

## Comparisons of Herbicide Systems for Weed Control in Field Corn at Rochester, MN in 2018.

Behnken, Lisa M., Ryan P. Miller, Fritz R. Breitenbach, Jeffery L. Gunsolus, and Thomas R. Hoverstad

The objective of this trial was to evaluate herbicide systems for weed control in field corn in southeastern Minnesota. The research site was a loamy sand series with a pH of 6.4, O.M. of 2.4%, and soil test P and K levels of 35 ppm and 165 ppm, respectively. Spring fertilizer was broadcast on April 30, 2018 at a rate of 120-52-120-24 lbs (N-P-K-S)/A. The field was disked and field cultivated prior to planting. The previous crop was soybean. The corn hybrid, Enlist SmartStax MY00T28, was planted May 16, 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) and most postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi using TTI 110015 tips. Postemergence (POST) treatments that included Liberty herbicide were applied at 15 gpa and 40 PSI using TurboTee 110015 tips. Evaluations of the plots were taken May 31, June 7, June 15, and September 10, 2018. The center two rows of each plot were machine harvested on November 1, 2018. Application dates, environmental conditions and weed stages are 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

Nineteen of the treatments had a PRE herbicide component. Nine treatments included atrazine (SOA 5). There were eight different SOAs (2, 4, 5, 9, 10, 14, 15 and 27) included in this trial. All treatments provided excellent control of common lambsquarters, common waterhemp and grass species. There were some differences in early season giant ragweed control, May 31 rating, Table 1. Anthem MAXX at 4 fl oz/a applied as a PRE was the weakest PRE for giant ragweed control, providing only 25% control, May 31 rating. However, after Callisto at 3 fl oz/a plus Roundup PowerMax herbicides were applied at POST II, giant ragweed control reached 98% by June 7 rating and a final rating of 96% on September 10. Acuron Flexi at 1.12 qt/a resulted in early season giant ragweed control of 71%, but this improved to 97% after the POST II application of Halex GT at 3.6 pt/a plus atrazine at 16 fl oz/a. Most of the herbicides programs achieved 97% or higher control by September 10 rating. Three programs provided 93% giant ragweed control, which was significantly lower than the other programs. These programs were Trt 17. PRE Harness at 36 oz/a / POST II ImpactZ at 8 oz/a + Roundup PowerMax at 32 fl oz/a, Trt 20. POST I Anthem Maxx at 3 fl oz/a + Callisto at 3 fl oz/a + Roundup Power MAXX at 32 fl oz / a + atrazine at 16 fl oz /a and Trt. 22 POST I Breakfree NXT at 1 pt/a + RealmQ at 4 oz/a + Abundit Edge at 32 fl oz/a. (University of Minnesota Extension Regional Office, Rochester.)

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

Date	5/17	5/25	6/1	6/6
<b>Treatment</b>	PRE (A)	POST I (B)	POST II (C)	POST III (D)
<b>Temperature (F)</b>				
Air	79	78	79	71
Soil	61.3	72.5	75.4	75.0
<b>Relative Humidity (%)</b>	45	68	69	61
<b>Wind (mph)</b>	3	15	9	7
<b>Soil Moisture</b>	Normal	Normal	Normal	Normal
<b>Corn</b>				
Stage		VE	3-collar	4-collar
Height (in)		1.5	7.6	10.5
<b>Giant Ragweed</b>				
Weed Density (ft <sup>2</sup> )			11	
Height (in)	0.0	0.0	3.0	4.8
<b>Common Lambsquarters</b>				
Weed Density (ft <sup>2</sup> )			2	
Height (in)	0.0	0.0	0.9	1.4
<b>Common Waterhemp</b>				
Weed Density (ft <sup>2</sup> )			8	
Height (in)	0.0	0.0	0.5	2.0
<b>Grass</b>				
Weed Density (ft <sup>2</sup> )			1	
Height (in)	0.0	0.0	0.8	1.5
<b>Rainfall after each application (inch)</b>				
Week 1	0.35	1.39	0.51	0.93
Week 2	1.39	0.51	0.42	1.87
Week 3	0.0	0.42	2.63	2.89

**Table 2. Giant ragweed control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code	AMBTR GIANT RAGWEED				YIELD		
	May-31-2018	Jun-7-2018	Jun-15-2018	Sep-10-2018			
Rating Date	PRECENT CONTROL (%)				BU/A		
Trt Treatment	Rate	Appl					
23 Weedy			0 k	0 j	0 h	0 d	11.2 c
24 Weed - Free		C	91 bcd	99 a	99 a	99 a	166.8 ab
<b>PRE (5/17/18)</b>							
1 SOA 5, 15, 27 ACURON	3 qt/a	A	96 a	97 a-d	97 b-e	98 ab	161.8 b
<b>PRE (5/17/18) / POST I (5/25/18)</b>							
2 SOA 9, 15, 27 ACURON FLEXI ACURON FLEXI ROUNDUP POWERMAX N-Pa-K AMS	1.12 qt/a 1.12 qt/a 32 fl oz/a 1.5 qt/a	A B B B	96 a	98 abc	97 b-e	98 ab	178.9 ab
<b>PRE (5/17/18) / POST II (6/1/18)</b>							
3 SOA 5, 9, 15, 27 ACURON FLEXI HALEX GT ATRAZINE NIS N-Pa-K AMS	1.12 qt/a 3.6 pt/a 16 fl oz/a 0.25 % v/v 1.5 qt/a	A C C C C	71 i	97 a-d	97 b-e	98 ab	173.7 ab
5 SOA 2, 9, 27 CORVUS ROUNDUP POWERMAX N-Pa-K AMS	5.6 fl oz/a 32 fl oz/a 1.5 qt/a	A C C	87 def	99 ab	98 abc	98 ab	173.0 ab
7 SOA 2, 5, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - Isoxadifen-ethyl ABUNDIT EDGE 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 1.5 pt/a 0.25 % v/v 1.5 qt/a	A C C C C C C C	82 fgh	99 a	99 abc	99 a	163.5 b
10 SOA 9, 15, 27 HARNESS HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	32 fl oz/a 40 fl oz/a 32 fl oz/a 1.5 qt/a	A C C C	82 gh	98 abc	97 cde	97 b	183.2 ab
17 SOA 5,9,15,27 HARNESS IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	36 oz/a 8 oz/a 32 fl oz/a 0.5 % v/v 1.5 qt/a	A C C C C	80 h	98 abc	95 ef	93 c	177.0 ab
18 SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 fl oz/a 3 fl oz/a 32 fl oz/a 1.5 qt/a 0.25 % v/v	A C C C C	25 j	98 abc	96 de	97 ab	173.5 ab
19 SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 fl oz/a 5 fl oz/a 32 fl oz/a 1.5 qt/a 0.25 % v/v	A A C C C	86 efg	98 abc	98 a-d	98 ab	180.8 ab
<b>PRE (5/17/18) / POST III (6/6/18)</b>							
4 SOA 5, 10, 15, 27 BALANCE FLEXX HARNESS ATRAZINE LIBERTY 280 N-Pa-K AMS	3.5 fl oz/a 2 pt/a 1.5 pt/a 32 fl oz/a 3 qt/a	A A A D D	95 ab	98 abc	99 abc	98 ab	189.8 a
6 SOA 4, 5, 27 BALANCE FLEXX ATRAZINE DIFLEXX DUO COC N-Pa-K AMS	3.5 fl oz/a 1.5 pt/a 28 fl oz/a 1 % v/v 1.5 qt/a	A A D D D	94 abc	96 bcd	99 ab	99 a	168.9 ab
8 SOA 2, 4, 9, 15 SURESTART II ENLIST DUO N-Pa-K AMS	2 pt/a 4.75 pt/a 1.5 qt/a	A D D	90 cde	93 fg	99 a	99 a	175.6 ab

**Table 2 (continued). Giant ragweed control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code	AMBTR GIANT RAGWEED				YIELD			
	May-31-2018	Jun-7-2018	Jun-15-2018	Sep-10-2018				
Trt Treatment	Rate	Appl	PERCENT CONTROL (%)			BU/A		
<b>PRE (5/17/18) / POST III (6/6/18)</b>								
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II HARNES MAX ROUNDUP POWERMAX N-Pa-K AMS	1 qt/a 40 fl oz/a 32 fl oz/a 1.5 qt/a	A D D D	90 cde	90 h	99 a	99 a	173.3 ab
11	SOA 4, 9, 15, 27 HARNES MAX DIFLEXX ROUNDUP POWERMAX N-Pa-K AMS NIS	64 fl oz/a 8 fl oz/a 32 fl oz/a 1.5 qt/a 0.25 % v/v	A D D D D	94 abc	98 abc	99 a	99 a	178.5 ab
12	SOA 2, 4, 5, 9, 15, 27 SURESTART II REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE ATRAZINE 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 1.5 pt/a 1.5 qt/a	A D D D D D D	90 cde	87 i	99 ab	99 a	169.5 ab
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.25 qt/a 1.25 qt/a 36 fl oz/a 1.5 qt/a	A D D D	94 abc	96 cde	99 a	99 a	178.5 ab
14	SOA 2, 4, 9, 15, 27 SURESTART II RESICORE DURANGO DMA N-Pa-K AMS	2 pt/a 1.25 qt/a 36 fl oz/a 1.5 qt/a	A D D D	91 bcd	92 gh	99 a	99 a	171.8 ab
15	SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 fl oz/a 16 fl oz/a 16 fl oz/a 32 fl oz/a 1 pt/a 1.5 qt/a	A D D D D D	91 bcd	85 i	99 a	99 a	174.8 ab
16	SOA 4, 9,14,15 VERDICT ROUNDUP POWERMAX STATUS COC N-Pa-K AMS	16 fl oz/a 32 fl oz/a 5 oz wt/a 1 pt/a 1.5 qt/a	A D D D D	94 abc	94 efg	99 a	99 a	180.7 ab
<b>POST I (5/25/18)</b>								
20	SOA 5, 9,14,15,27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX Atrazine N-Pa-K AMS NIS	3 fl oz/a 3 fl oz/a 32 fl oz/a 16 fl oz/a 1.5 qt/a 0.25 % v/v	B B B B B B	97 a	95 def	92 g	93 c	168.9 ab
21	SOA 4, 9, 15, 27 RESICORE ENLIST DUO N-Pa-K AMS	1.75 qt/a 3.5 pt/a 1.5 qt/a	B B B	99 a	98 abc	98 a-d	98 ab	177.6 ab
22	SOA 2, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE N-Pa-K AMS	1 pt/a 1.2 oz wt/a 2.5 oz wt/a 0.3 oz wt/a 32 fl oz/a 1.5 qt/a	B B B B B B	95 ab	97 a-d	93 fg	93 c	172.9 ab
LSD P=.10				4.8	2.6	2.1	2.2	24.3

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

**Table 3. Common lambsquarters control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code		CHEAL								YIELD				
		COMMON LAMBSQUARTERS												
Rating Date		May-31-2018		Jun-7-2018		Jun-15-2018		Sep-10-2018						
Trt	Treatment	Rate	Appl	PRECENT CONTROL (%)								BU/A		
23	Weedy			0	b	0	b	0	c	0	d	11.2	c	
24	Weed - Free		C	99	a	99	a	99	a	99	a	166.8	ab	
<b>PRE (5/17/18)</b>														
1	SOA 5, 15, 27 ACURON	3	qt/a	A	99	a	99	a	99	a	99	a	161.8	b
<b>PRE (5/17/18) / POST I (5/25/18)</b>														
2	SOA 9, 15, 27 ACURON FLEXI ACURON FLEXI ROUNDUP POWERMAX N-Pa-K AMS	1.12 1.12 32 1.5	qt/a qt/a fl oz/a qt/a	A B B B	99	a	99	a	99	a	99	a	178.9	ab
<b>PRE (5/17/18) / POST II (6/1/18)</b>														
3	SOA 5, 9, 15, 27 ACURON FLEXI HALEX GT ATRAZINE NIS N-Pa-K AMS	1.12 3.6 16 0.25 1.5	qt/a pt/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	a	173.7	ab
5	SOA 2, 9, 27 CORVUS ROUNDUP POWERMAX N-Pa-K AMS	5.6 32 1.5	fl oz/a fl oz/a qt/a	A C C	99	a	99	a	99	a	99	a	173.0	ab
7	SOA 2, 5, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - Isoxadifen-ethyl ABUNDIT EDGE Atrazine NIS N-Pa-K AMS	2 1.2 2.5 0.3 32 1.5 0.25 1.5	pt/a oz wt/a oz wt/a oz wt/a fl oz/a pt/a % v/v qt/a	A C C C C C C C	99	a	99	a	99	a	99	a	163.5	b
10	SOA 9, 15, 27 HARNESS HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	32 40 32 1.5	fl oz/a fl oz/a fl oz/a qt/a	A C C C	99	a	99	a	99	a	99	a	183.2	ab
17	SOA 5,9,15,27 HARNESS IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	36 8 32 0.5 1.5	oz/a oz/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	c	177.0	ab
18	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 3 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A C C C C	99	a	99	a	99	a	99	a	173.5	ab
19	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 5 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A A C C C	99	a	99	a	99	a	99	a	180.8	ab
<b>PRE (5/17/18) / POST III (6/6/18)</b>														
4	SOA 5, 10, 15, 27 BALANCE FLEXX HARNESS ATRAZINE LIBERTY 280 N-Pa-K AMS	3.5 2 1.5 32 3	fl oz/a pt/a pt/a fl oz/a qt/a	A A A D D	99	a	99	a	99	a	99	a	189.8	a
6	SOA 4, 5, 27 BALANCE FLEXX ATRAZINE DIFLEXX DUO COC N-Pa-K AMS	3.5 1.5 28 1 1.5	fl oz/a pt/a fl oz/a % v/v qt/a	A A D D D	99	a	99	a	99	a	99	a	168.9	ab
8	SOA 2, 4, 9, 15 SURESTART II ENLIST DUO N-Pa-K AMS	2 4.75 1.5	pt/a pt/a qt/a	A D D	99	a	99	a	99	a	99	b	175.6	ab

**Table 3 (continued). Common lambsquarters control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code	CHEAL				COMMON LAMBSQUARTERS				YIELD	
	Rating Date				May-31-2018	Jun-7-2018	Jun-15-2018	Sep-10-2018		
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)				BU/A		
<b>PRE (5/17/18) / POST III (6/6/18)</b>										
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	1 40 32 1.5	qt/a fl oz/a fl oz/a qt/a	A D D D	99 a	99 a	99 a	99 a	173.3	ab
11	SOA 4, 9, 15, 27 HARNESS MAX DIFLEXX ROUNDUP POWERMAX N-Pa-K AMS NIS	64 8 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A D D D D	99 a	99 a	99 a	99 a	178.5	ab
12	SOA 2, 4, 5, 9, 15, 27 SURESTART II REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE ATRAZINE N-Pa-K AMS	2 1.2 2.5 0.3 32 1.5 1.5	pt/a oz wt/a oz wt/a oz wt/a fl oz/a pt/a qt/a	A D D D D D D	99 a	99 a	99 a	99 a	169.5	ab
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.25 1.25 36 1.5	qt/a qt/a fl oz/a qt/a	A D D D	99 a	99 a	99 a	99 a	178.5	ab
14	SOA 2, 4, 9, 15, 27 SURESTART II RESICORE DURANGO DMA N-Pa-K AMS	2 1.25 36 1.5	pt/a qt/a fl oz/a qt/a	A D D D	99 a	99 a	99 a	99 a	171.8	ab
15	SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 16 16 32 1 1.5	fl oz/a fl oz/a fl oz/a fl oz/a pt/a qt/a	A D D D D D	99 a	99 a	99 a	99 a	174.8	ab
16	SOA 4, 9,14,15 VERDICT ROUNDUP POWERMAX STATUS COC N-Pa-K AMS	16 32 5 1 1.5	fl oz/a fl oz/a oz wt/a pt/a qt/a	A D D D D	99 a	99 a	99 a	99 b	180.7	ab
<b>POST I (5/25/18)</b>										
20	SOA 5, 9,14,15,27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX Atrazine N-Pa-K AMS NIS	3 3 32 16 1.5 0.25	fl oz/a fl oz/a fl oz/a fl oz/a qt/a % v/v	B B B B B B	99 a	99 a	99 b	99 a	168.9	ab
21	SOA 4, 9, 15, 27 RESICORE ENLIST DUO N-Pa-K AMS	1.75 3.5 1.5	qt/a pt/a qt/a	B B B	99 a	99 a	99 a	99 a	177.6	ab
22	SOA 2, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE N-Pa-K AMS	1 1.2 2.5 0.3 32 1.5	pt/a oz wt/a oz wt/a oz wt/a fl oz/a qt/a	B B B B B B	99 a	99 a	99 a	99 a	172.9	ab
LSD P=.10					NS	NS	0.1	0.2	24.3	

**Table 4. Common waterhemp control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code				AMATA COMMON WATERHEMP								YIELD		
				May-31-2018		Jun-7-2018		Jun-15-2018		Sep-10-2018				
Rating	Date			PERCENT CONTROL (%)								BU/A		
Trt	Treatment	Rate	Appl											
23	Weedy			0	b	0	b	0	d	0	d	11.2	c	
24	Weed - Free		C	99	a	99	a	99	a	99	a	166.8	ab	
<b>PRE (5/17/18)</b>														
1	SOA 5, 15, 27 ACURON	3	qt/a	A	99	a	99	a	99	a	99	a	161.8	b
<b>PRE (5/17/18) / POST I (5/25/18)</b>														
2	SOA 9, 15, 27 ACURON FLEXI ACURON FLEXI ROUNDUP POWERMAX N-Pa-K AMS	1.12 1.12 32 1.5	qt/a qt/a fl oz/a qt/a	A B B B	99	a	99	a	99	b	99	b	178.9	ab
<b>PRE (5/17/18) / POST II (6/1/18)</b>														
3	SOA 5, 9, 15, 27 ACURON FLEXI HALEX GT ATRAZINE NIS N-Pa-K AMS	1.12 3.6 16 0.25 1.5	qt/a pt/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	a	173.7	ab
5	SOA 2, 9, 27 CORVUS ROUNDUP POWERMAX N-Pa-K AMS	5.6 32 1.5	fl oz/a fl oz/a qt/a	A C C	99	a	99	a	99	c	98	c	173.0	ab
7	SOA 2, 5, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - Isoxadifen-ethyl ABUNDIT EDGE Atrazine NIS N-Pa-K AMS	2   1.2 2.5 0.3 32 1.5 0.25 1.5	pt/a   oz wt/a oz wt/a oz wt/a fl oz/a pt/a % v/v qt/a	A C C C C C C C C	99	a	99	a	99	a	99	a	163.5	b
10	SOA 9, 15, 27 HARNESS HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	32 40 32 1.5	fl oz/a fl oz/a fl oz/a qt/a	A C C C	99	a	99	a	99	a	99	a	183.2	ab
17	SOA 5,9,15,27 HARNESS IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	36 8 32 0.5 1.5	oz/a oz/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	a	177.0	ab
18	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 3 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A C C C C	99	a	99	a	99	b	99	a	173.5	ab
19	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 5 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A A C C C	99	a	99	a	99	a	99	a	180.8	ab
<b>PRE (5/17/18) / POST III (6/6/18)</b>														
4	SOA 5, 10, 15, 27 BALANCE FLEXX HARNESS ATRAZINE LIBERTY 280 N-Pa-K AMS	3.5 2 1.5 32 3	fl oz/a pt/a pt/a fl oz/a qt/a	A A A D D	99	a	99	a	99	a	99	a	189.8	a
6	SOA 4, 5, 27 BALANCE FLEXX ATRAZINE DIFLEXX DUO COC N-Pa-K AMS	3.5 1.5 28 1 1.5	fl oz/a pt/a fl oz/a % v/v qt/a	A A D D D	99	a	99	a	99	a	99	ab	168.9	ab

**Table 4 (continued). Common waterhemp control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code				AMATA				YIELD	
				COMMON WATERHEMP					
Rating Date				May-31-2018	Jun-7-2018	Jun-15-2018	Sep-10-2018		
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)				BU/A	
<b>PRE (5/17/18) / POST III (6/6/18)</b>									
8	SOA 2, 4, 9, 15 SURESTART II ENLIST DUO N-Pa-K AMS	2 4.75 1.5	pt/a pt/a qt/a	A D D	99 99	a a	99 99	a a	175.6 ab
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	1 40 32 1.5	qt/a fl oz/a fl oz/a qt/a	A D D D	99 99	a a	99 99	a a	173.3 ab
11	SOA 4, 9, 15, 27 HARNESS MAX DIFLEXX ROUNDUP POWERMAX N-Pa-K AMS NIS	64 8 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A D D D D	99 99	a a	99 99	a a	178.5 ab
12	SOA 2, 4, 5, 9, 15, 27 SURESTART II REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE ATRAZINE N-Pa-K AMS	2 1.2 2.5 0.3 32 1.5 1.5	pt/a D oz wt/a oz wt/a oz wt/a fl oz/a pt/a qt/a	A D D D D D D	99 99	a a	99 99	a a	169.5 ab
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.25 1.25 36 1.5	qt/a qt/a fl oz/a qt/a	A D D D	99 99	a a	99 99	a a	178.5 ab
14	SOA 2, 4, 9, 15, 27 SURESTART II RESICORE DURANGO DMA N-Pa-K AMS	2 1.25 36 1.5	pt/a qt/a fl oz/a qt/a	A D D D	99 99	a a	99 99	a a	171.8 ab
15	SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 16 16 32 1 1.5	fl oz/a fl oz/a fl oz/a fl oz/a pt/a qt/a	A D D D D D	99 99	a a	99 99	a a	174.8 ab
16	SOA 4, 9,14,15 VERDICT ROUNDUP POWERMAX STATUS COC N-Pa-K AMS	16 32 5 1 1.5	fl oz/a fl oz/a oz wt/a pt/a qt/a	A D D D D	99 99	a a	99 99	a a	180.7 ab
<b>POST I (5/25/18)</b>									
20	SOA 5, 9,14,15,27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX Atrazine N-Pa-K AMS NIS	3 3 32 16 1.5 0.25	fl oz/a fl oz/a fl oz/a fl oz/a qt/a % v/v	B B B B B B	99 99	a a	99 99	a a	168.9 ab
21	SOA 4, 9, 15, 27 RESICORE ENLIST DUO N-Pa-K AMS	1.75 3.5 1.5	qt/a pt/a qt/a	B B B	99 99	a a	99 99	a a	177.6 ab
22	SOA 2, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE N-Pa-K AMS	1 1.2 2.5 0.3 32 1.5	pt/a B oz wt/a oz wt/a oz wt/a fl oz/a qt/a	B B B B B B	99 99	a a	99 99	a a	172.9 ab
LSD P=.10				NS	NS	0.2	0.5	24.3	

**Table 5. Grass control in corn herbicide systems at Rochester, MN in 2018.**

Pest Code		GRASS								YIELD				
Rating Date		May-31-2018		Jun-7-2018		Jun-15-2018		Sep-10-2018						
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)								BU/A		
23	Weedy			0	b	0	c	0	c	0	d	11.2	c	
24	Weed - Free		C	99	a	99	a	99	a	99	a	166.8	ab	
<b>PRE (5/17/18)</b>														
1	SOA 5, 15, 27 ACURON	3	qt/a	A	99	a	99	a	99	a	99	a	161.8	b
<b>PRE (5/17/18) / POST I (5/25/18)</b>														
2	SOA 9, 15, 27 ACURON FLEXI ACURON FLEXI ROUNDUP POWERMAX N-Pa-K AMS	1.12 1.12 32 1.5	qt/a qt/a fl oz/a qt/a	A B B B	99	a	99	a	99	a	99	a	178.9	ab
<b>PRE (5/17/18) / POST II (6/1/18)</b>														
3	SOA 5, 9, 15, 27 ACURON FLEXI HALEX GT ATRAZINE NIS N-Pa-K AMS	1.12 3.6 16 0.25 1.5	qt/a pt/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	a	173.7	ab
5	SOA 2, 9, 27 CORVUS ROUNDUP POWERMAX N-Pa-K AMS	5.6 32 1.5	fl oz/a fl oz/a qt/a	A C C	99	a	99	a	99	a	99	a	173.0	ab
7	SOA 2, 5, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - Isoxadifen-ethyl ABUNDIT EDGE Atrazine NIS N-Pa-K AMS	2 1.2 2.5 0.3 32 1.5 0.25 1.5	pt/a oz wt/a oz wt/a oz wt/a fl oz/a pt/a % v/v qt/a	A C C C C C C C	99	a	99	a	99	a	99	a	163.5	b
10	SOA 9, 15, 27 HARNESS HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	32 40 32 1.5	fl oz/a fl oz/a fl oz/a qt/a	A C C C	99	a	99	a	99	a	99	a	183.2	ab
17	SOA 5,9,15,27 HARNESS IMPACTZ ROUNDUP POWERMAX DESTINY HC N-Pa-K AMS	36 8 32 0.5 1.5	oz/a oz/a fl oz/a % v/v qt/a	A C C C C	99	a	99	a	99	a	99	a	177.0	ab
18	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 3 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A C C C C	99	a	99	a	99	a	99	a	173.5	ab
19	SOA 9, 14, 15, 27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX N-Pa-K AMS NIS	4 5 32 1.5 0.25	fl oz/a fl oz/a fl oz/a qt/a % v/v	A A C C C	99	a	99	a	99	a	99	a	180.8	ab
<b>PRE (5/17/18) / POST III (6/6/18)</b>														
4	SOA 5, 10, 15, 27 BALANCE FLEXX HARNESS ATRAZINE LIBERTY 280 N-Pa-K AMS	3.5 2 1.5 32 3	fl oz/a pt/a pt/a fl oz/a qt/a	A A A D D	99	a	99	a	99	a	99	a	189.8	a
6	SOA 4, 5, 27 BALANCE FLEXX ATRAZINE DIFLEXX DUO COC N-Pa-K AMS	3.5 1.5 28 1 1.5	fl oz/a pt/a fl oz/a % v/v qt/a	A A D D D	99	a	99	a	99	a	99	a	168.9	ab
8	SOA 2, 4, 9, 15 SURESTART II ENLIST DUO N-Pa-K AMS	2 4.75 1.5	pt/a pt/a qt/a	A D D	99	a	99	a	99	a	99	a	175.6	ab



**Table 5 (continued). Grass control in corn herbicide systems at Rochester, MN in 2018.**

Rating Date				GRASS				YIELD	
				May-31-2018	Jun-7-2018	Jun-15-2018	Sep-10-2018		
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)				BU/A	
<b>PRE (5/17/18) / POST III (6/6/18)</b>									
9	SOA 2, 4, 9, 15, 27 TRIPLEFLEX II HARNESS MAX ROUNDUP POWERMAX N-Pa-K AMS	1 qt/a 40 fl oz/a 32 fl oz/a 1.5 qt/a	A D D D	99 a	99 a	99 a	99 a	173.3 ab	
11	SOA 4, 9, 15, 27 HARNESS MAX DIFLEXX ROUNDUP POWERMAX N-Pa-K AMS NIS	64 fl oz/a 8 fl oz/a 32 fl oz/a 1.5 qt/a 0.25 % v/v	A D D D D	99 a	99 a	99 a	99 a	178.5 ab	
12	SOA 2, 4, 5, 9, 15, 27 SURESTART II REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE ATRAZINE 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 1.5 pt/a 1.5 qt/a	A D D D D D D	99 a	99 a	99 a	99 a	169.5 ab	
13	SOA 4, 9, 15, 27 RESICORE RESICORE DURANGO DMA N-Pa-K AMS	1.25 qt/a 1.25 qt/a 36 fl oz/a 1.5 qt/a	A D D D	99 a	99 a	99 a	99 a	178.5 ab	
14	SOA 2, 4, 9, 15, 27 SURESTART II RESICORE DURANGO DMA N-Pa-K AMS	2 pt/a 1.25 qt/a 36 fl oz/a 1.5 qt/a	A D D D	99 a	99 a	99 a	99 a	171.8 ab	
15	SOA 5, 9, 14, 15, 27 VERDICT ARMEZON PRO Atrazine ROUNDUP POWERMAX COC N-Pa-K AMS	10 fl oz/a 16 fl oz/a 16 fl oz/a 32 fl oz/a 1 pt/a 1.5 qt/a	A D D D D D	99 a	99 a	99 a	99 a	174.8 ab	
16	SOA 4, 9,14,15 VERDICT ROUNDUP POWERMAX STATUS COC N-Pa-K AMS	16 fl oz/a 32 fl oz/a 5 oz wt/a 1 pt/a 1.5 qt/a	A D D D D	99 a	99 a	99 a	99 a	180.7 ab	
<b>POST I (5/25/18)</b>									
20	SOA 5,9,14,15,27 ANTHEM MAXX CALLISTO ROUNDUP POWERMAX Atrazine N-Pa-K AMS NIS	3 fl oz/a 3 fl oz/a 32 fl oz/a 16 fl oz/a 1.5 qt/a 0.25 % v/v	B B B B B B	99 a	99 a	99 b	99 b	168.9 ab	
21	SOA 4, 9, 15, 27 RESICORE ENLIST DUO N-Pa-K AMS	1.75 qt/a 3.5 pt/a 1.5 qt/a	B B B	99 a	99 b	99 b	99 ab	177.6 ab	
22	SOA 2, 9, 15, 27 BREAKFREE NXT REALM Q - 4 oz/A - rimsulfuron - mesotrione - isoxadifen-ethyl ABUNDIT EDGE N-Pa-K AMS	1 pt/a 1.2 oz wt/a 2.5 oz wt/a 0.3 oz wt/a 32 fl oz/a 1.5 qt/a	B B B B B B	99 a	99 a	99 b	98 c	172.9 ab	
LSD P=.10				NS	0.1	0.2	0.3	24.3	