

Herbicide performance in soybeans at Lamberton, MN in 2003. Getting, Jodie K., Jeffrey L. Gunsolus, and Thomas R. Hoverstad. The objective of this study was to evaluate soybean herbicide combinations for annual grass and annual broadleaf weed control in glyphosate-resistant soybeans. This study was conducted on a Normania loam soil containing 4.9% organic matter, pH 5.1 and soil test P and K levels of 32 and 272 lb/A, respectively. A randomized complete block design with four replications and a plot size of 10 by 30 ft was used. The site was planted to oats in 2002 and was fall chiseled. On May 15, 2003 preplant incorporated treatments were applied and tilled twice with a field cultivator set to till 3 to 4 inches deep and operated at 5 to 6 mph. The same day Asgrow 'AG 2105' glyphosate-resistant soybeans were planted in 30-inch rows at a seeding rate of 160,000 seeds/A. In August, all plots were treated with esfenvalerate (Asana) for soybean aphid control. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at a pressure of 40 psi. The sprayer was equipped with 8002 flat-fan nozzles spaced 15 inches apart on the boom. Application dates, environmental conditions, plant sizes and rainfall data are listed below:

Date	May 15	May 16	June 12	June 16	July 28
Treatment	PPI	PRE	POST I	POST II	POST III
Temperature (F)					
air	64	55	73	81	79
soil (4 inch)	68	56	70	72	80
Relative humidity (%)	49	88	73	42	54
Wind (mph)	S 10	calm	NW 2	calm	N 2
Sky	clear	clear	cloudy	clear	clear
Soil moisture	dry	dry	dry	dry	dry
Soybean					
leaf no.	-	-	V1	V2	R2
height (inch)	-	-	4	5	24
Yellow foxtail					
leaf no.	-	-	2 to 4	2 to 5	6 to 8
height (inch)	-	-	2 to 4	4 to 6	8 to 10
no./ft ²	-	-	46	62	5
Common lambsquarters					
leaf no.	-	-	2 to 5	2 to 6	6 to 8
height (inch)	-	-	2 to 3	3 to 5	8 to 10
no./ft ²	-	-	4	4	< 1
Redroot pigweed					
leaf no.	-	-	2 to 4	3 to 6	6 to 8
height (inch)	-	-	1 to 3	2 to 5	8 to 10
no./ft ²	-	-	3	3	< 1
Rainfall after application (inch)					
1 week	0.35	0.50	0.01	2.56	0.25
2 week	0.29	0.14	3.43	1.38	1.10
3 week	0.17	0.60	0.50	0.03	0.00

Early season crop development and crop canopy was delayed due to a June 23 hailstorm, which resulted in 43% defoliation of soybean leaves. The precipitation received in July and August was below average with a total of 2.96 inches compared to the historical average of 7.07 inches. On June 10, prior to POST treatments, pendimethalin applied PPI provided 96% yellow foxtail control, 98% common lambsquarters control, and 98 to 99% redroot pigweed control. PRE treatments provide 13 to 58% yellow foxtail control, 55 to 81% common lambsquarters control, and 63 to 95% redroot pigweed control. In August, PPI/POST I, PRE/POST I, and POST I treatments gave 91 to 96%, 75 to 86%, and 70 to 80% yellow foxtail control, respectively. PRE/POST II, POST II/POST III, and POST II treatments provided 80 to 92%, 100%, and 55 to 84% control, respectively. PRE/POST II and POST II treatments gave 95 to 97% and 88 to 93% common lambsquarters control, respectively. (Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Herbicide performance in soybeans at Lamberton, MN in 2003 (Getting, Gunsolus and Hoverstad).

Treatment ^a	Rate (lb/A or %)	SETLU			CHEAL			AMARE			Yield (bu/A) ^b
		6/10	6/25	8/27	6/10	6/25	8/27	6/10	6/25	8/27	
<u>Preplant incorporate 2X/POST I (4-inch weeds)</u>											
Pend/Immx+Acif+NIS+AMS	1.27/0.023+0.125+0.25%+2.5	96	91	91	98	97	95	99	98	92	37.4
Pend/Immx+Clsm+NIS+AMS	1.27/0.023+0.01+0.25%+2.5	96	95	95	98	98	97	98	98	94	37.2
Pend/[Imep&glyphosate]+NIS+AMS	1.27/[0.063&0.75]+0.125%+2.6	96	98	96	98	98	97	98	98	95	39.5
<u>Preemergence/POST I (4-inch weeds)</u>											
Flmx+Clsm/ Lact+Clet+NIS+AMS	0.08+0.031/ 0.125+0.094+0.25%+2.0	40	95	85	81	92	74	91	98	96	33.5
Flmx+Clsm/ Clsm+Lact+Clet+NIS+AMS	0.05+0.016/ 0.016+0.125+0.094+0.25%+2.5	45	94	86	55	88	65	94	98	95	28.6
Flumetsulam/ Clsm+Clet+Lact ¹ +COC+AMS	0.05/ 0.016+0.125+0.094+1.0%+2.5	21	95	85	61	86	65	91	98	94	29.6
[S-meto&Metr]/Fome +[Flfp-P&Fenx]+COC+AMS	[0.98&0.23]/0.24 +[0.125&0.035]+1.0%+2.5	40	96	86	71	97	86	78	98	94	39.8
Sulfentrazone/Fome+Qufp-P +COC+AMS	0.25/0.24+0.06 +1.0%+2.5	50	94	75	81	98	97	95	98	97	32.3
<u>Preemergence/POST II (6-inch weeds)</u>											
Sulfentrazone/glyphosate ¹ +Clim+AMS	0.16/0.75+0.016+2.5	40	97	80	63	98	95	79	98	97	36.4
Flumetsulam/glyphosate ² +AMS	0.05/0.75+2.5	13	96	79	63	95	97	91	98	97	34.3
Flmx+Clsm/glyphosate ¹ +AMS	0.05+0.016/0.75+2.5	58	96	91	68	97	97	94	98	97	35.8
[S-meto&Metr]/glyphosate ³ +AMS	[0.82&0.2]/0.75+2.5	53	96	92	55	95	97	93	98	96	36.2
Flumioxazin/glyphosate ¹ +AMS	0.063/0.75+2.5	48	95	84	76	96	97	89	98	97	34.7
Sulfentrazone/glyphosate ¹ +AMS	0.19/0.75+2.5	35	96	85	71	97	97	63	98	97	39.0
<u>POST I (4-inch weeds)</u>											
Fome+[Flfp-P&Fenx] +Thif+COC+AMS	0.24+[0.156&0.044] +0.002+1.0%+2.5	-	93	70	-	96	83	-	98	93	28.3
Fome+[Flfp-P&Fenx] +Clsm+COC+AMS	0.24+[0.156&0.044] +0.016+1.0%+2.5	-	91	80	-	89	74	-	98	96	29.6
<u>POST II (6-inch weeds)/POST III (soybean canopy)</u>											
Glyphosate ¹ +AMS/glyphosate ¹ +AMS	0.75+2.5/0.75+2.5	-	96	100	-	98	100	-	98	100	36.6
<u>POST II (6-inch weeds)</u>											
Glyphosate ¹ +Carf+AMS	0.75+0.004+2.5	-	95	55	-	97	93	-	98	88	18.1
Glyphosate ⁴ +Clsm+AMS	0.75+0.016+2.5	-	96	84	-	94	91	-	98	90	34.6
Glyphosate ⁵ +AMS	0.75+2.5	-	95	66	-	95	88	-	98	82	27.0
Glyphosate ² +AMS	0.75+2.5	-	94	68	-	87	89	-	98	91	29.9
Glyphosate ¹ +AMS	0.75+2.5	-	95	65	-	88	93	-	98	91	31.0
<u>Checks</u>											
Weedy Check	-	0	0	0	0	0	0	0	0	0	5.8
Weed-free check	-	100	100	100	100	100	100	100	100	100	41.0
	LSD (0.10)	10.3	2.0	5.2	11.7	4.4	7.4	11.3	ns	5.3	4.23

^a Acif or acifluorfen = Ultra Blazer 2L; Clet or clethodim = Select 2L; Clim or chlorimuron = Classic 75DF; Clsm or cloransulam = FirstRate 84WG; [Flfp-P&Fenx] or [fluazifop-P & fenoxaprop] = Fusion 2.56F; Flms or flumetsulam = Python 80WDG; Flmx or flumioxazin = Valor 51DF; Fome or fomesafen = Flexstar 1.88L; glyphosate¹ = Roundup Weathermax 4.5L; glyphosate² = Glyphomax HC; glyphosate³ = Touchdown IQ 3L; Glyphosate⁴ = Glyphomax Plus 3SL; Glyphosate⁵ = Clearout 41 Plus; [Imep&glyphosate] or [imazethapyr & glyphosate] = Extreme 2.17L; Immx or imazamox = Raptor 1L; Lact or lactofen = Phoenix 2EC; Lact¹ or lactofen¹ = Cobra 2EC; Pend or pendamethalin = Prowl H₂O 3.8; Qufp-P or quizalofop-P = Assure II 0.88E; [s-meto&metr] or [s-metolachlor & metribuzin] = Boundary 6.5EC; sulfentrazone = Authority 75DF; Thif or thifensulfuron = Harmony GT 75DF; COC = crop oil concentrate; NIS = nonionic surfactant; AMS = spray grade ammonium sulfate.

^b Yield adjusted to 13% moisture.