

Evaluation of the performance of Balance Flexx, Corvus and Capreno herbicide programs for weed control in field corn at Rochester, MN, in 2008.

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The objective of this trial was to evaluate the performance of Balance Flexx, Corvus and Capreno programs for weed control in corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 7.2 and soil test P and K levels of 81 ppm and 204 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 16, at a rate of 120-36-86-28 (N-P-K-S). The area was side dressed with an additional 35 b/A of N on June 25. The field was spring disked and field cultivated once prior to planting. The corn hybrid, NK N41C-3000GT 98 RM, was planted on May 5, 2008, at a depth of 2.0 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 22, 27, and 30, June 9, 18, and 30, and July 21. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on November 3, 2008.

Date	5/5	5/22	6/2	6/10
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
Air	75	64	72	70
soil	57.2	66.5	64	71
Relative Humidity (%)	34	34	57	52
Wind (mph)	17	12	8	22
Soil moisture	Adequate	Inadequate	Excessive	Adequate
Corn				
stage		V1-V2	V4	V5
height (inch)		2.0	4.5	9.5
Giant Ragweed				
weed density (ft ²)		6.1	6.1	6.1
height (inch)		1.5	4	4.5
Common Lambsquarters				
weed density (ft ²)		7.6	7.6	7.6
height (inch)		0.5	1.4	3.0
Common Waterhemp				
weed density (ft ²)		12.3	12.3	12.3
height (inch)		0.3	1.2	2.25
Woolly Cupgrass				
weed density (ft ²)		12.1	12.1	12.1
height (inch)		0.25	1.6	2.25
Rainfall after each application (inch)				
week 1	1.89	1.99	4.79	3.52
week 2	0.24	2.06	3.52	0.00
week 3	0.19	6.57	0.00	0.76

CONCLUSIONS

Weather conditions following preemergence applications allowed for excellent activation of the herbicides with 1.89 inches of precipitation falling within one week of application.

Preemergence control of giant ragweed was poor with no treatments rated higher than 41% (5/22 rating). In dramatic contrast, preemergence common lambsquarters control was excellent for all soil applied treatments resulting in 99% control (5/22 rating). No rating data for soil applied herbicides was collected for common waterhemp. Soil applied treatments provided poor control of woolly cupgrass with the best treatment, Harness Xtra, achieving only 65% control. The remaining treatments ranged between 25% to 46% control (5/22 rating).

Weather conditions prior to POST I, II & III applications were favorable due to abundant moisture conditions and moderate temperatures.

Sequential PRE/POST III applications consistently provided very good to excellent giant ragweed control. All treatments with the exception of Harness Xtra followed by Roundup PowerMax, 92% control, provided better than 98% control (7/21 rating).

POST I applications provided very good to excellent control of giant ragweed, 96% or better. Only the Balance Flexx 5 oz rate + Aatrex offered slightly less control at 93% (7/21 rating).

POST II applications provided very good to excellent giant ragweed control as well with all treatments at 94% control or better (7/21 rating).

Common lambsquarters control was excellent throughout the duration of the trial and no treatment provided less than 97% control regardless of application timing or rating date.

All sequential PRE/POST II applications provided excellent common waterhemp control with no treatment providing less than 95% control.

POST I applications of Corvus + Aatrex, although offering very good control at 88%, did show some weakness when compared to the other POST I treatments for common waterhemp control.

POST II treatments provided very good to excellent control for common waterhemp. Statistically, the best treatments included Halex GT, 99%, and Capreno + Aatrex + MSO, 98%, (7/21 rating). All other treatments provided at least 92% control of common waterhemp.

All sequential PRE/POST III applications provided very good woolly cupgrass control with the exception of the sequential Lumax treatment, 61%, and the Balance Flexx Capreno +Aatrex treatment, 77%. The remainder of the treatments provided at least 90% control of woolly cupgrass (7/21 rating).

POST I applications provided a wider range of woolly cupgrass control. Statistically, the best treatments were Balance Flexx 5 oz rate + Aatrex, 84%, and both rates of Corvus + Aatrex, 83% and 79% control, respectively (7/21 rating). The weakest treatment was Lumax at 58% control (7/21 rating).

POST II applications all provided good to very good control of woolly cupgrass. Statistically the best treatments were Halex GT, 92%, Capreno + Roundup PowerMax, 89%, Capreno + Ignite, 89%, Capreno + Aatrex, 87%, and Laudis + Ignite + Aatrex, 88% (7/21 rating). The weakest treatment was Laudis + Aatrex at 81% control (7/21 rating). (University of Minnesota Extension, Regional Office – Rochester).

Table 1. Performance of herbicide systems for giant ragweed control in field corn on May 22, June 9, 18, and 30, and July 21 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Giant Ragweed Control					Yield (bu/A)
		5/22	6/9	6/18	6/30	7/21	
		Giant Ragweed Control (%)					
Untreated Check		0	0	0	0	0	2
PRE / POST III							
Balance Flexx / Laudis + MSO + 28% UAN	4 fl oz / 3 fl oz + 1% v/v + 1.5 qt	32	69	94	99	99	112
Balance Flexx / Laudis + MSO + 28% UAN	5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	41	66	96	99	99	123
Balance Flexx / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	33	71	97	95	98	96
Balance Flexx / Ignite 280 + Aatrex + AMS	3 fl oz / 22 fl oz + 1 pt + 17 lbs/100 gal	40	78	98	97	98	81
Balance Flexx / Capreno + Aatrex + COC + UAN	3 fl oz / 3 fl oz + 1 pt + 1 % v/v + 1.5 qt	30	69	98	99	99	91
Balance Flexx / Capreno + MSO + UAN	3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	26	58	78	99	99	119
Corvus / Laudis + MSO + UAN	3.3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	38	79	92	98	99	102
Corvus / Laudis + MSO + UAN	4.5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	35	78	93	95	99	109
Corvus / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	39	81	98	98	99	112
Corvus / Laudis + Aatrex + COC + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	35	66	99	97	99	117
Corvus / Laudis + Aatrex + MSO + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	31	71	98	98	99	94
Harness Xtra / Roundup PowerMax + AMS	1.3 qt / 22 fl oz + 17 lbs/100 gal	23	20	97	94	92	109
Lumax / Lumax + NIS	1.5 qt / 1.5 qt + 0.25% v/v	40	88	99	99	99	84
POST I							
Balance Flexx + Aatrex	4 fl oz + 1 pt	0	98	96	94	96	91
Balance Flexx + Aatrex	5 fl oz + 1 pt	0	94	94	93	93	90
Corvus + Aatrex	3.3 fl oz + 1 pt	0	96	94	96	96	103
Corvus + Aatrex	4.5 fl oz + 1 pt	0	95	94	94	97	94
Lumax + NIS	2.5 qt + 0.25% v/v	0	94	94	94	97	47
POST II							
Laudis + Ignite 280 + Aatrex + AMS	2 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	97	95	95	95	108
Laudis + Aatrex + Roundup PowerMax + AMS	3 fl oz + 1 pt + 11 fl oz + 17 lbs/100 gal	0	95	95	94	95	114
Laudis + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	96	96	95	94	112
Capreno + Aatrex + COC + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	95	95	97	98	97
Capreno + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	96	96	96	99	81
Capreno + Ignite 280 + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	95	95	96	97	82
Capreno + Ignite 280 + Aatrex + AMS	3 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	96	96	94	96	100
Capreno + Roundup PowerMax + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	94	95	95	94	93
Halex GT + NIS + AMS	3.6 pts + 0.25% v/v + 17lbs/100 gal	0	95	93	92	96	113
LSD (P=0.10)		6	6	3	3	3	39

Table 2. Performance of herbicide systems for common lambsquarters control in field corn on May 22, June 9, 18, and 30, and July 21 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Common Lambsquarters Control					Yield (bu/A)
		5/22	6/9	6/18	6/30	7/21	
Untreated Check		0	0	0	0	0	2
PRE / POST III							
Balance Flexx / Laudis + MSO + 28% UAN	4 fl oz / 3 fl oz + 1% v/v + 1.5 qt	99	99	99	99	99	112
Balance Flexx / Laudis + MSO + 28% UAN	5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	99	99	99	99	99	123
Balance Flexx / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	99	98	99	99	99	96
Balance Flexx / Ignite 280 + Aatrex + AMS	3 fl oz / 22 fl oz + 1 pt + 17 lbs/100 gal	99	98	99	99	99	81
Balance Flexx / Capreno + Aatrex + COC + UAN	3 fl oz / 3 fl oz + 1 pt + 1 % v/v + 1.5 qt	99	97	99	99	99	91
Balance Flexx / Capreno + MSO + UAN	3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	99	98	99	99	99	119
Corvus / Laudis + MSO + UAN	3.3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	99	99	99	99	99	102
Corvus / Laudis + MSO + UAN	4.5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	99	98	99	99	99	109
Corvus / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	99	99	99	99	99	112
Corvus / Laudis + Aatrex + COC + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	99	99	99	99	99	117
Corvus / Laudis + Aatrex + MSO + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	99	98	99	99	99	94
Harness Xtra / Roundup PowerMax + AMS	1.3 qt / 22 fl oz + 17 lbs/100 gal	99	99	99	99	97	109
Lumax / Lumax + NIS	1.5 qt / 1.5 qt + 0.25% v/v	99	99	99	99	99	84
POST I							
Balance Flexx + Aatrex	4 fl oz + 1 pt	0	99	99	99	99	91
Balance Flexx + Aatrex	5 fl oz + 1 pt	0	99	99	99	99	90
Corvus + Aatrex	3.3 fl oz + 1 pt	0	99	99	99	99	103
Corvus + Aatrex	4.5 fl oz + 1 pt	0	99	99	98	99	94
Lumax + NIS	2.5 qt + 0.25% v/v	0	99	99	99	99	47
POST II							
Laudis + Ignite 280 + Aatrex + AMS	2 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	99	99	99	99	108
Laudis + Aatrex + Roundup PowerMax + AMS	3 fl oz + 1 pt + 11 fl oz + 17 lbs/100 gal	0	98	99	99	99	114
Laudis + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	98	99	99	99	112
Capreno + Aatrex + COC + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	99	99	99	99	97
Capreno + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	99	99	99	99	81
Capreno + Ignite 280 + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	99	99	99	99	82
Capreno + Ignite 280 + Aatrex + AMS	3 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	99	99	99	99	100
Capreno + Roundup PowerMax + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	99	99	99	99	93
Halex GT + NIS + AMS	3.6 pts + 0.25% v/v + 17lbs/100 gal	0	99	99	99	99	113
LSD (P=0.10)		0	1	0	1	1	39

Table 3. Performance of herbicide systems for common waterhemp control in field corn on May 22, June 9, 18, and 30, and July 21 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Common Waterhemp Control					Yield (bu/A)
		5/30	6/9	6/18	6/30	7/21	
		(%)					
Untreated Check		0	0	0	0	0	2
PRE / POST III							
Balance Flexx / Laudis + MSO + 28% UAN	4 fl oz / 3 fl oz + 1% v/v + 1.5 qt	94	94	99	99	99	112
Balance Flexx / Laudis + MSO + 28% UAN	5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	92	96	99	98	98	123
Balance Flexx / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	93	87	99	98	97	96
Balance Flexx / Ignite 280 + Aatrex + AMS	3 fl oz / 22 fl oz + 1 pt + 17 lbs/100 gal	92	91	99	96	95	81
Balance Flexx / Capreno + Aatrex + COC + UAN	3 fl oz / 3 fl oz + 1 pt + 1 % v/v + 1.5 qt	93	89	99	97	97	91
Balance Flexx / Capreno + MSO + UAN	3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	93	93	98	98	99	119
Corvus / Laudis + MSO + UAN	3.3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	91	92	99	99	99	102
Corvus / Laudis + MSO + UAN	4.5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	92	94	99	98	99	109
Corvus / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	95	94	99	98	98	112
Corvus / Laudis + Aatrex + COC + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	94	88	99	96	98	117
Corvus / Laudis + Aatrex + MSO + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	97	93	99	98	99	94
Harness Xtra / Roundup PowerMax + AMS	1.3 qt / 22 fl oz + 17 lbs/100 gal	98	98	98	96	95	109
Lumax / Lumax + NIS	1.5 qt / 1.5 qt + 0.25% v/v	98	99	99	99	99	84
POST I							
Balance Flexx + Aatrex	4 fl oz + 1 pt	96	99	88	90	94	91
Balance Flexx + Aatrex	5 fl oz + 1 pt	96	99	92	92	93	90
Corvus + Aatrex	3.3 fl oz + 1 pt	97	95	83	86	88	103
Corvus + Aatrex	4.5 fl oz + 1 pt	96	97	85	87	88	94
Lumax + NIS	2.5 qt + 0.25% v/v	92	99	97	97	99	47
POST II							
Laudis + Ignite 280 + Aatrex + AMS	2 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	99	96	90	95	108
Laudis + Aatrex + Roundup PowerMax + AMS	3 fl oz + 1 pt + 11 fl oz + 17 lbs/100 gal	0	93	89	85	93	114
Laudis + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	86	96	90	94	112
Capreno + Aatrex + COC + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	86	99	95	95	97
Capreno + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	84	98	94	98	81
Capreno + Ignite 280 + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	99	95	88	93	82
Capreno + Ignite 280 + Aatrex + AMS	3 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	99	92	88	93	100
Capreno + Roundup PowerMax + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	99	97	91	92	93
Halex GT + NIS + AMS	3.6 pts + 0.25% v/v + 17lbs/100 gal	0	99	99	96	99	113
LSD (P=0.10)			4	4	4	3	39

Table 4. Performance of herbicide systems for woolly cupgrass control in field corn on May 22, June 9, 18, and 30, and July 21 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Woolly Cupgrass Control (%)					Yield (bu/A)
		5/22	6/9	6/18	6/30	7/21	
Untreated Check		0	0	0	0	0	2
PRE / POST III							
Balance Flexx / Laudis + MSO + 28% UAN	4 fl oz / 3 fl oz + 1% v/v + 1.5 qt	31	79	97	95	94	112
Balance Flexx / Laudis + MSO + 28% UAN	5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	35	75	98	95	92	123
Balance Flexx / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	30	70	99	95	91	96
Balance Flexx / Ignite 280 + Aatrex + AMS	3 fl oz / 22 fl oz + 1 pt + 17 lbs/100 gal	39	88	99	95	93	81
Balance Flexx / Capreno + Aatrex + COC + UAN	3 fl oz / 3 fl oz + 1 pt + 1 % v/v + 1.5 qt	28	80	96	94	93	91
Balance Flexx / Capreno + MSO + UAN	3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	25	64	81	83	77	119
Corvus / Laudis + MSO + UAN	3.3 fl oz / 3 fl oz + 1% v/v + 1.5 qt	31	69	93	94	90	102
Corvus / Laudis + MSO + UAN	4.5 fl oz / 3 fl oz + 1% v/v + 1.5 qt	38	76	94	93	90	109
Corvus / Ignite 280 + Laudis + AMS	3 fl oz / 22 fl oz + 2 fl oz + 17 lbs/100 gal	36	78	99	96	94	112
Corvus / Laudis + Aatrex + COC + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	33	69	94	95	92	117
Corvus / Laudis + Aatrex + MSO + UAN	2.5 fl oz / 2 fl oz + 1 pt + 1 % v/v + 1.5 qt	31	65	96	94	92	94
Harness Xtra / Roundup PowerMax + AMS	1.3 qt / 22 fl oz + 17 lbs/100 gal	65	93	99	96	91	109
Lumax / Lumax + NIS	1.5 qt / 1.5 qt + 0.25% v/v	46	68	66	56	61	84
POST I							
Balance Flexx + Aatrex	4 fl oz + 1 pt	0	68	74	67	73	91
Balance Flexx + Aatrex	5 fl oz + 1 pt	0	88	86	83	84	90
Corvus + Aatrex	3.3 fl oz + 1 pt	0	94	88	87	83	103
Corvus + Aatrex	4.5 fl oz + 1 pt	0	91	84	85	79	94
Lumax + NIS	2.5 qt + 0.25% v/v	0	71	63	51	58	47
POST II							
Laudis + Ignite 280 + Aatrex + AMS	2 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	97	94	91	88	108
Laudis + Aatrex + Roundup PowerMax + AMS	3 fl oz + 1 pt + 11 fl oz + 17 lbs/100 gal	0	92	89	87	85	114
Laudis + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	76	88	86	81	112
Capreno + Aatrex + COC + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	88	92	90	87	97
Capreno + Aatrex + MSO + UAN	3 fl oz + 1 pt + 1% v/v + 1.5 qt	0	85	93	90	87	81
Capreno + Ignite 280 + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	96	96	92	89	82
Capreno + Ignite 280 + Aatrex + AMS	3 fl oz + 22 fl oz + 1 pt + 17 lbs/100 gal	0	94	93	86	86	100
Capreno + Roundup PowerMax + AMS	3 fl oz + 22 fl oz + 17 lbs/100 gal	0	95	95	90	89	93
Halex GT + NIS + AMS	3.6 pts + 0.25% v/v + 17lbs/100 gal	0	97	98	92	92	113
LSD (P=0.10)		7	6	4	4	5	39