

## **Evaluation of the application timings of Callisto, Touchdown Total, and Roundup WeatherMax based programs in field corn at Rochester, MN in 2005.**

Breitenbach, Fritz R., Lisa M. Behnken, Corey W. Stever, and Krista M. Sheehan

The objective of this trial was to evaluate and compare the performance of Callisto, Touchdown Total, and Roundup WeatherMax based programs for weed control in field corn in southeastern Minnesota. The research site was a Lawler series loam containing 2.4% organic matter with a pH test of 7.4 and soil test P and K levels of 52 ppm and 168 ppm, respectively. The previous crop was soybean. The area was fertilized in the spring with 130 lb/A nitrogen, 23, lb/A phosphorus, 90 lb/A potash, and 13 lb/A sulfur. The area was top dressed with 40 lb/A of nitrogen on June 7, 2005. The field was disked and field cultivated once prior to planting. The corn hybrid, DeKalb DKC 51-45RR, was planted on April 29, 2005 at a depth of 1.5 inches in 30-inch rows at 32,000 seeds/A. A randomized complete block design with four replications was used. Preemergence (PRE) and postemergence (POST I, POST II, POST III, and POST IV) 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 20, May 26, June 15, and June 24. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	April 29	May 24	June 2	June 6	June 16
Treatment	PRE	POST I	POST II	POST III	POST IV
Temperature (F)					
air	49	73	68	79	73
soil	50	--	68	80	65
Relative humidity (%)	33	44	58	46	44
Wind (mph)	6	8	14	14	6
Soil moisture	dry	adequate	adequate	dry/ adequate	adequate
Corn					
stage	Seeded	LS2	3 collar	3-4 collar	6 collar
height (inch)	--	2.5	4.8	7.1	15
Giant ragweed					
weed density (ft <sup>2</sup> )	--	15.9	15.9	15.9	15.9
height (inch)	--	2.4	5.5	10.5	3.8
Common waterhemp					
weed density (ft <sup>2</sup> )	--	116	116	116	116
height (inch)	--	0.2	0.8	0.6	2.5
Common lambsquarters					
weed density (ft <sup>2</sup> )	--	1.0	1.0	1.0	1.0
height (inch)	--	0.6	2.0	1.4	1.5
Giant foxtail					
weed density (ft <sup>2</sup> )	--	1.1	1.1	1.1	1.1
height (inch)	--	0.4	1.5	0.0	1.1
Rainfall after application (inch)					
week 1	0.12	0.31	1.82	2.06	0.15
week 2	1.65	1.45	0.54	0.19	1.23
week 3	0.31	0.25	0.15	1.29	0.07

### **CONCLUSIONS**

The five preemergence treatments afforded very good weed control across the spectrum of weeds evaluated in this trial. Early season differences (reduced control) were observed for KIH-485 + Hornet for giant ragweed, however, no differences were measurable during later ratings.

PRE/POST I treatments consisted of split applications of Lumax or Camix. Both of these treatments provided very good weed control as measured by the final weed rating. However, the Lumax split treatment provided better early season giant ragweed control.

PRE/POST II treatments consisted of reduced rates of soil applied herbicides followed by Touchdown Total or Roundup WeatherMax, compared to Dual II Magnum followed by Callisto + AAtrex. Soil applied products with atrazine or Callisto provided some suppression of giant ragweed. The soil applied product with the highest atrazine component provided the best early season giant ragweed control. The Dual II Magnum / Callisto + AAtrex treatment provided the best late season giant ragweed control. Significantly reduced common waterhemp control was observed in the Harness Xtra / Roundup WeatherMax treatment for the last two ratings.

POST I treatments consisted of reduced rates of Lumax, Lexar, or Camix (applied for residual control) tank mixed with Touchdown Total. The above three treatments were compared to a POST I only application of Roundup WeatherMax. Excellent weed control was achieved with the residual products tank mixed with Touchdown Total. The Roundup WeatherMax only treatment applied at POST I provided significantly reduced control of giant ragweed, common waterhemp, and giant foxtail.

Roundup WeatherMax only applications were also made POST II, POST III, and sequentially at POST II / POST IV. The POST II / POST IV sequential applications provided the most consistent weed control. POST III applications provided the next highest weed control; however, a slight reduction in giant ragweed control was observed and dramatically reduced common waterhemp control was evident. POST II applications also resulted in significantly lower giant ragweed and common waterhemp control when compared to the sequential applications of Roundup WeatherMax. POST I applications provided significantly reduced control of giant ragweed, common waterhemp, and giant foxtail when compared to all other application timings with Roundup WeatherMax. (University of Minnesota Extension Service, Regional Center, Rochester, MN).

**Table. Performance of Callisto, Touchdown Total, and Roundup WeatherMax systems for weed control in corn on May 20, May 26, June 15, and June 24 at Rochester, MN in 2005.**

Treatment <sup>a</sup>	Rate	Giant ragweed control				Common lambsquarters control			Common waterhemp control			Giant foxtail control			Corn yield <sup>b</sup>
		5/20	5/26	6/15	6/24	5/26	6/15	6/24	5/26	6/15	6/24	5/26	6/15	6/24	
	(rate/A)	5/20 5/26 6/15/6/24 (%)				5/26 6/15 6/24 (%)			5/26 6/15 6/24 (%)			5/26 6/15 6/24 (%)			(bu/A)
<b><u>PRE</u></b>															
Lumax	2.5 qt	60	75	93	94	99	99	99	99	99	99	99	95	97	198
Lexar	3 qt	71	79	96	95	99	99	99	99	99	99	99	96	97	179
Keystone LA + Hornet	2 qt + 3 oz	78	85	91	89	99	99	99	99	97	98	99	96	97	161
KIH-485 + Callisto	5 oz + 5 oz	34	68	90	93	99	99	99	99	99	99	99	97	99	174
KIH-485 + Hornet	5 oz + 3 oz	64	65	86	90	99	99	99	99	99	99	99	97	97	172
<b><u>PRE / POST I</u></b>															
Lumax / Lumax + NIS	1.25 qt / 1.25 qt + 0.25%	34	63	97	98	99	99	99	99	99	99	99	98	99	212
Camix / Camix + NIS	1 qt / 1 qt + 0.25%	15	59	95	96	99	99	99	99	99	99	99	97	98	192
<b><u>PRE / POST II</u></b>															
Camix / Touchdown Total + AMS	1.2 qt / 24 oz + 3 lb	18	56	89	90	99	99	99	99	99	98	99	99	98	187
Lumax / Touchdown Total + AMS	1.5 qt / 24 oz + 3 lb	39	64	91	88	99	99	99	99	99	99	99	98	96	202
Lexar / Touchdown Total + AMS	1.75 qt / 24 oz + 3 lb	55	71	94	90	99	99	99	99	99	96	99	97	98	203
Dual II Magnum / Callisto + AAtrex + COC + 28% UAN	1.34 pt / 3 oz + 1 pt + 1% + 2.5%	0	0	97	99	0	99	99	99	0	99	99	0	98	212
Harness Xtra / Roundup WeatherMax + AMS	1 qt / 22 oz + 3 lb	23	25	84	87	86	99	99	99	97	75	73	98	95	193
<b><u>POST I</u></b>															
Camix + Touchdown Total + AMS	1.2 qt + 24 oz + 3 lb	0	0	85	92	0	99	99	99	0	99	99	0	96	193
Lumax + Touchdown Total + AMS	1.5 qt + 24 oz + 3 lb	0	0	91	98	0	98	99	99	0	83	99	0	94	194
Lexar + Touchdown Total + AMS	1.75 qt + 24 oz + 3 lb	0	0	97	99	0	99	99	99	0	99	99	0	99	196
Roundup WeatherMax + AMS	22 oz + 3 lb	0	0	43	40	0	97	95	95	0	43	25	0	79	23

Treatment <sup>a</sup>	Rate	Giant ragweed control				Common lambsquarters control			Common waterhemp control			Giant foxtail control			Corn yield <sup>b</sup> (bu/A)
		5/20	5/26	6/15	6/24	5/26	6/15	6/24	5/26	6/15	6/24	5/26	6/15	6/24	
	(rate/A)	%				%			%			%			
<b>POST II</b>															
Roundup WeatherMax + AMS	22 oz + 3 lb	0	0	85	84	0	97	93	0	50	43	0	93	92	183
<b>POST II / POST IV</b>															
Roundup WeatherMax + AMS / Roundup WeatherMax + AMS	22 oz + 3 lb / 22 oz + 3 lb	0	0	86	97	0	95	99	0	54	90	0	94	99	204
<b>POST III</b>															
Roundup WeatherMax + AMS	22 oz + 3 lb	0	0	92	90	0	97	96	0	53	43	0	98	98	189
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>LSD (P = 0.05)</b>		<b>7</b>	<b>9</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>39</b>

a. NIS = AGRI-DEX nonionic surfactant, Helena; AMS = spray grade ammonium sulfate; COC = crop oil concentrate, Helena; 28% UAN = an aqueous solution of urea and ammonium nitrate.

b. Yield adjusted to 15.5% moisture. Corn yield variability due to extreme drought conditions in June and early July.