

Encapsulated Acetochlor for Selective Weed Control in Roundup-Ready Sugarbeets.

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A field study was initiated near Mitchell, Nebraska to evaluate encapsulated acetochlor for selective weed control in sugarbeets. The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 25 feet long and located on a silt loam soil with a pH of 7.9 and organic matter content of 1.1%. Sugarbeet 'BTS66RR70' was planted on May 5. The plot area was irrigated on May 8 for seed germination and incorporation of preemergence herbicide. Postemergence application of herbicides began on May 27 when sugarbeets were in the 2 true-leaf growth stage. 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 herbicide application are given in Table 1.

Modest sugarbeet injury was observed from Mon 63413 applied at the time of planting and postemergence at the 2 true-leaf growth stage (Table 2). Sugarbeet stand was reduced when Mon 63413 at 2.25 lb/acre was applied preemergence. Applying Mon 63413 postemergence at the 6 true-leaf growth stage resulted in the least amount of crop injury. Compared to Outlook applied postemergence at the 6 true-leaf growth stage, Mon 63413 was safer on the crop. Green foxtail emerged in the plot area following a hail storm that shredded the sugarbeet leaf canopy on June 10. Two applications of Roundup Power Max did not control this late flash of green foxtail. Mon 63413 applied preemergence and at the 6 true-leaf growth stage effectively suppressed green foxtail. Mon 63413 which is an encapsulated formulation of Acetochlor has potential to provide soil residual and hence extended sugarbeet weed control.

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
						----- (inches) -----		
May 7	60	46	2 NW	8:30 AM	PRE	No growth		
May 27	64	50	1 SW	10:30 AM	2 TL	1.5	2	0.5
June 3	60	63	7 SE	1:30 PM	4 TL	3	3	2
June 23	68	68	Calm	8:30 AM	6 TL	5	6	4
July 2	80	51	Calm	11:30 AM	8 TL	7	8	6

Table 2. Encapsulated Acetochlor for Selective Weed Control in Roundup-Ready Sugarbeets.

Herbicide Treatment ¹	Rate	Time of application ²	Sugarbeet		Percent weed control 7/20 ⁴					
			Visual Injury ³ 7/7	Stand 7/20	Common lambsquarters	Hairy nightshade	Redroot pigweed	Toothed spurge	Green foxtail	Average
	(lb/acre)		(%)	(plants/acre)	-----%-----					
Nontreated	--	--	0	33260	0	0	0	0	0	0
Roundup Power Max	0.75	2 TL								
Roundup Power Max	0.75	6 TL	0	37300	99	99	99	93	25	83
Mon63413	1.125	PRE								
Roundup Power Max	0.75	4 TL								
Roundup Power Max	0.75	8 TL	6	38970	99	99	99	99	99	99
Roundup Power Max + Mon 63413	0.75 + 1.125	2 TL								
Roundup Power Max	0.75	6 TL	3	34100	99	99	99	99	74	94
Roundup Power Max	0.75	2 TL								
Roundup Power Max + Mon 63413	0.75 + 1.125	6 TL	3	43120	99	99	99	99	99	99
Mon 63413	2.25	PRE								
Roundup Power Max	0.75	4 TL								
Roundup Power Max	0.75	8 TL	8	31360	99	99	99	99	99	99
Roundup Power Max + Mon 63413	0.75 + 2.25	2 TL								
Roundup Power Max	0.75	6 TL	10	37540	99	99	99	99	62	91
Roundup Power Max	0.75	2 TL								
Roundup Power Max + Mon 63413	0.75 + 2.25	6 TL	2	36710	99	99	99	99	99	99
Roundup Power Max + Outlook	0.75 + 0.98	2 TL								
Roundup Power Max	0.75	6 TL	3	37660	99	99	99	99	74	94
Roundup Power Max	0.75	2 TL								
Roundup Power Max + Outlook	0.75 + 0.98	6 TL	16	29581	97	99	94	93	99	96
LSD at 0.05	--	--	8	7247	2	0.4	4	7	44	9

¹All treatments containing Roundup Power Max were combined with ammonium sulfate at 2% w/w.

²Time of application: before crop and weed emergence (PRE), 2 true-leaves (2 TL), 4 true-leaves (4 TL), 6 true-leaves (6 TL), and 8 true-leaves (8 TL).

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

⁴Percent weed control calculated from weed counts taken on July 20.