

MSU Weed Science Research Program

Impact of micronutrients and glyphosate on soybean yield

Trial ID: SOY14-14

Study Dir.: Sprague and Powell

Conducted: Campus T-15

Investigator: Christy Sprague

Date Planted: May/19/2014 **Row Spacing:** 30 IN
Variety: Asgrow 2433 RR **No. of Reps:** 4
Population: 150,000 seeds/A **% OM:** 3.2
Soil Type: Loam **pH:** 6.5
Plot Size: 10 X 35 FT **Design:** RANDOMIZED COMPLETE BLOCK

Tillage: Fall chisel plow, spring soil finish.
Fertilizer: None

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	ANGR	mainly foxtail species	SETARIA SP.
2.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
3.	AMAPO	AMARANTH, POWELL	AMARANTHUS POWELLII S.WATS.
4.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI MEDIK.
Crop	Code	Common Name	
1.	GLXMA	SOYBEAN	

Application Description

	A	B
Application Timing:	POST	V4
Date Treated:	Jun/14/2014	Jun/27/2014
Time Treated:	12:00 PM	4:45 PM
% Cloud Cover:	0	40
Air Temp., Unit:	65 F	89 F
% Relative Humidity:	47	50
Wind Speed/Unit/Dir:	3 mph NW	2 mph S
Soil Temp., Unit:	58 F	70 F
Soil/Leaf Surface M:	5 5	4 5
Soil Moist (1=w 5=d):	5	3

Crop Stage at Each Application

	A	B
Crop Name:	GLXMA	GLXMA
Height (In.):	6"	16"
Stage (L):	V2	V4

Weed Stage at Each Application

	A	B
Weed 1 Name:	ANGR	ANGR
Height (In.):	1-3"	10"
Stage (L):	3-6	many
Weed 2 Name:	CHEAL	CHEAL
Height (In.):	1-3"	2-13"
Stage (L):	6-14	8-many
Weed 3 Name:	AMAPO	AMAPO
Height (In.):	2"	6-8"
Stage (L):	6	15-many
Weed 4 Name:	ABUTH	ABUTH
Height (In.):	1-2"	3-7"
Stage (L):	1-3	4-7

Application Equipment

App	Sprayer Type	Speed MPH	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	GPA	Carrier	PSI
A	Cub	3.8	AIXR	11003	25"	20"	100"	19	Water	30
B	Cub	3.8	AIXR	11003	29"	20"	100"	19	Water	30

Comments: 5/19/14 - A broadcast treatment of Boundary 1.5 pt/A was applied PRE. Greenness scale: -10 to +10. Soil nutrient levels prior to planting.

SOIL NUTRIENT LEVELS		Below Optimum	Optimum	Above Optimum
¹ Soil pH	6.4			
	Lime Index 69.0			
² Phosphorus (P)	39 ppm	████████████████████	████████████████████	████████████████████
³ Potassium (K)	112 ppm	████████████████████	████████████████████	
³ Magnesium (Mg)	230 ppm	████████████████████	████████████████████	████████████████████

ADDITIONAL RESULTS:					Optional Tests:						
Calcium (Ca) (ppm)	CEC (meq/100 g)	% of Exchangeable Bases			Micronutrients (ppm)					Organic Matter %	Nitrate-N ppm
		K	Mg	Ca	B	Cu	Mn	Zn	Fe		
1256	9.7	3.4	22.6	74.0			20.4	3.1			

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Weed Code										ANGR	CHEAL
Crop Code											
Rating Data Type										control	control
Rating Unit										percent	percent
Rating Date										Jun/27/2014	Jun/27/2014
Trt-Eval Interval										13 DA-A	13 DA-A
# Subsamples, Dec.											

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code					
1	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	2	-1	99	99	
1	N-Tank		L	0.5	% v/v	V2	A					
2	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	2	-1	99	99	
2	BB141		L	1	qt/a	V2	A					
2	N-Tank		L	0.5	% v/v	V2	A					
3	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	2	-1	99	99	
3	BB142		L	1	qt/a	V2	A					
3	N-Tank		L	0.5	% v/v	V2	A					
4	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	0	0	91	73	
4	N-Tank		L	0.5	% v/v	V4	B					
5	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	0	0	90	69	
5	BB141		L	1	qt/a	V4	B					
5	N-Tank		L	0.5	% v/v	V4	B					
6	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	0	0	88	74	
6	BB142		L	1	qt/a	V4	B					
6	N-Tank		L	0.5	% v/v	V4	B					
LSD (P=.05)									2.3	1.2	13.4	10.1
CV									154.92	0.0	9.47	7.84

Means followed by same letter do not significantly differ (P=.05, LSD)

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Weed Code	AMAPO	ABUTH	GLXMA	GLXMA	ANGR
Crop Code					
Rating Data Type	control	control	injury	greenness	control
Rating Unit	percent	percent	percent	-10 +10	percent
Rating Date	Jun/27/2014	Jun/27/2014	Jul/11/2014	Jul/11/2014	Jul/11/2014
Trt-Eval Interval	13 DA-A	13 DA-A	14 DA-B	14 DA-B	14 DA-B
# Subsamples, Dec.					

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	AMAPO	ABUTH	GLXMA injury	GLXMA greenness	ANGR control
1	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	1	-1	99
1	N-Tank		L	0.5	% v/v	V2	A					
2	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	98	1	-1	99
2	BB141		L	1	qt/a	V2	A					
2	N-Tank		L	0.5	% v/v	V2	A					
3	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	0	0	99
3	BB142		L	1	qt/a	V2	A					
3	N-Tank		L	0.5	% v/v	V2	A					
4	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	90	77	0	0	99
4	N-Tank		L	0.5	% v/v	V4	B					
5	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	87	79	0	0	99
5	BB141		L	1	qt/a	V4	B					
5	N-Tank		L	0.5	% v/v	V4	B					
6	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	90	87	0	0	99
6	BB142		L	1	qt/a	V4	B					
6	N-Tank		L	0.5	% v/v	V4	B					
LSD (P=.05)								13.7	19.9	1.2	1.2	0.6
CV								9.66	14.73	309.84	0.0	0.41

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Weed Code	CHEAL	AMAPO	ABUTH	GLXMA	GLXMA
Crop Code				injury	greenness
Rating Data Type	control	control	control	percent	-10 +10
Rating Unit	percent	percent	percent	percent	
Rating Date	Jul/11/2014	Jul/11/2014	Jul/11/2014	Jul/25/2014	Jul/25/2014
Trt-Eval Interval	14 DA-B	14 DA-B	14 DA-B	28 DA-B	28 DA-B
# Subsamples, Dec.					

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	CHEAL	AMAPO	ABUTH	GLXMA injury	GLXMA greenness
1	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	97	0	0
1	N-Tank		L	0.5	% v/v	V2	A					
2	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	96	0	0
2	BB141		L	1	qt/a	V2	A					
2	N-Tank		L	0.5	% v/v	V2	A					
3	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	99	0	0
3	BB142		L	1	qt/a	V2	A					
3	N-Tank		L	0.5	% v/v	V2	A					
4	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	0	0
4	N-Tank		L	0.5	% v/v	V4	B					
5	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	0	0
5	BB141		L	1	qt/a	V4	B					
5	N-Tank		L	0.5	% v/v	V4	B					
6	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	0	0
6	BB142		L	1	qt/a	V4	B					
6	N-Tank		L	0.5	% v/v	V4	B					
LSD (P=.05)								0.6	0.3	3.4	0.0	0.0
CV								0.41	0.21	2.32	0.0	0.0

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Weed Code	ANGR	CHEAL	AMAPO	ABUTH	GLXMA
Crop Code					
Rating Data Type	control	control	control	control	moisture
Rating Unit	percent	percent	percent	percent	percent
Rating Date	Jul/25/2014	Jul/25/2014	Jul/25/2014	Jul/25/2014	Oct/09/2014
Trt-Eval Interval	28 DA-B	28 DA-B	28 DA-B	28 DA-B	104 DA-B
# Subsamples, Dec.					

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code					
1	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	99	99	14.9
1	N-Tank		L	0.5	% v/v	V2	A					
2	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	99	99	14.8
2	BB141		L	1	qt/a	V2	A					
2	N-Tank		L	0.5	% v/v	V2	A					
3	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	99	99	99	99	14.7
3	BB142		L	1	qt/a	V2	A					
3	N-Tank		L	0.5	% v/v	V2	A					
4	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	99	15.2
4	N-Tank		L	0.5	% v/v	V4	B					
5	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	99	14.9
5	BB141		L	1	qt/a	V4	B					
5	N-Tank		L	0.5	% v/v	V4	B					
6	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	99	99	99	99	14.4
6	BB142		L	1	qt/a	V4	B					
6	N-Tank		L	0.5	% v/v	V4	B					
LSD (P=.05)								0.0	0.0	0.0	0.0	0.71
CV								0.0	0.0	0.0	0.0	3.19

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Weed Code
 Crop Code
 Rating Data Type
 Rating Unit
 Rating Date
 Trt-Eval Interval
 # Subsamples, Dec.

GLXMA
 yield
 bu/acre
 Oct/09/2014
 at 13% M

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	
1	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	73.4
1	N-Tank		L	0.5	% v/v	V2	A	
2	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	72.2
2	BB141		L	1	qt/a	V2	A	
2	N-Tank		L	0.5	% v/v	V2	A	
3	Roundup PowerMax	4.5	SL	32	fl oz/a	V2	A	73.9
3	BB142		L	1	qt/a	V2	A	
3	N-Tank		L	0.5	% v/v	V2	A	
4	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	71.2
4	N-Tank		L	0.5	% v/v	V4	B	
5	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	76.3
5	BB141		L	1	qt/a	V4	B	
5	N-Tank		L	0.5	% v/v	V4	B	
6	Roundup PowerMax	4.5	SL	32	fl oz/a	V4	B	76.5
6	BB142		L	1	qt/a	V4	B	
6	N-Tank		L	0.5	% v/v	V4	B	
LSD (P=.05)								8.01
CV								7.19

Means followed by same letter do not significantly differ (P=.05, LSD)