Purdue University

GAT Soybean Systems Comparison - Conventional Tillage

Trial ID: 11S-THP-CTS-31  Protocol ID: 11S-THP-CTS-201
Location: Throckmorton  Study Director: White/Marquardt
Project ID: USA-11-156  Investigator: Dr. Bill Johnson
Sponsor Contact: DuPon - Helen Flanigan

General Trial Information

Study Director: White/Marquardt  Investigator: Dr. Bill Johnson
Title: Research Associate  Title: Professor

Discipline: Herbicide
Trial Status: Established
Initiation Date: 3-26-2011

Trial Location

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

Personnel

Study Director: White/Marquardt  Title: Research Associate
Affiliation: Purdue University
Address: 915 W State Street
Location: West Lafayette, IN, USA
Postal Code: 47907  E-mail: mdwhite@purdue.edu
Phone No.: 765-494-0891

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

Cooperator/Landowner

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

Crop Description

Crop 1: GLXMA  Glycine max  Soybean

Description: GAT
BBCH Scale: BSOFY
Planting Method: PLANTD  planted
Depth, Unit: 1  IN
Row Spacing, Unit: 30  IN
Emergence Date: 6-13-2011

Pest Description

Pest 1 Type: W  Code: SETFA  Setaria faberii
  Common Name: Giant foxtail

Pest 2 Type: W  Code: AMBTR  Ambrosia trifida
  Common Name: Giant ragweed

Pest 3 Type: W  Code: AMARE  Amaranthus retroflexus
  Common Name: Redroot pigweed

Pest 4 Type: W  Code: CHEAL  Chenopodium album
  Common Name: Common lambsquarters

Pest 5 Type: W  Code: ABUTH  Abutilon theophrasti
  Common Name: Velvetleaf
Purdue University

**Site and Design**

- **Plot Width, Unit:** 10 FT
- **Plot Length, Unit:** 30 FT
- **Plot Area, Unit:** 300 FT²
- **Replications:** 4
- **Site Type:** FIELD
- **Experimental Unit:** 1
- **Tillage Type:** CONTIL
- **Study Design:** RACOBL
- **Untreated Arrangement:** INCLUDED

**Plot Area, Unit:** 300 FT²

**Tillage Type:** CONVENTIONAL

**Study Design:** RANDOMIZED COMPLETE BLOCK (RCB)

**Untreated Arrangement:** SINGLE CONTROL RANDOMIZED IN EACH BLOCK

**Soil Description**

- **Description Name:** TPAC - Field 4A
- **% OM:** 3.1
- **Texture:** SILT loam
- **pH:** 6
- **CEC:** 11.1
- **Soil Name:** Toronto-Millbrook

**Application Description**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application Date:</strong></td>
<td>6-8-2011</td>
<td>7-6-2011</td>
</tr>
<tr>
<td><strong>Time of Day:</strong></td>
<td>8:10-8:20</td>
<td></td>
</tr>
<tr>
<td><strong>Application Method:</strong></td>
<td>SPRAY</td>
<td>SPRAY</td>
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<tr>
<td><strong>Application Timing:</strong></td>
<td>ATPLAN</td>
<td>MIPOWE</td>
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<tr>
<td><strong>Application Placement:</strong></td>
<td>FOLIAR</td>
<td>FOLIAR</td>
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<tr>
<td><strong>Applied By:</strong></td>
<td>BM</td>
<td>BM</td>
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<tr>
<td><strong>Air Temperature, Unit:</strong></td>
<td>79 F</td>
<td>78 F</td>
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<tr>
<td><strong>% Relative Humidity:</strong></td>
<td>66</td>
<td>66</td>
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<tr>
<td><strong>Wind Velocity, Unit:</strong></td>
<td>4.4 MPH</td>
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<td><strong>Wind Direction:</strong></td>
<td>SW</td>
<td>SW</td>
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<tr>
<td><strong>Dew Presence (Y/N):</strong></td>
<td>N no</td>
<td>Y yes</td>
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<td><strong>Soil Temperature, Unit:</strong></td>
<td>77 F</td>
<td>76 F</td>
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<td><strong>Soil Moisture:</strong></td>
<td>DRY</td>
<td>SLIWET</td>
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<tr>
<td><strong>% Cloud Cover:</strong></td>
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**Crop Stage At Each Application**

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<tr>
<td><strong>Crop 1 Code, BBCH Scale:</strong></td>
<td>GLXMA BSOY</td>
<td>GLXMA BSOY</td>
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<td><strong>Stage Scale Used:</strong></td>
<td>BBCH</td>
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<tr>
<td><strong>Stage Majority, Percent:</strong></td>
<td>V3</td>
<td></td>
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<tr>
<td>A</td>
<td>B</td>
<td></td>
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<tr>
<td>---------</td>
<td>---------</td>
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</tr>
<tr>
<td>Pest 1 Code, Type, Scale:</td>
<td>SETFA W SETFA W</td>
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<tr>
<td>Height, Unit:</td>
<td>10 IN</td>
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<tr>
<td>Density, Unit:</td>
<td>40 YD2</td>
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<td>Pest 2 Code, Type, Scale:</td>
<td>AMBTR W AMBTR W</td>
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<td>Height, Unit:</td>
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<td>Density, Unit:</td>
<td>10 YD2</td>
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<td>Pest 3 Code, Type, Scale:</td>
<td>AMARE W AMARE W</td>
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<td>Height, Unit:</td>
<td>3 IN</td>
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<td>Density, Unit:</td>
<td>10 YD2</td>
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<tr>
<td>Pest 4 Code, Type, Scale:</td>
<td>CHEAL W CHEAL W</td>
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<td>Height, Unit:</td>
<td>2 IN</td>
<td></td>
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<td>Density, Unit:</td>
<td>10 YD2</td>
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<tr>
<td>Pest 5 Code, Type, Scale:</td>
<td>ABUTH W ABUTH W</td>
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<tr>
<td>Height, Unit:</td>
<td>5 IN</td>
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<td>Density, Unit:</td>
<td>3 YD2</td>
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<td>Appl. Equipment:</td>
<td>CO2 BKPK CO2 BKPK</td>
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<td>Equipment Type:</td>
<td>SPRBAC SPRBAC</td>
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<td>Operation Pressure, Unit:</td>
<td>17 PSI 17 PSI</td>
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<td>Nozzle Type:</td>
<td>FLAT FAN FLAT FAN</td>
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<td>Nozzle Size:</td>
<td>XR 110 02 XR 110 02</td>
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<td>Nozzle Spacing, Unit:</td>
<td>15 IN 15 IN</td>
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<tr>
<td>Nozzles/Row:</td>
<td>8 8</td>
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<td>Boom Length, Unit:</td>
<td>10 FT 10 FT</td>
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<td>Boom Height, Unit:</td>
<td>18 IN 18 IN</td>
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<td>Ground Speed, Unit:</td>
<td>3 MPH 3 MPH</td>
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<td>Carrier:</td>
<td>H20 H20</td>
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<td>Water Hardness (ppm CaCO3):</td>
<td>150 150</td>
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<tr>
<td>Spray Volume, Unit:</td>
<td>15 gal/ac 15 gal/ac</td>
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<tr>
<td>Mix Size, Unit:</td>
<td>1.8 liters 1.8 liters</td>
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<td>Propellant:</td>
<td>C02 C02</td>
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<tr>
<td>Tank Mix (Y/N):</td>
<td>N no N no</td>
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</tbody>
</table>
### Purdue University

**GAT Soybean Systems Comparison - Conventional Tillage**

**Trial ID:** 11S-THP-CTS-31  
**Protocol ID:** 11S-THP-CTS-201  
**Location:** West Lafayette, IN  
**Study Director:** White Marquardt  
**Investigator:** Dr. Bill Johnson  
**Sponsor Contact:** DuPont - Helen Flanigan

<table>
<thead>
<tr>
<th>Pest Type</th>
<th>W Weed</th>
<th>W Weed</th>
<th>W Weed</th>
<th>W Weed</th>
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<tbody>
<tr>
<td>Giant foxtail</td>
<td>SETFA</td>
<td>AMBTR</td>
<td>AMARE</td>
<td>CHEAEL</td>
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<tr>
<td>Giant ragweed</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
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<tr>
<td>Redroot pigweed</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
</tr>
<tr>
<td>Common lambsquarters</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
<td>GLXMA</td>
</tr>
</tbody>
</table>

| Crop Code | GLXMA | GLXMA | GLXMA | GLXMA |
| BBCH Scale | GLXMA | GLXMA | GLXMA | GLXMA |
| Crop Scientific Name | Glycine max | Glycine max | Glycine max | Glycine max |
| Subject | GLXMA | GLXMA | GLXMA | GLXMA |

<table>
<thead>
<tr>
<th>Pest Name</th>
<th>Crop Name</th>
<th>Rating Date</th>
<th>Rating Type</th>
<th>Rating Unit</th>
<th>Number of Subsamples</th>
<th>Crop Stage Majority</th>
<th>Pest Stage Majority</th>
<th>Pest Density, Unit</th>
<th>Pest Stage</th>
<th>Pest Assessed By</th>
<th>Pest Eval Interval</th>
<th>Days After First/Last Applic.</th>
<th>Plant-Eval Interval</th>
<th>Days After Emergence</th>
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<tbody>
<tr>
<td>Giant foxtail</td>
<td>Glycine max</td>
<td>7-6-2011</td>
<td>PHYYSTU</td>
<td>%</td>
<td>V3</td>
<td>10 IN</td>
<td>40 YD2</td>
<td>MW</td>
<td>MW</td>
<td>29 DP-1</td>
<td>23 DE-1</td>
<td>2 IN</td>
<td>23 DE-1</td>
<td>23 DE-1</td>
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<table>
<thead>
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<th>Pest</th>
<th>Rate</th>
<th>Appl Code</th>
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<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>1 Untreated Check</td>
<td>0.0 a</td>
<td>0.0 b</td>
<td>0.0 b</td>
<td>0.0 b</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>0.0 b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 DILIGENT (37.87 WP)</td>
<td>1.51 oz ai/a</td>
<td>A</td>
<td>0.0 a</td>
<td>92.5 a</td>
<td>68.8 a</td>
<td>99.0 a</td>
<td>99.0 a</td>
<td>3.8 a</td>
<td>1.5 a</td>
<td>0.8 b</td>
</tr>
<tr>
<td>Roundup PowerMax 4.5 SL</td>
<td>0.77 lb ae/a</td>
<td>B</td>
<td>2 lb ae/a</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Roundup PowerMax 4.5 SL</td>
<td>0.77 lb ae/a</td>
<td>B</td>
<td>2 lb ae/a</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4 Valor SX (51 WG)</td>
<td>0.102 oz ai/a</td>
<td>A</td>
<td>2.0 a</td>
<td>93.8 a</td>
<td>62.5 a</td>
<td>99.0 a</td>
<td>99.0 a</td>
<td>4.3 a</td>
<td>0.0 a</td>
<td>0.0 b</td>
</tr>
<tr>
<td>Roundup PowerMax 4.5 SL</td>
<td>0.77 lb ae/a</td>
<td>B</td>
<td>2 lb ae/a</td>
<td>B</td>
<td></td>
<td></td>
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<tr>
<td>5 DILIGENT (37.87 WP)</td>
<td>1.51 oz ai/a</td>
<td>A</td>
<td>2.0 a</td>
<td>88.0 a</td>
<td>68.8 a</td>
<td>99.0 a</td>
<td>99.0 a</td>
<td>4.8 a</td>
<td>0.0 a</td>
<td>0.0 b</td>
</tr>
<tr>
<td>Roundup PowerMax 4.5 SL</td>
<td>0.77 lb ae/a</td>
<td>B</td>
<td>2 lb ae/a</td>
<td>B</td>
<td></td>
<td></td>
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</tbody>
</table>

**LSD (P=0.05)**  
2.40  
7.61  
12.12  
39.39  
2.00  
2.00  
2.00  
3.41  
1.19  
1.74

**Standard Deviation**  
1.56  
2.34  
7.87  
25.56  
0.00  
0.00  
0.00  
2.22  
0.77  
1.13

**CV**  
194.39  
266.33  
36.39  
43.69  
0.00  
86.86  
258.2  
257.1  
161.3

**Bartlett's X2**  
1.00  
0.00  
0.00  
0.00  
0.00  
0.00  
0.00  
1.314  
1.00  
1.00

**P(Bartlett's X2)**  
0.332  
0.182  
0.377  
1.000  
0.000  
0.000  
0.000  
0.315  
0.426  
0.387

**Replicate F**  
0.455  
0.5115  
0.7712  
0.4262  
1.0000  
0.3153  
0.4262  
0.387

**Replicate Prob(F)**  
0.195  
0.0625  
0.0004  
1.0000  
0.0186  
0.0001  
0.0004  
0.0001  
0.0001  
0.0001

**Treatment F**  
1.973  
412.313  
86.616  
12.000  
0.000  
4.518  
3.000  
4.451

**Treatment Prob(F)**  
0.0163  
0.0001  
0.0001  
1.0000  
0.0186  
0.0625  
0.0004  
0.0001  
0.0001  
0.0001

Means followed by same letter do not significantly differ (P=0.05, Student-Newman-Keuls)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
### Pest Type
- W Weed
- W Weed
- W Weed
- W Weed
- W Weed
- W Weed

### Pest Code
- SETFA
- AMBTR
- CHEAL
- SETFA
- AMBTR

### Pest Scientific Name
- Setaria faberi
- Ambrosia trifida
- Chenopodium album
- Setaria faberi
- Ambrosia trifida

### Pest Name
- Giant foxtail
- Giant ragweed
- Common lamb'squarters
- Giant foxtail
- Giant ragweed

### Crop Code
- GLXMA
- GLXMA
- GLXMA
- GLXMA
- GLXMA

### BBCH Scale
- BSOY
- BSOY
- BSOY
- BSOY
- BSOY

### Crop Scientific Name
- Glycine max
- Glycine max
- Glycine max
- Glycine max
- Glycine max

### Crop Name
- Soybean
- Soybean
- Soybean
- Soybean
- Soybean

### Rating Date
- 7-19-2011
- 7-19-2011
- 7-19-2011
- 7-19-2011
- 8-2-2011
- 8-2-2011

### Rating Type
- CONTRO
- CONTRO
- CONTRO
- PHYLMA
- PHYSTU
- CONTRO
- CONTRO

### Rating Unit
- %
- %
- %
- %
- %

### Number of Subsamples
- 1
- 1
- 1
- 1
- 1

### Crop Stage Majority
- V6
- V6
- V6
- V6

### Plant-Eval Interval
- 42 DP-1
- 42 DP-1
- 42 DP-1
- 42 DP-1
- 42 DP-1
- 42 DP-1
- 42 DP-1

### Days After Emergence
- 36 DE-1
- 36 DE-1
- 36 DE-1
- 36 DE-1
- 50 DE-1
- 50 DE-1
- 50 DE-1

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<th>Unit</th>
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<th>11</th>
<th>12</th>
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<th>14</th>
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<td>0.0 c</td>
<td>b</td>
<td>0.0 b</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>0.0 b</td>
<td>0.0 c</td>
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<tr>
<td>2 DILIGENT (37.87 WP)</td>
<td>1.51 oz a/a A</td>
<td>97.0 a</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>96.5 a</td>
<td>93.0 ab</td>
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<tr>
<td>Roundup PowerMax 4.5 SL 0.77 lb ae/a B</td>
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<tr>
<td>AMS - Liquid</td>
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<tr>
<td>3 Roundup PowerMax 4.5 SL 0.77 lb ae/a B</td>
<td>98.0 a</td>
<td>82.5 b</td>
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<td>0.8 a</td>
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<td>97.0 a</td>
<td>90.0 b</td>
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<td>0.0 a</td>
<td>97.0 a</td>
<td>94.3 a</td>
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<tr>
<td>Roundup PowerMax 4.5 SL 0.77 lb ae/a B</td>
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<tr>
<td>AMS - Liquid</td>
<td>2 lb a/a B</td>
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</tr>
<tr>
<td>5 DILIGENT (37.87 WP)</td>
<td>1.51 oz a/a A</td>
<td>97.0 a</td>
<td>91.3 a</td>
<td>99.0 a</td>
<td>0.0 a</td>
<td>0.0 a</td>
<td>96.5 a</td>
<td>95.5 a</td>
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<tr>
<td>Roundup PowerMax 4.5 SL 0.77 lb ae/a B</td>
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<tr>
<td>Synchrony XP (28.4 WG)</td>
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Means followed by same letter do not significantly differ (P<.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment F (P<) is significant at mean comparison OSL.
Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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<th>Pest Type</th>
<th>W Weed</th>
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<th>Chenopodium am&gt;</th>
<th>Abutilon theop&gt;</th>
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### Purdue University

**GAT Soybean Systems Comparison - Conventional Tillage**

- **Trial ID:** 11S-THP-CTS-31
- **Protocol ID:** 11S-THP-CTS-201
- **Location:** Throckmorton
- **Study Director:** White/Marquardt
- **Project ID:** USA-11-156
- **Investigator:** Dr. Bill Johnson
- **Sponsor Contact:** DuPont - Helen Flanigan

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

#### Pest Code
- SETFA, Setaria faberii, = US
- AMBTR, Ambrosia trifida, = US
- AMARE, Amaranthus retroflexus, = US
- CHEAL, Chenopodium album, = US
- ABUTH, Abutilon theophrasti, = US

#### Crop Code
- GLXMA, BSOY, Glycine max, = US

#### Rating Type
- PHYSTU = phytotoxicity - stunting
- CONTRO = control / burndown or knockdown
- PHYLMA = phytotoxicity - leaf malformation
- PHYCHL = phytotoxicity - chlorosis
- YIELD = yield

#### Rating Unit
- % = percent
- bu/ac = bushels per acre
- YD2 = per square yard

#### Plant-Eval Interval
- 29 DP-1 = 1 GLXMA 6-7-2011
- 38 DP-1 = 1 GLXMA 6-7-2011
- 42 DP-1 = 1 GLXMA 6-7-2011
- 56 DP-1 = 1 GLXMA 6-7-2011
- 122 DP-1 = 1 GLXMA 6-7-2011