by June 13, Table 1. Only a few systems achieved over 90% control in this trial, and those systems achieved the top yields in this trial.

Control of common lambsquarters, common waterhemp, and grass were excellent with all treatments except treatment 12, Roundup plus Aatrex, which averaged only 50% control of common waterhemp throughout the season, Table 4.

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, p	<mark>lant stage, en</mark>	vironmental cor	ditions.
Date	5/5	5/15	5/25
Treatment	PRE	POST I	POST II
	(A)	(B)	(C)
Temperature (F)			
Air	63	73	65
Soil	55.0	68.5	64.8
Relative Humidity (%)	35	55	67
Wind (mph)	7	12	13
Soil Moisture	Normal	Normal	Slightly Wet
Corn			
Stage		1-collar	2-collar
Height (in)		2.0	3.0
Giant Ragweed			
Weed Density (ft <sup>2</sup> )		21	26
Height (in)	0.0	0.8	2.0
Common Waterhemp			
Weed Density (ft <sup>2</sup> )			14
Height (in)	0.0	0.1	0.5
Common Lambsquarter			
Weed Density (ft <sup>2</sup> )			18
Height (in)	0.0	0.3	1.0
Grass			
Weed Density (ft <sup>2</sup> )			4
Height (in)	0.0	0.2	0.6
Rainfall after each			
application (inch)			
Week 1	0.16	1.98	0.10
Week 2	1.98	1.17	0.08
Week 3	1.17	0.18	1.07

Table 2. Giant Ragweed	con	trol in h	erbicio	de progr	ams i	for field o	orn	at Roch	ester	MN in 2	017.						
Pest Code									AME	BTR							
Pest Name								G	iant Ra	agweed							
Rating Date				May-21-	2017	May-30-2	017	Jun-5-2		Jun-13-2	2017	Jul-14-2	2017	Oct-26-	2017	Nov	-6-2018
Trt Treatment	Rat	e	Appl							ONTROL (							IELD
11 UNTREATED CHECK	. tat	•		0	f	0	е	0	h	0	q	0	a	0	q	3	e
PRE (5/5/17)				Ů	· ·	Ŭ	Ū	, v		Ű	9	Ű	9	Ű	9	Ű	Ű
13 SOA 14,15, 27, 5				37	d	49	d	57	f	81	d	78	d	75	d	75	d
ANTHEM MAX	4	fl oz/a	А	57	u	77	ŭ	57	•	01	u	70	u	15	u	75	u
BALANCE FLEXX	3	fl oz/a	A														
AAtrex	16	fl oz/a	A														
14 SOA 2,27	10	11 UZ/d	A	38	cd	59	с	72	е	88	b	90	b	89	b	164	b
CORVUS	5.6	fl oz/a	А	30	cu	59	C	12	e	00	U	90	U	07	U	104	U
PRE (5/5/17)/ POST III (5 15 SOA 14,15,27, 5, 9	/23/	17) <b>2-</b> 4 II		1		00	_	94		93	-	02	ah	94	ala	100	ah
	4 5	£1 /-		56	b	80	а	94	а	93	а	93	ab	94	ab	190	ab
ANTHEM MAX	4.5	fl oz/a	A														
SHARPEN	2	fl oz/a	A														
SOLSTICE	2.5	fl oz/a	С														
AAtrex	16	fl oz/a	С														
ROUNDUP POWERMAX		fl oz/a	С														
AMS	3.3	lb/100 ga	I C														
16 SOA 14,15,27,9				19	е	70	b	76	de	76	е	69	е	66	е	98	cd
ANTHEM MAX	4.5	fl oz/a	Α														
SOLSTICE	2.5	fl oz/a	С														
ROUNDUP POWERMAX		fl oz/a	С														
AMS	3.3	lb/100 ga	I C														
17 SOA 2,4,15, 27, 9				43	С	78	а	82	bc	82	cd	81	cd	81	С	176	b
SURESTART II	2	pt/a	A														
RESICORE	57	fl oz/a	С														
ROUNDUP POWERMAX	22	fl oz/a	С														
AMS		lb/100 ga	I C														
POST II (5/15/17) 2-4 Inc	h W	eeds															
12 SOA 9,5				56	b	51	d	51	g	58	f	53	f	46	f	19	е
ROUNDUP POWERMAX	22	fl oz/a	В						-								
AAtrex	16	fl oz/a	В														
18 SOA 15,27,9				64	а	68	b	86	b	92	а	95	а	96	а	207	а
ACURON FLEXI	2.25	qt/a	В														
ROUNDUP POWERMAX	32	fl oz/a	В														
AMS	3.3	lb/100 ga	ΙB														
19 SOA 14,15,27,5,9		5		62	а	69	b	80	cd	87	b	84	С	82	С	112	С
ANTHEM MAX	2	fl oz/a	В														
SOLSTICE	2.5	fl oz/a	В														
AAtrex	16	fl oz/a	B														
ROUNDUP POWERMAX		fl oz/a	B														
AMS		lb/100 ga															
20 SOA 9,15,27			-	56	b	58	С	72	е	85	bc	84	С	82	С	119	С
HALEX GT	3.6	pt/a	В		~		-		-	50	~~				-		÷
AMS		lb/100 gal															
NIS	0.25		B														
LSD P=.10	0.20	70 070	U	5		5		4		4		5		5			
LSD P=.10				5		5		4		4		5		5			30
LJD F=.20																	30

Table 3. Common Lamb	squarte	er control	in he	rbicide pro	grams	for field	corn at l	Rochest	er MN	<mark>in 2017</mark>					
Pest Code								CHEAL							
Pest Name							Commor	I Lambsqu	arters					YIEI	LD
Rating Date				May-30-2	2017	Jun-5		Jun-13-		Jul-14-2	2017	Oct-26-	2017	Nov-6-	2018
Trt Treatment	Rate	Appl		<b>^</b>				T CONTRO				I		BU/	
11 UNTREATED CHECK				0	С	0	С	0	С	0	С	0	С	3	е
PRE (5/5/17)				-	-	-			-		-			-	-
13 SOA 14,15, 27, 5				99	а	99	b	99	а	99	а	99	а	75	d
ANTHEM MAX	4	fl oz/a	А		-										
BALANCE FLEXX	3	fl oz/a	А												
AAtrex	16	fl oz/a	А												
14 SOA 2,27				99	а	99	ab	99	а	99	а	99	а	164	b
CORVUS	5.6	fl oz/a	А		ũ				ũ				-		~
PRE (5/5/17)/ POST III (5				s											
15 SOA 14,15,27, 5, 9				99	а	99	а	99	а	99	а	99	а	190	ab
ANTHEM MAX	4.5	fl oz/a	А				-	,,	~	.,	u		~		
SHARPEN	2	fl oz/a	A												
SOLSTICE	2.5	fl oz/a	C												
AAtrex	16	fl oz/a	Č												
ROUNDUP POWERMAX	32	fl oz/a	Č												
AMS	3.3	lb/100 gal													
16 SOA 14,15,27,9	0.0	ibi i oo gai	0	99	а	99	а	97	b	98	b	98	b	98	cd
ANTHEM MAX	4.5	fl oz/a	А		ũ		u		2	70	Ň		~	70	ou
SOLSTICE	2.5	fl oz/a	C												
ROUNDUP POWERMAX	32	fl oz/a	Č												
AMS	3.3	lb/100 gal													
17 SOA 2,4,15, 27, 9	0.0	ib/100 gui	0	99	а	99	а	99	а	99	а	99	а	176	b
SURESTART II	2	pt/a	А	,,	u	,,	u	,,	u	,,	u	,,,	u	170	b
RESICORE	57	fl oz/a	C												
ROUNDUP POWERMAX	22	fl oz/a	Č												
AMS	3.3	lb/100 gal	C												
POST II (5/15/17) 2-4 Inc.			C												
12 SOA 9,5		15		99	b	99	а	99	а	99	а	99	а	19	е
ROUNDUP POWERMAX	22	fl oz/a	В	//	b	//	a	//	a	//	a	,,,	a	17	C
AAtrex	16	fl oz/a	B												
18 SOA 15,27,9	10	11 UZ/A	U	99	а	99	а	99	а	99	а	99	а	207	а
ACURON FLEXI	2.25	qt/a	В	77	a	77	a	77	а	77	a	77	a	201	a
ROUNDUP POWERMAX	2.25 32	fl oz/a	Б В												
AMS	32 3.3	lb/100 gal													
19 SOA 14,15,27,5,9	3.3	iu/ 100 yai	ט	99	а	99	а	99	а	99	а	99	а	112	С
ANTHEM MAX	n	fl oz/a	В	77	a	77	d	77	d	77	d	77	a	112	L
SOLSTICE	2 2.5	fl oz/a	в В												
AAtrex															
AAtrex ROUNDUP POWERMAX	16 22	fl oz/a fl oz/a	B												
AMS	32 3.3		B												
	3.3	lb/100 gal	В	00		99		99	-	99	•	99	-	110	
20 SOA 9,15,27	27	nt/o	р	99	а	99	а	99	а	99	а	99	а	119	С
HALEX GT	3.6	pt/a	B												
	3.3	lb/100 gal													
NIS	0.25	% v/v	В	0.4		~	0	1.0							
LSD P=.10				0.4		0.0	0	1.0		0.8		0.8	5		
LSD P=.20														30	

Table 4. Common Waterh	emp co	ntrol in	herb	<mark>icide prog</mark>	rams fo	<mark>or field c</mark> o	orn at F		er MN i	<mark>n 2017.</mark>				1		
Pest Code				AMATA												
Pest Name								nmon Wate						YIELD		
Rating Date					<i>I</i> lay-30-2017 Jun-5-2017 Jun-13-2017 Jul-14-2017					Oct-20	5-2017	Nov-6-				
Trt Treatment	Rat	е	Appl					CENT CONT	ROL (%)	1		1		BU/	/A	
11 UNTREATED CHECK				0	С	0	d	0	d	0	d	0	d	3	е	
PRE (5/5/17)																
13 SOA 14,15, 27, 5				99	а	99	b	99	а	99	а	99	а	75	d	
ANTHEM MAX	4	fl oz/a	А													
BALANCE FLEXX	3	fl oz/a	А													
AAtrex	16	fl oz/a	А													
14 SOA 2,27				99	а	99	ab	95	b	93	b	92	b	164	b	
CORVUS	5.6	fl oz/a	А													
PRE (5/5/17)/ POST III (5/2	25/17) 2-	4 Inch V	Need	S				1		1		1				
15 SOA 14,15,27, 5, 9	,			99	а	99	а	99	а	99	а	99	а	190	ab	
ANTHEM MAX	4.5	fl oz/a	А		-		-		-		-		-			
SHARPEN	2	fl oz/a	A													
SOLSTICE	2.5	fl oz/a	C													
AAtrex	16	fl oz/a	C													
ROUNDUP POWERMAX	32	fl oz/a	C													
AMS	3.3	lb/100 ga														
16 SOA 14,15,27,9	5.5	10/100 gu		99	а	99	а	99	а	99	а	99	а	98	cd	
ANTHEM MAX	4.5	fl oz/a	А	77	a	77	a	77	a	77	a	77	a	70	cu	
SOLSTICE	4.5 2.5	fl oz/a	C													
ROUNDUP POWERMAX	2.5	fl oz/a	C													
AMS	3.3	lb/100 ga														
17 SOA 2,4,15, 27, 9	3.3	iu/100 ya	I C	00	-	00		00	-	99	-	00		17/	h	
	2		٨	99	а	99	а	99	а	99	а	99	а	176	b	
SURESTART II	2	pt/a	A													
RESICORE	57	fl oz/a	С													
ROUNDUP POWERMAX	22	fl oz/a	C													
AMS	3.3	lb/100 ga	ΙC													
POST II (5/15/17) 2-4 Inch	Weeds															
12 SOA 9,5			_	51	b	55	С	49	С	49	С	48	С	19	е	
ROUNDUP POWERMAX	22	fl oz/a	В													
AAtrex	16	fl oz/a	В													
18 SOA 15,27,9				99	а	99	а	99	а	99	а	99	а	207	а	
ACURON FLEXI	2.25	qt/a	В													
ROUNDUP POWERMAX	32	fl oz/a	В													
AMS	3.3	lb/100 ga	ΙB													
19 SOA 14,15,27,5,9				99	а	99	а	99	а	99	а	99	а	112	С	
ANTHEM MAX	2	fl oz/a	В													
SOLSTICE	2.5	fl oz/a	В													
AAtrex	16	fl oz/a	В													
ROUNDUP POWERMAX	32	fl oz/a	В													
AMS		lb/100 ga	ΙB													
20 SOA 9,15,27		ý		99	а	99	а	99	а	99	а	99	а	119	С	
HALEX GT	3.6	pt/a	В		-								-			
AMS		lb/100 ga														
NIS	0.25		В													
LSD P=.10	0.20		-	1.0		0.0	)	1.	6	1	.7	1.	7			
LSD P=.20				1.0		0.0		1.	•					20	)	
.SD P=.20														30	)	

Table 5. Grass control in	herbici	ide progra	ams	for field o	<mark>corn at l</mark>	Rochester	<mark>r MN in</mark>		_							
Pest Code				GRASSES										YIELD		
Rating Date			May-30-	May-30-2017 Jun-5-2017 Jun-13-2017 Jul-14-2017 Oct-26-2017 PERCENT CONTROL (%)								5-2017	Nov-6-2018			
Rating Type		<b>D</b> 1					PERC	ENT CONT	ROL (%)					BU	/A	
Trt Treatment		Rate	Appl			-										
11 UNTREATED CHECK				0	С	0	С	0	С	0	С	0	b	3	е	
PRE (5/5/17)																
13 SOA 14,15, 27, 5				99	b	99	а	99	а	99	b	99	а	75	d	
ANTHEM MAX	4	fl oz/a	А													
BALANCE FLEXX	3	fl oz/a	А													
AAtrex	16	fl oz/a	Α													
14 SOA 2,27				99	ab	99	а	99	а	99	ab	99	а	164	b	
CORVUS	5.6	fl oz/a	А													
PRE (5/5/17)/ POST III (5/	25/17) 2	-4 Inch V	Veed	s												
15 SOA 14,15,27, 5, 9				99	а	99	а	99	ab	99	а	99	а	190	ab	
ANTHEM MAX	4.5	fl oz/a	А													
SHARPEN	2	fl oz/a	А													
SOLSTICE	2.5	fl oz/a	С													
AAtrex	16	fl oz/a	C													
ROUNDUP POWERMAX	32	fl oz/a	C													
AMS	3.3	lb/100 gal	C													
16 SOA 14,15,27,9	5.5	10/100 yai	C	99	а	99	а	99	а	99	а	99	•	98	cd	
ANTHEM MAX	1 5	fl oz/a	٨	99	d	99	d	99	d	99	d	99	а	90	cu	
SOLSTICE	4.5		A													
	2.5	fl oz/a	С													
ROUNDUP POWERMAX	32	fl oz/a	С													
AMS	3.3	lb/100 gal	С													
17 SOA 2,4,15, 27, 9				99	а	99	а	99	а	99	а	99	а	176	ab	
SURESTART II	2	pt/a	A													
RESICORE	57	fl oz/a	С													
ROUNDUP POWERMAX	22	fl oz/a	С													
AMS	3.3	lb/100 gal	С													
POST II (5/15/17) 2-4 Incl	Weeds	5														
12 SOA 9,5				99	а	95	b			99	а	99	а	19	е	
ROUNDUP POWERMAX	22	fl oz/a	В													
AAtrex	16	fl oz/a	В													
18 SOA 15,27,9				99	а	99	а	99	ab	99	а	99	а	207	а	
ACURON FLEXI	2.25	qt/a	В													
ROUNDUP POWERMAX	32	fl oz/a	В													
AMS	3.3	lb/100 gal	В													
19 SOA 14,15,27,5,9	-	a '	_	99	а	99	а	99	b	99	а	99	а	112	cd	
ANTHEM MAX	2	fl oz/a	В													
SOLSTICE	2.5	fl oz/a	В													
	16	fl oz/a	В													
ROUNDUP POWERMAX	32 3.3	fl oz/a	B													
AMS 20 SOA 9,15,27	3.3	lb/100 gal	В	99		99	•	99	ch	99	^	99	~	110	•	
	<u>م</u> (	ntla	Р	99	а	99	а	99	ab	99	а	99	а	119	С	
HALEX GT	3.6	pt/a	В													
AMS	3.3	lb/100 gal	В													
NIS	0.25	% v/v	В													
LSD P=.10				0.0	)	1.6		0.	.4	0	.0	0.	.3			
LSD P=.20														3	U	