

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 15, and October 21 at Rochester, MN in 2004 (Breitenbach, Behnken, Hoverstad, and Gunsolus).

Treatment	Rate	Giant ragweed control			Common lambsquarters control			Giant foxtail control			Common waterhemp control			Corn yield (% of weed free)
		5/24	6/15	10/21	5/24	6/15	10/21	5/24	6/15	10/21	6/7	6/15	10/21	
	(rate/A)	(%)			(%)			(%)			(%)			
PRE														
Hybrid = Pioneer 38H66 LL														
Keystone LA + Hornet	2.2 qts + 4 oz	95	88	77	100	100	99	100	100	98	99	100	95	83
Lumax	6 pts	96	99	94	100	100	98	100	100	97	99	100	96	94
PRE / POST I														
Hybrid = Pioneer 38H66 LL														
Surpass/ Hornet + Callisto + atrazine + COC + AMS	2.75 pts / 3 oz + 0.75 oz + 0.28 lbs + 1 % v/v + 2.5 lbs	50	91	98	100	100	97	100	100	92	99	100	95	94
Keystone LA / Hornet + Clarity + NIS + AMS	2.2 qts / 3 oz + 4 oz + 0.25 % v/v + 2.5 lbs	76	76	95	100	100	98	100	100	92	99	100	91	106
Outlook/Distinct + atrazine + NIS + AMS	21 oz / 4 oz + 0.5 lbs + 0.25 % v/v + 2.5 lbs	40	87	96	100	100	98	100	100	91	99	100	95	88
Define / Liberty + atrazine + AMS	12 oz / 32 oz + 0.5 lbs + 3 lbs	0	99	98	58	100	98	100	100	90	99	100	99	85
Define / Option + Distinct + MSO+28% N	12 oz / 1.5 oz + 4 oz + 1.5 pts + 1.5 qts	0	74	96	70	100	97	100	100	91	99	100	99	86
Define SC / Option + Callisto + MSO + 28%N	12 oz / 1.5 oz + 1.5 oz + 1.5 pts + 1.5 qts	0	53	80	68	63	98	99	100	94	99	100	98	83
Cinch / Accent Gold+ Callisto + atrazine + COC + AMS	0.75 pts / 3.5 oz + 1 oz + 0.5 lbs + 1 % v/v + 2 lbs	0	89	99	45	100	99	100	100	96	99	100	99	102
Cinch / Steadfast + Callisto + atrazine +COC +AMS	0.75 pts / 0.75 oz + 2 oz + 0.5 lbs + 1% v/v + 2 lbs	0	91	93	45	100	99	100	100	94	94	100	98	92
Dual II Magnum / Callisto + Liberty+ atrazine + AMS	1 pt / 3 oz + 16 oz + 0.55 lbs + 2 lbs	25	100	99	50	100	99	100	100	93	99	100	95	89
Dual II Magnum / Callisto + atrazine + COC + 28%N	2 pts / 3 oz + 0.55 lbs + 1 % v/v + 2.5 % v/v	0	93	99	68	100	99	100	100	93	99	100	94	98
Outlook / Aim + atrazine + Clarity + NIS	21 oz / 0.5 oz + 0.55 lbs + 3 oz + 0.25 % v/v	40	75	85	100	100	99	100	100	84	99	100	93	89
POST I														
Hybrid = Pioneer 38H66 LL														
Steadfast + Callisto + COC + AMS	0.75 oz + 2 oz + 1 % v/v + 2 lbs	0	64	67	0	50	99	0	100	95	0	75	98	59
Accent Gold+ Clarity + atrazine + COC + AMS	3.5 oz + 4 oz + 0.5 lbs + 1 % v/v + 2 lbs	0	83	99	0	100	99	0	100	84	0	100	96	93
Steadfast + Lumax + NIS + AMS	0.75 oz + 1.5 pts + 0.25 % v/v + 2 lbs	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														
Harness / Roundup WeatherMax + AMS	1.25 pts / 22 oz + 2.5 lbs	20	99	91	89	100	92	100	100	83	99	100	90	92
Dual II Magnum / Touchdown Total + AMS	1 pt / 24 oz + 2.5 lbs	0	100	90	48	100	92	98	100	84	99	100	89	103
Keystone LA / GF 1279 + AMS	1.1 qts / 24 oz + 2.5 lbs	45	100	89	100	100	89	100	100	85	99	100	89	108
Outlook / Distinct + Roundup WeatherMax + NIS + AMS	12 oz / 3 oz + 11 oz + 0.25 % v/v + 2.5 lbs	0	91	93	55	100	92	100	100	89	97	100	91	94
Cinch / Roundup WeatherMax + rimsulfuron + AMS	0.75 pts / 22 oz + 1 oz + 2.5 lbs	0	100	95	33	100	91	98	100	87	99	100	95	101
POST I / POST II														
Corn hybrid = Pioneer 39H66 RR														
Roundup WeatherMax + AMS / Roundup WeatherMax + AMS	22 oz + 2.5 lbs / 22 oz + 2.5 lbs	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

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.