2010 Evaluation of Weed Management Systems in Field Corn

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The objective of this trial was to evaluate the performance of herbicide programs for weed control in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.7, O.M. of 2.2%, and soil test P and K levels of 38 ppm and 121 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 5, at a rate of 126-35-120-24 (N-P-K-S). The area was side dressed with an additional 26 lb/A of N on June 10. The field was spring chisel plowed, disked and field cultivated once prior to planting. The corn hybrid, Pioneer 36V53, was planted on April 27, 2010 at a depth of 1.5 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 May 19, June 9, 30 and September 20. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on October 11, 2010.

Summary: Very impressive weed control and corn yields for the majority of the treatments in the 2010 corn weed management trial. No crop injury response was observed following herbicide applications in this trial. Very rapid corn development and giant ragweed growth coupled with the upcoming Memorial Day holiday promoted an earlier than anticipated POST II application. It was felt that being on the earlier side of corn development was better than flirting with crop injury on 5-6 collar corn and trying to play catch up with large weeds. As a result of the earlier (crop development timed) application several plots were treated before an herbicide treatment would have been warranted. To some degree this may have impacted weed control ratings and yields on the back end, however, in reality that's farming and not all treatments are perfectly timed.

Giant ragweed was the dominate weed driver in determining yield. It appears that both early season and late season giant ragweed competition with the corn crop may have impacted yields. PRE followed by POST sequential treatments (fifteen treatments) provided very stable yields, averaging 200 bu/acre. The six (treatments) with a single POST application averaged 191 bu/acre. The three PRE followed by POST conventional herbicide programs in the trial averaged 207 bu/A. (University of Minnesota Extension Regional Office, Rochester)

Date	**4/28**	**5/22**	**5/27**	**6/16**
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
Air	66	57	70	76
Soil	61.7	58.8	64.6	75
Relative Humidity (%)	26	96	47	59
Wind (mph)	21	10	10	8
Soil Moisture	Adequate	Adequate	Excessive	Excessive
Corn				
Stage		V1	V2-V3	V7
Height (inch)		2.0	4.5	18.6
Giant Ragweed				
Weed density (ft^2)			21.0	
Height (inch)		1.5	4.1	4.3
Common Lambsquarters				
Weed density (ft^2)			4.0	
Height (inch)		0.5	0.8	2.5
Common Waterhemp				
Weed density (ft^2)			5.5	
Height (inch)		0.3	0.8	3.6
Giant Foxtail				
Weed density (ft^2)			1.5	
Height (inch)		0.3	1.0	3.0
Rainfall after each application (inch)				
Week 1	0.60	0.0	1.14	3.31
Week 2	1.70	1.39	0.85	1.49
Week 3	0.03	1.20	2.52	0.27

Table 1. Performance of herbicide systems for giant ragweed control in field corn on May 19, June 9, 30, and September 20 at Rochester, MN, in 2010.

Treatment	Rate	Giant Ragweed Control				Yield
		5/19	6/9	6/30	9/20	
	(rate/A)	(%)				(bu/A)
Untreated Check		0	0	0	0	1
Weed Free		100	100	100	100	195
PRE/POST II (V2-V3 corn, 4 inch weeds)						
Harness / Laudis + Atrazine + MSO + 28%N	1.75 pt/a / 3 oz/a + 16 oz/a + 1% v/v + 1.5 qt/a	38	96	97	97	220
Dual II Magnum / Halex GT + NIS + N-Pak AMS	1 pt/a / 3.6 pt/a + 0.25% v/v + 3 qt/a	0	94	96	96	204
Harness / Laudis + Buctril + MSO + 28%N	1.75 pt/a / 3 oz/a + 6 oz/a + 1% v/v + 1.5 qt/a	39	96	96	97	204
Harness / Ignite + N-Pak AMS	1.75 pt/a / 22 oz/a + 2 qt/a	37	93	87	87	176
BreakFree / rimsulfuron + thifensulfuron + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1 oz/a + 0.1 oz/a + 0.23 oz/a + 32 oz/a + 3 qt/a	26	90	89	86	189
BreakFree / rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	28	94	96	96	203
Harness / Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 22 oz/a + 3 qt/a	27	91	88	85	195
Lumax / Touchdown Total + N-Pak AMS	3 pt/a / 24 oz/a + 3 qt/a	79	96	95	92	208
SureStart / Durango DMA + N-Pak AMS	1.75 pt/a / 24 oz/a + 3 qt/a	76	93	88	84	205
SureStart / Durango DMA + N-Pak AMS	2.5 pt/a / 24 oz/a + 3 qt/a	86	93	90	88	212
SureStart + Atrazine / Durango DMA + N-Pak AMS	1.75 pt/a + 1.5 pt/a / 24 oz/a + 3 qt/a	87	95	91	87	195
Verdict / Roundup WeatherMax + Status + NIS + N-Pak AMS	16 oz/a / 22 oz/a + 2.5 oz/a + 0.25% v/v + 3 qt/a	95	97	93	91	198
Verdict / Roundup WeatherMax + NIS + N-Pak AMS	16 oz/a / 22oz/a + 0.25% v/v + 3 qt/a	95	96	93	90	200
Harness / Impact + Atrazine + MSO + N-Pak AMS	1.75 pt/a / 0.75 oz/a + 16 oz/a + 1% v/v + 3 qt/a	38	96	94	92	197
Harness / Impact + Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 0.5 oz/a + 22 oz/a + 3 qt/a	28	92	89	86	199
POST I (V1 corn, 1 inch weeds) / POST III (V7 corn, 4 inch weed regrowth)						
Roundup WeatherMax + N-Pak AMS / Roundup WeatherMax + N-Pak AMS	22 oz/a + 3 qt/a / 22 oz/a + 3 qt/a	--	81	94	98	206
POST II (V2-V3 corn, 4 inch weeds)						
Surestart + Durango DMA + N-Pak AMS	1.75 pt/a + 24 oz/a + 3 qt/a	--	92	96	93	195
Halex GT + Atrazine + NIS + N-Pak AMS	3.6 pt/a + 16 oz/a + 0.25% v/v + 3 qt/a	--	97	97	98	194
Capreno + Roundup WeatherMax + Superb HC + N-Pak AMS	3 oz/a + 18 oz/a + 0.5% v/v + 3 qt/a	--	94	94	94	206
rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	--	92	96	95	199
rimsulfuron + thifensulfuron + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	1 oz/a + 0.1 oz/a + 0.23 oz/a + 0.5 oz/a + 1% v/v + 3qt/a	--	90	87	83	180
Accent + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	0.36 oz/a + 0.14 oz/a + 0.5 oz/a + 1% v/v + 3 qt/a		80	87	82	173
	LSD (P=0.10)	**3**	**1**	**2**	**3**	**13**

Table 2. Performance of herbicide systems for common lambsquarters control in field corn on May 19, June 9, 30, and September 20 at Rochester, MN, in 2010.

Treatment	Rate	Common Lambsquarters Control				Yield
		5/19	6/9	6/30	9/20	
	(rate/A)	(%)				(bu/A)
Untreated Check		0	0	0	0	1
Weed Free		100	100	100	100	195
PRE/POST II (V2-V3 corn, 4 inch weeds)						
Harness / Laudis + Atrazine + MSO + 28%N	1.75 pt/a / 3 oz/a + 16 oz/a + 1% v/v + 1.5 qt/a	99	99	99	99	220
Dual II Magnum / Halex GT + NIS + N-Pak AMS	1 pt/a / 3.6 pt/a + 0.25% v/v + 3 qt/a	88	99	99	99	204
Harness / Laudis + Buctril + MSO + 28%N	1.75 pt/a / 3 oz/a + 6 oz/a + 1% v/v + 1.5 qt/a	99	99	99	98	204
Harness / Ignite + N-Pak AMS	1.75 pt/a / 22 oz/a + 2 qt/a	99	99	96	98	177
BreakFree / rimsulfuron + thifensulfuron + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1 oz/a + 0.1 oz/a + 0.23 oz/a + 32 oz/a + 3 qt/a	99	99	99	98	189
BreakFree / rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	99	99	99	99	203
Harness / Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 22 oz/a + 3 qt/a	99	99	93	98	195
Lumax / Touchdown Total + N-Pak AMS	3 pt/a / 24 oz/a + 3 qt/a	99	99	99	99	208
SureStart / Durango DMA + N-Pak AMS	1.75 pt/a / 24 oz/a + 3 qt/a	99	99	97	99	205
SureStart / Durango DMA + N-Pak AMS	2.5 pt/a / 24 oz/a + 3 qt/a	99	99	95	99	212
SureStart + Atrazine / Durango DMA + N-Pak AMS	1.75 pt/a + 1.5 pt/a / 24 oz/a + 3 qt/a	99	99	98	99	195
Verdict / Roundup WeatherMax + Status + NIS + N-Pak AMS	16 oz/a / 22 oz/a + 2.5 oz/a + 0.25% v/v + 3 qt/a	99	99	97	98	198
Verdict / Roundup WeatherMax + NIS + N-Pak AMS	16 oz/a / 22oz/a + 0.25% v/v + 3 qt/a	99	99	96	98	200
Harness / Impact + Atrazine + MSO + N-Pak AMS	1.75 pt/a / 0.75 oz/a + 16 oz/a + 1% v/v + 3 qt/a	99	99	99	99	197
Harness / Impact + Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 0.5 oz/a + 22 oz/a + 3 qt/a	99	99	96	98	199
POST I (V1 corn, 1 inch weeds) / POST III (V7 corn, 4 inch weed regrowth)						
Roundup WeatherMax + N-Pak AMS / Roundup WeatherMax + N-Pak AMS	22 oz/a + 3 qt/a / 22 oz/a + 3 qt/a	--	86	99	99	206
POST II (V2-V3 corn, 4 inch weeds)						
Surestart + Durango DMA + N-Pak AMS	1.75 pt/a + 24 oz/a + 3 qt/a	--	99	97	99	195
Halex GT + Atrazine + NIS + N-Pak AMS	3.6 pt/a + 16 oz/a + 0.25% v/v + 3 qt/a	--	99	99	99	194
Capreno + Roundup WeatherMax + Superb HC + N-Pak AMS	3 oz/a + 18 oz/a + 0.5% v/v + 3 qt/a	--	99	98	98	206
rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	--	99	99	99	199
rimsulfuron + thifensulfuron + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	1 oz/a + 0.1 oz/a + 0.23 oz/a + 0.5 oz/a + 1% v/v + 3qt/a	--	99	94	99	180
Accent + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	0.36 oz/a + 0.14 oz/a + 0.5 oz/a + 1% v/v + 3 qt/a	--	98	88	94	173
	LSD (P=0.10)	**1**	**1**	**3**	**2**	**13**

Table 3. Performance of herbicide systems for common waterhemp control in field corn on May 19, June 9, 30 and September 20 at Rochester, MN, in 2010.

Treatment	Rate	Common Waterhemp Control				Yield
		5/19	6/9	6/30	9/20	
	(rate/A)	(%)				(bu/A)
Untreated Check		0	0	0	0	1
Weed Free		100	100	100	100	195
PRE/POST II (V2-V3 corn, 4 inch weeds)						
Harness / Laudis + Atrazine + MSO + 28%N	1.75 pt/a / 3 oz/a + 16 oz/a + 1% v/v + 1.5 qt/a	99	99	99	98	220
Dual II Magnum / Halex GT + NIS + N-Pak AMS	1 pt/a / 3.6 pt/a + 0.25% v/v + 3 qt/a	98	99	99	99	204
Harness / Laudis + Buctril + MSO + 28%N	1.75 pt/a / 3 oz/a + 6 oz/a + 1% v/v + 1.5 qt/a	99	99	99	99	204
Harness / Ignite + N-Pak AMS	1.75 pt/a / 22 oz/a + 2 qt/a	99	99	98	99	176
BreakFree / rimsulfuron + thifensulfuron + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1 oz/a + 0.1 oz/a + 0.23 oz/a + 32 oz/a + 3 qt/a	99	99	97	95	189
BreakFree / rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	99	99	99	98	203
Harness / Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 22 oz/a + 3 qt/a	99	99	97	95	195
Lumax / Touchdown Total + N-Pak AMS	3 pt/a / 24 oz/a + 3 qt/a	99	99	99	99	208
SureStart / Durango DMA + N-Pak AMS	1.75 pt/a / 24 oz/a + 3 qt/a	99	99	98	95	205
SureStart / Durango DMA + N-Pak AMS	2.5 pt/a / 24 oz/a + 3 qt/a	99	99	98	98	212
SureStart + Atrazine / Durango DMA + N-Pak AMS	1.75 pt/a + 1.5 pt/a / 24 oz/a + 3 qt/a	99	99	98	97	195
Verdict / Roundup WeatherMax + Status + NIS + N-Pak AMS	16 oz/a / 22 oz/a + 2.5 oz/a + 0.25% v/v + 3 qt/a	99	99	99	97	198
Verdict / Roundup WeatherMax + NIS + N-Pak AMS	16 oz/a / 22oz/a + 0.25% v/v + 3 qt/a	99	99	97	97	200
Harness / Impact + Atrazine + MSO + N-Pak AMS	1.75 pt/a / 0.75 oz/a + 16 oz/a + 1% v/v + 3 qt/a	99	99	98	97	197
Harness / Impact + Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 0.5 oz/a + 22 oz/a + 3 qt/a	99	99	99	98	199
POST I (V1 corn, 1 inch weeds)/ POST III (V7 corn, 4 inch weed regrowth)						
Roundup WeatherMax + N-Pak AMS / Roundup WeatherMax + N-Pak AMS	22 oz/a + 3 qt/a / 22 oz/a + 3 qt/a	--	85	97	97	206
POST II (V2-V3 corn, 4 inch weeds)						
Surestart + Durango DMA + N-Pak AMS	1.75 pt/a + 24 oz/a + 3 qt/a	--	99	97	96	195
Halex GT + Atrazine + NIS + N-Pak AMS	3.6 pt/a + 16 oz/a + 0.25% v/v + 3 qt/a	--	99	99	99	194
Capreno + Roundup WeatherMax + Superb HC + N-Pak AMS	3 oz/a + 18 oz/a + 0.5% v/v + 3 qt/a	--	99	95	90	206
rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	--	99	98	97	199
rimsulfuron + thifensulfuron + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	1 oz/a + 0.1 oz/a + 0.23 oz/a + 0.5 oz/a + 1% v/v + 3qt/a	--	99	84	81	180
Accent + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	0.36 oz/a + 0.14 oz/a + 0.5 oz/a + 1% v/v + 3 qt/a	--	93	87	85	173
	LSD (P=0.10)	**1**	**2**	**2**	**4**	**13**

Table 4. Performance of herbicide systems for giant foxtail control in field corn on May 19, June 9, 30, and September 20 at Rochester, MN, in 2010.

Treatment	Rate	Giant Foxtail				Yield
		5/19	6/9	6/30	9/20	
	(rate/A)	(%)				(bu/A)
Untreated Check		0	0	0	0	1
Weed Free		100	100	100	100	195
PRE/POST II (V2-V3 corn, 4 inch weeds)						
Harness / Laudis + Atrazine + MSO + 28%N	1.75 pt/a / 3 oz/a + 16 oz/a + 1% v/v + 1.5 qt/a	99	99	99	99	220
Dual II Magnum / Halex GT + NIS + N-Pak AMS	1 pt/a / 3.6 pt/a + 0.25% v/v + 3 qt/a	99	99	99	99	204
Harness / Laudis + Buctril + MSO + 28%N	1.75 pt/a / 3 oz/a + 6 oz/a + 1% v/v + 1.5 qt/a	99	99	99	99	204
Harness / Ignite + N-Pak AMS	1.75 pt/a / 22 oz/a + 2 qt/a	99	99	99	99	176
BreakFree / rimsulfuron + thifensulfuron + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1 oz/a + 0.1 oz/a + 0.23 oz/a + 32 oz/a + 3 qt/a	99	99	99	99	189
BreakFree / rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.25 pt/a / 1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a	99	99	98	99	203
Harness / Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 22 oz/a + 3 qt/a	99	99	99	99	195
Lumax / Touchdown Total + N-Pak AMS	3 pt/a / 24 oz/a + 3 qt/a	99	99	97	99	208
SureStart / Durango DMA + N-Pak AMS	1.75 pt/a / 24 oz/a + 3 qt/a	99	99	98	99	205
SureStart / Durango DMA + N-Pak AMS	2.5 pt/a / 24 oz/a + 3 qt/a	99	99	98	99	212
SureStart + Atrazine / Durango DMA + N-Pak AMS	1.75 pt/a + 1.5 pt/a / 24 oz/a + 3 qt/a	99	99	97	99	195
Verdict / Roundup WeatherMax + Status + NIS + N-Pak AMS	16 oz/a / 22 oz/a + 2.5 oz/a + 0.25% v/v + 3 qt/a	99	99	99	99	198
Verdict / Roundup WeatherMax + NIS + N-Pak AMS	16 oz/a / 22oz/a + 0.25% v/v + 3 qt/a	99	99	98	99	200
Harness / Impact + Atrazine + MSO + N-Pak AMS	1.75 pt/a / 0.75 oz/a + 16 oz/a + 1% v/v + 3 qt/a	99	99	98	99	197
Harness / Impact + Roundup WeatherMax + N-Pak AMS	1.25 pt/a / 0.5 oz/a + 22 oz/a + 3 qt/a	99	99	98	99	199
POST I (V1 corn, 1 inch weeds) / POST III (V7 corn, 4 inch weed regrowth)						
Roundup WeatherMax + N-Pak AMS / Roundup WeatherMax + N-Pak AMS	22 oz/a + 3 qt/a / 22 oz/a + 3 qt/a		99	98	99	206
POST II (V2-V3 corn, 4 inch weeds)						
Surestart + Durango DMA + N-Pak AMS	1.75 pt/a + 24 oz/a + 3 qt/a		99	97	99	195
Halex GT + Atrazine + NIS + N-Pak AMS	3.6 pt/a + 16 oz/a + 0.25% v/v + 3 qt/a		99	99	99	194
Capreno + Roundup WeatherMax + Superb HC + N-Pa-K AMS	3 oz/a + 18 oz/a + 0.5% v/v + 3 qt/a		99	99	99	206
rimsulfuron + mesotrione + isoxadifen-ethyl + Abundit Extra + N-Pak AMS	1.2 oz/a + 2.5 oz/a + 0.3 oz/a + 32 oz/a + 3 qt/a		99	97	99	199
rimsulfuron + thifensulfuron + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	1 oz/a + 0.1 oz/a + 0.23 oz/a + 0.5 oz/a + 1% v/v + 3qt/a		99	98	99	180
Accent + isoxadifen-ethyl + Impact + MSO + N-Pak AMS	0.36 oz/a + 0.14 oz/a + 0.5 oz/a + 1% v/v + 3 qt/a		98	91	99	173
	LSD (P=0.10)	**0**	**1**	**2**	**1**	**13**