

# Purdue Weed Science

## Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
 Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

### General Trial Information

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

**Discipline:** H herbicide  
**Status:** E established

**ARM Trial Created On:** Apr-28-2023  
**Initiation Date:** May-5-2023 **Planned Completion Date:** Oct-15-2023

### Trial Location

**City:** Lafayette **Country:** USA United States  
**State/Prov.:** Indiana **County:** Tippecanoe  
**Postal Code:** 47907

**Latitude of LL Corner** °: 40.2698806 N  
**Longitude of LL Corner** °: -86.8827528 W

### Regulations

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

### Contacts

**Role:** STYDIR study director  
**Study Director:** Dr. Bill Johnson **Title:** Professor  
**Organization:** Purdue University  
**Address 1:** 915 W. State Street  
**Country:** USA United States **E-mail:** wgj@purdue.edu  
**City:** West Lafayette **State/Prov:** IN **Postal Code:** 47907

**Role:** INVEST investigator  
**Investigator:** Dr. Bill Johnson **Title:** Professor  
**Organization:** Purdue University  
**Address 1:** 915 W. State Street  
**Country:** USA United States **E-mail:** wgj@purdue.edu  
**City:** West Lafayette **State/Prov:** IN **Postal Code:** 47907

**Role:** SPONSR sponsor  
**Sponsor:** Nick Hustedde  
**Organization:** FMC

**Role:** COOPER cooperater  
**Cooperator:** Jay Young **Title:** Superintendent  
**Organization:** Purdue University  
**Address 1:** 8343 US 231 S **Phone No.:** (765) 538-3422  
**Country:** USA United States **E-mail:** jayyoung@purdue.edu  
**City:** Lafayette **State/Prov:** IN **Postal Code:** 47907

### Crop Description

**Crop 1:** C GLXMA Glycine max Soybean **BBCH Scale:** BSOY  
**Entry Date:** May-24-2023 **Stage Scale:** BBCH  
**Variety:** Stine 29EB62  
**Attributes:** Glyphosate-R, Glufosinate-R, 2,4-D-R  
**Planting Date:** May-5-2023 **Planting Rate:** 140000 S/A  
**Depth:** 1.5 IN  
**Rows per Plot:** 4 **Planting Method:** PLANTD planted  
**Row Spacing:** 30 IN **Planting Equipment:** PP plot planter  
**Soil Temperature:** 70 F **Soil Moisture:** NORMAL normal, adequate  
**Emergence Date:** May-15-2023

### Pest Description

**Pest 1 Type:** W **Code:** AMATU **Amaranthus tuberculatus** **Entry Date:** May-24-2023  
**Common Name:** tall waterhemp **Stage Scale:** BBCH  
**Attributes:** Glyphosate-R and PPO-R

**Pest 2 Type:** W **Code:** ECHCG **Echinochloa crus-galli** **Entry Date:** May-24-2023  
**Common Name:** common barnyardgrass **Stage Scale:** BBCH

### Site and Design

**Treated Plot Width:** 6.67 FT **Site Type:** FIELD field  
**Treated Plot Length:** 30 FT **Experimental Unit:** 1 PLOT plot  
**Treated Plot Area:** 200.1 FT2 **Tillage Type:** NOTILL no-till  
**Replications:** 4 **Treatments:** 10 **Plots:** 40 **Study Design:** RACOB L Randomized Complete Block (RCB)

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**Field Prep./Maintenance:**

Roundup PowerMax 3 (30 fl oz/A) + 2,4-D (1 pint/A) applied 04/12/2023.  
 Gramoxone (3 pt/A) applied 05/04/2023.

**Soil Description**

**Description Name:** MEIGS-S5  
 % Sand: 27      % OM: 2.4      **Texture:** SIL      silt loam  
 % Silt: 52      **Soil Name:** Starks-Fincastle Complex  
 % Clay: 21      **Fert. Level:** G      good  
                          **pH:** 7.1      **CEC:** 9.3

| No. | Date        | Moisture Total | Unit | Min Temp | Max Temp | Avg Temp | Temp Unit | Max Wind | Avg Wind | Unit |
|-----|-------------|----------------|------|----------|----------|----------|-----------|----------|----------|------|
| 1.  | May-1-2023  | 0.27           | IN   | 39.7     | 46.4     | 42.6     | F         | 29.3     | 10.7     | MPH  |
| 2.  | May-2-2023  | 0              | IN   | 41       | 57.9     | 47.1     | F         | 25.1     | 7.8      | MPH  |
| 3.  | May-3-2023  | 0              | IN   | 39.2     | 62.4     | 49.3     | F         | 19.7     | 5.4      | MPH  |
| 4.  | May-4-2023  | 0              | IN   | 36.3     | 71.4     | 55.6     | F         | 12.5     | 2        | MPH  |
| 5.  | May-5-2023  | 0              | IN   | 49.1     | 78.1     | 64.2     | F         | 25.1     | 7.2      | MPH  |
| 6.  | May-6-2023  | 0.06           | IN   | 57.7     | 77.5     | 67.1     | F         | 31.5     | 9.2      | MPH  |
| 7.  | May-7-2023  | 0.76           | IN   | 60.8     | 79.7     | 69.1     | F         | 35.1     | 9.2      | MPH  |
| 8.  | May-8-2023  | 0.08           | IN   | 58.3     | 75.9     | 66.9     | F         | 20.8     | 6.7      | MPH  |
| 9.  | May-9-2023  | 0              | IN   | 54       | 75.2     | 64       | F         | 16.8     | 5.4      | MPH  |
| 10. | May-10-2023 | 0              | IN   | 52.9     | 78.3     | 65.8     | F         | 17.2     | 3.1      | MPH  |
| 11. | May-11-2023 | 0              | IN   | 53       | 81.4     | 67.94    | F         | 15       | 1.8      | MPH  |
| 12. | May-12-2023 | 0.02           | IN   | 63.4     | 79       | 70.76    | F         | 17       | 0.9      | MPH  |
| 13. | May-13-2023 | 0.17           | IN   | 66.5     | 80       | 72.06    | F         | 12       | 1.2      | MPH  |
| 14. | May-14-2023 | 0.58           | IN   | 58.7     | 72.8     | 65.19    | F         | 16       | 4.8      | MPH  |
| 15. | May-15-2023 | 0.06           | IN   | 54.3     | 71.8     | 61.5     | F         | 13       | 2.1      | MPH  |
| 16. | May-16-2023 | 0.02           | IN   | 53.9     | 71.4     | 62.06    | F         | 12       | 0.9      | MPH  |
| 17. | May-17-2023 | 0              | IN   | 49.9     | 70.2     | 60.7     | F         | 14       | 2.3      | MPH  |
| 18. | May-18-2023 | 0              | IN   | 44       | 74       | 59.75    | F         | 11       | 2.2      | MPH  |
| 19. | May-19-2023 | 1.15           | IN   | 57.1     | 79.6     | 64.84    | F         | 25       | 1.5      | MPH  |
| 20. | May-20-2023 | 0.01           | IN   | 47.6     | 66.3     | 57.57    | F         | 11       | 0        | MPH  |
| 21. | May-21-2023 | 0              | IN   | 44.3     | 78       | 62.38    | F         | 8        | 0.3      | MPH  |
| 22. | May-22-2023 | 0              | IN   | 51.1     | 80       | 67.15    | F         | 9        | 0.2      | MPH  |
| 23. | May-23-2023 | 0              | IN   | 56.7     | 82       | 70.38    | F         | 9        | 0.3      | MPH  |
| 24. | May-24-2023 | 0              | IN   | 54.4     | 82.9     | 70.73    | F         | 15       | 1        | MPH  |
| 25. | May-25-2023 | 0              | IN   | 48.4     | 68.3     | 59.7     | F         | 17       | 5.9      | MPH  |
| 26. | May-26-2023 | 0              | IN   | 46.8     | 75       | 61.24    | F         | 17       | 4        | MPH  |
| 27. | May-27-2023 | 0              | IN   | 47.2     | 77       | 64.85    | F         | 16       | 2.5      | MPH  |
| 28. | May-28-2023 | 0              | IN   | 57.6     | 79.6     | 68.81    | F         | 13       | 0.5      | MPH  |
| 29. | May-29-2023 | 0              | IN   | 56.4     | 84.6     | 71.88    | F         | 11       | 0.6      | MPH  |
| 30. | May-30-2023 | 0              | IN   | 58.7     | 87.1     | 75.14    | F         | 14       | 1.3      | MPH  |
| 31. | May-31-2023 | 0              | IN   | 65.4     | 87.7     | 77.14    | F         | 11       | 0.6      | MPH  |
| 32. | Jun-1-2023  | 0              | IN   | 64.6     | 89.2     | 77.42    | F         | 17       | 1.6      | MPH  |
| 33. | Jun-2-2023  | 0              | IN   | 61       | 89.9     | 76.83    | F         | 15       | 1.3      | MPH  |
| 34. | Jun-3-2023  | 0              | IN   | 63.1     | 89.9     | 78.15    | F         | 11       | 1.2      | MPH  |
| 35. | Jun-4-2023  | 0              | IN   | 63.5     | 82       | 73.54    | F         | 12       | 2.5      | MPH  |
| 36. | Jun-5-2023  | 0              | IN   | 54.1     | 78.8     | 67.66    | F         | 12       | 1.6      | MPH  |
| 37. | Jun-6-2023  | 0              | IN   | 53.7     | 85.5     | 69.23    | F         | 17       | 0.1      | MPH  |
| 38. | Jun-7-2023  | 0              | IN   | 59.1     | 76.2     | 67.27    | F         | 14       | 1        | MPH  |
| 39. | Jun-8-2023  | 0              | IN   | 45.9     | 76.6     | 62.87    | F         | 10       | 0.6      | MPH  |
| 40. | Jun-9-2023  | 0              | IN   | 44.6     | 79.3     | 64.11    | F         | 11       | 0.2      | MPH  |
| 41. | Jun-10-2023 | 0              | IN   | 56.5     | 84.1     | 71.38    | F         | 15       | 1.3      | MPH  |
| 42. | Jun-11-2023 | 0.76           | IN   | 56.1     | 68.3     | 63.16    | F         | 11       | 0.3      | MPH  |

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Investigator: Dr. Bill Johnson

|     |             |      |    |      |      |       |   |    |     |     |
|-----|-------------|------|----|------|------|-------|---|----|-----|-----|
| 43. | Jun-12-2023 | 0    | IN | 51.5 | 67.7 | 58.29 | F | 15 | 0.7 | MPH |
| 44. | Jun-13-2023 | 0.03 | IN | 55   | 68.6 | 60.74 | F | 16 | 2.4 | MPH |
| 45. | Jun-14-2023 | 0.04 | IN | 56.9 | 76.7 | 66.76 | F | 7  | 0   | MPH |
| 46. | Jun-15-2023 | 0    | IN | 57.6 | 84.2 | 70.06 | F | 16 | 1.8 | MPH |
| 47. | Jun-16-2023 | 0    | IN | 50.8 | 71.7 | 60.86 | F | 13 | 0.4 | MPH |
| 48. | Jun-17-2023 | 0    | IN | 50.7 | 80.9 | 66.2  | F | 7  | 0   | MPH |
| 49. | Jun-18-2023 | 0    | IN | 57.3 | 82.5 | 70.7  | F | 15 | 1.2 | MPH |
| 50. | Jun-19-2023 | 0    | IN | 65.6 | 84   | 74.05 | F | 17 | 3.3 | MPH |
| 51. | Jun-20-2023 | 0    | IN | 63.8 | 86.9 | 74.64 | F | 22 | 4.4 | MPH |
| 52. | Jun-21-2023 | 0    | IN | 64.4 | 86   | 75.4  | F | 18 | 5.1 | MPH |
| 53. | Jun-22-2023 | 0    | IN | 61.1 | 81.1 | 71.33 | F | 16 | 2.4 | MPH |
| 54. | Jun-23-2023 | 0    | IN | 64.7 | 82.4 | 72.52 | F | 7  | 0   | MPH |
| 55. | Jun-24-2023 | 0    | IN | 59.3 | 89.2 | 75.93 | F | 8  | 0.2 | MPH |
| 56. | Jun-25-2023 | 1.16 | IN | 66.8 | 87.6 | 76.75 | F | 24 | 2.8 | MPH |
| 57. | Jun-26-2023 | 0    | IN | 65.4 | 74.7 | 70.53 | F | 26 | 4.3 | MPH |
| 58. | Jun-27-2023 | 0    | IN | 60.4 | 75.3 | 66.32 | F | 7  | 0.1 | MPH |
| 59. | Jun-28-2023 | 0    | IN | 52.6 | 79.7 | 66.17 | F | 12 | 0.4 | MPH |
| 60. | Jun-29-2023 | 0.82 | IN | 63.7 | 82.9 | 69.49 | F | 30 | 1.3 | MPH |
| 61. | Jun-30-2023 | 0.01 | IN | 62.4 | 83.8 | 73.03 | F | 13 | 0.6 | MPH |

#### Application Description

|                                 | A            | B            |
|---------------------------------|--------------|--------------|
| Date                            | May-5-2023   | Jun-9-2023   |
| Start Time                      | 10:21 AM     | 5:07 PM      |
| Stop Time                       | 10:43 AM     | 5:26 PM      |
| Interval to Prev. Appl.         |              | 35 DAYS      |
| Method                          | SPRAY        | SPRAY        |
| Timing                          | PRE          | 4" WEEDS     |
| Placement                       | BROSOI       | BROFOL       |
| Applied By                      | M. ZIMMER    | M. ZIMMER    |
| Entry Date                      | May-24-2023  | Jun-15-2023  |
| Air Temperature Start, Stop     | 65, 65 F     | 89.6, 89.6 F |
| % Relative Humidity Start, Stop | 43, 43       | 30, 30       |
| Wind Velocity+Dir. Start        | 2.5 MPH, SSE | 5 MPH, S     |
| Wind Velocity+Dir. Stop         | 3 MPH, SSE   | 5 MPH, S     |
| Wind Velocity+Dir. Max          | 3 MPH, SSE   | 5 MPH, S     |
| Wet Leaves (Y/N)                | N, no        | N, no        |
| Soil Temperature                | 70 F         | 81 F         |
| Soil Moisture                   | ADEQUATE     | ADEQUATE     |
| % Cloud Cover                   | 0            | 5            |

#### Crop Stage At Each Application

|                         | A           | B           |
|-------------------------|-------------|-------------|
| Crop 1 Code, BBCH Scale | GLXMA, BSOY | GLXMA, BSOY |
| Days after Emergence    | -10         | 25          |
| Stage Majority, Percent | 0, -        | V3, -       |
| Stage Minimum, Percent  | 0, -        | V3, -       |
| Stage Maximum, Percent  | 0, -        | V4, -       |
| Height Average          | 0 IN        | 7 IN        |
| Height Minimum, Maximum | 0, 0        | 4, 8        |

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 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
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Investigator: Dr. Bill Johnson

#### Pest Stage At Each Application

|                                 | A              | B              |
|---------------------------------|----------------|----------------|
| <b>Pest 1 Code, Type, Scale</b> | AMATU, W, BBCH | AMATU, W, BBCH |
| <b>Height Average</b>           | 0 IN           | 3 IN           |
| <b>Height Minimum, Maximum</b>  | 0, 0           | 2, 6           |
| <b>Density Average</b>          | 0 FT2          | 2 FT2          |
| <b>Density Minimum, Maximum</b> | 0, 0           | 0, 6           |
| <b>Pest 2 Code, Type, Scale</b> | ECHCG, W, BBCH | ECHCG, W, BBCH |
| <b>Height Average</b>           | 0 IN           | 3 IN           |
| <b>Height Minimum, Maximum</b>  | 0, 0           | 1, 5           |
| <b>Density Average</b>          | 0 FT2          | 10 FT2         |
| <b>Density Minimum, Maximum</b> | 0, 0           | 0, 25          |

#### Application Equipment

|                               | A             | B             |
|-------------------------------|---------------|---------------|
| <b>Equipment Name</b>         | CO2 BACKPACK  | CO2 BACKPACK  |
| <b>Equipment Type</b>         | BACSPR        | BACSPR        |
| <b>Operation Pressure</b>     | 39 PSI        | 41 PSI        |
| <b>Nozzle Model</b>           | AIXR          | AIXR          |
| <b>Nozzle Type</b>            | FLAFAI        | FLAFAI        |
| <b>Nozzle TradeName</b>       | TEEJET        | TEEJET        |
| <b>Nozzle Tip Size, Color</b> | 110015, GREEN | 110015, GREEN |
| <b>Nozzle Spacing</b>         | 20.0 IN       | 20.0 IN       |
| <b>Boom Length</b>            | 6.67 FT       | 6.67 FT       |
| <b>Ground Speed</b>           | 3 MPH         | 3 MPH         |
| <b>Carrier</b>                | WATER         | WATER         |
| <b>Application Amount</b>     | 15 GAL/AC     | 15 GAL/AC     |
| <b>Mix Overage</b>            | 75.0 mL       | 75.0 mL       |
| <b>Mix Size</b>               | 1119.0 mL     | 1119.0 mL     |
| <b>Propellant</b>             | COMCO2        | COMCO2        |

#### Notes

| Context | Date        | By               | Notes   |
|---------|-------------|------------------|---|
| STATUS  | Mar-12-2023 | Dr. Bill Johnson | Automatically added by ARM: Trial Status updated to 'S' during trial creation.    |
| STATUS  | May-23-2023 | Dr. Bryan Young  | Automatically added by ARM: Status changed to: E: changed by (EINYOB).            |
| STATUS  | May-23-2023 | Dr. Bryan Young  | Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered. |

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Investigator: Dr. Bill Johnson

| Assessed By   | Rate   | Appl  | 1*   | 4*  | 2*   | 5*  | 7*  |          |
|---|--|---|--|---|--|---|---|----------|
| Assessed By<br>Rating Date<br>Rating Type<br>Rating Unit/Min/Max<br>Number of Subsamples<br>Crop Type, Code<br>Crop Scientific Name<br>Crop Name<br>Pest Code<br>Pest Scientific Name<br>Pest Name<br>Rating Timing<br>ARM Action Codes | Claudia Bland<br>May-19-2023<br>PHYGEN<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean | Claudia Bland<br>Jun-2-2023<br>PHYGEN<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean | Claudia Bland<br>May-19-2023<br>CONTRO<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean<br>AMATU<br>Amaranthus tube><br>tall waterhemp<br>14 DA-A<br>EC | Claudia Bland<br>Jun-2-2023<br>CONTRO<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean<br>AMATU<br>Amaranthus tube><br>tall waterhemp<br>28 DA-A<br>EC | Claudia Bland<br>May-19-2023<br>CONTRO<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean<br>AMATU<br>Amaranthus tube><br>tall waterhemp<br>14 DA-A<br>EC | Claudia Bland<br>Jun-2-2023<br>CONTRO<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean<br>AMATU<br>Amaranthus tube><br>tall waterhemp<br>28 DA-A<br>EC | Claudia Bland<br>Jun-9-2023<br>CONTRO<br>%, 0, 100<br>1<br>C, GLXMA<br>Glycine max<br>Soybean<br>AMATU<br>Amaranthus tube><br>tall waterhemp<br>35 DA-A<br>EC |          |
| Trt No.   | Treatment Name   | Rate Unit   | Code   | 1*  | 4*   | 2*  | 5*  | 7*       |
| 1   | NONTREATED   |   |  | 0.0 d   | 0.0 a  | 0.0   | 0.0   | 0.0      |
| 2   | AUTHORITY SUPREME<br>ENLIST ONE<br>LIBERTY<br>AMSOL  | 8 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                    |  | 4.0 abc   | 2.8 a  | 100.0 a   | 99.5 a  | 95.0 ab  |
| 3   | AUTHORITY SUPREME<br>TRICOR<br>ENLIST ONE<br>LIBERTY<br>AMSOL                                  | 7 fl oz/a A<br>5 oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                        |  | 5.8 a   | 1.5 a  | 100.0 a   | 99.5 a  | 100.0 a  |
| 4   | AUTHORITY SUPREME<br>ANTHEM MAXX<br>ENLIST ONE<br>LIBERTY<br>AMSOL                             | 6.5 fl oz/a A<br>2.5 fl oz/a B<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                 |  | 4.5 abc   | 0.8 a  | 100.0 a   | 99.5 a  | 95.0 ab  |
| 5   | TENDOVO<br>ENLIST ONE<br>LIBERTY<br>AMSOL  | 56 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                   |  | 4.8 ab  | 0.8 a  | 100.0 a   | 100.0 a   | 92.0 abc |
| 6   | ZIDUA PRO<br>ENLIST ONE<br>LIBERTY<br>AMSOL  | 6 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                    |  | 4.8 ab  | 1.5 a  | 100.0 a   | 99.5 a  | 95.0 ab  |
| 7   | ANTHEM MAXX<br>ENLIST ONE<br>LIBERTY<br>AMSOL  | 4 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                    |  | 4.5 abc   | 0.0 a  | 100.0 a   | 99.5 a  | 89.5 bc  |
| 8   | DUAL II MAGNUM<br>ENLIST ONE<br>LIBERTY<br>AMSOL   | 20.8 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                 |  | 3.5 abc   | 0.0 a  | 100.0 a   | 82.5 c  | 75.0 d   |
| 9   | OUTLOOK<br>ENLIST ONE<br>LIBERTY<br>AMSOL  | 14 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                                   |  | 2.8 bc  | 0.8 a  | 100.0 a   | 87.5 bc   | 83.8 cd  |

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.  
 \* Adjusted means  
 ^Calculated from residual.

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Investigator: Dr. Bill Johnson

| Assessed By          | Claudia Bland | Claudia Bland | Claudia Bland    | Claudia Bland    | Claudia Bland    |
|----------------------|---------------|---------------|------------------|------------------|------------------|
| Rating Date          | May-19-2023   | Jun-2-2023    | May-19-2023      | Jun-2-2023       | Jun-9-2023       |
| Rating Type          | PHYGEN        | PHYGEN        | CONTRO           | CONTRO           | CONTRO           |
| Rating Unit/Min/Max  | % , 0, 100    | % , 0, 100    | % , 0, 100       | % , 0, 100       | % , 0, 100       |
| Number of Subsamples | 1             | 1             | 1                | 1                | 1                |
| Crop Type, Code      | C, GLXMA      | C, GLXMA      | C, GLXMA         | C, GLXMA         | C, GLXMA         |
| Crop Scientific Name | Glycine max   | Glycine max   | Glycine max      | Glycine max      | Glycine max      |
| Crop Name            | Soybean       | Soybean       | Soybean          | Soybean          | Soybean          |
| Pest Code            |               |               | AMATU            | AMATU            | AMATU            |
| Pest Scientific Name |               |               | Amaranthus tube> | Amaranthus tube> | Amaranthus tube> |
| Pest Name            |               |               | tall waterhemp   | tall waterhemp   | tall waterhemp   |
| Rating Timing        | 14 DA-A       | 28 DA-A       | 14 DA-A          | 28 DA-A          | 35 DA-A          |
| ARM Action Codes     |               |               | EC               | EC               | EC               |
| Trt Treatment        |               |               |                  |                  |                  |
| No. Name             |               |               |                  |                  |                  |
| Rate                 |               |               |                  |                  |                  |
| Unit                 |               |               |                  |                  |                  |
| Appl Code            |               |               |                  |                  |                  |
|                      | 1*            | 4*            | 2*               | 5*               | 7*               |
| 10 WARRANT           | 2.0 cd        | 1.3 a         | 99.5 a           | 95.0 ab          | 90.0 bc          |
| ENLIST ONE           |               |               |                  |                  |                  |
| LIBERTY              |               |               |                  |                  |                  |
| AMSOL                |               |               |                  |                  |                  |
| LSD P=.05            | 2.53          | 2.22          | 0.49             | 7.80             | 9.11             |
| Standard Deviation   | 1.74          | 1.53          | 0.33             | 5.34             | 6.24             |
| CV                   | 47.77         | 165.24        | 0.33             | 5.58             | 6.89             |
| Levene's Prob(F)     | 0.141         | 0.551         | 0.704            | 0.458            | 0.35             |
| P(Shapiro-Wilk)^     | 0.5557        | 0.1945        | 0.0*             | 0.0105*          | 0.2494           |
| P(Skewness)^         | 0.4084        | 0.182         | 0.0*             | 0.0297*          | 0.5907           |
| P(Kurtosis)^         | 0.9982        | 0.9486        | 0.0*             | 0.0004*          | 0.2391           |
| Replicate F          | 0.208         | 0.952         | 1.000            | 1.517            | 0.466            |
| Replicate Prob(F)    | 0.8898        | 0.4293        | 0.4098           | 0.2356           | 0.7084           |
| Treatment F          | 3.694         | 1.285         | 1.000            | 5.824            | 5.649            |
| Treatment Prob(F)    | 0.0040        | 0.2896        | 0.4613           | 0.0004           | 0.0004           |

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.  
 \* Adjusted means  
 ^Calculated from residual.

## Purdue Weed Science

### Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
 Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

| Assessed By  | Claudia Bland   | Claudia Bland    | Claudia Bland    | Claudia Bland    |
|--|---|------------------|------------------|------------------|
| Rating Date  | Jun-9-2023  | Jun-30-2023      | May-19-2023      | Jun-2-2023       |
| Rating Type  | COUNT   | CONTRO           | CONTRO           | CONTRO           |
| Rating Unit/Min/Max  | NUMBER, -, -  | %, 0, 100        | %, 0, 100        | %, 0, 100        |
| Number of Subsamples   | 2   | 1                | 1                | 1                |
| Crop Type, Code  | C, GLXMA  | C, GLXMA         | C, GLXMA         | C, GLXMA         |
| Crop Scientific Name   | Glycine max   | Glycine max      | Glycine max      | Glycine max      |
| Crop Name  | Soybean   | Soybean          | Soybean          | Soybean          |
| Pest Code  | AMATU   | AMATU            | ECHCG            | ECHCG            |
| Pest Scientific Name   | Amaranthus tube>  | Amaranthus tube> | Echinochloa cru> | Echinochloa cru> |
| Pest Name  | tall waterhemp  | tall waterhemp   | common barnyard> | common barnyard> |
| Rating Timing  | 35 DA-A   | 56 DA-A          | 14 DA-A          | 28 DA-A          |
| ARM Action Codes   |   | EC               | EC               | EC               |
| Trt Treatment  | 9*  | 11*              | 3*               | 6*               |
| No. Name   |   |                  |                  |                  |
| Rate   |   |                  |                  |                  |
| Appl   |   |                  |                  |                  |
| Rate Unit  |   |                  |                  |                  |
| Code   |   |                  |                  |                  |
| 1 NONTREATED   | 12.1 a  | 0.0              | 0.0              | 0.0              |
| 2 AUTHORITY SUPREME<br>ENLIST ONE<br>LIBERTY<br>AMSOL                | 8 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                    | 0.4 b            | 96.3 a           | 100.0 a          |
| 3 AUTHORITY SUPREME<br>TRICOR<br>ENLIST ONE<br>LIBERTY<br>AMSOL      | 7 fl oz/a A<br>5 oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B        | 0.3 b            | 95.8 a           | 100.0 a          |
| 4 AUTHORITY SUPREME<br>ANTHEM MAXX<br>ENLIST ONE<br>LIBERTY<br>AMSOL | 6.5 fl oz/a A<br>2.5 fl oz/a B<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B | 0.4 b            | 97.5 a           | 100.0 a          |
| 5 TENDOVO<br>ENLIST ONE<br>LIBERTY<br>AMSOL                          | 56 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                   | 1.5 b            | 90.8 a           | 100.0 a          |
| 6 ZIDUA PRO<br>ENLIST ONE<br>LIBERTY<br>AMSOL                        | 6 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                    | 1.0 b            | 93.3 a           | 99.5 a           |
| 7 ANTHEM MAXX<br>ENLIST ONE<br>LIBERTY<br>AMSOL                      | 4 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                    | 5.3 b            | 92.0 a           | 100.0 a          |
| 8 DUAL II MAGNUM<br>ENLIST ONE<br>LIBERTY<br>AMSOL                   | 20.8 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                 | 4.4 b            | 77.5 b           | 98.8 a           |
| 9 OUTLOOK<br>ENLIST ONE<br>LIBERTY<br>AMSOL                          | 14 fl oz/a A<br>32 fl oz/a B<br>32 fl oz/a B<br>2.5 % v/v B                   | 2.0 b            | 81.3 b           | 100.0 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.  
 \* Adjusted means  
 ^Calculated from residual.

## Purdue Weed Science

### Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
 Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

|                      |                  |                  |                  |                  |
|----------------------|------------------|------------------|------------------|------------------|
| Assessed By          | Claudia Bland    | Claudia Bland    | Claudia Bland    | Claudia Bland    |
| Rating Date          | Jun-9-2023       | Jun-30-2023      | May-19-2023      | Jun-2-2023       |
| Rating Type          | COUNT            | CONTRO           | CONTRO           | CONTRO           |
| Rating Unit/Min/Max  | NUMBER, -, -     | %, 0, 100        | %, 0, 100        | %, 0, 100        |
| Number of Subsamples | 2                | 1                | 1                | 1                |
| Crop Type, Code      | C, GLXMA         | C, GLXMA         | C, GLXMA         | C, GLXMA         |
| Crop Scientific Name | Glycine max      | Glycine max      | Glycine max      | Glycine max      |
| Crop Name            | Soybean          | Soybean          | Soybean          | Soybean          |
| Pest Code            | AMATU            | AMATU            | ECHCG            | ECHCG            |
| Pest Scientific Name | Amaranthus tube> | Amaranthus tube> | Echinochloa cru> | Echinochloa cru> |
| Pest Name            | tall waterhemp   | tall waterhemp   | common barnyard> | common barnyard> |
| Rating Timing        | 35 DA-A          | 56 DA-A          | 14 DA-A          | 28 DA-A          |
| ARM Action Codes     |                  | EC               | EC               | EC               |
| Trt Treatment        | 9*               | 11*              | 3*               | 6*               |
| No. Name             |                  |                  |                  |                  |
| Rate                 |                  |                  |                  |                  |
| Appl                 |                  |                  |                  |                  |
| Code                 |                  |                  |                  |                  |
| 10 WARRANT           | 48 fl oz/a A     |                  |                  |                  |
| ENLIST ONE           | 32 fl oz/a B     |                  |                  |                  |
| LIBERTY              | 32 fl oz/a B     |                  |                  |                  |
| AMSOL                | 2.5 % v/v B      |                  |                  |                  |
| LSD P=.05            | 6.10             | 7.70             | 4.19             | 10.23            |
| Standard Deviation   | 4.20             | 5.28             | 2.87             | 7.01             |
| CV                   | 151.5            | 5.82             | 2.91             | 7.59             |
| Levene's Prob(F)     | 0.153            | 0.269            | 0.093            | 0.116            |
| P(Shapiro-Wilk)^     | 0.0*             | 0.1706           | 0.0*             | 0.0001*          |
| P(Skewness)^         | 0.0*             | 0.6301           | 0.4866           | 0.0003*          |
| P(Kurtosis)^         | 0.0*             | 0.275            | 0.0*             | 0.0*             |
| Replicate F          | 0.406            | 0.025            | 0.975            | 0.791            |
| Replicate Prob(F)    | 0.7499           | 0.9945           | 0.4210           | 0.5111           |
| Treatment F          | 3.132            | 6.775            | 5.250            | 9.860            |
| Treatment Prob(F)    | 0.0103           | 0.0001           | 0.0007           | 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.  
 \* Adjusted means  
 ^Calculated from residual.

# Purdue Weed Science

## Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
 Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

| Assessed By          |                   |                   | Claudia Bland    | Claudia Bland    | Claudia Bland    |         |
|----------------------|-------------------|-------------------|------------------|------------------|------------------|---------|
| Rating Date          |                   |                   | Jun-9-2023       | Jun-9-2023       | Jun-30-2023      |         |
| Rating Type          |                   |                   | CONTRO           | COUNT            | CONTRO           |         |
| Rating Unit/Min/Max  |                   |                   | %, 0, 100        | NUMBER, -, -     | %, 0, 100        |         |
| Number of Subsamples |                   |                   | 1                | 2                | 1                |         |
| Crop Type, Code      |                   |                   | C, GLXMA         | C, GLXMA         | C, GLXMA         |         |
| Crop Scientific Name |                   |                   | Glycine max      | Glycine max      | Glycine max      |         |
| Crop Name            |                   |                   | Soybean          | Soybean          | Soybean          |         |
| Pest Code            |                   |                   | ECHCG            | ECHCG            | ECHCG            |         |
| Pest Scientific Name |                   |                   | Echinochloa cru> | Echinochloa cru> | Echinochloa cru> |         |
| Pest Name            |                   |                   | common barnyard> | common barnyard> | common barnyard> |         |
| Rating Timing        |                   |                   | 35 DA-A          | 35 DA-A          | 56 DA-A          |         |
| ARM Action Codes     |                   |                   | EC               | EC               | EC               |         |
| Trt No.              | Treatment Name    | Rate<br>Rate Unit | Appl Code        | 8*               | 10*              | 12*     |
| 1                    | NONTREATED        |                   |                  | 0.0              | 34.0 a           | 0.0     |
| 2                    | AUTHORITY SUPREME | 8 fl oz/a A       |                  | 83.8 abc         | 3.4 b            | 88.3 a  |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 3                    | AUTHORITY SUPREME | 7 fl oz/a A       |                  | 86.3 ab          | 3.0 b            | 89.0 a  |
|                      | TRICOR            | 5 oz/a A          |                  |                  |                  |         |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 4                    | AUTHORITY SUPREME | 6.5 fl oz/a A     |                  | 82.5 abc         | 2.6 b            | 89.0 a  |
|                      | ANTHEM MAXX       | 2.5 fl oz/a B     |                  |                  |                  |         |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 5                    | TENDOVO           | 56 fl oz/a A      |                  | 92.5 ab          | 0.3 b            | 92.0 a  |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 6                    | ZIDUA PRO         | 6 fl oz/a A       |                  | 93.8 a           | 2.1 b            | 92.5 a  |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 7                    | ANTHEM MAXX       | 4 fl oz/a A       |                  | 77.5 bc          | 6.5 b            | 86.3 ab |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 8                    | DUAL II MAGNUM    | 20.8 fl oz/a A    |                  | 78.8 abc         | 5.9 b            | 85.0 ab |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |
| 9                    | OUTLOOK           | 14 fl oz/a A      |                  | 70.0 cd          | 2.9 b            | 76.3 bc |
|                      | ENLIST ONE        | 32 fl oz/a B      |                  |                  |                  |         |
|                      | LIBERTY           | 32 fl oz/a B      |                  |                  |                  |         |
|                      | AMSOL             | 2.5 % v/v B       |                  |                  |                  |         |

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.  
 \* Adjusted means  
 ^Calculated from residual.

## Purdue Weed Science

### Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
 Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
 Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

|                      |                  |                  |                  |
|----------------------|------------------|------------------|------------------|
| Assessed By          | Claudia Bland    |                  |                  |
| Rating Date          | Jun-9-2023       | Jun-9-2023       | Jun-30-2023      |
| Rating Type          | CONTRO           | COUNT            | CONTRO           |
| Rating Unit/Min/Max  | %, 0, 100        | NUMBER, -, -     | %, 0, 100        |
| Number of Subsamples | 1                | 2                | 1                |
| Crop Type, Code      | C, GLXMA         | C, GLXMA         | C, GLXMA         |
| Crop Scientific Name | Glycine max      | Glycine max      | Glycine max      |
| Crop Name            | Soybean          | Soybean          | Soybean          |
| Pest Code            | ECHCG            | ECHCG            | ECHCG            |
| Pest Scientific Name | Echinochloa cru> | Echinochloa cru> | Echinochloa cru> |
| Pest Name            | common barnyard> | common barnyard> | common barnyard> |
| Rating Timing        | 35 DA-A          | 35 DA-A          | 56 DA-A          |
| ARM Action Codes     | EC               | EC               | EC               |
| Trt Treatment        | 8*               | 10*              | 12*              |
| No. Name             | Rate Unit        | Rate Unit        | Rate Unit        |
| 10 WARRANT           | 48 fl oz/a A     |                  |                  |
| ENLIST ONE           | 32 fl oz/a B     |                  |                  |
| LIBERTY              | 32 fl oz/a B     |                  |                  |
| AMSOL                | 2.5 % v/v B      |                  |                  |
| LSD P=.05            | 15.22            | 9.80             | 11.04            |
| Standard Deviation   | 10.43            | 6.75             | 7.57             |
| CV                   | 12.95            | 101.95           | 8.88             |
| Levene's Prob(F)     | 0.016*           | 0.065            | 0.057            |
| P(Shapiro-Wilk)^     | 0.7087           | 0.0022*          | 0.0277*          |
| P(Skewness)^         | 0.4412           | 0.0136*          | 0.6453           |
| P(Kurtosis)^         | 0.8375           | 0.0*             | 0.0003*          |
| Replicate F          | 0.732            | 3.230            | 0.234            |
| Replicate Prob(F)    | 0.5431           | 0.0379           | 0.8716           |
| Treatment F          | 4.181            | 8.433            | 4.276            |
| Treatment Prob(F)    | 0.0030           | 0.0001           | 0.0026           |

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.

\* Adjusted means

^Calculated from residual.

## Purdue Weed Science

### Evaluating Authority Supreme/Edge and Anthem Maxx for Residual Weed Control in Soybean

Trial ID: 23-MGS-Soy-02  
Protocol ID: 23-MGS-Soy-02 Location: Meigs Trial Year: 2023  
Study Director: Dr. Bill Johnson Sponsor Contact: Nick Hustedde

Investigator: Dr. Bill Johnson

#### Rating Type

PHYGEN = phytotoxicity - general / injury  
CONTRO = control / burndown or knockdown  
COUNT = count

#### Rating Unit/Min/Max

%, 0, 100 = percent  
NUMBER, , = number

#### Crop Type Code

C = EPPO species (Bayer) codes  
GLXMA, BSOY, Glycine max, Soybean = US

#### Pest Code

AMATU, Amaranthus tuberculatus, tall waterhemp = US  
ECHCG, Echinochloa crus-galli, common barnyardgrass = US

#### ARM Action Codes

EC = Do not analyze untreated check, while still reporting treatment mean on AOV Means Table