

Herbicide performance in soybeans at Waseca, MN tall waterhemp site in 2003. Hoverstad, Thomas R and Jeffrey L. Gunsolus. The objective of this trial was to evaluate soybean weed management systems available to producers in southern Minnesota on several annual weed species. This site had a particularly high infestation of tall waterhemp. The research site was a Webster clay loam soil containing 8% organic matter with a pH of 7.4 and soil test P and K levels of 75 and 248 ppm, respectively. The previous crop was corn that had been chisel plowed in the fall of 2002. The entire area was field cultivated once in the spring prior to herbicide application. Following preplant incorporated treatments the entire area was field cultivated twice to a depth of 3 to 4 inches to incorporate herbicides and prepare a seedbed. Asgrow '2105' soybeans were planted on May 20, 2003 in 30-inch rows. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at 40 psi using 8002 flat-fan nozzle tips. Visual estimates of weed control were taken on September 19, 2003. Application dates, environmental conditions, crop and weed stages are listed below.

Date	May 20	May 21	June 20	June 27	July 14
Treatment			Post I	Post II	Post III
Application Stage	PPI	Pre	4-inch weeds	6-inch weeds	Crop canopy
air temp °F	55	65	77	85	72
soil temp (4-inch)	55	58	72	72	72
Relative humidity (%)	25	30	20	25	45
Wind	W 5	N 6	SW 8	W 8	N 5
Soil moisture	Moist	Moist	Dry	Moist	Moist
Soybeans					
Stage	-	-	V2	V3	R1
height (inch)	-	-	5	7	13
Giant foxtail					
leaf no.	-	-	3	4	3-4
height (inch)	-	-	3-4	4-6	4
Tall Waterhemp					
leaf no.	-	-	2-4	4-6	2-3
height (inch)	-	-	3	4-5	3
Common lambsquarters					
leaf no.	-	-	4-8	8-12	4
height (inch)	-	-	3-4	5	3-4
Rainfall after application (inch)					
week 1	0.06	0.06	1.44	0.70	0.37
week 2	0.09	0.14	0.70	2.19	0.07
week 3	2.08	2.07	2.19	0.23	0.13

The dominant weed in this trial was tall waterhemp while common lambsquarters was present in large numbers also. One-pass glyphosate treatments resulted in poorer control of tall waterhemp than a two-pass glyphosate treatment or where glyphosate was applied following soil applied sulfentrazone, flumioxazin, [S-metolachlor & metribuzin] or [flumioxazin&cloransulam]. Tank mixing carfentrazone with glyphosate reduced control of tall waterhemp compared to glyphosate used alone. Soil applied sulfentrazone provided better control of common lambsquarters than flumioxazin, [S-metolachlor&metribuzin] or [flumioxazin&cloransulam]. (University of Minnesota, Southern Research and Outreach Center, Waseca, MN and Dept of Agronomy and Plant Genetics, University of Minnesota, St Paul).

Table. Herbicide performance in soybeans at Waseca, MN tall waterhemp site in 2003 (Hoverstad and Gunsolus).

Treatment ^a	Rate (lb/A or %)	SETFA	AMATU	CHEAL	Yield Bu/A ^b
		-----(% control)-----			
<u>Preplant incorporate 2X/POST I (4-inch weeds)</u>					
Pend/Immx+Acif+NIS+AMS	1.3/0.023+0.125+0.25%+2.5	89	91	79	35.6
Pend/Immx+Clsm+NIS+AMS	1.3/0.023+0.01+0.25%+2.5	88	31	87	29.3
Pend/[Glyt&imep]+NIS+AMS	1.3/[0.75&0.063]+0.25%+2.5	99	98	91	45.9
<u>Preemergence/ POST I (4-inch weeds)</u>					
[Flmx&clsm]/Lact+Clet+NIS+AMS	[0.08&0.03]/0.125+0.09+0.25%+2	99	91	26	21.5
[Flmx&clsm]/	[0.05&0.016]/				
Clsm+Lact+Clet+NIS+AMS	0.016+0.125+0.09+0.25%+2	99	90	19	10.6
[Flms/	0.05/				
Clsm+Clet+Lact+COC+AMS	0.016+0.125+0.009+1%+2.5	99	94	20	15.5
[S-meto&metr]/	[1.0&0.23]/				
Fome+[Flfp-P&fenx]+COC+AMS	0.235+[0.125&0.035]+1%+2.5	95	91	63	28.1
Suen/	[1.0&0.23]/				
Fome+Qufp-P+COC+AMS	0.235+0.06+1%+2.5	99	99	99	45.8
<u>Preemergence/ POST I (6-inch weeds)</u>					
Suen/Glyt+Clim+AMS	0.25/+0.94+0.015+2.5	99	97	99	45.1
[Flmx&clsm]/Glyt+AMS	[0.05&0.016]/+0.94+2.5	99	97	99	46.1
[S-meto&metr]/Glyt ³ +AMS	[0.8&0.20]/0.75+2.5	99	97	91	45.1
Flmx/Glyt+AMS	0.06/0.94+2.5	99	97	99	47.8
Suen/Glyt+AMS	0.19/0.94+2.5	99	99	99	47.2
<u>POST I (4-inch weeds)</u>					
Fome+[Flfp-P&fenx]+Thif+COC+AMS	0.23[0.156&0.044]+0.002+1%+2.5	94	97	53	23.7
Fome+[Flfp-P&fenx]+	0.23[0.156&0.044]+				
Clsm+COC+AMS	0.016+1%+2.5	97	93	48	21.2
<u>POST I (4-inch weeds)/POST III(Canopy)</u>					
Glyt+AMS/Glyt+AMS	0.9+2.5 / 0.9+2.5	99	99	99	45.9
<u>POST II (6-inch weeds)</u>					
Glyt+Carf+AMS	0.9+0.004+2.5	96	73	75	28.8
Glyt ⁴ +Clsm+AMS	1+0.016+2.5	98	87	84	41.8
Glyt ³ +AMS	1+2.5	98	87	71	37.1
Glyt ² +AMS	1+2.5	97	89	77	37.2
Glyt+AMS	0.94+2.5	96	82	82	38.9
<u>Checks</u>					
Weedy	-	0	0	0	5.6
Hand-Weeded	-	10	100	100	42.1
	LSD (0.10)	5	7	12	6.8

^a Acif = acifluorfen = Ultra Blazer 2L; Carf = carfentrazone = Aim EW; Clet = clethodim = Select2EC; Clim = chlorimuron = Classic 75DF; Clsm = cloransulam = FirstRate 84WG; [Flfp-P&fenx] = [fluazifop-P & fenoxaprop] = Fusion 2.56L; Flms = flumetsulam = Python 80DF; Flmx = flumioxazin = Valor 50DF; [Flmx&clsm] = [Flumioxazin & cloransulam] = Gangster; Fome = fomesafen = Flexstar 1.88L; Glyt = glyphosate = Roundup Weather Max; Glyt² = glyphosate = Warrant; Glyt³ = glyphosate = Touchdown IQ; Glyt⁴ = glyphosate = Glyphomax Plus; Glyt⁵ = glyphosate = Clearout 41 Plus; [Glyt&imep] = [glyphosate & imazethapyr] = Extreme 2.17L; Immx = imazamox = Raptor 1L; Lact = lactofen = Phoenix 2L; Pend = pendimethalin = Prowl 3.8 H2O; Qufp-P = quizalofop-P = Assure II 0.88L; [S-meto&metr] = [S-metolachlor & metribuzin] = Boundary 6.5L; Suen = sulfentrazone = Authority 75DF; Thif = thifensulfuron = Harmony GT 75DF; AMS = spray grade ammonium sulfate; COC = crop oil concentrate, Class Additive 17%; NIS = nonionic surfactant, Class Preference.

^b Yield adjusted to 13% moisture.