

MANAGEMENT OF KOCHIA WITH PREEMERGENCE FOLLOWED BY POSTEMERGENCE ETHOFUMESATE IN ROUNDUP READY® SUGARBEET – BARNEY, ND – 2013

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The objective of this study was to determine the effect of Ethofumesate 4SC applied PRE and/or POST in combination and/or in sequence with glyphosate on the control of kochia and on yield and quality of Roundup Ready sugarbeet.

MATERIALS AND METHODS

‘BTS 81RR17’ sugarbeet was seeded 1.25 inches deep in 22 inch rows at 60,825 seeds per acre on May 9. Sugarbeet was treated with Tachigaren at 45 grams per 100,000 seeds and NipsIT Suite. Counter 20G insecticide at 8.9 pounds product per acre was applied in a 5-inch band and drag chain incorporated at planting. Herbicide treatments were applied May 9 & 24, June 7 & 25, and July 8. All treatments were applied with a bicycle sprayer in 17 gpa spray solution through 8002 XR flat fan nozzles pressurized with CO₂ at 40 psi to the center four rows of six row plots 30 feet in length. Cercospora leaf spot was controlled with Proline at 5.7 fl oz/A, Inspire XT + Topsisin at 7 + 10 fl oz/A, and Headline EC at 9 fl oz/A broadcast July 18, August 1, and August 19, respectively. Lorsban Advanced at 1 pt/A was applied July 18 and August 7 to control grasshopper. Sugarbeet was harvested September 17 from the center two rows of each plot and weighed. Twenty to thirty pounds of sugarbeet was collected from each plot and analyzed for quality at American Crystal Sugar Quality Lab, East Grand Forks, MN.

Sugarbeet stand was counted in the center two rows of plots on September 17. Sugarbeet injury was evaluated on June 7. No visible injury was observed in evaluations after June 7. Kochia control was evaluated June 7, July 8, 15, & 23, August 6, and September 4. All evaluations were a visual estimate of percent fresh weight reduction in the four treated rows compared to the adjacent untreated strip. Experimental design was randomized complete block with 4 replications. Data were analyzed with the ANOVA procedure of Agriculture Research Manager, version 8.5.0 software package.

Table 1. Application Information

Application code	A	B	C	D	E
Date	May 9	May 24	June 7	June 25	July 8
Time of Day	1:40 P	8:30 A	1:30 P	1:15 P	12:30 P
Air Temperature (F)	64	52	71	81	87
Relative Humidity (%)	39	51	38	72	49
Wind Velocity (mph)	13	10	8	12	3
Wind Direction	N	SE	SW	SE	SE
Soil Temp. (F at 6")	55	50	70	70	75
Soil Moisture	Good	Good	Good	Wet	Good
Cloud Cover	5	70	75	70	75
Sugarbeet stage (avg)	PRE	cot	2 lf	9 lf	16 lf
Kochia (untreated avg)	-	cot	0.5" tall	13" tall	30 inch

SUMMARY

Three applications of Roundup PowerMax (glyphosate; 4.5 lbae/gal) gave 74% kochia control at the September 4 evaluation. This indicated the presence of glyphosate-resistant kochia at this location. Four applications of PowerMax gave similar kochia control at 75%. The use of Ethofumesate 4 SC (ethofumesate; 4 lbae/gal) preemergence (PRE) at 2, 4, 6, or 7.5 pt/a followed by three applications of PowerMax did not improve kochia control compared to PowerMax alone. Applying Ethofumesate PRE at 6 pt/a or less followed by three applications of PowerMax + Ethofumesate at 1, 1.5, 2, or 3 pt/a did not improve kochia control compared to glyphosate alone. The only treatment that improved kochia control compared to PowerMax alone was four applications of PowerMax+Ethofumesate at 2 pt/a which gave 92% kochia control. Some sugarbeet injury was observed among treatments; however sugarbeet injury was not severe for any treatment.

Table 2. Management of Kochia with Preemergence Followed by Postemergence Ethofumesate in Roundup Ready® Sugarbeet – Barney, ND – 2013 (Carlson)

Trt Treatment No Name	Rate Rate Unit	Appl Code	June 7		July 8		Jul 15	Jul 23	Aug 6	Sept 4	September 17			
			sgbt inj	kocz cntl	kocz cntl	colq cntl	kocz cntl	kocz cntl	kocz cnlt	kocz cnlt	sgbt stand	sgbt yield	sgbt sucr	sgbt ext suc
			-----%-----											
			#/100'	ton/a	%	lb/a								
15 Ethofumesate 4SC	4 pt/a	A	3	68	72	100	84	80	81	81	169	36.9	13.5	8347
RU PowerMax	32 / 24 / 22 fl oz/a	B/C/D												
Ethofumesate 4SC	1 pt/a	BD												
Ethofumesate 4SC	2 pt/a	C												
Destiny HC	1.5 pt/a	BCD												
N Pak AMS	2.5 % v/v	BCD												
16 Ethofumesate 4SC	4 pt/a	A	8	73	61	100	71	73	72	73	165	32.2	14.5	8052
RU PowerMax	32 / 24 / 22 fl oz/a	B/C/D												
Ethofumesate 4SC	2 pt/a	BC												
Destiny HC	1.5 pt/a	BC												
N Pak AMS	2.5 % v/v	BCD												
17 Ethofumesate 4SC	6 pt/a	A	6	74	58	100	74	69	70	67	172	31.7	13.8	7442
RU PowerMax	32 / 24 / 22 fl oz/a	B/C/D												
Ethofumesate 4SC	1 pt/a	BC												
Destiny HC	1.5 pt/a	BC												
N Pak AMS	2.5 % v/v	BCD												
18 Ethofumesate 4SC	6 pt/a	A	3	45	71	99	80	80	77	77	177	34.4	15.4	9021
RU PowerMax	32 / 24 / 22 fl oz/a	B/C/D												
Ethofumesate 4SC	2 pt/a	C												
Destiny HC	1.5 pt/a	C												
N Pak AMS	2.5 % v/v	BCD												
LSD 5%			4.8	17.0	16.2	1.2	18.8	16.8	12.8	16.5	35.2	6.03	1.65	1612
CV %			100	23	19	1	19	17	13	17	15	13	9	15