

Weed Control Systems in Roundup Ready Sugarbeet

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Comparisons were made of conventional weed control programs (standard splits and micro-rate herbicide programs) to glyphosate based weed management programs in Roundup Ready sugarbeet. Treatments included: glyphosate (Roundup OriginalMax) applied alone twice postemergence, preemergence applications of Nortron, Dual Magnum, and KIH-485 (potential new product in corn and soybean) followed by one application of glyphosate applied postemergence, and glyphosate applied alone once followed by tank-mixtures of glyphosate with the soil residual herbicides Dual Magnum, Outlook, and KIH-485 applied.

The conventional micro-rate treatment (treatment #11) resulted in only fair weed control. Common lambsquarters was the one species in which this treatment struggled. The standard-split herbicide program (treatment #12) resulted in overall good weed control. However, it was still not as good as the glyphosate-based weed control programs, in which weed control was excellent for all weed species. When the experimental herbicide, KIH-485, was applied preemergence sugar beet injury was unacceptable (treatment #3). This treatment reduced sugar beet populations by nearly $\frac{2}{3}$, reduced sugar beet yields, quality, and RWSA by nearly 50%. When KIH-485 was applied postemergence, sugarbeet populations, yields, or quality was not different the glyphosate only based programs. In all other herbicide treatments sugar beet injury was not a concern.

Due to overall lower weed control, the micro-rate and standard split treatments resulted in significantly lower sugarbeet yield and RWSA as compared with the weed-free treatment (treatment #10). The addition of Dual Magnum, Outlook, or KIH-485 postemergence to glyphosate did not impact sugar beet yield or sugar quality. This year was a dry year and there was little new emergence after the second glyphosate application. In years where new weed emergence is likely to occur later in the season the addition of any of these compounds may reduce the need for a third or fourth application of glyphosate.

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Trial ID: SB04-07 Study Dir.: Christy Sprague/Gary Powell
 Conducted: Bean & Beet Farm Investigator: Christy Sprague

Date Planted: 4/20/07 Row Spacing: 30 IN
 Variety: Beta RZ02RR07 No. of Reps: 4
 Population: 4 3/8" spacing % OM: 3.9
 Soil Type: Silty Clay pH: 7.4
 Plot Size: 10 X 30 FT Design: RANDOMIZED COMPLETE BLOCK

Tillage: Fall Chisel Plow, Spring Soil Finish X 2, Previous Crop Wheat
 Fertilizer: 120 lb of Nitrogen as Urea

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	POLPY	SMARTWEED, PENNSYLVANIA	POLYGONUM PENNSYLVANICUM
3.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI
4.	ANGR	mainly foxtail species	SETARIA SP.
5.	AMAPO	AMARANTH, POWELL	AMARANTHUS POWELLII
6.	THLAR	PENNYCRESS, FIELD	THLASPI ARVENSE L.
Crop	Code	Common Name	
1.	BETVU	BEEET, SUGAR	

Application Description

	A	B	C	D	E
Application Timing:	PRE	Micro 1	Micro 2	EPOST	Micro 3
Date Treated:	4/21/07	4/30/07	5/10/07	5/18/07	5/22/07
Time Treated:	5:15 PM	6:45 PM	6:30 PM	1:15 PM	11:00 AM
% Cloud Cover:	20	60	30	5	0
Air Temp., Unit:	77 F	68 F	78 F	68 F	75 F
% Relative Humidity:	25	32	34	20	40
Wind Speed/Unit/Dir:	5 mph W	4 mph S	3 mph SW	4 mph SW	0 mph
Soil Temp., Unit:	63 F	69 F	73 F	58 F	70 F
Soil/Leaf Surface M:	5 5	5 5	5 5	5 5	5 5
Soil Moist (1=w 5=d):	5	5	4	5	4
	F	G	H		
Application Timing:	Micro 4	MPOS	POST		
Date Treated:	5/30/07	6/6/07	6/12/07		
Time Treated:	11:15 AM	11:00 AM	10:00 AM		
% Cloud Cover:	50	0	0		
Air Temp., Unit:	85 F	64 F	77 F		
% Relative Humidity:	45	52	43		
Wind Speed/Unit/Dir:	3 mph S	5 mph SW	5 mph NW		
Soil Temp., Unit:	73 F	60 F	69 F		
Soil/Leaf Surface M:	5 5	5 5	5 5		
Soil Moist (1=w 5=d):	5	4	5		

Crop Stage at Each Application

	A	B	C	D	E
Crop Name:	BETVU	BETVU	BETVU	BETVU	BETVU
Height (In.):	-	1/4-1/2"	1/2-1"	1-2"	1-3"
Stage (L):	-	coty	2	4	4-6
	F	G	H		
Crop Name:	BETVU	BETVU	BETVU		
Height (In.):	2-5"	7-11"	9-11"		
Stage (L):	4-8	8-10	12-14		

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Weed Code								CHEAL	AMAPO	ANGR	BETVU	BETVU	BETVU	BETVU	
Crop Code	Rating Data Type	Rating Unit	Rating Date	Tri-Eval Interval						injury	stand count	% Sugar	yield	RWSA	
Tri No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code			percent	#/100'		ton/acre	# / acre	
								65 DA-A	94 DA-A	94 DA-A	94 DA-A	157 DA-A	157 DA-A	157 DA-A	
1	Nortron	4	SC	3	pt/a	PRE	A	1	99	99	99	249	18.1	26.8	7231.2
1	Roundup OriginalMax	4.5	SL	22	fl oz/a	MPOS	G								
1	AMS		WG	17	lb/100 gal	MPOS	G								
1	Roundup OriginalMax	4.5	SL	22	fl oz/a	LPOS	I								
1	AMS		WG	17	lb/100 gal	LPOS	I								
2	Dual Magnum	7.64	EC	1.33	pt/a	PRE	A	14	99	99	99	229	17.8	27.9	7255.7
2	Roundup OriginalMax	4.5	SL	22	fl oz/a	MPOS	G								
2	AMS		WG	17	lb/100 gal	MPOS	G								
2	Roundup OriginalMax	4.5	SL	22	fl oz/a	LPOS	I								
2	AMS		WG	17	lb/100 gal	LPOS	I								
3	KIH-485	85	WG	2	oz/a	PRE	A	76	99	99	99	87	16.9	16.6	4051.2
3	Roundup OriginalMax	4.5	SL	22	fl oz/a	MPOS	G								
3	AMS		WG	17	lb/100 gal	MPOS	G								
3	Roundup OriginalMax	4.5	SL	22	fl oz/a	LPOS	I								
3	AMS		WG	17	lb/100 gal	LPOS	I								
4	Untreated							0	0	0	0	229	19.0	10.5	3046.6
5	Roundup OriginalMax	4.5	SL	22	fl oz/a	EPOS	D	0	99	99	99	249	18.3	28.2	7646.4
5	AMS		WG	17	lb/100 gal	EPOS	D								
5	Roundup OriginalMax	4.5	SL	22	fl oz/a	POST	H								
5	AMS		WG	17	lb/100 gal	POST	H								
5	Roundup OriginalMax	4.5	SL	22	fl oz/a	LPOS	I								
5	AMS		WG	17	lb/100 gal	LPOS	I								
6	Roundup OriginalMax	4.5	SL	22	fl oz/a	EPOS	D	0	99	99	99	233	17.9	29.6	7827.3
6	AMS		WG	17	lb/100 gal	EPOS	D								
6	Roundup OriginalMax	4.5	SL	22	fl oz/a	POST	H								
6	AMS		WG	17	lb/100 gal	POST	H								
7	Roundup OriginalMax	4.5	SL	22	fl oz/a	EPOS	D	0	99	99	99	221	17.6	29.2	7512.3
7	AMS		WG	17	lb/100 gal	EPOS	D								
7	Roundup OriginalMax	4.5	SL	22	fl oz/a	POST	H								
7	KIH-485	85	WG	2	oz/a	POST	H								
7	AMS		WG	17	lb/100 gal	POST	H								
8	Roundup OriginalMax	4.5	SL	22	fl oz/a	EPOS	D	0	99	99	99	217	17.0	29.4	7361.7
8	AMS		WG	17	lb/100 gal	EPOS	D								
8	Roundup OriginalMax	4.5	SL	22	fl oz/a	POST	H								
8	Outlook	6	EC	16	fl oz/a	POST	H								
8	AMS		WG	17	lb/100 gal	POST	H								
9	Roundup OriginalMax	4.5	SL	22	fl oz/a	EPOS	D	0	94	94	94	230	17.5	29.8	7769.2
9	AMS		WG	17	lb/100 gal	EPOS	D								
9	Roundup OriginalMax	4.5	SL	22	fl oz/a	POST	H								
9	Dual Magnum	7.64	EC	1.33	pt/a	POST	H								
9	AMS		WG	17	lb/100 gal	POST	H								
10	Weed-Free							0	99	99	99	248	17.9	30.3	7962.0
10	Roundup OriginalMax	4.5	SL	22	fl oz/a	MICRO 2	C								
10	AMS		WG	17	lb/100 gal	MICRO 2	C								
10	Roundup OriginalMax	4.5	SL	22	fl oz/a	MPOS	G								
10	AMS		WG	17	lb/100 gal	MPOS	G								
10	Roundup OriginalMax	4.5	SL	22	fl oz/a	LPOS	I								
10	AMS		WG	17	lb/100 gal	LPOS	I								
11	Betamix	1.3	EC	8	fl oz/a	MICRO 1	B	23	78	87	85	213	17.6	24.9	6510.6
11	Upbeet	50	DF	0.125	oz/a	MICRO 1	B								
11	Stinger	3	L	1	fl oz/a	MICRO 1	B								
11	MSO		L	1.5	% v/v	MICRO 1	B								
11	Betamix	1.3	EC	8	fl oz/a	MICRO 2	C								
11	Upbeet	50	DF	0.125	oz/a	MICRO 2	C								
11	Stinger	3	L	1	fl oz/a	MICRO 2	C								
11	MSO		L	1.5	% v/v	MICRO 2	C								
11	Betamix	1.3	EC	8	fl oz/a	MICRO 3	E								
11	Upbeet	50	DF	0.125	oz/a	MICRO 3	E								
11	Stinger	3	L	1	fl oz/a	MICRO 3	E								
11	MSO		L	1.5	% v/v	MICRO 3	E								
11	Betamix	1.3	EC	8	fl oz/a	MICRO 4	F								
11	Upbeet	50	DF	0.125	oz/a	MICRO 4	F								
11	Stinger	3	L	1	fl oz/a	MICRO 4	F								
11	MSO		L	1.5	% v/v	MICRO 4	F								
12	Betamix	1.3	EC	2	pt/a	STD 1	C	14	95	92	84	220	17.1	26.2	6553.1
12	Upbeet	50	DF	0.5	oz/a	STD 1	C								
12	Stinger	3	L	4	fl oz/a	STD 1	C								
12	Betamix	1.3	EC	3	pt/a	STD 2	E								
12	Upbeet	50	DF	0.5	oz/a	STD 2	E								
12	Stinger	3	L	4	fl oz/a	STD 2	E								
12	Activator 90 (NIS)		L	0.25	% v/v	STD 2	E								
LSD (P= .05)								4.3	8.0	7.8	10.9	35.7	1.08	3.51	1023.24
Standard Deviation								3.0	5.6	5.4	7.5	24.7	0.75	2.43	708.66
CV								27.88	6.32	6.07	8.58	11.31	4.21	9.42	10.53