

# Purdue University

## Soybean yield response to off-target Status drift

Trial ID: 09S-THP-CTS-41      Protocol ID: 09S-THP-CTS-41  
 Location: Throckmorton      Study Director: Paul Marquardt/Melissa Kruger  
 Project ID:      Investigator: Dr. Bill Johnson  
 Sponsor Contact: Gery Welker

### General Trial Information

**Study Director:** Paul Marquardt/Melissa Kruger      **Title:** Research Associate  
**Investigator:** Dr. Bill Johnson      **Title:** Professor

**Discipline:** H herbicide  
**Trial Status:** E established  
**Initiation Date:** 5/12/09

### Trial Location

**City:** West Lafayette  
**State/Prov.:** IN  
**Postal Code:** 47907  
**Country:** USA      United States  
**Directions:**  
 TPAC Field 4B

### Objectives:

Soybean yield response to off-target Status drift

### Personnel

**Study Director:** Paul Marquardt/Melissa Kruger      **Title:** Research Associate  
**Affiliation:** Purdue University  
**Address:** 915 W. State Street, Department of Botany & Plant Path.  
**Location:** West Lafayette, IN  
**Postal Code:** 47907      **E-mail:** pmarquar@purdue.edu/mmkruger@purdue.edu  
**Phone No.:** 765-494-4621      **Mobile No.:** 765-409-6369  
**Investigator:** Dr. Bill Johnson      **Title:** Professor  
**Affiliation:** Purdue University  
**Address:** 915 W. State Street, Department of Botany & Plant Path.  
**Location:** West Lafayette, IN  
**Postal Code:** 47907      **E-mail:** wgj@purdue.edu

### Cooperator/Landowner

**Cooperator:** Throckmorton Purdue Ag Center      **Role:** Farm Manager  
**Organization:** Purdue University  
**Address 1:** 8343 US 231 South  
**City:** Lafayette  
**State/Prov:** Indiana      **Phone No.:** 765-538-3422  
**Postal Code:** 47909      **Fax No.:** 765-538-3423  
**Country:** USA      United States      **E-mail:** jayyoung@purdue.edu

### Crop Description

**Crop 1:** GLXMA      Glycine max      Soybean  
**Variety:** P93M61      **Description:** roundup ready  
**BBCH Scale:** BSOY      **Planting Date:** 5/12/09  
**Planting Method:** SEEDED      seeded      **Rate, Unit:** 160000 P/A  
**Depth, Unit:** 1      IN  
**Row Spacing, Unit:** 15      IN      **Spacing Within Row, Unit:** 2.5      IN  
**Seed Bed:** CLOTRA      cloddy/trashy      **Soil Temperature, Unit:** 64      F  
**Soil Moisture:** ABONOR      above normal  
**Harvested Width, Unit:** 10      FT      **Harvested Length, Unit:** 25      FT

### Pest Description

**Pest 1 Type:** W      **Code:** SETFA      *Setaria faberi*  
**Common Name:** Giant foxtail

**Pest 2 Type:** W      **Code:** AMBTR      *Ambrosia trifida*  
**Common Name:** Giant ragweed

**Pest 3 Type:** W      **Code:** IPOHE      *Ipomoea hederacea*  
**Common Name:** Ivyleaf morningglory

**Pest 4 Type:** W      **Code:** SOLPT      *Solanum ptycanthum*  
**Common Name:** Eastern black nightshade

**Pest 5 Type:** W      **Code:** IPOSS      *Ipomoea sp.*  
**Common Name:** Morning glory

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## Site and Design

**Plot Width, Unit:** 10 FT  
**Plot Length, Unit:** 30 FT  
**Plot Area, Unit:** 300 FT<sup>2</sup>  
**Replications:** 4

**Site Type:** FIELD field  
**Experimental Unit:** 1 PLOT plot  
**Tillage Type:** NOTILL no-till  
**Study Design:** RACOB L Randomized Complete Block (RCB)

## Soil Description

**Description Name:** Silty Loam  
**% OM:** 3.1  
**pH:** 6  
**CEC:** 11.1

**Texture:** SIL silt loam  
**Soil Name:** Tornonto-Millbrook

### Analyzed By:

A&L Great Lakes Laboratories, Inc. Report #: F04048-0006

### Additional Measured Elements

Element	Quantity	Unit
P	53	ppm
K	208	ppm
Mg	325	ppm
Ca	1100	ppm

### Application Description

	A	B	C
<b>Application Date:</b>	5/12/09	6/18/09	7/10/09
<b>Time of Day:</b>	4:00-:30		6:10A
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	PREPRE	EAPOWE	LAPOWE
<b>Application Placement:</b>	BROSOL	BROFOL	BROFOL
<b>Applied By:</b>	AR	MH	PM
<b>Air Temperature, Unit:</b>	74 F	80 F	66 F
<b>% Relative Humidity:</b>	34	76	86
<b>Wind Velocity, Unit:</b>	7 MPH	2.5 MPH	1.5 MPH
<b>Wind Direction:</b>	SSE	W	SE
<b>Dew Presence (Y/N):</b>	N no	N no	Y yes
<b>Soil Temperature, Unit:</b>	64 F	74 F	69 F
<b>Soil Moisture:</b>	Moist	Wet	Moist
<b>% Cloud Cover:</b>	10	40	85

### Crop Stage At Each Application

	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
<b>Stage Scale Used:</b>		BBCH	BBCH
<b>Stage Majority, Percent:</b>		12	65 90
<b>Stage Minimum, Percent:</b>			61 10
<b>Stage Maximum, Percent:</b>			65 90
<b>Height, Unit:</b>		5 IN	14 IN
<b>Height Minimum, Maximum:</b>		4 6	10 18

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Pest Stage At Each Application			
	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	SETFA W	SETFA W	SETFA W
<b>Stage Minimum, Percent:</b>		22	22
<b>Stage Maximum, Percent:</b>		26	26
<b>Height, Unit:</b>		2.5 IN	2.5 IN
<b>Height Minimum, Maximum:</b>		0 5	0 5
<b>Density, Unit:</b>		87.5 YD2	87.5 YD2
<b>Pest 2 Code, Type, Scale:</b>	AMBTR W	AMBTR W	AMBTR W
<b>Stage Minimum, Percent:</b>		22	22
<b>Stage Maximum, Percent:</b>		25	25
<b>Height, Unit:</b>		4 IN	4 IN
<b>Height Minimum, Maximum:</b>		0 8	0 8
<b>Density, Unit:</b>		2.5 YD2	2.5 YD2
<b>Pest 3 Code, Type, Scale:</b>	IPOHE W	IPOHE W	IPOHE W
<b>Stage Minimum, Percent:</b>		11	
<b>Stage Maximum, Percent:</b>		12	
<b>Height, Unit:</b>		2.5 IN	
<b>Height Minimum, Maximum:</b>		1 4	
<b>Density, Unit:</b>		1 YD2	
<b>Pest 4 Code, Type, Scale:</b>	SOLPT W	SOLPT W	SOLPT W
<b>Stage Minimum, Percent:</b>		32	
<b>Stage Maximum, Percent:</b>		33	
<b>Height, Unit:</b>		1.5 IN	
<b>Height Minimum, Maximum:</b>		1 2	
<b>Density, Unit:</b>		2.5 YD2	
<b>Pest 5 Code, Type, Scale:</b>	IPOSS W	IPOSS W	IPOSS W
<b>Stage Minimum, Percent:</b>			11
<b>Stage Maximum, Percent:</b>			12
<b>Height, Unit:</b>			2 IN
<b>Height Minimum, Maximum:</b>			1 3
<b>Density, Unit:</b>			1 YD2

Application Equipment			
	A	B	C
<b>Appl. Equipment:</b>	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK
<b>Equipment Type:</b>	SPRBAC	SPRBAC	SPRBAC
<b>Operating Pressure, Unit:</b>	17 psi	17 psi	17 psi
<b>Nozzle Type:</b>	FLAT FAN	FLAT FAN	FLAT FAN
<b>Nozzle Size:</b>	XR11002	XR11002	XR11002
<b>Nozzle Spacing, Unit:</b>	15 IN	15 IN	15 IN
<b>Nozzles/Row:</b>	8	8	8
<b>Boom Length, Unit:</b>	10 FT	10 FT	10 FT
<b>Boom Height, Unit:</b>	18 IN	18 IN	18 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH	3 MPH
<b>Carrier:</b>	H2O	H2O	H2O
<b>Water Hardness (ppm CaCO3):</b>	150	150	150
<b>Spray Volume, Unit:</b>	15 gal/ac	15 gal/ac	15 gal/ac
<b>Mix Size, Unit:</b>	1.8 liters	1.8 liters	1.8 liters
<b>Propellant:</b>	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>	N no	N no	N no

Date	By	Notes
5/12/09	PM	Blanket of Canopy DF @ 3.5 oz/a over entire trial to control weed pressure during trial.

No.	Date	By	Deviations
	1.5/12/09	PM	NO-till instead of conventional tillage.
<b>Reasons:</b> Wet soil and high residue forced us to abandon tillage and plant when field dried.			

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 Project ID:      Investigator: Dr. Bill Johnson  
 Sponsor Contact: Gery Welker

Pest Type		W Weed SETFA	W Weed AMBTR		W Weed SETFA	W Weed AMBTR				
Pest Code		Setaria faberi	Ambrosia trifi>		Setaria faberi	Ambrosia trifi>				
Pest Scientific Name		Giant foxtail	Giant ragweed		Giant foxtail	Giant ragweed				
Pest Name										
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA				
BBCH Scale	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY				
Crop Scientific Name	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max				
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean				
Crop Variety	P93M61	P93M61	P93M61	P93M61	P93M61	P93M61				
Description	16-24"	16-24"	16-24"	30-36"	30-36"	30-36"				
Rating Date	7/20/09	7/20/09	7/20/09	8/6/09	8/6/09	8/6/09				
Rating Type	PHYGEN	CONTR	CONTR	PHYGEN	CONTR	CONTR				
Rating Unit	%	%	%	%	%	%				
Number of Subsamples	1	1	1	1	1	1				
Crop Stage Majority	R2	R2	R2	R4	R4	R4				
Pest Stage Majority		6-28"	10-48"		12-48"	12-72"				
Pest Density, Unit		27.5FT2	5.5 YD2		27.5FT2	5.5 YD2				
Assessed By	MK	MK	MK	PM	PM	PM				
Days After First/Last Applic.	69 10	69 10	69 10	86 27	86 27	86 27				
Plant-Eval Interval	69 DP-1	69 DP-1	69 DP-1	86 DP-1	86 DP-1	86 DP-1				
ARM Action Codes										
Number of Decimals										
Trt No.	Treatment Name	Rate	Unit	Appl Code	1	2	3	4	5	6
1	UNTREATED				0.0 c	0.0 c	0.0 b	0.0 c	0.0 c	0.0 c
2	Status	0.00175 lb ai/a	B		45.0 a	88.8 b	98.8 a	15.0 b	84.5 b	96.3 ab
	Roundup PowerMax	0.77 lb ae/a	B							
	NIS	0.25 % v/v	B							
	Ammonium Sulfate	2 % v/v	B							
3	Status	.000175 lb ai/a	B		1.0 c	87.5 b	88.5 a	0.0 c	82.0 b	86.7 b
	Roundup PowerMax	0.77 lb ae/a	B							
	NIS	0.25 % v/v	B							
	Ammonium Sulfate	2 % v/v	B							
4	Status	.000018 lb ai/a	B		6.5 bc	90.3 b	97.0 a	1.3 c	87.5 ab	96.8 ab
	Roundup PowerMax	0.77 lb ae/a	B							
	NIS	0.25 % v/v	B							
	Ammonium Sulfate	2 % v/v	B							
5	Status	0.00175 lb ai/a	C		18.8 b	99.0 a	94.8 a	23.8 a	97.0 a	99.5 a
	Roundup PowerMax	0.77 lb ae/a	C							
	NIS	0.25 % v/v	C							
	Ammonium Sulfate	2 % v/v	C							
6	Status	.000175 lb ai/a	C		7.5 bc	99.0 a	89.8 a	10.0 bc	100.0 a	100.0 a
	Roundup PowerMax	0.77 lb ae/a	C							
	NIS	0.25 % v/v	C							
	Ammonium Sulfate	2 % v/v	C							
7	Status	.000018 lb ai/a	C		1.3 c	99.5 a	88.8 a	0.0 c	100.0 a	97.5 ab
	Roundup PowerMax	0.77 lb ae/a	C							
	NIS	0.25 % v/v	C							
	Ammonium Sulfate	2 % v/v	C							
8	Roundup PowerMax	0.77 lb ae/a	C		9.5 bc	99.0 a	86.8 a	3.0 c	100.0 a	95.0 ab
	NIS	0.25 % v/v	C							
	Ammonium Sulfate	2 % v/v	C							
9	Canopy	0.164 lb ai/a	A		0.0 c	0.0 c	0.0 b	0.0 c	0.0 c	0.0 c
10	UNTREATED				0.0 c	0.0 c	0.0 b	0.0 c	0.0 c	0.0 c
LSD (P=.05)		9.73			4.48	9.32	8.18	8.90	7.79	
Standard Deviation		6.70			3.08	6.40	5.64	6.13	5.35	
CV		74.9			4.65	9.93	106.34	9.42	7.97	
Bartlett's X2		18.84			14.032	6.288	5.769	4.015	13.554	
P(Bartlett's X2)		0.004*			0.003*	0.392	0.217	0.26	0.019*	
Replicate F		3.214			1.913	0.978	0.502	1.309	1.100	
Replicate Prob(F)		0.0386			0.1513	0.4190	0.6844	0.2918	0.3676	
Treatment F		17.476			888.637	194.619	8.657	219.044	302.017	
Treatment Prob(F)		0.0001			0.0001	0.0001	0.0001	0.0001	0.0001	

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Code	GLXMA	GLXMA	
BBCH Scale	BSOY	BSOY	
Crop Scientific Name	Glycine max	Glycine max	
Crop Name	Soybean	Soybean	
Crop Variety	P93M61	P93M61	
Description			
Rating Date	10/15/09	10/15/09	
Rating Type	YIELD	YIELD	
Rating Unit	LB	BU	
Number of Subsamples	1	1	
Crop Stage Majority	R8	R8	
Pest Stage Majority			
Pest Density, Unit			
Assessed By	PM	PM	
Days After First/Last Applic.	156 97	156 97	
Plant-Eval Interval	156 DP-1	156 DP-1	
ARM Action Codes		TY1	
Number of Decimals		1	
Trt Treatment	Rate	Rate	Appl
No. Name		Unit	Code
			7
			8
1 UNTREATED			16.56 bcd
2 Status	0.00175 lb ai/a B		17.50 a-d
Roundup PowerMax	0.77 lb ae/a B		50.8 a-d
NIS	0.25 % v/v B		
Ammonium Sulfate	2 % v/v B		
3 Status	.000175 lb ai/a B		18.23 a-d
Roundup PowerMax	0.77 lb ae/a B		52.9 a-d
NIS	0.25 % v/v B		
Ammonium Sulfate	2 % v/v B		
4 Status	.000018 lb ai/a B		19.56 abc
Roundup PowerMax	0.77 lb ae/a B		56.8 abc
NIS	0.25 % v/v B		
Ammonium Sulfate	2 % v/v B		
5 Status	0.00175 lb ai/a C		17.96 a-d
Roundup PowerMax	0.77 lb ae/a C		52.1 a-d
NIS	0.25 % v/v C		
Ammonium Sulfate	2 % v/v C		
6 Status	.000175 lb ai/a C		20.78 a
Roundup PowerMax	0.77 lb ae/a C		60.3 a
NIS	0.25 % v/v C		
Ammonium Sulfate	2 % v/v C		
7 Status	.000018 lb ai/a C		21.03 a
Roundup PowerMax	0.77 lb ae/a C		61.1 a
NIS	0.25 % v/v C		
Ammonium Sulfate	2 % v/v C		
8 Roundup PowerMax	0.77 lb ae/a C		19.95 ab
NIS	0.25 % v/v C		57.9 ab
Ammonium Sulfate	2 % v/v C		
9 Canopy	0.164 lb ai/a A		14.99 d
			43.5 d
10 UNTREATED			15.90 cd
			46.2 cd
LSD (P=.05)		2.551	7.41
Standard Deviation		1.744	5.06
CV		9.56	9.56
Bartlett's X2		8.687	8.687
P(Bartlett's X2)		0.467	0.467
Replicate F		8.434	8.433
Replicate Prob(F)		0.0006	0.0006
Treatment F		5.606	5.605
Treatment Prob(F)		0.0004	0.0004

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Project ID:      Investigator: Dr. Bill Johnson  
Sponsor Contact: Gery Welker

Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Pest Code

SETFA, Setaria faberi, = US

AMBTR, Ambrosia trifida, = US

Crop Code

GLXMA, BSOY, Glycine max, = US

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

YIELD = yield

Rating Unit

% = percent

LB = pound

BU = bushel

FT2 = per square foot

YD2 = per square yard

Plant-Eval Interval

69 DP-1 = 1 5/12/09

86 DP-1 = 1 5/12/09

156 DP-1 = 1 5/12/09

ARM Action Codes

TY1 = 2.904\*7