

## **Evaluation of Prowl H<sub>2</sub>O programs and glyphosate products for weed control in soybean at Rochester, MN in 2004.**

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The objective of this trial was to evaluate Prowl H<sub>2</sub>O programs and compare glyphosate products for weed control in soybean in southeastern Minnesota. The research site was a Lawler loam series containing 2.5% organic matter with a pH of 6.1 and soil test P and K levels of 42 ppm and 135 ppm, respectively. The area was fertilized with 3 T/A of lime in the spring. The previous crop was corn. The field was disked and field cultivated once prior to planting. The soybean variety, Golden Harvest 1961, was planted on May 26, 2004 at a depth of 1.5 inches in 30-inch rows at 150,000 seeds/A. A randomized complete block design with four replications was used. Preplant incorporated (PPI), 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 29, July 12, and July 19. Application dates and environmental conditions as well as crop and weed stages are listed below.

Date	May 26	May 26	June 28
Treatment	PPI	PRE	POST
Temperature (F)			
air	56	58	71
Relative humidity (%)	64	62	45
Wind (mph)	13	13	13
Soil moisture	adequate	adequate	adequate
Soybean			
stage	seeded	seeded	V2
height (inches)	0	0	6.8
Giant ragweed			
weed density/ft <sup>2</sup>	--	--	4
height (inch)	--	--	5
Common lambsquarters			
weed density/ft <sup>2</sup>	--	--	6
height (inch)	--	--	1
Common waterhemp			
weed density/ft <sup>2</sup>	--	--	12
height (inch)	--	--	2.5
Giant foxtail			
weed density/ft <sup>2</sup>	--	--	25
height (inch)	--	--	5
Rainfall after application (inch)			
week 1	1.31	1.31	0.16
week 2	0.20	0.20	2.82
week 3	5.46	5.46	0.23

Soil applied Pursuit Plus provided significantly better giant ragweed and common lambsquarters control than soil applied Prowl H<sub>2</sub>O + Outlook and Prowl H<sub>2</sub>O by itself. Soil applied Prowl H<sub>2</sub>O + Outlook provided significantly better common waterhemp and giant foxtail control than soil applied Pursuit Plus and Prowl H<sub>2</sub>O by itself. Soil applied Prowl H<sub>2</sub>O + Outlook provided significantly better giant ragweed and common lambsquarters control than soil applied Prowl H<sub>2</sub>O by itself (Table 1.).

Two-pass programs (soil applied followed by post) generally provided similar weed control to the glyphosate standard. Exceptions to this were the Prowl H<sub>2</sub>O / Raptor + Ultra Blazer treatment which resulted in significantly lower giant ragweed and giant foxtail control, and the Pursuit Plus/ Rezult B + Rezult G treatment which provided significantly better giant ragweed control on the July 12 rating than the glyphosate standard. This difference, however, did not carryover to July 19 rating. Common waterhemp control was also significantly lower with the Pursuit Plus/ Rezult B + Rezult G treatment than the glyphosate standard (Table 1.).

Soybean yield was significantly lower with two treatments. In the Prowl H<sub>2</sub>O / Raptor + Ultra Blazer program, giant ragweed control was significantly less than other treatments resulting in greater weed competition and reduced yield. In the Pursuit Plus/ Rezult B + Rezult G program, common waterhemp control was significantly less than other treatments resulting in greater competition and reduced yield (Table 1.).

The comparison of ten glyphosate products resulted in minimal differences. Significant differences were observed in two of the glyphosate treatments; Touchdown Hi-Tech + AMS + NIS, and Roundup Original + AMS + NIS. On the July 12 common waterhemp rating, Touchdown Hi-Tech + AMS + NIS had significantly lower control than Touchdown Total + AMS, Touchdown IQ + AMS, GF-1279 + AMS, ClearOut 41 Plus + AMS, Buccaneer Plus + AMS, Roundup UltraMax + AMS, and Roundup WeatherMax + AMS. These differences were not measurable in the July 19 ratings for common waterhemp. Common waterhemp control was significantly lower on the July 12 rating with Roundup Original + AMS + NIS than Touchdown Total + AMS, ClearOut 41 Plus + AMS, and Roundup UltraMax + AMS. On the July 19 common waterhemp rating, Roundup Original + AMS + NIS had significantly lower control than the Touchdown Total + AMS and Roundup WeatherMax + AMS treatments. Roundup Original + AMS + NIS was significantly lower on the July 12 rating of common lambsquarters than Roundup WeatherMax + AMS. This difference was not observed in the subsequent July 19 rating. Soybean yield was statistically the same for all treatments, even with the slight differences in weed control (Table 2.). (University of Minnesota Extension Service, Regional Center, Rochester, MN)

Table 1. Performance of Prowl H<sub>2</sub>O and glyphosate herbicide programs for weed control in soybean on June 29, July 12, and July 19 at Rochester, MN in 2004. (Breitenbach, Behnken, Griffin, and Schaufler).

Treatment	Rate	Giant ragweed control			Common lambsquarters control			Common waterhemp control			Giant foxtail control			Soybean yield
		6/29	7/12	7/19	6/29	7/12	7/19	6/29	7/12	7/19	6/29	7/12	7/19	
	(rate/A)	6/29 7/12 7/19 (%)			6/29 7/12 7/19 (%)			6/29 7/12 7/19 (%)			6/29 7/12 7/19 (%)			(bu/A)
<b>PPI / POST</b>														
Prowl H <sub>2</sub> O / Raptor + Ultra Blazer + NIS + AMS	43 oz / 4 oz + 8 oz + 0.25% v/v + 3 lbs	0	58	81	90	99	99	85	99	96	88	58	90	29
Prowl H <sub>2</sub> O / Extreme + NIS + AMS	43 oz / 3 pts + 0.25 % v/v + 3 lbs	0	89	96	91	98	99	81	97	96	86	99	99	41
Prowl H <sub>2</sub> O / Extreme + Headline <sup>1</sup> + NIS + AMS	43 oz / 3 pts + 6 oz + 0.25 % v/v + 3 lbs	0	85	95	90	98	99	84	95	96	88	100	99	41
<b>PRE / POST</b>														
Prowl H <sub>2</sub> O + Outlook/ Roundup Original + NIS + AMS	16 oz + 12.6 oz / 24 oz + 0.25 % v/v + 3 lbs	23	92	98	96	98	97	99	98	98	94	99	98	42
Pursuit Plus/ Rezult B + Rezult G + NIS + AMS	2.5 pts / 1.6 pts + 1.6 pts + 0.25 % v/v + 3 lbs	66	99	99	100	99	99	83	46	49	88	95	99	37
Roundup WeatherMax + AMS	22 oz + 3 lbs	0	93	98	0	96	98	0	93	98	0	98	97	43
Untreated		0	0	0	0	0	0	0	0	0	0	0	0	16
LSD = (0.05)		8	5	3	1	4	2	4	4	3	2	2	2	3

Headline<sup>1</sup> = Headline fungicide, NIS = AGRI-DEX nonionic surfactant, Helena; and AMS = spray grade ammonium sulfate, Helena.

Table 2. Performance of glyphosate products applied with AMS and/or NIS for weed control in soybean on July 12 and July 19 at Rochester, MN in 2004 (Breitenbach, Behnken, Griffin, and Schaufler).

Treatment	Rate	Giant ragweed control		Common lambsquarters control		Common waterhemp control		Giant foxtail control		Soybean yield
		7/12	7/19	7/12	7/19	7/12	7/19	7/12	7/19	
	(rate/A)	(%)		(%)		(%)		(%)		(bu/A)
<b>POST</b>										
Touchdown Total + AMS	24 oz + 3 lbs	91	97	94	97	96	98	99	96	40
Touchdown HiTech + NIS + AMS	20 oz + 0.25 % v/v + 3 lbs	90	96	93	97	85	96	98	96	43
Touchdown IQ + AMS	32 oz + 3 lbs	91	97	93	97	93	97	98	96	42
GlyphoMax Plus + AMS	32 oz + 3 lbs	91	97	93	97	91	97	99	97	42
GF-1279+ AMS	24 oz + 3 lbs	91	97	91	97	93	97	98	96	41
Clearout 41 Plus + AMS	32 oz + 3 lbs	92	97	95	97	94	97	99	97	41
Buccaneer Plus + AMS	32 oz + 3 lbs	90	96	93	97	92	96	98	97	41
Roundup Original + NIS + AMS	32 oz + 0.25 % v/v + 3 lbs	91	96	90	98	87	93	98	97	42
Roundup UltraMax + AMS	26 oz + 3 lbs	93	97	94	97	96	97	98	97	41
Roundup WeatherMax + AMS	22 oz + 3 lbs	93	98	96	98	93	98	98	97	43
Untreated		0	0	0	0	0	0	0	0	16
LSD = (0.10)		4	3	3	1	4	3	2	2	2

AMS = spray grade ammonium sulfate, Helena; and NIS = nonionic surfactant, Helena.