

## Comparisons of Herbicide Systems for Weed Control in Field Corn at Rochester, MN in 2017

Behnken, Lisa M., Fritz R. Breitenbach, Jeffery Gunsolus, and Thomas Hoverstad

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 6.1, O.M. of 2.5%, and soil test P and K levels of 13 ppm and 128 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 115-0-0-24 (N-P-K-S) lbs/A. Additional nitrogen was applied on June 12, 2017 (~60 lbs/A). The field was disked and field cultivated prior to planting. The previous crop was soybean. The corn hybrid, Golden Harvest G03A50-3010, 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 most postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 30 psi using TTI 11002 tips. Postemergence (POST) treatments that included Liberty herbicide were applied at 15 gpa and 30 PSI using TTIJ60 tips. Evaluations of the plots were taken May 19, May 30, June 5, June 12, June 30 and October 18. 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. Crop response to herbicides and pre-harvest lodging are reported in Table 6. (University of Minnesota Extension Regional Office, Rochester.)

### DISCUSSION

Nineteen of the treatments had a PRE herbicide component. Six treatments included atrazine (SOA 5). There were eight different SOAs (2, 4, 5, 9, 10, 14, 15 and 27) included in this trial. Herbicide activation was impacted by lack of rainfall after planting. Giant ragweed control was slow for all PRE treatments, but varied based on activation rates. For example, Verdict at 16 oz/A gave 83% control two weeks after planting, whereas Resicore at 3 qt/a provided 54% and Acuron at 3 qt/a only 35% control, Table 2. In the following weeks, rainfall improved activation. There was “reachback” with several of the PRE herbicides, increasing giant ragweed control in the PRE Resicore (3 qt/a) treatment to 90 % by May 20 and 95% by June 12, Table 2. The PRE Acuron treatment also improved, with giant ragweed control increasing to 83% by May 20 and 96% by June 12, Table 2. All PRE/POST herbicide programs provided over 90% control of the small seeded broadleaves, common lambsquarters and common waterhemp, and grasses. Total POST herbicide programs were much weaker on giant ragweed (72-75%) and the grasses (78-81%) control, Table 2 and 5, respectively.

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 or the PRE provided minimal giant ragweed control, the POST herbicides needed to be applied 20 days after planting. If the PRE herbicide was more effective on giant ragweed, about 50-70% control, the post herbicide program was applied 4 weeks after planting. If the PRE herbicide provided very good to excellent control of giant ragweed (87-92%), the window widened to 38 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 18 days compared to the programs not using a PRE herbicide.

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

Date	5/5	5/25	6/1	6/12
<b>Treatment</b>	PRE (A)	POST I (B)	POST II (C)	POST III (D)
<b>Temperature (F)</b>				
Air	68	65	75	79
Soil	59.0	64.6	74.8	79.3
<b>Relative Humidity (%)</b>	33	65	29	76
<b>Wind (mph)</b>	9	12	5	14
<b>Soil Moisture</b>	Normal	Slightly Wet	Normal	Dry
<b>Corn</b>				
Stage		2-collar	3-collar	6-collar
Height (in)		3.0	5.25	15.0
<b>Giant Ragweed</b>				
Weed Density (ft <sup>2</sup> )			13	
Height (in)	0.0	2.375	3.625	3.5
<b>Common Waterhemp</b>				
Weed Density (ft <sup>2</sup> )			3	
Height (in)	0.0	0.25	0.5	1.375
<b>Common Lambsquarter</b>				
Weed Density (ft <sup>2</sup> )			10	
Height (in)	0.0	0.875	1.688	1.875
<b>Grass</b>				
Weed Density (ft <sup>2</sup> )			22	
Height (in)	0.0	0.625	1.938	2.125
<b>Rainfall after each application (inch)</b>				
Week 1	0.16	0.10	0.08	2.57
Week 2	1.98	0.08	1.07	1.14
Week 3	1.17	1.07	1.94	1.53

**Table 2. Giant ragweed control in herbicide systems for field corn at Rochester MN in 2017.**

Pest Code		AMBTR										YIELD Nov-6					
Pest Name		Giant ragweed															
Rating Date		May-19	May-30	Jun-5	Jun-12	Jun-30	Oct-18										
Trt	Treatment	Rate	Appl	Percent Control (%)										Bu/A			
23	Weedy			0	j	0	j	0	h	0	j	0	j	0	h	3	f
<b>PRE (5/5/17)</b>																	
1	SOA 5, 15, 27			35.0	fg	83.3	cde	91.5	bcd	95.5	bcd	96.8	b	96.5	b	178	bc
	ACURON	3	qt/a	A													
<b>PRE (5/5/17) / POST I (5/25/17)</b>																	
2	SOA 15, 27			22.5	hi	80.0	de	87.5	cde	94.3	cd	96.5	bc	96.8	b	192	ab
	ACURON FLEXI	2.25	pt/a	A													
	ACURON FLEXI	2.25	pt/a	B													
	NIS	0.25	% v/v	B													
	N-Pa-K AMS	1.5	qt/a	B													
3	SOA 9, 15, 27			20.0	hi	81.3	cde	87.3	cde	94.5	cd	97.3	ab	97.8	ab	189	ab
	ACURON FLEXI	2.25	pt/a	A													
	HALEX GT	3.6	pt/a	B													
	NIS	0.25	% v/v	B													
	N-Pa-K AMS	1.5	qt/a	B													
4	SOA 4, 9, 15			25.0	h	84.8	bcd	84.8	e	84.8	g	86.0	fg	86.0	de	174	bc
	HARNESS	1.25	pt/a	A													
	DIFLEXX	10	fl oz/a	B													
	ROUNDUP POWERMAX	28.4	fl oz/a	B													
	Destiny HC	0.5	% v/v	B													
	N-Pa-K AMS	1.5	qt/a	B													
5	SOA 2, 5, 10, 27			18.8	i	82.5	cde	88.3	cde	96.0	bcd	97.3	ab	97.0	ab	188	ab
	CORVUS	5.6	fl oz/a	A													
	LIBERTY 280	29	fl oz/a	B													
	ATRAZINE	16	fl oz/a	B													
	N-Pa-K AMS	1.5	qt/a	B													
6	SOA 4, 9, 15, 27			21.3	hi	82.5	cde	85.3	e	84.8	g	85.3	g	83.3	e	148	d
	HARNESS	1.25	pt/a	A													
	DIFLEXX DUO	24	fl oz/a	B													
	ROUNDUP POWERMAX	28.4	fl oz/a	B													
	Destiny HC	0.5	% v/v	B													
	N-Pa-K AMS	1.5	qt/a	B													
7	SOA 2, 5, 9, 15, 27			31.3	g	83.3	cde	87.3	cde	86.3	fg	86.3	fg	84.5	de	161	cd
	BREAKFREE NXT	2	pt/a	A													
	REALM Q - 4 oz/A			B													
	- rimsulfuron	1.2	oz wt/a	B													
	- mesotrione	2.5	oz wt/a	B													
	- Isoxadifen-ethyl	0.3	oz wt/a	B													
	ABUNDIT EXTRA	42	fl oz/a	B													
	Atrazine	12	fl oz/a	B													
	NIS	0.25	% v/v	B													
	N-Pa-K AMS	1.5	qt/a	B													
18	SOA 9, 14, 15, 27			21.3	hi	76.8	ef	79.3	f	76.8	h	78.0	h	76.3	f	109	e
	ANTHEM MAX	4	fl oz/a	A													
	SOLSTICE	3	fl oz/a	B													
	ROUNDUP POWERMAX	28.4	fl oz/a	B													
	N-Pa-K AMS	1.5	qt/a	B													
<b>PRE (5/5/17) / POST II (6/1/17)</b>																	
9	SOA 2, 4, 9, 15, 27			37.5	ef	67.0	gh	79.5	f	94.5	cd	93.5	cd	92.8	c	188	ab
	TRIPLEFLEX II	2.5	pt/a	A													
	IMPACT	0.75	fl oz/a	C													
	ROUNDUP POWERMAX	28.4	fl oz/a	C													
	MSO	1	% v/v	C													
	N-Pa-K AMS	1.5	qt/a	C													
10	SOA 9, 15, 27			36.3	efg	53.3	i	77.8	f	93.8	d	91.8	de	90.8	c	184	ab
	HARNESS	2.25	pt/a	A													
	IMPACT	0.75	fl oz/a	C													
	ROUNDUP POWERMAX	28.4	fl oz/a	C													
	MSO	1	% v/v	C													
	N-Pa-K AMS	1.5	qt/a	C													
11	SOA 2, 4, 9, 15, 27			33.8	fg	61.8	h	78.3	f	93.8	d	93.0	d	92.3	c	185	ab
	TRIPLEFLEX II	2	pt/a	A													
	IMPACT	0.75	fl oz/a	C													
	WARRANT	1.5	qt/a	C													
	ROUNDUP POWERMAX	28.4	fl oz/a	C													
	MSO	1	% v/v	C													
	N-Pa-K AMS	1.5	qt/a	C													
13	SOA 4, 9, 15, 27			41.3	e	77.0	ef	93.8	b	98.8	ab	98.8	ab	98.5	ab	200	a
	RESICORE	1.5	qt/a	A													
	RESICORE	1.25	qt/a	C													
	DURANGO DMA	32	fl oz/a	C													
	N-Pa-K AMS	1.5	qt/a	C													
14	SOA 2, 4, 9, 15			35.0	fg	67.0	gh	79.5	f	87.5	fg	89.0	ef	87.0	d	177	bc
	SURESTART II	2.5	pt/a	A													
	DURANGO DMA	32	fl oz/a	C													
	N-Pa-K AMS	1.5	qt/a	C													
15	SOA 5, 9, 14, 15, 27			47.5	d	61.8	h	86.5	de	98.0	abc	97.8	ab	97.8	ab	175	bc
	VERDICT	10	oz/a	A													
	ARMEZON PRO	16	fl oz/a	C													
	Atrazine	16	fl oz/a	C													
	ROUNDUP POWERMAX	28.4	fl oz/a	C													
	COC	1	pt/a	C													
	N-Pa-K AMS	1.5	qt/a	C													
17	SOA 5, 9, 15, 27			33.8	fg	54.5	i	79.0	f	93.0	de	92.0	de	91.0	c	183	ab
	HARNESS	2.25	pt/a	A													
	IMPACTZ	8	oz/a	C													
	ROUNDUP POWERMAX	28.4	fl oz/a	C													
	DESTINY HC	0.5	% v/v	C													
	N-Pa-K AMS	1.5	qt/a	C													

<b>PRE (5/5/17) / POST III (6/12/17)</b>																	
8	SOA 2, 5, 9, 15, 27			56.3	c	87.5	bc	88.5	cde	92.3	de	98.3	ab	98.3	ab	185	ab
	BREAKFREE NXT LITE	1.75	qt/a		A												
	INSTIGATE - 5.25 OZ/A																
	- rimsulfuron	0.875	oz wt/a		A												
	- mesotrione	4.375	oz wt/a		A												
	ABUNDIT EXTRA	42	fl oz/a		D												
	N-Pa-K AMS	1.5	qt/a		D												
12	SOA 4, 9, 15, 27			53.8	c	90.5	b	91.8	bc	95.3	bcd	98.5	ab	98.8	ab	188	ab
	RESICORE	3	qt/a		A												
	DURANGO DMA	32	fl oz/a		D												
	N-Pa-K AMS	1.5	qt/a		D												
16	SOA 4, 9, 14, 15			83.0	b	83.8	cd	86.5	de	89.8	ef	98.0	ab	98.0	ab	182	b
	VERDICT	16	fl oz/a		A												
	ROUNDUP POWERMAX	28.4	fl oz/a		D												
	STATUS	5	oz wt/a		D												
	NIS	0.25	% v/v		D												
	N-Pa-K AMS	1.5	qt/a		D												
<b>POST I (5/25/17)</b>																	
19	SOA 4, 9, 15, 27			0.0	j	69.5	g	74.8	fg	71.5	i	75.5	hi	74.5	fg	122	e
	RESICORE	1.5	qt/a		B												
	DURANGO DMA	32	fl oz/a		B												
	N-Pa-K AMS	1.5	qt/a		B												
21	SOA 5, 9, 14, 15, 27			0.0	j	79.3	def	75.3	fg	71.5	i	74.5	i	73.3	fg	110	e
	SOLSTICE	2.5	fl oz/a		B												
	ANTHEM MAX	2	fl oz/a		B												
	ROUNDUP POWERMAX	28.4	fl oz/a		B												
	Atrazine	16	fl oz/a		B												
	NIS	0.25	% v/v		B												
	N-Pa-K AMS	1.5	qt/a		B												
22	SOA 2, 9, 27			0.0	j	72.8	fg	72.3	g	71.0	i	73.5	i	72.0	g	117	e
	REALM Q - 4 oz/A				B												
	- rimsulfuron	1.2	oz wt/a		B												
	- mesotrione	2.5	oz wt/a		B												
	- isoxadifen-ethyl	0.3	oz wt/a		B												
	ABUNDIT EXTRA	42	fl oz/a		B												
	NIS	0.25	% v/v		B												
	N-Pa-K AMS	1.5	qt/a		B												
24	Weed - Free			100.0	a	100.0	a	100.0	a	100.0	a	100.0	a	100.0	a	182	ab
<b>LSD P=-.10</b>				<b>6.2</b>		<b>6.6</b>		<b>5.1</b>		<b>3.9</b>		<b>3.2</b>		<b>3.1</b>		<b>18</b>	



<b>PRE (5/5/17) / POST III (6/12/17)</b>																
8	SOA 2, 5, 9, 15, 27				99.0	b	99.0	b	99.0	ab	99.0	ab	99.0	ab	185	ab
	BREAKFREE NXT LITE	1.75	qt/a	A												
	INSTIGATE - 5.25 OZ/A			A												
	- rimsulfuron	0.875	oz wt/a	A												
	- mesotrione	4.375	oz wt/a	A												
	ABUNDIT EXTRA	42	fl oz/a	D												
	N-Pa-K AMS	1.5	qt/a	D												
12	SOA 4, 9, 15, 27				99.0	b	99.0	b	99.0	ab	99.0	ab	99.0	ab	188	ab
	RESICORE	3	qt/a	A												
	DURANGO DMA	32	fl oz/a	D												
	N-Pa-K AMS	1.5	qt/a	D												
16	SOA 4, 9, 14, 15				99.0	b	98.3	cd	97.3	c	98.5	abc	98.8	abc	182	b
	VERDICT	16	fl oz/a	A												
	ROUNDUP POWERMAX	28.4	fl oz/a	D												
	STATUS	5	oz wt/a	D												
	NIS	0.25	% v/v	D												
	N-Pa-K AMS	1.5	qt/a	D												
<b>POST I (5/25/17)</b>																
19	SOA 4, 9, 15, 27				99.0	b	99.0	b	95.5	d	95.3	ef	95.0	fg	122	e
	RESICORE	1.5	qt/a	B												
	DURANGO DMA	32	fl oz/a	B												
	N-Pa-K AMS	1.5	qt/a	B												
21	SOA 5, 9, 14, 15, 27				99.0	b	99.0	b	97.3	c	97.8	bcd	97.8	bcd	110	e
	SOLSTICE	2.5	fl oz/a	B												
	ANTHEM MAX	2	fl oz/a	B												
	ROUNDUP POWERMAX	28.4	fl oz/a	B												
	Atrazine	16	fl oz/a	B												
	NIS	0.25	% v/v	B												
	N-Pa-K AMS	1.5	qt/a	B												
22	SOA 2, 9, 27				99.0	b	97.8	d	84.5	e	84.0	g	83.5	h	117	e
	REALM Q - 4 oz/A			B												
	- rimsulfuron	1.2	oz wt/a	B												
	- mesotrione	2.5	oz wt/a	B												
	- isoxadifen-ethyl	0.3	oz wt/a	B												
	ABUNDIT EXTRA	42	fl oz/a	B												
	NIS	0.25	% v/v	B												
	N-Pa-K AMS	1.5	qt/a	B												
24	Weed - Free			B	100.0	a	100.0	a	100.0	a	100.0	a	100.0	a	182	ab
<b>LSD P=.10</b>							0.5		1.2		1.8		1.4		18	





**Table 5. Grass control in herbicide systems for field corn at Rochester MN in 2017.**

Pest Code		Grass										YIELD Nov-6			
Pest Name		Grass species													
Rating Date		May-30		Jun-5		Jun-12		Jun-30		Oct-18		Bu/A			
Trt Treatment	Rate	Appl	Percent Control (%)												
23	Weedy		0.0	c	0.0	e	0.0	h	0.0	g	0.0	g	3	f	
<b>PRE (5/5/17)</b>															
1	SOA 5, 15, 27 ACURON	3 qt/a	A	99.0	b	99.0	b	97.3	bcd	96.3	b-e	96.0	bcd	178	bc
<b>PRE (5/5/17) / POST I (5/25/17)</b>															
2	SOA 15, 27 ACURON FLEXI ACURON FLEXI NIS N-Pa-K AMS	2.25 pt/a 2.25 pt/a 0.25 % v/v 1.5 qt/a	A B B B	99.0	b	99.0	b	94.5	e	93.8	e	92.8	e	192	ab
3	SOA 9, 15, 27 ACURON FLEXI HALEX GT NIS N-Pa-K AMS	2.25 pt/a 3.6 pt/a 0.25 % v/v 1.5 qt/a	A B B B	99.0	b	99.0	b	96.5	cde	97.8	abc	97.8	abc	189	ab
4	SOA 4, 9, 15 HARNES DIFLEXX ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a 10 fl oz/a 28.4 fl oz/a 0.5 % v/v 1.5 qt/a	A B B B B	99.0	b	99.0	b	98.5	a-d	96.8	bcd	96.0	bcd	174	bc
5	SOA 2, 5, 10, 27 CORVUS LIBERTY 280 ATRAZINE N-Pa-K AMS	5.6 fl oz/a 29 fl oz/a 16 fl oz/a 1.5 qt/a	A B B B	99.0	b	99.0	b	96.3	de	95.8	cde	94.8	cde	188	ab
6	SOA 4, 9, 15, 27 HARNES DIFLEXX DUO ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a 24 fl oz/a 28.4 fl oz/a 0.5 % v/v 1.5 qt/a	A B B B B	99.0	b	99.0	b	98.5	a-d	97.8	abc	97.0	a-d	148	d
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 42 fl oz/a 12 fl oz/a 0.25 % v/v 1.5 qt/a	A B B B B B B B	99.0	b	99.0	b	98.0	a-d	97.5	a-d	97.0	a-d	161	cd
18	SOA 9, 14, 15, 27 ANTHEM MAX SOLSTICE ROUNDUP POWERMAX N-Pa-K AMS	4 fl oz/a 3 fl oz/a 28.4 fl oz/a 1.5 qt/a	A B B B	99.0	b	98.8	bc	96.8	b-e	95.8	cde	95.0	cde	109	e
<b>PRE (5/5/17) / POST II (6/1/17)</b>															
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II IMPACT ROUNDUP POWERMAX MSO N-Pa-K AMS	2.5 pt/a 0.75 fl oz/a 28.4 fl oz/a 1 % v/v 1.5 qt/a	A C C C C	99.0	b	99.0	b	98.5	a-d	95.8	cde	94.3	de	188	ab
10	SOA 9, 15, 27 HARNES IMPACT ROUNDUP POWERMAX MSO N-Pa-K AMS	2.25 pt/a 0.75 fl oz/a 28.4 fl oz/a 1 % v/v 1.5 qt/a	A C C C C	99.0	b	99.0	b	98.8	abc	97.5	a-d	97.8	abc	184	ab
11	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II IMPACT WARRANT ROUNDUP POWERMAX MSO N-Pa-K AMS	2 pt/a 0.75 fl oz/a 1.5 qt/a 28.4 fl oz/a 1 % v/v 1.5 qt/a	A C C C C C	99.0	b	99.0	b	98.5	a-d	98.3	abc	97.5	abc	185	ab
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.5 qt/a 1.25 qt/a 32 fl oz/a 1.5 qt/a	A C C C	99.0	b	99.0	b	99.0	ab	99.0	ab	98.8	ab	200	a
14	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	A C C	99.0	b	99.0	b	99.0	ab	94.8	de	94.0	de	177	bc
15	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 28.4 fl oz/a 1 pt/a 1.5 qt/a	A C C C C C	99.0	b	99.0	b	98.8	abc	98.0	abc	98.3	ab	175	bc
17	SOA 5,9,15,27 HARNES IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	2.25 pt/a 8 oz/a 28.4 fl oz/a 0.5 % v/v 1.5 qt/a	A C C C C	99.0	b	99.0	b	99.0	ab	98.5	abc	98.3	ab	183	ab



<b>PRE (5/5/17) / POST III (6/12/17)</b>															
8	SOA 2, 5, 9, 15, 27			99.0	b	99.0	b	96.3	de	98.8	ab	98.5	ab	184	ab
	BREAKFREE NXT LITE	1.75	qt/a	A											
	INSTIGATE - 5.25 OZ/A														
	- rimsulfuron	0.875	oz wt/a	A											
	- mesotrione	4.375	oz wt/a	A											
	ABUNDIT EXTRA	42	fl oz/a	D											
	N-Pa-K AMS	1.5	qt/a	D											
12	SOA 4, 9, 15, 27			99.0	b	99.0	b	97.0	bcd	97.5	a-d	97.0	a-d	188	ab
	RESICORE	3	qt/a	A											
	DURANGO DMA	32	fl oz/a	D											
	N-Pa-K AMS	1.5	qt/a	D											
16	SOA 4, 9, 14, 15			99.0	b	99.0	b	97.0	bcd	98.8	ab	99.0	ab	182	b
	VERDICT	16	fl oz/a	A											
	ROUNDUP POWERMAX	28.4	fl oz/a	D											
	STATUS	5	oz wt/a	D											
	NIS	0.25	% v/v	D											
	N-Pa-K AMS	1.5	qt/a	D											
<b>POST I (5/25/17)</b>															
19	SOA 4, 9, 15, 27			99.0	b	98.0	c	72.5	f	82.3	f	80.5	f	122	e
	RESICORE	1.5	qt/a	B											
	DURANGO DMA	32	fl oz/a	B											
	N-Pa-K AMS	1.5	qt/a	B											
21	SOA 5, 9, 14, 15, 27			99.0	b	94.5	d	70.0	g	80.0	f	77.8	f	110	e
	SOLSTICE	2.5	fl oz/a	B											
	ANTHEM MAX	2	fl oz/a	B											
	ROUNDUP POWERMAX	28.4	fl oz/a	B											
	Atrazine	16	fl oz/a	B											
	NIS	0.25	% v/v	B											
	N-Pa-K AMS	1.5	qt/a	B											
22	SOA 2, 9, 27			99.0	b	95.0	d	73.0	f	80.0	f	79.0	f	117	e
	REALM Q - 4 oz/A			B											
	- rimsulfuron	1.2	oz wt/a	B											
	- mesotrione	2.5	oz wt/a	B											
	- isoxadifen-ethyl	0.3	oz wt/a	B											
	ABUNDIT EXTRA	42	fl oz/a	B											
	NIS	0.25	% v/v	B											
	N-Pa-K AMS	1.5	qt/a	B											
24	Weed - Free			100.0	a	100.0	a	100.0	a	100.0	a	100.0	a	182	ab
<b>LSD P=.10</b>						0.8		2.5		2.9		3.2		18	

**Table 6. Crop response and lodging at harvest in herbicide systems for field corn at Rochester MN in 2017.**

Rating Type			CROP RESPONSE				LODGING		YIELD	
Rating Date			May-19	May-30	Jun-5	Jun-12	Oct-18	Nov-6		
Trt	Treatment	Rate Appl	%						BU/A	
23	Weedy		0	0 d	0 b	0 b		3	f	
<b>PRE (5/5/17)</b>										
1	SOA 5, 15, 27 ACURON	3 qt/a A	0	0 d	0 b	0 b	35 cde	178	bc	
<b>PRE (5/5/17) / POST I (5/25/17)</b>										
2	SOA 15, 27 ACURON FLEXI ACURON FLEXI NIS N-Pa-K AMS	2.25 pt/a A 2.25 pt/a B 0.25 % v/v B 1.5 qt/a B	0	0 d	0 b	0 b	33 de	192	ab	
3	SOA 9, 15, 27 ACURON FLEXI HALEX GT NIS N-Pa-K AMS	2.25 pt/a A 3.6 pt/a B 0.25 % v/v B 1.5 qt/a B	0	0 d	0 b	0 b	33 de	189	ab	
4	SOA 4, 9, 15 HARNES DIFLEXX ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a A 10 fl oz/a B 28.4 fl oz/a B 0.5 % v/v B 1.5 qt/a B	0	0 d	0 b	0 b	48 a-d	174	bc	
5	SOA 2, 5, 10, 27 CORVUS LIBERTY 280 ATRAZINE N-Pa-K AMS	5.6 fl oz/a A 29 fl oz/a B 16 fl oz/a B 1.5 qt/a B	0	0 d	0 b	0 b	30 ef	188	ab	
6	SOA 4, 9, 15, 27 HARNES DIFLEXX DUO ROUNDUP POWERMAX Destiny HC N-Pa-K AMS	1.25 pt/a A 24 fl oz/a B 28.4 fl oz/a B 0.5 % v/v B 1.5 qt/a B	0	0 d	0 b	0 b	53 ab	148	d	
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 A B 1.2 oz wt/a B 2.5 oz wt/a B 0.3 oz wt/a B 42 fl oz/a B 12 fl oz/a B 0.25 % v/v B 1.5 qt/a B	0	0 d	0 b	0 b	35 cde	161	cd	
18	SOA 9, 14, 15, 27 ANTHEM MAX SOLSTICE ROUNDUP POWERMAX N-Pa-K AMS	4 fl oz/a A 3 fl oz/a B 28.4 fl oz/a B 1.5 qt/a B	0	20 b	5 a	0 b	50 abc	109	e	
<b>PRE (5/5/17) / POST II (6/1/17)</b>										
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II IMPACT ROUNDUP POWERMAX MSO N-Pa-K AMS	2.5 pt/a A 0.75 fl oz/a C 28.4 fl oz/a C 1 % v/v C 1.5 qt/a C	0	0 d	0 b	0 b	30 ef	188	ab	
10	SOA 9, 15, 27 HARNES IMPACT ROUNDUP POWERMAX MSO N-Pa-K AMS	2.25 pt/a A 0.75 fl oz/a C 28.4 fl oz/a C 1 % v/v C 1.5 qt/a C	0	0 d	0 b	0 b	30 ef	184	ab	
11	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II IMPACT WARRANT ROUNDUP POWERMAX MSO N-Pa-K AMS	2 pt/a A 0.75 fl oz/a C 1.5 qt/a C 28.4 fl oz/a C 1 % v/v C 1.5 qt/a C	0	0 d	0 b	0 b	35 cde	185	ab	
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.5 qt/a A 1.25 qt/a C 32 fl oz/a C 1.5 qt/a C	0	0 d	0 b	0 b	28 ef	200	a	
14	SOA 2, 4, 9, 15 SURESTART II DURANGO DMA N-Pa-K AMS	2.5 pt/a A 32 fl oz/a C 1.5 qt/a C	0	0 d	0 b	0 b	35 cde	177	bc	
15	SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 oz/a A 16 fl oz/a C 16 fl oz/a C 28.4 fl oz/a C 1 pt/a C 1.5 qt/a C	0	0 d	0 b	0 b	38 b-e	175	bc	
17	SOA 5, 9, 15, 27 HARNES IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	2.25 pt/a A 8 oz/a C 28.4 fl oz/a C 0.5 % v/v C 1.5 qt/a C	0	0 d	0 b	0 b	23 ef	183	ab	

<b>PRE (5/5/17) / POST III (6/12/17)</b>													
8	SOA 2, 5, 9, 15, 27		0	0	d	0	b	0	b	15	f	184	ab
	BREAKFREE NXT LITE	1.75 qt/a											
	INSTIGATE - 5.25 OZ/A												
	- rimsulfuron	0.875 oz wt/a											
	- mesotrione	4.375 oz wt/a											
	ABUNDIT EXTRA	42 fl oz/a											
	N-Pa-K AMS	1.5 qt/a											
12	SOA 4, 9, 15, 27		0	0	d	0	b	0	b	28	ef	188	ab
	RESICORE	3 qt/a											
	DURANGO DMA	32 fl oz/a											
	N-Pa-K AMS	1.5 qt/a											
16	SOA 4, 9, 14, 15		0	0	d	0	b	10	a	15	f	182	b
	VERDICT	16 fl oz/a											
	ROUNDUP POWERMAX	28.4 fl oz/a											
	STATUS	5 oz wt/a											
	NIS	0.25 % v/v											
	N-Pa-K AMS	1.5 qt/a											
<b>POST I (5/25/17)</b>													
19	SOA 4, 9, 15, 27		0	18	b	5	a	0	b	55	a	122	e
	RESICORE	1.5 qt/a											
	DURANGO DMA	32 fl oz/a											
	N-Pa-K AMS	1.5 qt/a											
21	SOA 5, 9, 14, 15, 27		0	26	a	5	a	0	b	58	a	110	e
	SOLSTICE	2.5 fl oz/a											
	ANTHEM MAX	2 fl oz/a											
	ROUNDUP POWERMAX	28.4 fl oz/a											
	Atrazine	16 fl oz/a											
	NIS	0.25 % v/v											
	N-Pa-K AMS	1.5 qt/a											
22	SOA 2, 9, 27		0	6	c	0	b	0	b	58	a	117	e
	REALM Q - 4 oz/A												
	- rimsulfuron	1.2 oz wt/a											
	- mesotrione	2.5 oz wt/a											
	- isoxadifen-ethyl	0.3 oz wt/a											
	ABUNDIT EXTRA	42 fl oz/a											
	NIS	0.25 % v/v											
	N-Pa-K AMS	1.5 qt/a											
24	Weed - Free		0	0	d	0	b	0	b	35	cde	182	ab
<b>LSD P=.10</b>				2.5						16		18	