

Herbicide performance in soybeans at Waseca, MN in 2000. Hoverstad, Thomas R and Jeffrey L. Gunsolus The objective of this trial was to evaluate several new herbicide options and mechanical weed control methods in soybeans for south central Minnesota. The research site was a Webster clay loam soil containing 6.5% organic matter with a pH of 6.6 and soil test P and K levels of 22 and 135 ppm respectively. The previous crop was oats that had been fall chisel plowed. 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 '2101' soybeans were planted on May 15, 2000 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. Cultivation was performed on the appropriate treatments on July 7, 2000. Visual estimates of weed control were taken on September 18, 2000. Application dates, environmental conditions, crop and weed stages are listed below

Date	May 15	May 15	June 19	June 26	July 21
Treatment			Post I	Post II	Post III
Application Stage	PPI	Pre	3-4 inch weeds	4-6 inch weeds	4-inch regrowth
air temp °F	67	69	78	73	75
soil temp (4-inch)	53	57	69	70	75
Relative humidity (%)	25	35	37	49	36
Wind	N 5	N 10	N 12	N 11	N 5
Soil moisture	Mist	Mist	Mist	Mist	Dry
Soybeans					
Stage	-	-	V2	V3	R1
height (inch)	-	-	4	5	14
Giant foxtail					
leaf no.	-	-	1-3	5	3
height (inch)	-	-	1-3	2-4	4-6
Common ragweed					
leaf no.	-	-	4-6	6	6
height (inch)	-	-	2-3	3-4	4-6
Common lambsquarters					
leaf no.	-	-	4-6	8-12	6
height (inch)	-	-	2	3	4
Velvetleaf					
leaf no.	-	-	2-4	4	4
height (inch)	-	-	2	3	4
Redroot Pigweed					
leaf no.	-	-	2-6	8-12	6
height (inch)	-	-	1-2	2	4
Rainfall after application (inch)					
Week 1	3.46	3.46	1.43	1.19	0.05
week 2	1.08	1.08	1.19	4.07	0.05
week 3	5.00	5.00	4.07	0.00	1.15

Giant foxtail and common ragweed were the dominant weed species in this trial. Several treatments failed to provide adequate control of common ragweed including [pendimethalin & imazethapyr] PPI; trifluralin PPI followed by imazethapyr post, clomazone plus sulfentrazone pre; and imazethapyr post. The highest yields were obtained by using a soil applied grass herbicide either PPI or preemergence followed by glyphosate postemergence. Mechanical treatments resulted in 25 to 30 bushel per acre yield reductions compared to the best herbicide treatments.

Table. Herbicide performance in soybeans at Waseca, MN in 2000 (Hoverstad and Gunsolus).

Treatment ^a	Rate	SETFA	AMBEL	ABUTH	CHEAL	AMAPO	Yield
<u>Preplant incorporate 2X</u>	(lb/A or %)	-----(% control)-----					Bu/A ^b
[Imep&Pend]	[0.063&0.84]	93	23	99	99	99	19.5
Trif+Cloransulam	0.75+0.03	63	65	92	99	91	29.7
<u>Preplant incorporate 2X/POST II (4-inch weeds)</u>							
Trif/Imep+COC+28%N	0.75/0.031+1.25%+1.25%	97	41	96	96	99	33.3
Trif/Imep+COC+28%N	0.75/0.063+1.25%+1.25%	99	60	99	96	96	36.2
Trif/[Bent&Acif]+28%N	0.75/[0.75&0.17]+2.5%	50	77	99	99	93	30.1
Clom ¹ /Imep+COC+28%N	0.75/0.031+1.25%+1.25%	99	50	97	99	92	33.0
[Imep&Pend]/Glyt+AMS	[0.063&0.84] / 0.56+2.5	97	96	96	99	86	53.9
Trif/Glyt+AMS	0.75/0.56+2.5	99	98	99	99	82	54.8
[Imep&Pend] /	[0.044&0.59] /						
Seth+Bent+Acif+COC+28%N	0.2+1+0.1875+0.625%+1.25%	97	94	99	85	99	41.5
Weedy check	-	0	0	0	0	0	7.9
<u>Preplant incorporate 2X/POST II (4-inch weeds)/cultivate (35 DAP)</u>							
Trif/Imep+COC+28%N/	0.75/0.031+1.25%+1.25%	99	61	95	99	99	36.1
Trif/Imep+COC+28%N/	0.75/0.063+1.25%+1.25%	99	82	99	99	99	45.3
Trif/[Bent&Acif]+28%N/	0.75/[0.75&0.17]+2.5%	81	93	99	92	99	42.0
Hand-weeded	-	100	100	100	100	100	53.4
<u>Preemergence</u>							
Clomazone ² + Sulfentrazone ¹	0.75+0.375	84	15	99	99	99	17.3
Clomazone ² +Cloransulam	0.75+0.03	74	58	99	96	99	30.8
<u>Preemergence/POST III (4-6 inch weeds)</u>							
Clomazone / Glyt+AMS	0.75 / 0.56+2.5	99	98	99	99	97	53.2
[FOE-5043&metr] / Glyt+AMS	[0.177&0.176] / 0.56+2.5	99	98	99	99	93	53.6
[S-meto&metr] / Glyt+AMS	[0.98&0.23] / 0.56+2.5	98	99	99	99	99	56.9
Dimethenamid / Glyt+AMS	1.125 / 0.56+2.5	99	98	99	99	99	54.3
Sulfentrazone ² / Glyt+AMS	0.19 / 0.56+2.5	98	97	99	99	99	50.0
Suen ² / [Flfp-P&fex]+	0.25 / [.156&.044]+						
Fome+COC+28%N	0.235+1%+2.5%	96	98	99	99	99	50.2
Flmx/Glyt+AMS	0.078/0.56+2.5	98	99	99	99	99	51.9
Flmx / Clsm+Clet+COC+28%N	0.078/0.016+0.094+1%+2.5%	98	96	99	64	94	51.8
[FOE-5043&metr] / Imep+	[0.117&0.176] / .031+						
Fome+COC+28%	0.176+0.625%+1.25%	90	98	99	96	99	48.8
[S-meto&metr] / [Flfp-P&fex]+	[1.18&0.28]+ [.09&.027]+						
Fome+COC+AMS	0.176+1%+2	99	99	99	99	99	50.7
[S-meto&metr]/	[1.18&0.28]+						
Clsm+Clet+MSO+AMS	0.016+0.094+0.625%+2	99	87	99	84	66	51.3
<u>POST I (3 to 4-inch weeds)/POST IV (4-inch regrowth)</u>							
Glyt+AMS/Glyt+AMS	0.56+2.5/0.56+2.5	99	99	99	99	99	51.2
<u>Mechanical Treatments</u>							
Rotary Hoe 2X (7 & 11 DAP) /							
Cultivate 2X (37 & 53 DAP)		59	26	61	68	68	20.4
Spring Tooth Harrow 1X (7 DAP)							
Rotary Hoe 1X (11 DAP)							
Cultivate 2X (37 & 53 DAP)		54	48	61	69	69	25.8
<u>POST II (4-inch weeds)</u>							
[Flfp-P&fex]+	[.156&.044]+						
Fome+COC+28%N	0.235+1%+2.5%	96	93	99	49	99	46.0
Clsm+Glyt	0.016+0.56	98	92	97	89	99	50.9
[Glyt&imep]+NIS+AMS	[0.75&0.063]+0.125%+2.5	99	92	99	99	99	50.8
Glyt+Dimethenamid+AMS	0.56+0.94+2.5	99	86	99	99	99	49.5
Glyt+AMS	0.75+2.5	99	99	99	99	99	50.6
ICI 0224+AMS	1+2.5	99	96	99	99	99	50.6
Seth+Bent+Fome+COC+28%N	0.2+1.0+0.18+0.625%+1.25%	96	95	99	45	99	43.6
Imep+COC+28%N	0.063+1.25%+1.25%	98	51	99	98	99	24.3
<u>POST II (4-inch weeds)/cultivate (35 DAP)</u>							
Seth+Bent+Fome+COC+28%N	0.2+1.0+0.18+0.625%+1.25%	98	98	99	93	99	45.0
Imep+COC+28%N	0.063+1.25%+1.25%	98	74	99	99	99	36.3
	LSD (0.10)	11	13	5	10	12	8.7

^a ; Acif = Ultra Blazer 2L; Bent = Result G 5L; [Bent&Acif] = Galaxy 3.67E; Clom¹ = Command 4E; Clom² = Command 3ME; Fome = Flexstar 1.88L; Suen¹ = Authority 75DF; Suen² = Spartan 4L; Glyt = Roundup Ultra 3L; ICIA 0224=Touchdown 5; Imep = Pursuit 2AS; [Imep&Pend] = Pursuit Plus 2.9E; Clsm = FirstRate 84WG; Dimethenamid = Frontier 6E; Seth = Result G 1E; Trif = Treflan 4E; [Glyt&imep] = Extreme 2.17L; [Flfp-P&fex] = Fusion 2.56L; [S-meto&metr] = Boundary 7.8L; [FOE-5043&metr] = Domain 60 DF; Flmx = Valor 50DF; COC = crop oil concentrate, Class Additive 17%; MSO = Methylated Seed Oil; NIS = nonionic surfactant, Class Preference; 28%N = an aqueous solution of urea and ammonium nitrate; AMS = spray grade ammonium sulfate.

^b Yield adjusted to 13% moisture.