

Comparison of weed control programs with herbicides containing bicyclopyrone and their standards in field corn in SE Minnesota in 2013

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The objective of this trial was to evaluate preemergence and postemergence control of weed with bicyclopyrone containing herbicides in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.7, O.M. of 2.5%, and soil test P and K levels of 69 ppm and 180 ppm, respectively. Spring fertilizer was broadcast on April 26, 2013 ahead of planting at a rate of 130-26-120-24 (N-P-K-S). The field was spring disked and field cultivated once prior to planting. The corn hybrid, Pioneer P9917AMX (99 day), was planted on May 13, 2013 at a depth of 1.5 inches in 30 inch rows at a rate of 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 15 GPA at 32 psi using TeeJet 11002 air induction flat spray tips for PRE treatments, and Turbo TeeJet 11002 wide angle flat spray tip nozzles for POST applications. Evaluations of the plots were taken on May 29, June 17, 26, and July 11, 2013. The center two rows of each plot were machine harvested on November 8, 2013. Application dates, environmental conditions, and weed stages are listed below in Table 1. Herbicide performance for giant ragweed, common lambsquarters, common waterhemp and grasses, plus plant injury ratings can be seen in Tables 2 through 6 respectively. (University of Minnesota Extension Regional Office – Rochester)

Table 1. Application timing, plant stage, environmental conditions.

Date	5/14	6/19
Treatment	PRE	POST I
Temperature (F)		
Air	71	86
Soil	54.5	74
Relative Humidity (%)	49	25
Wind (mph)	8	24
Soil Moisture	Normal	Normal
Corn		
Stage		V5
Height (inch)		12
Giant Ragweed		
Weed density (ft ²)		11.6
Height (inch)		13.3
Common Lambsquarters		
Weed density (ft ²)		9.3
Height (inch)		4.3
Common Waterhemp		
Weed density (ft ²)		60.9
Height (inch)		0.5
Grass		
Weed density (ft ²)		8.8
Height (inch)		4.6
Rainfall after each application (inch)		
Week 1	4.77	5.25
Week 2	1.93	.51
Week 3	2.1	1.07

Table 2. Evaluation of preemergence and postemergence systems for giant ragweed control in field corn on May 29, June 17, 26 and July 11, at Rochester, MN, in 2013.

Treatment	Rate (rate/A)	Giant Ragweed Control				Yield (bu/A)
		5/29	6/17	6/26	7/11	
		Giant Ragweed Control (%)				
Untreated Check		0	0	0	0	9.3
PRE						
A19707	3 qt/a	70	91	95	95	194.5
A19707 + Aatrex	3 qt/a + 0.75 qt/a	76	95	98	97	200.3
Lumax EZ	3.24 qt/a	71	86	89	89	*
PRE / POST I (V5 Corn)						
A19707 / Halex GT + Aatrex+ N-Pak AMS + Induce	1.5 qt/a / 1.79 qt/a + 0.5 qt/a +1.5 qt/a +4.8 fl oz/a	70	81	99	99	200.7
A19707 / Status + Touchdown Total + N- Pak AMS	3 qt/a / 5 oz/a + 30 fl oz/a + 1.5 qt/a	75	92	98	97	200.1
A19707 / Touchdown Total + N-Pak AMS	3 qt/a / 30 fl oz/a + 1.5 qt/a	78	93	98	98	196.6
SureStart / Touchdown Total+ N-Pak AMS	2 pt/a / 30 fl oz/a + 1.5 qt/a	60	62	94	94	193.7
Verdict / Touchdown Total + N-Pak AMS	13 fl oz/a / 30 fl oz/a + 1.5 qt/a	54	53	91	92	191.6
Harness Xtra / Touchdown Total + N-Pak AMS	2 qt/a / 30 fl oz/a + 1.5 qt/a	65	71	95	94	200.3
BreakFree + instigate / Touchdown Total + N-Pak AMS	2 pt/a + 6 oz/a / 30 fl oz/a + 1.5 qt/a	74	87	98	96	190.2
POST I (V5 Corn)						
A19707 + Touchdown Total + N-Pak AMS	1.5 qt/a + 30 fl oz/a + 1.5 qt/a	0	0	87	95	166.8
LSD (P=0.10)		8	6	2	2	14.7

*Harvest rows in the Lumax EZ treatment were damaged by wheel traffic and will not be reported.

Table 3. Evaluation of preemergence and postemergence systems for common lambsquarters control in field corn on May 29, June 17, 26 and July 11, at Rochester, MN, in 2013.

Treatment	Rate	Common Lambsquarters Control				Yield
		5/29	6/17	6/26	7/11	
	(rate/A)	(%)				(bu/A)
Untreated Check		0	0	0	0	9.3
PRE						
A19707	3 qt/a	99	99	99	99	194.5
A19707 + Aatrex	3 qt/a + 0.75 qt/a	99	99	99	99	200.3
Lumax EZ	3.24 qt/a	99	99	99	99	*
PRE / POST I (V5 Corn)						
A19707 / Halex GT + Aatrex+ N-Pak AMS + Induce	1.5 qt/a / 1.79 qt/a + 0.5 qt/a +1.5 qt/a +4.8 fl oz/a	99	99	99	99	200.7
A19707 / Status + Touchdown Total + N- Pak AMS	3 qt/a / 5 oz/a + 30 fl oz/a + 1.5 qt/a	99	99	99	99	200.1
A19707 / Touchdown Total + N-Pak AMS	3 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	99	99	196.6
SureStart / Touchdown Total+ N-Pak AMS	2 pt/a / 30 fl oz/a + 1.5 qt/a	99	98	99	96	193.7
Verdict / Touchdown Total + N-Pak AMS	13 fl oz/a / 30 fl oz/a + 1.5 qt/a	99	88	99	97	191.6
Harness Xtra / Touchdown Total + N-Pak AMS	2 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	99	98	200.3
BreakFree + instigate / Touchdown Total + N-Pak AMS	2 pt/a + 6 oz/a / 30 fl oz/a + 1.5 qt/a	99	99	99	99	190.2
POST I (V5 Corn)						
A19707 + Touchdown Total + N-Pak AMS	1.5 qt/a + 30 fl oz/a + 1.5 qt/a	0	0	96	86	166.8
LSD (P=0.10)		0.0	2	1	5	14.7

*Harvest rows in the Lumax EZ treatment were damaged by wheel traffic and will not be reported.

Table 4. Evaluation of preemergence and postemergence systems for common waterhemp control in field corn on May 29, June 17, 26 and July 11, at Rochester, MN, in 2013.

Treatment	Rate (rate/A)	Common Waterhemp Control				Yield (bu/A)
		5/29	6/17	6/26	7/11	
		Common Waterhemp Control (%)				
Untreated Check		0	0	0	0	9.3
PRE						
A19707	3 qt/a	99	99	98	95	194.5
A19707 + Aatrex	3 qt/a + 0.75 qt/a	99	99	98	95	200.3
Lumax EZ	3.24 qt/a	99	99	97	96	*
PRE / POST I (V5 corn)						
A19707 / Halex GT + Aatrex+ N-Pak AMS + Induce	1.5 qt/a / 1.79 qt/a + 0.5 qt/a + 1.5 qt/a + 4.8 fl oz/a	99	90	99	99	200.7
A19707 / Status + Touchdown Total + N- Pak AMS	3 qt/a / 5 oz/a + 30 fl oz/a + 1.5 qt/a	99	99	98	97	200.1
A19707 / Touchdown Total + N-Pak AMS	3 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	97	96	196.6
SureStart / Touchdown Total+ N-Pak AMS	2 pt/a / 30 fl oz/a + 1.5 qt/a	99	94	97	94	193.7
Verdict / Touchdown Total + N-Pak AMS	13 fl oz/a / 30 fl oz/a + 1.5 qt/a	99	85	98	93	191.6
Harness Xtra / Touchdown Total + N-Pak AMS	2 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	98	92	200.3
BreakFree + instigate / Touchdown Total + N-Pak AMS	2 pt/a + 6 oz/a / 30 fl oz/a + 1.5 qt/a	99	99	98	95	190.2
POST I (V5 Corn)						
A19707 + Touchdown Total + N-Pak AMS	1.5 qt/a + 30 fl oz/a + 1.5 qt/a	0	0	95	85	166.8
LSD (P=0.10)		0	4	2	2	14.7

*Harvest rows in the Lumax EZ treatment were damaged by wheel traffic and will not be reported.

Table 5 Evaluation of preemergence and postemergence systems for grass control in field corn on May 29, June 17, 26 and July 11, at Rochester, MN, in 2013.

Treatment	Rate (rate/A)	Grass Control				Yield (bu/A)
		5/29	6/17	6/26	7/11	
		Grass Control (%)				
Untreated Check		0	0	0	0	9.3
PRE						
A19707	3 qt/a	99	99	99	99	194.5
A19707 + Aatrex	3 qt/a + 0.75 qt/a	99	99	99	99	200.3
Lumax EZ	3.24 qt/a	99	99	99	99	*
PRE / POST I (V5 Corn)						
A19707 / Halex GT + Aatrex+ N-Pak AMS + Induce	1.5 qt/a / 1.79 qt/a + 0.5 qt/a +1.5 qt/a + 4.8 fl oz/a	99	99	99	99	200.7
A19707 / Status + Touchdown Total + N- Pak AMS	3 qt/a / 5 oz/a + 30 fl oz/a + 1.5 qt/a	99	98	99	99	200.1
A19707 / Touchdown Total + N-Pak AMS	3 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	99	99	196.6
SureStart / Touchdown Total+ N-Pak AMS	2 pt/a / 30 fl oz/a + 1.5 qt/a	99	98	99	96	193.7
Verdict / Touchdown Total + N-Pak AMS	13 fl oz/a / 30 fl oz/a + 1.5 qt/a	99	98	99	98	191.6
Harness Xtra / Touchdown Total + N-Pak AMS	2 qt/a / 30 fl oz/a + 1.5 qt/a	99	99	99	97	200.3
BreakFree + instigate / Touchdown Total + N-Pak AMS	2 pt/a + 6 oz/a / 30 fl oz/a + 1.5 qt/a	99	99	99	99	190.2
POST I (V5 Corn)						
A19707 + Touchdown Total + N-Pak AMS	1.5 qt/a + 30 fl oz/a + 1.5 qt/a	0	0	99	99	166.8
LSD (P=0.10)		0	1	1	2	14.7

*Harvest rows in the Lumax EZ treatment were damaged by wheel traffic and will not be reported.

Table 6. Evaluation of postemergence crop response and plant height in field corn on June 17 and 26, and July 12, at Rochester, MN, in 2013.

Treatment	Rate (rate/A)	Injury		Height	Yield
		6/17	6/26	7/12	
		Injury (%)		Height (ft)	Yield (bu/A)
Untreated Check		0	0	4.06	9.3
PRE					
A19707	3 qt/a	0	0	5.31	194.5
A19707 + Aatrex	3 qt/a + 0.75 qt/a	0	0	5.29	200.3
Lumax EZ	3.24 qt/a	0	0	4.90	*
PRE / POST I (V5 Corn)					
A19707 / Halex GT + Aatrex+ N-Pak AMS + Induce	1.5 qt/a / 1.79 qt/a + 0.5 qt/a +1.5 qt/a + 4.8 fl oz/a	0	0	5.35	200.7
A19707 / Status + Touchdown Total + N- Pak AMS	3 qt/a / 5 oz/a + 30 fl oz/a + 1.5 qt/a	0	0	5.40	200.1
A19707 / Touchdown Total + N-Pak AMS	3 qt/a / 30 fl oz/a + 1.5 qt/a	0	0	5.29	196.6
SureStart / Touchdown Total+ N-Pak AMS	2 pt/a / 30 fl oz/a + 1.5 qt/a	0	0	4.85	193.7
Verdict / Touchdown Total + N-Pak AMS	13 fl oz/a / 30 fl oz/a + 1.5 qt/a	0	0	4.46	191.6
Harness Xtra / Touchdown Total + N-Pak AMS	2 qt/a / 30 fl oz/a + 1.5 qt/a	0	0	4.88	200.3
BreakFree + instigate / Touchdown Total + N-Pak AMS	2 pt/a + 6 oz/a / 30 fl oz/a + 1.5 qt/a	0	0	5.17	190.2
POST I (V5 Corn)					
A19707 + Touchdown Total + N-Pak AMS	1.5 qt/a + 30 fl oz/a + 1.5 qt/a	0	0	4.15	166.8
LSD (P=0.10)		0	0	0.47	14.7

*Harvest rows in the Lumax EZ treatment were damaged by wheel traffic and will not be reported.