

## Evaluation of the performance of BAS 78102 , BAS 80004, Gowan 3041 and Gowan 3124 for weed control in field corn at Rochester, MN, in 2008.

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The objectives of this trial were to: 1) Evaluate weed control performance of BAS 78102 and BAS 80004 herbicide, 2) evaluate weed control of Gowan 3041 and Gowan 3124 herbicides, and 3) evaluate residual weed control of Yukon and Permit tank mixed with glyphosate herbicide in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 7.3, organic matter of 2.6% and soil test P and K levels of 64 ppm and 226 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 fall chisel plowed and spring disked once and field cultivated once prior to planting. The corn hybrid, Pioneer 37Y14, was planted on May 12, 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 June 4, 9, 23, 30, and July 30. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on November 3, 2008.

<b>Date</b>	<b>5/12</b>	<b>6/10</b>
<b>Treatment</b>	PRE	POST I
<b>Temperature (F)</b>		
Air	51	65
soil	67	60
<b>Relative Humidity (%)</b>	41	67
<b>Wind (mph)</b>	21	12
<b>Soil moisture</b>	Adequate	Excessive
<b>Corn</b>		
stage		V4
height (inch)		6.0
<b>Giant Ragweed</b>		
weed density (ft <sup>2</sup> )		9.9
height (inch)		4.0
<b>Common Lambsquarters</b>		
weed density (ft <sup>2</sup> )		2.8
height (inch)		1.4
<b>Common Waterhemp</b>		
weed density (ft <sup>2</sup> )		3.0
height (inch)		1.0
<b>Grass</b>		
weed density (ft <sup>2</sup> )		7.0
height (inch)		1.8
<b>Rainfall after each application (inch)</b>		
week 1	0.24	3.52
week 2	0.19	0.00
week 3	2.29	0.76

### **CONCLUSIONS**

Weather conditions following pre-emergence applications did not allow for immediate activation of the soil applied herbicides. Only 0.24 inches of precipitation was recorded within one week of application, and only 0.43 inches following 2 weeks of application. A significant rainfall event occurred during the third week with 2.72 inches recorded for the 3 week total.

Preemergence giant ragweed control was generally poor, although the Lumax treatment did reach back and ultimately provided 90% control (6/9 rating).

Preemergence common lambsquarters control also exhibited a large degree of reach back which occurred in all treatments. Statistically, the best common lambsquarters control was provided by Lumax and Harness + Aatrex, 98 and 95% control, respectively, (6/9 rating).

Reach back was also observed for preemergence common waterhemp control for all treatments. Statistically, the best common waterhemp control was provided by Lumax and Harness + Aatrex, 98 and 94% control, respectively, (6/9 rating).

Reach back was less evident for giant foxtail. Statistically, the best giant foxtail control was provided by BAS 80004 + Outlook + Aatrex (low rate) and BAS 78102 (high rate), 81 and 78% control, respectively, (6/9 rating).

**Sequential PRE/POST applications:** All of the treatments provided excellent control of giant ragweed with no statistical differences. Control ranged from a low of 92% to a high of 96% (7/30 rating).

Statistical differences were evident with common lambsquarters control. Statistically, the best treatments were BAS 80004 + Outlook + Aatrex followed by Roundup PowerMax and Harness + Aatrex followed by Roundup PowerMax, 97 and 95% control, respectively. The lowest control was provided by BAS 78102 followed by PowerMax, 83%, (7/30 rating). All of the treatments provided excellent control of common waterhemp with no statistical differences. Control ranged from 93% to 96% (7/30 rating). All of the treatments provided very good control of giant foxtail with no statistical differences. Control ranged from a low of 87% to a high of 92% (7/30 rating).

**POST I applications:** Statistically, all of the treatments were similar except for the Roundup PowerMax treatment which provided only 88% control of giant ragweed (7/30 rating). Common lambsquarters and common waterhemp control mirrored giant ragweed with all treatments being statistically similar. Only the Roundup PowerMax treatment providing lower control of common lambsquarters, 83%, and common waterhemp, 84%, (7/30 rating). Statistical differences were evident with giant foxtail control. Statistically, the best treatment was Status + Roundup PowerMax, 88% control. The weakest treatments were GWN-3041 + GWN-3124 + Roundup PowerMax, 81%, Permit + Roundup PowerMax, 82%, Yukon + Roundup PowerMax, 82%, and Roundup PowerMax, 82%, (7/30 rating). (University of Minnesota Extension, Regional Office – Rochester).

**Table 1. Giant ragweed control with BASF and Gowan herbicides in field corn on June 4, 9, 23, and 30 and July 30 at Rochester, MN, in 2008.**

Treatment	Rate (rate/A)	Giant Ragweed Control (%)					Yield (bu/A)
		6/4	6/9	6/23	6/30	7/30	
Untreated Check		0	0	0	0	0	0
<b>PRE</b>							
BAS 78102	20 fl oz	51	58	58	55	45	27
BAS 80004 + Outlook + Aatrex	3 fl oz + 21 fl oz + 24 fl oz	41	53	56	58	48	29
Lumax	2.5 qt	74	90	96	91	90	144
<b>PRE/POST I</b>							
BAS 78102/ Roundup PowerMax + NIS + AMS	13 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	45	49	97	94	93	169
BAS 80004 + Outlook + Aatrex/ Roundup PowerMax + NIS + AMS	2.5 fl oz + 12 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	48	68	97	95	96	173
Harness + Aatrex/ Roundup PowerMax + NIS + AMS	24 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	49	51	96	93	92	172
BAS 78102/ Roundup PowerMax + Status + NIS + AMS	13 fl oz/ 22 fl oz + 2.5 oz wt + 0.25% v/v + 3.4 lb	38	43	97	95	94	170
<b>POST I</b>							
Permit + Roundup PowerMax + NIS + AMS	0.67 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	98	96	169
GWN-3041 + GWN-3124 + Roundup PowerMax + NIS + AMS	0.67 oz wt + 0.083 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	98	95	162
Yukon + Roundup PowerMax + NIS + AMS	4 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	97	97	171
Yukon + Roundup PowerMax + NIS + AMS	3 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	98	98	96	188
Status + Roundup PowerMax + NIS + AMS	5 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	96	94	180
Roundup PowerMax + NIS + AMS	22 fl oz + 0.125% v/v + 3.4 lb	0	0	96	93	88	161
<b>LSD (P=0.10)</b>		<b>8</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>28</b>

**Table 2. Common lambsquarters control with BASF and Gowan herbicides in corn on June 4, 9, 23, and 30 and July 30 at Rochester, MN, in 2008.**

Treatment	Rate	Common Lambsquarter Control					Yield
		6/4	6/9	6/23	6/30	7/30	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	0
<b>PRE</b>							
BAS 78102	20 fl oz	24	78	50	58	48	27
BAS 80004 + Outlook + Aatrex	3 fl oz + 21 fl oz + 24 fl oz	29	68	59	65	58	29
Lumax	2.5 qt	76	98	99	99	98	144
<b>PRE/POST I</b>							
BAS 78102/ Roundup PowerMax + NIS + AMS	13 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	23	68	97	94	83	169
BAS 80004 + Outlook + Aatrex/ Roundup PowerMax + NIS + AMS	2.5 fl oz + 12 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	31	86	99	99	97	173
Harness + Aatrex/ Roundup PowerMax + NIS + AMS	24 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	38	95	99	99	95	172
BAS 78102/ Roundup PowerMax + Status + NIS + AMS	13 fl oz/ 22 fl oz + 2.5 oz wt + 0.25% v/v + 3.4 lb	21	78	99	91	92	170
<b>POST I</b>							
Permit + Roundup PowerMax + NIS + AMS	0.67 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	98	96	96	169
GWN-3041 + GWN-3124 + Roundup PowerMax + NIS + AMS	0.67 oz wt + 0.083 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	98	95	162
Yukon + Roundup PowerMax + NIS + AMS	4 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	96	95	171
Yukon + Roundup PowerMax + NIS + AMS	3 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	99	97	188
Status + Roundup PowerMax + NIS + AMS	5 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	93	95	180
Roundup PowerMax + NIS + AMS	22 fl oz + 0.125% v/v + 3.4 lb	0	0	98	89	83	161
<b>LSD (P=0.10)</b>		<b>8</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>28</b>

**Table 3. Common waterhemp control with BASF and Gowan herbicides in field corn on June 4, 9, 23, and 30 and July 30 at Rochester, MN, in 2008.**

Treatment	Rate	Common Waterhemp Control					Yield
		6/4	6/9	6/23	6/30	7/30	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	0
<b>PRE</b>							
BAS 78102	20 fl oz	70	90	86	94	74	27
BAS 80004 + Outlook + Aatrex	3 fl oz + 21 fl oz + 24 fl oz	53	84	76	75	65	29
Lumax	2.5 qt	78	98	98	97	99	144
<b>PRE/POST I</b>							
BAS 78102/ Roundup PowerMax + NIS + AMS	13 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	40	81	99	94	94	169
BAS 80004 + Outlook + Aatrex/ Roundup PowerMax + NIS + AMS	2.5 fl oz + 12 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	58	92	98	95	93	173
Harness + Aatrex/ Roundup PowerMax + NIS + AMS	24 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	48	94	99	98	96	172
BAS 78102/ Roundup PowerMax + Status + NIS + AMS	13 fl oz/ 22 fl oz + 2.5 oz wt + 0.25% v/v + 3.4 lb	48	84	99	93	94	170
<b>POST I</b>							
Permit + Roundup PowerMax + NIS + AMS	0.67 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	98	94	90	169
GWN-3041 + GWN-3124 + Roundup PowerMax + NIS + AMS	0.67 oz wt + 0.083 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	87	89	162
Yukon + Roundup PowerMax + NIS + AMS	4 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	94	90	171
Yukon + Roundup PowerMax + NIS + AMS	3 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	93	94	87	188
Status + Roundup PowerMax + NIS + AMS	5 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	97	93	90	180
Roundup PowerMax + NIS + AMS	22 fl oz + 0.125% v/v + 3.4 lb	0	0	91	84	84	161
<b>LSD (P=0.10)</b>		<b>8</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>28</b>

**Table 4. Giant foxtail control with BASF and Gowan herbicide systems in field corn on June 4, 9, 23, and 30 and July 30 at Rochester, MN, in 2008.**

Treatment	Rate	Giant foxtail Control					Yield
		6/4	6/9	6/23	6/30	7/30	
	(rate/A)	(%)					(bu/A)
Untreated Check		0	0	0	0	0	0
<b>PRE</b>							
BAS 78102	20 fl oz	70	78	60	74	64	27
BAS 80004 + Outlook + Aatrex	3 fl oz + 21 fl oz + 24 fl oz	61	74	60	73	63	29
Lumax	2.5 qt	69	74	83	73	70	144
<b>PRE/POST I</b>							
BAS 78102/ Roundup PowerMax + NIS + AMS	13 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	60	68	99	98	87	169
BAS 80004 + Outlook + Aatrex/ Roundup PowerMax + NIS + AMS	2.5 fl oz + 12 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	64	81	98	98	90	173
Harness + Aatrex/ Roundup PowerMax + NIS + AMS	24 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	66	73	99	98	92	172
BAS 78102/ Roundup PowerMax + Status + NIS + AMS	13 fl oz/ 22 fl oz + 2.5 oz wt + 0.25% v/v + 3.4 lb	64	69	99	98	89	170
<b>POST I</b>							
Permit + Roundup PowerMax + NIS + AMS	0.67 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	97	82	169
GWN-3041 + GWN-3124 + Roundup PowerMax + NIS + AMS	0.67 oz wt + 0.083 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	98	81	162
Yukon + Roundup PowerMax + NIS + AMS	4 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	99	98	84	171
Yukon + Roundup PowerMax + NIS + AMS	3 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	96	97	82	188
Status + Roundup PowerMax + NIS + AMS	5 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	0	98	98	88	180
Roundup PowerMax + NIS + AMS	22 fl oz + 0.125% v/v + 3.4 lb	0	0	96	98	82	161
<b>LSD (P=0.10)</b>		<b>5</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>28</b>

**Table 5. Corn Injury with BASF and Gowan herbicide systems in corn on June 4 at Rochester, MN, in 2008.**

Treatment	Rate	Injury 6/4	Yield
	(rate/A)	(%)	(bu/A)
Untreated Check		0	0
<b>PRE</b>			
BAS 78102	20 fl oz	0	27
BAS 80004 + Outlook + Aatrex	3 fl oz + 21 fl oz + 24 fl oz	0	29
Lumax	2.5 qt	0	144
<b>PRE/POST I</b>			
BAS 78102/ Roundup PowerMax + NIS + AMS	13 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	0	169
BAS 80004 + Outlook + Aatrex/ Roundup PowerMax + NIS + AMS	2.5 fl oz + 12 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	0	173
Harness + Aatrex/ Roundup PowerMax + NIS + AMS	24 fl oz + 24 fl oz/ 22 fl oz + 0.25% v/v + 3.4 lb	0	172
BAS 78102/ Roundup PowerMax + Status + NIS + AMS	13 fl oz/ 22 fl oz + 2.5 oz wt + 0.25% v/v + 3.4 lb	0	170
<b>POST I</b>			
Permit + Roundup PowerMax + NIS + AMS	0.67 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	169
GWN-3041 + GWN-3124 + Roundup PowerMax + NIS + AMS	0.67 oz wt + 0.083 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	162
Yukon + Roundup PowerMax + NIS + AMS	4 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	171
Yukon + Roundup PowerMax + NIS + AMS	3 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	188
Status + Roundup PowerMax + NIS + AMS	5 oz wt + 22 fl oz + 0.125% v/v + 3.4 lb	0	180
Roundup PowerMax + NIS + AMS	22 fl oz + 0.125% v/v + 3.4 lb	0	161
	<b>LSD (P=0.10)</b>	<b>0</b>	<b>28</b>