

Weed management systems in corn at Potsdam, MN in 2003. Behnken, Lisa M., Fritz R. Breitenbach, Thomas R. Hoverstad, and Jeffrey L. Gunsolus. The objective of this trial was to evaluate weed management systems available to corn producers for control of several annual weed species in southeastern Minnesota. The research site was a Port Byron silt loam containing 3.2% organic matter with a pH of 6.7 and soil test P and K levels of 6 and 376 ppm, respectively. The previous crop was soybeans. The area was fertilized in the spring with 160 and 120 lb/A of nitrogen and potassium, respectively. The field was disked followed by one pass with a field cultivator. Two corn hybrids were used to evaluate the products for weed control in this trial, Syngenta NK45-A6 and DeKalb DKC46-26. All corn was planted on May 20, 2003, at a depth of 1.5 inches in 30-inch rows at 32,000 seeds/A. Preemergence (PRE) and postemergence (POST I, II, and III) treatments were applied with a tractor-mounted sprayer delivering 20 gpa at 32 psi using 11002 TurboTee nozzle tips. Evaluations of plots were taken on June 16 and July 3, 2003. Application dates, environmental conditions, crop and weed stages are listed below.

Date	May 22	June 14	June 18	July 1
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
air	61	74	82	76
soil				
Relative humidity (%)	45	51	53	45
Wind (mph)	10	9	14	9
Soil moisture	adequate	adequate	adequate	adequate
Corn				
stage	--	3-collar	3 to 4-collar	7 to 8- collar
height (inches)	--	8	10	28
Common lambsquarters				
weed density/ft <sup>2</sup>	--	35	35	
height (inches)	--	2	3.5	1 inch regrowth
Velvetleaf				
weed density/ft <sup>2</sup>	--	1	1	
height (inches)	--	--	3	2 inch regrowth
Wild proso millet				
weed density/ft <sup>2</sup>	--	13	13	
height (inch)	--	2	3.5	2 inch regrowth
Redroot pigweed				
weed density/ft <sup>2</sup>	--	10	10	
height (inch)	--	2.5	3	2 inch regrowth
Rainfall after application (inch)				
week 1	0.02	0	0.45	1.98
week 2	0.1	1.07	0.62	0.32
week 3	2.78	1.28	2.25	0

All treatments gave very good to excellent control of velvetleaf, 96 to 99%, except for the preemergence treatment of acetachlor & atrazine + flumetsulam & clopyralid, which gave only 88% control. All treatments provided 98 to 99% control of redroot pigweed. All treatments provided very good-excellent control, 95 to 99%, of common lambsquarters. All of the PRE/POST II, POST I/POST III, and POST II treatments gave very good to excellent control of wild proso millet, 94 to 99%. In addition, the PRE/POST I treatments flufenacet followed by glufosinate + atrazine + AMS and s-metolachlor & CGA-154281 followed by nicosulfuron & rimsulfuron + mesotrione + atrazine + COC + AMS also gave 98% and 94% control, respectively. However, the PRE and most of the PRE/POST I treatments without a grass component had reduced control of wild proso millet. Weed control differences did not result in yields decreases from the weed-free check, (corn hybrid Syngenta NK45-A6). The preemergence treatment of acetachlor & atrazine + flumetsulam & clopyralid and the PRE/POST I treatments of acetachlor followed by flumetsulam & clopyralid + mesotrione + atrazine + MSO and dimethenamid-P followed by carfentrazone + atrazine + COC resulted in yields over 100% of the weed-free check, however, the wild proso millet control in each of these was only 79, 82, and 83%, respectively. Weed control of velvetleaf, wild proso millet and redroot pigweed was similar in all of the PRE/POST II, POST I/POST III and POST II group treatments. Glyphosate + AMS followed by glyphosate + AMS, achieved a yield of 100% of the weed-free check, (corn hybrid DeKalb DKC 46-26). Due to the use of two corn hybrids in this study, corn yield is reported as a percent of the weed-free corn hybrid yield. The corn hybrid Syngenta NK45-A6 had a yield of 151 bu/A and the hybrid DeKalb DKC46-26 had a yield of 168 bu/A. (Southeast District, University of Minnesota Extension Service, Rochester).

Table. Performance of weed management systems in corn on July 3 at Potsdam, MN in 2003 (Breitenbach, Behnken, Hoverstad, Gunsolus).

Treatment	Rate (lb/A)	CHEAL control (%)	ABUTH control (%)	PANMI control (%)	AMARE control (%)	Corn yield (% of weed-free)
<b><u>PRE Corn Hybrid = Syngenta NK45-A6</u></b>						
Acetachlor&atrazine+ flumetsulam&clpyralid	2.2&0.82 + 0.046&0.125	99	88	79	99	105
S-metolachlor&atrazine &mesotrione&CGA-154281	2.007&0.752&0.2007	99	99	73	99	95
<b><u>PRE/POST I Corn Hybrid = Syngenta NK45-A6</u></b>						
Acet <sup>1</sup> / flms&clpy+atra+COC+ AMS	2.2 / 0.035&0.093+ 0.675+1%+2.5	99	99	83	99	97
Acet <sup>1</sup> / flms&clpy+meso+atra+NIS+ AMS	2.2 / 0.035&0.093 +0.0234+0.252+1%+2.5	99	98	82	99	102
Acet&atra / flms&clpy+dicamba+NIS+ AMS	2.2&0.82 / 0.035&0.093 + 0.125+ 1%+2.5	99	98	79	99	99
Dimethenamid-P/ dicamba& diflufenzopyr+atrazine+NIS+AMS	0.98/ 0.125&0.05 +0.45+0.25%+2.5	99	99	91	99	98
Flufenacet / glufosinate+ atrazine + AMS	0.45 / 0.417+ 0.45+3.0	99	98	98	99	100
Flufenacet / foramsulfuron+dica&difl+ MSO+28%N	0.45/ 0.0328+ 0.125&0.05 + 0.94%+1.88%	95	96	91	99	95
S-meto&CGA-154281 <sup>2</sup> / nicosulfuron&rimsulfuron &clpy&flms + meso + atra + COC + AMS	0.716 / 0.013&0.013& 0.105&0.039 +0.0312+ 0.45+1%+2.0	99	99	89	99	99
S-meto&CGA-154281 <sup>2</sup> / nico&rims + meso + atra + COC+ AMS	0.716 / 0.0233 & 0.0117 + 0.0312 +0.45+1%+2.0	99	99	94	99	98
S-meto&CGA-154281 <sup>3</sup> / primisulfuron&dica + atra + COC+28%N	1.91 / 0.025&0.123 + 0.45+1%+ 2.5%	99	98	85	99	98
S-meto&CGA-154281 <sup>3</sup> / meso+atra+COC+28%N	0.955 / 0.047+ 0.252+1%+2.5%	99	99	85	99	97
Dime-P/ carfentrazone+atra+COC	0.98 / 0.0078+0.9+1%	99	99	83	99	103
Weedy Corn Hybrid = Syngenta NK45-A6		0	0	0	0	67
Weed Free Corn Hybrid = Syngenta NK45-A6		100	100	100	100	100
<b><u>PRE/POST II Corn Hybrid = DeKalb DKC46-26</u></b>						
Acet <sup>4</sup> / glyphosate <sup>5</sup> + AMS	1.09 / 0.95+2.5	98	99	98	99	92
S-meto&CGA-154281/glyphosate <sup>6</sup> + AMS	0.955 / 0.9+2.5	95	99	97	99	97
Dime-P/dicamba+glyphosate <sup>5</sup>	0.56 / 0.25+0.473	97	99	98	99	94
<b><u>POST I/POST III Corn Hybrid = DeKalb DKC46-26</u></b>						
Glyphosate <sup>5</sup> + AMS / glyphosate <sup>5</sup> + AMS	0.95 + 2.5 / 0.95 + 2.5	95	97	97	99	100
<b><u>POST II Corn Hybrid = DeKalb DKC46-26</u></b>						
Nico&rims+ meso+ COC+AMS	0.0233&0.0117+ 0.0312+1%+2.0	99	99	94	98	95
Nico&rims&atra+ meso + COC+AMS	0.0233&0.0117&0.75+ 0.0312+1%+2.0	99	99	95	99	87
Nico&rims&clpy&flms+dica+ atra+COC+AMS	0.0128&0.0128&0.105& 0.039+0.0625+0.028+1%+2	96	99	94	98	90
Nico&rims+ s-meto&atra& meso& CGA-154281 + NIS+AMS	0.0233&0.0117 + 0.661& 0.251&0.067+0.25%+2.0	99	99	95	99	92
Weedy Corn Hybrid = DeKalb DKC46-26		0	0	0	0	32
Weed-Free Corn Hybrid = DeKalb DKC46-26		100	100	100	100	100
LSD (0.01)		2	5	6	1	8

1. Acetachlor = Surpass, 2. S-metolachlor = Cinch, 3. S-metolachlor = Dual II Magnum, 4. Acetachlor = Harness, 5. Glyphosate = Roundup WeatherMax, 6. Glyphosate = Touchdown IQ, COC = crop oil concentrate, AMS = spray grade ammonium sulfate, Helena; MOS = methylated sunflower oil, NIS = AGRI-DEX nonionic surfactant, Helena.