

Herbicide performance in corn at Waseca, MN tall waterhemp site in 2003. Hoverstad, Thomas R. and Jeffrey L. Gunsolus. The objective of this trial was to evaluate weed management systems available to corn producers in southern Minnesota on several annual weed species. This site had an especially high population of tall waterhemp. The research site was a Webster clay loam soil containing 6.7% organic matter, pH = 7.0 and soil test P and K levels of 26 and 165 ppm, respectively. The previous crop was corn that had been chisel plowed in the fall. The area was fertilized in the spring with 175 lb N/A as urea and field cultivated once to a depth of 3 inches prior to planting to incorporate nitrogen and prepare a seedbed. Three corn hybrids were used to evaluate the products for weed control in this trial. Those treatments that included glyphosate were evaluated using Garst '8590RR'. The treatment including [Imazethapyr&Imazapyr] were evaluated using Garst '8590IT'. The treatments using glufosinate and those treatments that require no special herbicide resistance were evaluated using 'Garst 8517LL'. All corn was planted on May 2, 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 18, 2003. Application dates, environmental conditions, crop and weed stages are listed below.

Date Treatment	May 2 Pre	May 30 V3 corn	June 12 V4 corn	June 24 4-inch regrowth
air temp °F	64	74	72	85
soil temp (4-inch) °F	52	65	64	75
Relative humidity (%)	45	30	40	25
Wind	W6	W 12	W2	W 6
Soil moisture	Moist	Dry	Moist	Moist
Corn				
stage	--	V3	V4	V9
height (inch)	--	4	6	30
Giant foxtail				
leaf no.	--	1-2	2-3	2-4
height (inch)	--	1-2	2-3	3-5
Tall waterhemp				
leaf no.	--	2-4	4-6	2-4
height (inch)	--	1-2	4	2-4
Velvetleaf				
leaf no.	--	2-4	3	6-10
height (inch)	--	1-2	3-4	3-4
Rainfall after application (inch)				
Week 1	1.93	0.03	0.03	0.93
Week 2	1.24	2.09	1.44	1.67
Week 3	0.21	0.03	0.26	1.16

Poor tall waterhemp control was observed with [acetochlor & atrazine] plus [flumetsulam & clopyralid] soil applied as a one-pass preemergence treatment. A postemergence application of [nicosulfuron&rimsulfuron&clopyralid&flumetsulam] plus dicamba plus atrazine resulted in poor tall waterhemp control because the atrazine rate was inadvertently applied at 0.25 oz/A instead of 0.25 lb/A. Postemergence treatments that used mesotrione all resulted in excellent tall waterhemp control. (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 corn at Waseca, MN tall waterhemp site in 2003 (Hoverstad and Gunsolus).

Treatment <sup>a</sup>	Rate (lb/A or %)	SETFA	AMATU	ABUTH	Yield Bu/A <sup>b</sup>
-----(% control)-----					
<u>Preemergence Corn hybrid = Garst 8517LL</u>					
[Acet&atra]+[Flms&clpy]	[2.2&0.8]+[0.046&0.15]	80	53	98	96
[S-meto&meso&atra]	[2&0.2&0.75]	94	85	78	126
<u>Preemergence/POST II (V4 corn) Corn hybrid = Garst 8517LL</u>					
Acet/[Flms&clpy]+Atra+COC+AMS	2.2/[0.035&0.11]+0.75+1%+2.5	93	97	92	137
Acet/ Flms&clpy]+Meso+Atra+NIS+AMS	2.2/ [0.035&0.11]+0.023+0.25+1%+2.5	87	99	92	127
[Acet&atra]/ Flms&clpy]+Dica+Atra+NIS+AMS	[2.2&0.8]/ [0.035&0.11]+0.125+0.25+1%+2.5	92	93	92	128
Dime-P/ [Dica&difl]+Atra+NIS+AMS	0.98/ [0.125&0.05]+0.45+0.25%+2.5	95	85	65	95
Ftct/Gluf+Atra+AMS	0.45/0.42+0.45+3	97	97	84	144
Ftct/ Fora[Dica&difl]+MSO+28%	0.45/ 0.033[[0.125&0.05]+1.5pt+3pt	96	70	65	124
[S-meto&CGA-154281]/ [Nico&rims&clpy&flms]+Meso+ Atra+COC+AMS	0.71/ [0.01&0.01&0.11&0.03]+0.03+ 0.45+1%+2	89	99	98	133
[S-meto&CGA-154281]/ [Nico&rims]+Meso Atra+COC+AMS	0.71/ [0.02&0.01]+0.063 0.45+1%+2	94	96	96	154
[S-meto&CGA-154281]/ [Prim&dica]+Atra+COC+28%N	1.91/ [0.03&0.12]+0.45+1%+2.5%	90	97	91	120
[S-meto&CGA-154281]/ Meso+Atra+COC+28%N	0.95/ 0.094+0.25+1%+2.5%	64	99	97	125
Dime-P/Carf+atra+COC	0.98/0.007+0.9+1%	83	97	97	133
Dime-P/ Carf+Atra+Dica+COC	0.98/ [0.007]+0.9+0.125+1%	89	99	99	123
<u>Preemergence/POST II (V4 corn) Corn hybrid = Garst 8590 RR</u>					
Acet <sup>2</sup> /Glyt+AMS	1.1/0.94+2.5	87	95	86	131
[S-meto&CGA-154281]/Glyt <sup>2</sup> +AMS	0.95/0.9+2.5	97	94	82	138
Dime-P/Dica+Glyt	0.56/0.25+0.47	94	99	96	129
<u>POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Garst 8590 RR</u>					
Glyt+AMS/ Glyt+AMS	0.94+2.5 / 0.94+2.5	98	98	98	139
<u>POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Garst 8517LL</u>					
Gluf+Atra+AMS / Gluf+Atra+AMS	0.42+0.5+2.5 / 0.42+0.5+2.5	98	99	75	132
<u>POST I (V3 corn) Corn hybrid = Garst 8590IT</u>					
[Imep&impr]+[Dica&atra]+ NIS+AMS	[0.042&0.014]+[0.28&0.55]+ 0.25%+2.5	75	86	99	130
<u>POST II (V4 Corn) Corn hybrid = Garst 8517LL</u>					
[Nico&rims]+ Meso+COC+AMS	[0.02&0.01]+ 0.06+1%+2	92	86	93	135
[Nico&rims&atra]+ Meso+COC+AMS	[0.02&0.01+0.75]+ 0.06+1%+2	91	99	99	133
[Nico&rims&clpy&flms]+ Dica+Atra+COC+AMS	[0.01&0.01&0.11&0.03]+ 0.125+0.03+1%+2	84	51	99	110
[Nico&rims]+ [S-meto&meso&atra]+NIS+AMS	[0.01&0.01&0.11&0.03]+ [0.67&0.067&0.25]+0.25%+2	89	99	94	142
<u>Checks</u>					
Weedy	-	0	0	0	63
Hand-Weeded	-	100	100	100	154
	LSD (0.10)	11	15	22	23

<sup>a</sup> Acet = acetochlor = Surpass 6.4E; Acet<sup>2</sup> = acetochlor = Harness 7E; [Acet&atra] = [Acetochlor&atrazine] = Keystone LA; Atra = atrazine = Aatrex 90DF; Carf = carfentrazone = Aim EW; Dica = dicamba = Clarity 4S; [Dica&atra] = [dicamba & atrazine] = Marksman 3.3L; [Dica&difl] = [dicamba & diflufenzopyr] = Distinct 70WG; Dime-P = Dimethenamid-P = Outlook 6L; Ftct = flufenacet = Define 60DF; [Flms&clpy] = [flumetsulam & clopyralid] = Hornet WDG; Fora = foramsulfuron = Option 35DF; Gluf = glufosinate = Liberty 1.67L; Glyt = glyphosate = Roundup Weather MAX; Glyt<sup>2</sup> = glyphosate = Touchdown IQ; [Imep&impr] = [imazethapyr & imazapyr] = Lightning 70DF; Meso = mesotrione = Callisto 4L; [Nico&rims&clpy&flms] = [nicosulfuron & rimsulfuron & clopyralid & flumetsulam] = Accent Gold WDG; [Nico&rims] = [nicosulfuron & rimsulfuron] = Steadfast 75DF; [Prim&dica] = [primisulfuron & dicamba] = Northstar 47.4WG; [S-meto&CGA-154281] = [S-metolachlor & CGA-154281] = Dual II Magnum 7.64EC; [S-meto&meso&atra] = [S-metolachlor&mesotrione&atrazine] = Lumax; NIS = nonionic surfactant, Class Preference; AMS = spray grade ammonium sulfate; COC = crop oil concentrate, Class Additive 17%; 28%N = an aqueous solution of urea and ammonium nitrate.

<sup>b</sup> Yield adjusted to 15.5% moisture.