Comparison of Weed Management Programs to Halex GT Herbicide in Field Corn in SE Minnesota in 2010

Behnken, Lisa M., Fritz R. Breitenbach, Ryan P. Miller and Kira Stearns

The objective of this trial was to evaluate the performance of Halex GT herbicide programs for weed control in corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.6, O.M. of 2.4%, and soil test P and K levels of 39 ppm and 113 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 5, 2010 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, DeKalb DKC52-59, was planted on April 20, 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 18, June 3, 15, 23, and September 30. 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: A late frost on May 9 impacted the trial resulting in greater than 36 percent frost damage across all plots. However, plant stand was not negatively impacted with the frost. No crop response from herbicide application was observed during the course of the trial. Giant ragweed was the dominate weed in this trial.

Very respectable grain yields were obtained with all the PRE followed by POST II applications and with the POST I applications where the treatments included a residual broadleaf herbicide that was effective in controlling giant ragweed. Corn grain yields suffered in treatments with no residual broadleaf materials (Roundup PowerMax, and Roundup PowerMax with Status). The addition of Status to Roundup PowerMax may have positively affected yields by hastening the rate of kill; however, it did not improve final overall weed control. Woolly cupgrass control was improved with the PRE followed by POST II treatments when compared to the POST I treatments. The addition of residual grass control herbicides in the POST I treatments provided a slight improvement in control over the non-residual herbicide treatments. (University of Minnesota Extension Regional Office, Rochester)

Date	**4/21**	**5/22**	**6/3**	**6/16**
Treatment	PRE	POST I	POST II	POST III
Field Conditions				
Temperature (F)				
Air	64.0	57.0	75.0	46.0
Soil	64.0	58.8	72.7	77.5
Relative Humidity (%)	39	96	41	59
Wind (mph)	13	10	0	8
Soil Moisture	Adequate	Adequate	Excessive	Excessive
Corn				
Stage		V3	V5	V7
Height (inch)		4.0	11.0	27.8
Giant Ragweed				
Weed density (ft^2)			13.0	
Height (inch)		2.0	3.5	10.3
Common Lambsquarters				
Weed density (ft^2)			1.5	
Height (inch)		0.75	2.0	0.9
Common Waterhemp				
Weed density (ft^2)			1.5	
Height (inch)		0.5	2.0	0.9
Woolly Cupgrass				
Weed density (ft^2)			3.5	
Height (inch)		0.5	3.5	2.3
Rainfall after each application (inch)				
Week 1	0.38	0.0	0.85	3.31
Week 2	0.60	1.39	2.34	1.49
Week 3	1.70	1.20	1.94	0.27

Table 1. Performance of Halex GT herbicide systems for giant ragweed control in field corn on May 18, June 3, 15, 23, and September 30 at Rochester, MN in 2010.

Treatment	Rate	Giant Ragweed Control					Yield
		5/18	6/3	6/15	6/23	9/30	
	(rate/A)	(% Control)					(bu/A)
Untreated Check		0	0	0	0	0	2
PRE / POST II (2-4" weed regrowth)							
SureStart / Durango + N-Pak-AMS	1.75 pt/a / 24 fl oz/a + 2.5% v/v	85	83	97	96	96	208
Dual II Magnum + Callisto / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a / 24 fl oz/a + 2.5% v/v	78	91	97	96	96	219
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	86	92	98	96	97	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	84	92	97	95	95	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2.5 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	84	94	97	95	95	223
Verdict / Touchdown Total + Status + NIS	13 fl oz/a / 24 fl oz/a + 2.5 oz wt/a + 0.25% v/v	93	90	98	96	97	214
POST I (2-4 inch weeds)							
Halex GT + N-Pak AMS + NIS	3.6 pt/z + 2.5% v/v + 0.25% v/v	--	95	94	92	92	210
Halex GT + Aatrex + N-Pak AMS + NIS	3.6 pt/a + 1 pt/a + 2.5% v/v + 0.25% v/v	--	97	96	94	96	217
Roundup PowerMax + Laudis + Aatrex + N-Pak AMS	22 fl oz/a + 2 fl oz/a + 1 pt/a + 2.5% v/v	--	96	92	92	90	207
SureStart + Durango + N-Pak AMS	1.75 pt/a + 24 fl oz/a + 2.5% v/v	--	94	95	92	92	221
Roundup PowerMax + Capreno + Aatrex + N-Pak AMS	22 fl oz/a + 3 fl oz/a + 1 pt/a + 2.5% v/v	--	95	94	92	90	214
Roundup PowerMax + Status + N-Pak AMS	22 fl oz/a + 2.5 oz wt/a + 2.5% v/v	--	90	91	86	74	184
Halex GT + Northstar + N-Pak AMS + NIS	3.6 pt/a + 2.5 oz wt/a + 2.5% v/v + 0.25% v/v	--	96	96	94	96	214
Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v	--	82	89	83	74	166
POST I (2-4 inch weeds) / POST III (25 DAT)							
Roundup PowerMax + N-Pak AMS / Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v / 22 fl oz/a + 2.5% v/v	--	81	88	96	99	206
	LSD (P=0.10)	**2**	**3**	**2**	**2**	**3**	**17**

Table 2. Performance of Halex GT herbicide systems for common lambsquarters control in field corn on May 18, June 3, 15, 23, and September 30 at Rochester, MN in 2010.

Treatment	Rate	Common Lambsquarters Control					Yield
		5/18	6/3	6/15	6/23	9/30	
	(rate/A)	(% Control)					(bu/A)
Untreated Check		0	0	0	0	0	2
PRE / POST II (2-4" weed regrowth)							
SureStart / Durango + N-Pak-AMS	1.75 pt/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	99	208
Dual II Magnum + Callisto / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	98	219
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	99	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	99	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2.5 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	98	99	223
Verdict / Touchdown Total + Status + NIS	13 fl oz/a / 24 fl oz/a + 2.5 oz wt/a + 0.25% v/v	99	99	99	99	99	214
POST I (2-4 inch weeds)							
Halex GT + N-Pak AMS + NIS	3.6 pt/z + 2.5% v/v + 0.25% v/v	--	99	99	99	99	210
Halex GT + Aatrex + N-Pak AMS + NIS	3.6 pt/a + 1 pt/a + 2.5% v/v + 0.25% v/v	--	99	99	99	99	217
Roundup PowerMax + Laudis + Aatrex + N-Pak AMS	22 fl oz/a + 2 fl oz/a + 1 pt/a + 2.5% v/v	--	99	99	99	99	207
SureStart + Durango + N-Pak AMS	1.75 pt/a + 24 fl oz/a + 2.5% v/v	--	99	98	97	99	221
Roundup PowerMax + Capreno + Aatrex + N-Pak AMS	22 fl oz/a + 3 fl oz/a + 1 pt/a + 2.5% v/v	--	99	99	99	99	214
Roundup PowerMax + Status + N-Pak AMS	22 fl oz/a + 2.5 oz wt/a + 2.5% v/v	--	90	90	85	90	184
Halex GT + Northstar + N-Pak AMS + NIS	3.6 pt/a + 2.5 oz wt/a + 2.5% v/v + 0.25% v/v	--	99	99	99	99	214
Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v	--	89	87	76	96	166
POST I (2-4 inch weeds) / POST III (25 DAT)							
Roundup PowerMax + N-Pak AMS / Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v / 22 fl oz/a + 2.5% v/v	--	88	86	99	99	206
	LSD (P=0.10)	**0**	**2**	**2**	**1**	**2**	**17**

Table 3. Performance of Halex GT herbicide systems for common waterhemp control in field corn on May 18, June 3, 15, 23, and September 30 at Rochester, MN in 2010.

Treatment	Rate	Common Waterhemp Control					Yield
		5/18	6/3	6/15	6/23	9/30	
	(rate/A)	(% Control)					(bu/A)
Untreated Check		0	0	0	0	0	2
PRE / POST II (2-4" weed regrowth)							
SureStart / Durango + N-Pak-AMS	1.75 pt/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	97	208
Dual II Magnum + Callisto / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	96	219
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	97	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	98	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2.5 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	99	99	99	99	98	223
Verdict / Touchdown Total + Status + NIS	13 fl oz/a / 24 fl oz/a + 2.5 oz wt/a + 0.25% v/v	99	99	99	99	98	214
POST I (2-4 inch weeds)							
Halex GT + N-Pak AMS + NIS	3.6 pt/z + 2.5% v/v + 0.25% v/v	--	98	98	96	96	210
Halex GT + Aatrex + N-Pak AMS + NIS	3.6 pt/a + 1 pt/a + 2.5% v/v + 0.25% v/v	--	99	99	99	98	217
Roundup PowerMax + Laudis + Aatrex + N-Pak AMS	22 fl oz/a + 2 fl oz/a + 1 pt/a + 2.5% v/v	--	96	92	90	93	207
SureStart + Durango + N-Pak AMS	1.75 pt/a + 24 fl oz/a + 2.5% v/v	--	99	99	98	97	221
Roundup PowerMax + Capreno + Aatrex + N-Pak AMS	22 fl oz/a + 3 fl oz/a + 1 pt/a + 2.5% v/v	--	96	97	94	93	214
Roundup PowerMax + Status + N-Pak AMS	22 fl oz/a + 2.5 oz wt/a + 2.5% v/v	--	88	90	83	83	184
Halex GT + Northstar + N-Pak AMS + NIS	3.6 pt/a + 2.5 oz wt/a + 2.5% v/v + 0.25% v/v	--	99	99	99	98	214
Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v	--	82	87	75	82	166
POST I (2-4 inch weeds) / POST III (25 DAT)							
Roundup PowerMax + N-Pak AMS / Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v / 22 fl oz/a + 2.5% v/v	--	84	86	99	98	206
	LSD (P=0.10)	**0**	**3**	**2**	**3**	**2**	**17**

Table 4. Performance of Halex GT herbicide systems for woolly cupgrass control in field corn on May 18, June 3, 15, 23, and September 30 at Rochester, MN in 2010.

Treatment	Rate	Woolly Cupgrass Control					Yield
		5/18	6/3	6/15	6/23	9/30	
	(rate/A)	(% Control)					(bu/A)
Untreated Check		0	0	0	0	0	2
PRE / POST II (2-4" weed regrowth)							
SureStart / Durango + N-Pak-AMS	1.75 pt/a / 24 fl oz/a + 2.5% v/v	81	89	98	95	97	208
Dual II Magnum + Callisto / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a / 24 fl oz/a + 2.5% v/v	72	88	99	95	97	219
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	73	86	99	96	97	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	74	86	98	98	98	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2.5 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	73	85	98	98	97	223
Verdict / Touchdown Total + Status + NIS	13 fl oz/a / 24 fl oz/a + 2.5 oz wt/a + 0.25% v/v	81	91	99	99	98	214
POST I (2-4 inch weeds)							
Halex GT + N-Pak AMS + NIS	3.6 pt/z + 2.5% v/v + 0.25% v/v	--	96	94	91	91	210
Halex GT + Aatrex + N-Pak AMS + NIS	3.6 pt/a + 1 pt/a + 2.5% v/v + 0.25% v/v	--	97	95	93	94	217
Roundup PowerMax + Laudis + Aatrex + N-Pak AMS	22 fl oz/a + 2 fl oz/a + 1 pt/a + 2.5% v/v	--	95	91	87	88	207
SureStart + Durango + N-Pak AMS	1.75 pt/a + 24 fl oz/a + 2.5% v/v	--	97	94	90	89	221
Roundup PowerMax + Capreno + Aatrex + N-Pak AMS	22 fl oz/a + 3 fl oz/a + 1 pt/a + 2.5% v/v	--	96	93	89	89	214
Roundup PowerMax + Status + N-Pak AMS	22 fl oz/a + 2.5 oz wt/a + 2.5% v/v	--	97	90	83	84	184
Halex GT + Northstar + N-Pak AMS + NIS	3.6 pt/a + 2.5 oz wt/a + 2.5% v/v + 0.25% v/v	--	97	95	92	90	214
Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v	--	92	87	79	81	166
POST I (2-4 inch weeds) / POST III (25 DAT)							
Roundup PowerMax + N-Pak AMS / Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v / 22 fl oz/a + 2.5% v/v	--	94	88	99	99	206
	LSD (P=0.10)	**1**	**3**	**2**	**3**	**4**	**17**

Table 5. Crop response to frost on May 9, rated on May 18 at Rochester, MN, in 2010.

Treatment	Rate	Injury 5/18 Frost Damage	Yield
	(rate/A)	(%)	(bu/A)
Untreated Check		41	2
PRE / POST II (2-4" weed regrowth)			
SureStart / Durango + N-Pak-AMS	1.75 pt/a / 24 fl oz/a + 2.5% v/v	43	208
Dual II Magnum + Callisto / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a / 24 fl oz/a + 2.5% v/v	48	219
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 3 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	46	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	44	223
Dual II Magnum + Callisto + Stinger / Touchdown Total + N-Pak-AMS	1 pt/a + 2.5 fl oz/a + 2.5 fl oz/a / 24 fl oz/a + 2.5% v/v	40	223
Verdict / Touchdown Total + Status + NIS	13 fl oz/a / 24 fl oz/a + 2.5 oz wt/a + 0.25% v/v	43	214
POST I (2-4 inch weeds)			
Halex GT + N-Pak AMS + NIS	3.6 pt/z + 2.5% v/v + 0.25% v/v	40	210
Halex GT + Aatrex + N-Pak AMS + NIS	3.6 pt/a + 1 pt/a + 2.5% v/v + 0.25% v/v	40	217
Roundup PowerMax + Laudis + Aatrex + N-Pak AMS	22 fl oz/a + 2 fl oz/a + 1 pt/a + 2.5% v/v	39	207
SureStart + Durango + N-Pak AMS	1.75 pt/a + 24 fl oz/a + 2.5% v/v	43	221
Roundup PowerMax + Capreno + Aatrex + N-Pak AMS	22 fl oz/a + 3 fl oz/a + 1 pt/a + 2.5% v/v	45	214
Roundup PowerMax + Status + N-Pak AMS	22 fl oz/a + 2.5 oz wt/a + 2.5% v/v	43	184
Halex GT + Northstar + N-Pak AMS + NIS	3.6 pt/a + 2.5 oz wt/a + 2.5% v/v + 0.25% v/v	40	214
Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v	41	166
POST I (2-4 inch weeds) / POST III (25 DAT)			
Roundup PowerMax + N-Pak AMS / Roundup PowerMax + N-Pak AMS	22 fl oz/a + 2.5% v/v / 22 fl oz/a + 2.5% v/v	36	206
	LSD (P=0.10)	**6**	**17**