Comparison of single pass and two-pass sequential weed management systems for weed control in corn at Potsdam, MN in 2003. Breitenbach, Fritz R., Lisa M. Behnken, Andrew R. Sheehan and Kristal L. Schaufler. The objective of the trial was to evaluate the weed control of herbicides applied preemergence and postemergence to sequential preemergence plus postemergence weed control systems in corn in southeastern Minnesota. The research site was a Port Byron silt loam soil, containing 3.3% organic matter, pH of 6.6, and soil test P and K levels of 63 ppm and 284 ppm, respectively. The previous crop was soybean. In the spring, the area was fertilized with 160 lb/A nitrogen and 120 lb/A potassium. The field was field cultivated twice to incorporate the fertilizer. One additional pass with a field cultivator was made prior to planting. The corn hybrid, DKC 46-26, was planted on May 20, 2003, at a depth of 1.5 inch in 30-inch rows at a population of 32,000 seeds/A. A randomized complete block design with four replications was used. Preemergence (PRE) and Postemergence (POST I and POST II) treatments were applied with a tractor-mounted sprayer, delivering 20 gpa at 32 psi using TurboTee 11002 nozzles. Evaluations of the plots were taken on June 5, 16, July 3, and 18, 2003. Application dates, environmental conditions, crop and weed stages are listed below.

Date	May 22	June 18	July 1
Treatment	PRE	POST I	POST II
Temperature (F)			
air	61	80	76
soil	---	---	---
Relative humidity (%)	45	56	45
Wind (mph)	10	14	9
Soil moisture	adequate	adequate	adequate
Corn			
stage	---	3-4 collar	7-8 collar
height (inch)	---	10	28
Common lambsquarters			
weed density/ ft^2	---	35	---
height (inch)	---	3.5	2
Velvetleaf			
weed density/ft^2	---	1	---
height (inch)	---	3	1
Wild proso millet			
weed density/ ft^2	---	13	---
height (inch)	---	3.5	2
Rainfall after application (inch)			
week 1	0.01	0.75	
week 2	0.05		
week 3	2.45		

Crop injury from sulfonylurea compounds was noted following the June 18 herbicide applications, but not recorded. Preemergence treatments with atrazine rates greater than 0.75 lb/A provided substantially better early season (6/5 rating) common lambsquarters control than preemergence treatments with lower rates of atrazine or treatments without atrazine. By the July 18 rating, all treatments gave 99% control of common lambsquarters, except for the postemergence treatment of foramsulfuron plus flumetsulam & clopyralid that gave 96%. All but two treatments provided excellent, 98 to 99%, control of velvetleaf. S-metolachlor & atrazine followed by nicosulfuron & rimsulfuron plus dicamba and acetachlor & atrazine & MON 4660 followed by glyphosate provided 96% and 94% control, respectively. Seven treatments resulted in 89% or better control of wild proso millet, all with postemergence components. Mesotrione and diflufenzopyr & dicamba provided some additional control of wild proso millet when applied postemergence following preemergence treatments. The highest level of weed control was achieved with the postemergence only treatments. The highest yields however, were with the preemergence or preemergence plus postemergence (POST I) treatments, suggesting an advantage to removing early season weed competition. (Southeast District, University of Minnesota Extension Service, Rochester).

Table. Comparison of herbicides applied preemergence, preemergence plus postemergence, and postemergence for weed control in corn on June 5, 16, July 3 and 18 at Potsdam, MN in 2003 (Breitbenbach, Behnken, Sheehan and Schaufler).

Treatment	Rate	-----CHEAL----- control				-----ABUTH----- control[2]			-----PANMI----- control				Corn yield
		6/5	6/16	7/3	7/18	6/16	7/3	7/18	6/5	6/16	7/3	7/18	
	(lb/A)	(%)				(%)			(%)				(bu/A)
PRE													
s-metolachlor&atrazine &mesotrione&CGA-154281	2.007&0.752 & 0.2007	95	99	99	99	99	99	99	58	58	55	51	170
PRE / POST I													
S-metolachlor&CGA-154281 / mesotrione + atrazine + COC +28% UAN	1.9 / 0.094 + 0.5+ 1% + 2.5%	34	13	99	99	88	99	99	55	55	82	74	162
S-metolachlor & atrazine & CGA-154281 / mesotrione + atrazine + COC + 28% UAN	1.665&1.335 / 0.094+0.25+ 1% + 2.5%	95	95	97	99	90	99	99	60	58	81	72	165
Acetachlor&MON 4660 / halosulfuron&dicamba + COC + 28% UAN	2.38 / 0.04225 & 0.12675 + 1% + 2.5%	71	39	94	99	65	99	99	60	59	24	21	146
Dimethenamid-P / dicamba&atrazine + NIS	0.98/ 0.4816 & 0.9184 + 0.125%	39	10	99	99	91	99	99	60	55	48	40	151
Dimethenamid-P& atra / dicamba & diflufenzopyr + NIS + 28% UAN	0.9885&1.2045 / 0.187&0.0749 + 0.25% + 2.5%	95	98	98	99	67	98	99	56	56	85	79	157
Acetachlor&atrazine / flumetsulam&clopyralid + NIS + 28% UAN	2.2537&0.8463 / 0.035&0.093 + 0.25% + 2.5%	95	95	98	99	78	98	99	60	58	53	38	156
S-metolachlor&atrazine / nicosulfuron&rimsulfuron + dicamba+COC+28% UAN	0.6272&0.5028 / 0.0233&0.0117 + 0.125+1%+2.5%	63	46	90	98	34	98	96	44	33	93	92	141
Acet&atra&MON 4660 / glyphosate[1] + AMS	0.8385&0.6615 / 0.77 + 3.0	64	55	99	99	83	93	94	62	54	98	91	170
POST I/ POST II													
Glyphosate + AMS / glyphosate + AMS	0.77 + 3.0 / 0.77 + 3.0	0	0	94	99	0	96	99	0	0	98	93	161
POST II													
S-metolachlor&atrazine + nicosulfuron&rimsulfuron + COC + 28% UAN	0.9157&0.7343 + 0.0233&0.0117 + 1% + 2.5%	0	0	99	99	0	99	98	0	0	92	94	132
Dicamba&diflufenzopyr& nicosulfuron + NIS+ 28%UAN	0.1275&0.0494&0. 029+0.25%+ 2.5%	0	0	91	98	0	99	98	0	0	91	89	152
Nicosulfuron&rimsulfuron + atrazine + mesotrione + COC + 28% UAN	0.0233&0.0117 + 0.25 + 0.094 + 1% + 2.5%	0	0	99	99	0	99	99	0	0	90	85	154
Nicosulfuron&rimsulfuron + atrazine + dicamba + COC + 28% UAN	0.0233&0.0117 + 0.25 + 0.125 +1% + 2.5%	0	0	99	99	0	99	99	0	0	96	92	154
Foramsulfuron + flumetsulam&clopyralid + MSO + 28% UAN	0.0328 + 0.035&0.093 + 1% + 2.5%	0	0	88	96	0	99	99	0	0	91	88	155
Untreated		0	0	0	0	0	0	0	0	0	0	0	75
LSD (0.10)		5	6	3	2	14	2	2	5	5	5	7	12

1. Glyphosate = Roundup Weather Max, 2. Evaluations of velvetleaf control not taken on June 5, COC = crop oil concentrate, 28% UAM = an aqueous solution of urea and ammonium nitrate, NIS = AGRI-DEX nonionic surfactant, Helena; AMS = spray grade ammonium sulfate, Helena; MOS = methylated sunflower oil.