

Weed Management in field corn at Rochester, MN, in 2008.

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The objective of this trial was to evaluate herbicide systems for weed control in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 7.3, organic matter of 2.6% and soil test P and K levels of 64 ppm and 226 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 16, at a rate of 120-36-86-28 (N-P-K-S). The area was side dressed with an additional 35 b/A of N on June 25. The field was fall chisel plowed and spring disked once and field cultivated once prior to planting. The corn hybrid, Pioneer 37Y14LLRR2, was planted on May 12, 2008, at a depth of 2.0 inches in 30 inch rows at 35,000 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 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on June 4, 9, 23, July 1, and August 4. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on November 3, 2008. (University of Minnesota Extension, Regional Office – Rochester, Southern Research and Outreach Center – Waseca, and Southwest Research and Outreach Center – Lamberton, MN).

Date	5/12	6/2	6/10	6/23
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
Air	61	28	65	78
soil	57	61	62	85
Relative Humidity (%)	42	84	67	40
Wind (mph)	18	7	12	3
Soil moisture	Adequate	Excessive	Excessive	Inadequate
Corn				
stage		V3	4-Collar	7-collar
height (inch)		3.5	8.0	16.6
Giant Ragweed				
weed density (ft ²)		9.9	9.9	9.9
height (inch)		2.5	5.8	4.6
Common				
Lambsquarters				
weed density (ft ²)		2.8	2.8	2.8
height (inch)		1.0	1.6	2.1
Common Waterhemp				
weed density (ft ²)		3.0	3.0	3.0
height (inch)		0.3	1.0	2.5
Giant foxtail				
weed density (ft ²)		7.0	7.0	7.0
height (inch)		0.9	2.1	2.8
Rainfall after each application (inch)				
week 1	0.24	4.79	3.52	0.76
week 2	0.19	3.52	0.00	0.87
week 3	2.29	0.00	0.76	0.92

Table 1. Performance of herbicide systems for giant ragweed control in field corn on June 4, 9, 23, July 1 and August 4 at Rochester, MN, in 2008.

Treatment	Rate	Giant Ragweed Control					Yield
		6/4	6/9	6/23	7/1	8/4	
	(rate/A)	(%)					(bu/A)
PRE							
Corvus	5.6 oz	6	25	46	45	43	48
PRE/POST I							
Dual II Magnum/ Halex GT + Atrazine + NIS + N-Pa-K AMS	1 pt/ 3.6 pt + 16 oz + 0.25% v/v + 3 qt	1	94	98	98	96	125
PRE/POST II							
Balance Flexx/ Laudis + MSO + 28% N	3 oz/ 3 oz + 1% v/v + 1.5 qt	3	23	99	99	88	147
Harness/ Ignite + N-Pa-K AMS	1.75 pt/ 22 oz + 2 qt	11	11	94	90	96	117
Harness/ Laudis + MSO + 28% N	1.75 pt/ 3 oz + 1% v/v + 1.5 qt	10	5	98	99	83	113
BreakFree/ Resolve Q (Rimsulfuron + Thifensulfuron + isoxadifen) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1 pt/ 1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	8	2	98	97	97	123
Harness/ Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 22 oz + 3 qt	5	2	97	93	96	133
Lumax/ Touchdown Total + N-Pa-K AMS	3 pt/ 24 oz + 3 qt	39	86	97	96	96	130
SureStart/ Durango + N-Pa-K AMS	1.75 pt/ 24 oz + 3 qt	18	36	97	95	94	133
SureStart/ Durango + N-Pa-K AMS	2 pt/ 24 oz + 3 qt	23	40	96	93	94	128
SureStart + Atrazine/ Durango + N-Pa-K AMS	2 pt + 2 pt/ 24 oz + 3 qt	44	80	95	93	97	145
Outlook/ Roundup WeatherMax + N-Pa-K AMS	12 oz/ 22 oz + 3 qt	0	0	96	93	93	123
Outlook/ Roundup WeatherMax + Status + N-Pa-K AMS	12 oz/ 22 oz + 2.5 oz + 3 qt	1	4	97	96	95	115
Harness/ Impact + Atrazine + MSO + 28% N	1.75 pt/ 0.5 oz + 24 oz + 1% v/v + 2.5% v/v	13	13	99	97	93	125
Harness/ Impact + Atrazine + Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 0.5 oz + 16 oz + 22 oz + 3 qt	5	8	98	96	95	127
POST I							
SureStart + Durango + N-Pa-K AMS	1.75 pt + 24 oz + 3 qt	0	95	94	88	97	119
Halex GT + Atrazine + NIS + N-Pa-K AMS	3.6 pt + 16 oz + 0.25% v/v + 3 qt	0	92	96	96	95	121
POST I/POST III							
Roundup WeatherMax + N-Pa-K AMS/ Roundup WeatherMax + N-Pa-K AMS	22 oz + 3 qt/ 22 oz + 3 qt	0	95	82	99	98	132
POST II							
Require Q (Rimsulfuron + Dicamba + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	4 oz (1 oz + 2.75 oz + 0.25 oz) + 16 oz + 22 oz + 3 qt	0	0	99	99	96	108
Resolve Q (Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Callisto + Roundup PowerMax + N-Pa-K AMS	1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 1 oz + 16 oz + 3 qt	0	0	99	98	98	128
Steadfast Q (Rimsulfuron + Nicosulfuron + Isoxadifen-ethyl) + Impact + Atrazine + MSO + N-Pa-K	1.5 oz (0.75 oz + 0.5 oz + 0.25 oz) + 0.5 oz + 16 oz + 1% v/v + 3 qt	0	0	98	95	93	100
Resolve Q ((Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	0	0	98	97	96	137
Weedy Check		0	0	0	0	0	11
Weed Free		100	100	100	100	100	143
LSD (P=0.10)		9	7	2	2	3	43

Table 2. Performance of herbicide systems for common lambsquarter control in field corn on June 4, 9, 23, July 1 and August 4] at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Common Lambsquarter Control					Yield (bu/A)
		6/4	6/9	6/23	7/1	8/4	
		(%)					
PRE							
Corvus	5.6 oz	16	60	56	59	50	48
PRE/POST I							
Dual II Magnum/ Halex GT + Atrazine + NIS + N-Pa-K AMS	1 pt/ 3.6 pt + 16 oz + 0.25% v/v + 3 qt	3	99	99	99	99	125
PRE/POST II							
Balance Flexx/ Laudis + MSO + 28% N	3 oz/ 3 oz + 1% v/v + 1.5 qt	5	41	99	98	97	147
Harness/ Ignite + N-Pa-K AMS	1.75 pt/ 22 oz + 2 qt	20	0	94	89	87	117
Harness/ Laudis + MSO + 28% N	1.75 pt/ 3 oz +1% v/v + 1.5 qt	14	0	99	97	92	113
BreakFree/ Resolve Q (Rimsulfuron + Thifensulfuron + isoxadifen) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1 pt/ 1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	3	0	99	99	99	123
Harness/ Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 22 oz + 3 qt	9	0	99	95	94	133
Lumax/ Touchdown Total + N-Pa-K AMS	3 pt/ 24 oz + 3 qt	60	99	99	99	99	130
SureStart/ Durango + N-Pa-K AMS	1.75 pt/ 24 oz + 3 qt	19	3	99	98	97	133
SureStart/ Durango + N-Pa-K AMS	2 pt/ 24 oz + 3 qt	25	9	99	98	96	128
SureStart + Atrazine/ Durango + N-Pa-K AMS	2 pt + 2 pt/ 24 oz + 3 qt	81	98	99	99	99	145
Outlook/ Roundup WeatherMax + N-Pa-K AMS	12 oz/ 22 oz + 3 qt	0	0	97	83	85	123
Outlook/ Roundup WeatherMax + Status + N-Pa-K AMS	12 oz/ 22 oz + 2.5 oz + 3 qt	3	0	99	98	95	115
Harness/ Impact + Atrazine + MSO + 28% N	1.75 pt/ 0.5 oz + 24 oz + 1% v/v + 2.5% v/v	16	0	98	98	97	125
Harness/ Impact + Atrazine + Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 0.5 oz + 16 oz + 22 oz + 3 qt	5	0	99	98	98	127
POST I							
SureStart + Durango + N-Pa-K AMS	1.75 pt + 24 oz + 3 qt	0	99	99	99	98	119
Halex GT + Atrazine + NIS + N-Pa-K AMS	3.6 pt + 16 oz + 0.25% v/v + 3 qt	0	99	99	99	99	121
POST I/POST III							
Roundup WeatherMax + N-Pa-K AMS/ Roundup WeatherMax + N-Pa-K AMS	22 oz + 3 qt/ 22 oz + 3 qt	0	99	79	96	94	132
POST II							
Require Q (Rimsulfuron + Dicamba + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	4 oz (1 oz + 2.75 oz + 0.25 oz) + 16 oz + 22 oz + 3 qt	0	0	99	99	99	108
Resolve Q (Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Callisto + Roundup PowerMax + N-Pa-K AMS	1.2 oz (0.92 oz + 0.1 oz + 0.23 oz) + 1 oz + 16 oz + 3 qt	0	0	99	99	99	128
Steadfast Q (Rimsulfuron + Nicosulfuron + Isoxadifen-ethyl) + Impact + Atrazine + MSO + N-Pa-K	1.5 oz (0.75 oz + 0.5 oz + 0.25 oz) + 0.5 oz + 16 oz + 1% v/v + 3 qt	0	0	99	98	97	100
Resolve Q ((Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	0	0	99	99	97	137
Weedy Check		0	0	0	0	0	11
Weed Free		100	100	100	100	100	143
LSD (P=0.10)		10	3	2	2	3	43

Table 3. Performance of herbicide systems for common waterhemp control in field corn on June 4, 9, 23, July 1 and August 4 at Rochester, MN, in 2008.

Treatment	Rate	Common Waterhemp Control					Yield
		6/4	6/9	6/23	7/1	8/4	
	(rate/A)	(%)					(bu/A)
PRE							
Corvus	5.6 oz	0	55	58	59	50	48
PRE/POST I							
Dual II Magnum/ Halex GT + Atrazine + NIS + N-Pa-K AMS	1 pt/ 3.6 pt + 16 oz + 0.25% v/v + 3 qt	3	99	99	98	99	125
PRE/POST II							
Balance Flexx/ Laudis + MSO + 28% N	3 oz/ 3 oz + 1% v/v + 1.5 qt	3	0	99	95	95	147
Harness/ Ignite + N-Pa-K AMS	1.75 pt/ 22 oz + 2 qt	23	99	99	96	97	117
Harness/ Laudis + MSO + 28% N	1.75 pt/ 3 oz +1% v/v + 1.5 qt	14	99	99	97	98	113
BreakFree/ Resolve Q (Rimsulfuron + Thifensulfuron + isoxadifen) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1 pt/ 1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	3	99	99	97	97	123
Harness/ Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 22 oz + 3 qt	9	99	99	96	96	133
Lumax/ Touchdown Total + N-Pa-K AMS	3 pt/ 24 oz + 3 qt	59	99	99	98	99	130
SureStart/ Durango + N-Pa-K AMS	1.75 pt/ 24 oz + 3 qt	19	99	99	97	96	133
SureStart/ Durango + N-Pa-K AMS	2 pt/ 24 oz + 3 qt	25	99	99	95	96	128
SureStart + Atrazine/ Durango + N-Pa-K AMS	2 pt + 2 pt/ 24 oz + 3 qt	83	94	99	97	98	145
Outlook/ Roundup WeatherMax + N-Pa-K AMS	12 oz/ 22 oz + 3 qt	0	0	99	96	95	123
Outlook/ Roundup WeatherMax + Status + N-Pa-K AMS	12 oz/ 22 oz + 2.5 oz + 3 qt	3	0	99	96	95	115
Harness/ Impact + Atrazine + MSO + 28% N	1.75 pt/ 0.5 oz + 24 oz + 1% v/v + 2.5% v/v	19	99	99	98	96	125
Harness/ Impact + Atrazine + Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 0.5 oz + 16 oz + 22 oz + 3 qt	5	0	99	96	98	127
POST I							
SureStart + Durango + N-Pa-K AMS	1.75 pt + 24 oz + 3 qt	0	99	99	97	98	119
Halex GT + Atrazine + NIS + N-Pa-K AMS	3.6 pt + 16 oz + 0.25% v/v + 3 qt	0	99	99	98	99	121
POST I/POST III							
Roundup WeatherMax + N-Pa-K AMS/ Roundup WeatherMax + N-Pa-K AMS	22 oz + 3 qt/ 22 oz + 3 qt	0	99	80	99	99	132
POST II							
Require Q (Rimsulfuron + Dicamba + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	4 oz (1 oz + 2.75 oz + 0.25 oz) + 16 oz + 22 oz + 3 qt	0	0	99	98	97	108
Resolve Q (Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Callisto + Roundup PowerMax + N-Pa-K AMS	1.2 oz (0.92 oz + 0.1 oz + 0.23 oz) + 1 oz + 16 oz + 3 qt	0	0	99	97	97	128
Steadfast Q (Rimsulfuron + Nicosulfuron + Isoxadifen-ethyl) + Impact + Atrazine + MSO + N-Pa-K	1.5 oz (0.75 oz + 0.5 oz + 0.25 oz) + 0.5 oz + 16 oz + 1% v/v + 3 qt	0	0	98	94	94	100
Resolve Q ((Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	0	0	99	93	93	137
Weedy Check		0	0	0	0	0	11
Weed Free		100	100	100	100	100	143
LSD (P=0.10)		10	3	2	2	2	43

Table 4. Performance of herbicide systems for giant foxtail control in field corn on June 4, 9, 23, July 1 and August 4 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Grass Control					Yield (bu/A)
		6/4	6/9	6/23	7/1	8/4	
PRE							
Corvus	5.6 oz	6	63	65	64	54	48
PRE/POST I							
Dual II Magnum/ Halex GT + Atrazine + NIS + N-Pa-K AMS	1 pt/ 3.6 pt + 16 oz + 0.25% v/v + 3 qt	11	99	99	99	98	125
PRE/POST II							
Balance Flexx/ Laudis + MSO + 28% N	3 oz/ 3 oz + 1% v/v + 1.5 qt	10	51	99	97	88	147
Harness/ Ignite + N-Pa-K AMS	1.75 pt/ 22 oz + 2 qt	11	99	99	99	96	117
Harness/ Laudis + MSO + 28% N	1.75 pt/ 3 oz + 1% v/v + 1.5 qt	21	99	94	93	83	113
BreakFree/ Resolve Q (Rimsulfuron + Thifensulfuron + isoxadifen) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1 pt/ 1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	8	99	99	99	97	123
Harness/ Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 22 oz + 3 qt	5	99	99	99	96	133
Lumax/ Touchdown Total + N-Pa-K AMS	3 pt/ 24 oz + 3 qt	28	60	99	98	96	130
SureStart/ Durango + N-Pa-K AMS	1.75 pt/ 24 oz + 3 qt	8	99	99	99	94	133
SureStart/ Durango + N-Pa-K AMS	2 pt/ 24 oz + 3 qt	13	99	99	98	94	128
SureStart + Atrazine/ Durango + N-Pa-K AMS	2 pt + 2 pt/ 24 oz + 3 qt	41	97	99	99	97	145
Outlook/ Roundup WeatherMax + N-Pa-K AMS	12 oz/ 22 oz + 3 qt	0	0	99	99	93	123
Outlook/ Roundup WeatherMax + Status + N-Pa-K AMS	12 oz/ 22 oz + 2.5 oz + 3 qt	3	0	99	98	95	115
Harness/ Impact + Atrazine + MSO + 28% N	1.75 pt/ 0.5 oz + 24 oz + 1% v/v + 2.5% v/v	10	99	98	96	93	125
Harness/ Impact + Atrazine + Roundup WeatherMax + N-Pa-K AMS	1.25 pt/ 0.5 oz + 16 oz + 22 oz + 3 qt	6	99	99	99	93	127
POST I							
SureStart + Durango + N-Pa-K AMS	1.75 pt + 24 oz + 3 qt	0	99	99	99	98	119
Halex GT + Atrazine + NIS + N-Pa-K AMS	3.6 pt + 16 oz + 0.25% v/v + 3 qt	0	99	99	98	97	121
POST I/POST III							
Roundup WeatherMax + N-Pa-K AMS/ Roundup WeatherMax + N-Pa-K AMS	22 oz + 3 qt/ 22 oz + 3 qt	0	99	80	99	98	132
POST II							
Require Q (Rimsulfuron + Dicamba + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	4 oz (1 oz + 2.75 oz + 0.25 oz) + 16 oz + 22 oz + 3 qt	0	0	99	99	96	108
Resolve Q (Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Callisto + Roundup PowerMax + N-Pa-K AMS	1.2 oz (0.92 oz + 0.1 oz + 0.23 oz) + 1 oz + 16 oz + 3 qt	0	0	99	99	97	128
Steadfast Q (Rimsulfuron + Nicosulfuron + Isoxadifen-ethyl) + Impact + Atrazine + MSO + N-Pa-K	1.5 oz (0.75 oz + 0.5 oz + 0.25 oz) + 0.5 oz + 16 oz + 1% v/v + 3 qt	0	0	96	97	94	100
Resolve Q ((Rimsulfuron + Thifensulfuron + Isoxadifen-ethyl) + Atrazine + Roundup PowerMax + N-Pa-K AMS	1.25 oz (0.92 oz + 0.1 oz + 0.23 oz) + 16 oz + 22 oz + 3 qt	0	0	99	99	96	137
Weedy Check		0	0	0	0	0	11
Weed Free		100	100	100	100	100	143
LSD (P=0.10)		12	3	2	2	3	43