

Evaluation of herbicide combinations for weed control in soybean at Potsdam, MN in 2004.

Behnken, Lisa, M., Fritz, R. Breitenbach, Thomas R. Hoverstad, and Jeffrey L. Gunsolus. The objective of this trial was to evaluate herbicide combinations 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 of 6.7 and soil test P and K levels of 66 ppm and 376 ppm, respectively. The previous crop was corn. The field was disked and field cultivated once prior to planting. The soybean variety, Pioneer 92-M00, was planted on May 28, 2004 at a depth of 1.5 inches in 30-inch rows at 15,000 seeds/A. A randomized complete block design with four replications was used. Preplant incorporated (PPI), preemergence (PRE), and postemergence (POST I, II, and 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 July 1, July 20, and October 4, 2004. Application dates, environmental conditions, and crop and weed stages are listed below.

Date	May 28	May 28	July 1	July 14	July 23
Treatment	PPI	PRE	POST I	POST II	POST III
Temperature (F)					
air	60	69	77	78	67
Relative humidity (%)	61	45	64	53	56
Wind (mph)	5	9	0	12	13
Soybean					
stage	--	seeded	V3	R1	R2
height (inches)	--	--	6	14.5	19
Giant ragweed					
weed density	--	--	moderate	moderate	moderate
height (inch)	--	--	6	20	30
Common lambsquarters					
weed density	--	--	moderate	moderate	moderate
height (inch)	--	--	3	8	9
Wild proso millet					
weed density	--	--	moderate	moderate	moderate
height (inch)	--	--	1	14	22
Rainfall after application (inch)					
week 1	1.30	1.30	2.08	1.85	0.65
week 2	4.32	4.32	0.93	0.63	0.58
week 3	3.19	3.19	0.19	0.38	0.11

Several herbicide treatments caused up to 26% injury to soybean. Pendimethalin / cloransulam + clethodim + lactofen caused 26% injury to soybean and flumioxazin + cloransulam / lactofen + clethodim, 20%. Weed control ratings were generally good with these two treatments however, yields may have been impacted by injury, especially the pendimethalin / cloransulam + clethodim + lactofen which yielded only 27 bushels. Soybeans were chlorotic (July 1 rating) in plots with imazethapyr & pendimethalin applied PPI.

All sequential and postemergence only herbicide programs provided over 90% control of wild proso millet by July 20 and October 4 ratings. The preemergence only program of pendimethalin + flumioxazin + clethodim provided only 73% to 79% control during the same rating dates, respectively.

Common lambsquarters control was over 95% with most herbicide programs by October 4 rating. Pendimethalin followed by cloransulam + clethodim + lactofen provided only 87% control and fomesafen & adjuvant + flazifop-P & fenoxaprop + cloransulam gave only 85% control.

Giant ragweed control was very good to excellent for all but one herbicide program by the July 20 and October 4 ratings. However, only five herbicide programs gave season long control, with only three of these providing over 90% control at the July 1 rating.

A comparison of three glyphosate products revealed that there were no differences in weed control or yield. (University of Minnesota Extension Service, Regional Center, Rochester, MN)

Table. Performance of herbicide combinations for weed control in soybean on July 1, July 20, and October 4 at Potsdam, MN in 2004 (Behnken, Breitenbach, Hoverstad and Gunsolus).

Treatment	Rate	AMBTR control			CHEAL control			PANMI control			Soybean injury	Soybean yield
		7/1	7/20	10/4	7/1	7/20	10/4	7/1	7/20	10/4	7/20	
	(lb/A)	(%)			(%)			(%)			(%)	(bu/A)
PRE												
Pend ¹ + flmx ² + clsm ³	1.2+ 0.096 + 0.03	92	91	95	99	96	98	87	73	79	0	33
PPI / POST I												
Pend ⁴ / immx + acifl + NIS + AMS	1.28 / 0.031 + 0.125 + 0.25% + 2.5	0	92	88	63	93	96	70	92	93	19	34
Imep&pend / bent + seth + NIS + AMS	0.063&0.847 /1+ 0.2+0.25%+2.5	75	93	91	96	95	97	87	93	98	8	36
Pend ⁴ / imep&glyt + NIS + AMS	1.3 /0.058&0.75 / 0.125% + 2.5	0	98	99	65	99	99	76	98	99	6	36
PRE / POST I												
Flmx ⁵ + clsm ⁶ / lact ⁷ + clet ⁸ + AMS	0.096 + 0.03 / 0.16+ 0.125 + 2.0	96	99	96	98	98	98	92	98	99	20	35
Pend ¹ / clsm ⁶ + clet ⁹ + lact ¹⁰ + COC + AMS	1.2 /0.016 + 0.125 + 0.09 + 1% + 2.5	0	89	90	86	85	87	85	97	96	26	27
S-meto&metr / fome&adjuvant + flfp-P& fenx + COC + AMS	0.99&0.23 / 0.24 + 0.125&0.035 + 1% + 2.5	0	94	92	100	98	99	90	99	100	13	38
Suen / fome&adjuvant + qufp-P + COC + AMS	0.25 / 0.235 + 0.06 + 1% + 2.5	0	100	96	100	100	100	85	99	100	11	38
PRE / POST II												
Alac / glyt ¹¹ + AMS	2 / 0.95 + 2.5	0	90	100	64	99	99	83	99	100	0	39
Pend ⁴ +dime-P/glyt ¹¹ +AMS	0.48 + 0.59/0.95 + 2.5	0	90	100	76	99	100	86	99	100	0	38
Flmx ² + clsm ³ / glyt ¹¹ + AMS	0.048 + 0.016 / 0.95 + 2.5	95	97	100	95	100	100	81	100	100	0	44
S-meto&metri /glyt ¹² + AMS	0.82&0.196 /1.1 + 2.5	0	90	97	81	100	99	83	100	100	0	41
Flmx ⁵ / glyt ¹¹ + AMS	0.064 / 0.95 + 2.5	0	90	100	83	100	100	75	100	100	0	39
Flmx ⁵ + flms / glyt ¹¹ + AMS	0.05 + 0.025/0.95+2.5	55	91	99	100	99	100	77	99	100	0	41
Suen / glyt ¹¹ + AMS	0.187 / 0.95+2.5	0	90	97	100	99	100	76	99	100	0	39
POST I												
Fome&adjuvant + flfp-P& fenx + thif + COC + AMS	0.235+ 0.156& 0.044 + 0.002 + 1%+ 2.5	0	95	93	0	94	93	0	96	100	16	35
Fome&adjuvant + flfp-P &fenx + clsm ⁶ +COC+ AMS	0.235 + 0.156 &0.044 + 0.016 + 1% + 2.5	0	100	99	0	68	85	0	97	97	11	37
POST I / POST III												
glyt ¹¹ + AMS / glyt ¹¹ + AMS	0.95+2.5/0.95+2.5	0	100	100	0	95	100	0	96	100	0	43
POST II												
GF 1279 + clsm ⁶ + AMS	1.01 + 0.016 + 2.5	0	90	100	0	99	99	0	99	100	0	42
Glyt ¹³ + AMS	1 + 2.5	0	90	97	0	99	99	0	99	100	0	43
GF 1279 + AMS	1.01 + 2.5	0	90	99	0	99	99	0	99	100	0	40
Glyt ¹¹ + AMS	0.95 + 2.5	0	90	97	0	99	100	0	99	100	0	41
Weedy		0	0	0	0	0	0	0	0	0	0	13
Weed-Free		100	100	100	100	100	100	100	100	100	0	41
LSD (0.05)		4	6	6	8	4	3	9	3	5	2	6

Pend¹ = Pendimax, flmx² = Gangster V, clsm³ = Gangster FR, Pend⁴ = Prowl H2O, Flmx⁵ = Valor SX, clsm⁶ = FirstRate, lact⁷ = Phoenix, clet⁸ = V-10137, clet⁹ = Select, lact¹⁰ = Cobra, glyt¹¹ = Roundup WeatherMax, glyt¹² = Touchdown Total, glyt¹³ = ClearOut 41 Plus, NIS = AGRI-DEX nonionic surfactant, Helena, AMS = spray grade ammonium sulfate, Helena; and COC = crop oil concentrate, Helena.