

Purdue Weed Science

Balance GT Soybean Showcase & Comparison

Trial ID: 18S-TPAC-SOY-29 Location: TPAC Trial Year: 2018
 Protocol ID: 18S-TPAC-SOY-29 Investigator: Dr. Bill Johnson
 Project ID: HP18USA-XP4-UEF1 Study Director: Dustin Johnson
 Sponsor Contact: A. Kurtz - Bayer

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-17-2018
Completion Date: Jul-17-2018

Trial Location

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

Latitude of LL Corner °: 40.299339 N
Longitude of LL Corner °: 86.91035 W

Directions:
 SE
 N-40.29274
 W-86.91037

NW
 N-40.29338
 W-86.91058

SW
 N-40.29275
 W-86.91060

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: BALANCE GT (FG72-34BA20)
Description: HPPD/RR

Planting Rate, Unit: 140000 S/A
Depth, Unit: 1.5 IN
Row Spacing, Unit: 15 IN
Rows per Plot: 7
Soil Temperature, Unit: 74 F
Soil Moisture: DRY dry

Planting Date: May-17-2018
Planting Method: PLANTD planted
Planting Equipment: PP plot planter
Emergence Date: May-26-2018

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Pest Description

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

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 12
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 |
|--------------------------------|-------------|------------|
| Application Date: | May-17-2018 | Jun-7-2018 |
| Appl. Start Time: | 5:00 PM | 1:30 PM |
| Appl. Stop Time: | 5:30 PM | 1:40 PM |
| Application Method: | SPRAY | SPRAY |
| Application Timing: | POSPOS | POSPOS |
| Application Placement: | BROADC | BROADC |
| Applied By: | D. JOHNSON | D. JOHNSON |
| Air Temperature, Unit: | 82 F | 88 F |
| % Relative Humidity: | 34 | 48 |
| Wind Velocity, Unit: | 10 MPH | 6 MPH |
| Wind Direction: | ENE | WSW |
| Dew Presence (Y/N): | N no | N no |
| Soil Temperature, Unit: | 74 F | 82 F |
| Soil Moisture: | DRY | DRY |
| % Cloud Cover: | 80 | 5 |

Crop Stage At Each Application

| | A | B |
|---------------------------------|------------|------------|
| Crop 1 Code, BBCH Scale: | GLXMA BSOY | GLXMA BSOY |
| Stage Scale Used: | BBCH | BBCH |
| Stage Majority, Percent: | 00 | 12 |
| Stage Minimum, Percent: | 00 | 11 |
| Stage Maximum, Percent: | 00 | 12 |
| Height, Unit: | | 6 IN |
| Height Minimum, Maximum: | | 3 8 |

Pest Stage At Each Application

| | A | B |
|----------------------------------|---------|--------------------|
| Pest 1 Code, Type, Scale: | AMBTR W | AMBTR W |
| Stage Majority, Percent: | 00 | 14 |
| Stage Minimum, Percent: | 00 | 10 |
| Stage Maximum, Percent: | 00 | 19 |
| Height, Unit: | | 5 IN |
| Height Minimum, Maximum: | | 0.25 9 |
| Density, Unit: | | 19 FT ² |

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Application Equipment

| | A | B |
|----------------------------------|--------------|--------------|
| Appl. Equipment: | CO2 BACKPACK | CO2 BACKPACK |
| Equipment Type: | BACSPR | BACSPR |
| Operation Pressure, Unit: | 43 PSI | 24 PSI |
| Nozzle Type: | TTI | FLAFXR |
| Nozzle Size: | 110015 | XR8002 |
| Nozzle Spacing, Unit: | 20 IN | 20 IN |
| Nozzles/Row: | 4 | 4 |
| Boom Length, Unit: | 6.67 FT | 6.67 FT |
| Boom Height, Unit: | 17 IN | 17 IN |
| Ground Speed, Unit: | 3 MPH | 3 MPH |
| Carrier: | WATER | WATER |
| Spray Volume, Unit: | 15 GAL/AC | 15 GAL/AC |
| Mix Size, Unit: | 1119 mL | 1119 mL |
| Propellant: | COMCO2 | COMCO2 |

| Date | By | Notes |
|-------------|------------|---|
| Jun-7-2018 | D. JOHNSON | 102 did not appear to have PRE applied. |
| Jun-8-2018 | D. JOHNSON | Evening storm brought hail and damage to crop occurred. |
| Jul-17-2018 | D. JOHNSON | Mowed trial down for crop destruction. |

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 Sponsor Contact: A. Kurtz - Bayer

Reps: 4 Plots: 6.67 by 30 feet
 Spray vol: 15 GAL/AC Mix Size: 1119 mL (total for 4 plots; minimum=1043.3 mL)

| Trt No. | Treatment Name | Form Conc | Form Unit | Form Type | Rate | Appl Code | Appl Description | Amt Product to Measure | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---------|------------------|--------------|-----------|-----------|------------|-----------|------------------|------------------------|-------|-------|-------|-------|
| 1 | UNTREATED CHECK | | | | | | | | 101 | 303 | 505 | 706 |
| 2 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 102 | 406 | 504 | 801 |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 3 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 103 | 403 | 506 | 803 |
| | VALOR SX | 51 % | | WG | 2 oz/a | A | AT PLANTING | 1.117 g/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 4 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 104 | 301 | 603 | 704 |
| | OUTLOOK | 6 LB/GAL | | EC | 12 oz/a | A | AT PLANTING | 6.994 mL/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 5 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 105 | 306 | 605 | 804 |
| | ZIDUA | 85 % | | WG | 1.5 oz/a | A | AT PLANTING | 0.838 g/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 6 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 106 | 401 | 502 | 805 |
| | TRICOR 75 DF | 75 % | | DF | 5.33 oz/a | A | AT PLANTING | 2.978 g/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 7 | SONIC | 70 % | | WG | 4.3 oz/a | A | AT PLANTING | 2.402 g/mx | 201 | 305 | 606 | 705 |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 8 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 202 | 402 | 604 | 802 |
| | WARRANT | 3 LB/GAL | | EC | 48 fl oz/a | A | AT PLANTING | 27.97 mL/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 9 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 203 | 304 | 501 | 703 |
| | DUAL II MAGNUM | 7.64 LB/GAL | | EC | 16 fl oz/a | A | AT PLANTING | 9.325 mL/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 10 | BALANCE BEAN | 4 LB/GAL | | SC | 2 fl oz/a | A | AT PLANTING | 1.166 mL/mx | 204 | 404 | 503 | 806 |
| | TRICOR 75 DF | 75 % | | DF | 5.33 oz/a | A | AT PLANTING | 2.978 g/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 11 | FIERCE | 76 % | | WG | 3 oz/a | A | AT PLANTING | 1.676 g/mx | 205 | 405 | 601 | 702 |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |
| 12 | BALANCE BEAN | 4 LB/GAL | | SC | 3 fl oz/a | A | AT PLANTING | 1.748 mL/mx | 206 | 302 | 602 | 701 |
| | SONIC | 70 % | | WG | 3 oz/a | A | AT PLANTING | 1.676 g/mx | | | | |
| | ROUNDUP POWERMAX | 4.5 LBAE/GAL | | SL | 32 fl oz/a | B | 1-3" WEEDS | 18.65 mL/mx | | | | |
| | N-PAK AMS | 3.4 LBA/GAL | | L | 2.5 % v/v | B | 1-3" WEEDS | 27.97 mL/mx | | | | |

Sort Order: Treatment

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Location: TPAC Trial Year: 2018
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| Pest Type Pest Code Pest Name | | | W Weed AMBTR Giant ragweed | | W Weed AMBTR Giant ragweed | 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-2-2018 PHYGEN % 1 D. JOHNSON | GLXMA Soybean PLOT - Jun-7-2018 PHYGEN % 1 D. JOHNSON | GLXMA Soybean PLOT - Jun-7-2018 PHYGEN % 1 D. JOHNSON | GLXMA Soybean PLOT - Jun-22-2018 PHYGEN % 1 M. ZIMMER | GLXMA Soybean PLOT - Jun-22-2018 PHYGEN % 1 M. ZIMMER | GLXMA Soybean PLOT - Jul-5-2018 PHYGEN % 1 D. JOHNSON | | |
| Rating Timing Days After First/Last Applic. Trt-Eval Interval Days After Emergence ARM Action Codes Number of Decimals | A1 16 16 14 DA-A 7 DE-1 P 0 | A2 21 21 14 DA-A 12 DE-1 P 0 | A2 21 21 14 DA-A 12 DE-1 P 0 | A3 36 15 14 DA-A 27 DE-1 P 0 | A3 36 15 14 DA-A 27 DE-1 P 0 | A4 49 28 14 DA-A 40 DE-1 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 BALANCE BEAN ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 3 abc | 82 ab | 0 - | 88 abc | 82 b-e |
| 3 BALANCE BEAN VALOR SX ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 2 oz/a A 32 fl oz/a B 2.5 % v/v B | | 1 - | 3 abc | 78 ab | 0 - | 92 a | 90 a |
| 4 BALANCE BEAN OUTLOOK ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 12 oz/a A 32 fl oz/a B 2.5 % v/v B | | 1 - | 3 ab | 80 ab | 0 - | 86 c | 78 e |
| 5 BALANCE BEAN ZIDUA ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 1.5 oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 1 cd | 74 b | 0 - | 91 a | 87 abc |
| 6 BALANCE BEAN TRICOR 75 DF ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 5.33 oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 2 bcd | 88 a | 0 - | 89 abc | 82 cde |
| 7 SONIC ROUNDUP POWERMAX N-PAK AMS | 4.3 oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 1 cd | 35 c | 0 - | 87 bc | 87 abc |
| 8 BALANCE BEAN WARRANT ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 48 fl oz/a A 32 fl oz/a B 2.5 % v/v B | | 1 - | 2 a-d | 81 ab | 0 - | 91 ab | 88 ab |
| 9 BALANCE BEAN DUAL II MAGNUM ROUNDUP POWERMAX N-PAK AMS | 3 fl oz/a A 16 fl oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 2 a-d | 74 b | 0 - | 85 c | 78 e |
| 10 BALANCE BEAN TRICOR 75 DF ROUNDUP POWERMAX N-PAK AMS | 2 fl oz/a A 5.33 oz/a A 32 fl oz/a B 2.5 % v/v B | | 0 - | 1 d | 74 b | 0 - | 87 c | 80 de |
| 11 FIERCE ROUNDUP POWERMAX N-PAK AMS | 3 oz/a A 32 fl oz/a B 2.5 % v/v B | | 1 - | 4 a | 24 c | 0 - | 91 ab | 85 a-d |

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=2,3

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

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| Pest Type | | | W Weed | | | W Weed | | | | | | | | |
|-------------------------------|------------|------------|---------------|-------------|-------------|---------------|-------------|------------|-----|--|-------|--|------|--|
| Pest Code | | | AMBTR | | | AMBTR | | | | | | | | |
| Pest Name | | | Giant ragweed | | | Giant ragweed | | | | | | | | |
| Crop Code | GLXMA | GLXMA | GLXMA | GLXMA | GLXMA | GLXMA | GLXMA | GLXMA | | | | | | |
| Crop Name | Soybean | Soybean | Soybean | Soybean | Soybean | Soybean | Soybean | Soybean | | | | | | |
| Part Rated | PLOT - | PLOT - | PLOT - | PLOT - | PLOT - | PLOT - | PLOT - | PLOT - | | | | | | |
| Rating Date | Jun-2-2018 | Jun-7-2018 | Jun-7-2018 | Jun-22-2018 | Jun-22-2018 | Jun-22-2018 | Jun-22-2018 | Jul-5-2018 | | | | | | |
| Rating Type | PHYGEN | PHYGEN | PHYGEN | PHYGEN | PHYGEN | PHYGEN | PHYGEN | PHYGEN | | | | | | |
| Rating Unit | % | % | % | % | % | % | % | % | | | | | | |
| Number of Subsamples | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | |
| Assessed By | D. JOHNSON | D. JOHNSON | D. JOHNSON | M. ZIMMER | M. ZIMMER | M. ZIMMER | M. ZIMMER | D. JOHNSON | | | | | | |
| Rating Timing | A1 | A2 | A2 | A3 | A3 | A3 | A3 | A4 | | | | | | |
| Days After First/Last Applic. | 16 16 | 21 21 | 21 21 | 36 15 | 36 15 | 36 15 | 36 15 | 49 28 | | | | | | |
| Trt-Eval Interval | 14 DA-A | 14 DA-A | 14 DA-A | 14 DA-A | 14 DA-A | 14 DA-A | 14 DA-A | 14 DA-A | | | | | | |
| Days After Emergence | 7 DE-1 | 12 DE-1 | 12 DE-1 | 27 DE-1 | 27 DE-1 | 27 DE-1 | 27 DE-1 | 40 DE-1 | | | | | | |
| ARM Action Codes | P | P | P | P | P | P | P | P | | | | | | |
| Number of Decimals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Trt Treatment No. Name | Rate | Appl | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| | Rate Unit | Code | | | | | | | | | | | | |
| 12 BALANCE BEAN | 3 fl oz/a | A | 0 - | | 2 cd | | 83 ab | | 0 - | | 91 ab | | 90 a | |
| SONIC | 3 oz/a | A | | | | | | | | | | | | |
| ROUNDUP POWERMAX | 32 fl oz/a | B | | | | | | | | | | | | |
| N-PAK AMS | 2.5 % v/v | B | | | | | | | | | | | | |
| LSD P=.05 | 1.2 | | 1.7 | 12.4 | . | 3.9 | 6.4 | | | | | | | |
| Standard Deviation | 0.8 | | 1.2 | 8.6 | 0.0 | 2.7 | 4.4 | | | | | | | |
| CV | 206.22 | | 54.55 | 12.24 | 0.0 | 3.07 | 5.28 | | | | | | | |
| Levene's F | 0.952 | | 2.449 | 1.074 | 0.00 | 0.908 | 0.321 | | | | | | | |
| Levene's Prob(F) | 0.502 | | 0.027* | 0.41 | 0.00* | 0.537 | 0.97 | | | | | | | |
| Skewness | 3.6312* | | 1.4809* | -1.4278* | . | -0.349 | -0.2413 | | | | | | | |
| Kurtosis | 15.4696* | | 2.6321* | 1.0991 | . | -0.1165 | -0.6797 | | | | | | | |
| Replicate F | 5.095 | | 3.040 | 2.774 | 0.000 | 5.790 | 9.767 | | | | | | | |
| Replicate Prob(F) | 0.0057 | | 0.0448 | 0.0592 | 1.0000 | 0.0030 | 0.0001 | | | | | | | |
| Treatment F | 1.210 | | 2.539 | 23.419 | 0.000 | 3.036 | 4.186 | | | | | | | |
| Treatment Prob(F) | 0.3241 | | 0.0245 | 0.0001 | 1.0000 | 0.0090 | 0.0011 | | | | | | | |

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

Pest Code
AMBTR, Ambrosia trifida, Giant ragweed = US

Crop Code
GLXMA, BSOY, Glycine max, Soybean = US

Part Rated
PLOT = plot

Rating Type
PHYGEN = phytotoxicity - general / injury

Rating Unit
% = percent

Rating Timing
A1 = 1st Assessment According to Trial Schedule
A2 = 2nd Assessment According to trial Schedule
A3 = 3rd Assessment According to Trial Schedule
A4 = 4th Assessment According to Trial Schedule

ARM Action Codes
P = Rating scale of 0 to 100 (e.g. % control or injury)

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=2,3
 Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.