

## Comparisons of Herbicide Systems for Weed Control in Field Corn at Rochester, MN in 2016

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The objective of this trial was to evaluate herbicide systems 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. Fall fertilizer was broadcast on November 5, 2015 at a rate of 0-46-180-0 lbs/A. Fertilizer was also applied in the spring, ahead of a planting, on April 16, 2016 at a rate of 115-0-0-24 (N-P-K-S) lbs/A. Additional nitrogen was applied on May (25 lbs/A) and on June (36 lbs/A). The field was disked and field cultivated once prior to planting. The previous crop was soybean. The corn hybrid, DEKALB DKC49-72RIB, was planted April 25, 2016 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 30 psi using TTI-11002 tips. Postemergence (POST) were applied at 15 gpa and 30 PSI using TTI 11002 tips for systemic materials and TTI J60 - 11002 tips for contact herbicides. Evaluations of the plots were taken May 19, May 24, May 31, June 6, June 15, and September 15. The center two rows of each plot were machine harvested on October 19, 2016. 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. Minor crop injury (speckling) was only observed immediately after application in two postemergence treatments, 19 and 21 (data not shown). (University of Minnesota Extension Regional Office, Rochester.)

### DISCUSSION

Twenty of the twenty-two or (91%) of the treatments had a PRE herbicide component. Four of them (23%) included atrazine (SOA 5). There were eight different SOAs (2, 4, 5, 9, 10, 14, 15 and 27) included in this trial. Three of the soil applied programs provided 93-96% control of giant ragweed, Acuron, Corvus and Resicore. Six of the soil applied programs provided 89-92% control of giant ragweed, full rates of Surestart and Verdict, split rates of Acuron Flexi and Resicore, and a tankmix of Breakfree NXT Lite + Instigate. 95% of the herbicide programs provided excellent control of the small seeded broadleaf weeds, waterhemp and common lambsquarters. Grass control was 98 – 99% for twenty of the herbicide programs.

One of the key values of using a preemergence herbicide is to extend the window of opportunity to make the postemergence herbicide applications. In regards to giant ragweed, if no PRE was used, the POST herbicides needed to be applied 25 days after planting for effective control. If the PRE herbicide was weak on Giant ragweed, (%) control, the post herbicide was applied 29 days after planting. If the PRE herbicide provided very good to excellent control of giant ragweed (85-98%?), the window widened to 37 to 43 days after planting before the POST herbicide needed to be applied to control later emerging weeds. The use of a robust PRE expanded the window to apply the POST herbicide by an additional 12 to 18 days compared to the programs not using a PRE herbicide.

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

Date	4/25	5/20	5/24	6/2	6/8
<b>Treatment</b>	PRE (A)	POST I (B)	POST II (C)	POST III (D)	POST IV (E)
<b>Temperature (F)</b>					
Air	69	68	75	64	65
Soil	62.8	69.1	71.3	64.9	65.3
<b>Relative Humidity (%)</b>	62	38	68	64	56
<b>Wind (mph)</b>	10	15	9	8	5
<b>Soil Moisture</b>	Normal	Normal	Normal	Normal	Normal
<b>Corn</b>					
Stage		2-collar	3-collar	5-collar	V6
Height (in)		2.5	3.7	10.0	12.8
<b>Giant Ragweed</b>					
Weed Density (ft <sup>2</sup> )				15.3	
Height (in)	0.0	1.0	2.5	3.9	4.6
<b>Common Waterhemp</b>					
Weed Density (ft <sup>2</sup> )				12.0	
Height (in)	0.0	0.3	0.6	1.4	1.6
<b>Common Lambsquarter</b>					
Weed Density (ft <sup>2</sup> )				12.0	
Height (in)	0.0	0.7	1.3	1.9	2.8
<b>Grass</b>					
Weed Density (ft <sup>2</sup> )				16.3	
Height (in)	0.0	0.0	0.5	1.6	2.8
<b>Rainfall after each application (inch)</b>					
Week 1	0.77	0	2.79	0.90	2.66
Week 2	0		0.32		1.39
Week 3	1.45				0.71



**Table 2 (continued). Giant ragweed control in herbicide systems for field corn at Rochester MN in 2016.**

Pest Code	Pest Name	Rating Date	Trt	Treatment	Rate	Growth	Appl	AMBTR						YIELD @15% Bu/A							
								Giant ragweed													
								May-19	May-24	May-31	Jun-6	Jun-15	Sept 15								
Percent Control (%)																					
<b>A/E = PRE 4-25-16 / POST IV 6-8-16 (MIPOWE 4 inch weeds)</b>																					
5	SOA 2, 5, 10, 27							87	de	93	bcd	94	de	94	f	98	b	98	ab	220	ab
	CORVUS	5.6	fl oz/a	PRE	A																
	LIBERTY 280	29	fl oz/a	4" weeds	E																
	ATRAZINE	16	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
8	SOA 2, 5, 9, 15, 27							89	cd	89	de	90	g	90	ghi	97	b	98	ab	220	ab
	BREAKFREE NXT	1.75	qt/a	PRE	A																
	LITE																				
	INSTIGATE	5.25	oz/a		A																
	- rimsulfuron	0.875	oz wt/a	PRE	A																
	- mesotrione	4.375	oz wt/a	PRE	A																
	ABUNDIT EXTRA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
13	SOA 4, 9, 15, 27							97	a	96	b	97	bc	96	b-e	98	b	99	ab	226	a
	RESICORE	3	qt/a	PRE	A																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
14	SOA 4, 9, 15, 27							87	def	91	d	91	fg	88	i	97	b	99	ab	219	abc
	RESICORE	1.25	qt/a	PRE	A																
	RESICORE	1.25	qt/a	4" weeds	E																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
18	SOA 4, 9, 14, 15							94	b	92	cd	92	fg	89	hi	97	b	98	ab	211	bcd
	VERDICT	16	fl oz/a	PRE	A																
	ROUNDUP	32	fl oz/a	4" weeds	E																
	POWERMAX																				
	STATUS	5	oz wt/a	4" weeds	E																
	NIS	0.25	% v/v	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
<b>B = POST I 5-20-16 (EAPOWE 2 inch weeds)</b>																					
21	SOA 9, 14, 15, 27							0	k	85	fg	96	bc	95	c-f	93	c	94	d	211	bcd
	SOLSTICE	2.5	fl oz/a	2" weeds	B																
	ANTHEM MAX	2	fl oz/a	2" weeds	B																
	ROUNDUP	32	fl oz/a	2" weeds	B																
	POWERMAX																				
	Atrazine	16	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
22	SOA 2, 9, 15, 27							0	k	65	h	92	ef	90	gh	90	de	88	f	180	f
	REALM Q - 4 oz/A			2" weeds	B																
	- rimsulfuron	1.2	oz wt/a	2" weeds	B																
	- mesotrione	2.5	oz wt/a	2" weeds	B																
	- isoxadifen-ethyl	0.3	oz wt/a	2" weeds	B																
	ABUNDIT EXTRA	32	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
24	Weed - Free							100	a	100	a	100	a	100	a	100	a	100	a	204	de
<b>LSD P=10</b>								4		4		2		2		2		3		12.9	



**Table 3 (continued). Common lambsquarters control with different herbicide systems in corn at Rochester, MN in 2016.**

Pest Code	Pest Name	Rating Date	Trt	Treatment	Rate	Growth	Appl	CHEAL						YIELD @15%							
								Common Lambsquarter													
								May-19	May-24	May-31	Jun-6	Jun-15	Sept 15	Percent Control (%)	Bu/A						
<b>A/E = PRE 4-25-16 / POST IV 6-8-16 (MIPOWE 4 inch weeds)</b>																					
5	SOA 2, 5, 10, 27							99	b	99	ab	99	b	99	b	99	b	220	ab		
	CORVUS	5.6	fl oz/a	PRE	A																
	LIBERTY 280	29	fl oz/a	4" weeds	E																
	ATRAZINE	16	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
8	SOA 2, 5, 9, 15, 27							99	b	99	ab	99	b	99	b	99	b	220	ab		
	BREAKFREE NXT	1.75	qt/a	PRE	A																
	LITE																				
	INSTIGATE	5.25	oz/a		A																
	- rimsulfuron	0.875	oz wt/a	PRE	A																
	- mesotrione	4.375	oz wt/a	PRE	A																
	ABUNDIT EXTRA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
13	SOA 4, 9, 15, 27							99	b	99	ab	99	b	99	b	99	b	226	a		
	RESICORE	3	qt/a	PRE	A																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
14	SOA 4, 9, 15, 27							99	b	98	b	99	b	99	b	99	b	219	abc		
	RESICORE	1.25	qt/a	PRE	A																
	RESICORE	1.25	qt/a	4" weeds	E																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
18	SOA 4, 9, 14, 15							99	b	99	ab	99	b	99	b	99	b	98	de	211	bcd
	VERDICT	16	fl oz/a	PRE	A																
	ROUNDUP	32	fl oz/a	4" weeds	E																
	POWERMAX																				
	STATUS	5	oz wt/a	4" weeds	E																
	NIS	0.25	% v/v	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
<b>B = POST I 5-20-16 (EAPOWE 2 inch weeds)</b>																					
21	SOA 9, 14, 15, 27							0	c	99	ab	99	b	99	b	99	b	99	bc	211	bcd
	SOLSTICE	2.5	fl oz/a	2" weeds	B																
	ANTHEM MAX	2	fl oz/a	2" weeds	B																
	ROUNDUP	32	fl oz/a	2" weeds	B																
	POWERMAX																				
	Atrazine	16	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
22	SOA 2, 9, 15, 27							0	c	65	d	98	c	98	c	97	d	98	ef	180	f
	REALM Q - 4 oz/A			2" weeds	B																
	- rimsulfuron	1.2	oz wt/a	2" weeds	B																
	- mesotrione	2.5	oz wt/a	2" weeds	B																
	- isoxadifen-ethyl	0.3	oz wt/a	2" weeds	B																
	ABUNDIT EXTRA	32	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
24	Weed - Free				E			100	a	100	a	100	a	100	a	100	a	100	a	204	de
<b>LSD P=.10</b>										1		0.4		0.5		1		1		12.9	

**Table 4. Common waterhemp control with different herbicide systems in corn at Rochester, MN in 2016.**

Pest Code Pest Name Rating Date	AMATA Common waterhemp										YIELD @15%					
	May-24		May-31		Jun-6		Jun-15		Sept 15							
	Trt Treatment	Rate	Growth	Appl	Percent Control (%)										Bu/A	
23 Weedy					0	e	0	d	0	c	0	d	0	e	3	g
<b>A = PRE 4-25-16</b>																
1 SOA 5, 15, 27 ACURON	3 qt/a	PRE	A		99	b	99	b	99	a	99	ab	99	ab	218	abc
<b>A/C = PRE 4-25-16 / POST II 5-24-16 (MIPOWE 3-4 inch weeds)</b>																
4 SOA 4, 9, 15 HARNESSESS DIFLEXX ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a 10 fl oz/a 28 fl oz/a 0.5 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C		99	b	99	b	99	a	98	b	98	bc	206	cde
6 SOA 4, 9, 15, 27 HARNESSESS DIFLEXX DUO ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a 24 fl oz/a 28 fl oz/a 0.5 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C		99	b	99	b	99	a	99	ab	99	ab	206	cde
7 SOA 2, 5, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - Isoxadifen-ethyl ABUNDIT EXTRA Atrazine NIS N-Pa-K AMS	2 pt/a 1.2 oz wt/a 2.5 oz wt/a 0.3 oz wt/a 32 fl oz/a 12 fl oz/a 0.25 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C C C C		99	b	99	b	99	a	99	ab	99	ab	217	abc
10 SOA 9, 15, 27 HARNESSESS IMPACT ROUNDUP POWERMAX MSO N-Pa-K AMS	2.25 pt/a 0.75 fl oz/a 32 fl oz/a 1 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C		99	b	99	b	99	a	99	ab	99	abc	198	e
12 SOA 4, 9, 15 HARNESSESS ROUNDUP POWERMAX STATUS NIS N-Pa-K AMS	2.25 pt/a 32 fl oz/a 5 oz/a 0.25 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C		99	b	99	b	99	a	99	ab	99	ab	210	b-e
19 SOA 9, 14, 15, 27 ANTHEM MAX SOLSTICE ROUNDUP POWERMAX N-Pa-K AMS	4 fl oz/a 3 fl oz/a 32 fl oz/a 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds	A C C C		99	b	99	b	99	a	99	ab	99	ab	220	ab
20 SOA 2, 4, 9, 15, 27 HARNESSESS IMPACT Atrazine Destiny HC N-Pa-K AMS	2.25 pt/a 0.75 fl oz/a 16 fl oz/a 1 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A C C C C		99	b	99	b	99	a	99	ab	99	ab	213	a-d
<b>A/D = PRE 4-25/16 / POST III 6-2-16 (MIPOWE 2-4 inch weeds)</b>																
2 SOA 15, 27 ACURON FLEXI ACURON FLEXI NIS N-Pa-K AMS	1.12 qt/a 1.12 qt/a 0.25 % v/v 1.5 qt/a	PRE 2" weeds 2" weeds 2" weeds	A D D D		99	b	99	b	99	a	99	ab	99	ab	219	abc
3 SOA 9, 15, 27 ACURON FLEXI HALEX GT NIS N-Pa-K AMS	1.12 qt/a 3.6 pt/a 0.25 % v/v 1.5 qt/a	PRE 2-4" weeds 2-4" weeds 2-4" weeds	A D D D		99	b	99	b	99	a	99	ab	99	ab	222	ab
9 SOA 2, 4, 9, 15, 27 TRIPLEFLEX II ROUNDUP POWERMAX IMPACT MSO N-Pa-K AMS	2 pt/a 32 fl oz/a 0.75 fl oz/a 1 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A D D D D		99	b	99	b	99	a	99	ab	98	bc	218	abc
11 SOA 2, 4, 9, 15 TRIPLEFLEX II STATUS ROUNDUP POWERMAX NIS N-Pa-K AMS	2 pt/a 5 oz/a 32 fl oz/a 0.25 % v/v 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds	A D D D D		99	b	99	b	99	a	99	ab	97	c	222	ab
15 SOA 2, 4, 9, 15 SURESTART II DURANGO DMA N-Pa-K AMS	2.5 pt/a 32 fl oz/a 1.5 qt/a	PRE 4" weeds 4" weeds	A D D		99	b	99	b	99	a	99	ab	98	bc	218	abc
16 SOA 2, 4, 9, 15, 27 SURESTART II RESICORE DURANGO DMA N-Pa-K AMS	2 pt/a 1.25 qt/a 32 fl oz/a 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds	A D D D		99	b	99	b	99	a	99	ab	99	ab	221	ab
17 SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 oz/a 16 fl oz/a 16 fl oz/a 32 fl oz/a 1 pt/a 1.5 qt/a	PRE 4" weeds 4" weeds 4" weeds 4" weeds 4" weeds	A D D D D D		99	b	99	b	99	a	99	ab	99	ab	220	ab

**Table 4 (continued). Common waterhemp control with different herbicide systems in corn at Rochester, MN in 2016.**

Pest Code	Pest Name	Rating Date	Trt Treatment	Rate	Growth	Appl	AMATA					YIELD @15%						
							Common waterhemp											
							May-24	May-31	Jun-6	Jun-15	Sept 15	Percent Control (%)	Bu/A					
<b>A/E = PRE 4-25-16 / POST IV 6-8-16 (MIPOWE 4 inch weeds)6</b>																		
5	SOA 2, 5, 10, 27						99	b	99	b	99	a	99	ab	97c	c	220	ab
	CORVUS	5.6	fl oz/a	PRE	A													
	LIBERTY 280	29	fl oz/a	4" weeds	E													
	ATRAZINE	16	fl oz/a	4" weeds	E													
	N-Pa-K AMS	1.5	qt/a	4" weeds	E													
8	SOA 2, 5, 9, 15, 27						99	b	99	b	99	a	99	ab	99	ab	220	ab
	BREAKFREE NXT	1.75	qt/a	PRE	A													
	LITE																	
	INSTIGATE	5.25	oz a		A													
	- rimsulfuron	0.875	oz wt/a	PRE	A													
	- mesotrione	4.375	oz wt/a	PRE	A													
	ABUNDIT EXTRA	32	fl oz/a	4" weeds	E													
	N-Pa-K AMS	1.5	qt/a	4" weeds	E													
13	SOA 4, 9, 15, 27						99	b	99	b	99	a	99	ab	99	ab	226	a
	RESICORE	3	qt/a	PRE	A													
	DURANGO DMA	32	fl oz/a	4" weeds	E													
	N-Pa-K AMS	1.5	qt/a	4" weeds	E													
14	SOA 4, 9, 15, 27						98	c	99	b	99	a	99	ab	99	ab	219	abc
	RESICORE	1.25	qt/a	PRE	A													
	RESICORE	1.25	qt/a	4" weeds	E													
	DURANGO DMA	32	fl oz/a	4" weeds	E													
	N-Pa-K AMS	1.5	qt/a	4" weeds	E													
18	SOA 4, 9, 14, 15						99	b	99	b	99	a	99	ab	99	abc	211	bcd
	VERDICT	16	fl oz/a	PRE	A													
	ROUNDUP	32	fl oz/a	4" weeds	E													
	POWERMAX																	
	STATUS	5	oz wt/a	4" weeds	E													
	NIS	0.25	% v/v	4" weeds	E													
	N-Pa-K AMS	1.5	qt/a	4" weeds	E													
<b>B = POST I 5-20-16 (EAPOWE 2 inch weeds)</b>																		
21	SOA 9, 14, 15, 27						99	b	99	b	99	a	99	ab	98	bc	211	bcd
	SOLSTICE	2.5	fl oz/a	2" weeds	B													
	ANTHEM MAX	2	fl oz/a	2" weeds	B													
	ROUNDUP	32	fl oz/a	2" weeds	B													
	POWERMAX																	
	Atrazine	16	fl oz/a	2" weeds	B													
	NIS	0.25	% v/v	2" weeds	B													
	N-Pa-K AMS	1.5	qt/a	2" weeds	B													
22	SOA 2, 9, 15, 27						65	d	97	c	94	b	94	c	94	d	180	f
	REALM Q - 4 oz/A			2" weeds	B													
	- rimsulfuron	1.2	oz wt/a	2" weeds	B													
	- mesotrione	2.5	oz wt/a	2" weeds	B													
	- isoxadifen-ethyl	0.3	oz wt/a	2" weeds	B													
	ABUNDIT EXTRA	32	fl oz/a	2" weeds	B													
	NIS	0.25	% v/v	2" weeds	B													
	N-Pa-K AMS	1.5	qt/a	2" weeds	B													
24 Weed - Free							100	a	100	a	100	a	100	a	100	a	204	de
<b>LSD P=.10</b>							<b>0.5</b>		<b>1</b>		<b>2</b>		<b>2</b>		<b>2</b>		<b>12.9</b>	

**Table 5. Grass control with different herbicide systems in corn at Rochester, MN in 2016.**

Pest Code		GRASS										YIELD @15%						
Pest Name		Grangea sp.																
Rating Date		May-19	May-24	May-31	Jun-6	Jun-15	Sep 15											
Trt	Treatment	Rate	Growth	Appl	Percent Control (%)										Bu/A			
23	Weedy				0	c	0	e	0	e	0	d	0	f	0	f	3	g
<b>A = PRE 4-25-16</b>																		
1	SOA 5, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	218	abc
	ACURON	3 qt/a	PRE	A														
<b>A/C = PRE 4-25-16 / POST II 5-24-16 (MIPOWE 3-4 inch weeds)</b>																		
4	SOA 4, 9, 15				99	b	99	b	99	ab	99	b	98	bc	98	bc	206	cde
	HARNESS	1.25 pt/a	PRE	A														
	DIFLEXX	10 fl oz/a	4" weeds	C														
	ROUNDUP POWERMAX	28 fl oz/a	4" weeds	C														
	Destiny HC	0.5 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
6	SOA 4, 9,15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	206	cde
	HARNESS	1.25 pt/a	PRE	A														
	DIFLEXX DUO	24 fl oz/a	4" weeds	C														
	ROUNDUP POWERMAX	28 fl oz/a	4" weeds	C														
	Destiny HC	0.5 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
7	SOA 2, 5, 9, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	217	abc
	BREAKFREE NXT	2 pt/a	PRE	A														
	REALM Q - 4 oz/A			C														
	- rimsulfuron	1.2 oz wt/a	4" weeds	C														
	- mesotrione	2.5 oz wt/a	4" weeds	C														
	- Isoxadifen-ethyl	0.3 oz wt/a	4" weeds	C														
	ABUNDIT EXTRA	32 fl oz/a	4" weeds	C														
	Atrazine	12 fl oz/a	4" weeds	C														
	NIS	0.25 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
10	SOA 9, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	198	e
	HARNESS	2.25 pt/a	PRE	A														
	IMPACT	0.75 fl oz/a	4" weeds	C														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	C														
	MSO	1 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
12	SOA 4, 9, 15				99	b	99	b	99	ab	99	b	99	ab	99	ab	210	b-e
	HARNESS	2.25 pt/a	PRE	A														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	C														
	STATUS	5 oz/a	4" weeds	C														
	NIS	0.25 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
19	SOA 9, 14, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	abc	220	ab
	ANTHEM MAX	4 fl oz/a	PRE	A														
	SOLSTICE	3 fl oz/a	4" weeds	C														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
20	SOA 2, 4, 9, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	213	a-d
	HARNESS	2.25 pt/a	PRE	A														
	IMPACT	0.75 fl oz/a	4" weeds	C														
	Atrazine	16 fl oz/a	4" weeds	C														
	Destiny HC	1 % v/v	4" weeds	C														
	N-Pa-K AMS	1.5 qt/a	4" weeds	C														
<b>A/D = PRE 4-25/16 / POST III 6-2-16 (MIPOWE 2-4 inch weeds)</b>																		
2	SOA 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	219	abc
	ACURON FLEXI	1.12 qt/a	PRE	A														
	ACURON FLEXI	1.12 qt/a	2" weeds	D														
	NIS	0.25 % v/v	2" weeds	D														
	N-Pa-K AMS	1.5 qt/a	2" weeds	D														
3	SOA 9, 15, 27				99	b	99	b	99	ab	99	b	99	ab	97	cd	222	ab
	ACURON FLEXI	1.12 qt/a	PRE	A														
	HALEX GT	3.6 pt/a	2-4" weeds	D														
	NIS	0.25 % v/v	2-4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	2-4" weeds	D														
9	SOA 2, 4, 9, 15, 27				99	b	99	b	99	ab	99	b	99	b	99	ab	218	abc
	TRIPLEFLEX II	2 pt/a	PRE	A														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	D														
	IMPACT	0.75 fl oz/a	4" weeds	D														
	MSO	1 % v/v	4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	4" weeds	D														
11	SOA 2, 4, 9, 15				99	b	99	b	99	ab	99	b	99	ab	98	bc	222	ab
	TRIPLEFLEX II	2 pt/a	PRE	A														
	STATUS	5 oz/a	4" weeds	D														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	D														
	NIS	0.25 % v/v	4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	4" weeds	D														
15	SOA 2, 4, 9, 15				99	b	99	b	99	ab	99	b	99	ab	99	ab	218	abc
	SURESTART II	2.5 pt/a	PRE	A														
	DURANGO DMA	32 fl oz/a	4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	4" weeds	D														
16	SOA 2, 4, 9, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	221	ab
	SURESTART II	2 pt/a	PRE	A														
	RESICORE	1.25 qt/a	4" weeds	D														
	DURANGO DMA	32 fl oz/a	4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	4" weeds	D														
17	SOA 5, 9, 14, 15, 27				99	b	99	b	99	ab	99	b	99	ab	99	ab	220	ab
	VERDICT	10 oz/a	PRE	A														
	ARMEZON PRO	16 fl oz/a	4" weeds	D														
	Atrazine	16 fl oz/a	4" weeds	D														
	ROUNDUP POWERMAX	32 fl oz/a	4" weeds	D														
	COC	1 pt/a	4" weeds	D														
	N-Pa-K AMS	1.5 qt/a	4" weeds	D														



**Table 5 (continued). Grass control with different herbicide systems in corn at Rochester, MN in 2016.**

Pest Code	Pest Name	Rating	Date	Treatment	Rate	Growth	Appl	GRASS						YIELD @15% Bu/A							
								Grangea sp.													
								May-19	May-24	May-31	Jun-6	Jun-15	Sep 15								
<b>A/E = PRE 4-25-16 / POST IV 6-8-16 (MIPOWE 4 inch weeds)</b>								Percent Control (%)													
5	SOA 2, 5, 10, 27							99	b	99	b	95	c	99	b	98	c	98	bc	220	ab
	CORVUS	5.6	fl oz/a	PRE	A																
	LIBERTY 280	29	fl oz/a	4" weeds	E																
	ATRAZINE	16	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
8	SOA 2, 5, 9, 15, 27							99	b	99	b	99	ab	99	b	99	b	99	ab	220	ab
	BREAKFREE NXT LITE	1.75	qt/a	PRE	A																
	INSTIGATE	5.25	oz/a		A																
	- rimsulfuron	0.875	oz wt/a	PRE	A																
	- mesotrione	4.375	oz wt/a	PRE	A																
	ABUNDIT EXTRA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
13	SOA 4, 9, 15, 27							99	b	99	b	99	ab	99	b	99	ab	99	ab	226	a
	RESICORE	3	qt/a	PRE	A																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
14	SOA 4, 9, 15, 27							99	b	98	c	99	ab	99	b	99	ab	99	ab	219	abc
	RESICORE	1.25	qt/a	PRE	A																
	RESICORE	1.25	qt/a	4" weeds	E																
	DURANGO DMA	32	fl oz/a	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
18	SOA 4, 9, 14, 15							99	b	99	b	99	ab	99	b	99	ab	99	ab	211	bcd
	VERDICT	16	fl oz/a	PRE	A																
	ROUNDUP POWERMAX	32	fl oz/a	4" weeds	E																
	STATUS	5	oz wt/a	4" weeds	E																
	NIS	0.25	% v/v	4" weeds	E																
	N-Pa-K AMS	1.5	qt/a	4" weeds	E																
<b>B = POST I 5-20-16 (EAPOWE 2 inch weeds)</b>																					
21	SOA 9, 14, 15, 27							0	c	99	b	98	b	99	b	96	d	96	d	211	bcd
	SOLSTICE	2.5	fl oz/a	2" weeds	B																
	ANTHEM MAX	2	fl oz/a	2" weeds	B																
	ROUNDUP POWERMAX	32	fl oz/a	2" weeds	B																
	Atrazine	16	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
22	SOA 2, 9, 15, 27							0	c	65	d	90	d	91	c	88	e	88	e	180	f
	REALM Q - 4 oz/A			2" weeds	B																
	- rimsulfuron	1.2	oz wt/a	2" weeds	B																
	- mesotrione	2.5	oz wt/a	2" weeds	B																
	- isoxadifen-ethyl	0.3	oz wt/a	2" weeds	B																
	ABUNDIT EXTRA	32	fl oz/a	2" weeds	B																
	NIS	0.25	% v/v	2" weeds	B																
	N-Pa-K AMS	1.5	qt/a	2" weeds	B																
24 Weed - Free								100	a	100	a	100	a	100	a	100	a	100	a	204	de
<b>LSD P=.10</b>								.		0.5		1		1		1		1.5		12.9	