

# Purdue University

## Spitfire Soybean Preplant Intervals and Rainfall

Trial ID: 14S-THP-CTS-47      Protocol ID: 14S-THP-CTS-47  
 Location: Throckmorton      Study Director:  
 Project ID: H 2014 103 IN      Investigator: Dr. Bill Johnson  
 Sponsor Contact: Nufarm - Bob Bruss

### General Trial Information

**Investigator:** Dr. Bill Johnson    **Title:** Professor

**Discipline:** H herbicide

### Trial Location

**City:** Lafayette  
**State/Prov.:** IN  
**Postal Code:** 47909  
**Country:** USA

### Personnel

**Investigator:** Dr. Bill Johnson      **Title:** Professor  
**Affiliation:** Purdue University  
**Address:** 915 W State Street  
**Location:** West Lafayette, IN, USA  
**Postal Code:** 47907      **E-mail:** wj@purdue.edu  
**Phone No.:** 765-494-4656    **Mobile No.:** 765-404-9801

### Cooperator/Landowner

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

### Crop Description

**Crop 1:** GLXMA Glycine max      Soybean  
**Variety:** Asgrow 2933      **Description:** RR2  
**BBCH Scale:** BSOY      **Planting Date:** Jun-26-2014  
**Planting Method:** SEEDED seeded      **Rate, Unit:** 130000 S/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 30 IN  
**Seed Bed:** CLODDY cloddy  
**Soil Moisture:** SLIWET slightly wet, moist      **Emergence Date:** Jul-2-2014

### Pest Description

**Pest 1 Type:** W    **Code:** AMBTR Ambrosia trifida  
**Common Name:** Giant ragweed  
**Pest 2 Type:** W    **Code:** SETFA Setaria faberi  
**Common Name:** Giant foxtail  
**Pest 3 Type:** W    **Code:** IPOHE Ipomoea hederacea  
**Common Name:** Ivyleaf morningglory

### Site and Design

**Plot Width, Unit:** 10 FT      **Site Type:** FIELD field  
**Plot Length, Unit:** 30 FT      **Experimental Unit:** 1 PLOT plot  
**Plot Area, Unit:** 300 FT2      **Tillage Type:** CONTIL conventional-till  
**Replications:** 4      **Study Design:** RACOB� Randomized Complete Block (RCB)  
**Untreated Arrangement:** INCLUDED single control randomized in each block

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## Maintenance

No.	Date	Maintenance Treatment Name	Rate	Rate Unit
1.	Jun-13-2014	Roundup PowerMax	32	OZ A/A
2.	Jul-10-2014	Roundup PowerMax	32	OZ A/A

## Soil Description

Description Name: TPAC - Field 4B  
 % OM: 2.9      Texture: SIL      silt loam  
 pH: 6.2      Soil Name: Toronto-Millbrook  
 CEC: 13.3

## Application Description

	A	B
Application Date:	Jun-18-2014	Jun-26-2014
Time of Day:	AM	AM
Application Method:	SPRAY	SPRAY
Application Timing:	EARPRE	ATPLAN
Application Placement:	BROADC	BROADC
Air Temperature, Unit:	68 F	68 F
% Relative Humidity:	70	82
Wind Velocity, Unit:	5.4 mph	1.5 mph
Wind Direction:	SW	NE
Dew Presence (Y/N):	N no	Y yes
Soil Temperature, Unit:	70 F	78 F
Soil Moisture:	SLIWET	SLIWET
% Cloud Cover:	40	100

## Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		BBCH
Stage Majority, Percent:		00

## Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMBTR W	AMBTR W
Stage Majority, Percent:	2	2
Height Minimum, Maximum:	1 4	1 4
Density, Unit:	2 YD2	2 YD2
Pest 2 Code, Type, Scale:	SETFA W	SETFA W
Stage Majority, Percent:	1	2
Height Minimum, Maximum:	1 3	1 4
Density, Unit:	3 FT2	3 YD2
Pest 3 Code, Type, Scale:	IPOHE W	IPOHE W
Stage Majority, Percent:	1	
Height Minimum, Maximum:	1 3	
Density, Unit:	1 YD2	

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## Application Equipment

	A	B
<b>Appl. Equipment:</b>	CO2 FORD	CO2 FORD
<b>Equipment Type:</b>	SPTRMO	SPTRMO
<b>Operation Pressure, Unit:</b>	25 PSI	25 PSI
<b>Nozzle Type:</b>	FLAT FAN	FLAT FAN
<b>Nozzle Size:</b>	XR 100 02	XR 100 02
<b>Nozzle Spacing, Unit:</b>	20 IN	20 IN
<b>Nozzles/Row:</b>	6	6
<b>Boom Length, Unit:</b>	10 FT	10 FT
<b>Ground Speed, Unit:</b>	2.1 MPH	2.1 MPH
<b>Carrier:</b>	MEIGS	MEIGS
<b>Spray Volume, Unit:</b>	20 gal/ac	20 gal/ac
<b>Mix Size, Unit:</b>	2.5 liters	2.5 liters
<b>Propellant:</b>	CO2	CO2

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## Spitfire Soybean Preplant Intervals and Rainfall

Trial ID: 14S-THP-CTS-47      Protocol ID: 14S-THP-CTS-47  
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 Sponsor Contact: Nufarm - Bob Bruss

Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 20 gal/ac      Mix size: 2.5 liters (min 2.0856)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Other Rate	Other Unit	Growth Stage	Appl Code	Appl Description	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated Check											101	502	801	1002
2	Spitfire (3.57 EC)	3.57	LBAE/GAL	EC	8.9 oz ae/a	20 oz/a		EARPRE A	0	DAT Rain	19.47 ml/mx	102	302	601	902
3	Spitfire (3.57 EC)	3.57	LBAE/GAL	EC	17.9 oz ae/a	40 oz/a		EARPRE A	0	DAT Rain	39.17 ml/mx	201	401	701	1001
4	Spitfire (3.57 EC)	3.57	LBAE/GAL	EC	8.9 oz ae/a	20 oz/a		ATPLAN B	7	DAT Rain	19.47 ml/mx	202	402	702	901
5	Spitfire (3.57 EC)	3.57	LBAE/GAL	EC	17.9 oz ae/a	40 oz/a		ATPLAN B	7	DAT Rain	39.17 ml/mx	301	501	602	802

Sort Order: Treatment

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Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
BBCH Scale	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY		
Crop Scientific Name	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Description			Not flowering							
Rating Date	Jul-11-2014	Jul-11-2014	Jul-11-2014	Jul-29-2014	Jul-29-2014	Jul-29-2014	Jul-31-2014	Jul-31-2014		
Rating Type	PHYLMA	stand	HEIGHTS	PHYSTU	STASUB	PHYLMA	Stand	HEIGHT		
Rating Unit	%	NUMBER	cm	%	%	%	NUMBER	CM		
Sample Size, Unit	1 PLOT	10 FT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	5 FT	1 PLOT		
Number of Subsamples	1	1	10	1	1	1	1	6		
Crop Stage Majority	V1	V1	V1	V4	V4	V4	V4	V4		
Days After First/Last Applic.	23 15	23 15	23 15	41 33	41 33	41 33	43 35	43 35		
Plant-Eval Interval	15 DP-1	15 DP-1	15 DP-1	33 DP-1	33 DP-1	33 DP-1	35 DP-1	35 DP-1		
Days After Emergence	9 DE-1	9 DE-1	9 DE-1	27 DE-1	27 DE-1	27 DE-1	29 DE-1	29 DE-1		
Number of Decimals			1					1		
Trt Treatment	Rate	Appl								
No. Name	Rate Unit	Code Plot	1	2	3	4	5	6	7	8
1 Untreated Check		101	0.0	88.0	14.7	0.0	97.0	0.0	49.0	40.3
		502	0.0	89.0	12.2	0.0	97.0	0.0	48.0	38.0
		801	0.0	81.0	13.4	0.0	97.0	0.0	49.0	37.2
		1002	0.0	87.0	13.5	0.0	95.0	5.0	44.0	37.8
		Mean =	0.0	86.3	13.5	0.0	96.5	1.3	47.5	38.3
2 Spitfire (3.57 EC)	8.9 oz ae/a A	102	0.0	99.0	14.2	0.0	97.0	0.0	47.0	41.0
		302	0.0	89.0	12.4	0.0	95.0	0.0	48.0	40.7
		601	5.0	72.0	12.2	5.0	90.0	5.0	32.0	36.7
		902	0.0	87.0	13.8	0.0	95.0	0.0	46.0	39.0
		Mean =	1.3	86.8	13.2	1.3	94.3	1.3	43.3	39.3
3 Spitfire (3.57 EC)	17.9 oz ae/a A	201	0.0	75.0	12.9	0.0	97.0	0.0	49.0	39.8
		401	0.0	88.0	13.0	0.0	95.0	2.0	44.0	39.0
		701	0.0	81.0	13.5	0.0	97.0	0.0	46.0	38.0
		1001	0.0	83.0	13.6	0.0	97.0	0.0	44.0	39.0
		Mean =	0.0	81.8	13.3	0.0	96.5	0.5	45.8	39.0
4 Spitfire (3.57 EC)	8.9 oz ae/a B	202	7.0	69.0	12.8	10.0	93.0	7.0	39.0	31.7
		402	10.0	72.0	10.8	20.0	90.0	10.0	38.0	27.8
		702	20.0	72.0	11.7	20.0	87.0	10.0	33.0	24.8
		901	12.0	59.0	12.9	10.0	90.0	10.0	31.0	33.0
		Mean =	12.3	68.0	12.1	15.0	90.0	9.3	35.3	29.3
5 Spitfire (3.57 EC)	17.9 oz ae/a B	301	10.0	57.0	11.2	30.0	87.0	7.0	36.0	25.2
		501	7.0	56.0	9.9	30.0	85.0	10.0	34.0	27.8
		602	30.0	36.0	8.1	40.0	83.0	15.0	15.0	19.7
		802	15.0	54.0	12.0	30.0	85.0	10.0	25.0	23.5
		Mean =	15.5	50.8	10.3	32.5	85.0	10.5	27.5	24.0

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Crop Code		GLXMA	GLXMA	GLXMA
BBCH Scale		BSOY	BSOY	BSOY
Crop Scientific Name		Glycine max	Glycine max	Glycine max
Crop Name		Soybean	Soybean	Soybean
Description				
Rating Date		Oct-10-2014	Oct-10-2014	Oct-27-2014
Rating Type		HEIGHT	MATURI	YIELD
Rating Unit		CM	0-10	bu/ac
Sample Size, Unit		1 PLOT		
Number of Subsamples		6	1	1
Crop Stage Majority				
Days After First/Last Applic.		114 106	114 106	131 123
Plant-Eval Interval		106 DP-1	106 DP-1	123 DP-1
Days After Emergence		100 DE-1	100 DE-1	117 DE-1
Number of Decimals		1		
Trt Treatment	Rate	Appl		
No. Name	Rate Unit	Code Plot	9	10
1 Untreated Check		101	82.0	9.00
		502	75.7	10.00
		801	76.2	9.50
		1002	74.2	10.00
		Mean =	77.0	9.63
2 Spitfire (3.57 EC)	8.9 oz ae/a A	102	84.8	8.70
		302	78.8	9.00
		601	71.7	9.00
		902	78.3	9.80
		Mean =	78.4	9.13
3 Spitfire (3.57 EC)	17.9 oz ae/a A	201	80.3	9.50
		401	75.2	9.00
		701	74.5	10.00
		1001	77.0	10.00
		Mean =	76.8	9.63
4 Spitfire (3.57 EC)	8.9 oz ae/a B	202	75.3	8.50
		402	68.8	7.50
		702	63.2	7.50
		901	72.0	8.50
		Mean =	69.8	8.00
5 Spitfire (3.57 EC)	17.9 oz ae/a B	301	64.7	8.00
		501	64.0	7.50
		602	59.2	6.00
		802	65.0	6.50
		Mean =	63.2	7.00

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### Crop Code

GLXMA, BSOY, Glycine max, = US

### Rating Type

PHYLMA = phytotoxicity - leaf malformation

PHYSTU = phytotoxicity - stunting

STASUB = stand - subjective / emergence

HEIGHT = height

MATURI = maturity

YIELD = yield

### Rating Unit

% = percent

NUMBER = number

cm = centimeter

0-10 = 0-10 index/scale

bu/ac = bushels per acre

PLOT = total plot

FT = foot

### Plant-Eval Interval

15 DP-1 = 1 GLXMA Jun-26-2014

33 DP-1 = 1 GLXMA Jun-26-2014

35 DP-1 = 1 GLXMA Jun-26-2014

106 DP-1 = 1 GLXMA Jun-26-2014

123 DP-1 = 1 GLXMA Jun-26-2014

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Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	
BBCH Scale	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	BSOY	
Crop Scientific Name	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	Glycine max	
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	
Description			Not flowering								
Rating Date	Jul-11-2014	Jul-11-2014	Jul-11-2014	Jul-29-2014	Jul-29-2014	Jul-29-2014	Jul-31-2014	Jul-31-2014	Jul-31-2014	Oct-10-2014	
Rating Type	PHYLMA	stand	HEIGHTS	PHYSTU	STASUB	PHYLMA	Stand	HEIGHT	HEIGHT	HEIGHT	
Rating Unit	%	NUMBER	cm	%	%	%	NUMBER	CM	CM	CM	
Sample Size, Unit	1 PLOT	10 FT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	5 FT	1 PLOT	1 PLOT	1 PLOT	
Number of Subsamples	1	1	10	1	1	1	1	6	6	6	
Crop Stage Majority	V1	V1	V1	V4	V4	V4	V4				
Days After First/Last Applic.	23 15	23 15	23 15	41 33	41 33	41 33	43 35	43 35	43 35	114 106	
Plant-Eval Interval	15 DP-1	15 DP-1	15 DP-1	33 DP-1	33 DP-1	33 DP-1	35 DP-1	35 DP-1	35 DP-1	106 DP-1	
Days After Emergence	9 DE-1	9 DE-1	9 DE-1	27 DE-1	27 DE-1	27 DE-1	29 DE-1	29 DE-1	29 DE-1	100 DE-1	
Number of Decimals			1						1	1	
Trt Treatment	Rate	Appl									
No. Name	Rate Unit	Code	1	2	3	4	5	6	7	8	9
1 Untreated Check			0.0 b	86.3 a	13.5 a	0.0 c	96.5 a	1.3 b	47.5 a	38.3 a	77.0 a
2 Spitfire (3.57 EC)	8.9 oz ae/a A		1.3 b	86.8 a	13.2 a	1.3 c	94.3 a	1.3 b	43.3 a	39.3 a	78.4 a
3 Spitfire (3.57 EC)	17.9 oz ae/a A		0.0 b	81.8 a	13.3 a	0.0 c	96.5 a	0.5 b	45.8 a	39.0 a	76.8 a
4 Spitfire (3.57 EC)	8.9 oz ae/a B		12.3 a	68.0 b	12.1 a	15.0 b	90.0 b	9.3 a	35.3 b	29.3 b	69.8 b
5 Spitfire (3.57 EC)	17.9 oz ae/a B		15.5 a	50.8 c	10.3 b	32.5 a	85.0 c	10.5 a	27.5 c	24.0 c	63.2 c
LSD (P=.05)			6.76	10.71	1.24	4.66	2.43	3.25	7.35	2.89	3.53
Standard Deviation			4.39	6.95	0.80	3.03	1.58	2.11	4.77	1.87	2.29
CV			75.63	9.31	6.46	31.05	1.7	46.32	11.97	5.51	3.13
Bartlett's X2			4.672	4.175	5.3	1.841	5.058	4.097	8.308	7.433	2.51
P(Bartlett's X2)			0.097	0.383	0.258	0.398	0.281	0.393	0.081	0.115	0.643
Replicate F			3.354	2.255	5.366	3.045	3.886	2.023	3.713	5.070	11.612
Replicate Prob(F)			0.0554	0.1343	0.0142	0.0702	0.0375	0.1645	0.0424	0.0170	0.0007
Treatment F			11.625	19.589	10.694	88.091	39.282	21.540	12.250	54.829	31.527
Treatment Prob(F)			0.0004	0.0001	0.0006	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

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



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Crop Code		GLXMA	GLXMA
BBCH Scale		BSOY	BSOY
Crop Scientific Name		Glycine max	Glycine max
Crop Name		Soybean	Soybean
Description			
Rating Date		Oct-10-2014	Oct-27-2014
Rating Type		MATURI	YIELD
Rating Unit		0-10	bu/ac
Sample Size, Unit			
Number of Subsamples		1	1
Crop Stage Majority			
Days After First/Last Applic.		114 106	131 123
Plant-Eval Interval		106 DP-1	123 DP-1
Days After Emergence		100 DE-1	117 DE-1
Number of Decimals			
Trt No.	Treatment Name	Rate	Appl Code
		Rate Unit	
1	Untreated Check		
		9.63 a	58.25 a
2	Spitfire (3.57 EC)	8.9 oz ae/a A	
		9.13 a	56.90 a
3	Spitfire (3.57 EC)	17.9 oz ae/a A	
		9.63 a	57.63 a
4	Spitfire (3.57 EC)	8.9 oz ae/a B	
		8.00 b	51.98 ab
5	Spitfire (3.57 EC)	17.9 oz ae/a B	
		7.00 c	47.10 b
LSD (P=.05)		0.965	7.039
Standard Deviation		0.626	4.568
CV		7.22	8.4
Bartlett's X2		2.04	2.182
P(Bartlett's X2)		0.728	0.702
Replicate F		0.708	3.096
Replicate Prob(F)		0.5655	0.0675
Treatment F		13.426	4.343
Treatment Prob(F)		0.0002	0.0212

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### Crop Code

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### Rating Type

PHYLMA = phytotoxicity - leaf malformation

PHYSTU = phytotoxicity - stunting

STASUB = stand - subjective / emergence

HEIGHT = height

MATURI = maturity

YIELD = yield

### Rating Unit

% = percent

NUMBER = number

cm = centimeter

0-10 = 0-10 index/scale

bu/ac = bushels per acre

PLOT = total plot

FT = foot

### Plant-Eval Interval

15 DP-1 = 1 GLXMA Jun-26-2014

33 DP-1 = 1 GLXMA Jun-26-2014

35 DP-1 = 1 GLXMA Jun-26-2014

106 DP-1 = 1 GLXMA Jun-26-2014

123 DP-1 = 1 GLXMA Jun-26-2014