

# Purdue Weed Science

## Does the Addition of Micronutrient & PGR Products to Herbicides Impact Weed Control in Soybeans?

Trial ID: 18S-TPAC-SOY-19      Location: TPAC    Trial Year: 2018  
 Protocol ID: 18S-TPAC-SOY-19    Investigator: Dr. Bill Johnson  
 Project ID: NA                      Study Director: Dustin Johnson  
    Sponsor Contact: J. Green - Stoller

### General Trial Information

**Study Director:** Dustin Johnson    **Title:** Research Associate  
**Investigator:** Dr. Bill Johnson    **Title:** Professor

**Discipline:** H    herbicide  
**Trial Status:** E    established  
**Initiation Date:** May-7-2018

### Trial Location

**City:** Lafayette      **Country:** USA United States  
**State/Prov.:** Indiana  
**Postal Code:** 47909

**Latitude of LL Corner °:** 40.29176 N  
**Longitude of LL Corner °:** 86.91096 W

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Contacts

**Study Director:** Dustin Johnson    **Title:** Research Associate  
**Organization:** Purdue University  
**Address:** 915 W. State Street  
**City+State/Prov:** West Lafayette, IN  
**Postal Code:** 47907    **E-mail:** john1357@purdue.edu  
**Country:** USA    United States

**Investigator:** Dr. Bill Johnson    **Title:** Professor  
**Organization:** Purdue University  
**Address:** 915 W. State Street  
**City+State/Prov:** West Lafayette, IN  
**Postal Code:** 47907    **E-mail:** wgj@purdue.edu  
**Country:** USA    United States

### Cooperator/Landowner

**Cooperator:** Jay Young                      **Role:** Superintendent  
**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  
**Country:** USA United States    **E-mail:** jayyoung@purdue.edu

### Crop Description

**Crop 1:** GLXMA      Glycine max      Soybean  
**Variety:** Becks 296L4  
**Description:** Liberty Link

**Planting Date:** May-7-2018  
**Planting Method:** PLANTD planted  
**Planting Equipment:** PP      plot planter  
**Emergence Date:** May-16-2018

**Planting Rate, Unit:** 155000 S/A  
**Depth, Unit:** 1.5 IN  
**Row Spacing, Unit:** 15 IN  
**Rows per Plot:** 7  
**Soil Temperature, Unit:** 72 F  
**Soil Moisture:** DRY    dry

**Harvested Width, Unit:** 10 FT  
**Harvested Length, Unit:** 25 FT  
**% Standard Moisture:** 13

# Purdue Weed Science

## Pest Description

**Pest 1 Type:** W **Code:** AMBTR Ambrosia trifida  
**Common Name:** Giant ragweed

**Pest 2 Type:** W **Code:** ECHSS Echinochloa sp.  
**Common Name:** Barnyardgrass

**Pest 3 Type:** W **Code:** SETFA Setaria faberi  
**Common Name:** Giant foxtail

**Pest 4 Type:** W **Code:** AMARE Amaranthus retroflexus  
**Common Name:** Redroot pigweed

**Pest 5 Type:** W **Code:** ABUTH Abutilon theophrasti  
**Common Name:** velvetleaf

**Pest 6 Type:** W **Code:** CHEAL Chenopodium album  
**Common Name:** common lambsquarters

## Site and Design

**Treated Plot Width:** 10 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 300 FT<sup>2</sup> **Treatments:** 13  
**Replications:** 4

**Site Type:** FIELD field  
**Experimental Unit:** 1 PLOT plot  
**Tillage Type:** CONTIL conventional-till  
**Study Design:** RACOB� Randomized Complete Block (RCB)

## 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
<b>Application Date:</b>	May-7-2018	Jun-4-2018
<b>Appl. Start Time:</b>	6:25 PM	8:00 PM
<b>Appl. Stop Time:</b>	6:45 PM	8:30 AM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	PREPRE	POSPOS
<b>Application Placement:</b>	BROADC	BROADC
<b>Applied By:</b>	M. ZIMMER	D. JOHNSON
<b>Air Temperature, Unit:</b>	73 F	78 F
<b>% Relative Humidity:</b>	32	30
<b>Wind Velocity, Unit:</b>	8 MPH	4 MPH
<b>Wind Direction:</b>	NE	NW
<b>Dew Presence (Y/N):</b>	N no	N no
<b>Soil Temperature, Unit:</b>	72 F	78 F
<b>Soil Moisture:</b>	DRY	DRY
<b>% Cloud Cover:</b>	5	0

## Crop Stage At Each Application

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GLXMA BSOY	GLXMA BSOY
<b>Stage Scale Used:</b>	BBCH	BBCH
<b>Stage Majority, Percent:</b>	00	13
<b>Stage Minimum, Percent:</b>	00	12
<b>Stage Maximum, Percent:</b>	00	14
<b>Height, Unit:</b>		6 IN
<b>Height Minimum, Maximum:</b>		4 8

## Purdue Weed Science

### Pest Stage At Each Application

	A	B
<b>Pest 1 Code, Type, Scale:</b>	AMBTR W	AMBTR W
<b>Stage Majority, Percent:</b>	00	16
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	19
<b>Height, Unit:</b>		6 IN
<b>Height Minimum, Maximum:</b>		0.25 12
<b>Density, Unit:</b>		6 FT2
<b>Pest 2 Code, Type, Scale:</b>	ECHSS W	ECHSS W
<b>Stage Majority, Percent:</b>	00	16
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	19
<b>Height, Unit:</b>		4 IN
<b>Height Minimum, Maximum:</b>		0.5 8
<b>Density, Unit:</b>		6 FT2
<b>Pest 3 Code, Type, Scale:</b>	SETFA W	SETFA W
<b>Stage Majority, Percent:</b>	00	16
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	19
<b>Height, Unit:</b>		4 IN
<b>Height Minimum, Maximum:</b>		0.5 8
<b>Density, Unit:</b>		5 FT2
<b>Pest 4 Code, Type, Scale:</b>	AMARE W	AMARE W
<b>Stage Majority, Percent:</b>	00	14
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	18
<b>Height, Unit:</b>		3 IN
<b>Height Minimum, Maximum:</b>		0.5 6
<b>Density, Unit:</b>		3 FT2
<b>Pest 5 Code, Type, Scale:</b>	ABUTH W	ABUTH W
<b>Stage Majority, Percent:</b>	00	13
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	16
<b>Height, Unit:</b>		3 IN
<b>Height Minimum, Maximum:</b>		0.5 6
<b>Density, Unit:</b>		2 FT2
<b>Pest 6 Code, Type, Scale:</b>	CHEAL W	CHEAL W
<b>Stage Majority, Percent:</b>	00	16
<b>Stage Minimum, Percent:</b>	00	11
<b>Stage Maximum, Percent:</b>	00	19
<b>Height, Unit:</b>		3 IN
<b>Height Minimum, Maximum:</b>		0.25 6
<b>Density, Unit:</b>		2 FT2

## Purdue Weed Science

### Application Equipment

	A	B
<b>Appl. Equipment:</b>	CO2 BACKPACK	CO2 BACKPACK
<b>Equipment Type:</b>	BACSPR	BACSPR
<b>Operation Pressure, Unit:</b>	29 PSI	18 PSI
<b>Nozzle Type:</b>	TTI	FLAFXR
<b>Nozzle Size:</b>	110015	XR11002
<b>Nozzle Spacing, Unit:</b>	15 IN	15 IN
<b>Nozzles/Row:</b>	8	8
<b>Boom Length, Unit:</b>	10 FT	10 FT
<b>Boom Height, Unit:</b>	17 IN	17 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH
<b>Carrier:</b>	WATER	WATER
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC
<b>Mix Size, Unit:</b>	1.8 L	1.8 L
<b>Propellant:</b>	COMCO2	COMCO2

Date	By	Notes
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Jun-4-2018	D. JOHNSON	Sprayed at V3 majority crop stage due to the size that weeds were at.
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Jun-8-2018	D. JOHNSON	Evening storm brought hail and damage to crop occurred.
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Aug-1-2018	D. JOHNSON	Just rated AMBTR & ECHSS due to soybean canopy closure.
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Oct-19-2018	D. JOHNSON	Harvest notes: These plots had partial or all outer row either slightly or completely mowed or harvested: 201, 301,401, 501, 506, 604, 607, 704 & 707.
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 Project ID: NA      Study Director: Dustin Johnson  
 Sponsor Contact: J. Green - Stoller

Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 GAL/AC      Mix Size: 1.8 L (total for 4 plots; minimum=1.564 L)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Appl Code	Appl Description	Amt to Measure	Product	Rep 1	Rep 2	Rep 3	Rep 4
1	UNTREATED CHECK										101	301	505	606
2	BOUNDARY	6.5 LB/GAL	EC		1.5 pt/a		A	AT PLANTING	22.5 mL/mx		102	403	506	605
	SELECT MAX	0.97 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
3	BOUNDARY	6.5 LB/GAL	EC		1.5 pt/a		A	AT PLANTING	22.5 mL/mx		103	303	503	607
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-1103	100 %	L		8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx					
	SELECT MAX	0.97 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
4	BOUNDARY	6.5 LB/GAL	EC		1.5 pt/a		A	AT PLANTING	22.5 mL/mx		104	304	406	707
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-2111	100 %	L		4 fl oz/a		B	V4-V5 SOYBEANS	3.75 mL/mx					
	SELECT MAX	0.97 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
5	BOUNDARY	6.5 LB/GAL	EC		1.5 pt/a		A	AT PLANTING	22.5 mL/mx		105	306	507	704
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-2004	100 %	L		8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx					
	SELECT MAX	0.97 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
6	BROADAXE XC	7 LB/GAL	L		25 fl oz/a		A	AT PLANTING	23.44 mL/mx		106	302	407	801
	FLEXSTAR	1.88 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
7	BROADAXE XC	7 LB/GAL	L		25 fl oz/a		A	AT PLANTING	23.44 mL/mx		107	402	601	705
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-1103	100 %	L		8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx					
	FLEXSTAR	1.88 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
8	BROADAXE XC	7 LB/GAL	L		25 fl oz/a		A	AT PLANTING	23.44 mL/mx		201	207	604	701
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-2111	100 %	L		4 fl oz/a		B	V4-V5 SOYBEANS	3.75 mL/mx					
	FLEXSTAR	1.88 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
9	BROADAXE XC	7 LB/GAL	L		25 fl oz/a		A	AT PLANTING	23.44 mL/mx		202	305	502	802
	STO-510	100 %	D		40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx					
	STO-2004	100 %	L		8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx					
	FLEXSTAR	1.88 LB/GAL	L		1 pt/a		B	V4-V5 SOYBEANS	15.0 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					
10	CANOPY @ 6 OZ/A	75 %	DG				A	AT PLANTING			203	404	501	702
	METRIBUZIN	75 %	DG		5.14 oz/a		A	AT PLANTING	4.619 g/mx					
	CLASSIC	25 %	DG		2.57 oz/a		A	AT PLANTING	2.31 g/mx					
	ASSURE II	0.88 LB/GAL	EC		8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx					
	DUAL II MAGNUM	7.64 LB/GAL	EC		1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx					
	LIBERTY 280 SL	2.34 LB/GAL	SL		32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx					

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Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 GAL/AC      Mix Size: 1.8 L (total for 4 plots; minimum=1.564 L)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
11	CANOPY @ 6 OZ/A	75 %		DG			A	AT PLANTING		204	401	602	703
	METRIBUZIN	75 %		DG	5.14 oz/a		A	AT PLANTING	4.619 g/mx				
	CLASSIC	25 %		DG	2.57 oz/a		A	AT PLANTING	2.31 g/mx				
	STO-510	100 %		D	40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx				
	STO-1103	100 %		L	8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx				
	ASSURE II	0.88 LB/GAL		EC	8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx				
	DUAL II MAGNUM	7.64 LB/GAL		EC	1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx				
	LIBERTY 280 SL	2.34 LB/GAL		SL	32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx				
12	CANOPY @ 6 OZ/A	75 %		DG			A	AT PLANTING		205	307	603	803
	METRIBUZIN	75 %		DG	5.14 oz/a		A	AT PLANTING	4.619 g/mx				
	CLASSIC	25 %		DG	2.57 oz/a		A	AT PLANTING	2.31 g/mx				
	STO-510	100 %		D	40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx				
	STO-2111	100 %		L	4 fl oz/a		B	V4-V5 SOYBEANS	3.75 mL/mx				
	ASSURE II	0.88 LB/GAL		EC	8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx				
	DUAL II MAGNUM	7.64 LB/GAL		EC	1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx				
	LIBERTY 280 SL	2.34 LB/GAL		SL	32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx				
13	CANOPY @ 6 OZ/A	75 %		DG			A	AT PLANTING		206	405	504	706
	METRIBUZIN	75 %		DG	5.14 oz/a		A	AT PLANTING	4.619 g/mx				
	CLASSIC	25 %		DG	2.57 oz/a		A	AT PLANTING	2.31 g/mx				
	STO-510	100 %		D	40 oz/a		B	V4-V5 SOYBEANS	35.95 g/mx				
	STO-2004	100 %		L	8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx				
	ASSURE II	0.88 LB/GAL		EC	8 fl oz/a		B	V4-V5 SOYBEANS	7.5 mL/mx				
	DUAL II MAGNUM	7.64 LB/GAL		EC	1.3 pt/a		B	V4-V5 SOYBEANS	19.5 mL/mx				
	LIBERTY 280 SL	2.34 LB/GAL		SL	32 fl oz/a		B	V4-V5 SOYBEANS	30.0 mL/mx				

Sort Order: Treatment

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**Does the Addition of Micronutrient & PGR Products to Herbicides Impact Weed Control in Soybeans?**

Trial ID: 18S-TPAC-SOY-19      Location: TPAC      Trial Year: 2018  
 Protocol ID: 18S-TPAC-SOY-19      Investigator: Dr. Bill Johnson  
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Pest Type Pest Code Pest Name		W Weed AMBTR Giant ragweed	W Weed ECHSS Barnyardgrass	W Weed SETFA Giant foxtail	W Weed AMATA Common waterhe>	W Weed ABUTH velvetleaf		
Crop Code Crop Name Part Rated Rating Date Rating Type Rating Unit Number of Subsamples Assessed By	GLXMA Soybean PLOT - Jun-11-2018 PHYGEN % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-11-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-11-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-11-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-11-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-11-2018 CONTRO % 1 D. JOHNSON		
Rating Timing Days After First/Last Applic. Trt-Eval Interval ARM Action Codes Number of Decimals	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	1	2	3	4	5	6
1 UNTREATED CHECK			0	0	0	0	0	0
2 BOUNDARY SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	15 bc	91 cd	89 -	95 -	100 -	98 -
3 BOUNDARY STO-510 STO-1103 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	11 c	90 d	88 -	93 -	100 -	100 -
4 BOUNDARY STO-510 STO-2111 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	11 c	89 d	92 -	94 -	100 -	99 -
5 BOUNDARY STO-510 STO-2004 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	12 c	92 bcd	90 -	94 -	100 -	96 -
6 BROADAXE XC FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	29 a	95 abc	94 -	96 -	100 -	100 -
7 BROADAXE XC STO-510 STO-1103 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	29 a	95 abc	95 -	95 -	100 -	100 -
8 BROADAXE XC STO-510 STO-2111 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	31 a	96 a	95 -	96 -	100 -	100 -

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

## Purdue Weed Science

Pest Type		W Weed	W Weed	W Weed	W Weed	W Weed		
Pest Code		AMBTR	ECHSS	SETFA	AMATA	ABUTH		
Pest Name		Giant ragweed	Barnyardgrass	Giant foxtail	Common waterhe	velvetleaf		
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Part Rated	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -		
Rating Date	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018		
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Assessed By	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON		
Rating Timing	A1	A1	A1	A1	A1	A1		
Days After First/Last Applic.	35 7	35 7	35 7	35 7	35 7	35 7		
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	1	2	3	4	5	6
9 BROADAXE XC	25 fl oz/a	A	33 a	96 ab	95 -	98 -	100 -	100 -
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
FLEXSTAR	1 pt/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
10 CANOPY @ 6 OZ/A		A	13 bc	90 d	88 -	93 -	100 -	100 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
11 CANOPY @ 6 OZ/A		A	12 bc	92 bcd	93 -	91 -	100 -	99 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-1103	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
12 CANOPY @ 6 OZ/A		A	18 b	93 a-d	92 -	94 -	100 -	98 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2111	4 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
13 CANOPY @ 6 OZ/A		A	12 bc	93 a-d	93 -	94 -	100 -	96 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
LSD P=.05			5.7	4.6	6.5	4.7	.	5.4
Standard Deviation			4.0	3.2	4.5	3.2	0.0	3.7
CV			21.2	3.47	4.87	3.44	0.0	3.77
Levene's F			1.004	1.629	0.897	0.503	0.00	0.596
Levene's Prob(F)			0.463	0.133	0.554	0.888	0.00*	0.819
Skewness			0.5153	-0.6495	-0.6171	-0.5849	.	-2.9589*
Kurtosis			-1.3954*	-0.8294	0.3465	-0.0311	.	7.9707*
Replicate F			4.105	6.080	0.246	5.461	0.000	2.011
Replicate Prob(F)			0.0143	0.0021	0.8637	0.0038	1.0000	0.1322
Treatment F			19.488	2.559	1.577	1.233	0.000	0.643
Treatment Prob(F)			0.0001	0.0189	0.1623	0.3064	1.0000	0.7790

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
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 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.



# Purdue Weed Science

Pest Type Pest Code Pest Name	W Weed CHEAL common lambsqu>	W Weed SETPU yellow foxtail	W Weed GLXMA Soybean PLOT - Jun-11-2018 CONTRO %	W Weed GLXMA Soybean PLOT - Jun-11-2018 CONTRO %	W Weed GLXMA Soybean PLOT - Jun-18-2018 PHYGEN %	W Weed GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	W Weed GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	W Weed GLXMA Soybean PLOT - Jun-18-2018 CONTRO %
Crop Code Crop Name Part Rated Rating Date Rating Type Rating Unit Number of Subsamples Assessed By	GLXMA Soybean PLOT - Jun-11-2018 CONTRO %	GLXMA Soybean PLOT - Jun-11-2018 CONTRO %	GLXMA Soybean PLOT - Jun-18-2018 PHYGEN %	GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	GLXMA Soybean PLOT - Jun-18-2018 CONTRO %	GLXMA Soybean PLOT - Jun-18-2018 CONTRO %
Rating Timing Days After First/Last Applic. Trt-Eval Interval ARM Action Codes Number of Decimals	A1 35 7 14 DA-A P 0	A1 35 7 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0
Trt Treatment No. Name	Rate Rate Unit	Appl Code	7	8	9	10	11	12
1 UNTREATED CHECK			0	0	0	0	0	0
2 BOUNDARY SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	83 cde	14 bc	93 b	99 -	100 -
3 BOUNDARY STO-510 STO-1103 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	85 bcd	10 c	91 cd	100 -	100 -
4 BOUNDARY STO-510 STO-2111 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	85 bcd	13 bc	91 bcd	100 -	100 -
5 BOUNDARY STO-510 STO-2004 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	88 abc	14 bc	91 bc	100 -	100 -
6 BROADAXE XC FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	88 abc	25 a	97 a	99 -	100 -
7 BROADAXE XC STO-510 STO-1103 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	87 bcd	26 a	96 a	99 -	99 -
8 BROADAXE XC STO-510 STO-2111 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 -	93 a	29 a	97 a	98 -	100 -

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

# Purdue Weed Science

Pest Type	W Weed	W Weed		W Weed	W Weed	W Weed		
Pest Code	CHEAL	SETPU		AMBTR	ECHSS	SETFA		
Pest Name	common lambsqu>	yellow foxtail		Giant ragweed	Barnyardgrass	Giant foxtail		
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Part Rated	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -		
Rating Date	Jun-11-2018	Jun-11-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018		
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Assessed By	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON		
Rating Timing	A1	A1	A2	A2	A2	A2		
Days After First/Last Applic.	35 7	35 7	42 14	42 14	42 14	42 14		
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	7	8	9	10	11	12
9 BROADAXE XC	25 fl oz/a	A	100 -	90 ab	26 a	97 a	99 -	100 -
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
FLEXSTAR	1 pt/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
10 CANOPY @ 6 OZ/A		A	100 -	80 de	15 b	91 bc	96 -	100 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
11 CANOPY @ 6 OZ/A		A	100 -	78 e	13 bc	90 cd	99 -	100 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-1103	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
12 CANOPY @ 6 OZ/A		A	99 -	78 e	16 b	91 bc	100 -	100 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2111	4 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
13 CANOPY @ 6 OZ/A		A	100 -	83 cde	13 bc	89 d	100 -	100 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
LSD P=.05	1.1	6.6	3.8	2.1	2.6	0.5		
Standard Deviation	0.8	4.4	2.7	1.4	1.8	0.3		
CV	0.76	5.25	15.04	1.54	1.83	0.34		
Levene's F	0.868	0.682	1.185	0.425	1.944	3.137		
Levene's Prob(F)	0.578	0.742	0.331	0.935	0.067	0.005*		
Skewness	-5.507*	-0.4338	0.6229	0.1471	-2.3546*	-3.8236*		
Kurtosis	32.3165*	0.764	-1.0656	-0.793	6.0652*	15.3058*		
Replicate F	2.306	4.526	6.624	0.578	2.947	1.627		
Replicate Prob(F)	0.0954	0.0141	0.0013	0.6339	0.0476	0.2025		
Treatment F	0.970	4.528	25.504	18.230	1.998	1.759		
Treatment Prob(F)	0.4921	0.0017	0.0001	0.0001	0.0628	0.1046		

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 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

# Purdue Weed Science

Pest Type Pest Code Pest Name	W Weed AMATA Common waterhe>	W Weed ABUTH velvetleaf	W Weed CHEAL common lambsqu>	W Weed SETPU yellow foxtail		W Weed AMBTR Giant ragweed				
Crop Code Crop Name Part Rated Rating Date Rating Type Rating Unit Number of Subsamples Assessed By	GLXMA Soybean PLOT - Jun-18-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-18-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-18-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jun-18-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jul-2-2018 PHYGEN % 1 D. JOHNSON	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 D. JOHNSON				
Rating Timing Days After First/Last Applic. Trt-Eval Interval ARM Action Codes Number of Decimals	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A2 42 14 14 DA-A P 0	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0				
Trt No.	Treatment Name	Rate	Appl Unit	Code	13	14	15	16	17	18
1	UNTREATED CHECK	0			0	0	0	0	0	0
2	BOUNDARY SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B		100 -	96 bc	100 -	100 a	0 -	81 bcd
3	BOUNDARY STO-510 STO-1103 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a 40 oz/a 8 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B B B		99 -	100 a	98 -	99 a	0 -	76 d
4	BOUNDARY STO-510 STO-2111 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a 40 oz/a 4 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B B B		99 -	97 ab	98 -	99 a	0 -	80 bcd
5	BOUNDARY STO-510 STO-2004 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a 40 oz/a 8 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B B B		100 -	99 ab	100 -	98 a	0 -	79 cd
6	BROADAXE XC FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B		100 -	96 abc	99 -	99 a	0 -	97 a
7	BROADAXE XC STO-510 STO-1103 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a 40 oz/a 8 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B B B		100 -	98 ab	100 -	98 a	0 -	98 a
8	BROADAXE XC STO-510 STO-2111 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a 40 oz/a 4 fl oz/a 1 pt/a 1.3 pt/a 32 fl oz/a	A B B B B B		100 -	99 ab	100 -	99 a	0 -	97 a

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

# Purdue Weed Science

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed	W Weed		
Pest Code	AMATA	ABUTH	CHEAL	SETPU		AMBTR		
Pest Name	Common waterhe>	velvetleaf	common lambsqu>	yellow foxtail		Giant ragweed		
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Part Rated	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -		
Rating Date	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jul-2-2018	Jul-2-2018		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Assessed By	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON		
Rating Timing	A2	A2	A2	A2	A3	A3		
Days After First/Last Applic.	42 14	42 14	42 14	42 14	56 28	56 28		
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	13	14	15	16	17	18
9 BROADAXE XC	25 fl oz/a	A	100 -	100 a	99 -	99 a	0 -	97 a
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
FLEXSTAR	1 pt/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
10 CANOPY @ 6 OZ/A		A	99 -	96 abc	96 -	96 a	0 -	84 bc
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
11 CANOPY @ 6 OZ/A		A	100 -	100 ab	99 -	87 b	0 -	85 b
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-1103	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
12 CANOPY @ 6 OZ/A		A	100 -	99 ab	100 -	97 a	0 -	79 cd
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2111	4 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
13 CANOPY @ 6 OZ/A		A	98 -	93 c	96 -	99 a	0 -	79 cd
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
LSD P=.05	2.0	4.4	4.1	5.5	.	5.4		
Standard Deviation	1.4	3.0	2.9	3.8	0.0	3.8		
CV	1.37	3.1	2.91	3.92	0.0	4.39		
Levene's F	1.046	0.793	0.95	2.035	0.00	1.17		
Levene's Prob(F)	0.43	0.645	0.507	0.055	0.00*	0.342		
Skewness	-2.9021*	-1.1773*	-3.1469*	-3.0678*	.	0.1327		
Kurtosis	6.9109*	0.0649	11.2577*	11.5991*	.	-1.5946*		
Replicate F	2.635	1.610	1.138	2.730	0.000	4.752		
Replicate Prob(F)	0.0667	0.2064	0.3486	0.0601	1.0000	0.0075		
Treatment F	0.989	2.189	1.132	3.283	0.000	20.882		
Treatment Prob(F)	0.4768	0.0416	0.3705	0.0042	1.0000	0.0001		

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

# Purdue Weed Science

Pest Type Pest Code Pest Name	W Weed ECHSS Barnyardgrass	W Weed SETFA Giant foxtail	W Weed AMATA Common waterhe>	W Weed ABUTH velvetleaf	W Weed CHEAL common lambsqu>	W Weed SETPU yellow foxtail		
Crop Code Crop Name Part Rated Rating Date Rating Type Rating Unit Number of Subsamples Assessed By	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 M. ZIMMER	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 M. ZIMMER	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 M. ZIMMER	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 M. ZIMMER	GLXMA Soybean PLOT - Jul-2-2018 CONTRO % 1 M. ZIMMER		
Rating Timing Days After First/Last Applic. Trt-Eval Interval ARM Action Codes Number of Decimals	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0	A3 56 28 14 DA-A P 0		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	19	20	21	22	23	24
1 UNTREATED CHECK			0	0	0	0	0	0
2 BOUNDARY SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B	97 -	100 -	100 -	100 -	100 -	98 -
3 BOUNDARY STO-510 STO-1103 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B B B	99 -	98 -	100 -	100 -	100 -	99 -
4 BOUNDARY STO-510 STO-2111 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B B B	98 -	98 -	100 -	100 -	100 -	98 -
5 BOUNDARY STO-510 STO-2004 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B B B	99 -	96 -	100 -	96 -	100 -	95 -
6 BROADAXE XC FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B	97 -	96 -	100 -	99 -	100 -	96 -
7 BROADAXE XC STO-510 STO-1103 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B B B	98 -	98 -	100 -	100 -	100 -	93 -
8 BROADAXE XC STO-510 STO-2111 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A B B B B B	98 -	100 -	100 -	99 -	100 -	99 -

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

# Purdue Weed Science

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed	W Weed		
Pest Code	ECHSS	SETFA	AMATA	ABUTH	CHEAL	SETPU		
Pest Name	Barnyardgrass	Giant foxtail	Common waterhe>	velvetleaf	common lambsqu>	yellow foxtail		
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Part Rated	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -		
Rating Date	Jul-2-2018	Jul-2-2018	Jul-2-2018	Jul-2-2018	Jul-2-2018	Jul-2-2018		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1		
Assessed By	D. JOHNSON	M. ZIMMER	M. ZIMMER	M. ZIMMER	M. ZIMMER	M. ZIMMER		
Rating Timing	A3	A3	A3	A3	A3	A3		
Days After First/Last Applic.	56 28	56 28	56 28	56 28	56 28	56 28		
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	19	20	21	22	23	24
9 BROADAXE XC	25 fl oz/a	A	99 -	99 -	100 -	100 -	99 -	100 -
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
FLEXSTAR	1 pt/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
10 CANOPY @ 6 OZ/A		A	94 -	91 -	100 -	95 -	98 -	95 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
11 CANOPY @ 6 OZ/A		A	97 -	97 -	100 -	98 -	94 -	88 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-1103	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
12 CANOPY @ 6 OZ/A		A	98 -	100 -	100 -	100 -	100 -	95 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2111	4 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
13 CANOPY @ 6 OZ/A		A	99 -	99 -	100 -	96 -	95 -	98 -
METRIBUZIN	5.14 oz/a	A						
CLASSIC	2.57 oz/a	A						
STO-510	40 oz/a	B						
STO-2004	8 fl oz/a	B						
ASSURE II	8 fl oz/a	B						
DUAL II MAGNUM	1.3 pt/a	B						
LIBERTY 280 SL	32 fl oz/a	B						
LSD P=.05	3.8	5.0	.	.	.	5.5	5.8	9.4
Standard Deviation	2.7	3.5	0.0	0.0	0.0	3.8	4.0	6.5
CV	2.73	3.57	0.0	0.0	0.0	3.84	4.1	6.77
Levene's F	1.086	0.489	0.00	0.00	0.00	0.978	0.965	0.905
Levene's Prob(F)	0.40	0.898	0.00*	0.00*	0.00*	0.484	0.495	0.545
Skewness	-1.6511*	-1.5799*	.	.	.	-3.0252*	-3.9358*	-2.387*
Kurtosis	2.7198*	1.1267	.	.	.	8.4044*	15.0361*	6.1487*
Replicate F	12.059	8.287	0.000	0.000	0.000	1.915	2.775	1.336
Replicate Prob(F)	0.0001	0.0003	1.0000	1.0000	1.0000	0.1471	0.0573	0.2800
Treatment F	1.160	1.862	0.000	0.000	0.000	0.911	1.212	0.988
Treatment Prob(F)	0.3514	0.0839	1.0000	1.0000	1.0000	0.5410	0.3188	0.4773

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Untreated treatment(s) 1 excluded from analysis.  
 Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8  
 Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

## Purdue Weed Science

Pest Type Pest Code Pest Name	W Weed AMBTR Giant ragweed	W Weed ECHSS Barnyardgrass						
Crop Code Crop Name Part Rated Rating Date Rating Type Rating Unit Number of Subsamples Assessed By	GLXMA Soybean PLOT - Aug-1-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Aug-1-2018 CONTRO % 1 D. JOHNSON	GLXMA Soybean PLOT - Oct-19-2018 YIELD lb/plot 1 D. JOHNSON	GLXMA Soybean PLOT - Oct-19-2018 MOICON % 1 D. JOHNSON	GLXMA Soybean PLOT - Oct-19-2018 WEITES BU60LB 1 D. JOHNSON	GLXMA Soybean PLOT - Oct-19-2018 YIELD BU 1 D. JOHNSON		
Rating Timing Days After First/Last Applic. Trt-Eval Interval ARM Action Codes Number of Decimals	A3 86 58 14 DA-A P 0	A3 86 58 14 DA-A P 0	165 137 123 DA-A P 1	165 137 123 DA-A P 1	165 137 P 1	165 137 123 DA-A TY1 1		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	25	26	27	28	29	30
1 UNTREATED CHECK			0	0	8.8	12.5	50.9	25.8
2 BOUNDARY SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B		80 bc	100 -	18.3 -	12.8 -	53.1 -	53.2 -
3 BOUNDARY STO-510 STO-1103 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		78 bc	100 -	18.0 -	12.6 -	53.3 -	52.4 -
4 BOUNDARY STO-510 STO-2111 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		76 c	100 -	17.1 -	12.5 -	50.8 -	49.8 -
5 BOUNDARY STO-510 STO-2004 SELECT MAX DUAL II MAGNUM LIBERTY 280 SL	1.5 pt/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		81 bc	100 -	16.6 -	12.3 -	52.2 -	48.5 -
6 BROADAXE XC FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 1 pt/a B 1.3 pt/a B 32 fl oz/a B		100 a	100 -	19.4 -	13.1 -	53.3 -	56.2 -
7 BROADAXE XC STO-510 STO-1103 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		98 a	100 -	20.6 -	13.2 -	52.8 -	59.6 -
8 BROADAXE XC STO-510 STO-2111 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 4 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B		96 a	100 -	16.7 -	12.9 -	54.0 -	48.5 -

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

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

Untreated treatment(s) 1 excluded from analysis.

Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8

Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.

## Purdue Weed Science

Pest Type	W Weed	W Weed						
Pest Code	AMBTR	ECHSS						
Pest Name	Giant ragweed	Barnyardgrass						
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Name	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean		
Part Rated	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -		
Rating Date	Aug-1-2018	Aug-1-2018	Oct-19-2018	Oct-19-2018	Oct-19-2018	Oct-19-2018		
Rating Type	CONTRO	CONTRO	YIELD	MOICON	WEITES	YIELD		
Rating Unit	%	%	lb/plot	%	BU60LB	BU		
Number of Subsamples	1	1	1	1	1	1		
Assessed By	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON		
Rating Timing	A3	A3						
Days After First/Last Applic.	86 58	86 58	165 137	165 137	165 137	165 137		
Trt-Eval Interval	14 DA-A	14 DA-A	123 DA-A	123 DA-A		123 DA-A		
ARM Action Codes	P	P	P	P	P	TY1		
Number of Decimals	0	0	1	1	1	1		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	25	26	27	28	29	30
9 BROADAXE XC STO-510 STO-2004 FLEXSTAR DUAL II MAGNUM LIBERTY 280 SL	25 fl oz/a A 40 oz/a B 8 fl oz/a B 1 pt/a B 1.3 pt/a B 32 fl oz/a B	A	100 a	100 -	20.9 -	13.0 -	53.4 -	60.8 -
10 CANOPY @ 6 OZ/A METRIBUZIN CLASSIC ASSURE II DUAL II MAGNUM LIBERTY 280 SL	A 5.14 oz/a A 2.57 oz/a A 8 fl oz/a B 1.3 pt/a B 32 fl oz/a B	A	81 bc	100 -	18.0 -	12.7 -	54.0 -	52.6 -
11 CANOPY @ 6 OZ/A METRIBUZIN CLASSIC STO-510 STO-1103 ASSURE II DUAL II MAGNUM LIBERTY 280 SL	A 5.14 oz/a A 2.57 oz/a A 40 oz/a B 8 fl oz/a B 8 fl oz/a B 1.3 pt/a B 32 fl oz/a B	A	84 b	100 -	19.3 -	12.6 -	53.5 -	56.4 -
12 CANOPY @ 6 OZ/A METRIBUZIN CLASSIC STO-510 STO-2111 ASSURE II DUAL II MAGNUM LIBERTY 280 SL	A 5.14 oz/a A 2.57 oz/a A 40 oz/a B 4 fl oz/a B 8 fl oz/a B 1.3 pt/a B 32 fl oz/a B	A	80 bc	100 -	18.9 -	12.5 -	52.8 -	55.3 -
13 CANOPY @ 6 OZ/A METRIBUZIN CLASSIC STO-510 STO-2004 ASSURE II DUAL II MAGNUM LIBERTY 280 SL	A 5.14 oz/a A 2.57 oz/a A 40 oz/a B 8 fl oz/a B 8 fl oz/a B 1.3 pt/a B 32 fl oz/a B	A	76 c	100 -	16.9 -	12.9 -	52.6 -	49.2 -
LSD P=.05	6.6	.	3.70	0.80	2.36	10.87		
Standard Deviation	4.6	0.0	2.57	0.55	1.64	7.55		
CV	5.38	0.0	13.98	4.35	3.09	14.1		
Levene's F	1.292	0.00	0.642	1.331	0.573	0.61		
Levene's Prob(F)	0.269	0.00*	0.78	0.249	0.837	0.808		
Skewness	0.1661	.	-0.2155	-0.984*	-1.5238*	-0.2326		
Kurtosis	-1.5154*	.	-0.4668	3.6144*	4.0145*	-0.4589		
Replicate F	5.666	0.000	1.982	1.852	1.120	1.874		
Replicate Prob(F)	0.0031	1.0000	0.1365	0.1576	0.3556	0.1538		
Treatment F	17.208	0.000	1.303	0.933	1.135	1.235		
Treatment Prob(F)	0.0001	1.0000	0.2675	0.5224	0.3685	0.3053		

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

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

Untreated treatment(s) 1 excluded from analysis.

Missing data estimates are included in columns: Yates=1,2,4,5,6,7,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30; Average=3,8

Could not calculate LSD (% mean diff) for columns 5,17,21,26 because error mean square = 0.



# Purdue Weed Science

## Does the Addition of Micronutrient & PGR Products to Herbicides Impact Weed Control in Soybeans?

Trial ID: 18S-TPAC-SOY-19      Location: TPAC    Trial Year: 2018  
 Protocol ID: 18S-TPAC-SOY-19    Investigator: Dr. Bill Johnson  
 Project ID: NA                      Study Director: Dustin Johnson  
    Sponsor Contact: J. Green - Stoller

### Pest Type

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

### Pest Code

AMBTR, Ambrosia trifida, Giant ragweed = US  
 ECHSS, Echinochloa sp., Barnyardgrass = US  
 SETFA, Setaria faberi, Giant foxtail = US  
 AMATA, Amaranthus tamariscinus, Common waterhemp = US  
 ABUTH, Abutilon theophrasti, velvetleaf = US  
 CHEAL, Chenopodium album, common lambsquarters = US  
 SETPU, Setaria pumila, yellow foxtail = US

### Crop Code

GLXMA, BSOY, Glycine max, Soybean = US

### Part Rated

PLOT = plot

### Rating Type

PHYGEN = phytotoxicity - general / injury  
 CONTRO = control / burndown or knockdown  
 YIELD = yield  
 MOICON = moisture content  
 WEITES = weight - test

### Rating Unit

% = percent  
 lb/plot = pounds per plot  
 BU60LB = bushel 60 lb  
 BU = bushel

### Rating Timing

A1 = 1st Assessment According to Trial Schedule  
 A2 = 2nd Assessment According to trial Schedule  
 A3 = 3rd Assessment According to Trial Schedule

### ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)  
 TY1 =  $2.904 * [27] * (100 - @MVAVGREP([28])) / 87$