

**Tank-mixes with glyphosate for Roundup Ready sugar beets**

Trial ID: SB06-08                      Study Dir.: Sprague, Powell  
 Conducted: Bean & Beet              Investigator: Christy Sprague

**Date Planted:** 4/25/08                      **Row Spacing:** 30 IN  
**Variety:** Hillshog 9027 RR              **No. of Reps:** 4  
**Population:** 4.1" seed spacing              **% OM:** 3.0  
**Soil Type:** Clay                      **pH:** 7.8  
**Plot Size:** 10 X 30 FT              **Design:** RANDOMIZED COMPLETE BLOCK

**Tillage:** Fall chisel dry bean stubble  
 Early spring cultivate  
 Shallow field cultivate 4/23/08  
**Fertilizer:** 125#/acre Nitrogen (urea) applied and incorporated in early spring.

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

	Application Description		
	A	B	C
<b>Application Timing:</b>	A 2"weed	"B" 4"	"B" 4"
<b>Date Treated:</b>	5/28/08	6/16/08	6/17/08
<b>Time Treated:</b>	4:45 PM	3:00 PM	2:30 PM
<b>% Cloud Cover:</b>	5	75	100
<b>Air Temp., Unit:</b>	76 F	70 F	65 F
<b>% Relative Humidity:</b>	22	56	56
<b>Wind Speed/Unit/Dir:</b>	1 mph N	5 mph NW	4 mph N
<b>Soil Temp., Unit:</b>	66 F	74 F	65 F
<b>Soil/Leaf Surface M:</b>	5 5	5 5	5 5
<b>Soil Moist (1=w 5=d):</b>	5	5	5

	Crop Stage at Each Application		
	A	B	C
<b>Crop Name:</b>	BETVU	BETVU	BETVU
<b>Height (In.):</b>	1-2.5	8-10	
<b>Stage (L):</b>	2-4	8-10	

	Weed Stage at Each Application		
	A	B	C
<b>Weed 1 Name:</b>	CHEAL	CHEAL	CHEAL
<b>Height (In.):</b>	1-2	2-6	
<b>Stage (L):</b>	4-8	6-many	
<b>Weed 2 Name:</b>	POLPE	POLPE	POLPE
<b>Height (In.):</b>	2	--	
<b>Stage (L):</b>	2-4	--	
<b>Weed 3 Name:</b>	AMASS	AMASS	AMASS
<b>Height (In.):</b>	--	1-4	
<b>Stage (L):</b>	--	2-10	

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	Weed Density (plants/sq. ft.)			
	1	2	3	4
Date:	7/25/08	7/25/08	7/25/08	7/25/08
Weed Name:	CHEAL	AMAPO	POLPE	POLCO
Density:	13.875	4	0.375	0.5

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

**Comments:** Second application ("B" 4-inch weeds) got rained on after application on 6/16/08; re-sprayed on 6/17/08

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

**TANK-MIXES WITH GLYPHOSATE FOR USE ROUNDUP READY SUGARBEET (SB06-08)**

**Christy Sprague and Gary Powell**

**MSU Crop and Soil Sciences**

Glyphosate-resistant weeds will likely become an issue in Roundup Ready sugarbeets with the exclusive use of glyphosate for weed control. Because this may become an issue in the future a study was initiated to evaluate compatible tank-mix partners with postemergence applications of Roundup PowerMax (glyphosate) in Roundup Ready sugarbeet. Tank-mix partners evaluated with 22 fl oz/A of Roundup PowerMax included: Nortron, Upbeet, Stinger, Dual Magnum, and Outlook. The first application was made when weeds were 2-inches tall. The second herbicide application was made in each treatment when weeds were 4-inches tall. Some treatments were scheduled to be treated a third time when weeds were again 4-inches tall. All treatments resulted in excellent weed control (>96%) late in the season, and sugarbeet injury throughout the growing season from herbicides was less than 12% in all treatments. Initial common lambsquarters control was lower when crop oil concentrate was added to the glyphosate + UpBeet tank-mixture. It appears if UpBeet is applied with glyphosate AMS should only be added. Highest yields (tons/acre and recoverable white sugar/acre) were from Roundup PowerMax alone, or Roundup PowerMax tank-mixed with Dual Magnum in the second application. Roundup PowerMax tank-mixed with Upbeet in the first application; or tank-mixed with Nortron, Stinger, or Outlook in the second application resulted in lower sugar yields.







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Weed Code	CHEAL		AMAPO		CHEAL		AMAPO		CHEAL		AMAPO	
Crop Code	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU	BETVU
Rating Data Type	Injury	Injury	Control	Control	Injury	Control	Control	Control	Control	Control	Control	Control
Rating Unit	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date	6/4/08	6/11/08	6/11/08	6/11/08	6/24/08	6/24/08	6/24/08	7/25/08	7/25/08	9/17/08	9/17/08	9/17/08
Trt-Eval Interval	7 DA-A	14 DA-A	14 DA-A	14 DA-A	27 DA-A	27 DA-A	27 DA-A	58 DA-A	58 DA-A	112 DA-A	112 DA-A	112 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code											
16	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	5	5	68	95	3	92	99	99	99	99	99
16	AMS		WG	17	lb/100 gal	2" weeds	A											
16	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B											
16	AMS		WG	17	lb/100 gal	+4" wds	B											
16	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C											
16	Outlook	6	L	16	fl oz/a	+4" wds	C											
16	AMS		WG	17	lb/100 gal	+4" wds	C											

LSD (P=.10)	3.5	4.8	10.7	4.1	4.1	3.7	0.5	1.8	0.9	0.8	1.3
Standard Deviation	2.9	4.0	9.0	3.4	3.4	3.1	0.4	1.5	0.8	0.6	1.1
CV	80.99	87.17	13.36	3.79	111.21	3.48	0.47	1.62	0.82	0.69	1.16

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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

BETVU BETVU BETVU BETVU BETVU  
 count % Sugar Yield RWST RWSA  
 100' row Ton/acre # / Ton # / Acre  
 9/18/08 9/19/08 9/19/08 9/19/08 9/19/08  
 113 DA-A 114 DA-A 114 DA-A 114 DA-A 114 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	218	16.5	35.1	236.5	8297
1	AMS		WG	17	lb/100 gal	2" weeds	A					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
1	AMS		WG	17	lb/100 gal	+4" wds	B					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	235	16.1	33.6	233.4	7839
2	Nortron	4	SC	3	pt/a	2" weeds	A					
2	AMS		WG	17	lb/100 gal	2" weeds	A					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
2	AMS		WG	17	lb/100 gal	+4" wds	B					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	213	16.4	33.2	238.4	7902
3	Nortron	4	SC	12	fl oz/a	2" weeds	A					
3	AMS		WG	17	lb/100 gal	2" weeds	A					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
3	AMS		WG	17	lb/100 gal	+4" wds	B					
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	242	16.4	32.0	237.0	7599
4	AMS		WG	17	lb/100 gal	2" weeds	A					
4	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
4	Nortron	4	SC	12	fl oz/a	+4" wds	B					
4	AMS		WG	17	lb/100 gal	+4" wds	B					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	244	16.2	33.7	232.4	7824
5	Nortron	4	SC	6	fl oz/a	2" weeds	A					
5	AMS		WG	17	lb/100 gal	2" weeds	A					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
5	Nortron	4	SC	6	fl oz/a	+4" wds	B					
5	AMS		WG	17	lb/100 gal	+4" wds	B					
6	Untreated							230	15.1	6.4	212.6	1348

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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

BETVU	BETVU	BETVU	BETVU	BETVU
count	% Sugar	Yield	RWST	RWSA
100' row		Ton/acre	# / Ton	# / Acre
9/18/08	9/19/08	9/19/08	9/19/08	9/19/08
113 DA-A	114 DA-A	114 DA-A	114 DA-A	114 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	231	17.0	31.9	245.1	7818
7	AMS		WG	17	lb/100 gal	2" weeds	A					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
7	AMS		WG	17	lb/100 gal	+4" wds	B					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
7	AMS		WG	17	lb/100 gal	+4" wds	C					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	239	16.1	33.4	229.9	7688
8	Upbeet	50	DF	0.5	oz/a	2" weeds	A					
8	AMS		WG	17	lb/100 gal	2" weeds	A					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
8	AMS		WG	17	lb/100 gal	+4" wds	B					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
8	AMS		WG	17	lb/100 gal	+4" wds	C					
9	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	201	16.3	31.3	231.4	7243
9	Upbeet	50	DF	0.5	oz/a	2" weeds	A					
9	Crop oil concentrate		L	1	% v/v	2" weeds	A					
9	AMS		WG	17	lb/100 gal	2" weeds	A					
9	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
9	AMS		WG	17	lb/100 gal	+4" wds	B					
9	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
9	AMS		WG	17	lb/100 gal	+4" wds	C					
10	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	224	16.3	33.9	233.3	7907
10	AMS		WG	17	lb/100 gal	2" weeds	A					
10	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
10	Upbeet	50	DF	0.5	oz/a	+4" wds	B					
10	AMS		WG	17	lb/100 gal	+4" wds	B					



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Weed Code												
Crop Code							BETVU	BETVU	BETVU	BETVU	BETVU	
Rating Data Type							count	% Sugar	Yield	RWST	RWSA	
Rating Unit							100' row		Ton/acre	# / Ton	# / Acre	
Rating Date							9/18/08	9/19/08	9/19/08	9/19/08	9/19/08	
Trt-Eval Interval							113 DA-A	114 DA-A	114 DA-A	114 DA-A	114 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	2" weeds	A	239	16.2	31.1	231.5	7196
11	AMS		WG	17	lb/100 gal	2" weeds	A					
11	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
11	Stinger	3	SL	8	fl oz/a	+4" wds	B					
11	AMS		WG	17	lb/100 gal	+4" wds	B					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	242	16.6	30.5	240.4	7309
12	AMS		WG	17	lb/100 gal	2" weeds	A					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
12	AMS		WG	17	lb/100 gal	+4" wds	B					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
12	Stinger	3	SL	8	fl oz/a	+4" wds	C					
12	AMS		WG	17	lb/100 gal	+4" wds	C					
13	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	199	16.1	34.6	227.5	7871
13	AMS		WG	17	lb/100 gal	2" weeds	A					
13	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
13	Dual Magnum	7.62	EC	1.33	pt/a	+4" wds	B					
13	AMS		WG	17	lb/100 gal	+4" wds	B					
14	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	217	16.2	35.4	235.2	8328
14	AMS		WG	17	lb/100 gal	2" weeds	A					
14	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
14	AMS		WG	17	lb/100 gal	+4" wds	B					
14	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
14	Dual Magnum	7.62	EC	1.33	pt/a	+4" wds	C					
14	AMS		WG	17	lb/100 gal	+4" wds	C					
15	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	230	16.1	32.7	228.6	7461
15	AMS		WG	17	lb/100 gal	2" weeds	A					
15	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
15	Outlook	6	L	16	fl oz/a	+4" wds	B					
15	AMS		WG	17	lb/100 gal	+4" wds	B					

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Weed Code												
Crop Code							BETVU	BETVU	BETVU	BETVU	BETVU	BETVU
Rating Data Type							count	% Sugar	Yield	RWST	RWSA	
Rating Unit							100' row		Ton/acre	# / Ton	# / Acre	
Rating Date							9/18/08	9/19/08	9/19/08	9/19/08	9/19/08	
Trt-Eval Interval							113 DA-A	114 DA-A	114 DA-A	114 DA-A	114 DA-A	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
16	Roundup PowerMax	4.5	SL	22	fl oz/a	2" weeds	A	235	16.1	31.6	230.3	7257
16	AMS		WG	17	lb/100 gal	2" weeds	A					
16	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	B					
16	AMS		WG	17	lb/100 gal	+4" wds	B					
16	Roundup PowerMax	4.5	SL	22	fl oz/a	+4" wds	C					
16	Outlook	6	L	16	fl oz/a	+4" wds	C					
16	AMS		WG	17	lb/100 gal	+4" wds	C					

LSD (P=.10)	42.4	0.51	2.88	10.66	711.0
Standard Deviation	35.6	0.43	2.42	8.95	597.1
CV	15.64	2.63	7.74	3.85	8.17