

Evaluation of Prefix as a component of a weed control program in soybean at Rochester, MN, in 2008.

Behnken, Lisa M., Fritz R. Breitenbach, Ryan P. Miller, Amanda J. Welter, and Brent R. Breitenbach.

The objective of this trial was: To evaluate Prefix herbicide programs for weed control in soybean. The research site was a Lawler loam series with a pH of 6.9 and soil test P and K levels of 19 ppm and 112 ppm, respectively. The field was spring disked and field cultivated prior to planting. The soybean variety, Asgrow AG2107, was planted on May 23, 2008, at a depth of 1.5 inches in 30 inch rows at 150,000 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST I, POST II, and POST III) 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 23 and 30, July 14 and 28, and September 19, 2008. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on October 10, 2008.

Date	5/23	6/26	6/30	7/21
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
air	66	75	76	77
soil	70	82	84	72
Relative Humidity (%)	43	55	32	61
Wind (mph)	15	3	12	7
Soil moisture	Inadequate	Inadequate	Adequate	Adequate
Soybean				
stage		V3	V4	R2
height (inch)		4.4	6.5	19
Giant Ragweed				
weed density (ft ²)		3.8	3.8	3.8
height (inch)		5.9	8.3	6.0
Common Lambsquarters				
weed density (ft ²)		3.6	3.6	3.6
height (inch)		1.6	2.4	5.6
Common Waterhemp				
weed density (ft ²)		46.0	46.0	46.0
height (inch)		1.6	2.1	6.3
Velvetleaf				
weed density (ft ²)		1.4	1.4	1.4
height (inch)		0.0	3.3	5.1
Giant Foxtail				
weed density (ft ²)		2.6	2.6	2.6
height (inch)		3.1	6.9	5.8
Rainfall after each application (inch)				
week 1	2.15	0.76	0.87	0.04
week 2	2.61	1.33	0.92	0.81
week 3	5.86	0.91	0.59	0.07

CONCLUSIONS

Weather conditions following pre-emergence applications allowed for excellent activation of the herbicides with 2.15 inches of precipitation falling within one week of application.

The best pre-emergence giant ragweed control (6/30 rating) was provided by the Enlite and Sonic treatments at 88 and 85 percent, respectively. Prefix at the higher 2 pt rate provided good control at 81 percent, with the 1.5 pt rate slipping to 73 percent. Valor provided very little giant ragweed control.

Valor, Enlite, and Sonic pre-emergence treatments provided excellent common lambsquarters control (6/30 rating). Prefix at the higher 2 pt rate provided very good control at 88 percent, with the 1.5 pt rate slipping to 68 percent.

Prefix at both rates and Enlite provided excellent pre-emergence control of common waterhemp (6/30 rating). Sonic and Valor also provided very good control with 94 and 90 percent control, respectively.

Valor, Enlite, and Sonic all provided excellent velvetleaf control; 98 percent (6/30 rating). Both Prefix applications slipped, providing only 61 and 63 percent control.

Both Prefix treatments provided excellent giant foxtail control; 98 percent (6/30 rating). Very good control was also achieved with the Valor and Enlite treatments, 94 and 91 percent control, respectively. Sonic provide good giant foxtail control at 84 percent.

Weather conditions prior to all POST applications was challenging due to drier than normal conditions and inadequate soil moisture. Sequential weed control programs (PRE/POST II, or POST I/POST II) provided statistically better weed control than the single POST I glyphosate application of Touchdown Total for all weed species except common lambsquarters. The control differences were dramatic with common waterhemp, velvetleaf, and giant foxtail.

Excellent giant ragweed control was achieved with Prefix followed by Touchdown Total and the sequential POST I and POST II Touchdown Total application. All three of the treatments provided 98 percent control (9/19 rating). Valor, Enlite, and Sonic followed by Touchdown Total also offered very good control of giant ragweed with 95 percent (9/19 rating). The single POST I application of Touchdown Total provided only 90 percent control of giant ragweed (9/19 rating).

Excellent common lambsquarters control was achieved with Valor (96% control), Enlite (98% control), Sonic (99% control), all followed by Touchdown Total and the sequential POST I and POST II Touchdown Total applications (99% control) (9/19 rating). Both Prefix treatments followed by Touchdown Total provided very good common lambsquarters control of 93 and 90 percent, respectively (9/19 rating). The single POST I application of Touchdown Total provided only 95 percent control of common lambsquarters (9/19 rating).

Excellent common waterhemp control was achieved with Prefix (97% and 96%), Sonic (99%), all followed by Touchdown Total, and the sequential POST I and POST II Touchdown Total applications (99%) (9/19 rating). Valor and Enlite, followed by Touchdown Total, also offered very good control of common waterhemp with 87 and 92 percent control, respectively (9/19 rating). The single POST I application of Touchdown Total provided only 70 percent control of common waterhemp (9/19 rating).

Excellent velvetleaf control was achieved with Prefix (low rate) (98%) Enlite (99%) and Sonic (98%) all followed by Touchdown Total and the sequential POST I and POST II Touchdown Total applications (98%) (9/19 rating). Prefix (high rate) and Valor, followed by Touchdown Total also offered very good control of velvetleaf with 92 and 90 percent control, respectively (9/19 rating). The single POST I application of Touchdown Total provided only 78 percent control of velvetleaf (9/19 rating).

Excellent giant foxtail control was achieved with Prefix (96% and 97%), followed by Touchdown Total, and the sequential POST I and POST II Touchdown Total applications (99%) (9/19 rating). Valor, Enlite, and Sonic, followed by Touchdown Total, also offered very good control of giant foxtail with 89, 91, and 90 percent control, respectively (9/19 rating). The single POST I application of Touchdown Total provided only 73 percent control of giant foxtail (9/19 rating). (University of Minnesota Extension, Regional Office – Rochester).

Table 1. Performance of herbicide systems for giant ragweed control in soybean on June 23 and 30, July 14 and 28, and September 19 at Rochester, MN, in 2008.

Treatment	Rate	Giant Ragweed Control					Yield (bu/A)
		6/23	6/30	7/14	7/28	9/19	
	(rate/A)	(%)					
Untreated		0	0	0	0	0	3
PRE/POST II							
Prefix/ AMS + Touchdown Total	1.5 pt/ 2% w/v + 24 fl oz	74	73	98	99	98	24
Prefix/AMS + Touchdown Total	2 pt/ 2% w/v + 24 fl oz	79	81	98	99	98	23
Valor SX/ AMS + Touchdown Total	2 oz wt/ 2% w/v + 24 fl oz	13	0	92	94	95	22
Enlite/ AMS + Touchdown Total	2.8 oz wt/ 2% w/v + 24 fl oz	86	88	96	98	95	25
Sonic/ AMS + Touchdown Total	3 oz wt/2% w/v + 24 fl oz	84	85	95	99	95	24
POST I							
AMS + Touchdown Total	2% w/v + 24 fl oz	0	50	96	96	90	23
POST I/POST III							
AMS + Touchdown Total/ AMS + Touchdown Total	2% w/v + 24 fl oz/2% w/v + 24 fl oz	0	50	94	99	99	24
		LSD (P=0.10)	2	3	1	1	4

Table 2. Performance of herbicide systems for common lambsquarters control in soybean on June 23 and 30, July 14 and 28, and September 19 at Rochester, MN, in 2008.

Treatment	Rate	Common Lambsquarters Control					Yield (bu/A)
		6/23	6/30	7/14	7/28	9/19	
	(rate/A)	(%)					
Untreated		0	0	0	0	0	3
PRE/POST II							
Prefix/ AMS + Touchdown Total	1.5 pt/ 2% w/v + 24 fl oz	91	68	96	98	93	24
Prefix/AMS + Touchdown Total	2 pt/ 2% w/v + 24 fl oz	95	88	97	98	90	23
Valor SX/ AMS + Touchdown Total	2 oz wt/ 2% w/v + 24 fl oz	99	99	99	99	96	22
Enlite/ AMS + Touchdown Total	2.8 oz wt/ 2% w/v + 24 fl oz	99	99	99	99	98	25
Sonic/ AMS + Touchdown Total	3 oz wt/2% w/v + 24 fl oz	99	99	99	99	99	24
POST I							
AMS + Touchdown Total	2% w/v + 24 fl oz	0	50	98	98	95	23
POST I/POST III							
AMS + Touchdown Total/ AMS + Touchdown Total	2% w/v + 24 fl oz/2% w/v + 24 fl oz	0	50	97	99	99	24
		LSD (P=0.10)	2	3	2	1	3

Table 3. Performance of herbicide systems for common waterhemp control in soybean on June 23 and 30, July 14 and 28, and September 19 at Rochester, MN, in 2008.

Treatment	Rate	Common Waterhemp Control					Yield (bu/A)
		6/23	6/30	7/14	7/28	9/19	
	(rate/A)	(%)					
Untreated		0	0	0	0	0	3
PRE/POST II							
Prefix/ AMS + Touchdown Total	1.5 pt/ 2% w/v + 24 fl oz	99	97	98	97	97	24
Prefix/AMS + Touchdown Total	2 pt/ 2% w/v + 24 fl oz	99	98	97	96	96	23
Valor SX/ AMS + Touchdown Total	2 oz wt/ 2% w/v + 24 fl oz	99	90	93	94	87	22
Enlite/ AMS + Touchdown Total	2.8 oz wt/ 2% w/v + 24 fl oz	99	96	97	97	92	25
Sonic/ AMS + Touchdown Total	3 oz wt/2% w/v + 24 fl oz	99	94	99	98	99	24
POST I							
AMS + Touchdown Total	2% w/v + 24 fl oz	0	50	80	87	70	23
POST I/POST III							
AMS + Touchdown Total/ AMS + Touchdown Total	2% w/v + 24 fl oz/2% w/v + 24 fl oz	0	50	80	98	99	24
		LSD (P=0.10)	0.2	3	2	1	4

Table 4. Performance of herbicide systems for velvetleaf control in soybean on June 23 and 30, July 14 and 28, and September 19 at Rochester, MN, in 2008.

Treatment	Rate	Velvetleaf Control					Yield (bu/A)
		6/23	6/30	7/14	7/28	9/19	
	(rate/A)	(%)					
Untreated		0	0	0	0	0	3
PRE/POST II							
Prefix/ AMS + Touchdown Total	1.5 pt/ 2% w/v + 24 fl oz	70	61	97	99	98	24
Prefix/AMS + Touchdown Total	2 pt/ 2% w/v + 24 fl oz	70	63	97	98	92	23
Valor SX/ AMS + Touchdown Total	2 oz wt/ 2% w/v + 24 fl oz	99	98	97	98	90	22
Enlite/ AMS + Touchdown Total	2.8 oz wt/ 2% w/v + 24 fl oz	98	98	99	99	99	25
Sonic/ AMS + Touchdown Total	3 oz wt/2% w/v + 24 fl oz	99	98	99	99	98	24
POST I							
AMS + Touchdown Total	2% w/v + 24 fl oz	0	50	95	97	78	23
POST I/POST III							
AMS + Touchdown Total/ AMS + Touchdown Total	2% w/v + 24 fl oz/2% w/v + 24 fl oz	0	50	97	99	98	24
		LSD (P=0.10)	3	3	3	1	6

Table 5. Performance of herbicide systems for giant foxtail control in soybean on June 23 and 30, July 14 and 28, and September 19 at Rochester, MN, in 2008.

Treatment	Rate (rate/A)	Giant Foxtail Control (%)					Yield (bu/A)
		6/23	6/30	7/14	7/28	9/19	
Untreated		0	0	0	0	0	3
PRE/POST II							
Prefix/ AMS + Touchdown Total	1.5 pt/ 2% w/v + 24 fl oz	99	98	98	99	96	24
Prefix/AMS + Touchdown Total	2 pt/ 2% w/v + 24 fl oz	99	98	99	99	97	23
Valor SX/ AMS + Touchdown Total	2 oz wt/ 2% w/v + 24 fl oz	66	91	96	98	89	22
Enlite/ AMS + Touchdown Total	2.8 oz wt/ 2% w/v + 24 fl oz	90	94	97	98	91	25
Sonic/ AMS + Touchdown Total	3 oz wt/2% w/v + 24 fl oz	88	84	98	99	90	24
POST I							
AMS + Touchdown Total	2% w/v + 24 fl oz	0	50	89	92	73	23
POST I/POST III							
AMS + Touchdown Total/ AMS + Touchdown Total	2% w/v + 24 fl oz/2% w/v + 24 fl oz	0	50	92	99	99	24
LSD (P=0.10)		3	4	2	2	3	4