

Weed control and crop tolerance with Sequence in RR beets

Trial ID: SB05-08
 Conducted: Bean & Beet

Study Dir.: Sprague, Powell
 Investigator: Christy Sprague

Date Planted: 4/25/08
Variety: Hillshog 9027 RR
Population: 4.1" seed spacing
Soil Type: Clay
Plot Size: 10 X 30 FT

Row Spacing: 30 IN
No. of Reps: 4
% OM: 3.0
pH: 7.8
Design: RANDOMIZED COMPLETE BLOCK

Tillage: Fall chisel dry bean stubble
 Early spring field cultivate
 Shallow field cultivate 4/23/08
Fertilizer: 125#/acre Nitrogen applied and incorporated early spring, before planting.

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI MEDIK.
3.	AMASS	REDROOT PIGWEED, POWELL AMARANTH	AMARANTHUS SP.
4.	ANGR	mainly foxtail species	SETARIA SP.
5.	POLPE	LADYSTHUMB	POLYGONUM PERSICARIA L.
Crop	Code	Common Name	
1.	BETVU	BEET, SUGAR	

Application Description

	A	B
Application Timing:	"A" 2leaf	"B" 2"
Date Treated:	5/23/08	6/11/08
Time Treated:	1:30 PM	2:30 PM
% Cloud Cover:	80	25
Air Temp., Unit:	60 F	91 F
% Relative Humidity:	41	42
Wind Speed/Unit/Dir:	8 mph NE	4 mph NE
Soil Temp., Unit:	57 F	87 F
Soil/Leaf Surface M:	5 5	5 5
Soil Moist (1=w 5=d):	5	3

Crop Stage at Each Application

	A	B
Crop Name:	BETVU	BETVU
Height (In.):	.5	2-8
Stage (L):	2	4-8

Weed Stage at Each Application

	A	B
Weed 1 Name:	CHEAL	CHEAL
Height (In.):	.125-2	.5-2
Stage (L):	2-10	4-8
Weed 2 Name:	ABUTH	ABUTH
Height (In.):	--	--
Stage (L):	--	--
Weed 3 Name:	AMASS	AMASS
Height (In.):	.125-.5	.5-1
Stage (L):	coty-4	2-4
Weed 4 Name:	ANGR	ANGR
Height (In.):	.125-.25	--
Stage (L):	1-2	--
Weed 5 Name:	POLPE	POLPE
Height (In.):	1-2	--
Stage (L):	1-4	--

Weed Density (plants/sq. ft.)

	1	2
Date:	7/25/08	7/25/08
Weed Name:	CHEAL	AMAPO
Density:	14.375	0.375

Application Equipment

Appl	Sprayer Type	Speed MPH	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	GPA	Carrier	PSI
A	Cub	3.8	AirMix	11003	21	20	100	19	water	28
B	Cub	3.8	AirMix	11003	26	20	100	19	water	28

Comments: Fungicides were broadcast applied the following dates-

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May 11- 40 oz/acre Quadris
July 6- 13 oz/acre Eminent
July 24- 9.2 oz/acre Headline
August 12- 2.0 lb/acre Pencozeb + 0.5 lb/acre Toppin
September 2- 9.2 oz/acre Headline

**WEED CONTROL AND CROP TOLERANCE WITH SEQUENCE AND ROUNDUP READY SUGARBEET (SB05-08)
Christy Sprague and Gary Powell
MSU Crop and Soil Sciences**

As Roundup Ready sugarbeets become more prevalent in Michigan sugarbeet production, additional products may be commercialized to help with weed management. Some of these products may include premixtures of products that can be currently used in sugarbeets. For example, glyphosate and Dual Magnum (s-metolachlor) are two products that can be used POST in Roundup Ready sugarbeets. Sequence is a premixture of these two products and is currently being marketed in Roundup Ready soybean by Syngenta Crop Protection. A field study was initiated to evaluate weed control and crop tolerance of Roundup Ready sugarbeet to Sequence herbicide. Sequence was applied to sugarbeets at the 2-leaf stage at 2, 3, 4, 6, and 8 pints per acre, these treatments were compared with tank-mixtures of Touchdown Total (1.2 pt/A) and Dual Magnum (1.5 pt/A) was applied; the equivalent of Sequence at the 3 pt per acre rate. Additional treatments included Sequence applied at 3 pt/A at 2-leaf sugarbeets and then followed by Touchdown Total 1.5 pt/A (glyphosate) or Sequence when weeds regrew to 2-inches tall or the initial application of Touchdown Total followed by Sequence. Injury to sugarbeet from Sequence at rates greater than 4 pt/A ranged between 6 and 12%. This injury did not seem to have any significant affect on sugarbeet yield. However, when only one herbicide application was made common lambsquarters control was less than satisfactory by then end of the growing season. Two applications either Sequence, Sequence followed by Touchdown, Touchdown followed by Sequence or even two applications of Touchdown provided season-long weed control. Sugarbeet yield was the highest, 37 and 36.9 tons/A when Sequence was applied in the first application followed by Sequence or Touchdown Total, respectively. The results of this study indicate that, if labeled, Sequence may be a useful herbicide for weed control in Roundup Ready sugarbeet, although more than one herbicide application will be needed for season-long weed control.

MSU Weed Science Research Program

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Weed Code	Crop Code	BETVU	BETVU	BETVU	CHEAL	AMAPO	BETVU
Rating Data Type	Rating Unit	Injury	Injury	Injury	Control	Control	Injury
Rating Date	Rating Date	Percent	Percent	Percent	Percent	Percent	Percent
Trt-Eval Interval	Trt-Eval Interval	5/28/08	6/2/08	6/11/08	6/11/08	6/11/08	6/16/08
		5 DA-A	10 DA-A	19 DA-A	19 DA-A	19 DA-A	63 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code						
1	Sequence	5.25	EW	2	pt/a	2-LF	A	0	0	0	81	99	3
1	AMS		WG	17	lb/100 gal	2-LF	A						
2	Sequence	5.25	EW	3	pt/a	2-LF	A	1	4	5	96	99	4
2	AMS		WG	17	lb/100 gal	2-LF	A						
3	Sequence	5.25	EW	4	pt/a	2-LF	A	6	7	6	98	99	3
3	AMS		WG	17	lb/100 gal	2-LF	A						
4	Sequence	5.25	EW	6	pt/a	2-LF	A	6	9	8	98	99	5
4	AMS		WG	17	lb/100 gal	2-LF	A						
5	Sequence	5.25	EW	8	pt/a	2-LF	A	12	12	6	97	98	3
5	AMS		WG	17	lb/100 gal	2-LF	A						
6	Dual Magnum	7.62	EC	1.18	pt/a	2-LF	A	1	3	1	96	99	1
6	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A						
6	AMS		WG	17	lb/100 gal	2-LF	A						
7	Untreated							0	0	0	0	0	0
8	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	0	0	6	94	97	0
8	AMS		WG	17	lb/100 gal	2-LF	A						
8	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
8	AMS		WG	17	lb/100 gal	+2" wds	B						
9	Sequence	5.25	EW	3	pt/a	2-LF	A	0	2	0	88	94	0
9	AMS		WG	17	lb/100 gal	2-LF	A						
9	Sequence	5.25	EW	3	pt/a	+2" wds	B						
9	AMS		WG	17	lb/100 gal	+2" wds	B						
10	Sequence	5.25	EW	3	pt/a	2-LF	A	1	6	4	94	99	2
10	AMS		WG	17	lb/100 gal	2-LF	A						
10	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
10	AMS		WG	17	lb/100 gal	+2" wds	B						
11	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	1	3	3	88	99	1
11	AMS		WG	17	lb/100 gal	2-LF	A						
11	Sequence	5.25	EW	3	pt/a	+2" wds	B						
11	AMS		WG	17	lb/100 gal	+2" wds	B						
12	Dual Magnum	7.62	EC	0.67	pt/a	2-LF	A	0	5	0	91	99	1
12	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A						
12	AMS		WG	17	lb/100 gal	2-LF	A						
12	Dual Magnum	7.62	EC	0.67	pt/a	+2" wds	B						
12	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
12	AMS		WG	17	lb/100 gal	+2" wds	B						

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Study Dir.: Sprague, Powell
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Weed Code	BETVU			CHEAL	AMAPO	BETVU
Crop Code	BETVU	BETVU	BETVU			BETVU
Rating Data Type	Injury	Injury	Injury	Control	Control	Injury
Rating Unit	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date	5/28/08	6/2/08	6/11/08	6/11/08	6/11/08	6/16/08
Trt-Eval Interval	5 DA-A	10 DA-A	19 DA-A	19 DA-A	19 DA-A	63 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code
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LSD (P=.10)						2.9	3.2	4.8	5.4	3.7	4.0
Standard Deviation						2.4	2.6	4.0	4.5	3.1	3.3
CV						104.69	63.36	125.74	5.28	3.44	178.43

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								CHEAL	AMAPO	CHEAL	AMAPO	CHEAL	
								BETVU					
								Injury	Control	Control	Control	Control	
								Percent	Percent	Percent	Percent	Percent	
								6/20/08	6/20/08	6/20/08	7/25/08	7/25/08	
								9 DA-B	9 DA-B	9 DA-B	63 DA-A	63 DA-A	
											117 DA-A		
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Grow Stg	Appl Code						
1	Sequence	5.25	EW	2	pt/a	2-LF	A	1	83	97	63	78	63
1	AMS		WG	17	lb/100 gal	2-LF	A						
2	Sequence	5.25	EW	3	pt/a	2-LF	A	4	89	99	81	99	75
2	AMS		WG	17	lb/100 gal	2-LF	A						
3	Sequence	5.25	EW	4	pt/a	2-LF	A	8	93	99	84	99	80
3	AMS		WG	17	lb/100 gal	2-LF	A						
4	Sequence	5.25	EW	6	pt/a	2-LF	A	9	96	99	85	97	83
4	AMS		WG	17	lb/100 gal	2-LF	A						
5	Sequence	5.25	EW	8	pt/a	2-LF	A	8	95	98	93	99	88
5	AMS		WG	17	lb/100 gal	2-LF	A						
6	Dual Magnum	7.62	EC	1.18	pt/a	2-LF	A	4	94	99	86	98	78
6	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A						
6	AMS		WG	17	lb/100 gal	2-LF	A						
7	Untreated							0	0	0	0	0	0
8	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	3	99	99	98	99	95
8	AMS		WG	17	lb/100 gal	2-LF	A						
8	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
8	AMS		WG	17	lb/100 gal	+2" wds	B						
9	Sequence	5.25	EW	3	pt/a	2-LF	A	3	99	99	99	99	99
9	AMS		WG	17	lb/100 gal	2-LF	A						
9	Sequence	5.25	EW	3	pt/a	+2" wds	B						
9	AMS		WG	17	lb/100 gal	+2" wds	B						
10	Sequence	5.25	EW	3	pt/a	2-LF	A	4	99	99	99	99	97
10	AMS		WG	17	lb/100 gal	2-LF	A						
10	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
10	AMS		WG	17	lb/100 gal	+2" wds	B						
11	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	3	99	99	99	99	99
11	AMS		WG	17	lb/100 gal	2-LF	A						
11	Sequence	5.25	EW	3	pt/a	+2" wds	B						
11	AMS		WG	17	lb/100 gal	+2" wds	B						
12	Dual Magnum	7.62	EC	0.67	pt/a	2-LF	A	10	99	99	99	99	99
12	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A						
12	AMS		WG	17	lb/100 gal	2-LF	A						
12	Dual Magnum	7.62	EC	0.67	pt/a	+2" wds	B						
12	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B						
12	AMS		WG	17	lb/100 gal	+2" wds	B						

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Weed Code		CHEAL	AMAPO	CHEAL	AMAPO	CHEAL
Crop Code		BETVU				
Rating Data Type		Injury	Control	Control	Control	Control
Rating Unit		Percent	Percent	Percent	Percent	Percent
Rating Date		6/20/08	6/20/08	6/20/08	7/25/08	7/25/08
Trt-Eval Interval		9 DA-B	9 DA-B	9 DA-B	63 DA-A	63 DA-A
					117 DA-A	

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code
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LSD (P=.10)		5.2	4.0	1.9	7.0	2.3	7.3
Standard Deviation		4.3	3.3	1.6	5.8	1.9	6.1
CV		94.07	3.78	1.74	7.05	2.19	7.64

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								AMAPO				
								Control	BETVU	BETVU	BETVU	BETVU
								Percent	count	% Sugar	Yield	RWST
								9/17/08	100' row		Ton/acre	# / ton
								9/17/08	9/18/08	9/19/08	9/19/08	9/19/08
								117 DA-A	118 DA-A	119 DA-A	119 DA-A	119 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code					
1	Sequence	5.25	EW	2	pt/a	2-LF	A	85	227	15.7	31.2	226.0
1	AMS		WG	17	lb/100 gal	2-LF	A					
2	Sequence	5.25	EW	3	pt/a	2-LF	A	99	236	16.4	35.1	238.6
2	AMS		WG	17	lb/100 gal	2-LF	A					
3	Sequence	5.25	EW	4	pt/a	2-LF	A	97	231	16.2	33.3	232.7
3	AMS		WG	17	lb/100 gal	2-LF	A					
4	Sequence	5.25	EW	6	pt/a	2-LF	A	98	210	16.2	31.7	235.5
4	AMS		WG	17	lb/100 gal	2-LF	A					
5	Sequence	5.25	EW	8	pt/a	2-LF	A	94	250	16.4	36.2	238.8
5	AMS		WG	17	lb/100 gal	2-LF	A					
6	Dual Magnum	7.62	EC	1.18	pt/a	2-LF	A	97	233	15.9	35.6	229.9
6	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A					
6	AMS		WG	17	lb/100 gal	2-LF	A					
7	Untreated							0	205	16.2	13.4	235.1
8	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	99	241	16.7	31.9	246.3
8	AMS		WG	17	lb/100 gal	2-LF	A					
8	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B					
8	AMS		WG	17	lb/100 gal	+2" wds	B					
9	Sequence	5.25	EW	3	pt/a	2-LF	A	99	225	16.1	37.0	234.2
9	AMS		WG	17	lb/100 gal	2-LF	A					
9	Sequence	5.25	EW	3	pt/a	+2" wds	B					
9	AMS		WG	17	lb/100 gal	+2" wds	B					
10	Sequence	5.25	EW	3	pt/a	2-LF	A	99	224	16.0	36.9	233.1
10	AMS		WG	17	lb/100 gal	2-LF	A					
10	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B					
10	AMS		WG	17	lb/100 gal	+2" wds	B					
11	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	99	257	16.0	34.8	231.6
11	AMS		WG	17	lb/100 gal	2-LF	A					
11	Sequence	5.25	EW	3	pt/a	+2" wds	B					
11	AMS		WG	17	lb/100 gal	+2" wds	B					
12	Dual Magnum	7.62	EC	0.67	pt/a	2-LF	A	99	224	16.4	34.8	237.2
12	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A					
12	AMS		WG	17	lb/100 gal	2-LF	A					
12	Dual Magnum	7.62	EC	0.67	pt/a	+2" wds	B					
12	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B					
12	AMS		WG	17	lb/100 gal	+2" wds	B					

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Weed Code	AMAPO				
Crop Code		BETVU	BETVU	BETVU	BETVU
Rating Data Type	Control	count	% Sugar	Yield	RWST
Rating Unit	Percent	100' row		Ton/acre	# / ton
Rating Date	9/17/08	9/18/08	9/19/08	9/19/08	9/19/08
Trt-Eval Interval	117 DA-A	118 DA-A	119 DA-A	119 DA-A	119 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code
LSD (P=.10)							
Standard Deviation							
CV							

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Weed Code
 Crop Code BETVU
 Rating Data Type RWSA
 Rating Unit # / acre
 Rating Date 9/19/08
 Trt-Eval Interval 119 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	
1	Sequence	5.25	EW	2	pt/a	2-LF	A	7067
1	AMS		WG	17	lb/100 gal	2-LF	A	
2	Sequence	5.25	EW	3	pt/a	2-LF	A	8182
2	AMS		WG	17	lb/100 gal	2-LF	A	
3	Sequence	5.25	EW	4	pt/a	2-LF	A	7417
3	AMS		WG	17	lb/100 gal	2-LF	A	
4	Sequence	5.25	EW	6	pt/a	2-LF	A	7473
4	AMS		WG	17	lb/100 gal	2-LF	A	
5	Sequence	5.25	EW	8	pt/a	2-LF	A	8653
5	AMS		WG	17	lb/100 gal	2-LF	A	
6	Dual Magnum	7.62	EC	1.18	pt/a	2-LF	A	8160
6	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	
6	AMS		WG	17	lb/100 gal	2-LF	A	
7	Untreated							3148
8	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	7864
8	AMS		WG	17	lb/100 gal	2-LF	A	
8	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B	
8	AMS		WG	17	lb/100 gal	+2" wds	B	
9	Sequence	5.25	EW	3	pt/a	2-LF	A	8683
9	AMS		WG	17	lb/100 gal	2-LF	A	
9	Sequence	5.25	EW	3	pt/a	+2" wds	B	
9	AMS		WG	17	lb/100 gal	+2" wds	B	
10	Sequence	5.25	EW	3	pt/a	2-LF	A	8600
10	AMS		WG	17	lb/100 gal	2-LF	A	
10	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B	
10	AMS		WG	17	lb/100 gal	+2" wds	B	
11	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	8060
11	AMS		WG	17	lb/100 gal	2-LF	A	
11	Sequence	5.25	EW	3	pt/a	+2" wds	B	
11	AMS		WG	17	lb/100 gal	+2" wds	B	
12	Dual Magnum	7.62	EC	0.67	pt/a	2-LF	A	8269
12	Touchdown Total	4.17	SL	1.5	pt/a	2-LF	A	
12	AMS		WG	17	lb/100 gal	2-LF	A	
12	Dual Magnum	7.62	EC	0.67	pt/a	+2" wds	B	
12	Touchdown Total	4.17	SL	1.5	pt/a	+2" wds	B	
12	AMS		WG	17	lb/100 gal	+2" wds	B	

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Weed Code
 Crop Code BETVU
 Rating Data Type RWSA
 Rating Unit # / acre
 Rating Date 9/19/08
 Trt-Eval Interval 119 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code
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LSD (P=.10)	870.8
Standard Deviation	725.7
CV	9.51