

Evaluation of soybean weed management systems in Potsdam, MN in 2005. Breitenbach, Fritz R., Lisa M. Behnken, Thomas R. Hoverstad, and Jeffrey L. Gunsolus. The objective of this trial was to evaluate weed management systems for weed control in soybean in southeastern Minnesota. The research site was a Port Byron Silt Loam containing 3.2% organic matter with a pH test of 6.6 and soil test P and K levels of 67 and 342 ppm respectively,. The previous crop was corn. The field was field cultivated twice prior to planting. The soybean variety, Garst 1827RR/STS, was planted on May 24, 2005 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. Pre-plant incorporated (PPI), preemergence (PRE) and postemergence (POST I, POST II, POST III, and POST IV) 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 20, July 1, July 8, July 14, and July 29. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	May 24	May 24	June 20	June 27	July 1	July 19
Treatment	PPI	PRE	POST I	POST II	POST III	POST IV
Temperature (F)						
air	69	70	87	77	69	78
soil	59	59	70	72	80	--
Relative humidity (%)	56	43	44	73	54	60
Wind (mph)	6	8	15	18	14	8
Soil moisture	adequate	adequate	adequate	adequate	dry	adequate
Soybean						
stage	seeded	seeded	V2	6 nodes	7 nodes	R2
height (inch)	0	0	6.1	8.9	10.0	24.0
Wild proso millet						
weed density (ft ²)	--	--	11.8	11.8	11.8	11.8
height (inch)	--	--	3.5	7.1	10.5	5.0
Common lambsquarters						
weed density (ft ²)	--	--	2.4	2.4	2.4	2.4
height (inch)	--	--	2.0	1.7	3.0	3.7
Velvetleaf						
weed density (ft ²)	--	--	0.6	0.6	0.6	0.6
height (inch)	--	--	2.5	3.8	8.8	2.5
Rainfall after application (inch)						
week 1	0.31	0.31	1.29	0.16	0.07	4.82
week 2	0.11	0.11	0.16	0.0	0.0	0.0
week 3	2.15	2.15	0.0	0.2	1.54	0.0

Soybean injury from 22 to 39% was observed in the PRE/POST II treatments. Soybean yields for flumoxazin² & cloransulam³ / cloransulam¹ + lactofen⁴ + clethodim⁵ and s-metolachlor & metribuzin / fomesafen & adjuvant + fluazifop-P & fenoxaprop + cloransulam¹ were lower than the top yielding treatments of pendimethalin + dimethenamid-P / glyphosate⁹ and flumoxazin¹³ + metribuzin / glyphosate¹⁰. Soybean yields for the other PRE/POST II treatments trended lower. Injury was also observed in the PPI/POST II treatments of pendimethalin / imazamox + cloransulam¹ and the pendimethalin / imazethapyr & glyphosate treatments, 32 and 24% on July 1, respectively. However, the injury dropped to 11% for both treatments by the July 8 rating date.

S-metolachlor & glyphosate applied as a solo treatment at POST I resulted in significantly lower wild proso millet, common lambsquarters, and velvetleaf control compared to all other treatments and had a reduced soybean yield compared to the top treatments. Wild proso millet control with imazethapyr & pendimethalin / cloransulam¹ applied PPI/POST II was significantly lower than all other treatments except the s-metolachlor & glyphosate treatment. Several PPI and PRE treatments gave reduced velvetleaf control, 50 to 70% on the June 20 rating. However, control reached 97 to 99% on all treatments after POST applications were applied. (University of Minnesota Extension Service, Regional Center, Rochester).

Table. Performance of weed management systems for weed control in soybean on June 20, and July 8, 14, and 29 at Rochester, MN in 2005. (Breitenbach, Behnken, Hoverstad, and Gunsolus).

Treatment ^a	Rate	Injury		PANMI control				CHEAL control				ABUTH control				Soybean yield ^b
		7/1	7/8	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	6/20	7/8	7/14	7/29	
	(lb/A)	(%)		(%)				(%)				(%)				(bu/A)
PPI / POST II																
Pend / immx + clsm ¹ + NIS + N-PAK AMS	1.28 / 0.03 + 0.016 + 0.25% + 2.6	32	11	87	98	97	96	96	97	98	98	50	99	99	99	55
Imep & pend / clsm ¹ + NIS + N-PAK AMS	0.06 & 0.85 / 0.016 + 0.25% + 2.6	5	3	90	86	85	72	99	99	99	98	95	99	99	99	53
Pend / imep & glyt + NIS + N-PAK AMS	1.28 / 0.058 & 0.75 + 0.125% + 2.6	24	11	84	97	96	95	99	99	97	99	60	99	99	99	53
PRE / POST II																
Flmx ² & clsm ³ / clsm ¹ + lact ⁴ + clet ⁵ + NIS + N-PAK AMS	0.08 & 0.026 / 0.016 + 0.125 + 0.094 + 0.25% + 2.6	39	28	92	98	96	96	99	99	99	99	99	99	99	99	51
Flmx ² & clsm ³ / clsm ¹ + lact ⁴ + clet ⁶ + NIS + N-PAK AMS	0.08 & 0.026 / 0.016 + 0.125 + 0.1 + 0.25% + 2.6	32	28	88	97	95	93	99	98	98	96	99	99	99	99	52
Flms / clsm ¹ + clet ⁷ + lact ⁸ + COC + N-PAK AMS	0.05 / 0.016 + 0.094 + 0.094 + 1% + 2.6	37	26	72	95	95	93	98	99	99	99	96	99	99	99	52
S-meto & metr / fome & adjuvant + flfp-P & fenx + clsm ¹ + MSO + 28%UAN	1.0 & 0.23 / 0.24 + 0.13 & 0.035 + 0.016 + 1% + 2.5%	36	22	94	99	94	94	98	99	98	98	70	99	99	99	52
PRE / POST III																
Alac / glyt ⁹ + N-PAK AMS	2 / 0.77 + 2.6	1	0	91	96	97	97	98	99	99	99	50	99	99	99	52
Pend + dime-P / glyt ⁹ + N-PAK AMS	0.48 + 0.59 / 0.77 + 2.6	3	1	93	96	98	97	99	99	98	99	63	98	98	99	58
Flmx ² & clsm ³ / glyt ¹⁰ + N-PAK AMS	0.048 & 0.016 / 0.77 + 3.4	0	0	85	94	97	96	99	99	99	99	94	99	99	99	56
S-meto & metr / glyt ¹¹ + N-PAK AMS	0.8 & 0.2 / 0.78 + 1.7	4	0	91	97	98	96	96	99	99	99	60	99	99	99	56
Flmx ¹² / glyt ¹⁰ + N-PAK AMS	0.063 / 0.77 + 3.4	0	0	91	97	98	98	99	99	99	99	87	99	99	99	56
Flmx ¹³ + flms / glyt ¹⁰ + N-PAK AMS	0.048 + 0.025 / 0.77 + 2.6	0	1	78	93	95	94	97	99	99	99	91	99	99	97	53
Flmx ¹³ + metr / glyt ¹⁰ + N-PAK AMS	0.048 + 0.14 / 0.77 + 2.6	0	0	81	94	95	96	99	99	99	99	90	99	99	99	58
POST I																
S-meto & glyt + N-PAK AMS	0.95 & 0.7 + 1.7	0	1	0	78	75	33	0	79	74	65	0	89	82	73	49
POST II / POST IV																
Glyt ⁹ + N-PAK AMS / glyt ⁹ + N-PAK AMS	0.77 + 2.6 / 0.77 + 2.6	0	0	0	88	87	98	0	98	96	99	0	99	99	99	53
POST III																
Glyt ¹⁴ + clsm ¹ + N-PAK AMS	0.75 + 0.0157 + 2.6	0	3	0	79	87	96	0	98	95	96	0	99	98	99	54
Thif + glyt ¹⁰ + N-PAK AMS	0.016 + 0.77 + 2	0	1	0	80	87	94	0	97	95	95	0	99	99	99	53
Thif + clim + glyt ¹⁰ + N-Pa-K AMS	0.016 + 0.005 + 0.77 + 2	0	1	0	87	86	94	0	97	97	96	0	98	99	99	55
Glyt ¹⁵ + N-PAK AMS	0.75 + 2.6	0	1	0	82	87	95	0	97	95	96	0	99	99	99	54
Glyt ¹⁴ + N-PAK AMS	0.75 + 2.6	0	0	0	81	86	95	0	96	97	95	0	99	99	98	55
Glyt ⁹ + N-PAK AMS	0.77 + 2.6	0	1	0	80	88	95	0	97	98	97	0	98	99	99	49
Weedy Check		0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Weed Free		0	0	100	100	100	100	100	100	100	100	100	100	100	100	54
LSD (P = 0.10)		3	3	7	7	8	8	2	2	3	3	9	2	1	2	7

a. Clsm¹ = Cloransulam = FirstRate; flmx² = flumoxazin = GangsterV; clsm³ = cloransulam = GangsterFR; lact⁴ = lactofen = Phoenix; clet⁵ = clethodim = V10137; clet⁶ = clethodim = V10139; clet⁷ = clethodim = Select; lact⁸ = lactofen = Cobra; glyt⁹ = glyphosate = Roundup WeatherMax; glyt¹⁰ = glyphosate = Roundup Original Max; glyt¹¹ = glyphosate = Touchdown Total; flmx¹² = flumoxazin = Valor; flmx¹³ = flumoxazin = Valor SX; glyt¹⁴ = glyphosate = Glyphomax XRT; glyt¹⁵ = glyphosate = Clearout 41 Plus, NIS = AGRI-DEX nonionic surfactant, Helena; N-PAK AMS = ammonium sulfate solution, Agrilience LLC; COC = crop oil concentrate, Helena; MSO = DyneAmic methylated seed oil, Helena; 28% UAN = an aqueous solution of urea and ammonium nitrate.

b. Yield adjusted to 13% moisture.