

Herbicide performance in soybeans at Potsdam, MN in 2003. Behnken, Lisa M., Fritz R. Breitenbach, Thomas R. Hoverstad and Jeffrey L. Gunsolus. The objective of this trial was to evaluate herbicides in combinations for weed control in soybeans in southeastern Minnesota. The research site was a Port Byron silt loam soil 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. In the spring, the area was disked once followed by two passes with a field cultivator. The soybean variety, DeKalb 19-51, was planted on June 3, 2003, at a depth of 1.5 inch in 30-inch rows at 160,000 seeds/A. A randomized complete block design with four replications was used. Preplant incorporated (PPI), 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 TurboTee 11002 nozzles. Evaluations of the plots were taken on July 2 and 23 and August 4. Application dates, environmental conditions, crop and weed stages are listed below.

Date	June 2	June 3	July 1	July 11	July 16
Treatment	PPI	PRE	POST I	POST II	POST III
Temperature (F)					
air	61	67	77	73	76
Relative humidity (%)	44	53	45	66	71
Wind (mph)	13	10	9	16	11
Soil moisture	inadequate	inadequate	adequate	adequate	adequate
Soybean					
stage		seeded	V2	V4	V5
height (inch)		0	5.5	11.5	13
Common lambsquarters					
weed density/ft ²	42	42	42	42	42
height (inch)	0	0	3	7	8
Velvetleaf					
weed density/ ft ²	3	3	3	3	3
height (inch)	0	0	4	9	10
Wild-proso millet					
weed density/ ft ²	10	10	10	10	10
height (inch)	0	0	4	9	10
Rainfall after application (inch)					
week 1	2.78	2.78	1.98	0.05	0
week 2	0	0	0.32	0	0.2
week 3	0.18	0.45	0	0.25	0.05

The overall best performance was from the preemergence followed by postemergence II (6 inch weeds) treatments. These treatments provided season long weed control of all three weed species and provided the top yields in this trial. All treatments provided excellent velvetleaf control by the August 4 rating date. Herbicide treatments applied only at postemergence II gave lower common lambsquarters control, July 23 rating. Fomesafen & adjuvant + fluazifop-P & fenoxaprop + cloransulam + COC + AMS applied at postemergence I also had reduced common lambsquarters control on July 23 at 73%. Common lambsquarters control provided by the total postemergence programs with only one application at either postemergence I (4 inch weeds) or postemergence II (6 inch weeds), increased by the August 4 rating (90 to 99%). The total postemergence programs with only one application at either postemergence I (4 inch weeds) or postemergence II (6 inch weeds), provided excellent velvetleaf and wild proso millet control by the August 4 rating. However, most of these herbicide programs had yields lower than those in the sequential preemergence followed by the postemergence II application time. This suggests that early season weed competition had a negative impact on soybean performance and yield. Crop response (stunting) from herbicide treatments that included carfentrazone and thifensulfuron were noted in this trial, and may have negatively impacted yield. (Southeast District, University of Minnesota Extension Service, Rochester).

Table. Herbicide performance in soybeans on July 2, 23 and August 4 at Potsdam, MN in 2003 (Behnken, Breitenbach, Hoverstad and Gunsolus).

Treatment	Rate (lb/A)	---CHEAL--- control			---ABUTH--- control			---PANMI--- control			Soybean yield bu/A
		7/02	7/23	8/04	7/02	7/23	8/04	7/02	7/23	8/04	
<u>PPI / POST I</u>											
Pendimethalin / imazamox + acifluorfen + NIS + AMS	1.28 / 0.0234+0.125+0.25%+2.5	96	96	99	95	96	99	93	93	97	35
Pend / immx + cloransulam + NIS + AMS	1.28 / 0.0234 + 0.0105 + 0.25% + 2.5	95	94	98	91	99	99	90	94	96	35
Pend / imazethapyr & glyphosate + NIS + AMS	1.28 / 0.058&0.752+ 0.125% + 2.6	97	98	99	92	99	99	93	99	99	36
<u>PRE / POST I</u>											
Flumioxazin & cloransulam / lactofen ¹ + clethodim + NIS + AMS	0.08&0.0315 / 0.125 + 0.094 + 0.25% + 2	97	99	98	99	99	99	99	95	99	35
Flmx&clsm / clsm+lact ¹ +clet+NIS+AMS	0.048&0.0157 / 0.0157 + 0.125 + 0.094 + 0.25%+ 2	96	99	98	99	99	99	99	95	97	36
Flumetsulam / clsm+cleth+lact ² +COC + AMS	0.05 / 0.0157 + 0.125 + 0.094+ 1% + 2.5	93	99	98	99	99	99	99	96	99	35
S-metolachlor & metribuzin / fomesafen & adjuvant + fluazifop-P & fenoxaprop + COC + AMS	0.986 & 0.234 / 0.235 + 0.125&0.035 + 1% + 2.5	99	99	99	99	99	98	99	99	99	35
Sulfentrazone / fomesafen & adjuvant + quizalofop-P + COC + AMS	0.248 / 0.235 + 0.062 + 1% + 2.5	98	99	99	99	99	99	99	99	99	35
<u>PRE / POST II</u>											
Suen / glyphosate ³ +chlorimuron+AMS	0.164 / 0.95 + 0.155 + 2.5	92	99	99	97	99	99	99	99	99	39
Flumetsulam / glyphosate ⁴ + AMS	0.05 / 1.01 + 2.5	94	99	99	99	99	99	99	96	99	38
Flmx&clsm / glyphosate ³ + AMS	0.048 & 0.0157 / 0.95 + 2.5	96	99	99	99	99	99	99	99	99	37
S-meto & metr / glyphosate ⁵ + AMS	0.824 & 0.196 / 0.75 + 2.5	96	99	99	96	99	99	97	99	99	38
Flumioxazin / glyphosate ³ + AMS	0.064 / 0.95 + 2.5	94	96	99	97	99	99	94	99	99	38
Sulfentrazone / glyphosate ³ + AMS	0.187 / 0.95 + 2.5	95	99	99	98	99	99	99	99	99	38
<u>POST I</u>											
Fome & adjuvant + flfp-P & fenx + thifensulfuron + COC + AMS	0.235 + 0.156 & 0.044 + 0.00187 + 1% + 2.5	0	95	98	0	99	99	0	97	99	34
Fome & adjuvant + flf-P & fenx + cloransulam + COC + AMS	0.235 + 0.156 & 0.044 + 0.0157 + 1% + 2.5	0	73	90	0	99	99	0	99	99	35
<u>POST I / POST III</u>											
Glyphosate ³ +AMS / glyphosate ³ +AMS	0.95 + 2.5 / 0.95 + 2.5	0	97	99	0	99	99	0	94	98	36
<u>POST II</u>											
Glyphosate ³ + carfentrazone + AMS	0.95 + 0.0037 + 2.5	0	92	96	0	99	99	0	98	96	32
Glyphosate ⁶ + cloransulam + AMS	0.75 + 0.0157 + 2.5	0	85	96	0	99	99	0	97	96	36
Glyphosate ⁷ + AMS	1.0 + 2.5	0	86	96	0	99	99	0	98	99	34
Glyphosate ⁴ + AMS	1.01 + 2.5	0	88	96	0	99	99	0	97	97	35
Glyphosate ³ + AMS	0.95 + 2.5	0	87	97	0	99	99	0	97	99	35
Weedy		0	0	0	0	0	0	0	0	0	15
Weed-Free		99	99	99	100	99	99	99	99	99	35
LSD (0.10)		1	4	2	2	1	1	1	2	3	2

1. Lactofen = Phoenix, 2. Lactofen = Cobra, 3. Glyphosate = Roundup WeatherMax, 4. Glyphosate = Glyphomax HC, 5. Glyphosate = Touchdown IQ, 6. Glyphosate = Glyphomax Plus, 7. Glyphosate = Clearout 41 Plus, AMS = spray grade ammonium sulfate, Helena; NIS = AGRI-DEX nonionic surfactant, Helena.