Evaluation of Two-Pass Herbicide Programs for Weed Control in Field Corn in 2011.

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The objective of this trial was to evaluate the performance of two-pass herbicide programs for weed control in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.6, O.M. of 2.1%, and soil test P and K levels of 49 ppm and 137 ppm, respectively. Fall fertilizer was broadcast applied on November 11, 2010 at a rate of 6-26-150 (N-P-K). Spring fertilizer was broadcast ahead of planting on April 5, 2011 at a rate of 120-0-0-24 (N-P-K-S). The area was side dressed with an additional 33 lb/A of N on June 13. The field was spring disked and field cultivated once prior to planting. The corn hybrid, Pioneer P9910AM1 (99 day), was planted on May 2, 2011 at a depth of 1.5 inches in 30 inch rows at 32,000 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 23, 31, June 8, 16, 24, and August 22. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on October 13, 2011.

SUMMARY

Giant ragweed and giant foxtail control provided the most separation among the soil applied pre-emergence herbicides. For giant ragweed the lowest soil applied control was achieved with Harness at 18% control (6/8 rating date). The three soil applied Capreno treatments averaged 47% control (6/8 rating date). SureStart, Lumax, Verdict, and Zemax all provided 77% control or better (6/8 rating date). By the last rating (8/22). only the Harness followed by Roundup PowerMax treatment provided significantly lower final giant ragweed control, 84% versus 94% or better for all other treatments (8/22).

Soil applied giant foxtail control with Capreno herbicide averaged 82%(6/8 rating date). All other soil applied herbicides provided 95% control or better (6/8 rating date). Final giant foxtail control in the PRE/POST systems was closely tied to the application date of the Post emergence herbicides. PRE/POST systems with POST applications at POST III & IV provided better giant foxtail control when compared to sequential POST II applications.

Common lambsquaters and common waterhemp control was very good to excellent for all treatments. Final common waterhemp control with the soil applied Capreno treatments was about 10% lower when compared to the best common waterhemp control treatments, (8/22 rating).

All crop response was associated with post emergence herbicide applications. Treatments with Buctril or Lumax provided the highest level of injury however; there was no impact on corn growth and development or grain yield. (University of Minnesota Extension Regional Office, Rochester).

Date	**5/3**	**5/26**	**6/6**	**6/8**	**6/13**
Treatment	PRE	POST I	POST II	POST III	POST IV
Temperature (F)					
Air	54	60	89	85	64
Soil	50.7	62.2	83.8	84.9	60.1
Relative Humidity (%)	36	43	53	34	64
Wind (mph)	10	18	3	14	8
Soil Moisture	Adequate	Adequate	Adequate	Dry	Dry
Corn					
Stage		2 Collar	4-5 Collar	5 Collar	5-6 Collar
Height (inch)		2.6	10.5	13.5	16.3
Giant Ragweed					
Weed density (ft^2)		17.1			
Height (inch)		2.0	6.3	5.3	3.8
Common Lambsquarters					
Weed density (ft^2)		7.1			
Height (inch)		0.8	4.5		
Common Waterhemp					
Weed density (ft^2)		20.0			
Height (inch)		0.4	1.0		
Giant Foxtail					
Weed density (ft^2)		16.0			
Height (inch)		0.6	2.5		6.0
Rainfall after each application (inch)					
Week 1	0.97	0.14	0.48	2.26	3.41
Week 2	0.51	0.48	3.41	2.83	1.29
Week 3	1.78	1.82	1.29	0.19	0.31

Table 1. Evaluation of two-pass herbicide systems for giant ragweed control in field corn on May 23, 31, June 8, 16, 24, and August 22 at Rochester, MN, in 2011.

Treatment	Rate	Giant Ragweed Control						Yield
		5/23	5/31	6/8	6/16	6/24	8/22	
	(rate/A)	(%)						(bu/A)
Untreated Check		0	0	0	0	0	0	0
PRE/POST II (4-6 inch weeds)								
Capreno / Laudis + Buctril + Destiny HC + AMS	3 fl oz/a / 3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	61	48	46	94	93	99	171
Capreno / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	61	44	46	84	94	98	172
Capreno / Ignite 280 + Laudis + AMS	3 fl oz/a / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	59	59	50	46	93	98	177
Harness / Roundup PowerMax + AMS	1.33 pt/a / 22 fl oz/a + 8.5 lb/ 100 gal	29	20	18	73	91	84	168
PRE/POST III (2-4 inch regrowth)								
SureStart / SureStart + Durango DMA + AMS	1.5 pt/a / 1.5 pt/a + 24 fl oz/a + 8.5 lb/ 100 gal	82	74	77	97	96	97	168
SureStart / Durango DMA + AMS	1.75 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	85	77	85	94	96	95	179
PRE / POST IV (4-6 inch regrowth)								
Lumax / Touchdown Total + AMS	1.5 qt/a / 24 fl oz/a + 8.5 lb/ 100 gal	83	84	89	83	96	98	192
Lumax / Halex GT + NIS + AMS	1.5 qt/a / 3.6 pt/a + 0.25 % v/v + 8.5 lb/ 100 gal	79	80	87	82	97	99	181
Verdict/ Status + Roundup PowerMax + AMS	13 fl oz/a / 2.5 oz/a + 22 fl oz/a + 8.5 lb/ 100 gal	90	88	89	90	91	94	202
Zemax / Touchdown Total + AMS	2.4 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	76	75	84	75	91	95	203
Zemax / Touchdown Total + AMS	3.2 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	81	80	92	89	95	98	188
POST I (1-2 inch weeds) / POST IV (4-6 inch regrowth)								
Capreno + Buctril + Superb HC + AMS / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	87	87	78	97	99	191
Capreno + Buctril + Superb HC + AMS / Ignite 280 + Laudis + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	88	86	80	97	99	183
Lumax + Superb HC / Touchdown Total + AMS	1.5 qt/a + 0.5% v/v / 24 fl oz/a + 8.5 lb/ 100 gal	0	81	92	86	97	99	179
Lumax + Superb HC / Halex GT + NIS + AMS	1.5 qt/a + 0.5% v/v / 3.6 pt/a + 0.25% v/v + 8.5 lb/ 100 gal	0	80	92	88	97	99	189
	LSD (P=0.10)	**3.5**	**5.0**	**4.8**	**5.5**	**3.1**	**3.0**	**21**

Table 2. Evaluation of two-pass herbicide systems for common lambsquarters control in field corn on May 23, 31, June 8, 16, 24, and August 22 at Rochester, MN, in 2011.

Treatment	Rate	Common Lambsquarters Control						Yield
		5/23	5/31	6/8	6/16	6/24	8/22	
	(rate/A)	(%)						(bu/A)
Untreated Check		0	0	0	0	0	0	0
PRE/POST II (4-6 inch weeds)								
Capreno / Laudis + Buctril + Destiny HC + AMS	3 fl oz/a / 3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	96	96	97	99	99	99	171
Capreno / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	97	95	96	97	99	98	172
Capreno / Ignite 280 + Laudis + AMS	3 fl oz/a / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	97	96	97	99	96	98	177
Harness / Roundup PowerMax + AMS	1.33 pt/a / 22 fl oz/a + 8.5 lb/ 100 gal	98	96	96	95	97	99	168
PRE/POST III (2-4 inch regrowth)								
SureStart / SureStart + Durango DMA + AMS	1.5 pt/a / 1.5 pt/a + 24 fl oz/a + 8.5 lb/ 100 gal	99	99	97	99	99	99	168
SureStart / Durango DMA + AMS	1.75 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	98	99	99	99	179
PRE / POST IV (4-6 inch regrowth)								
Lumax / Touchdown Total + AMS	1.5 qt/a / 24 fl oz/a + 8.5 lb/ 100 gal	98	99	99	99	99	99	192
Lumax / Halex GT + NIS + AMS	1.5 qt/a / 3.6 pt/a + 0.25 % v/v + 8.5 lb/ 100 gal	99	99	99	99	99	99	181
Verdict/ Status + Roundup PowerMax + AMS	13 fl oz/a / 2.5 oz/a + 22 fl oz/a + 8.5 lb/ 100 gal	99	99	97	98	99	98	202
Zemax / Touchdown Total + AMS	2.4 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	99	203
Zemax / Touchdown Total + AMS	3.2 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	99	188
POST I (1-2 inch weeds) / POST IV (4-6 inch regrowth)								
Capreno + Buctril + Superb HC + AMS / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	99	98	99	99	99	191
Capreno + Buctril + Superb HC + AMS / Ignite 280 + Laudis + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	99	99	99	99	99	183
Lumax + Superb HC / Touchdown Total + AMS	1.5 qt/a + 0.5% v/v / 24 fl oz/a + 8.5 lb/ 100 gal	0	99	99	99	99	99	179
Lumax + Superb HC / Halex GT + NIS + AMS	1.5 qt/a + 0.5% v/v / 3.6 pt/a + 0.25% v/v + 8.5 lb/ 100 gal	0	98	99	99	99	99	189
	LSD (P=0.10)	**0.5**	**2.1**	**1.6**	**1.3**	**1.4**	**0.7**	**21**

Table 3. Evaluation of two-pass herbicide systems for common waterhemp control in field corn on May 23, 31, June 8, 16, 24, and August 22 at Rochester, MN, in 2011.

Treatment	Rate	Common Waterhemp Control						Yield
		5/23	5/31	6/8	6/16	6/24	8/22	
	(rate/A)	(%)						(bu/A)
Untreated Check		0	0	0	0	0	0	0
PRE/POST II (4-6 inch weeds)								
Capreno / Laudis + Buctril + Destiny HC + AMS	3 fl oz/a / 3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	96	95	97	98	98	89	171
Capreno / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	98	97	99	99	98	89	172
Capreno / Ignite 280 + Laudis + AMS	3 fl oz/a / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	97	96	98	99	96	90	177
Harness / Roundup PowerMax + AMS	1.33 pt/a / 22 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	95	168
PRE/POST III (2-4 inch regrowth)								
SureStart / SureStart + Durango DMA + AMS	1.5 pt/a / 1.5 pt/a + 24 fl oz/a + 8.5 lb/ 100 gal	99	99	98	99	99	98	168
SureStart / Durango DMA + AMS	1.75 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	97	179
PRE / POST IV (4-6 inch regrowth)								
Lumax / Touchdown Total + AMS	1.5 qt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	98	192
Lumax / Halex GT + NIS + AMS	1.5 qt/a / 3.6 pt/a + 0.25 % v/v + 8.5 lb/ 100 gal	99	99	99	99	99	99	181
Verdict/ Status + Roundup PowerMax + AMS	13 fl oz/a / 2.5 oz/a + 22 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	98	96	202
Zemax / Touchdown Total + AMS	2.4 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	98	96	203
Zemax / Touchdown Total + AMS	3.2 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	98	98	188
POST I (1-2 inch weeds) / POST IV (4-6 inch regrowth)								
Capreno + Buctril + Superb HC + AMS / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	99	98	98	99	98	191
Capreno + Buctril + Superb HC + AMS / Ignite 280 + Laudis + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	98	97	99	99	98	183
Lumax + Superb HC / Touchdown Total + AMS	1.5 qt/a + 0.5% v/v / 24 fl oz/a + 8.5 lb/ 100 gal	0	99	99	99	98	99	179
Lumax + Superb HC / Halex GT + NIS + AMS	1.5 qt/a + 0.5% v/v / 3.6 pt/a + 0.25% v/v + 8.5 lb/ 100 gal	0	98	99	99	99	99	189
	LSD (P=0.10)	**0.9**	**1.5**	**1.1**	**0.5**	**1.6**	**4.5**	**21**

Table 4. Evaluation of two-pass herbicide systems for giant foxtail control in field corn on May 23, 31, June 8, 16, 24, and August 22 at Rochester, MN, in 2011.

Treatment	Rate	Giant Foxtail Control						Yield
		5/23	5/31	6/8	6/16	6/24	8/22	
	(rate/A)	(%)						(bu/A)
Untreated Check		0	0	0	0	0	0	0
PRE/POST II (4-6 inch weeds)								
Capreno / Laudis + Buctril + Destiny HC + AMS	3 fl oz/a / 3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	95	81	80	85	82	71	171
Capreno / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	95	84	81	97	92	73	172
Capreno / Ignite 280 + Laudis + AMS	3 fl oz/a / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	95	80	85	95	89	74	177
Harness / Roundup PowerMax + AMS	1.33 pt/a / 22 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	97	78	168
PRE/POST III (2-4 inch regrowth)								
SureStart / SureStart + Durango DMA + AMS	1.5 pt/a / 1.5 pt/a + 24 fl oz/a + 8.5 lb/ 100 gal	99	99	98	99	99	98	168
SureStart / Durango DMA + AMS	1.75 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	99	99	89	179
PRE / POST IV (4-6 inch regrowth)								
Lumax / Touchdown Total + AMS	1.5 qt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	95	95	99	94	192
Lumax / Halex GT + NIS + AMS	1.5 qt/a / 3.6 pt/a + 0.25 % v/v + 8.5 lb/ 100 gal	99	99	96	94	99	98	181
Verdict/ Status + Roundup PowerMax + AMS	13 fl oz/a / 2.5 oz/a + 22 fl oz/a + 8.5 lb/ 100 gal	99	99	99	98	99	93	202
Zemax / Touchdown Total + AMS	2.4 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	97	89	90	88	203
Zemax / Touchdown Total + AMS	3.2 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	99	99	99	97	99	95	188
POST I (1-2 inch weeds) / POST IV (4-6 inch regrowth)								
Capreno + Buctril + Superb HC + AMS / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	78	72	71	94	83	191
Capreno + Buctril + Superb HC + AMS / Ignite 280 + Laudis + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	80	73	75	78	78	183
Lumax + Superb HC / Touchdown Total + AMS	1.5 qt/a + 0.5% v/v / 24 fl oz/a + 8.5 lb/ 100 gal	0	78	80	56	99	97	179
Lumax + Superb HC / Halex GT + NIS + AMS	1.5 qt/a + 0.5% v/v / 3.6 pt/a + 0.25% v/v + 8.5 lb/ 100 gal	0	79	80	58	99	99	189
	LSD (P=0.10)	**1.5**	**4.5**	**4.8**	**4.2**	**3.7**	**4.5**	**21**

Table 5. Crop response to two-pass herbicide systems in field corn on May 23, 31, June 8, 16, and 24 at Rochester, MN, in 2011.

Treatment	Rate	Crop Injury					Yield
		5/23	5/31	6/8	6/16	6/24	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	0
PRE/POST II (4-6 inch weeds)							
Capreno / Laudis + Buctril + Destiny HC + AMS	3 fl oz/a / 3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	0	8	0	0	171
Capreno / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	0	4	0	0	172
Capreno / Ignite 280 + Laudis + AMS	3 fl oz/a / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	0	5	0	0	177
Harness / Roundup PowerMax + AMS	1.33 pt/a / 22 fl oz/a + 8.5 lb/ 100 gal	0	0	1	0	0	168
PRE/POST III (2-4 inch regrowth)							
SureStart / SureStart + Durango DMA + AMS	1.5 pt/a / 1.5 pt/a + 24 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	168
SureStart / Durango DMA + AMS	1.75 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	179
PRE / POST IV (4-6 inch regrowth)							
Lumax / Touchdown Total + AMS	1.5 qt/a / 24 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	192
Lumax / Halex GT + NIS + AMS	1.5 qt/a / 3.6 pt/a + 0.25 % v/v + 8.5 lb/ 100 gal	0	0	1	0	0	181
Verdict/ Status + Roundup PowerMax + AMS	13 fl oz/a / 2.5 oz/a + 22 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	202
Zemax / Touchdown Total + AMS	2.4 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	203
Zemax / Touchdown Total + AMS	3.2 pt/a / 24 fl oz/a + 8.5 lb/ 100 gal	0	0	0	0	0	188
POST I (1-2 inch weeds) / POST IV (4-6 inch regrowth)							
Capreno + Buctril + Superb HC + AMS / Laudis + Roundup PowerMax + Destiny HC + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 2 fl oz/a + 22 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal	0	16	6	0	0	191
Capreno + Buctril + Superb HC + AMS / Ignite 280 + Laudis + AMS	3 fl oz/a + 6 fl oz/a + 0.5% v/v + 8.5 lb/ 100 gal / 22 fl oz/a + 2 fl oz/a + 8.5 lb/ 100 gal	0	16	6	0	0	183
Lumax + Superb HC / Touchdown Total + AMS	1.5 qt/a + 0.5% v/v / 24 fl oz/a + 8.5 lb/ 100 gal	0	12	4	0	0	179
Lumax + Superb HC / Halex GT + NIS + AMS	1.5 qt/a + 0.5% v/v / 3.6 pt/a + 0.25% v/v + 8.5 lb/ 100 gal	0	7	4	0	0	189
	LSD (P=0.10)	**0**	**2.5**	**2.2**	**0**	**0**	**21**