

Controlling Weeds in Irrigated Roundup Ready® Corn at Scottsbluff, Nebraska During the 2007 Growing Season.

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A field study was initiated near Scottsbluff, Nebraska to compare various herbicide treatments for selective weed control in Roundup Ready Corn. The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 30 feet long and were located on a sandy loam soil with 1.5% organic matter and a pH of 8.1. corn, 'Pioneer 36K69', was planted on May 3. Herbicides were applied preemergence on May 9, early postemergence on May 24, postemergence on May 31, and late postemergence on June 11 (Table 1). Herbicides were applied with a tractor-mounted sprayer calibrated to deliver 20 gallons of water per acre at 32-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions at the time of spraying are given in Table 1.

Corn stand was reduced in plots treated postemergence with SureStart plus Durango (Table 2). Visual corn injury was observed in plots treated preemergence with Guardsman Max and followed postemergence with Status plus Roundup WeatherMax, and plots treated postemergence with SureStart plus Durango. Corn was subjected to freezing temperatures on June 8 which caused leaf tip browning but corn seemed to out-grow the injury. However corn yields at harvest were well below average yields of 200 bu/acre and suggest early season frost damage caused more crop injury than anticipated.

Weed density was moderate and consisted of common lambsquarters, redroot pigweed, hairy nightshade, and kochia at average plant densities of 88, 9, 126, and 2 plants per 92 sq ft, respectively. Average weed control was equal to or greater than 97% in most plots except areas treated with a single postemergence application of Roundup WeatherMax and Dual Magnum or Surpass applied preemergence. The experimental herbicide KIH485 applied preemergence provided excellent weed control and corn selectivity at all rates of application.

Table 1. Environmental conditions at the time of herbicide application.

Date	Air temperature	Humidity	Wind speed & direction	Time of day	Corn height	Weed height			
						Colq	Rrpw	Hans	Kocz
	(F)	(%)	(mph)			----- (inches) -----			
May 9	55	57	2 SE	9:00 am		----- no growth -----			
May 24	58	38	1 S	10:30 am	3	1.5	1.5	1.5	1.5
May 31	66	34	8 W	11:00 am	7	4	4	4	3
June 11	86	30	4 SE	11:30 am	12	8	6	6	6

Rainfall and irrigation before and after herbicide application

Date	Amount	Date	Amount	Date	Amount
	- (inches) -		- (inches) -		- (inches) -
May 3	0.26	May 21	0.23	June 7	0.08
May 5	0.29	May 25	0.75	June 8	0.75
May 10	0.50	May 29	0.23	June 13	0.85

Table 2. Controlling Weeds in Irrigated Roundup Ready Corn at Scottsbluff, Nebraska During the 2007 Growing Season.

Treatment ¹	Rate	Time of application ²	Corn					Percent weed control calculated from weed counts taken on 6/13 ⁴				
			Visual injury ³			Stand 6/13	Yield at 15.5% moisture 10/24	Colq	Rrpw	Hans	Kocz	Avg
			5/22	5/31	6/11							
Nontreated	—	—	0	0	0	31500	59.0	0	0	0	0	0
Guardzman Max	1.87	PRE										
Status + X77 + UAN	0.175	4" weeds	3	1	0	29900	78.4	99	99	99	99	99
Bicep II Magnum	1.44	PRE										
Status + X77 + UAN	0.175	4" weeds	0	0	0	30400	85.7	99	99	99	99	99
Guardzman Max	1.87	PRE										
Roundup WeatherMax + AMS	0.75	4" weeds	0	0	1	31000	111.9	99	99	99	99	99
Guardzman Max	1.87	PRE										
Status + Roundup WeatherMax + AMS	0.14 + 0.75	4" weeds	8	4	2	30700	79.9	99	99	99	99	99
Outlook	0.75	PRE										
Status + Atrazine + X77 + UAN	0.175 + 0.5	4" weeds	0	2	2	29500	94.7	98	94	99	99	97
Roundup WeatherMax + AMS	0.75	4" weeds	0	0	0	31300	113.9	79	86	99	99	91
Roundup WeatherMax + Status + AMS	0.75 + 0.14	4" weeds	0	0	0	31700	114.2	97	99	99	99	98
Roundup WeatherMax + Status + AMS	0.75 + 0.175	4" weeds	0	0	0	31300	121.3	98	96	99	99	98
Pensate (Bas 756) + AMS + X77	1.56	4" weeds	0	0	0	31000	110.0	94	91	99	87	93
Roundup WeatherMax + Outlook + Clarity + AMS	0.75 + 0.56 + 0.25	4" weeds	0	0	0	33000	91.7	99	99	99	99	99
Roundup WeatherMax + Atrazine + AMS	0.75 + 1.1	4' weeds	0	0	0	32400	85.3	99	99	99	99	99
Lumax	2.46	PRE										
Bicep II Magnum	2.2	PRE										
ZA 1296 + AMS	2.17	4" weeds	0	0	0	31000	131.0	99	99	99	99	99
ZA 1296 + AMS	2.17	4" weeds	0	0	0	32400	126.5	99	99	99	99	99
Touchdown Total + AMS	0.75	4" weeds										
Sequence + AMS	1.64	8" weeds	0	0	0	31400	127.4	98	99	99	75	93
Sequence + AMS	1.64	4" weeds										
Touchdown Total + AMS	0.75	8" weeds	0	0	0	32000	131.7	99	99	99	99	99

Treatment ¹	Rate	Time of application ²	Corn				Percent weed control calculated from weed counts taken on 6/13 ⁴					
			Visual injury ³			Stand 6/13	Yield at 15.5% moisture 10/24	Colq	Rrpw	Hans	Kocz	Avg
			5/22	5/31	6/11							
			---- (%) ----			(plants/acre)	(bu/acre)	----- (%) -----				
SureStart + Durango + AMS (L)	0.93 + 0.75	1" weeds	0	3	3	32000	104.8	99	99	99	99	99
Glyphomax XRT + Starane + AMS (L)	0.75 + 0.125	4" weeds	0	0	0	32300	122.7	95	96	99	99	97
SureStart + Durango + AMS (L)	0.93 + 0.75	4" weeds	9	15	21	28900	112.3	99	99	99	87	96
Widematch + Steadfast + Aatrex + Scoil + AMS (L)	0.156 + 0.035 + 0.33	4" weeds	0	0	0	31500	114.6	98	99	99	99	99
Surpass	2.0	PRE										
Starane NXT	0.38	4" weeds	0	0	0	30800	95.7	99	99	99	99	99
KIH - 485	0.089	PRE	0	0	0	31100	119.0	98	99	99	99	99
KIH - 485	0.111	PRE	0	0	0	31800	106.2	99	99	99	99	99
KIH - 485	0.147	PRE	0	0	1	31200	107.3	99	99	99	99	99
KIH - 485	0.186	PRE	2	2	0	30800	105.2	99	99	99	99	99
KIH - 485	0.222	PRE	3	4	2	31400	122.6	99	99	99	99	99
Dual Magnum	0.952	PRE	0	0	0	30700	121.4	94	96	98	50	84
Surpass	1.103	PRE	0	0	0	30700	112.1	78	91	98	62	82
LSD at 5%	—	—	3	3	4	1801	35	4	5	1	22	6

¹ Spray additives were applied at the following concentrations: ammonium sulfate (AMS) at 8.5 lb/100 gallons of spray solution, ammonium sulfate low rate [AMS (L)] at 2.5 lb/100 gallons of spray solution, methylated seed oil (Scoil) at 1% v/v, surfactant X77 at 0.25% v/v, and liquid nitrogen 33-0-0 (UAN) at 1% v/v.

² Herbicides were applied preemergence (PRE) on May 9, early postemergence to 1 inch weeds on May 24, postemergence to 4 inch weeds on May 31, and late postemergence to 8 inch weeds on June 11.

³ Visual corn injury was evaluated on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

⁴ Percent weed control calculated from weed counts taken on June 13. Weed abbreviations: common lambsquarters (Colq), redroot pigweed, (Rrpw), hairy nightshade (Hans), and kochia (Kocz).