

# Purdue University Weed Science

## Planned two-pass programs for control of glyphosate-resistant Palmer amaranth in RR Soybean

Trial ID: 13S-CCP-CTS-10      Location: Cass County      Trial Year: 2013  
 Protocol ID: 13S-CCP-CTS-10      Investigator: Dr. Bill Johnson  
 Project ID: USA-13-114/116      Study Director: Joe Ikley  
 Sponsor Contact: DuPont - Kelly Barnett

### General Trial Information

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

**Discipline:** H herbicide  
**Trial Status:** F one-year/final      **Trial Reliability:** HIGH  
**Initiation Date:** 5/9/2013  
**Completion Date:** 7/1/2013

### Trial Location

**City:** 12 Mile      **Country:** USA United States  
**State/Prov.:** Indiana

### Contacts

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-0891  
**City+State/Prov:** West Lafayette      **Mobile No.:** 410-596-9091  
**Postal Code:** 47907      **E-mail:** jikley@purdue.edu

**Investigator:** Dr. Bill Johnson      **Title:** Professor  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-4656  
**City+State/Prov:** West Lafayette      **Mobile No.:** 765-404-9801  
**Postal Code:** 47907      **E-mail:** wgj@purdue.edu

### Crop Description

**Crop 1:** GLXMA      Glycine max      Soybean  
**Variety:** Stine 29RD02  
**Description:** RR  
**Planting Rate, Unit:** 140000 S/A      **Planting Date:** 5/9/2013  
**Depth, Unit:** 2 IN      **Planting Method:** DIRDRI direct drilled  
**Row Spacing, Unit:** 30 IN      **Emergence Date:** 5/17/2013  
**Spacing Within Row, Unit:** 2 IN

### Pest Description

**Pest 1 Type:** W      **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth  
**Description:** GLY-RES

### Site and Design

**Treated Plot Width:** 10 FT      **Site Type:** FIELD field  
**Treated Plot Length:** 30 FT      **Experimental Unit:** 1 PLOT plot  
**Treated Plot Area:** 300 FT<sup>2</sup>      **Treatments:** 16      **Tillage Type:** CONTIL conventional-till  
**Replications:** 4      **Study Design:** RAOBL Randomized Complete Block (RCB)

### Soil Description

**Description Name:** Bloomfield Loamy Fine Sand  
**Texture:** LFS      loamy fine sand  
**Soil Name:** Bloomfield Loamy Fine Sand  
**Soil Drainage:** E      excellent

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## Application Description

|                                | A         | B          |
|--------------------------------|-----------|------------|
| <b>Application Date:</b>       | 5/13/2013 | 6/3/2013   |
| <b>Appl. Start Time:</b>       | 11:30     | 14:00      |
| <b>Appl. Stop Time:</b>        | 13:00     | 15:30      |
| <b>Application Method:</b>     | SPRAY     | SPRAY      |
| <b>Application Timing:</b>     | PREPRE    | POSPOS     |
| <b>Application Placement:</b>  | SOIL      | BROADC     |
| <b>Applied By:</b>             | Devkota   | Spaunhorst |
| <b>Air Temperature, Unit:</b>  | 61 F      | 72.5 F     |
| <b>% Relative Humidity:</b>    | 30        | 60         |
| <b>Wind Velocity, Unit:</b>    | 5 MPH     | 2 MPH      |
| <b>Wind Direction:</b>         | NW        | NNE        |
| <b>Dew Presence (Y/N):</b>     | N no      | N no       |
| <b>Soil Temperature, Unit:</b> | 58 F      | 76 F       |
| <b>Soil Moisture:</b>          | SLIWET    | SLIWET     |
| <b>% Cloud Cover:</b>          | 30        | 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         | 12         |
| <b>Height, Unit:</b>            |            | 4 IN       |

## Pest Stage At Each Application

|                                  | A       | B       |
|----------------------------------|---------|---------|
| <b>Pest 1 Code, Type, Scale:</b> | AMAPA W | AMAPA W |
| <b>Stage Majority, Percent:</b>  | 00      | 32      |
| <b>Stage Minimum, Percent:</b>   |         | 31      |
| <b>Stage Maximum, Percent:</b>   |         | 33      |
| <b>Height, Unit:</b>             |         | 1 IN    |
| <b>Height Minimum, Maximum:</b>  |         | 0 2     |
| <b>Density, Unit:</b>            |         | 30 YD2  |

## Purdue University Weed Science

| Application Equipment              |              |              |
|------------------------------------|--------------|--------------|
|                                    | A            | B            |
| <b>Appl. Equipment:</b>            | CO2 Backpack | CO2 Backpack |
| <b>Equipment Type:</b>             | SPRBAC       | SPRBAC       |
| <b>Operation Pressure, Unit:</b>   | 17 PSI       | 17 PSI       |
| <b>Nozzle Type:</b>                | Flat Fan     | Flat Fan     |
| <b>Nozzle Size:</b>                | XR11002      | 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>          | 18 IN        | 18 IN        |
| <b>Ground Speed, Unit:</b>         | 3 MPH        | 3 MPH        |
| <b>Carrier:</b>                    | H2O          | H2O          |
| <b>Water Hardness (ppm CaCO3):</b> | 150          | 150          |
| <b>Spray Volume, Unit:</b>         | 15 GAL/AC    | 15 GAL/AC    |
| <b>Mix Size, Unit:</b>             | 1.8 Liters   | 1.8 Liters   |
| <b>Propellant:</b>                 | CO2          | CO2          |
| <b>Tank Mix (Y/N):</b>             | N no         | N no         |

Trial Comments

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## Planned two-pass programs for control of glyphosate-resistant Palmer amaranth in RR Soybean

Trial ID: 13S-CCP-CTS-10      Location: Cass County      Trial Year: 2013  
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 Project ID: USA-13-114/116      Study Director: Joe Ikley  
 Sponsor Contact: DuPont - Kelly Barnett

Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 gal/ac      Mix size: 1.8 liters (min 1.5642)

| Trt No. | Treatment Name  | Form Conc | Form Unit | Form Type | Rate   | Rate Unit | Other Rate | Other Unit | Appl Code | Appl Description | Amt Product to Measure | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---------|-----------------|-----------|-----------|-----------|--------|-----------|------------|------------|-----------|------------------|------------------------|-------|-------|-------|-------|
| 1       | Untreated Check |           |           |           |        |           |            |            |           |                  |                        | 101   | 406   | 507   | 802   |
| 2       | Classic         | 25 %      | AW/W      | DF        | 33.6 g | ai/ha     | 0.48 oz    | ai/a       | A         | PREPRE           | 1.724 g/mx             | 102   | 402   | 504   | 808   |
|         | Harmony SG      | 50 %      |           | SG        | 10.5 g | ai/ha     | 0.15 oz    | ai/a       | A         | PREPRE           | 0.2694 g/mx            |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 108 g  | ai/ha     | 3.03 oz    | a          | A         | PREPRE           | 2.717 g/mx             |       |       |       |       |
| 3       | Classic         | 25 %      | AW/W      | DF        | 33.6 g | ai/ha     | 0.48 oz    | ai/a       | A         | PREPRE           | 1.724 g/mx             | 103   | 308   | 502   | 806   |
|         | Harmony SG      | 50 %      |           | SG        | 10.5 g | ai/ha     | 0.15 oz    | ai/a       | A         | PREPRE           | 0.2694 g/mx            |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 108 g  | ai/ha     | 3.03 oz    | a          | A         | PREPRE           | 2.717 g/mx             |       |       |       |       |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | B         | POSPOS           | 14.97 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 4       | Canopy          | 75 %      | AW/W      | DF        | 210 g  | ai/ha     | 4 oz       | a          | A         | PREPRE           | 3.592 g/mx             | 104   | 407   | 501   | 704   |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | A         | PREPRE           | 14.97 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | Prefix          | 5.3       | LB/GAL    | L         | 1490 g | ai/ha     | 1 qt       | a          | B         | POSPOS           | 30.05 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 5       | Classic         | 25 %      | AW/W      | DF        | 22 g   | ai/ha     | 0.3125 oz  | ai/a       | A         | PREPRE           | 1.129 g/mx             | 105   | 405   | 508   | 705   |
|         | Sencor 75DF     | 75 %      | AW/W      | DF        | 250 g  | ai/ha     | 4.75 oz    | a          | A         | PREPRE           | 4.276 g/mx             |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 71.5 g | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.799 g/mx             |       |       |       |       |
| 6       | Classic         | 25 %      | AW/W      | DF        | 22 g   | ai/ha     | 0.3125 oz  | ai/a       | A         | PREPRE           | 1.129 g/mx             | 106   | 305   | 601   | 707   |
|         | Sencor 75DF     | 75 %      | AW/W      | DF        | 250 g  | ai/ha     | 4.75 oz    | a          | A         | PREPRE           | 4.276 g/mx             |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 71.5 g | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.799 g/mx             |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | B         | POSPOS           | 14.97 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 7       | Classic         | 25 %      | AW/W      | DF        | 22.4 g | ai/ha     | 0.32 oz    | ai/a       | A         | PREPRE           | 1.149 g/mx             | 107   | 301   | 605   | 803   |
|         | Harmony SG      | 50 %      |           | SG        | 7 g    | ai/ha     | 0.1 oz     | ai/a       | A         | PREPRE           | 0.1796 g/mx            |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 71.5 g | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.799 g/mx             |       |       |       |       |
|         | Zidua           | 85 %      |           | WG        | 89 g   | ai/ha     | 1.5 oz     | a          | A         | PREPRE           | 1.343 g/mx             |       |       |       |       |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | B         | POSPOS           | 14.97 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 8       | Classic         | 25 %      | AW/W      | DF        | 22.4 g | ai/ha     | 0.32 oz    | ai/a       | A         | PREPRE           | 1.149 g/mx             | 108   | 401   | 505   | 706   |
|         | Harmony SG      | 50 %      |           | SG        | 7 g    | ai/ha     | 0.1 oz     | ai/a       | A         | PREPRE           | 0.1796 g/mx            |       |       |       |       |
|         | Valor           | 51 %      |           | WG        | 71.5 g | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.799 g/mx             |       |       |       |       |
|         | Zidua           | 85 %      |           | WG        | 89 g   | ai/ha     | 1.5 oz     | a          | A         | PREPRE           | 1.343 g/mx             |       |       |       |       |
|         | Prefix          | 5.3       | LB/GAL    | L         | 1490 g | ai/ha     | 1 qt       | a          | B         | POSPOS           | 30.05 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 9       | Canopy          | 75 %      | AW/W      | DF        | 210 g  | ai/ha     | 4 oz       | a          | A         | PREPRE           | 3.592 g/mx             | 201   | 304   | 503   | 807   |
|         | Zidua           | 85 %      |           | WG        | 89 g   | ai/ha     | 1.5 oz     | a          | A         | PREPRE           | 1.343 g/mx             |       |       |       |       |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | B         | POSPOS           | 14.97 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 10      | Canopy          | 75 %      | AW/W      | DF        | 210 g  | ai/ha     | 4 oz       | a          | A         | PREPRE           | 3.592 g/mx             | 202   | 306   | 603   | 703   |
|         | Zidua           | 85 %      |           | WG        | 89 g   | ai/ha     | 1.5 oz     | a          | A         | PREPRE           | 1.343 g/mx             |       |       |       |       |
|         | Prefix          | 5.3       | LB/GAL    | L         | 1490 g | ai/ha     | 1 qt       | a          | B         | POSPOS           | 30.05 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 11      | Canopy          | 75 %      | AW/W      | DF        | 210 g  | ai/ha     | 4 oz       | a          | A         | PREPRE           | 3.592 g/mx             | 203   | 303   | 606   | 702   |
|         | Fierce          | 76 %      |           | WG        | 106 g  | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.789 g/mx             |       |       |       |       |
|         | Cinch           | 7.64      | LBA/GAL   | EC        | 1070 g | ai/ha     | 1 pt       | a          | B         | POSPOS           | 14.97 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |
| 12      | Canopy          | 75 %      | AW/W      | DF        | 210 g  | ai/ha     | 4 oz       | a          | A         | PREPRE           | 3.592 g/mx             | 204   | 404   | 602   | 708   |
|         | Fierce          | 76 %      |           | WG        | 106 g  | ai/ha     | 2 oz       | a          | A         | PREPRE           | 1.789 g/mx             |       |       |       |       |
|         | Prefix          | 5.3       | LB/GAL    | L         | 1490 g | ai/ha     | 1 qt       | a          | B         | POSPOS           | 30.05 ml/mx            |       |       |       |       |
|         | Abundit Extra   | 3         | LBAE/GAL  | L         | 840 g  | ae/ha     | 32 fl oz   | a          | B         | POSPOS           | 29.93 ml/mx            |       |       |       |       |
|         | N-Pak AMS       | 3.4       | LBA/GAL   | SL        | 3.9 %  | v/v       | 2 lb       | ai/a       | B         | POSPOS           | 70.2 ml/mx             |       |       |       |       |

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Reps: 4

Plots: 10 by 30 feet

Spray vol: 15 gal/ac

Mix size: 1.8 liters (min 1.5642)

| Trt No. | Treatment Name  | Form Conc    | Form Type | Form Rate    | Form Rate Unit | Other Rate     | Other Rate Unit | Appl Code | Appl Description | Amt Product to Measure | Rep 1 | 2   | 3   | 4   |
|---------|-----------------|--------------|-----------|--------------|----------------|----------------|-----------------|-----------|------------------|------------------------|-------|-----|-----|-----|
| 13      | Classic         | 25 %AW/W     | DF        | 22 g ai/ha   |                | 0.3125 oz ai/a |                 | A         | PREPRE           | 1.129 g/mx             | 205   | 408 | 604 | 805 |
|         | Sencor 75DF     | 75 %AW/W     | DF        | 250 g ai/ha  |                | 4.75 oz/a      |                 | A         | PREPRE           | 4.276 g/mx             |       |     |     |     |
|         | Valor           | 51 %         | WG        | 71.5 g ai/ha |                | 2 oz/a         |                 | A         | PREPRE           | 1.799 g/mx             |       |     |     |     |
|         | Zidua           | 85 %         | WG        | 89 g ai/ha   |                | 1.5 oz/a       |                 | A         | PREPRE           | 1.343 g/mx             |       |     |     |     |
|         | Cinch           | 7.64 LBA/GAL | EC        | 1070 g ai/ha |                | 1 pt/a         |                 | B         | POSPOS           | 14.97 ml/mx            |       |     |     |     |
|         | Abundit Extra   | 3 LBAE/GAL   | L         | 840 g ae/ha  |                | 32 fl oz/a     |                 | B         | POSPOS           | 29.93 ml/mx            |       |     |     |     |
|         | N-Pak AMS       | 3.4 LBA/GAL  | SL        | 3.9 % v/v    |                | 2 lb ai/a      |                 | B         | POSPOS           | 70.2 ml/mx             |       |     |     |     |
| 14      | Classic         | 25 %AW/W     | DF        | 22 g ai/ha   |                | 0.3125 oz ai/a |                 | A         | PREPRE           | 1.129 g/mx             | 206   | 302 | 608 | 701 |
|         | Sencor 75DF     | 75 %AW/W     | DF        | 250 g ai/ha  |                | 4.75 oz/a      |                 | A         | PREPRE           | 4.276 g/mx             |       |     |     |     |
|         | Valor           | 51 %         | WG        | 71.5 g ai/ha |                | 2 oz/a         |                 | A         | PREPRE           | 1.799 g/mx             |       |     |     |     |
|         | Zidua           | 85 %         | WG        | 89 g ai/ha   |                | 1.5 oz/a       |                 | A         | PREPRE           | 1.343 g/mx             |       |     |     |     |
|         | Prefix          | 5.3 LB/GAL   | L         | 1490 g ai/ha |                | 1 qt/a         |                 | B         | POSPOS           | 30.05 ml/mx            |       |     |     |     |
|         | Abundit Extra   | 3 LBAE/GAL   | L         | 840 g ae/ha  |                | 32 fl oz/a     |                 | B         | POSPOS           | 29.93 ml/mx            |       |     |     |     |
|         | N-Pak AMS       | 3.4 LBA/GAL  | SL        | 3.9 % v/v    |                | 2 lb ai/a      |                 | B         | POSPOS           | 70.2 ml/mx             |       |     |     |     |
| 15      | Abundit Extra   | 3 LBAE/GAL   | SL        | 1680 g ae/ha |                | 1.5 lb ae/a    |                 | B         | POSPOS           | 59.87 ml/mx            | 207   | 307 | 506 | 804 |
|         | N-Pak AMS       | 3.4 LBA/GAL  | SL        | 3.9 % v/v    |                | 2 lb ai/a      |                 | B         | POSPOS           | 70.2 ml/mx             |       |     |     |     |
| 16      | Untreated Check |              |           |              |                |                |                 |           |                  |                        | 208   | 403 | 607 | 801 |

Sort Order: Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

| Amount* | Unit | Treatment Name | Form Conc | Form Type | Lot Code |
|---------|------|----------------|-----------|-----------|----------|
| 10.263  | g    | Classic        | 25        | DF        |          |
| 0.898   | g    | Harmony SG     | 50        | SG        |          |
| 16.225  | g    | Valor          | 51        | WG        |          |
| 104.807 | ml   | Cinch          | 7.64      | EC        |          |
| 329.270 | ml   | Abundit Extra  | 3         | L         |          |
| 842.400 | ml   | N-Pak AMS      | 3.4       | SL        |          |
| 17.960  | g    | Canopy         | 75        | DF        |          |
| 150.273 | ml   | Prefix         | 5.3       | L         |          |
| 17.105  | g    | Sencor 75DF    | 75        | DF        |          |
| 8.059   | g    | Zidua          | 85        | WG        |          |
| 3.579   | g    | Fierce         | 76        | WG        |          |
| 59.867  | ml   | Abundit Extra  | 3         | SL        |          |

\* 'Per area' calculations based on spray volume= 15 gal/ac, mix size= 1.8 liters (mix size basis).

\* 'Per volume' calculations use spray volume= 15 gal/ac, mix size= 1.8 liters.

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## Planned two-pass programs for control of glyphosate-resistant Palmer amaranth in RR Soybean

Trial ID: 13S-CCP-CTS-10      Location: Cass County      Trial Year: 2013  
 Protocol ID: 13S-CCP-CTS-10      Investigator: Dr. Bill Johnson  
 Project ID: USA-13-114/116      Study Director: Joe Ikley  
 Sponsor Contact: DuPont - Kelly Barnett

| Pest Type                     | W Weed          |       |       |       |        |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------|-------|-------|--------|
| Pest Code                     | AMAPA           | AMAPA           | AMAPA           | AMAPA           | AMAPA           |       |       |       |        |
| Pest Scientific Name          | Amaranthus pal> |       |       |       |        |
| Pest Name                     | Palmer amaranth |       |       |       |        |
| Crop Code                     |                 | GLXMA           |                 | GLXMA           |                 |       |       |       |        |
| BBCH Scale                    |                 | BSOY            |                 | BSOY            |                 |       |       |       |        |
| Crop Scientific Name          |                 | Glycine max     |                 | Glycine max     |                 |       |       |       |        |
| Crop Name                     |                 | Soybean         |                 | Soybean         |                 |       |       |       |        |
| Part Rated                    | PLOT P          | PLOT C          | PLOT P          | PLOT C          | PLOT P          |       |       |       |        |
| Rating Date                   | 5/29/2013       | 5/29/2013       | 6/3/2013        | 6/3/2013        | 6/11/2013       |       |       |       |        |
| Rating Type                   | CONTRO          | PHYGEN          | CONTRO          | PHYGEN          | CONTRO          |       |       |       |        |
| Rating Unit                   | %               | %               | %               | %               | %               |       |       |       |        |
| Sample Size, Unit             | 1 PLOT          |       |       |       |        |
| Days After First/Last Applic. | 16 16           | 16 16           | 21 21           | 21 21           | 29 8            |       |       |       |        |
| Trt-Eval Interval             | 16 DA-A         | 16 DA-A         | 0 DA-B          | 0 DA-B          | 29 DA-A         |       |       |       |        |
| ARM Action Codes              | P               | P               | P               | P               | P               |       |       |       |        |
| Number of Decimals            | 0               | 0               | 0               | 0               | 0               |       |       |       |        |
| Trt No.                       | Treatment Name  | Rate            | Appl            | 1               | 2               | 3     | 4     | 5     | 6      |
|                               |                 | Rate Unit       | Code            |                 |                 |       |       |       |        |
| 1                             | Untreated Check |                 |                 | 0 c             | 0 c             | 0 d   | 0 c   | 0 c   | 0 e    |
| 2                             | Classic         | 33.6 g ai/ha A  |                 | 79 a            | 14 ab           | 85 ab | 10 ab | 86 ab | 14 bcd |
|                               | Harmony SG      | 10.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Valor           | 108 g ai/ha A   |                 |                 |                 |       |       |       |        |
| 3                             | Classic         | 33.6 g ai/ha A  |                 | 86 a            | 10 abc          | 86 ab | 8 abc | 93 a  | 11 b-e |
|                               | Harmony SG      | 10.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Valor           | 108 g ai/ha A   |                 |                 |                 |       |       |       |        |
|                               | Cinch           | 1070 g ai/ha B  |                 |                 |                 |       |       |       |        |
|                               | Abundit Extra   | 840 g ae/ha B   |                 |                 |                 |       |       |       |        |
|                               | N-Pak AMS       | 3.9 % v/v B     |                 |                 |                 |       |       |       |        |
| 4                             | Canopy          | 210 g ai/ha A   |                 | 74 a            | 0 c             | 75 b  | 1 bc  | 98 a  | 13 bcd |
|                               | Cinch           | 1070 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Abundit Extra   | 840 g ae/ha B   |                 |                 |                 |       |       |       |        |
|                               | Prefix          | 1490 g ai/ha B  |                 |                 |                 |       |       |       |        |
|                               | N-Pak AMS       | 3.9 % v/v B     |                 |                 |                 |       |       |       |        |
| 5                             | Classic         | 22 g ai/ha A    |                 | 76 a            | 3 bc            | 86 ab | 4 abc | 89 ab | 6 de   |
|                               | Sencor 75DF     | 250 g ai/ha A   |                 |                 |                 |       |       |       |        |
|                               | Valor           | 71.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
| 6                             | Classic         | 22 g ai/ha A    |                 | 76 a            | 8 abc           | 80 ab | 5 abc | 95 a  | 8 cde  |
|                               | Sencor 75DF     | 250 g ai/ha A   |                 |                 |                 |       |       |       |        |
|                               | Valor           | 71.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Abundit Extra   | 840 g ae/ha B   |                 |                 |                 |       |       |       |        |
|                               | Cinch           | 1070 g ai/ha B  |                 |                 |                 |       |       |       |        |
|                               | N-Pak AMS       | 3.9 % v/v B     |                 |                 |                 |       |       |       |        |
| 7                             | Classic         | 22.4 g ai/ha A  |                 | 85 a            | 15 a            | 84 ab | 8 abc | 93 a  | 14 bcd |
|                               | Harmony SG      | 7 g ai/ha A     |                 |                 |                 |       |       |       |        |
|                               | Valor           | 71.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Zidua           | 89 g ai/ha A    |                 |                 |                 |       |       |       |        |
|                               | Cinch           | 1070 g ai/ha B  |                 |                 |                 |       |       |       |        |
|                               | Abundit Extra   | 840 g ae/ha B   |                 |                 |                 |       |       |       |        |
|                               | N-Pak AMS       | 3.9 % v/v B     |                 |                 |                 |       |       |       |        |
| 8                             | Classic         | 22.4 g ai/ha A  |                 | 88 a            | 11 abc          | 89 ab | 8 abc | 95 a  | 21 ab  |
|                               | Harmony SG      | 7 g ai/ha A     |                 |                 |                 |       |       |       |        |
|                               | Valor           | 71.5 g ai/ha A  |                 |                 |                 |       |       |       |        |
|                               | Zidua           | 89 g ai/ha A    |                 |                 |                 |       |       |       |        |
|                               | Prefix          | 1490 g ai/ha B  |                 |                 |                 |       |       |       |        |
|                               | Abundit Extra   | 840 g ae/ha B   |                 |                 |                 |       |       |       |        |
|                               | N-Pak AMS       | 3.9 % v/v B     |                 |                 |                 |       |       |       |        |

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Missing data estimates are included in columns: Yates=1,3,7,8

# Purdue University Weed Science

| Pest Type                     | W Weed          |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Pest Code                     | AMAPA           | AMAPA           | AMAPA           | AMAPA           | AMAPA           |
| Pest Scientific Name          | Amaranthus pal> |
| Pest Name                     | Palmer amaranth |
| Crop Code                     |                 | GLXMA           |                 | GLXMA           |                 |
| BBCH Scale                    |                 | BSOY            |                 | BSOY            |                 |
| Crop Scientific Name          |                 | Glycine max     |                 | Glycine max     |                 |
| Crop Name                     |                 | Soybean         |                 | Soybean         |                 |
| Part Rated                    | PLOT P          | PLOT C          | PLOT P          | PLOT C          | PLOT P          |
| Rating Date                   | 5/29/2013       | 5/29/2013       | 6/3/2013        | 6/3/2013        | 6/11/2013       |
| Rating Type                   | CONTRO          | PHYGEN          | CONTRO          | PHYGEN          | CONTRO          |
| Rating Unit                   | %               | %               | %               | %               | %               |
| Sample Size, Unit             | 1 PLOT          |
| Days After First/Last Applic. | 16 16           | 16 16           | 21 21           | 21 21           | 29 8            |
| Trt-Eval Interval             | 16 DA-A         | 16 DA-A         | 0 DA-B          | 0 DA-B          | 29 DA-A         |
| ARM Action Codes              | P               | P               | P               | P               | P               |
| Number of Decimals            | 0               | 0               | 0               | 0               | 0               |
| Trt Treatment                 | Rate            | Appl            |                 |                 |                 |
| No. Name                      | Rate Unit       | Code            | 1               | 2               | 3               |
| 9 Canopy                      | 210 g ai/ha     | A               | 48 b            | 0 c             | 63 c            |
| Zidua                         | 89 g ai/ha      | A               |                 |                 | 0 c             |
| Cinch                         | 1070 g ai/ha    | B               |                 |                 | 75 b            |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 | 5 de            |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 10 Canopy                     | 210 g ai/ha     | A               | 78 a            | 1 c             | 83 ab           |
| Zidua                         | 89 g ai/ha      | A               |                 |                 | 0 c             |
| Prefix                        | 1490 g ai/ha    | B               |                 |                 | 95 a            |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 | 8 cde           |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 11 Canopy                     | 210 g ai/ha     | A               | 81 a            | 5 abc           | 91 ab           |
| Fierce                        | 106 g ai/ha     | A               |                 |                 | 5 abc           |
| Cinch                         | 1070 g ai/ha    | B               |                 |                 | 96 a            |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 | 10 b-e          |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 12 Canopy                     | 210 g ai/ha     | A               | 90 a            | 11 abc          | 93 ab           |
| Fierce                        | 106 g ai/ha     | A               |                 |                 | 9 abc           |
| Prefix                        | 1490 g ai/ha    | B               |                 |                 | 95 a            |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 | 19 abc          |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 13 Classic                    | 22 g ai/ha      | A               | 96 a            | 16 a            | 98 a            |
| Sencor 75DF                   | 250 g ai/ha     | A               |                 |                 | 10 ab           |
| Valor                         | 71.5 g ai/ha    | A               |                 |                 | 100 a           |
| Zidua                         | 89 g ai/ha      | A               |                 |                 | 20 ab           |
| Cinch                         | 1070 g ai/ha    | B               |                 |                 |                 |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 |                 |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 14 Classic                    | 22 g ai/ha      | A               | 91 a            | 14 ab           | 98 a            |
| Sencor 75DF                   | 250 g ai/ha     | A               |                 |                 | 11 a            |
| Valor                         | 71.5 g ai/ha    | A               |                 |                 | 100 a           |
| Zidua                         | 89 g ai/ha      | A               |                 |                 | 28 a            |
| Prefix                        | 1490 g ai/ha    | B               |                 |                 |                 |
| Abundit Extra                 | 840 g ae/ha     | B               |                 |                 |                 |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 |                 |
| 15 Abundit Extra              | 1680 g ae/ha    | B               | 0 c             | 0 c             | 0 d             |
| N-Pak AMS                     | 3.9 % v/v       | B               |                 |                 | 0 c             |
| 16 Untreated Check            |                 |                 | 0 c             | 0 c             | 0 d             |
|                               |                 |                 |                 |                 | 0 c             |
| LSD (P=.05)                   |                 |                 | 17.6            | 7.6             | 11.2            |
| Standard Deviation            |                 |                 | 12.3            | 5.3             | 5.5             |
| CV                            |                 |                 | 18.84           | 78.79           | 3.9             |
| Bartlett's X2                 |                 |                 | 8.785           | 15.477          | 79.49           |
| P(Bartlett's X2)              |                 |                 | 0.721           | 0.116           | 0.173           |
| Skewness                      |                 |                 | -1.0394*        | 1.056*          | -1.473*         |
| Kurtosis                      |                 |                 | -0.4082         | 0.4944          | 2.5953*         |
|                               |                 |                 |                 |                 | 0.4575          |
|                               |                 |                 |                 |                 | 7.3             |
|                               |                 |                 |                 |                 | 5.1             |
|                               |                 |                 |                 |                 | 46.41           |
|                               |                 |                 |                 |                 | 20.008          |
|                               |                 |                 |                 |                 | 0.029*          |
|                               |                 |                 |                 |                 | 0.6641*         |
|                               |                 |                 |                 |                 | -0.5922         |

# Purdue University Weed Science

|                               |                 |                   |                 |
|-------------------------------|-----------------|-------------------|-----------------|
| Pest Type                     |                 |                   | W Weed          |
| Pest Code                     |                 |                   | AMAPA           |
| Pest Scientific Name          |                 |                   | Amaranthus pal> |
| Pest Name                     |                 |                   | Palmer amaranth |
| Crop Code                     | GLXMA           |                   |                 |
| BBCH Scale                    | BSOY            |                   |                 |
| Crop Scientific Name          | Glycine max     |                   |                 |
| Crop Name                     | Soybean         |                   |                 |
| Part Rated                    | PLOT C          |                   | PLOT P          |
| Rating Date                   | 7/1/2013        |                   | 7/1/2013        |
| Rating Type                   | PHYGEN          |                   | CONTRO          |
| Rating Unit                   | %               |                   | %               |
| Sample Size, Unit             | 1 PLOT          |                   | 1 PLOT          |
| Days After First/Last Applic. | 49 28           |                   | 49 28           |
| Trt-Eval Interval             | 28 DA-B         |                   | 28 DA-B         |
| ARM Action Codes              | P               |                   | P               |
| Number of Decimals            | 0               |                   | 0               |
| Trt No.                       | Treatment Name  | Rate<br>Rate Unit | Appl<br>Code    |
|                               |                 |                   |                 |
|                               |                 |                   |                 |
| 1                             | Untreated Check |                   | 0 b             |
| 2                             | Classic         | 33.6 g ai/ha A    | 2 b             |
|                               | Harmony SG      | 10.5 g ai/ha A    |                 |
|                               | Valor           | 108 g ai/ha A     | 78 c            |
| 3                             | Classic         | 33.6 g ai/ha A    | 4 b             |
|                               | Harmony SG      | 10.5 g ai/ha A    |                 |
|                               | Valor           | 108 g ai/ha A     |                 |
|                               | Cinch           | 1070 g ai/ha B    |                 |
|                               | Abundit Extra   | 840 g ae/ha B     |                 |
|                               | N-Pak AMS       | 3.9 % v/v B       | 99 ab           |
| 4                             | Canopy          | 210 g ai/ha A     | 3 b             |
|                               | Cinch           | 1070 g ai/ha A    |                 |
|                               | Abundit Extra   | 840 g ae/ha B     |                 |
|                               | Prefix          | 1490 g ai/ha B    |                 |
|                               | N-Pak AMS       | 3.9 % v/v B       | 95 ab           |
| 5                             | Classic         | 22 g ai/ha A      | 0 b             |
|                               | Sencor 75DF     | 250 g ai/ha A     |                 |
|                               | Valor           | 71.5 g ai/ha A    | 83 bc           |
| 6                             | Classic         | 22 g ai/ha A      | 2 b             |
|                               | Sencor 75DF     | 250 g ai/ha A     |                 |
|                               | Valor           | 71.5 g ai/ha A    |                 |
|                               | Abundit Extra   | 840 g ae/ha B     |                 |
|                               | Cinch           | 1070 g ai/ha B    |                 |
|                               | N-Pak AMS       | 3.9 % v/v B       | 94 ab           |
| 7                             | Classic         | 22.4 g ai/ha A    | 1 b             |
|                               | Harmony SG      | 7 g ai/ha A       |                 |
|                               | Valor           | 71.5 g ai/ha A    |                 |
|                               | Zidua           | 89 g ai/ha A      |                 |
|                               | Cinch           | 1070 g ai/ha B    |                 |
|                               | Abundit Extra   | 840 g ae/ha B     |                 |
|                               | N-Pak AMS       | 3.9 % v/v B       | 94 ab           |
| 8                             | Classic         | 22.4 g ai/ha A    | 8 ab            |
|                               | Harmony SG      | 7 g ai/ha A       |                 |
|                               | Valor           | 71.5 g ai/ha A    |                 |
|                               | Zidua           | 89 g ai/ha A      |                 |
|                               | Prefix          | 1490 g ai/ha B    |                 |
|                               | Abundit Extra   | 840 g ae/ha B     |                 |
|                               | N-Pak AMS       | 3.9 % v/v B       | 100 a           |

# Purdue University Weed Science

|                               |                 |              |           |         |                 |
|-------------------------------|-----------------|--------------|-----------|---------|-----------------|
| Pest Type                     |                 |              |           |         | W Weed          |
| Pest Code                     |                 |              |           |         | AMAPA           |
| Pest Scientific Name          |                 |              |           |         | Amaranthus pal> |
| Pest Name                     |                 |              |           |         | Palmer amaranth |
| Crop Code                     |                 | GLXMA        |           |         |                 |
| BBCH Scale                    |                 | BSOY         |           |         |                 |
| Crop Scientific Name          |                 | Glycine max  |           |         |                 |
| Crop Name                     |                 | Soybean      |           |         |                 |
| Part Rated                    |                 | PLOT C       |           |         | PLOT P          |
| Rating Date                   |                 | 7/1/2013     |           |         | 7/1/2013        |
| Rating Type                   |                 | PHYGEN       |           |         | CONTRO          |
| Rating Unit                   |                 | %            |           |         | %               |
| Sample Size, Unit             |                 | 1 PLOT       |           |         | 1 PLOT          |
| Days After First/Last Applic. |                 | 49 28        |           |         | 49 28           |
| Trt-Eval Interval             |                 | 28 DA-B      |           |         | 28 DA-B         |
| ARM Action Codes              |                 | P            |           |         | P               |
| Number of Decimals            |                 | 0            |           |         | 0               |
| Trt No.                       | Treatment Name  | Rate         | Appl Code |         |                 |
|                               |                 | Rate Unit    |           | 7       | 8               |
| 9                             | Canopy          | 210 g ai/ha  | A         | 3 b     | 74 c            |
|                               | Zidua           | 89 g ai/ha   | A         |         |                 |
|                               | Cinch           | 1070 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 10                            | Canopy          | 210 g ai/ha  | A         | 1 b     | 95 ab           |
|                               | Zidua           | 89 g ai/ha   | A         |         |                 |
|                               | Prefix          | 1490 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 11                            | Canopy          | 210 g ai/ha  | A         | 4 b     | 96 ab           |
|                               | Fierce          | 106 g ai/ha  | A         |         |                 |
|                               | Cinch           | 1070 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 12                            | Canopy          | 210 g ai/ha  | A         | 8 ab    | 99 ab           |
|                               | Fierce          | 106 g ai/ha  | A         |         |                 |
|                               | Prefix          | 1490 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 13                            | Classic         | 22 g ai/ha   | A         | 7 ab    | 98 ab           |
|                               | Sencor 75DF     | 250 g ai/ha  | A         |         |                 |
|                               | Valor           | 71.5 g ai/ha | A         |         |                 |
|                               | Zidua           | 89 g ai/ha   | A         |         |                 |
|                               | Cinch           | 1070 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 14                            | Classic         | 22 g ai/ha   | A         | 12 a    | 99 ab           |
|                               | Sencor 75DF     | 250 g ai/ha  | A         |         |                 |
|                               | Valor           | 71.5 g ai/ha | A         |         |                 |
|                               | Zidua           | 89 g ai/ha   | A         |         |                 |
|                               | Prefix          | 1490 g ai/ha | B         |         |                 |
|                               | Abundit Extra   | 840 g ae/ha  | B         |         |                 |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 15                            | Abundit Extra   | 1680 g ae/ha | B         | 0 b     | 16 d            |
|                               | N-Pak AMS       | 3.9 % v/v    | B         |         |                 |
| 16                            | Untreated Check |              |           | 0 b     | 0 e             |
| LSD (P=.05)                   |                 |              |           | 4.7     | 10.0            |
| Standard Deviation            |                 |              |           | 3.3     | 7.0             |
| CV                            |                 |              |           | 101.77  | 9.17            |
| Bartlett's X2                 |                 |              |           | 6.749   | 27.943          |
| P(Bartlett's X2)              |                 |              |           | 0.819   | 0.003*          |
| Skewness                      |                 |              |           | 1.1989* | -1.5163*        |
| Kurtosis                      |                 |              |           | 0.4306  | 0.6563          |

# Purdue University Weed Science

## Planned two-pass programs for control of glyphosate-resistant Palmer amaranth in RR Soybean

Trial ID: 13S-CCP-CTS-10      Location: Cass County      Trial Year: 2013  
 Protocol ID: 13S-CCP-CTS-10      Investigator: Dr. Bill Johnson  
 Project ID: USA-13-114/116      Study Director: Joe Ikley  
 Sponsor Contact: DuPont - Kelly Barnett

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 5/29/2013 CONTRO % 1 PLOT 16 16 DA-A P 0 (Data Column 1)

| Source    | DF | Sum of Squares | Mean Square | F      | Prob(F) |
|-----------|----|----------------|-------------|--------|---------|
| Total     | 62 | 77331.750000   |             |        |         |
| Replicate | 3  | 382.328704     | 127.442901  | 0.838  | 0.4804  |
| Treatment | 15 | 70257.268519   | 4683.817901 | 30.795 | 0.0001  |
| Error     | 44 | 6692.152778    | 152.094381  |        |         |

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 5/29/2013 PHYGEN % 1 PLOT 16 16 16 DA-A P 0 (Data Column 2)

| Source    | DF | Sum of Squares | Mean Square | F     | Prob(F) |
|-----------|----|----------------|-------------|-------|---------|
| Total     | 63 | 3660.937500    |             |       |         |
| Replicate | 3  | 51.562500      | 17.187500   | 0.613 | 0.6099  |
| Treatment | 15 | 2348.437500    | 156.562500  | 5.587 | 0.0001  |
| Error     | 45 | 1260.937500    | 28.020833   |       |         |

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/3/2013 CONTRO % 1 PLOT 21 21 0 DA-B P 0 (Data Column 3)

| Source    | DF | Sum of Squares | Mean Square | F      | Prob(F) |
|-----------|----|----------------|-------------|--------|---------|
| Total     | 62 | 78268.416667   |             |        |         |
| Replicate | 3  | 356.356481     | 118.785494  | 1.925  | 0.1394  |
| Treatment | 15 | 75196.990741   | 5013.132716 | 81.242 | 0.0001  |
| Error     | 44 | 2715.069444    | 61.706124   |        |         |

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 6/3/2013 PHYGEN % 1 PLOT 21 21 0 DA-B P 0 (Data Column 4)

| Source    | DF | Sum of Squares | Mean Square | F     | Prob(F) |
|-----------|----|----------------|-------------|-------|---------|
| Total     | 63 | 1748.437500    |             |       |         |
| Replicate | 3  | 32.812500      | 10.937500   | 0.738 | 0.5351  |
| Treatment | 15 | 1048.437500    | 69.895833   | 4.714 | 0.0001  |
| Error     | 45 | 667.187500     | 14.826389   |       |         |

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/11/2013 CONTRO % 1 PLOT 29 8 29 DA-A P 0 (Data Column 5)

| Source    | DF | Sum of Squares | Mean Square | F      | Prob(F) |
|-----------|----|----------------|-------------|--------|---------|
| Total     | 63 | 81873.437500   |             |        |         |
| Replicate | 3  | 120.312500     | 40.104167   | 0.616  | 0.6082  |
| Treatment | 15 | 78823.437500   | 5254.895833 | 80.715 | 0.0001  |
| Error     | 45 | 2929.687500    | 65.104167   |        |         |

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 6/11/2013 PHYGEN % 1 PLOT 29 8 29 DA-A P 0 (Data Column 6)

| Source    | DF | Sum of Squares | Mean Square | F      | Prob(F) |
|-----------|----|----------------|-------------|--------|---------|
| Total     | 63 | 5193.750000    |             |        |         |
| Replicate | 3  | 103.125000     | 34.375000   | 1.334  | 0.2751  |
| Treatment | 15 | 3931.250000    | 262.083333  | 10.173 | 0.0001  |
| Error     | 45 | 1159.375000    | 25.763889   |        |         |

Randomized Complete Block (RCB) AOV For GLXMA BSOY Glycine max Soybean PLOT C 7/1/2013 PHYGEN % 1 PLOT 49 28 28 DA-B P 0 (Data Column 7)

| Source    | DF | Sum of Squares | Mean Square | F     | Prob(F) |
|-----------|----|----------------|-------------|-------|---------|
| Total     | 56 | 1173.886579    |             |       |         |
| Replicate | 3  | 13.910055      | 4.636685    | 0.420 | 0.7396  |
| Treatment | 15 | 740.577071     | 49.371805   | 4.473 | 0.0001  |
| Error     | 38 | 419.399453     | 11.036828   |       |         |

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/1/2013 CONTRO % 1 PLOT 49 28 28 DA-B P 0 (Data Column 8)

| Source    | DF | Sum of Squares | Mean Square | F       | Prob(F) |
|-----------|----|----------------|-------------|---------|---------|
| Total     | 62 | 80599.083333   |             |         |         |
| Replicate | 3  | 435.333333     | 145.111111  | 2.977   | 0.0417  |
| Treatment | 15 | 78018.750000   | 5201.250000 | 106.692 | 0.0001  |
| Error     | 44 | 2145.000000    | 48.750000   |         |         |

Pest Type  
 W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop  
Crop Code  
 GLXMA, BSOY, Glycine max, = US  
Part Rated

## Purdue University Weed Science

PLOT = plot

P = Pest is Part Rated

C = Crop is Part Rated

Rating Type

CONTRO = control / burndown or knockdown

PHYGEN = phytotoxicity - general / injury

Rating Unit

% = percent

PLOT = total plot

ARM Action Codes

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