Herbicide performance in corn at Waseca, MN in 1999. Hoverstad, Thomas R., Jeffrey L. Gunsolus and Jodie K. Getting. 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 = 7.5 and soil test P and K levels of 28 and 181 ppm, respectively. The previous crop was oats that had been chisel plowed in the fall. The entire area was field cultivated in the spring prior to any treatment application. The area was fertilized in the spring with 150 lb N/A 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. Garst '8773 Bt/LL/IT' (imidazolinone and glufosinate tolerant) corn seed was planted on May 10, 1999 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 June 24, 1999. Visual estimates of weed control were taken on September 21, 1999. Application dates, environmental conditions, crop and weed stages are listed below.

Date	May 10	May 19	June 1	June 7	June 14
Treatment	PPI	Pre	2-collar	3-collar	4-collar
air temp °F	81	70	55	82	62
soil temp (4-inch) °F	56	60	58	65	60
Relative humidity (%)	30	44	83	S	W
Wind	S 17	S 12	NE 8	7	5
Soil moisture	Moist	wet	Moist	Moist	moist
Corn					
stage	--	--	V2	V3	V5
height (inch)	--	--	3	5	9-11
Giant foxtail					
leaf no.	--	--	2	3-4	5
height (inch)	--	--	1	2-4	6-8
Common ragweed					
leaf no.	--	--	4	4-6	6-8
height (inch)	--	--	1	3	4-6
Common lambsquarters					
leaf no.	--	--	4	4-6	6-10
height (inch)	--	--	1	3	4-6
Velvetleaf					
leaf no.	--	--	3	3-4	4-5
height (inch)	--	--	1	2	4-5
Rainfall after application (inch)					
Week 1	2.36	1.12	0.89	2.08	0.47
Week 2	1.50	0.50	2.08	0.47	0.50
Week 3	0.34	0.77	0.47	0.38	0.67

Soil applied acetanalide herbicides performed better when applied preemergence compared to preplant incorporated. This was likely the result of abundant soil moisture prior to and after planting. Postemergence treatments targeting 4-collar corn resulted in reduced corn yields due to delayed application and early season weed competition. Because of excessive rain the 4-collar treatments were not actually applied until corn was in the V5 stage and giant foxtail was 6 to 8-inches tall. When these same treatments were applied following soil applied acetanalide herbicides yield reductions were not observed. (MN Agric. Exp. Sta. Paper No. 991051001, Misc Journ Series, University of MN, St Paul).

Table. Herbicide performance in corn at Waseca, MN in 1999 (Hoverstad, Gunsolus and Getting).

Treatment[a]	Rate	Gift	Corw	Colq	Vele	Rrpw	Yield
	(lb/A or %)	---------(% control)--------					Bu/A[b]
Preplant incorporate 1X/POST III (4-collar corn)							
[EPTC+R-29148&Acet]/Dica	[4.2&1.05]/0.5	86	99	99	99	99	172.9
CGA 77102/dicamba	1.91/0.5	74	99	99	99	99	144.7
Acetochlor/dicamba	1.97/0.5	75	99	99	99	99	154.9
SAN-582H/dicamba	1.5/0.5	76	99	99	99	99	170.8
Preemergence/POST III (4-collar corn)							
CGA 77102/dicamba	1.91/0.5	84	99	99	99	99	176.6
Acetochlor/dicamba	1.97/0.5	89	99	96	99	99	166.7
SAN-582H/dicamba	1.5/0.5	93	99	99	99	99	175.2
Weedy check	-	0	0	0	0	0	21.3
Preemergence/POST III (4-collar corn)/cultivation (42 DAP)							
CGA 77102/Dica	1.91/0.5	99	99	99	99	99	159.9
Acetochlor/dicamba	1.97/0.5	96	99	99	99	99	174.6
SAN-582H/Dica	1.5/0.5	97	99	99	99	99	170.7
Hand-weeded check	-	100	100	100	100	100	176.1
Preemergence							
[FOE-5043&RPA201772]+ atrazine	[0.33&0.07]+0.9	99	99	99	99	99	173.0
RPA 201772+atrazine	0.094+0.72	99	99	99	99	99	161.3
Acetochlor+[Flms&Clpy]	2+[0.058&0.156]	89	99	99	99	99	161.6
Preemergence/POST III (4-collar corn)							
Acet/Gluf+Atra+AMS	1.2/0.26+0.45+2.5	99	99	99	99	99	169.0
RPA201772/ Gluf+atrazine+AMS	.08/ .26+0.72+2.5	99	99	99	99	99	167.4
CGA77102/ [Nico&Rims& Clpy&Flms]+ Dica+COC+28%N	0.63/ [0.012&0.012&0.094&0.035] + 0.125+1.0%+4.0%	95	99	99	99	99	164.6
[FOE-5043&metr]/ Gluf+atra+AMS	[0.33&0.08]/ .26+.45+2.5	94	99	99	99	99	175.3
[FOE-5043&metr]/ [Nico&Rims&Clpy&Flms]+ COC+28%N	[0.39&0.10]/ [0.012&0.012&0.094&0.035] + 1%+4%	99	99	99	99	99	170.0
Acet/[Flms&Clpy]+ Dica+NIS+28%N	2.0/[0.035&0.094]+ 0.125+0.25%+2.5%	95	99	99	99	99	165.5
Acet/[Flms&Clpy]+ F6285+NIS+28%N	2.0/[0.035&0.094]+ 0.008+0.25%+2.5%	91	99	99	99	99	170.6
CGA 77102/ [Prim&Dica]+COC+28%N	1.91/ [0.025&0.123]+1.25%+4%	91	99	99	99	99	157.8
CGA 77102/[Prim&Dica]+ Nico+COC+28%N	1.91/[0.025&0.123]+ 0.015+1.25%+4%	99	99	99	99	99	159.3
San 582H/ [dica&San 1269H]+ NIS+28%N	1.5/ [0.187&0.075]+ 0.25%+1.25%	99	99	99	99	99	148.5
Weedy check		0	0	0	0	0	50.1
POST I (2-collar corn)/Cultivation (42 DAP)							
[Rims&Thif]+Dica+ NIS+28%N	[0.01&0.005]+0.25+ 0.25%+4.0%	83	99	99	99	99	162.8
POST II (3-collar corn)/Cultivation (42 DAP)							
[Rims&Nico&Atra]+ [Flms&Clpy]+COC+28%N	[0.012&0.012&0.76]+ [0.035&0.094]+1.0%+1.25%	99	98	98	98	99	169.4
[Imep&Impr]+Dica+ NIS+28%N	[0.042&0.014]+0.1875+ 0.25%+1.25%	99	99	99	99	99	159.5

POST III (4-collar corn)/Cultivation (42 DAP)							
Nico+[dica&San 1269H]+ NIS+28%N	0.031+[0.125&0.05]+ 0.25%+1.25%	96	99	99	99	99	147.4
Hand-weeded check	-	100	100	100	100	100	154.7
POST II (3-collar corn)							
[Rims&Nico&Atra]+ [Flms&Clpy]+COC+28%N	[0.012&0.012&0.76]+ [0.035&0.094]+1.0%+1.25%	87	99	99	99	99	159.1
[Imep&Impr]+Dica+ NIS+28%N	[0.042&0.014]+0.1875+ 0.25%+1.25%	96	97	99	99	99	167.9
POST III (4-collar corn)							
Nico+[Dica&San 1269H]+ NIS+28%N	0.031+[0.125&0.05]+ 0.25%+1.25%	93	99	99	99	99	144.0
Nico+F6285+Atra+ NIS+28%N	0.031+0.008+0.5+ 0.25%+2.5%	94	6	99	99	99	106.8
Gluf+Atra+AMS	0.26+0.45+2.5	89	99	99	96	99	152.5
Gluf+F6285+AMS	0.26+0.008+2.5	86	82	76	96	99	161.0
[Nico&Rims&Clpy&Flms]+ Dica+COC+28%N	[0.012&0.012&0.094&0.035] + 0.125+1.0%+2.5%	81	99	99	99	99	131.3
[Nico&Rims&Clpy&Flms]+ F6285+COC+28%N	[0.012&0.012&0.094&0.035] + 0.008+1.0%+2.5%	94	96	97	99	99	140.8
Weedy check		0	0	0	0	0	8.0
	LSD (0.10)	6	4	4	2	1	16.6

[a] Acet or acetochlor = Harness 7E; Atra or atrazine = Aatrex 90DF; [Dica&SAN 1269H] = Distinct 70WG; FOE 5043&metr = Axiom 68DF; CGA 77102 = Dual II Magnum 7.64EC; Dica or dicamba = Clarity 4S; [Rims&Nico&Atra] = Basis Gold 89.9WG; [EPTC+R-29148&Acet] = DoublePlay 7EC; [Flms&Clpy] = Hornet 85.6WG; F6285 = Aim 40DF; Gluf = Liberty 1.67L; [Imep&Impr] = Lightning 70DF; Nico = Accent 75DF; [Nico&Rims&Clyp&Flms] = Accent Gold 83.8DF; [Prim&Dica] = Northstar 47.4WG; [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; AMS = spray grade ammonium sulfate.

[b] Yield adjusted to 15.5% moisture.