

## **Resistant Weed Management Systems in Corn during the 2008 Growing Season at Scottsbluff, Nebraska.**

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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 0.9% organic matter and a pH of 8.2. Corn, 'DeKalb DKC54-46', was planted on May 12. Herbicides were applied preemergence on May 13, early postemergence on June 3, and postemergence on June 10. 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 visual injury was evaluated on June 4, 10, and 24 (Table 2). Corn injury was only evident in areas treated with Halex FT plus Aatrex or Lumax plus Aatrex. Weed density was severe and consisted of common lambsquarters, redroot pigweed, hairy nightshade, and kochia at average densities of 535, 54, 7, and 6 plants/137 sq ft, respectively.

Corn yield in the nontreated was 19.5 bu/acre compared to over 200 bu/acre where weed control was excellent. Failure to control common lambsquarter resulted in a reduction in corn yield. Dual II Magnum preemergence followed postemergence by Impact at 0.011 provided common lambsquarter control of 65% which resulted in a corn yield of 107 bu/acre. Adding Roundup PowerMax to Impact improved common lambsquarters control to 95% with a corresponding increase in corn yield to 171 bu/acre. Increasing the Impact rate from 0.011 to 0.016 lb/acre also improved common lambsquarters from 65 to 97% with a corresponding increase in corn yield from 107 to 201 bu/acre. Applying Dual Magnum preemergence followed by different timings of Status at 0.095 lb/acre postemergence influenced weed control and corn grain yield. An early application of Status when common lambsquarters was 3 inches tall resulted in average weed control of 82% and a corn yield of 203 bu/acre; in contrast applying Status a week later when common lambsquarters was 6 inches tall resulted in average weed control of 99% but corn yield declined to 159 bu/acre. The addition of Roundup PowerMax to Status at 0.095

lb/acre applied to 3 inch tall common lambsquarters increased average weed control to 97%. The combination of Roundup PowerMax with either Status or Impact provided better common lambsquarters control than a second application of Roundup PowerMax.

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

Date	Air temperature (F)	Humidity (%)	Wind speed & direction (mph)	Time of day	Corn growth stage	Weed height (inches)			
						Colq	Rrpw	Hans	Kocz
May 13	58	29	12 NW	3:00 pm	PRE	----- no weeds -----			
June 3	81	27	6 SW	2:00 pm	V3	3	0.5	0.5	1
June 10	71	47	4 SE	10:00 am	V3	6	3	1	3
June 16	60	72	6 SE	9:00 am	V5	10	5	3	5
June 25	75	55	3 SE	10:00 am	V7	12	6	5	10

Rainfall and irrigation following herbicide application

Date	Amount (inches)	Date	Amount (inches)	Date	Amount (inches)
May 7	0.33	May 22	0.21	June 4	0.75
May 8	0.06	May 23	0.31	June 12	0.60
May 10	0.12	May 26	0.20	June 19	0.07
May 15	0.60	June 1	0.19	June 20	0.36

Table 2. Resistant Weed Management Systems in Corn during the 2008 Growing Season.

Treatment <sup>1</sup>	Rate (lbs/acre)	Time of application <sup>2</sup>	Corn					Percent weed control 6/24 <sup>4</sup>				
			Visual Injury <sup>3</sup>			Stand	Yield at 15.5% moisture	Colq	Rrpw	Hans	Kocz	Avg
			6/4	6/10	6/24	6/24	(bu/acre)	----- (%) -----				
Nontreated	—	—	0	0	0	32789	19.5	0	0	0	0	0
Dual II Magnum Impact + COC + AMS	1.2 0.011	Pre 3" Weeds	0	0	0	36590	107.0	65	67	55	50	59
Dual II Magnum Impact + Roundup PowerMAX + AMS	1.2 0.011 + 0.75	Pre 3" Weeds	0	0	2	36947	171.0	95	96	99	99	97
Dual II Magnum Impact + COC + AMS	1.2 0.016	Pre 3" Weeds	0	0	0	36590	201.3	97	97	99	91	96
Dual II Magnum Impact + Roundup PowerMAX + AMS	1.2 0.016 + 0.75	Pre 3" Weeds	0	0	0	35640	187.0	99	98	99	99	99
Dual II Magnum Status + COC + AMS	1.2 0.095	Pre 3" Weeds	0	0	1	35640	203.7	93	80	74	83	82
Dual II Magnum Status + Roundup PowerMAX + AMS	1.2 0.095 + 0.75	Pre 3" Weeds	0	0	0	35284	199.1	97	99	99	95	97
Dual II Magnum Status + Impact + COC + AMS	1.2 0.19 + 0.016	Pre 3" Weeds	0	0	1	35996	188.2	99	99	99	99	99
Dual II Magnum Status + Roundup PowerMAX + AMS	1.2 0.19 + 0.75	Pre 3" Weeds	0	0	0	35640	187.9	99	99	99	99	99
Dual II Magnum Roundup PowerMAX + AMS Roundup PowerMAX + AMS	1.2 0.75 0.75	Pre 3" Weeds 2 Wk Later	0	0	0	37066	177.6	98	99	99	99	99
Dual II Magnum Impact + COC + AMS	1.2 0.011	Pre 6" Weeds	0	0	1	34927	154.3	89	81	74	62	77
Dual II Magnum Impact + Roundup PowerMAX + AMS	1.2 0.011 + 0.75	Pre 6" Weeds	0	0	2	29344	164.1	96	96	99	75	91

Treatment <sup>1</sup>	Rate (lbs/acre)	Time of application <sup>2</sup>	Corn					Percent weed control 6/24 <sup>4</sup>				
			Visual Injury <sup>3</sup>			Stand	Yield at 15.5% moisture	Colq	Rrpw	Hans	Kocz	Avg
			6/4	6/10	6/24	6/24	(bu/acre)	----- (%) -----				
Dual II Magnum Impact + COC + AMS	1.2 0.016	Pre 6" Weeds	0	0	2	34096	154.7	86	92	99	62	85
Dual II Magnum Impact + Roundup PowerMAX + AMS	1.2 0.016 + 0.75	Pre 6" Weeds	0	0	0	35165	152.3	87	99	99	99	96
Dual II Magnum Status + COC + AMS	1.2 0.095	Pre 6" Weeds	0	0	1	35996	159.2	98	99	99	99	99
Dual II Magnum Status + Roundup PowerMAX + AMS	1.2 0.095 + 0.75	Pre 6" Weeds	0	0	1	35402	181.2	97	99	99	99	99
Dual II Magnum Status + COC + AMS	1.2 0.19	Pre 6" Weeds	0	0	2	34452	187.0	98	99	99	91	97
Dual II Magnum Status + Roundup PowerMAX + AMS	1.2 0.19 + 0.75	Pre 6" Weeds	0	0	0	36115	203.1	98	99	99	99	99
Dual II Magnum Roundup PowerMAX + AMS Roundup PowerMAX + AMS	1.2 0.75 0.75	Pre 6" Weeds 2 Wk Later	0	0	1	35284	237.1	80	99	99	99	94
Halex GT + Aatrex + X77 + AMS	1.98 + 0.25	3" Weeds	0	4	2	35759	202.2	99	99	99	99	99
Lumax + Aatrex Lumax + Aatrex + Touchdown Total + AMS	1.23 + 0.25 1.23 + 0.25 + 0.78	Pre 3" Weeds	4	2	1	35640	207.3	99	99	99	99	99
Touchdown Total + AMS Sequence + AMS	0.78 1.64	3" Weeds 2 Wk Later	0	0	1	36234	186.5	99	99	99	99	99
LSD at 5%	—	—	1	1	2	4987	41.4	11	18	26	29	12

<sup>1</sup> Spray additives were combined with the spray solution at the following rate: ammonium sulfate (AMS) at 2%, concentrated crop oil (COC) at 1%, and surfactant X77 at 0.25%.

<sup>2</sup> Time of application: preemergence (Pre) on May 13, at 3" weeds on June 3, at 6" weeds on June 10, 2 weeks after 3" weeds application on June 16, and 2 weeks after 6" weeds application on June 25.

<sup>3</sup> Visual crop injury evaluated on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

<sup>4</sup> Percent weed control calculated from weed counts taken on June 24. Weed abbreviations: common lambsquarters (Colq), redroot pigweed (Rrpw), hairy nightshade (Hans), and kochia (Kocz).