Herbicide performance in corn at Waseca, MN common ragweed site in 2004. 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 common ragweed. The research site was a Webster clay loam soil containing 7% organic matter, pH = 7.0 and soil test P and K levels of 38 and 155 ppm, respectively. The previous crop was oats that had been moldboard plowed in the fall. The area was fertilized in the spring with 150 lb N/A as anhydrous ammonia and field cultivated once to a depth of 3 inches to prior to planting to prepare a seedbed. Two corn hybrids were used to evaluate the products for weed control in this trial. Those treatments that included glyphosate were evaluated using Pioneer '38H66'. The treatments using glufosinate and those treatments that require no special herbicide resistance were evaluated using Pioneer '38H68'. All corn was planted on May 5, 2004 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 29, 2004. Application dates, environmental conditions, crop and weed stages are listed below.

Date Treatment	May 6 Pre	June 3 V3 corn	June 14 V4 corn	June 30 4-inch
air temp °F	72	70	72	regrowth 82
soil temp (4-inch) °F	72 74	65	72 70	75
Relative humidity (%)	74 25	45	70 35	75 35
Wind	NE 8	W 5	W 9	S 4
Soil moisture		Moist	Moist	Moist
Corn	Dry	MOISI	MOIST	เขเบเรเ
		\/2	V4	V9
stage		V3 4	6	_
height (inch) Giant foxtail		4	0	30
leaf no.		1-2	2-3	2-4
		- <del>-</del>	_	
height (inch)		1-2	2-3	3-5
Common ragweed leaf no.		2.4	4.6	2.4
		2-4	4-6	2-4
height (inch)		1-2	3	2-4
Common lamsquarters		0.4	0	0.40
leaf no.		2-4	6	6-10
height (inch)		1-2	3-4	3-4
Rainfall after application (inch)				
Week 1	1.66	4.29	0.15	2.09
Week 2	0.73	1.18	0.37	2.49
Week 3	2.47	0.37	0.88	1.85
WOOK O	2.77	0.07	5.00	1.00

Ample soil moisture after planting and throughout the spring resulted in excellent activity for preemergence treatments. Postemergence treatments that failed to control common ragweed included [nicosulfuron & rimsulfuron] tank mixed with either mesotrione or [S-metolachlor & mesotrione & atrazine]. Using [nicosulfuron & rimsulfuron & clopyalid & flumetsulam] postemergence resulted in better common ragweed control than the tank mixes that included [nicosulfuron & rimsulfuron]. (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 a common ragweed site at Waseca, MN in 2004 (Hoverstad and Gunsolus).

Rememergence Corn hybrid = Pioneer 38H68	Treatment <sup>a</sup>	Rate	SETFA	AMBEL	CHEAL	Yield			
		,		-(% control)		Bu/A <sup>b</sup>			
	Preemergence Corn hybrid = Pionee	<u>r 38H68</u>							
Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H68   Acat/	[Acet&atra]+[Flms&clpy]	[2.2&0.8]+[0.046&0.125]	97	99	99	188			
Acet/	[S-meto&meso&atra]	[2&0.2&0.75]	87	99	99	185			
Acet/									
FimsAcipy -Meso+Atra+NIS+AMS		•							
		[0.035&0.09]+0.023+0.25+1%+2.5	99	99	99	181			
Firms&c py +Dica+Atra+NIS+AMS   0.035&0.09 +0.125+0.25+1%+2.5   95   99   99   184									
Dime-P/   0.98/   98   99   99   184			95	99	99	201			
Dica&diff  +Atra+NIS+AMS									
Flct/ora+pass			98	99	99	184			
Flot	-		98	97	97	200			
Forat Dica&diff J+MSO+28%   0.033+[0.125&0.05]+1.5pt+3pt   98   99   99   189   Flct²   0.38   0.033+[0.125&0.05]+1.5pt+3pt   96   95   99   202   Flot²   0.38   0.033+[0.125&0.05]+1.5pt+3pt   96   95   99   202   Flot²   0.71   Flot³   0.71   Flot³   0.71   Flot³   0.01&0.01&0.01&0.01&0.01&0.01&0.01   0.03+0.031+   96   97   99   180   Mtra+COC+AMS   0.45+196+2   Flot³   0.71   Flot³   0.02&0.01]+0.063   97   91   99   181   Mtra+COC+AMS   0.45+196+2   97   99   99   196   Mtra+COC+AMS   0.45+196+2   97   99   99   196   Mtra+COC+AMS   0.45+196+2   97   99   99   196   Mtra+COC+AMS   0.45+196+2   97   96   99   99   199   Mtra+COC+AMS   0.94+0.25+0.5+2   97   96   99   99   199   199   Mtra+COC+AMS   0.094+0.5+196+2.5%   96   99   99   99   199   199   Mtra+COC+AMS   0.094+0.5+196+2.5%   93   99   99   200				31	37	200			
Flct    0.38/   96   95   99   202			98	99	99	189			
Forat-Meso-HMSO-L28%   0.033+0.047+1.5pt+3pt   90   95   99   202     S-meto&CGA-154281 /   0.71/     Nico&rims&clpy&films +Meso+   (0.01&0.01&0.11&0.03]+0.031+   96   97   99   180     Atra+COC+AMS   0.45+19%+2     S-meto&CGA-154281 /   0.71/     Nico&rims +Meso   (0.02&0.01]+0.063   97   91   99   181     Atra+COC+AMS   0.45+19%+2     S-meto&CGA-154281 /   0.95/   97   99   99   196     S-meto&CGA-154281 /   0.95/   97   99   99   196     S-meto&CGA-154281 /   1.91/   96   99   99   199     Meso+Gluf+Atra+AMS   0.94+0.5+19%+2.5%   96   99   99   99   199     Meso+Atra+COC+28%N   0.094+0.5+19%+2.5%   96   99   99   99   200     Carl-Atra+Dica+NIS   0.008+0.5+0.94+0.25%   93   99   99   200     Carl-Atra+Dica+NIS   0.008+0.5+0.94+0.25%   94   50   99   181     Nico&rims +   (0.02&0.01]+   94   50   99   181     Nico&rims&clpy&films]+   (0.01&0.01&0.01&0.03]+   97   63   99   99   198     Nico&rims&clpy&films]+   (0.01&0.01&0.01&0.03]+   97   63   99   99   198     Nico&rims&clpy&films]+   (0.02&0.01]+   97   63   99   99   198     Nico&rims +   (0.02&0.01]+   97   97   97   97   97   97   97   9									
S-meto&CGA-154281 /			96	95	99	202			
Nico&rims&clpy&flms +Meso+ Atra+COC+AMS									
Attra+COC+AMS			06	07	00	100			
[S-meto&CGA-154281]/ [Nico&rims]+Meso			90	97	99	160			
[Nico&rims]+Meso									
Atra+COC+AMS			07	04	00	404			
S-meto&CGA-154281 /   0.95/   97   99   99   196     Meso+Gluf+Atra+AMS   0.94+0.22+0.5+2   1.91/   1.91/   96   99   99   199   199     Meso+Atra+COC+28/N   0.094+0.5+19/+2.5%   96   99   99   99   200     Dime-P/   0.98/   93   99   99   200     Carf+Atra+Dica+NIS   0.008+0.5+0.94+0.25%   93   99   99   200     Carf+Atra+Dica+NIS   0.008+0.5+0.94+0.25%   94   50   99   181     Meso+COC+AMS   0.06+1%+2   94   50   99   181     Nico&rims]+   [0.01&0.01&0.01&0.03]+   88   99   99   198     Nico&rimsAclpy&films]+   [0.01&0.01&0.01&0.03]+   88   99   99   198     Nico&rimsBertoCOC+AMS   0.125+0.45+1%+2   97   63   99   191     S-meto&meso&atra]+NIS+AMS   [0.5&0.05&0.19]+0.25%+2   76   76   76   76   76   76     Checks Corn Hybrid = Pioneer 38H68   76   76   76   76   76   76     Weedy   - 0 0 0 0 0 85     Hand-Weeded   - 100 100 100 100 189     Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66   76   76   76   76   76     Acet²/Glyt+AMS   1.1/0.94+2.5   99   99   99   99   223     S-meto&CGA-154281]/Glyt²+AMS   0.95f1.1+2.5   99   99   99   99   225     Acet&atra]+GF1279+AMS   1.1&0.4]/1.0+2.5   99   99   99   99   221     S-meto&CGA-154281/   0.71/   99   99   99   99   202     S-meto&CGA-154281/   0.71/   99   99   99   90   202     S-meto&CGA-154281/   0.71/   99   99   99   90   202     S-meto&CGA-154281/   0.71/   0			97	91	99	181			
Meso+Gluf+Atra+AMS									
S-meto&CGA-154281 /   1.91 /   96   99   99   199   199   199   199   199   199   199   199   199   199   199   199   199   199   199   190			97	99	99	196			
Meso+Atra+COC+28%N									
Meso+Atra+COC+28%N   0.094+0.5+1%+2.5%   93   99   99   200			96	99	99	199			
Carf+Atra+Dica+NIS				00					
Cari-Atra-Dica+Nis			93	99	99	200			
Nico&rims +   (0.02&0.01 +   94   50   99   181     Meso+COC+AMS			00	00	00	200			
Meso+COC+AMS	POST II (V4 Corn) Corn hybrid = Pio	<u>neer 38H68</u>							
Nico&rims&clpy&flms]+		[0.02&0.01]+	94	50	aa	181			
Dica+Atra+COC+AMS	Meso+COC+AMS	0.06+1%+2	34	30	33	101			
Dica+Atra+COC+AMS	[Nico&rims&clpy&flms]+	[0.01&0.01&0.11&0.03]+	00	00	00	109			
[S-meto&meso&atra]+NIS+AMS [0.5&0.05&0.19]+0.25%+2  Checks Corn Hybrid = Pioneer 38H68  Weedy - 0 0 0 0 0 100 189  Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66  Acet²/Glyt+AMS 1.1/0.94+2.5 99 99 99 99 223  [S-meto&CGA-154281]/Glyt²+AMS 0.95/1.1+2.5 99 99 99 99 225  [Acet&atra]+GF1279+AMS [1.1&0.4]/1.0+2.5 99 99 99 99 228  Dime-P/[Dica&difi]+Glyt+NIS+AMS 0.56/[0.094&0.04]+0.47+0.25%+2.5 99 99 99 99 221  [S-meto&CGA-154281/ 0.71/ 99 99 99 99 99 221  [S-meto&CGA-154281/ 0.71/ 99 99 99 99 99 221  [S-meto&CGA-154281/ 0.94+0.016+2.5 99 99 99 99 99 202  [S-meto&CGA-154281/ 0.94+2.5 99 99 99 99 99 202  [S-meto&CGA-154281/ 0.94+2.5 0.94+2.5 99 99 99 99 202  [S-meto&CGA-154281/ 0.94+2.5 99 99 99 99 99 202  [S-meto&Corn Hybrid = Pioneer 38H68]  Hand-Weeded - 100 100 100 100 211	Dica+Atra+COC+AMS	0.125+0.45+1%+2	00	99	99	190			
S-meto&meso&atra]+NIS+AMS   (0.5&0.05&0.19]+0.25%+2	[Nico&rims]+	[0.02&0.01]+	07	62	00	101			
Weedy         -         0         0         0         0         85           Hand-Weeded         -         100         100         100         189           Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66           Acet²/Glyt+AMS         1.1/0.94+2.5         99         99         99         99         223           [S-meto&CGA-154281]/Glyt²+AMS         0.95/1.1+2.5         99         99         99         99         225           [Acet&atra]+GF1279+AMS         [1.1&0.4]/1.0+2.5         99         99         99         99         228           Dime-P/[Dica&difl]+Glyt+NIS+AMS         0.56/[0.094&0.04]+0.47+0.25%+2.5         99         99         99         99         221           [S-meto&CGA-154281/         0.71/         99         99         99         99         221           [S-meto&CGA-154281/         0.71/         99         99         99         211           Glyt+Rims+AMS         0.94+0.016+2.5         99         99         99         99         211           FOST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66         6         99         99         99         99         99         202           Glyt+AMS/ Glyt+AMS         0.94+0	[S-meto&meso&atra]+NIS+AMS	[0.5&0.05&0.19]+0.25%+2	91	03	99	191			
Hand-Weeded       -       100       100       100       189         Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66         Acet²/Glyt+AMS       1.1/0.94+2.5       99       99       99       99       223         [S-meto&CGA-154281]/Glyt²+AMS       0.95/1.1+2.5       99       99       99       99       225         [Acet&atra]+GF1279+AMS       [1.1&0.4]/1.0+2.5       99       99       99       99       228         Dime-P/[Dica&difi]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211	· · · · · · · · · · · · · · · · · · ·								
Hand-Weeded       -       100       100       100       189         Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66         Acet²/Glyt+AMS       1.1/0.94+2.5       99       99       99       99       223         [S-meto&CGA-154281]/Glyt²+AMS       0.95/1.1+2.5       99       99       99       99       225         [Acet&atra]+GF1279+AMS       [1.1&0.4]/1.0+2.5       99       99       99       99       228         Dime-P/[Dica&difl]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211	Weedv	<del>-</del> -	0	0	0	85			
Preemergence/POST II (V4 corn) Corn hybrid = Pioneer 38H66         Acet²/Glyt+AMS       1.1/0.94+2.5       99       99       99       92       223         [S-meto&CGA-154281]/Glyt²+AMS       0.95/1.1+2.5       99       99       99       99       225         [Acet&atra]+GF1279+AMS       [1.1&0.4]/1.0+2.5       99       99       99       99       228         Dime-P/[Dica&difl]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211	•	<del>-</del>	100	100	100	189			
Acet²/Glyt+AMS       1.1/0.94+2.5       99       99       99       99       223         [S-meto&CGA-154281]/Glyt²+AMS       0.95/1.1+2.5       99       99       99       99       225         [Acet&atra]+GF1279+AMS       [1.1&0.4]/1.0+2.5       99       99       99       99       228         Dime-P/[Dica&difl]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66       6       8       99       99       99       99       202         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211									
[S-meto&CGA-154281]/Glyt²+AMS		· ·	99	99	99	223			
[Acet&atra]+GF1279+ÅMS       [1.1&0.4]/1.0+2.5       99       99       99       99       228         Dime-P/[Dica&difi]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66       6       6       6       6         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211						_			
Dime-P/[Dica&difi]+Glyt+NIS+AMS       0.56/[0.094&0.04]+0.47+0.25%+2.5       99       99       99       99       221         [S-meto&CGA-154281/       0.71/       99       99       99       99       211         Glyt+Rims+AMS       0.94+0.016+2.5       99       99       99       99       211         POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66       99       99       99       99       202         Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211									
[S-meto&CGA-154281/ 0.71/ 99 99 99 211 Glyt+Rims+AMS 0.94+0.016+2.5 POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66 Glyt+AMS/ Glyt+AMS 0.94+2.5 / 0.94+2.5 99 99 99 202 Glyt+Carf+AMS/ Glyt+AMS 0.94+0.008+2.5 / 0.94+2.5 99 99 99 206 Checks Corn Hybrid = Pioneer 38H68 Hand-Weeded - 100 100 100 211	-								
Glyt+Rims+AMS 0.94+0.016+2.5  POST I (V3 corn) / POST III (4-inch Regrowth) Corn hybrid = Pioneer 38H66  Glyt+AMS/ Glyt+AMS 0.94+2.5 / 0.94+2.5 99 99 99 202  Glyt+Carf+AMS/ Glyt+AMS 0.94+0.008+2.5 / 0.94+2.5 99 99 99 206  Checks Corn Hybrid = Pioneer 38H68  Hand-Weeded - 100 100 100 211	,		99	99	99	221			
Clyt+Rims+AMS	•		99	99	99	211			
Glyt+AMS/ Glyt+AMS       0.94+2.5 / 0.94+2.5       99       99       99       202         Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211	•				-				
Glyt+Carf+AMS/ Glyt+AMS       0.94+0.008+2.5 / 0.94+2.5       99       99       99       206         Checks Corn Hybrid = Pioneer 38H68       -       100       100       100       211									
Checks Corn Hybrid = Pioneer 38H68           Hand-Weeded         -         100         100         100         211	,					-			
Hand-Weeded - 100 100 100 211			99	99	99	206			
ISD (0.10) 4 7 1 24	Hand-Weeded	<del>-</del>	100	100	100	211			
200 (0.10)		LSD (0.10)	4	7	1	24			

<sup>a</sup>Acet = acetochlor = Surpass 6.4E; Acet<sup>2</sup> = acetochlor = Harness 7E; [Acet&atra] = [acetochlor & atrazine] = Keystone LA 5.5 SE; Atra = atrazine = Aatrex 90DF; Carf = carfentrazone = Aim EW; Dica = dicamba = Clarity 4S; [Dica&difl] = [dicamba & diflufenzopyr] = Distinct 70WG; Dime-P= Dimethenamid-P=Outlook 6L; Flct = flufenacet = Define 60DF; Flct<sup>2</sup> = flufenacet = DefineSC 4L; Fora = foramsulfuron= Option 35DF; [Flms&clpy] = [flumetsulam & clopyralid] = Hornet WDG; Glyt = glyphosate = Roundup Weather MAX; Glyt<sup>2</sup> = glyphosate = Touchdown Total; Gluf = glufosinate = Liberty 1.67L; Meso = mesotrione = Callisto 4L; [Nico&rims&clpy&flms] = [nicosulfuron & rimsulfuron & clopyralid & flumetsulam] = Accent Gold WDG; [Nico&rims] = [nicosulfuron & rimsulfuron] = Steadfast 75DF; Rims = rimsulfuron; [S-meto&CGA-154281] = [S-metolachlor & CGA-154281] = Cinch 7.64EC; [S-meto&meso&atra] = [S-metoloachlor & mesotrione & atrazine] = Lumax 3.95L; 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.

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