

Evaluation of weed management systems in field corn at Rochester, MN in 2006.

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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 and soil test P and K levels of 64 ppm and 226 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 20, at a rate of 109-19-85-24 (N-P-K-S). The area was side dressed with an additional 30 lb/A of N on June 7. The field was chisel plowed, spring disked, and field cultivated once prior to planting. The corn hybrid, Pioneer 38H65, was planted on May 3, 2006 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 I and POST II) 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 31, June 14, and July 10. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on November 2, 2006.

Date	May 3	May 26	June 2
Treatment	PRE	POST I	POST II
Temperature (F)			
Air	64	66	79
soil	62.8	69.3	83.8
Relative Humidity (%)	44	88	34
Wind (mph)	18	6	0
Soil moisture	adequate	adequate	dry
Corn			
stage	--	V2	4 collar
height (inch)	--	3.5	6.0
Giant Ragweed			
weed density (ft ²)	--	14.6	14.6
height (inch)	--	2.0	3.0
Common Lambsquarters			
weed density (ft ²)	--	4.1	4.1
height (inch)	--	0.3	1.3
Common Waterhemp			
weed density (ft ²)	--	17.5	17.5
height (inch)	--	0.3	0.8
Giant Foxtail			
weed density (ft ²)	--	14.3	14.3
height (inch)	--	0.5	1.3
Rainfall after each application (inch)			
week 1	0.80	0.24	0.42
week 2	0.58	0.42	2.23
week 3	0.07	2.23	0.16

CONCLUSIONS

PRE only treatments of Keystone LA + Hornet WDG provided consistently good giant ragweed control on all rating dates. It also provided excellent common waterhemp, common lambsquarters, and giant foxtail control. Grain yield was not statistically different than the weed free check.

PRE / POST II herbicide programs afforded good giant ragweed control with the exception of the Define SC / Liberty + atrazine + N-Pa-K AMS treatment, and the Outlook/ Aim + atrazine treatment. Common lambsquarters control was reduced in the Outlook / Roundup WeatherMax + BAS 799 + N-Pa-K AMS treatment, compared to all other PRE / POST II programs. Common waterhemp control was reduced in the Define SC / Liberty + atrazine + N-Pa-K AMS treatment, compared to all other PRE / POST II programs. All PRE / POST II treatments achieved excellent giant foxtail control.

POST I and POST II only herbicide applications resulted in very good overall weed control with the exception of the POST II treatment of Steadfast + Callisto + atrazine + COC + N-Pa-K AMS treatment. Common waterhemp was not adequately controlled with this treatment.

Grain yields in this trial were highly variable, LSD (P=0.10) of 19 bushels per acre. Early season drought conditions and variability in soil and weed density account for some of this variability. Although not statistically different than the PRE, POST I and POST II programs, the two highest grain yields, 188 bu/A, occurred in the PRE / POST II herbicide programs, Surpass / Hornet WDG + Callisto + atrazine + COC + N-Pa-K AMS and the Lumax / Liberty + N-Pa-K AMS treatments. Four PRE / POST II treatments were statistically lower in yield than the highest yielding treatments. In three of the four cases, poor early season giant ragweed control is a possible explanation for the reduction in grain yield. In the fourth, reduced common lambsquarters control is a possible explanation. (University of Minnesota Extension Service, Regional Center, Rochester, MN).

Table. Performance of herbicide systems for weed control in field corn on May 31 June 14, and July 10 at Rochester, MN in 2006.

Treatment	Rate	Injury 6/14	Giant ragweed control		Common lambsquarters control			Common waterhemp control			Giant foxtail control			Corn yield (bu/A)	
			5/31	6/14	7/10	5/31	6/14	7/10	5/31	6/14	7/10	5/31	6/14		7/10
	(rate/A)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	
Outlook / Roundup WeatherMax + BAS 799 + N-PAK AMS	12 oz / 14 oz + 2.5 oz + 3 qt	0	8	80	98	31	83	80	99	98	97	99	99	98	168
Dual II Magnum / Touchdown Total + Callisto + N-PAK AMS	1 pt / 24 oz + 3 oz + 3 qt	0	0	96	96	26	99	99	99	99	99	99	99	99	175
Resolve + atrazine / Roundup Original MAX + NIS + N-PAK AMS	1 oz + 16 oz / 22 oz + 0.25%v/v + 3 qt	0	76	90	97	99	99	98	87	99	95	99	99	98	177
GF 1834 / Glyphomax XRT + N-PAK AMS	1.75 pt / 24 oz + 3 qt	0	85	98	97	99	99	99	98	99	99	99	99	98	176
Weedy		0	0	0	0	0	0	0	0	0	0	0	0	0	4
Weed Free		0	100	100	100	100	100	100	100	100	100	100	100	100	181
POST I															
Accent + Harmony GT + Lumax + NIS	0.45 oz + 0.05 oz + 2 pt + 0.25% v/v	0	98	96	97	99	99	99	99	98	98	92	92	94	171
Lumax + Touchdown Total + N-PAK AMS	3 pt + 24 oz + 3 qt	0	97	95	98	99	99	99	99	99	99	98	89	91	173
Lumax + Liberty + N-PAK AMS	3 pt + 20 oz + 3 qt	0	97	96	98	99	99	99	99	96	97	96	93	95	180
POST II															
Steadfast + Callisto + atrazine + COC + N-PAK AMS	0.75 oz + 2 oz + 16 oz + 1% v/v + 3 qt	0	0	90	94	0	95	98	0	84	83	0	88	96	173
Resolve + atrazine + Roundup Original MAX + NIS + N-PAK AMS	1 oz + 16 oz + 22 oz + 0.25% v/v + 3 qt	0	0	74	94	0	85	92	0	86	90	0	98	98	181
LSD (P=0.10)		1	7	4	2	8	3	3	5	2	3	2	3	3	19