

Herbicide performance in corn at Waseca, MN in 1997. 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 corn for southern Minnesota. The research site was a Webster clay loam soil containing 6.7% organic matter, pH = 6.9 and soil test P and K levels of 20 and 150 ppm, respectively. The previous crop was oats that had been moldboard plowed in the fall. The entire area was field cultivated in the spring prior to any treatment application. 150 lb N/A was spring applied as anhydrous ammonia. Following preplant incorporated treatment application the entire area was field cultivated once to a depth of 3 inches to incorporate herbicides and prepare a seedbed. Pioneer '3730' corn seed was planted on May 13, 1997 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. Application dates, environmental conditions, crop and weed stages are listed below.

Date	May 13	May 13	June 5	June 11	June 13
Treatment	PPI	Pre	2-collar	3-collar	4-collar
air temp °F	42	54	78	84	83
soil temp (4-inch) °F	45	57	72	74	70
Relative humidity (%)	37	24	33	33	27
Wind	SW 4	SW 5	N 6	E 2	NE 10
Soil moisture	dry	dry	moist	dry	dry
Corn					
stage	--	--	V2	V3	V4
height (inch)	--	--	4	9	10
Giant foxtail					
leaf no.	--	--	1-2	2-3	2-4
height (inch)	--	--	1	2-3	3-4
Common ragweed					
leaf no.	--	--	2-4	4-6	4-6
height (inch)	--	--	1	2-4	3
Common lambsquarters					
leaf no.	--	--	2-4	4-8	4-10
height (inch)	--	--	1	2-3	3-4
Velvetleaf					
leaf no.	--	--	coty.	2	2-4
height (inch)	--	--	½	1-2	2-3
Rainfall after application (inch)					
week 1	0.32	0.32	0.19	0.17	0.26
week 2	1.69	1.69	0.24	1.67	1.58
week 3	0.64	0.64	1.60	1.06	1.20

Soil applied herbicides performed relatively poor due to dry soil conditions through May and early June. Cultivation enhanced control of grasses by soil applied herbicides approximately 10 percent. With adequate mid to late season rainfall those treatments that afforded even fair weed control resulted in yields as good as the weed-free plots.

Table. Herbicide performance in corn at Waseca, MN in 1997 (Hoverstad and Gunsolus).

Treatment <sup>a</sup>	Rate (lb/A or %)	Gift	Corw	Vele	Colq	Rrpw	H2O (%)	Yield <sup>b</sup> (bu/A)
<u>Preplant incorporate 1X/POST (4-collar corn)</u>								
[EPTC+R-29148&Acet]/Dica	[4.2&1.05]/0.5	89	99	96	99	99	18.0	194
CGA 77102/Dica	1.91/0.5	69	96	96	99	99	17.9	193
[Acet&MON 4660]/Dica	2.0/0.5	77	99	99	99	99	17.7	180
SAN-582H/Dica	1.5/0.5	75	99	99	99	99	17.9	194
<u>Preemergence/POST (4-collar corn)/cultivation (38 DAP)</u>								
CGA 77102/Dica/cultivate	1.91/0.5	74	99	99	99	99	17.8	200
SAN-582H/Dica/cultivate	1.5/0.5	87	99	99	99	99	17.8	205
[Acet&MON4660/Dica/cultivate 4660]/Dica/cultivate	2.0/0.5	92	99	96	99	99	17.4	181
Hand-weeded check	-	100	100	100	100	100	18.2	196
<u>Preemergence/POST (2-collar corn)</u>								
CGA 77102/[Rims&Thif]+Atra +COC+28%N	0.76/[0.01&0.005]+0.5 +1.25%+5.0%	68	99	78	99	99	18.5	196
<u>Early POST (2-collar corn)</u>								
ICIA 5676+Dica+Nico +NIS+28%N	1.6+0.25+0.016 +0.25%+5.0%	92	99	94	96	99	17.9	213
Pend+Dica+Nico +NIS+28%N	1.24+0.375+0.016 0.25%+5.0%	86	99	99	99	99	18.3	201
[Rims&Thif]+Atra +COC+28%N	[0.01&0.005]+0.5 +1.25%+5.0%	76	99	93	99	99	18.6	180
Weedy check	-	0	0	0	0	0	20.0	158
<u>Preemergence/POST (4-collar corn)</u>								
CGA 77102/Dica	1.91/0.5	69	99	99	99	99	19.1	212
SAN-582H/Dica	1.5/0.5	76	99	99	99	99	17.5	197
[Acet&MON 4660]/Dica	2.0/0.5	86	99	99	99	99	18.9	196
BAY FOE 5043/Dica	0.98/0.5	56	99	99	99	99	19.0	195
ICIA 5676/[Flms&Clpy] +NIS+28%N	2.0/[0.034&0.094] +0.25%+5.0%	87	99	99	99	99	18.7	208
ICIA 5676/[Flms&Clpy] +Dica+NIS	2.0/[0.034&0.094] +0.125+0.25%	86	99	99	99	99	18.3	188
ICIA 5676/[Flms&Clpy] +Atra+COC+28%N	2.0/[0.034&0.094] +0.5+1.25%+5.0%	91	99	97	99	99	18.8	216
ICIA 5676/[Flms&Clpy&2,4-D] +NIS	2.0/[0.023&0.063&0.125] +0.25%	79	99	96	99	99	18.3	206
CGA 77102/[CGA-152005&Prim] +Dica+COC+28%N	1.91/[0.014&0.014] +0.063+1.25%+5.0%	80	99	99	99	99	18.7	201
CGA 77102/Prim+Dica +COC+28%N	1.91/0.018+0.063 +1.25%+5.0%	78	99	99	99	99	19.2	198
CGA 77102/Prim+Atra +CGA 248757+COC+28%N	1.91/0.018+0.5 +0.004+1.25%+5.0%	84	99	99	96	99	18.9	190
SAN-582H/BAS 662 +NIS+28%N	1.5/0.26 +0.25%+1.25%	91	99	99	99	99	18.8	194
CGA 77102/F8426+Atra+NIS	1.91/0.008+0.5+0.25%	76	99	99	99	99	18.9	183
CGA 77102/F8426+Atra +Dica+NIS	1.91/0.008+0.5 0.094+0.25%	87	98	99	99	99	18.4	204
Weedy check	-	0	0	0	0	0	20.1	164
<u>Preemergence</u>								
RPA 201772	0.094	97	99	99	99	73	18.4	200
RPA 201772+ICIA 5676	0.094+1.0	98	99	99	99	99	18.0	199
<u>POST (3-collar corn)</u>								
[DPX 79406&Atra]+COC+28%N	[0.023&0.75]+1.25%+5.0%	96	88	88	99	99	19.5	203
<u>POST (4-collar corn)</u>								
Nico+[Dica&Atra] +NIS+28%N	0.031+[0.34&0.66] +0.25%+2.5%	97	99	99	99	99	19.6	197
Nico+Dica+NIS+28%N	0.031+0.5+0.25%+5.0%	97	99	99	99	99	19.9	200
Nico+[Brox&Atra] +NIS+28%N	0.031+[0.23&0.46] +0.25%+5.0%	94	87	99	99	99	19.2	202
Nico+[Flms&Clpy] +Atra+COC+28%N	0.031+[0.034&0.094] +0.5+1.25%+5.0%	95	99	99	99	99	19.8	206
Nico+MON 12000 +Dica+COC+28%N	0.031+0.031 +0.063+1.25%+5.0%	94	98	97	99	99	19.2	192
Weedy check	-	0	0	0	0	0	20.1	161
Nico+[CGA 152005&Prim] +COC+28%N	0.031+[0.009&0.009] +1.25%+5.0%	95	99	96	96	99	19.6	192
Nico+Prim+Dica +COC+28%N	0.031+0.018+0.063 +1.25%+5.0%	97	99	97	99	99	19.6	196
Hand-weeded	-	100	100	100	100	100	19.4	201
	LSD (0.10)	10	4	6	2	9	0.6	22

<sup>a</sup> [Acet&MON 4660] = Harness 7E; atrazine = Aatrex 90DF; BAY FOE 5043 = Axiom 68DF; Brox = Buctril 2EC; [Brox&Atra] = Buctril & Atrazine 3.2F; CGA 248757 = Action 4.75WP; [CGA 152005 &Prim] = Exceed 57WDG; CGA 77102 = Dual II Magnum 7.64EC; Dica = Banvel 4S; [Dica&Atra] = Marksman 3.2F; [DPX 79406&Atra] = Basis Gold 89.9WG; [EPTC+R-29148&Acet] = DoublePlay 7EC; [Flms&Clpy] = Hornet 85.6WG; [Flms&Clpy&2,4-D] = Scorpion III 84.3DF; ICIA 5676 = Surpass 6.4EC; MON 12000 = Permit 75DF; Nico = Accent 75DF; Pend = Prowl 3.3EC; Prim = Beacon 75DF; [Rims&Thif] = Basis 75DF; RPA 201772 = Balance 75DF; SAN-582H = Frontier 6EC; COC = crop oil concentrate, Class Additive 17%; NIS = nonionic surfactant, Class Preference; 28%N = an aqueous solution of urea and ammonium nitrate.

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