

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: 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

Table with 4 columns: Weed, Code, Common Name, Scientific Name. Lists weeds 1-3 and crop 1.

Application Description

Table with 4 columns: Application Timing, Date Treated, Time Treated, % Cloud Cover, Air Temp., Unit, % Relative Humidity, Wind Speed/Unit/Dir, Soil Temp., Unit, Soil/Leaf Surface M, Soil Moist (1=w 5=d).

Crop Stage at Each Application

Table with 4 columns: Crop Name, Height (In.), Stage (L).

Weed Stage at Each Application

Table with 4 columns: Weed Name, Height (In.), Stage (L).

Application Equipment

Table with 11 columns: Appl, Sprayer Type, Speed MPH, Nozzle Type, Nozzle Size, Nozzle Height, Nozzle Spacing, Boom Width, GPA, Carrier, PSI.

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Weed Code								CHEAL	AMAPO	POLPY	CHEAL		
Crop Code								BETVU			BETVU		
Rating Data Type								injury	control	control	control	injury	control
Rating Unit								percent	percent	percent	percent	percent	
Rating Date								6/14/2011	6/14/2011	6/14/2011	6/14/2011	6/25/2011	6/25/2011
Trt-Eval Interval								15 DA-A	15 DA-A	15 DA-A	15 DA-A	26 DA-A	26 DA-A
# Subsamples, Dec.								0	0	0	0	0	0
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-leaf	A	0	99	99	98	0	99
1	Class Act NG		L	2	% v/v	2-leaf	A						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
1	Class Act NG		L	2	% v/v	6-leaf	B						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
1	Class Act NG		L	2	% v/v	10-leaf	C						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
2	Class Act NG		L	2	% v/v	2-leaf	A						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
2	AGM9026		L	1	qt/a	6-leaf	B						
2	AGM9022		L	1	pt/a	6-leaf	B						
2	Class Act NG		L	2	% v/v	6-leaf	B						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
2	AGM9026		L	1	qt/a	10-leaf	C						
2	AGM9022		L	1	pt/a	10-leaf	C						
2	Class Act NG		L	2	% v/v	10-leaf	C						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
3	Class Act NG		L	2	% v/v	2-leaf	A						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
3	AGM8005		L	3.2	fl oz/a	6-leaf	B						
3	Class Act NG		L	2	% v/v	6-leaf	B						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
3	AGM8005		L	3.2	fl oz/a	10-leaf	C						
3	Class Act NG		L	2	% v/v	10-leaf	C						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
4	Class Act NG		L	2	% v/v	2-leaf	A						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
4	AGM6018		L	1	qt/a	6-leaf	B						
4	AGM8005		L	3.2	fl oz/a	6-leaf	B						
4	Class Act NG		L	2	% v/v	6-leaf	B						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
4	AGM6018		L	1	qt/a	10-leaf	C						
4	AGM8005		L	3.2	fl oz/a	10-leaf	C						
4	Class Act NG		L	2	% v/v	10-leaf	C						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
5	Class Act NG		L	2	% v/v	2-leaf	A						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
5	AGM9022		L	1	pt/a	6-leaf	B						
5	AGM8005		L	3.2	fl oz/a	6-leaf	B						
5	Class Act NG		L	2	% v/v	6-leaf	B						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
5	AGM9022		L	1	pt/a	10-leaf	C						
5	AGM8005		L	3.2	fl oz/a	10-leaf	C						
5	Class Act NG		L	2	% v/v	10-leaf	C						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
6	Class Act NG		L	2	% v/v	2-leaf	A						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
6	AGM9026		L	1	qt/a	6-leaf	B						
6	AGM8005		L	3.2	fl oz/a	6-leaf	B						
6	Class Act NG		L	2	% v/v	6-leaf	B						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
6	AGM9026		L	1	qt/a	10-leaf	C						
6	AGM8005		L	3.2	fl oz/a	10-leaf	C						
6	Class Act NG		L	2	% v/v	10-leaf	C						

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								CHEAL	AMAPO	POLPY	CHEAL		
								BETVU			BETVU		
								injury	control	control	control	injury	control
								percent	percent	percent	percent	percent	percent
								6/14/2011	6/14/2011	6/14/2011	6/14/2011	6/25/2011	6/25/2011
								15 DA-A	15 DA-A	15 DA-A	15 DA-A	26 DA-A	26 DA-A
								0	0	0	0	0	0
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-leaf	A	0	99	99	99	0	99
7	Class Act NG		L	2	% v/v	2-leaf	A						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
7	AGM9026		L	1	qt/a	6-leaf	B						
7	AGM9022		L	1	pt/a	6-leaf	B						
7	AGM8005		L	3.2	fl oz/a	6-leaf	B						
7	Class Act NG		L	2	% v/v	6-leaf	B						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
7	AGM9026		L	1	qt/a	10-leaf	C						
7	AGM9022		L	1	pt/a	10-leaf	C						
7	AGM8005		L	3.2	fl oz/a	10-leaf	C						
7	Class Act NG		L	2	% v/v	10-leaf	C						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	0	99	99	99	0	99
8	Class Act NG		L	2	% v/v	2-leaf	A						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
8	Class Act NG		L	2	% v/v	6-leaf	B						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
8	AGM9026		L	1	qt/a	10-leaf	C						
8	AGM9022		L	1	pt/a	10-leaf	C						
8	AGM8005		L	3.2	fl oz/a	10-leaf	C						
8	Class Act NG		L	2	% v/v	10-leaf	C						
LSD (P=.05)								0.0	0.0	0.5	1.2	0.0	0.0
Standard Deviation								0.0	0.0	0.4	0.8	0.0	0.0
CV								0.0	0.0	0.36	0.84	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.

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Weed Code								AMAPO	POLPY	CHEAL	AMAPO	POLPY	BETVU
Crop Code													count
Rating Data Type								control	control	control	control	control	100' row
Rating Unit								percent	percent	percent	percent	percent	9/15/2011
Rating Date								6/25/2011	6/25/2011	7/14/2011	7/14/2011	7/14/2011	108 DA-A
Trt-Eval Interval								26 DA-A	26 DA-A	45 DA-A	45 DA-A	45 DA-A	108 DA-A
# Subsamples, Dec.								0	0	0	0	0	0
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-leaf	A	99	99	99	99	99	227
1	Class Act NG		L	2	% v/v	2-leaf	A						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
1	Class Act NG		L	2	% v/v	6-leaf	B						
1	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
1	Class Act NG		L	2	% v/v	10-leaf	C						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	220
2	Class Act NG		L	2	% v/v	2-leaf	A						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
2	AGM9026		L	1	qt/a	6-leaf	B						
2	AGM9022		L	1	pt/a	6-leaf	B						
2	Class Act NG		L	2	% v/v	6-leaf	B						
2	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
2	AGM9026		L	1	qt/a	10-leaf	C						
2	AGM9022		L	1	pt/a	10-leaf	C						
2	Class Act NG		L	2	% v/v	10-leaf	C						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	219
3	Class Act NG		L	2	% v/v	2-leaf	A						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
3	AGM8005		L	3.2	fl oz/a	6-leaf	B						
3	Class Act NG		L	2	% v/v	6-leaf	B						
3	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
3	AGM8005		L	3.2	fl oz/a	10-leaf	C						
3	Class Act NG		L	2	% v/v	10-leaf	C						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	240
4	Class Act NG		L	2	% v/v	2-leaf	A						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
4	AGM6018		L	1	qt/a	6-leaf	B						
4	AGM8005		L	3.2	fl oz/a	6-leaf	B						
4	Class Act NG		L	2	% v/v	6-leaf	B						
4	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
4	AGM6018		L	1	qt/a	10-leaf	C						
4	AGM8005		L	3.2	fl oz/a	10-leaf	C						
4	Class Act NG		L	2	% v/v	10-leaf	C						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	215
5	Class Act NG		L	2	% v/v	2-leaf	A						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
5	AGM9022		L	1	pt/a	6-leaf	B						
5	AGM8005		L	3.2	fl oz/a	6-leaf	B						
5	Class Act NG		L	2	% v/v	6-leaf	B						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
5	AGM9022		L	1	pt/a	10-leaf	C						
5	AGM8005		L	3.2	fl oz/a	10-leaf	C						
5	Class Act NG		L	2	% v/v	10-leaf	C						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	229
6	Class Act NG		L	2	% v/v	2-leaf	A						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
6	AGM9026		L	1	qt/a	6-leaf	B						
6	AGM8005		L	3.2	fl oz/a	6-leaf	B						
6	Class Act NG		L	2	% v/v	6-leaf	B						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
6	AGM9026		L	1	qt/a	10-leaf	C						
6	AGM8005		L	3.2	fl oz/a	10-leaf	C						
6	Class Act NG		L	2	% v/v	10-leaf	C						

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								AMAPO	POLPY	CHEAL	AMAPO	POLPY	BETVU
								control	control	control	control	control	count
Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	# Subsamples, Dec.		percent	percent	percent	percent	percent	100' row
								6/25/2011	6/25/2011	7/14/2011	7/14/2011	7/14/2011	9/15/2011
								26 DA-A	26 DA-A	45 DA-A	45 DA-A	45 DA-A	108 DA-A
								0	0	0	0	0	0
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-leaf	A	98	99	99	99	99	225
7	Class Act NG		L	2	% v/v	2-leaf	A						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
7	AGM9026		L	1	qt/a	6-leaf	B						
7	AGM9022		L	1	pt/a	6-leaf	B						
7	AGM8005		L	3.2	fl oz/a	6-leaf	B						
7	Class Act NG		L	2	% v/v	6-leaf	B						
7	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
7	AGM9026		L	1	qt/a	10-leaf	C						
7	AGM9022		L	1	pt/a	10-leaf	C						
7	AGM8005		L	3.2	fl oz/a	10-leaf	C						
7	Class Act NG		L	2	% v/v	10-leaf	C						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	99	99	99	99	99	215
8	Class Act NG		L	2	% v/v	2-leaf	A						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B						
8	Class Act NG		L	2	% v/v	6-leaf	B						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C						
8	AGM9026		L	1	qt/a	10-leaf	C						
8	AGM9022		L	1	pt/a	10-leaf	C						
8	AGM8005		L	3.2	fl oz/a	10-leaf	C						
8	Class Act NG		L	2	% v/v	10-leaf	C						
LSD (P=.05)								1.0	0.0	0.0	0.0	0.0	17.0
Standard Deviation								0.7	0.0	0.0	0.0	0.0	11.5
CV								0.72	0.0	0.0	0.0	0.0	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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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

Subsamples, Dec.

BETVU % sugar	BETVU yield ton/acre	BETVU RWST # / ton	BETVU RWSA # / acre
9/15/2011	9/15/2011	9/15/2011	9/15/2011
108 DA-A	108 DA-A	108 DA-A	108 DA-A
1	1	0	0

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-leaf	A	19.4	20.8	286	6362
1	Class Act NG		L	2	% v/v	2-leaf	A				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
1	Class Act NG		L	2	% v/v	6-leaf	B				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
1	Class Act NG		L	2	% v/v	10-leaf	C				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.0	20.9	278	5840
2	Class Act NG		L	2	% v/v	2-leaf	A				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
2	AGM9026		L	1	qt/a	6-leaf	B				
2	AGM9022		L	1	pt/a	6-leaf	B				
2	Class Act NG		L	2	% v/v	6-leaf	B				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
2	AGM9026		L	1	qt/a	10-leaf	C				
2	AGM9022		L	1	pt/a	10-leaf	C				
2	Class Act NG		L	2	% v/v	10-leaf	C				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.5	20.1	283	5675
3	Class Act NG		L	2	% v/v	2-leaf	A				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
3	AGM8005		L	3.2	fl oz/a	6-leaf	B				
3	Class Act NG		L	2	% v/v	6-leaf	B				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
3	AGM8005		L	3.2	fl oz/a	10-leaf	C				
3	Class Act NG		L	2	% v/v	10-leaf	C				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.1	19.5	278	5413
4	Class Act NG		L	2	% v/v	2-leaf	A				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
4	AGM6018		L	1	qt/a	6-leaf	B				
4	AGM8005		L	3.2	fl oz/a	6-leaf	B				
4	Class Act NG		L	2	% v/v	6-leaf	B				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
4	AGM6018		L	1	qt/a	10-leaf	C				
4	AGM8005		L	3.2	fl oz/a	10-leaf	C				
4	Class Act NG		L	2	% v/v	10-leaf	C				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.1	20.4	278	6192
5	Class Act NG		L	2	% v/v	2-leaf	A				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
5	AGM9022		L	1	pt/a	6-leaf	B				
5	AGM8005		L	3.2	fl oz/a	6-leaf	B				
5	Class Act NG		L	2	% v/v	6-leaf	B				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
5	AGM9022		L	1	pt/a	10-leaf	C				
5	AGM8005		L	3.2	fl oz/a	10-leaf	C				
5	Class Act NG		L	2	% v/v	10-leaf	C				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.5	20.1	284	5710
6	Class Act NG		L	2	% v/v	2-leaf	A				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
6	AGM9026		L	1	qt/a	6-leaf	B				
6	AGM8005		L	3.2	fl oz/a	6-leaf	B				
6	Class Act NG		L	2	% v/v	6-leaf	B				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
6	AGM9026		L	1	qt/a	10-leaf	C				
6	AGM8005		L	3.2	fl oz/a	10-leaf	C				
6	Class Act NG		L	2	% v/v	10-leaf	C				

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Weed Code

Crop Code	BETVU	BETVU	BETVU	BETVU
Rating Data Type	% sugar	yield	RWST	RWSA
Rating Unit		ton/acre	# / ton	# / acre
Rating Date	9/15/2011	9/15/2011	9/15/2011	9/15/2011
Trt-Eval Interval	108 DA-A	108 DA-A	108 DA-A	108 DA-A
# Subsamples, Dec.	1	1	0	0

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-leaf	A	19.0	20.7	274	5675
7	Class Act NG		L	2	% v/v	2-leaf	A				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
7	AGM9026		L	1	qt/a	6-leaf	B				
7	AGM9022		L	1	pt/a	6-leaf	B				
7	AGM8005		L	3.2	fl oz/a	6-leaf	B				
7	Class Act NG		L	2	% v/v	6-leaf	B				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
7	AGM9026		L	1	qt/a	10-leaf	C				
7	AGM9022		L	1	pt/a	10-leaf	C				
7	AGM8005		L	3.2	fl oz/a	10-leaf	C				
7	Class Act NG		L	2	% v/v	10-leaf	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A	19.6	20.2	288	5811
8	Class Act NG		L	2	% v/v	2-leaf	A				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	B				
8	Class Act NG		L	2	% v/v	6-leaf	B				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	10-leaf	C				
8	AGM9026		L	1	qt/a	10-leaf	C				
8	AGM9022		L	1	pt/a	10-leaf	C				
8	AGM8005		L	3.2	fl oz/a	10-leaf	C				
8	Class Act NG		L	2	% v/v	10-leaf	C				

LSD (P=.05)	0.69	3.62	11.4	714.2
Standard 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.