

**Time of weed removal in Roundup Ready sugar beet**

Trial ID: SB04-08  
 Conducted: Bean & Beet

Study Dir.: Sprague, Powell  
 Investigator: Christy Sprague

**Date Planted:** 4/25/08  
**Variety:** Hillshog 9027  
**Population:** See comments  
**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 beans  
 Early spring field cultivate  
 Shallow field cultivate 4/23/08  
**Fertilizer:** 125#/acre Nitrogen (urea) applied and incorporated in early spring.

Crop and Weed Description			Scientific Name
<b>Weed</b>	<b>Code</b>	<b>Common Name</b>	
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	POLPE	LADYSTHUMB	POLYGONUM PERSICARIA L.
3.	AMASS	REDROOT PIGWEED, POWELL AMARANTH	AMARANTHUS SP.
<b>Crop</b>	<b>Code</b>	<b>Common Name</b>	
1.	BETVU	BEET, SUGAR	

	Application Description						
	A	B	C	D	E	F	G
<b>Application Timing:</b>	A 1"weeds	B 2"weeds	C 1"3"wds	D 4"weeds	E 2"/6"	F 1"/3"	G 4"weeds
<b>Date Treated:</b>	5/15/08	5/28/08	6/2/08	6/4/08	6/11/08	6/16/08	6/24/08
<b>Time Treated:</b>	5:12 PM	4:15 PM	3:30 PM	1:00 PM	3:00 PM	1:00 PM	3:30 PM
<b>% Cloud Cover:</b>	100	5	40	100	25	60	30
<b>Air Temp., Unit:</b>	65 F	76 F	86 F	66 F	91 F	74 F	87 F
<b>% Relative Humidity:</b>	26	22	22	70	42	48	48
<b>Wind Speed/Unit/Dir:</b>	3 mph NE	1 mph N	2 mph W	4 mph E	4 mph NE	5 mph NW	3 mph W
<b>Soil Temp., Unit:</b>	60 F	66 F	70 F	65 F	87 F	71 F	80 F
<b>Soil/Leaf Surface M:</b>	5 5	5 5	5 5	5 5	5 5	5 5	4 5
<b>Soil Moist (1=w 5=d):</b>	4	5	5	5	3	3	3

**Application Timing:** H 4" wds  
**Date Treated:** 7/7/08  
**Time Treated:** 2:00 pm  
**% Cloud Cover:** 100  
**Air Temp., Unit:** 83 F  
**% Relative Humidity:** 61  
**Wind Speed/Unit/Dir:** 7 mph S  
**Soil Temp., Unit:** 72 F  
**Soil/Leaf Surface M:** 5 5  
**Soil Moist (1=w 5=d):** 4

Crop Name:	Crop Stage at Each Application							
	A	B	C	D	E	F	G	H
BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU
<b>Height (In.):</b>	.5-.75	.75-2.5	1-4.5	2.5-4	3-7	8-10	10-12	12-17
<b>Stage (L):</b>	2	2-4	2-6	4-6	6-8	6-10	8-12	12-14

Weed Name:	Weed Stage at Each Application							
	A	B	C	D	E	F	G	H
CHEAL	CHEAL	CHEAL	CHEAL	CHEAL	CHEAL	CHEAL	CHEAL	CHEAL
<b>Height (In.):</b>	.25-1	1-2	.5-3.5	2-5	.5-13	1-4	1-6	2-10
<b>Stage (L):</b>	coty-4	4-8	2-10	6-many	6-many	many	4-many	4-many
POLPE	POLPE	POLPE	POLPE	POLPE	POLPE	POLPE	POLPE	POLPE
<b>Height (In.):</b>	--	2	--	--	--	--	--	--
<b>Stage (L):</b>	--	2-4	--	--	--	--	--	--
AMASS	AMASS	AMASS	AMASS	AMASS	AMASS	AMASS	AMASS	AMASS
<b>Height (In.):</b>	--	--	1-2	1-1.5	1-3	1-4	1-4	4-10
<b>Stage (L):</b>	--	--	2-6	4-8	4-6	4-8	4-8	4-many

Date:	Weed Density (plants/sq. ft.)	
	1	2
7/25/08	7/25/08	
<b>Weed Name:</b>	CHEAL	AMAPO
<b>Density:</b>	14.6	1.25

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Appl	Sprayer Type	Speed MPH	Application Equipment				GPA	Carrier	PSI
			Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing			
A	Cub	3.8	AirMix	11003	21	20	100	19 water	28
B	Cub	3.8	AirMix	11003	21	20	100	19 water	28
C	Cub	3.8	AirMix	11003	23	20	100	19 water	28
D	Cub	3.8	AirMix	11003	23	20	100	19 water	28
E	Cub	3.8	AirMix	11003	26	20	100	19 water	28
F	Cub	3.8	AirMix	11003	26	20	100	19 water	28
G	Cub	3.8	AirMix	11003	28	20	100	19 water	28
H	Cub	3.8	AirMix	11003	28	20	100	19 water	28

Comments: Fungicides were broadcast applied the following dates-

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

**TIME OF WEED REMOVAL IN ROUNDUP READY SUGARBEET (SB04-08)**

**Christy Sprague and Gary Powell**  
**MSU Crop and Soil Sciences**

Early-season weed competition can reduce sugarbeet yields. This field study was conducted to demonstrate the optimum time for weed removal or POST glyphosate applications in Roundup Ready (glyphosate-resistant) sugarbeets. Glyphosate formulated as Roundup PowerMax was applied at 22 fl oz/A and 33 fl oz/A when weeds were 1-inch, 2-inches, 3-inches, 4-inches, and 6-inches tall. Initial and sequential timings of glyphosate were applied according to weed size. Three applications were made in the 1-inch weed plots, two applications were made in plots where weeds were 2-, 3- or 4-inches tall, and only one application was made in the plots where weeds were 6-inches tall. Weed control (common lambsquarters and pigweed) was lowest when glyphosate applications were made to weeds that were 4-inches tall. When averaged over glyphosate rates, sugarbeet yield and recoverable white sugar per acre was lower as glyphosate applications timings were made to taller weeds. In fact, recoverable white sugar per acre was significantly (P = 0.1) lower when weeds were not controlled until they were 4- or 6-inches tall. The optimum time for the first application of glyphosate in Roundup Ready sugarbeets would be when weeds are 2-inches tall. Control of weeds early in sugarbeets is important to maximizing sugarbeet yield.

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Weed Code	CHEAL	AMARE	CHEAL	AMARE
Crop Code	BETVU	BETVU	BETVU	BETVU
Rating Data Type	injury	control	injury	control
Rating Unit	percent	percent	percent	percent
Rating Date	6/16/08	6/16/08	7/25/08	7/25/08
Trt-Eval Interval	32 DA-A	32 DA-A	71 DA-A	71 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	1" weeds	A	0	90	92	1	96	99
1	AMS		WG	17	lb/100 gal	1" weeds	A						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	C						
1	AMS		WG	17	lb/100 gal	+1" wds	C						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	F						
1	AMS		WG	17	lb/100 gal	+1" wds	F						
2	Roundup PowerMax	4.5	SL	33	fl oz/a	1" weeds	A	4	89	92	0	97	99
2	AMS		WG	17	lb/100 gal	1" weeds	A						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	C						
2	AMS		WG	17	lb/100 gal	+1" wds	C						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	F						
2	AMS		WG	17	lb/100 gal	+1" wds	F						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	8	98	99	1	98	97
3	AMS		WG	17	lb/100 gal	2" weeds	B						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	+2" wds	E						
3	AMS		WG	17	lb/100 gal	+2" wds	E						
4	Roundup PowerMax	4.5	SL	33	fl oz/a	2" weeds	B	7	98	99	1	94	99
4	AMS		WG	17	lb/100 gal	2" weeds	B						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	+2" wds	E						
4	AMS		WG	17	lb/100 gal	+2" wds	E						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	3" weeds	C	8	84	91	1	99	99
5	AMS		WG	17	lb/100 gal	3" weeds	C						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	+3" wds	F						
5	AMS		WG	17	lb/100 gal	+3" wds	F						
6	Roundup PowerMax	4.5	SL	33	fl oz/a	3" weeds	C	18	91	92	0	94	97
6	AMS		WG	17	lb/100 gal	3" weeds	C						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	+3" wds	F						
6	AMS		WG	17	lb/100 gal	+3" wds	F						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	4" weeds	D	5	96	93	1	89	86
7	AMS		WG	17	lb/100 gal	4" weeds	D						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	H						
7	AMS		WG	17	lb/100 gal	+4" wds	H						
8	Roundup PowerMax	4.5	SL	33	fl oz/a	4" weeds	D	11	97	98	2	86	89
8	AMS		WG	17	lb/100 gal	4" weeds	D						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	H						
8	AMS		WG	17	lb/100 gal	+4" wds	H						
9	Untreated							0	0	0	25	0	0
10	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	3	83	95	1	96	99
10	AMS		WG	17	lb/100 gal	2" weeds	B						
10	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	G						
10	AMS		WG	17	lb/100 gal	+4" wds	G						

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Crop Code	BETVU		BETVU	
Rating Data Type	injury	control	injury	control
Rating Unit	percent	percent	percent	percent
Rating Date	6/16/08	6/16/08	7/25/08	7/25/08
Trt-Eval Interval	32 DA-A	32 DA-A	71 DA-A	71 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	CHEAL	AMARE	CHEAL	AMARE		
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6" weeds	E	13	97	99	1	97	99
11	AMS		WG	17	lb/100 gal	6" weeds	E						
12	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	5	81	96	2	99	99
12	AMS		WG	17	lb/100 gal	2" weeds	B						
12	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	G						
12	Dual Magnum	7.62	EC	1.33	pt/a	+4" wds	G						
12	AMS		WG	17	lb/100 gal	+4" wds	G						

LSD (P=.10)	5.1	6.5	6.2	2.8	5.4	4.4
Standard Deviation	4.3	5.5	5.2	2.4	4.5	3.7
CV	63.07	6.53	5.94	83.07	5.18	4.2

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Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

BETVU count	BETVU % Sugar	BETVU Yield	BETVU RWST	BETVU RWSA
100' row		Ton/acre	# / ton	# / acre
9/18/08	9/19/08	9/19/08	9/19/08	9/19/08
126 DA-A	127 DA-A	127 DA-A	127 DA-A	127 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	BETVU count	BETVU % Sugar	BETVU Yield	BETVU RWST	BETVU RWSA
1	Roundup PowerMax	4.5	SL	22	fl oz/a	1" weeds	A	229	15.7	33.8	226.0	7962
1	AMS		WG	17	lb/100 gal	1" weeds	A					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	C					
1	AMS		WG	17	lb/100 gal	+1" wds	C					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	F					
1	AMS		WG	17	lb/100 gal	+1" wds	F					
2	Roundup PowerMax	4.5	SL	33	fl oz/a	1" weeds	A	229	16.5	33.8	238.4	8059
2	AMS		WG	17	lb/100 gal	1" weeds	A					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	C					
2	AMS		WG	17	lb/100 gal	+1" wds	C					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	+1" wds	F					
2	AMS		WG	17	lb/100 gal	+1" wds	F					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	241	16.7	33.5	237.6	7931
3	AMS		WG	17	lb/100 gal	2" weeds	B					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	+2" wds	E					
3	AMS		WG	17	lb/100 gal	+2" wds	E					
4	Roundup PowerMax	4.5	SL	33	fl oz/a	2" weeds	B	232	16.4	32.6	236.3	7702
4	AMS		WG	17	lb/100 gal	2" weeds	B					
4	Roundup PowerMax	4.5	SL	22	fl oz/a	+2" wds	E					
4	AMS		WG	17	lb/100 gal	+2" wds	E					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	3" weeds	C	229	16.3	32.6	236.4	7743
5	AMS		WG	17	lb/100 gal	3" weeds	C					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	+3" wds	F					
5	AMS		WG	17	lb/100 gal	+3" wds	F					
6	Roundup PowerMax	4.5	SL	33	fl oz/a	3" weeds	C	213	16.2	30.4	232.6	7065
6	AMS		WG	17	lb/100 gal	3" weeds	C					
6	Roundup PowerMax	4.5	SL	22	fl oz/a	+3" wds	F					
6	AMS		WG	17	lb/100 gal	+3" wds	F					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	4" weeds	D	244	16.1	32.2	230.4	7424
7	AMS		WG	17	lb/100 gal	4" weeds	D					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	H					
7	AMS		WG	17	lb/100 gal	+4" wds	H					
8	Roundup PowerMax	4.5	SL	33	fl oz/a	4" weeds	D	231	16.5	30.0	238.3	7158
8	AMS		WG	17	lb/100 gal	4" weeds	D					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	H					
8	AMS		WG	17	lb/100 gal	+4" wds	H					
9	Untreated							126	15.5	2.6	215.9	559
10	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	217	16.5	31.4	238.2	7496
10	AMS		WG	17	lb/100 gal	2" weeds	B					
10	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	G					
10	AMS		WG	17	lb/100 gal	+4" wds	G					

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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

BETVU count	BETVU % Sugar	BETVU Yield Ton/acre	BETVU RWST # / ton	BETVU RWSA # / acre
126 DA-A	127 DA-A	127 DA-A	127 DA-A	127 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6" weeds	E	224	16.3	29.8	232.6	6912
11	AMS		WG	17	lb/100 gal	6" weeds	E					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	B	240	16.6	31.4	239.1	7490
12	AMS		WG	17	lb/100 gal	2" weeds	B					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	G					
12	Dual Magnum	7.62	EC	1.33	pt/a	+4" wds	G					
12	AMS		WG	17	lb/100 gal	+4" wds	G					
LSD (P=.10)								35.5	0.42	3.60	9.22	790.5
Standard Deviation								29.5	0.35	3.00	7.68	658.7
CV								13.35	2.14	10.18	3.29	9.47