### (SB04-11 Micronutrients) Site Description Page 1 of 7 MSU Weed Science Research Program

Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Trial ID: SB04-11 Study Dir.: Sprague, Powell Conducted: SVREC Investigator: Christy Sprague

 Date Planted:
 5/4/2011
 Row Spacing:
 30 IN

 Variety:
 Hilleshog 9042
 No. of Reps:
 4

 Population:
 4 1/4" spacing
 % OM:
 2.8

 Soil Type:
 Clay Loam
 pH:
 7.9

 Plot Size:
 10 X 35 FT
 Design:
 RANDOMIZE

RANDOMIZED COMPLETE BLOCK

Tillage: Fall moldboard plow. Spring field cultivated (twice).

Fertilizer: Urea (125 lb/A of nitrogen) was broadcast and incorporated prior to planting.

### Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	AMAPO	AMARANTH, POWELL	AMARANTHUS POWELLII S.WATS.
3.	POLPY	SMARTWEED, PENNSYLVANIA	POLYGONUM PENSYLVANICUM L.
Crop	Code	Common Name	
1.	BETVU	BEET, SUGAR	

### Application Description

	A	В	C		
Application Timing:	2 leaf	6 leaf	10 leaf		
Date Treated:	5/30/2011	6/9/2011	6/30/2011		
Time Treated:	7:30 pm	6:00 pm	1:20 pm		
% Cloud Cover:	0	95	5		
Air Temp., Unit:	89 F	60 F	78 F		
<pre>% Relative Humidity:</pre>	60	73	39		
Wind Speed/Unit/Dir:	3 mph N	6 mph E	2 mph SE		
Soil Temp., Unit:	73 F	70 F	85 F		
Soil/Leaf Surface M:	5 5	5 5	5 5		
Soil Moist (1=w 5=d):	3	3	5		

# Crop Stage at Each Application

	A	В	С
Crop Name:	BETVU	BETVU	BETVU
Height (In.):	3"	3-5"	12"
Stage (L):	2-4	6	10-12

### Weed Stage at Each Application

	A	В	С
Weed 1 Name:	CHEAL	CHEAL	CHEAL
Height (In.):	1"	-	-
Stage (L):	4-6	-	-
Weed 2 Name:	AMAPO	AMAPO	AMAPO
Height (In.):	1/4"	-	1-2"
Stage (L):	1	-	4
Weed 3 Name:	POLPY	POLPY	POLPY
Height (In.):	1.5-2"	-	-
Stage (L):	2-3	-	-

### Application Equipment

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

MSU Weed Science Research Program
Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Trial ID: SB04-11 Study Dir.: Sprague, Powell Conducted: SVREC Investigator: Christy Sprague

Cro	ed Code o Code			. 00 019	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0111007	oprag.	BETVU	CHEAL	AMAPO	POLPY	BETVU	CHEAL
Rati Rati Trt-l	ng Data Type ng Unit ng Date Eval Interval Jbsamples, Dec.							injury percent 6/14/2011 15 DA-A 0	control percent 6/14/2011 15 DA-A 0	control percent 6/14/2011 15 DA-A 0	control percent 6/14/2011 15 DA-A 0	injury percent 6/25/2011 26 DA-A 0	control percent 6/25/2011 26 DA-A 0
Trt	Treatment Name		Form Type	Rate	Rate Unit	Grow Stg	Appl Code						
1 1 1 1 1	Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG	4.5	SL L SL L SL L	22 2 22 2 2 22 2	% v/v fl oz/a % v/v fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf		0	99	99	98	0	99
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 1 2 22 1 1 1 2	% v/v fl oz/a qt/a pt/a % v/v fl oz/a qt/a pt/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C	0	99	99	99	0	99
3 3 3 3 3 3 3	Roundup PowerMax Class Act NG Roundup PowerMax AGM8005 Class Act NG Roundup PowerMax AGM8005 Class Act NG	4.5	SL L SL L SL L	22 2 22 3.2 2 22 3.2 2	% v/v fl oz/a fl oz/a % v/v fl oz/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	С	0	99	99	99	0	99
4 4 4 4 4 4 4 4	Roundup PowerMax Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C	0	99	99	99	0	99
5 5 5 5 5 5 5 5 5	Roundup PowerMax Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a pt/a fl oz/a % v/v fl oz/a pt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C	0	99	99	99	0	99
666666666	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG	4.5	SL L SL L L SL L L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a		B C C	0	99	99	99	0	99

## MSU Weed Science Research Program

Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Trial ID: SB04-11 Study Dir.: Sprague, Powell Conducted: SVREC Investigator: Christy Sprague

Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval # Subsamples, Dec. Trt Treatment No. Name		Form Type	Rate	Rate Unit	Grow Stg	Appl Code	BETVU injury percent 6/14/2011 15 DA-A 0	CHEAL control percent 6/14/2011 15 DA-A 0	AMAPO control percent 6/14/2011 15 DA-A 0	POLPY control percent 6/14/2011 15 DA-A 0	BETVU injury percent 6/25/2011 26 DA-A 0	CHEAL control percent 6/25/2011 26 DA-A 0
7 Roundup PowerMax 7 Class Act NG 7 Roundup PowerMax 7 AGM9026 7 AGM9022 7 AGM8005 7 Class Act NG 7 Roundup PowerMax 7 AGM9026 7 AGM9022 7 AGM8005 7 Class Act NG	4.5	SL L SL L L L L L	22 2 22 1 1 3.2 2 22 1 1 3.2 2	% v/v fl oz/a qt/a pt/a fl oz/a	2-leaf	C C C	0	99	99	99	0	99
8 Roundup PowerMax 8 Class Act NG 8 Roundup PowerMax 8 Class Act NG 8 Roundup PowerMax 8 AGM9026 8 AGM9022 8 AGM8005 8 Class Act NG	4.5	SL L SL L SL L L	22 2 22 2 2 22 1 1 3.2 2	fl oz/a qt/a pt/a fl oz/a	2-leaf	C C C	0	99	99	99	0	99
LSD (P=.05) Standard Deviation CV							0.0 0.0 0.0	0.0 0.0 0.0	0.5 0.4 0.36	1.2 0.8 0.84	0.0 0.0 0.0	0.0 0.0 0.0

Means followed by same letter do not significantly differ (P=.05, LSD) Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

MSU Weed Science Research Program
Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Trial ID: SB04-11 Conducted: SVREC Study Dir.: Sprague, Powell Investigator: Christy Sprague

Crop Rati Rati Rati	ed Code p Code ng Data Type ng Unit ng Date Eval Interval							AMAPO control percent 6/25/2011 26 DA-A	POLPY control percent 6/25/2011 26 DA-A	CHEAL control percent 7/14/2011 45 DA-A	AMAPO control percent 7/14/2011 45 DA-A	POLPY control percent 7/14/2011 45 DA-A	BETVU count 100' row 9/15/2011 108 DA-A
# Sı	ubsamples, Dec.							0 0	0 0	0 0	0 0	0 0	0
	Treatment Name		Form Type	Rate	Rate Unit	Grow Stg	Appl Code						
1 1 1 1 1	Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG	4.5	SL L SL L SL L	22 2 22 2 2 22 2	% v/v fl oz/a % v/v	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf		99	99	99	99	99	227
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 1 2 22 1 1 1 2	% v/v fl oz/a qt/a pt/a % v/v	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C	99	99	99	99	99	220
3 3 3 3 3 3 3	Roundup PowerMax Class Act NG Roundup PowerMax AGM8005 Class Act NG Roundup PowerMax AGM8005 Class Act NG	4.5	SL L SL L SL L L	22 2 22 3.2 2 22 3.2 2	% v/v fl oz/a fl oz/a % v/v fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf 10-leaf	С	99	99	99	99	99	219
4 4 4 4 4 4 4 4	Roundup PowerMax Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a		C C	99	99	99	99	99	240
5 5 5 5 5 5 5 5 5	Roundup PowerMax Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a pt/a fl oz/a % v/v fl oz/a pt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C C	99	99	99	99	99	215
6 6 6 6 6 6 6 6	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2 2	% v/v fl oz/a qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C	99	99	99	99	99	229

## MSU Weed Science Research Program

Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Trial ID: SB04-11 Conducted: SVREC Study Dir.: Sprague, Powell Investigator: Christy Sprague

Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval # Subsamples, De Trt Treatment No. Name	Form	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	AMAPO control percent 6/25/2011 26 DA-A 0	control percent 6/25/2011 26 DA-A 0	CHEAL control percent 7/14/2011 45 DA-A 0	AMAPO control percent 7/14/2011 45 DA-A 0	POLPY control percent 7/14/2011 45 DA-A 0	BETVU count 100' row 9/15/2011 108 DA-A 0
7 Roundup Pov 7 Class Act NG 7 Roundup Pov 7 AGM9026 7 AGM8005 7 Class Act NG 7 Roundup Pov 7 AGM9026 7 AGM9022 7 AGM8005 7 Class Act NG	werMax 4.5  werMax 4.5  werMax 4.5	SL L SL L L L L L L L	22 2 22 1 1 3.2 2 22 1 1 3.2 2	qt/a pt/a	2-leaf 6-leaf 6-leaf 6-leaf 6-leaf	C C C	98	99	99	99	99	225
8 Roundup Pov 8 Class Act NG 8 Roundup Pov 8 Class Act NG 8 Roundup Pov 8 AGM9026 8 AGM9022 8 AGM8005 8 Class Act NG	werMax 4.5 werMax 4.5 werMax 4.5	SL L SL L L L L	22 2 22 2 22 1 1 3.2 2	qt/a pt/a fl oz/a	2-leaf 6-leaf	C C C	99	99	99	99	99	215
LSD (P=.05) Standard Deviation CV	n						1.0 0.7 0.72	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	17.0 11.5 5.15

Means followed by same letter do not significantly differ (P=.05, LSD) Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trial ID: SB04-11 Conducted: SVREC Study Dir.: Sprague, Powell Investigator: Christy Sprague

Crop Rati Rati Rati Trt-l	ed Code o Code ng Data Type ng Unit ng Date Eval Interval ubsamples, Dec.								BETVU yield ton/acre 9/15/2011 108 DA-A 1		
Trt No.	Treatment Name		Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1 1 1 1 1	Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG Roundup PowerMax Class Act NG	4.5	SL L SL L SL L	22 2 22 2 2 22 2	% v/v fl oz/a % v/v fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf		19.4	20.8	286	6362
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG Roundup PowerMax AGM9026 AGM9022 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 1 2 22 1 1 1 2	% v/v fl oz/a qt/a pt/a % v/v fl oz/a qt/a pt/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C C	19.0	20.9	278	5840
3 3 3 3 3 3 3	Roundup PowerMax Class Act NG Roundup PowerMax AGM8005 Class Act NG Roundup PowerMax AGM8005 Class Act NG	4.5	SL L SL L SL L	22 2 22 3.2 2 22 3.2 2	% v/v fl oz/a fl oz/a % v/v fl oz/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	С	19.5	20.1	283	5675
4 4 4 4 4 4 4 4	Roundup PowerMax Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG Roundup PowerMax AGM6018 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2 2	% v/v fl oz/a qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	C	19.1	19.5	278	5413
5 5 5 5 5 5 5 5 5	Roundup PowerMax Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG Roundup PowerMax AGM9022 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a pt/a fl oz/a % v/v fl oz/a pt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	B C C C	19.1	20.4	278	6192
6 6 6 6 6 6 6 6	Roundup PowerMax Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG Roundup PowerMax AGM9026 AGM8005 Class Act NG	4.5	SL L SL L L SL L	22 2 22 1 3.2 2 22 1 3.2 2	% v/v fl oz/a qt/a fl oz/a % v/v fl oz/a qt/a fl oz/a	2-leaf 2-leaf 6-leaf 6-leaf 6-leaf 10-leaf 10-leaf 10-leaf	B C C C	19.5	20.1	284	5710

## MSU Weed Science Research Program

Interaction of glyphosate and micronutrients in Roundup Ready sugarbeet

Study Dir.: Sprague, Powell Investigator: Christy Sprague Trial ID: SB04-11 Conducted: SVREC

Weed Code

Rati	p Code ng Data Type ng Unit							BETVU % sugar	BETVU yield ton/acre	BETVU RWST # / ton	BETVU RWSA #/acre
	ng Date							9/15/2011	9/15/2011		
	Eval Interval							108 DA-A	108 DA-A	108 DA-A	108 DA-A
# St	ubsamples, Dec.							1	1	0	0
Trt	Treatment		Form		Rate	Grow	Appl				
No.	Name	Conc	Type	Rate	Unit	Stg	Code				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	Α	19.0	20.7	274	5675
7	Class Act NG		L	2	% v/v	2-leaf	Α				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	В				
7	AGM9026		L	1	qt/a	6-leaf	В				
7	AGM9022		L	1	pt/a	6-leaf	В				
7	AGM8005		L	3.2	fl oz/a		В				
7	Class Act NG		L	2		6-leaf	В				
7	Roundup PowerMax	4.5	SL	22		10-leaf					
7	AGM9026		L	1	qt/a	10-leaf	_				
7 7	AGM9022 AGM8005		F	1 3.2	pt/a	10-leaf 10-leaf	-				
7	Class Act NG		L	3.2 2	11 02/a % v/v		_				
,	Class Acting		L	2	70 V/V	10-leai	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	Α	19.6	20.2	288	5811
8	Class Act NG		L	2		2-leaf	Α				
8	Roundup PowerMax	4.5	SL	22	fl oz/a		В				
8	Class Act NG		L	2		6-leaf	В				
8	Roundup PowerMax	4.5	SL	22		10-leaf	_				
8	AGM9026		L	1	qt/a	10-leaf	_				
8	AGM9022		Ŀ	1	pt/a	10-leaf	_				
8	AGM8005		Ŀ	3.2		10-leaf	-				
8	Class Act NG		L	2	% v/v	10-leaf	C				
LSD	) (P=.05)							0.69	3.62	11.4	714.2
Star	ndard Deviation							0.47	2.46	7.7	482.6
CV								2.43	12.11	2.75	8.27

Means followed by same letter do not significantly differ (P=.05, LSD) Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.