

Sequence Crop Tolerance and Efficacy in Roundup Ready Sugarbeets at Scottsbluff, NE during the 2008 Growing Season.

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A field study was initiated near Mitchell, Nebraska to compare crop tolerance and weed control from different rates and timings of Sequence (glyphosate plus Dual). The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 45 feet long and were located on a sandy loam soil with a pH of 8.0 and organic matter content of 1%. Sugarbeets, 'BTS66RR50', were planted on April 22 and irrigated on April 25 to enhance sugarbeet seed germination and early season crop vigor. Postemergence herbicide application began on May 29 when sugarbeets had 2 true leaves. Herbicides were applied with a tractor-mounted sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions and weed growth stages at the time of herbicide application are given in Table 1.

Early season sugarbeet injury was observed in plots treated with Sequence at rates of 2.62 to 5.25 lb/acre (Table 2.) Crop injury was temporary and by July 9 sugarbeets had recovered. Sequence applied at 1.96 lb/acre had better crop safety than a tank mixture of Touchdown Total at 0.78 lb/acre plus Dual Magnum at 1.18 lb/acre. A single application of Sequence did not provide adequate weed control. Average weed control obtained from a single application of Sequence at 1.31 to 3.93 lb/acre was 80% and sugarbeet root yield averaged 24.2 tons/acre. Applying a second herbicide treatment at the 8 true-leaf growth stage increased average weed control to 92% which improved average sugarbeet root yield 25.8 tons/acre. In the Nebraska growing region, a Sequence rate of 1.96 lb/acre (48 ounces/acre) provided good crop tolerance. There was a trend for the best weed control to be obtained when Touchdown Total was applied at the 2 true-leaf stage and followed 24 days later with Sequence at the 8 true-leaf growth stage.

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

Date	Air temperature (F)	Humidity (%)	Wind speed & direction (mph)	Time of day	Crop growth stage	Weed heights					
						Colq	Hans	Tosp	Kocz	Rrpw	Grft
May 29	80	35	11 NW	2:00 pm	2 TL	2	1	1	2	0.5	0.5
June 23	78	45	2 NE	11:00 am	8 TL	12	4	4	14	3	3

Rainfall before and after herbicide application:

Date	Amount - (inches) -	Date	Amount - (inches) -	Date	Amount - (inches) -
May 26	0.15	June 5	0.13	June 20	0.47
June 1	0.06	June 15	0.08	June 26	0.02
June 4	0.52	June 16	0.17		

Table 2. Sequence Crop Tolerance and Efficacy in Roundup Ready Sugarbeets 2008.

Herbicide treatment ¹	Rate (lb/acre)	Time of application ²	Sugarbeet						Percent weed control 7/14 ⁴						
			Visual injury ³		Stand	Root Yield		Percent weed control 7/14 ⁴							
			6/18	7/9	7/14	10/16	Sucrose	SLM	Colq	Hans	Tosp	Kocz	Cosf	Grft	Avg
---		---		(plants/acre)	(tons/acre)	(%)	(%)	----- (%) -----							
Nontreated	---	---	0	0	21120	17.3	15.3	1.5	0	0	0	0	0	0	0
Sequence + AMS	1.31	2 TL	5	1	20988	24.8	16.4	1.3	81	55	70	93	85	99	81
Sequence + AMS	1.96	2 TL	2	0	15246	24.1	16.5	1.4	87	63	52	97	99	74	79
Sequence + AMS	2.62	2 TL	10	2	19272	23.7	17.1	1.3	92	77	70	91	99	99	88
Sequence + AMS	3.93	2 TL	10	3	17028	24.2	16.3	1.4	78	46	50	83	90	99	74
Sequence + AMS	5.25	2 TL	12	3	20658	28.4	16.7	1.2	89	78	49	93	99	99	84
Touchdown Total + AMS	0.78	2 TL	9	0	18414	28.9	16.3	1.4	86	80	48	86	99	99	83
Dual Magnum	1.18	2 TL													
Sequence + AMS	1.96	2 TL	4	0	17226	26.3	16.8	1.4	98	99	65	94	99	99	92
Sequence + AMS	1.96	8TL													
Sequence + AMS	1.96	2 TL	6	0	18480	25.5	16.1	1.4	95	91	64	97	99	99	91
Touchdown Total + AMS	0.78	8TL													
Touchdown Total + AMS	0.78	2 TL	0	0	19008	27.0	15.9	1.4	93	99	92	94	99	99	96
Sequence + AMS	1.96	8TL													
Touchdown Total + AMS	0.78	2 TL	0	0	18942	28.6	16.6	1.3	94	97	58	88	99	99	89
Touchdown Total + AMS	0.78	8TL													
LSD at 5%	---	---	5	3	NS	7.6	1	NS	10	23	41	18	13	22	11

¹ Spray additives were combined with the spray solution at the following rate: ammonium sulfate (AMS) at 17lbs/100 gal.

² Time of application: 2 true-leaves (2 TL), and 8 true-leaves (8 TL).

³ 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.

⁴ Percent weed control calculated from weed counts taken on July 14. Weed abbreviations: common lambsquarters (Colq), hairy nightshade (Hans), toothed spurge (Tosp), kochia (Kocz), common sunflower (Cosf), and green foxtail (Grft).