Weed Control in Corn

Evaluation of weed management systems in field corn at Rochester, MN in 2004. Breitenbach, Fritz R., Lisa M. Behnken, Thomas R. Hoverstad and Jeffrey L. Gunsolus. The objective of this trial was to evaluate weed management systems for weed control in field corn in southeastern Minnesota. The research site was a Lawler loam series containing 2.4% organic matter with a pH of 6.1 and soil test P and K levels of 59 ppm and 198 ppm, respectively. The previous crop was soybean. The area was fertilized in the spring with 122 lb/A nitrogen, 23 lb/A phosphorus, 120 lb/A of potash, 23 lb/A sulfur, and 3 tons/A of lime. The area was topdressed with 40 lbs/A of nitrogen as urea on June 15. The field was disked and field cultivated once prior to planting. The corn hybrids, Pioneer 38H66 LL and Pioneer 39H66 RR, were planted on May 6, 2004, at a depth of 1.5 inches in 30-inch rows at 32,000 seeds/A. A randomized complete block design with four replications was used. Preemergence (PRE) and postemergence (POST I and II) treatments were applied with a tractor-mounted sprayer, delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on May 24, June 7, June 15, and October 21, 2004. Application dates, environmental conditions, and crop and weed stages are listed below. (University of Minnesota Extension Service, Regional Center, Rochester, MN)

Date	May 6	June 7	June 28
Treatment	PRE	POST I	POST II
Temperature (F)			
air	70	94	70
Relative humidity (%)	33	41	44
Wind (mph)	16	28	9
Soil moisture	adequate	adequate	adequate
Corn			
stage	--	4 collar	7 collar
height (inches)	--	6	17
Giant ragweed			
weed density	--	heavy	heavy
height (inch)	--	5	2 regrowth
Common lambsquarters			
weed density	--	light	light
height (inch)	--	1.5	2 regrowth
Giant foxtail			
weed density	--	moderate	moderate
height (inch)	--	2.2	2 regrowth
Common waterhemp			
weed density	--	moderate	moderate
height (inch)	--	1.5	2 regrowth
Rainfall after application (inch)			
week 1	1.44	5.65	0.16
week 2	1.02	1.85	2.82
week 3	2.91	0.63	0.23

Table. Performance of weed management systems in corn on May 24, June 7, June 15, and October 21 at Rochester, MN in 2004 (Breitenbach, Behnken, Hoverstad, and Gunsolus).

Treatment	Rate	AMBTR control			CHEAL control			SETFA control			AMATA control			Corn yield
		5/24	6/15	10/21	5/24	6/15	10/21	5/24	6/15	10/21	6/7	6/15	10/21	
	(lb/A)	(%)			(%)			(%)			(%)			(% of weed free)
PRE														
Hybrid = Pioneer 38H66 LL														
Acet&atra&dcmd + flms&clpy	2.195&0.824 + 0.046&0.125	95	88	77	100	100	99	100	100	98	99	100	95	83
S-meto&atra&meso&benoxacor	2.01&0.75&0.201	96	99	94	100	100	98	100	100	97	99	100	96	94
PRE / POST I														
Hybrid = Pioneer 38H66 LL														
Acet&dichlormid/ flms&clpy + meso + atra + COC + AMS	2.2 / 0.035&0.093 + 0.023+0.252+ 1% + 2.5	50	91	98	100	100	97	100	100	92	99	100	95	94
Acet&atra&dcmd / flms&clpy + dicamba + NIS + AMS	2.195&0.825 / 0.035& 0.093+0.125+0.25%+2.5	76	76	95	100	100	98	100	100	92	99	100	91	106
Dime-P/dica&difl + atra + NIS + AMS	0.98 / 0.125&0.05 +0.45 + 0.25% + 2.5	40	87	96	100	100	98	100	100	91	99	100	95	88
Flct[1] / gluf + atra + AMS	0.45 / 0.417 + 0.45 + 3.0	0	99	98	58	100	98	100	100	90	99	100	99	85
Flct[1] / fora + dica&difl +MSO+28% N	0.45 / 0.033+ 0.125& 0.05 +0.94%+1.88%	0	74	96	70	100	97	100	100	91	99	100	99	86
Flct[2] / fora + meso + MSO + 28%N	0.375 / 0.033 + 0.047+0.94%+1.88%	0	53	80	68	63	98	99	100	94	99	100	98	83
S-meto&benoxacor[3] / nico& rims&clpy&flms + meso + atrazine + COC + AMS	0.716 / 0.013&0.013&0.105&0.039 + 0.031 + 0.45 + 1% + 2.0	0	89	99	45	100	99	100	100	96	99	100	99	102
S-meto&benoxacor[3] / nico&rims + meso + atra +COC +AMS	0.716 / 0.023 & 0.012 + 0.063 + 0.45 + 1% + 2.0	0	91	93	45	100	99	100	100	94	94	100	98	92
S-meto&benoxacor[4] / meso + gluf+ atraz + AMS	0.955 / 0.094 + 0.209 + 0.495 + 2.0	25	100	99	50	100	99	100	100	93	99	100	95	89
S-meto&benoxacor[4] / meso + atrazine + COC + 28%N	1.91 / 0.094 + 0.495 + 1% + 2.5%	0	93	99	68	100	99	100	100	93	99	100	94	98
Dime-P / carf + atra + dica + NIS	0.98/0.008+0.5+0.094+0.25%	40	75	85	100	100	99	100	100	84	99	100	93	89
POST I														
Hybrid = Pioneer 38H66 LL														
Nico&rims + meso + COC + AMS	0.023&0.012 + 0.063 + 1% +2.0	0	64	67	0	50	99	0	100	95	0	75	98	59
Nico&rims&clpy& flms + dica + atra + COC + AMS	0.013&0.013&0.105&0.039 + 0.125+0.45+1% + 2.0	0	83	99	0	100	99	0	100	84	0	100	96	93
Nico&rims + s-meto&atra & meso&benoxacor +NIS+ AMS	0.023&0.012 + 0.5&0.19&0.05 + 0.25% + 2.0	0	79	68	0	100	99	0	100	98	0	100	99	55
Weed free		100	100	100	100	100	100	100	100	100	100	100	100	100
Hybrid = Pioneer 38H66 LL														
Weedy		0	0	0	0	0	0	0	0	0	0	0	0	3
PRE / POST I														
Hybrid = Pioneer 39H66 RR														
Aceto&MON 4660 / glyt[5] + AMS	1.09 / 0.95 + 2.5	20	99	91	89	100	92	100	100	83	99	100	90	92
S-meto&benoxacor[4] / glyt[6] + AMS	0.955 / 1.12 + 2.5	0	100	90	48	100	92	98	100	84	99	100	89	103
Acet&atra&dcmd / GF 1279 + AMS	1.098&0.412 / 1.01 + 2.5	45	100	89	100	100	89	100	100	85	99	100	89	108
Dime-P/dica&difl + glyt[5] + NIS + AMS	0.56 / 0.094&0.04 + 0.47 + 0.25% + 2.5	0	91	93	55	100	92	100	100	89	97	100	91	94
S-meto&benoxacor[3]/glyt[5]+rims+ AMS	0.716 / 0.95 + 0.0156 + 2.5	0	100	95	33	100	91	98	100	87	99	100	95	101
POST I / POST II														
Corn hybrid = Pioneer 39H66 RR														
Glyt[5] + AMS / glyt[5] + AMS	0.95 + 2.5 / 0.95 + 2.5	0	100	99	0	98	99	0	100	99	0	90	99	95
Weed Free		100	100	100	100	100	100	100	100	100	100	100	100	100
Corn hybrid = Pioneer 39H66 RR														
LSD (0.10)		13	5	4	11	6	3	2	0	4	3	8	4	14

Flct[1] = Define; flct[2] = Define SC; s-meto&benoxacor[3] = Cinch; s-meto&benoxacor[4] = Dual II Magnum; glyt[5] = Roundup WeatherMax; glyt[6] = Touchdown Total; COC = crop oil concentrate; AMS = spray grade ammonium sulfate, Helena; NIS = AGRI-DEX nonionic surfactant, Helena; MSO = methylated sunflower oil; Loveland; and 28% N = an aqueous solution of urea and ammonium nitrate, Helena.