

## Evaluation of HPPD Inhibiting Herbicides (Balance Flex, Corvus and Lumax) in Field Corn at Rochester, MN in 2012.

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The objective of this trial was to evaluate and compare weed control performance of HPPD inhibiting herbicides - Balance Flex, Corvus, and Lumax in field 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 March 30, 2012 at a rate of 135-26-150-24 (N-P-K-S). The field was spring disked and field cultivated once prior to planting. The corn hybrid, Pioneer P9917 AM1 (99 day), was planted on April 26, 2012 at a depth of 1.5 inches in 30 inch rows at 32,000 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) treatments were applied on April 26, 2012, and a postemergence (POST) treatment was applied on May 24, 2012 with a tractor-mounted sprayer delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on May 24, 29, June 4, 14, and August 8. The center two rows of each plot were machine harvested on October 2. Application dates, environmental conditions, and weed stages are listed in Table 1. Herbicide performance for giant ragweed, common lambsquarters, common waterhemp and giant foxtail control, plus plant injury ratings can be found in Tables 2 through 6, respectively. (University of Minnesota Extension Regional Office – Rochester)

### SUMMARY

Pre-emergent giant ragweed control ranged 99 to 93% (5/24 rating). Final ratings for giant ragweed show excellent control with Balance Flex + atrazine, Balance Flex + Sharpen, and Lumax followed by glyphosate (99 to 98%, 8/8 rating). Very good control was also achieved with Corvus + Clarity and Corvus + Sharpen (94 and 93%, respectively, 8/8 rating). Slightly reduced control was seen with Corvus + atrazine (89%, 8/8 rating).

Excellent common lambsquarters control was achieved with all treatments.

Common waterhemp control was very good to excellent. Only two treatments had slightly reduced control, Corvus + Sharpen and Corvus + Clarity, 95 and 96 % control, respectively (8/8 rating).

Only slight differences were seen among treatments for giant foxtail. The highest ratings were for Balance Flex + atrazine, Balance Flex + Sharpen, and Lumax followed by glyphosate (98 to 96%, 8/8 rating).

Minimal crop injury was observed, and was virtually undetectable following the 5/29 rating date. Crop height was measured and the Corvus + Clarity treatment was significantly

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

<b>Date</b>	<b>4/26</b>	<b>5/24</b>
<b>Treatment</b>	PRE	POST I
<b>Temperature (F)</b>		
Air	54	79
Soil	59	76
<b>Relative Humidity (%)</b>	38	52
<b>Wind (mph)</b>	16	25
<b>Soil Moisture</b>	Normal	Normal
<b>Corn</b>		
Stage		4-collar
Height (inch)		6.0
<b>Giant Ragweed</b>		
Weed density (ft <sup>2</sup> )		4.5
Height (inch)		3.0
<b>Common Lambsquarters</b>		
Weed density (ft <sup>2</sup> )		5.8
Height (inch)		1.0
<b>Common Waterhemp</b>		
Weed density (ft <sup>2</sup> )		4.3
Height (inch)		0.9
<b>Giant Foxtail</b>		
Weed density (ft <sup>2</sup> )		5.3
Height (inch)		1.9
<b>Rainfall after each application (inch)</b>		
Week 1	1.28	2.08
Week 2	1.68	0.08
Week 3	0.00	0.80

shorter in height than the Balance Flex + Sharpen and the Lumax treatments followed by the glyphosate treatments.

**Table 2. Evaluation of HPPD inhibiting herbicides for giant ragweed control in field corn on May 24, 29, June 4, 14 and August 8 at Rochester, MN, in 2012.**

Treatment	Rate	Giant Ragweed Control					Yield 10/2
		5/24	5/29	6/4	6/14	8/8	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	5
<b>PRE (After Planting)</b>							
Corvus + Atrazine	5.6 fl oz/a + 25 fl oz/a	93	93	89	92	89	94
Corvus + Sharpen	5.6 fl oz/a + 1 fl oz/a	97	96	94	95	93	73
Corvus + Clarity	5.6 fl oz/a + 16 fl oz/a	97	97	96	96	94	103
Balance Flex + Atrazine	6 fl oz/a + 25 fl oz/a	99	99	98	99	99	109
Balance Flex + Sharpen	6 fl oz/a + 1 fl oz/a	98	98	97	98	98	123
<b>PRE (After Planting) / POST I (V3-V5 Corn)</b>							
Lumax / Abundit Extra + AMS	2.5 qt/a / 32 fl oz/a + 2 lb/a	98	99	98	99	99	96
	<b>LSD (P=0.10)</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>39</b>

**Table 3. Evaluation of HPPD inhibiting herbicides for common lambsquarters control in field corn on May 24, 29, June 4, 14 and August 8 at Rochester, MN, in 2012.**

Treatment	Rate	Common Lambsquarters Control					Yield 10/2
		5/24	5/29	6/4	6/14	8/8	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	5
<b>PRE (After Planting)</b>							
Corvus + Atrazine	5.6 fl oz/a + 25 fl oz/a	99	99	99	99	99	94
Corvus + Sharpen	5.6 fl oz/a + 1 fl oz/a	99	99	99	99	98	73
Corvus + Clarity	5.6 fl oz/a + 16 fl oz/a	99	99	99	99	99	103
Balance Flex + Atrazine	6 fl oz/a + 25 fl oz/a	99	99	99	99	99	109
Balance Flex + Sharpen	6 fl oz/a + 1 fl oz/a	99	99	99	99	98	123
<b>PRE (After Planting) / POST I (V3-V5 Corn)</b>							
Lumax / Abundit Extra + AMS	2.5 qt/a / 32 fl oz/a + 2 lb/a	99	99	99	99	99	96
	<b>LSD (P=0.10)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>39</b>

**Table 4. Evaluation of HPPD inhibiting herbicides for common waterhemp control in field corn on May 24, 29, June 4, 14 and August 8 at Rochester, MN, in 2012.**

Treatment	Rate	Common Waterhemp Control					Yield 10/2
		5/24	5/29	6/4	6/14	8/8	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	5
<b>PRE (After Planting)</b>							
Corvus + Atrazine	5.6 fl oz/a + 25 fl oz/a	99	99	99	98	97	94
Corvus + Sharpen	5.6 fl oz/a + 1 fl oz/a	99	99	98	97	95	73
Corvus + Clarity	5.6 fl oz/a + 16 fl oz/a	99	99	99	98	96	103
Balance Flex + Atrazine	6 fl oz/a + 25 fl oz/a	99	99	99	99	98	109
Balance Flex + Sharpen	6 fl oz/a + 1 fl oz/a	99	99	99	99	98	123
<b>PRE (After Planting) / POST I (V3-V5 Corn)</b>							
Lumax / Abundit Extra + AMS	2.5 qt/a / 32 fl oz/a + 2 lb/a	99	99	99	99	99	96
<b>LSD (P=0.10)</b>		<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>39</b>

**Table 5. Evaluation of HPPD inhibiting herbicides for giant foxtail control in field corn on May 24, 29, June 4, 14 and August 8 at Rochester, MN, in 2012.**

Treatment	Rate	Giant Foxtail Control					Yield 10/2
		5/24	5/29	6/4	6/14	8/8	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	5
<b>PRE (After Planting)</b>							
Corvus + Atrazine	5.6 fl oz/a + 25 fl oz/a	98	99	97	98	93	94
Corvus + Sharpen	5.6 fl oz/a + 1 fl oz/a	97	98	95	97	91	73
Corvus + Clarity	5.6 fl oz/a + 16 fl oz/a	99	99	96	98	94	103
Balance Flex + Atrazine	6 fl oz/a + 25 fl oz/a	99	99	98	99	96	109
Balance Flex + Sharpen	6 fl oz/a + 1 fl oz/a	99	99	98	99	97	123
<b>PRE (After Planting) / POST I (V3-V5 Corn)</b>							
Lumax / Abundit Extra + AMS	2.5 qt/a / 32 fl oz/a + 2 lb/a	99	99	99	99	98	96
<b>LSD (P=0.10)</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>39</b>

**Table 6. Crop response to HPPD inhibiting herbicides in field corn on May 24, 29, and June 18, at Rochester, MN, in 2012.**

Treatment	Rate	Injury		Plant Height	Yield
		5/24	5/29	6/18	10/2
	(rate/A)	(%)		(in)	(bu/A)
treated Check		0	0	36	5
<b>PRE (After Planting)</b>					
Corvus + Atrazine	5.6 fl oz/a + 25 fl oz/a	19	10	48	94
Corvus + Sharpen	5.6 fl oz/a + 1 fl oz/a	26	11	47	73
Corvus + Clarity	5.6 fl oz/a + 16 fl oz/a	23	13	42	103
Balance Flex + Atrazine	6 fl oz/a + 25 fl oz/a	11	6	47	109
Balance Flex + Sharpen	6 fl oz/a + 1 fl oz/a	9	6	50	123
<b>PRE (After Planting) / POST I (V3-V5 Corn)</b>					
Lumax / Abundit Extra + AMS	2.5 qt/a / 32 fl oz/a + 2 lb/a	4	1	50	96
<b>LSD (P=0.10)</b>		<b>4</b>	<b>3</b>	<b>7</b>	<b>39</b>