Crop Tolerance and Efficacy of Different Brands of Glyphosate and Adjuvants at Scottsbluff, Nebraska during the 2009 Growing Season.

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A field study was initiated near Scottsbluff, Nebraska to compare the efficacy of different brands of glyphosate for selective weed control in Roundup-Ready sugarbeets. Also included in the study was a comparison of different adjuvants for use as ammonium sulfate replacements. The experimental design was a randomized complete block with three replications. Plots were 11 feet wide by 35 feet long and were located on a sandy loam soil with a pH of 8.1 and organic matter content of 0.9%. Sugarbeet 'BTS66RR70' were planted on April 24. The plot area was irrigated on May 6, May 17, and May 21 to enhance germination and emergence of sugarbeets. Postemergence herbicide application began on June 1 when sugarbeets were in the four true-leaf growth stage and average weed height was 3 inches. 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 following herbicide application are given in Table 1.

No sugarbeet injury was observed with any of the herbicide treatments (Table 2). Sugarbeet stand was also not influenced by herbicide treatments. Weed density in the plot area was uniform and dense and consisted of common lambsquarters, hairy nightshade, redroot pigweed, and common purslane at densities of 804, 248, 55, and 6 plants per 440 sq ft, respectively. Environmental conditions during the spring of 2009 were very conducive for excellent herbicide performance, cool air temperatures and timely rainfall which reduced plant stress. Although the weed population averaged over 2.5 weeds/sq ft all glyphosate treatments provided greater than 95% weed control. Under ideal conditions all formulations of glyphosate and all adjuvants were equal in performance on Roundup-Ready sugarbeets.

Table 1. Environmental Conditions at the Time of Herbicide Application.

Date	Air temperature	Humidity	Wind speed & direction	Time of day	Sugarbeet growth stage	Weed heights				
						Colq	Hans	Rrpw	Copu	Vele
	(F)	(%)	(mph)			---------- (inches) ----------				
June 1	61	81	Calm	9:00 AM	4 true-leaves	5	4	1	--	1
June 22	63	70	2 W	9:00 AM	8 true-leaves	24	13	13	1	10

Table 2. Crop Tolerance and Efficacy of Different Brands of Glyphosate and Adjuvants at Scottsbluff, Nebraska during the 2009 Growing Season.

				Sugarbeet		Weed density 7/13					
Herbicide treatment	Adjuvant rate	Herbicide rate	Time of application	Visual injury 6/17	Stand 6/10	Colq	Hans	Rrpw	Copu	Vele	Total
		(lb/acre)		(%)	(plants/acre)	(plants/440 sq ft)					
Nontreated	--	--	--	0	41200	660	302	70	12	0	1044
Roundup Power Max + AMS	17 lb/100 gal	0.75	4 TL								
Roundup Power Max + AMS	17 lb/100 gal	0.75	8 TL	0	46900	1	0	0	2	0	3
Roundup Power Max + Choice Weather Master	4 pt/100 gal	0.75	4 TL								
Roundup Power Max + Choice Weather Master	4 pt/100 gal	0.75	8 TL	0	44300	4	0	0	5	0	9
Roundup Power Max + Quest	4 pt/100 gal	0.75	4 TL								
Roundup Power Max + Quest	4 pt/100 gal	0.75	8 TL	0	46600	3	1	0	3	0	7
Roundup Power Max + Alliance	2% v/v	0.75	4 TL								
Roundup Power Max + Alliance	2% v/v	0.75	8 TL	0	46900	1	0	0	3	0	4
Roundup Power Max + NPAK AMS	5% v/v	0.75	4 TL								
Roundup Power Max + NPAK AMS	5% v/v	0.75	8 TL	0	44200	3	2	0	7	1	13
Roundup Power Max	--	0.75	4 TL								
Roundup Power Max	--	0.75	8 TL	0	47200	4	1	1	3	3	12
Roundup Power Max + Simplot Fraction	4 lb/100 gal	0.75	4 TL								
Roundup Power Max + Simplot Fraction	4 lb/100 gal	0.75	8 TL	0	46400	2	0	0	7	3	12
Roundup Power Max + Weather Guard Complete	2 qt/100 gal	0.75	4 TL								
Roundup Power Max + Weather Guard Complete	2 qt/100 gal	0.75	8 TL	0	47700	1	1	0	5	3	10
Roundup Power Max + Class Act	5 gal/100 gal	0.75	4 TL								
Roundup Power Max + Class Act	5 gal/100 gal	0.75	8 TL	0	46100	5	0	0	8	0	12
Roundup Power Max + Loadout	1 qt/acre	0.75	4 TL								
Roundup Power Max + Loadout	1 qt/acre	0.75	8 TL	0	48100	13	0	1	12	0	26
Roundup Original + AMS	17 lb/100 gal	0.75	4 TL								
Roundup Original + AMS	17 lb/100 gal	0.75	8 TL	0	46200	4	0	0	4	0	8
Touchdown Total + AMS	17 lb/100 gal	0.75	4 TL								
Touchdown Total + AMS	17 lb/100 gal	0.75	8 TL	0	45800	3	0	0	5	0	8
Cornerstone Plus + AMS	17 lb/100 gal	0.75	4 TL								
Cornerstone Plus + AMS	17 lb/100 gal	0.75	8 TL	0	47000	6	0	0	5	0	11
Nufarm Credit Extreme + AMS	17 lb/100 gal	0.75	4 TL								
Nufarm Credit Extreme + AMS	17 lb/100 gal	0.75	8 TL	0	47300	10	1	1	25	1	38
Gly Star Plus + AMS	17 lb/100 gal	0.75	4 TL								
Gly Star Plus + AMS	17 lb/100 gal	0.75	8 TL	0	46100	2	0	0	7	0	9
Makaze + AMS	17 lb/100 gal	0.75	4 TL								
Makaze + AMS	17 lb/100 gal	0.75	8 TL	0	47500	5	0	0	10	0	15
Helosate Plus + AMS	17 lb/100 gal	0.75	4 TL								
Helosate Plus + AMS	17 lb/100 gal	0.75	8 TL	0	46600	2	0	0	4	0	6
Mad Dog Plus + AMS	17 lb/100 gal	0.75	4 TL								
Mad Dog Plus + AMS	17 lb/100 gal	0.75	8 TL	0	44700	5	0	0	9	0	14

Table 2. Crop Tolerance and Efficacy of Different Brands of Glyphosate and Adjuvants at Scottsbluff, Nebraska during the 2009 Growing Season – Continued.

				Sugarbeet		Weed density 7/13					
Herbicide treatment	Adjuvant rate	Herbicide rate	Time of application	Visual injury 6/17	Stand 6/10	Colq	Hans	Rrpw	Copu	Vele	Total
		(lb/acre)		(%)	(plants/acre)	---------- (plants/440 sq ft) ----------					
Roundup Power Max + AMS	17 lb/100 gal	0.75	4 TL								
+ LI 700 + Kugler XRN	2 qt/100 gal + 2 qt/acre										
Roundup Power Max + AMS	17 lb/100 gal	0.75	8 TL								
+ LI 700 + Kugler XRN	2 qt/100 gal + 2 qt/acre			0	44200	6	0	0	11	1	18
Nufarm Credit Extra + Fraction	4 lb/100 gal	0.75	4 TL								
+ Wet Cit	40 oz/100 gal										
Nufarm Credit Extra + Fraction	4 lb/100 gal	0.75	8 TL								
+ Wet Cit	40 oz/100 gal			0	46700	5	0	2	10	1	19
Makaze + Choice Weather Master	4 pt/100 gal	0.75	4 TL								
+ LI 700	2 pt/acre										
Makaze + Choice Weather Master	4 pt/100 gal	0.75	8 TL								
+ LI 700	2 pt/acre			0	46400	2	0	0	9	1	12
Roundup Power Max + NPAK AMS	5% v/v	0.75	4 TL								
+ CoRon 25-0-0	3 gal/acre										
Roundup Power Max + NPAK AMS	5% v/v	0.75	8 TL								
+ CoRon 25-0-0	3 gal/acre			0	44300	8	0	0	8	1	17
Roundup Power Max + NutriPAK	16 fl oz/acre	0.75	4 TL								
+ AMS	17 lb/100 gal										
Roundup Power Max + NutriPAK	16 fl oz/acre	0.75	8 TL								
+ AMS	17 lb/100 gal			0	42400	3	0	0	7	0	10
Nontreated	--	--	--	0	41200	948	194	40	0	0	1182
LSD at 0.05	--	--	--	NS	NS	156	44	18	13	2	122