

Herbicide performance in corn at Waseca, MN in 2000. Hoverstad, Thoms 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 = 6.6 and soil test P and K levels of 22 and 135 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. Novartis 'NK 42B7' (imidazolinone and glufosinate tolerant) corn seed was planted on May 4, 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 June 19, 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 4	May 4	May 26	June 2	June 9
Treatment	PPI	Pre	2-collar	3-collar	4-collar
air temp °F	87	87	67	66	85
soil temp (4-inch) °F	65	65	63	62	75
Relative humidity (%)	34	34	33	47	50
Wind	N 9	N 9	N 9	N 3	N 15
Soil moisture	dry	dry	moist	wet	moist
Corn					
stage	--	--	V2	V3	V5
height (inch)	--	--	3	5	7
Giant foxtail					
leaf no.	--	--	1	1-3	4-5
height (inch)	--	--	1	2-4	6-8
Common ragweed					
leaf no.	--	--	2	2-4	4-6
height (inch)	--	--	1	3	4-6
Common lambsquarters					
leaf no.	--	--	2	2-5	6-8
height (inch)	--	--	1	3	4-6
Velvetleaf					
leaf no.	--	--	2	2-3	4-6
height (inch)	--	--	1	2	4-5
Powell amaranth					
leaf no.	--	--	1	2	4
height (inch)	--	--	1	2	4-5
Rainfall after application (inch)					
Week 1	0.75	0.75	4.76	1.19	2.08
Week 2	3.41	3.41	1.19	2.08	1.34
Week 3	0.68	0.68	2.08	1.34	0.55

Preplant incorporated [EPTC+R-29148&Acet] provided better giant foxtail control than the three other acetanilide herbicides evaluated preplant. Cultivation improved giant foxtail control with preemergence acetanilide herbicides by about 10 percent. No corn injury was observed with any of the treatments evaluated (data not shown). Mechanical treatments yielded about 20 to 25 bushels per acre less than the average of the herbicide treatments.

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

Treatment ^a	Rate (lb/A or %)	SETFA	AMBEL	CHEAL	ABUTH	AMAPO	Yield Bu/A ^b
		-----(% control)-----					
<u>Preplant incorporate 1X/POST III (4-collar corn)</u>							
[EPTC+R-29148&Acet]/Dica	[4.2&1.05]/0.5	87	98	99	98	99	162
[S-meto&CGA-154281]/ dicamba	1.91/ 0.5	77	99	99	99	99	162
Acetochlor/dicamba	1.97/0.5	83	99	99	99	99	157
Dimethenamid-P/dicamba	1.0/0.5	80	99	99	99	99	144
<u>Preemergence/POST III (4-collar corn)</u>							
[S-meto&CGA-154281]/ dicamba	1.91/ 0.5	88	99	99	99	99	155
Acetochlor/dicamba	1.97/0.5	91	99	99	99	99	163
Dimethenamid-P/dicamba	1.0/0.5	80	97	98	99	99	166
Weedy check	-	0	0	0	0	0	64
<u>Preemergence/POST III (4-collar corn) + Cultivation (46DAP)</u>							
[S-meto&CGA-154281]/ dicamba	1.91/ 0.5	95	99	99	99	99	171
Acetochlor/dicamba	1.97/0.5	95	99	99	98	99	164
Dimethenamid-P/Dica	1.0/0.5	93	99	99	99	99	159
Hand-weeded check	-	100	100	100	100	100	164
<u>Preemergence</u>							
[Acet&atra&dcmd]+ [Flms&clpy]	[0.94&0.63]+ [[.04&.12]	80	90	99	99	99	162
Acetochlor+ RPA201772	1.0 +.005	95	71	99	97	96	169
<u>Preemergence/POST II (3-collar corn)</u>							
Dimethenamid-P/ [dica&San 1269H]+ NIS+28%N	1.0/ [0.187&0.075]+ 0.25%+1.25%	97	95	96	99	99	159
Dimethenamid-P/ [dica&San 1269H]+ NIS+28%N	1.0/ [0.125&0.05]+ 0.25%+1.25%	94	99	99	93	99	171
Acet/Gluf+atra+AMS S-meto&CGA-154281/ [Nico&Rims& Clpy&Flms]+ Dica+COC+28%N	1.2/ 0.26+0.45+2.5 0.63/ [0.012&0.012&0.094&0.03]+ 0.125+1.0%+4.0%	93	59	90	97	99	165
[FOE-5043&metr]/ Gluf+atra+AMS	[0.37&0.09]/ 0.26+0.45+2.5	94	90	92	97	99	176
[FOE-5043&metr]/ [Nico&Rims&Clpy&Flms]+ COC+28%N	[0.44&0.11]/ [0.012&0.012&0.094&0.035]+1%+4 %	99	98	99	99	99	180
Rims+FOE 5043/Dica [S-meto&CGA-154281]/ [Prim&Dica]+ Carf+[Flms&clpy]+NIS	0.03+0.45/0.25 1.91/ [0.023&0.125]+ 0.008+[0.04&0.12]+0.25%	89	97	99	93	99	164
[S-meto&CGA-154281]/ [Prim&Dica]+Carf+NIS	1.91/ [0.023&0.125]+0.008+0.25%	84	99	99	99	99	169
[FOE-5043&metr]/ Dica	[0.78&0.2]/ 0.5	75	99	98	98	99	160
Acet/ZA 1296+ COC+28%N	2.0/0.094+ 1%+2.5%	91	90	99	99	99	152
Acet/[Flms&Clpy]+ Dica+NIS+28%N	2.0/[0.035&0.094]+ 0.125+0.25%+2.5%	93	99	99	99	99	171
RPA 210772/ Gluf+atra+AMS [S-meto&CGA-154281]/ [Prim&Dica]+COC+28%N	0.058/ 0.31+0.45+2.5 1.91/ [0.023&0.125]+ 1.25%+2.5%	92	99	99	99	99	172
<u>Mechanical treatments</u>							
2X rotary how (9 & 16 DAP)/ 3X cultivation (33, 46 & 53 DAP)		54	16	60	60	60	143
1X Spring tooth harrow (9 DAP)/ 1X rotary how (16 DAP)/ 3X cultivation (33, 46 & 53 DAP)		48	43	61	61	61	146
<u>POST I (2-collar corn)/Cultivation (46 DAP)</u>							
[Rims&Thif]+Dica+ NIS+28%N	[0.01&0.005]+0.25+ 0.25%+4.0%	99	89	97	99	97	178
<u>POST II (3-collar corn)/Cultivation (46 DAP)</u>							
[Rims&Nico&Atra]+	[0.012&0.012&0.76]+	99	99	99	99	99	161

[Flms & Clpy]+COC+28%N	[0.035&0.094]+1.0%+1.25%								
[Imep&Impr]+Dica+ NIS+28%N	[0.042&0.014]+0.1875+ 0.25%+1.25%	99	99	99	99	99	99	99	172
<u>POST III (4-collar corn)/Cultivation (46 DAP)</u>									
Nico+[dica&San 1269H]+ NIS+28%N	0.031+[0.125&0.05]+ 0.25%+1.25%	98	98	98	99	99	99	99	161
<u>POST II (3-collar corn)</u>									
[Rims&Nico&Atra]+ [Flms&Clpy]+COC+28%N	[0.012&0.012&0.76]+ [0.035&0.094]+1.0%+1.25%	97	96	99	99	99	99	99	179
[Imep&Impr]+Dica+ NIS+28%N	[0.042&0.014]+0.1875+ 0.25%+1.25%	99	94	99	99	99	93	93	172
Rims+Nico+ [Dica&SAN 1269H]+ NIS+28%N	01+.023 [0.125&0.05]+ 0.25%+2.5%	94	94	97	98	97	97	97	176
<u>POST III (4-collar corn)</u>									
[Dica&SAN1269H&Nico]+ NIS+28%N	[.137&.05&.031]+ 0.25%+2.5%	98	99	99	96	99	99	99	162
Gluf+Atra+AMS	0.26+0.45+2.5	93	93	99	99	99	99	99	173
[Nico&Rims&Clpy&Flms]+ Dica+COC+28%N	[0.012&0.012&0.094&0.035]+ 0.125+1.0%+2.5%	99	99	99	99	99	99	99	175
	LSD (0.10)	10	13	5	5	5	5	5	22

^a Acet or acetochlor = Harness 7E; Atra or atrazine = Aatrex 90DF; [Dica&SAN 1269H] = Distinct 70WG; FOE 5043&metr = Axiom 68DF; [S-meto&CGA-154281] = 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&Clpy&Flms] = Accent Gold 83.8DF; [Prim&Dica] = Northstar 47.4WG; [Rims&Thif] = Basis 75DF; [Dica&SAN1269H&Nico] = Celebrity Plus 75.3DF; [Prim&Dica] = Northstar 47DF; RPA 201772 = Balance Pro 4L; 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.