

# Purdue Weed Science

## Market Development

Trial ID: 15S-THP-CTS-16      Location: TPAC      Trial Year: 2015  
 Protocol ID: 15S-THP-CTS-16      Investigator: Dr. Bill Johnson  
 Project ID:      Study Director: Joe Ikley  
 Sponsor Contact:

## General Trial Information

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

**Discipline:** H      herbicide  
**Trial Status:** E      established  
**Initiation Date:** 5/12/2015

## Trial Location

**Country:** USA United States  
**State/Prov.:** Indiana

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

**Study Rules:** Default

## Contacts

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Organization:** Purdue University  
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**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

## Cooperator/Landowner

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

## Crop Description

**Crop 1:** GLXMA      Glycine max      Soybean  
**Variety:** Asgrow 2933      **BBCH Scale:** BSOY  
**Description:** RR  
**Planting Date:** 5/14/2015  
**Planting Method:** SEEDED seeded  
**Planting Equipment:** PP      Plot Planter  
**Emergence Date:** 5/21/2015  
**Planting Rate, Unit:** 140000 S/A  
**Depth, Unit:** 1.25 IN  
**Row Spacing, Unit:** 15 IN  
**Soil Temperature, Unit:** 62 F  
**Soil Moisture:** SLIDRY      slightly dry

## Pest Description

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

## 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:** 10      **Tillage Type:** CONTIL      conventional-till  
**Replications:** 4      **Study Design:** RACOB      Randomized Complete Block (RCB)  
**Untreated Arrangement:** INCLUDED single control randomized in each block

## Soil Description

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

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## Application Description

|                                | A         | B        |
|--------------------------------|-----------|----------|
| <b>Application Date:</b>       | 5/14/2015 | 6/5/2015 |
| <b>Appl. Start Time:</b>       | 19:00     | 20:15    |
| <b>Appl. Stop Time:</b>        | 21:00     | 20:45    |
| <b>Application Method:</b>     | SPRAY     | SPRAY    |
| <b>Application Timing:</b>     | PRE       | POST     |
| <b>Application Placement:</b>  | SOIL      | BROADC   |
| <b>Applied By:</b>             | PD        | JI       |
| <b>Air Temperature, Unit:</b>  | 67 F      | 69 F     |
| <b>% Relative Humidity:</b>    | 45        | 61       |
| <b>Wind Velocity, Unit:</b>    | 5 MPH     | 8 MPH    |
| <b>Wind Direction:</b>         | SE        | N        |
| <b>Dew Presence (Y/N):</b>     | N no      | N no     |
| <b>Soil Temperature, Unit:</b> | 62 F      | 72 F     |
| <b>Soil Moisture:</b>          | SLIWET    | DRY      |
| <b>% Cloud Cover:</b>          | 100       | 30       |

## 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>            |            | 3 IN       |
| <b>Height Minimum, Maximum:</b> |            | 2.5 3.5    |

## Pest Stage At Each Application

|                                  | A       | B       |
|----------------------------------|---------|---------|
| <b>Pest 1 Code, Type, Scale:</b> | AMBTR W | AMBTR W |
| <b>Stage Majority, Percent:</b>  |         | 32G     |
| <b>Stage Minimum, Percent:</b>   |         | 31G     |
| <b>Stage Maximum, Percent:</b>   |         | 34G     |
| <b>Height, Unit:</b>             |         | 2.5 IN  |
| <b>Height Minimum, Maximum:</b>  |         | 0.5 4   |
| <b>Density, Unit:</b>            |         | 250 YD2 |

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| Application Equipment            |              |              |
|----------------------------------|--------------|--------------|
|                                  | A            | B            |
| <b>Appl. Equipment:</b>          | CO2 BACKPACK | CO2 BACKPACK |
| <b>Equipment Type:</b>           | BACSPR       | BACSPR       |
| <b>Operation Pressure, Unit:</b> | 18 PSI       | 28 PSI       |
| <b>Nozzle Type:</b>              | FLAT FAN     | TEEJAI       |
| <b>Nozzle Size:</b>              | XR 11002     | TTI110015    |
| <b>Nozzle Spacing, Unit:</b>     | 15 IN        | 15 IN        |
| <b>Nozzles/Row:</b>              | 8            | 8            |
| <b>Boom Length, Unit:</b>        | 10 FT        | 10 FT        |
| <b>Boom Height, Unit:</b>        | 17 IN        | 17 IN        |
| <b>Ground Speed, Unit:</b>       | 3 MPH        | 3 MPH        |
| <b>Carrier:</b>                  | MEIGS        | MEIGS        |
| <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          |

Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 GAL/AC      Mix Size: 1.8 liters (calculated mix size 1.5642)

| Trt No. | Treatment Name  | Form Conc     | Form Unit | Form Type | Rate         | Rate Unit | Appl Code | Amt Product to Measure | Rep 1 | 2   | 3   | 4   |
|---------|-----------------|---------------|-----------|-----------|--------------|-----------|-----------|------------------------|-------|-----|-----|-----|
| 1       | Untreated Check |               |           |           |              |           |           |                        | 101   | 210 | 302 | 408 |
| 2       | BROADAXE        | 7 LB/GAL      |           | SC        | 25 fl oz/a   |           | A         | 23.44 ml/mx            | 102   | 207 | 306 | 405 |
|         | TOUCHDOWN TOTAL | 4.17 LBAE/GAL |           | L         | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 3       | BROADAXE        | 7 LB/GAL      |           | SC        | 25 fl oz/a   |           | A         | 23.44 ml/mx            | 103   | 204 | 308 | 406 |
|         | FLEXSTAR GT 3.5 | 2.82 LBAE/GAL |           | L         | 3.5 pt/a     |           | B         | 52.5 ml/mx             |       |     |     |     |
|         | MSO ULTRA       | 100 %         |           | L         | 1 % v/v      |           | B         | 18.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 4       | TRICOR          | 75 %          |           | DF        | 3 oz wt/a    |           | A         | 2.696 g/mx             | 104   | 205 | 307 | 404 |
|         | BOUNDARY        | 6.5 LB/GAL    |           | EC        | 1.75 pt/a    |           | A         | 26.25 ml/mx            |       |     |     |     |
|         | FLEXSTAR GT 3.5 | 2.82 LBAE/GAL |           | L         | 3.5 pt/a     |           | B         | 52.5 ml/mx             |       |     |     |     |
|         | MSO ULTRA       | 100 %         |           | L         | 1 % v/v      |           | B         | 18.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 5       | CLASSIC         | 25 %          |           | WG        | 1.25 oz wt/a |           | A         | 1.123 g/mx             | 105   | 208 | 303 | 407 |
|         | BROADAXE        | 7 LB/GAL      |           | SC        | 25 fl oz/a   |           | A         | 23.44 ml/mx            |       |     |     |     |
|         | TOUCHDOWN TOTAL | 4.17 LBAE/GAL |           | L         | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 6       | SONIC           | 70 %          |           | WG        | 4.5 oz wt/a  |           | A         | 4.044 g/mx             | 106   | 209 | 305 | 409 |
|         | DURANGO DMA     | 4 LBAE/GAL    |           | SL        | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 7       | SONIC           | 70 %          |           | WG        | 6 oz wt/a    |           | A         | 5.392 g/mx             | 107   | 203 | 301 | 410 |
|         | DURANGO DMA     | 4 LBAE/GAL    |           | SL        | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 8       | SONIC           | 70 %          |           | WG        | 6 oz wt/a    |           | A         | 5.392 g/mx             | 108   | 206 | 304 | 402 |
|         | FIRSTRATE       | 84 %          |           | WG        | 0.3 oz wt/a  |           | B         | 0.2696 g/mx            |       |     |     |     |
|         | DURANGO DMA     | 4 LBAE/GAL    |           | SL        | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 9       | SURVEIL         | 48 %          |           | WG        | 2.8 oz wt/a  |           | A         | 2.516 g/mx             | 109   | 202 | 310 | 401 |
|         | DURANGO DMA     | 4 LBAE/GAL    |           | SL        | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |
| 10      | SURVEIL         | 48 %          |           | WG        | 4.2 oz wt/a  |           | A         | 3.775 g/mx             | 110   | 201 | 309 | 403 |
|         | DURANGO DMA     | 4 LBAE/GAL    |           | SL        | 32 fl oz/a   |           | B         | 30.0 ml/mx             |       |     |     |     |
|         | N-PAK - AMS     | 3.4 LBA/GAL   |           | SL        | 2.5 % v/v    |           | B         | 45.0 ml/mx             |       |     |     |     |

Sort Order: Replicate 1



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| Pest Type                     |             | W Weed        | W Weed          | W Weed         |          | W Weed        |    |     |   |  |   |  |   |  |
|-------------------------------|-------------|---------------|-----------------|----------------|----------|---------------|----|-----|---|--|---|--|---|--|
| Pest Code                     |             | AMBTR         | CHEAL           | SETPU          |          | AMBTR         |    |     |   |  |   |  |   |  |
| Pest Name                     |             | Giant ragweed | Common lambsqu> | yellow foxtail |          | Giant ragweed |    |     |   |  |   |  |   |  |
| Crop Code                     | GLXMA       |               |                 |                | GLXMA    |               |    |     |   |  |   |  |   |  |
| Crop Name                     | Soybean     |               |                 |                | Soybean  |               |    |     |   |  |   |  |   |  |
| Part Rated                    | PLOT C      | PLOT P        | PLOT P          | PLOT P         | PLOT C   | PLOT P        |    |     |   |  |   |  |   |  |
| Rating Date                   | 6/5/2015    | 6/5/2015      | 6/5/2015        | 6/5/2015       | 6/9/2015 | 6/9/2015      |    |     |   |  |   |  |   |  |
| Rating Type                   | PHYGEN      | CONTRO        | CONTRO          | CONTRO         | PHYGEN   | CONTRO        |    |     |   |  |   |  |   |  |
| Rating Unit                   | %           | %             | %               | %              | %        | %             |    |     |   |  |   |  |   |  |
| Number of Subsamples          | 1           | 1             | 1               | 1              | 1        | 1             |    |     |   |  |   |  |   |  |
| Days After First/Last Applic. | 22 22       | 22 22         | 22 22           | 22 22          | 26 4     | 26 4          |    |     |   |  |   |  |   |  |
| Trt-Eval Interval             | 0 DA-B      | 0 DA-B        | 0 DA-B          | 0 DA-B         | 4 DA-B   | 4 DA-B        |    |     |   |  |   |  |   |  |
| Days After Emergence          | 15 DE-1     | 15 DE-1       | 15 DE-1         | 15 DE-1        | 19 DE-1  | 19 DE-1       |    |     |   |  |   |  |   |  |
| ARM Action Codes              | P           | P             | P               | P              | P        | P             |    |     |   |  |   |  |   |  |
| Number of Decimals            | 0           | 0             | 0               | 0              | 0        | 0             |    |     |   |  |   |  |   |  |
| Trt Treatment                 | Rate        | Appl          | 1               |                | 2        |               | 3  |     | 4 |  | 5 |  | 6 |  |
| No. Name                      | Rate Unit   | Code Plot     |                 |                |          |               |    |     |   |  |   |  |   |  |
| 6 SONIC                       | 4.5 oz wt/a | A 106         | 0               | 75             | 100      | 90            | 5  | 85  |   |  |   |  |   |  |
| DURANGO DMA                   | 32 fl oz/a  | B 209         | 0               | 50             | 100      | 95            | 0  | 70  |   |  |   |  |   |  |
| N-PAK - AMS                   | 2.5 % v/v   | B 305         | 0               | 65             | 100      | 95            | 0  | 80  |   |  |   |  |   |  |
|                               |             | 409           | 0               | 75             | 100      | 70            | 0  | 90  |   |  |   |  |   |  |
|                               |             | Mean =        | 0               | 66             | 100      | 88            | 1  | 81  |   |  |   |  |   |  |
| 7 SONIC                       | 6 oz wt/a   | A 107         | 0               | 80             | 100      | 80            | 5  | 80  |   |  |   |  |   |  |
| DURANGO DMA                   | 32 fl oz/a  | B 203         | 0               | 90             | 100      | 95            | 5  | 75  |   |  |   |  |   |  |
| N-PAK - AMS                   | 2.5 % v/v   | B 301         | 0               | 80             | 100      | 80            | 5  | 80  |   |  |   |  |   |  |
|                               |             | 410           | 0               | 80             | 100      | 99            | 0  | 75  |   |  |   |  |   |  |
|                               |             | Mean =        | 0               | 83             | 100      | 89            | 4  | 78  |   |  |   |  |   |  |
| 8 SONIC                       | 6 oz wt/a   | A 108         | 0               | 70             | 100      | 90            | 0  | 75  |   |  |   |  |   |  |
| FIRSTRATE                     | 0.3 oz wt/a | B 206         | 0               | 75             | 100      | 95            | 0  | 85  |   |  |   |  |   |  |
| DURANGO DMA                   | 32 fl oz/a  | B 304         | 0               | 30             | 100      | 100           | 0  | 70  |   |  |   |  |   |  |
| N-PAK - AMS                   | 2.5 % v/v   | B 402         | 0               | 70             | 100      | 100           | 0  | 60  |   |  |   |  |   |  |
|                               |             | Mean =        | 0               | 61             | 100      | 96            | 0  | 73  |   |  |   |  |   |  |
| 9 SURVEIL                     | 2.8 oz wt/a | A 109         | 10              | 85             | 100      | 95            | 25 | 80  |   |  |   |  |   |  |
| DURANGO DMA                   | 32 fl oz/a  | B 202         | 15              | 90             | 100      | 100           | 20 | 85  |   |  |   |  |   |  |
| N-PAK - AMS                   | 2.5 % v/v   | B 310         | 5               | 85             | 100      | 90            | 5  | 75  |   |  |   |  |   |  |
|                               |             | 401           | 10              | 90             | 100      | 85            | 15 | 95  |   |  |   |  |   |  |
|                               |             | Mean =        | 10              | 88             | 100      | 93            | 16 | 84  |   |  |   |  |   |  |
| 10 SURVEIL                    | 4.2 oz wt/a | A 110         | 15              | 90             | 100      | 95            | 30 | 85  |   |  |   |  |   |  |
| DURANGO DMA                   | 32 fl oz/a  | B 201         | 20              | 95             | 100      | 95            | 25 | 100 |   |  |   |  |   |  |
| N-PAK - AMS                   | 2.5 % v/v   | B 309         | 15              | 90             | 100      | 100           | 25 | 90  |   |  |   |  |   |  |
|                               |             | 403           | 10              | 75             | 100      | 100           | 30 | 70  |   |  |   |  |   |  |
|                               |             | Mean =        | 15              | 88             | 100      | 98            | 28 | 86  |   |  |   |  |   |  |

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| Pest Type                     | W Weed          | W Weed         |           | W Weed        | W Weed          |     |     |
|-------------------------------|-----------------|----------------|-----------|---------------|-----------------|-----|-----|
| Pest Code                     | CHEAL           | SETPU          |           | AMBTR         | CHEAL           |     |     |
| Pest Name                     | Common lambsqu> | yellow foxtail |           | Giant ragweed | Common lambsqu> |     |     |
| Crop Code                     |                 |                | GLXMA     |               |                 |     |     |
| Crop Name                     |                 |                | Soybean   |               |                 |     |     |
| Part Rated                    | PLOT P          | PLOT P         | PLOT C    | PLOT P        | PLOT P          |     |     |
| Rating Date                   | 6/9/2015        | 6/9/2015       | 6/19/2015 | 6/19/2015     | 6/19/2015       |     |     |
| Rating Type                   | CONTRO          | CONTRO         | PHYGEN    | CONTRO        | CONTRO          |     |     |
| Rating Unit                   | %               | %              | %         | %             | %               |     |     |
| Number of Subsamples          | 1               | 1              | 1         | 1             | 1               |     |     |
| Days After First/Last Applic. | 26 4            | 26 4           | 36 14     | 36 14         | 36 14           |     |     |
| Trt-Eval Interval             | 4 DA-B          | 4 DA-B         | 14 DA-B   | 14 DA-B       | 14 DA-B         |     |     |
| Days After Emergence          | 19 DE-1         | 19 DE-1        | 29 DE-1   | 29 DE-1       | 29 DE-1         |     |     |
| 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 Plot      | 7         | 8             | 9               | 10  | 11  |
| 1 Untreated Check             |                 | 101            | 0         | 0             | 0               | 0   | 0   |
|                               |                 | 210            | 0         | 0             | 0               | 0   | 0   |
|                               |                 | 302            | 0         | 0             | 0               | 0   | 0   |
|                               |                 | 408            | 0         | 0             | 0               | 0   | 0   |
|                               |                 | Mean =         | 0         | 0             | 0               | 0   | 0   |
| 2 BROADAXE                    | 25 fl oz/a      | A 102          | 95        | 95            | 0               | 75  | 100 |
| TOUCHDOWN TOTAL               | 32 fl oz/a      | B 207          | 95        | 100           | 0               | 90  | 100 |
| N-PAK - AMS                   | 2.5 % v/v       | B 306          | 95        | 95            | 0               | 85  | 100 |
|                               |                 | 405            | 95        | 95            | 0               | 60  | 100 |
|                               |                 | Mean =         | 95        | 96            | 0               | 78  | 100 |
| 3 BROADAXE                    | 25 fl oz/a      | A 103          | 100       | 100           | 5               | 95  | 100 |
| FLEXSTAR GT 3.5               | 3.5 pt/a        | B 204          | 100       | 95            | 5               | 97  | 100 |
| MSO ULTRA                     | 1 % v/v         | B 308          | 100       | 100           | 5               | 100 | 100 |
| N-PAK - AMS                   | 2.5 % v/v       | B 406          | 100       | 100           | 10              | 99  | 100 |
|                               |                 | Mean =         | 100       | 99            | 6               | 98  | 100 |
| 4 TRICOR                      | 3 oz wt/a       | A 104          | 100       | 100           | 10              | 95  | 100 |
| BOUNDARY                      | 1.75 pt/a       | A 205          | 100       | 100           | 5               | 95  | 100 |
| FLEXSTAR GT 3.5               | 3.5 pt/a        | B 307          | 100       | 100           | 5               | 99  | 100 |
| MSO ULTRA                     | 1 % v/v         | B 404          | 100       | 100           | 5               | 95  | 100 |
| N-PAK - AMS                   | 2.5 % v/v       | B              |           |               |                 |     |     |
|                               |                 | Mean =         | 100       | 100           | 6               | 96  | 100 |
| 5 CLASSIC                     | 1.25 oz wt/a    | A 105          | 95        | 95            | 0               | 65  | 100 |
| BROADAXE                      | 25 fl oz/a      | A 208          | 95        | 100           | 0               | 95  | 100 |
| TOUCHDOWN TOTAL               | 32 fl oz/a      | B 303          | 95        | 95            | 0               | 65  | 100 |
| N-PAK - AMS                   | 2.5 % v/v       | B 407          | 95        | 95            | 0               | 75  | 100 |
|                               |                 | Mean =         | 95        | 96            | 0               | 75  | 100 |

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| Pest Type                     |               | W Weed          | W Weed         |           | W Weed        | W Weed          |
|-------------------------------|---------------|-----------------|----------------|-----------|---------------|-----------------|
| Pest Code                     |               | CHEAL           | SETPU          |           | AMBTR         | CHEAL           |
| Pest Name                     |               | Common lambsqu> | yellow foxtail |           | Giant ragweed | Common lambsqu> |
| Crop Code                     |               |                 |                | GLXMA     |               |                 |
| Crop Name                     |               |                 |                | Soybean   |               |                 |
| Part Rated                    |               | PLOT P          | PLOT P         | PLOT C    | PLOT P        | PLOT P          |
| Rating Date                   |               | 6/9/2015        | 6/9/2015       | 6/19/2015 | 6/19/2015     | 6/19/2015       |
| Rating Type                   |               | CONTRO          | CONTRO         | PHYGEN    | CONTRO        | CONTRO          |
| Rating Unit                   |               | %               | %              | %         | %             | %               |
| Number of Subsamples          |               | 1               | 1              | 1         | 1             | 1               |
| Days After First/Last Applic. |               | 26 4            | 26 4           | 36 14     | 36 14         | 36 14           |
| Trt-Eval Interval             |               | 4 DA-B          | 4 DA-B         | 14 DA-B   | 14 DA-B       | 14 DA-B         |
| Days After Emergence          |               | 19 DE-1         | 19 DE-1        | 29 DE-1   | 29 DE-1       | 29 DE-1         |
| 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 Plot       | 7              | 8         | 9             | 10              |
| 6 SONIC                       | 4.5 oz wt/a A | 106             | 95             | 100       | 0             | 75              |
| DURANGO DMA                   | 32 fl oz/a B  | 209             | 95             | 95        | 0             | 95              |
| N-PAK - AMS                   | 2.5 % v/v B   | 305             | 95             | 95        | 0             | 75              |
|                               |               | 409             | 95             | 100       | 0             | 90              |
|                               |               | Mean =          | 95             | 98        | 0             | 84              |
| 7 SONIC                       | 6 oz wt/a A   | 107             | 95             | 90        | 0             | 85              |
| DURANGO DMA                   | 32 fl oz/a B  | 203             | 95             | 100       | 0             | 75              |
| N-PAK - AMS                   | 2.5 % v/v B   | 301             | 95             | 90        | 5             | 70              |
|                               |               | 410             | 95             | 95        | 0             | 85              |
|                               |               | Mean =          | 95             | 94        | 1             | 79              |
| 8 SONIC                       | 6 oz wt/a A   | 108             | 95             | 95        | 0             | 70              |
| FIRSTRATE                     | 0.3 oz wt/a B | 206             | 95             | 85        | 0             | 90              |
| DURANGO DMA                   | 32 fl oz/a B  | 304             | 90             | 95        | 0             | 60              |
| N-PAK - AMS                   | 2.5 % v/v B   | 402             | 95             | 95        | 0             | 60              |
|                               |               | Mean =          | 94             | 93        | 0             | 70              |
| 9 SURVEIL                     | 2.8 oz wt/a A | 109             | 95             | 90        | 0             | 90              |
| DURANGO DMA                   | 32 fl oz/a B  | 202             | 95             | 100       | 0             | 90              |
| N-PAK - AMS                   | 2.5 % v/v B   | 310             | 95             | 95        | 0             | 80              |
|                               |               | 401             | 100            | 90        | 0             | 95              |
|                               |               | Mean =          | 96             | 94        | 0             | 89              |
| 10 SURVEIL                    | 4.2 oz wt/a A | 110             | 100            | 100       | 0             | 95              |
| DURANGO DMA                   | 32 fl oz/a B  | 201             | 100            | 95        | 0             | 99              |
| N-PAK - AMS                   | 2.5 % v/v B   | 309             | 100            | 100       | 0             | 95              |
|                               |               | 403             | 95             | 95        | 0             | 70              |
|                               |               | Mean =          | 99             | 98        | 0             | 90              |

# Purdue Weed Science

| Pest Type                     | W Weed         | W Weed        | W Weed          | W Weed         |     |     |
|-------------------------------|----------------|---------------|-----------------|----------------|-----|-----|
| Pest Code                     | SETPU          | AMBTR         | CHEAL           | SETPU          |     |     |
| Pest Name                     | yellow foxtail | Giant ragweed | Common lambsqu> | yellow foxtail |     |     |
| Crop Code                     |                |               |                 |                |     |     |
| Crop Name                     |                |               |                 |                |     |     |
| Part Rated                    | PLOT P         | PLOT P        | PLOT P          | PLOT P         |     |     |
| Rating Date                   | 6/19/2015      | 7/1/2015      | 7/1/2015        | 7/1/2015       |     |     |
| Rating Type                   | CONTRO         | CONTRO        | CONTRO          | CONTRO         |     |     |
| Rating Unit                   | %              | %             | %               | %              |     |     |
| Number of Subsamples          | 1              | 1             | 1               | 1              |     |     |
| Days After First/Last Applic. | 36 14          | 48 26         | 48 26           | 48 26          |     |     |
| Trt-Eval Interval             | 14 DA-B        | 26 DA-B       | 26 DA-B         | 26 DA-B        |     |     |
| Days After Emergence          | 29 DE-1        | 41 DE-1       | 41 DE-1         | 41 DE-1        |     |     |
| ARM Action Codes              | P              | P             | P               | P              |     |     |
| Number of Decimals            | 0              | 0             | 0               | 0              |     |     |
| Trt Treatment                 | Rate           | Appl          |                 |                |     |     |
| No. Name                      | Rate Unit      | Code Plot     | 12              | 13             | 14  | 15  |
| 1 Untreated Check             |                | 101           | 0               | 0              | 0   | 0   |
|                               |                | 210           | 0               | 0              | 0   | 0   |
|                               |                | 302           | 0               | 0              | 0   | 0   |
|                               |                | 408           | 0               | 0              | 0   | 0   |
|                               |                | Mean =        | 0               | 0              | 0   | 0   |
| 2 BROADAXE                    | 25 fl oz/a     | A 102         | 99              | 70             | 100 | 95  |
| TOUCHDOWN TOTAL               | 32 fl oz/a     | B 207         | 100             | 97             | 100 | 100 |
| N-PAK - AMS                   | 2.5 % v/v      | B 306         | 100             | 92             | 100 | 100 |
|                               |                | 405           | 100             | 85             | 100 | 100 |
|                               |                | Mean =        | 100             | 86             | 100 | 99  |
| 3 BROADAXE                    | 25 fl oz/a     | A 103         | 100             | 95             | 100 | 100 |
| FLEXSTAR GT 3.5               | 3.5 pt/a       | B 204         | 100             | 97             | 100 | 100 |
| MSO ULTRA                     | 1 % v/v        | B 308         | 100             | 100            | 100 | 100 |
| N-PAK - AMS                   | 2.5 % v/v      | B 406         | 100             | 99             | 100 | 100 |
|                               |                | Mean =        | 100             | 98             | 100 | 100 |
| 4 TRICOR                      | 3 oz wt/a      | A 104         | 100             | 95             | 100 | 100 |
| BOUNDARY                      | 1.75 pt/a      | A 205         | 100             | 99             | 100 | 100 |
| FLEXSTAR GT 3.5               | 3.5 pt/a       | B 307         | 100             | 97             | 100 | 99  |
| MSO ULTRA                     | 1 % v/v        | B 404         | 100             | 97             | 100 | 100 |
| N-PAK - AMS                   | 2.5 % v/v      | B             |                 |                |     |     |
|                               |                | Mean =        | 100             | 97             | 100 | 100 |
| 5 CLASSIC                     | 1.25 oz wt/a   | A 105         | 100             | 75             | 100 | 100 |
| BROADAXE                      | 25 fl oz/a     | A 208         | 100             | 95             | 100 | 100 |
| TOUCHDOWN TOTAL               | 32 fl oz/a     | B 303         | 100             | 75             | 100 | 100 |
| N-PAK - AMS                   | 2.5 % v/v      | B 407         | 100             | 90             | 100 | 100 |
|                               |                | Mean =        | 100             | 84             | 100 | 100 |



# Purdue Weed Science

|                               |             |           | W Weed<br>SETPU<br>yellow foxtail | W Weed<br>AMBTR<br>Giant ragweed | W Weed<br>CHEAL<br>Common lambsqu> | W Weed<br>SETPU<br>yellow foxtail |
|-------------------------------|-------------|-----------|-----------------------------------|----------------------------------|------------------------------------|-----------------------------------|
| Pest Type                     |             |           |                                   |                                  |                                    |                                   |
| Pest Code                     |             |           |                                   |                                  |                                    |                                   |
| Pest Name                     |             |           |                                   |                                  |                                    |                                   |
| Crop Code                     |             |           |                                   |                                  |                                    |                                   |
| Crop Name                     |             |           |                                   |                                  |                                    |                                   |
| Part Rated                    |             |           | PLOT P                            | PLOT P                           | PLOT P                             | PLOT P                            |
| Rating Date                   |             |           | 6/19/2015                         | 7/1/2015                         | 7/1/2015                           | 7/1/2015                          |
| Rating Type                   |             |           | CONTRO                            | CONTRO                           | CONTRO                             | CONTRO                            |
| Rating Unit                   |             |           | %                                 | %                                | %                                  | %                                 |
| Number of Subsamples          |             |           | 1                                 | 1                                | 1                                  | 1                                 |
| Days After First/Last Applic. |             |           | 36 14                             | 48 26                            | 48 26                              | 48 26                             |
| Trt-Eval Interval             |             |           | 14 DA-B                           | 26 DA-B                          | 26 DA-B                            | 26 DA-B                           |
| Days After Emergence          |             |           | 29 DE-1                           | 41 DE-1                          | 41 DE-1                            | 41 DE-1                           |
| ARM Action Codes              |             |           | P                                 | P                                | P                                  | P                                 |
| Number of Decimals            |             |           | 0                                 | 0                                | 0                                  | 0                                 |
| Trt Treatment                 | Rate        | Appl      |                                   |                                  |                                    |                                   |
| No. Name                      | Rate Unit   | Code Plot | 12                                | 13                               | 14                                 | 15                                |
| 6 SONIC                       | 4.5 oz wt/a | A 106     | 100                               | 80                               | 100                                | 85                                |
| DURANGO DMA                   | 32 fl oz/a  | B 209     | 100                               | 95                               | 100                                | 99                                |
| N-PAK - AMS                   | 2.5 % v/v   | B 305     | 100                               | 85                               | 100                                | 99                                |
|                               |             | 409       | 100                               | 95                               | 100                                | 100                               |
|                               |             | Mean =    | 100                               | 89                               | 100                                | 96                                |
| 7 SONIC                       | 6 oz wt/a   | A 107     | 95                                | 75                               | 100                                | 85                                |
| DURANGO DMA                   | 32 fl oz/a  | B 203     | 100                               | 80                               | 100                                | 100                               |
| N-PAK - AMS                   | 2.5 % v/v   | B 301     | 95                                | 70                               | 100                                | 90                                |
|                               |             | 410       | 100                               | 90                               | 100                                | 100                               |
|                               |             | Mean =    | 98                                | 79                               | 100                                | 94                                |
| 8 SONIC                       | 6 oz wt/a   | A 108     | 100                               | 85                               | 100                                | 100                               |
| FIRSTRATE                     | 0.3 oz wt/a | B 206     | 100                               | 95                               | 100                                | 100                               |
| DURANGO DMA                   | 32 fl oz/a  | B 304     | 100                               | 75                               | 100                                | 100                               |
| N-PAK - AMS                   | 2.5 % v/v   | B 402     | 100                               | 65                               | 100                                | 100                               |
|                               |             | Mean =    | 100                               | 80                               | 100                                | 100                               |
| 9 SURVEIL                     | 2.8 oz wt/a | A 109     | 100                               | 90                               | 100                                | 100                               |
| DURANGO DMA                   | 32 fl oz/a  | B 202     | 100                               | 85                               | 100                                | 99                                |
| N-PAK - AMS                   | 2.5 % v/v   | B 310     | 100                               | 95                               | 100                                | 100                               |
|                               |             | 401       | 90                                | 95                               | 100                                | 80                                |
|                               |             | Mean =    | 98                                | 91                               | 100                                | 95                                |
| 10 SURVEIL                    | 4.2 oz wt/a | A 110     | 100                               | 95                               | 100                                | 99                                |
| DURANGO DMA                   | 32 fl oz/a  | B 201     | 100                               | 95                               | 100                                | 95                                |
| N-PAK - AMS                   | 2.5 % v/v   | B 309     | 100                               | 99                               | 100                                | 100                               |
|                               |             | 403       | 100                               | 70                               | 100                                | 100                               |
|                               |             | Mean =    | 100                               | 90                               | 100                                | 99                                |

# Purdue Weed Science

## Market Development

Trial ID: 15S-THP-CTS-16      Location: TPAC      Trial Year: 2015  
 Protocol ID: 15S-THP-CTS-16      Investigator: Dr. Bill Johnson  
 Project ID:      Study Director: Joe Ikley  
                                  Sponsor Contact:

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

Pest Code  
 AMBTR, Ambrosia trifida, = US  
 CHEAL, Chenopodium album, = US  
 SETPU, Setaria pumila, = US

Crop Code  
 GLXMA, BSOY, Glycine max, = US

Part Rated  
 PLOT = plot  
 C = Crop is Part Rated  
 P = Pest is Part Rated

Rating Type  
 PHYGEN = phytotoxicity - general / injury  
 CONTRO = control / burndown or knockdown

Rating Unit  
 % = percent

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

| Pest Type                     |                 | W Weed         | W Weed          | W Weed         |          | W Weed        |        |      |       |
|-------------------------------|-----------------|----------------|-----------------|----------------|----------|---------------|--------|------|-------|
| Pest Code                     |                 | AMBTR          | CHEAL           | SETPU          |          | AMBTR         |        |      |       |
| Pest Name                     |                 | Giant ragweed  | Common lambsqu> | yellow foxtail |          | Giant ragweed |        |      |       |
| Crop Code                     | GLXMA           |                |                 |                | GLXMA    |               |        |      |       |
| Crop Name                     | Soybean         |                |                 |                | Soybean  |               |        |      |       |
| Part Rated                    | PLOT C          | PLOT P         | PLOT P          | PLOT P         | PLOT C   | PLOT P        |        |      |       |
| Rating Date                   | 6/5/2015        | 6/5/2015       | 6/5/2015        | 6/5/2015       | 6/9/2015 | 6/9/2015      |        |      |       |
| Rating Type                   | PHYGEN          | CONTRO         | CONTRO          | CONTRO         | PHYGEN   | CONTRO        |        |      |       |
| Rating Unit                   | %               | %              | %               | %              | %        | %             |        |      |       |
| Number of Subsamples          | 1               | 1              | 1               | 1              | 1        | 1             |        |      |       |
| Days After First/Last Applic. | 22 22           | 22 22          | 22 22           | 22 22          | 26 4     | 26 4          |        |      |       |
| Trt-Eval Interval             | 0 DA-B          | 0 DA-B         | 0 DA-B          | 0 DA-B         | 4 DA-B   | 4 DA-B        |        |      |       |
| Days After Emergence          | 15 DE-1         | 15 DE-1        | 15 DE-1         | 15 DE-1        | 19 DE-1  | 19 DE-1       |        |      |       |
| ARM Action Codes              | P               | P              | P               | P              | P        | P             |        |      |       |
| Number of Decimals            | 0               | 0              | 0               | 0              | 0        | 0             |        |      |       |
| Trt No.                       | Treatment Name  | Rate           | Appl Code       | 1              | 2        | 3             | 4      | 5    | 6     |
|                               |                 | Rate Unit      |                 |                |          |               |        |      |       |
| 1                             | Untreated Check |                |                 | 0 d            | 0 e      | 0 c           | 0 d    | 0 d  | 0 d   |
| 2                             | BROADAXE        | 25 fl oz/a A   |                 | 2 cd           | 16 de    | 100 a         | 95 abc | 3 d  | 78 bc |
|                               | TOUCHDOWN TOTAL | 32 fl oz/a B   |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |
| 3                             | BROADAXE        | 25 fl oz/a A   |                 | 1 cd           | 31 cd    | 100 a         | 99 a   | 34 a | 95 a  |
|                               | FLEXSTAR GT 3.5 | 3.5 pt/a B     |                 |                |          |               |        |      |       |
|                               | MSO ULTRA       | 1 % v/v B      |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |
| 4                             | TRICOR          | 3 oz wt/a A    |                 | 0 d            | 19 de    | 95 b          | 99 a   | 35 a | 95 a  |
|                               | BOUNDARY        | 1.75 pt/a A    |                 |                |          |               |        |      |       |
|                               | FLEXSTAR GT 3.5 | 3.5 pt/a B     |                 |                |          |               |        |      |       |
|                               | MSO ULTRA       | 1 % v/v B      |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |
| 5                             | CLASSIC         | 1.25 oz wt/a A |                 | 4 c            | 49 bc    | 100 a         | 99 a   | 1 d  | 76 bc |
|                               | BROADAXE        | 25 fl oz/a A   |                 |                |          |               |        |      |       |
|                               | TOUCHDOWN TOTAL | 32 fl oz/a B   |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |
| 6                             | SONIC           | 4.5 oz wt/a A  |                 | 0 d            | 66 ab    | 100 a         | 88 c   | 1 d  | 81 bc |
|                               | DURANGO DMA     | 32 fl oz/a B   |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |
| 7                             | SONIC           | 6 oz wt/a A    |                 | 0 d            | 83 a     | 100 a         | 89 bc  | 4 d  | 78 bc |
|                               | DURANGO DMA     | 32 fl oz/a B   |                 |                |          |               |        |      |       |
|                               | N-PAK - AMS     | 2.5 % v/v B    |                 |                |          |               |        |      |       |

# Purdue Weed Science

| Pest Type                     |               | W Weed        | W Weed          | W Weed         |          | W Weed        |
|-------------------------------|---------------|---------------|-----------------|----------------|----------|---------------|
| Pest Code                     |               | AMBTR         | CHEAL           | SETPU          |          | AMBTR         |
| Pest Name                     |               | Giant ragweed | Common lambsqu> | yellow foxtail |          | Giant ragweed |
| Crop Code                     | GLXMA         |               |                 |                | GLXMA    |               |
| Crop Name                     | Soybean       |               |                 |                | Soybean  |               |
| Part Rated                    | PLOT C        | PLOT P        | PLOT P          | PLOT P         | PLOT C   | PLOT P        |
| Rating Date                   | 6/5/2015      | 6/5/2015      | 6/5/2015        | 6/5/2015       | 6/9/2015 | 6/9/2015      |
| Rating Type                   | PHYGEN        | CONTRO        | CONTRO          | CONTRO         | PHYGEN   | CONTRO        |
| Rating Unit                   | %             | %             | %               | %              | %        | %             |
| Number of Subsamples          | 1             | 1             | 1               | 1              | 1        | 1             |
| Days After First/Last Applic. | 22 22         | 22 22         | 22 22           | 22 22          | 26 4     | 26 4          |
| Trt-Eval Interval             | 0 DA-B        | 0 DA-B        | 0 DA-B          | 0 DA-B         | 4 DA-B   | 4 DA-B        |
| Days After Emergence          | 15 DE-1       | 15 DE-1       | 15 DE-1         | 15 DE-1        | 19 DE-1  | 19 DE-1       |
| ARM Action Codes              | P             | P             | P               | P              | P        | P             |
| Number of Decimals            | 0             | 0             | 0               | 0              | 0        | 0             |
| Trt Treatment                 | Rate          | Appl          |                 |                |          |               |
| No. Name                      | Rate Unit     | Code          | 1               | 2              | 3        | 4             |
|                               |               |               | 5               | 6              |          |               |
| 8 SONIC                       | 6 oz wt/a A   |               | 0 d             | 61 ab          | 100 a    | 96 abc        |
| FIRSTRATE                     | 0.3 oz wt/a B |               |                 |                |          |               |
| DURANGO DMA                   | 32 fl oz/a B  |               |                 |                |          |               |
| N-PAK - AMS                   | 2.5 % v/v B   |               |                 |                |          | 73 c          |
| 9 SURVEIL                     | 2.8 oz wt/a A |               | 10 b            | 88 a           | 100 a    | 93 abc        |
| DURANGO DMA                   | 32 fl oz/a B  |               |                 |                |          |               |
| N-PAK - AMS                   | 2.5 % v/v B   |               |                 |                |          | 16 c          |
| 10 SURVEIL                    | 4.2 oz wt/a A |               | 15 a            | 88 a           | 100 a    | 98 ab         |
| DURANGO DMA                   | 32 fl oz/a B  |               |                 |                |          |               |
| N-PAK - AMS                   | 2.5 % v/v B   |               |                 |                |          | 28 b          |
| LSD P=.05                     |               |               | 3.0             | 28.4           | 1.9      | 9.2           |
| Standard Deviation            |               |               | 2.1             | 19.6           | 1.3      | 6.3           |
| CV                            |               |               | 64.13           | 39.13          | 1.44     | 7.41          |
| Bartlett's X2                 |               |               | 4.794           | 20.329         | 0.0      | 15.84         |
| P(Bartlett's X2)              |               |               | 0.309           | 0.009*         | .        | 0.045*        |
| Skewness                      |               |               | 1.7403*         | -0.3951        | -2.7525* | -2.53*        |
| Kurtosis                      |               |               | 2.1555*         | -1.5235*       | 5.9094*  | 5.0748*       |
| Replicate F                   |               |               | 2.042           | 1.088          | 1.000    | 0.565         |
| Replicate Prob(F)             |               |               | 0.1316          | 0.3709         | 0.4079   | 0.6431        |
| Treatment F                   |               |               | 25.670          | 10.712         | 2379.334 | 91.710        |
| Treatment Prob(F)             |               |               | 0.0001          | 0.0001         | 0.0001   | 0.0001        |
|                               |               |               |                 |                |          | 1.841         |
|                               |               |               |                 |                |          | 0.1635        |
|                               |               |               |                 |                |          | 71.134        |
|                               |               |               |                 |                |          | 56.693        |
|                               |               |               |                 |                |          | 0.0001        |

# Purdue Weed Science

| Pest Type<br>Pest Code<br>Pest Name                                 | W Weed<br>CHEAL<br>Common lambsqu>                                   | W Weed<br>SETPU<br>yellow foxtail |                     | W Weed<br>AMBTR<br>Giant ragweed | W Weed<br>CHEAL<br>Common lambsqu> | W Weed<br>SETPU<br>yellow foxtail |       |       |
|---|--|-----------------------------------|---------------------|----------------------------------|------------------------------------|-----------------------------------|-------|-------|
| Crop Code<br>Crop Name<br>Part Rated                                |  |                                   | GLXMA<br>Soybean    |                                  |                                    |                                   |       |       |
| Rating Date   | PLOT P<br>6/9/2015   | PLOT P<br>6/9/2015                | PLOT C<br>6/19/2015 | PLOT P<br>6/19/2015              | PLOT P<br>6/19/2015                | PLOT P<br>6/19/2015               |       |       |
| Rating Type   | CONTRO   | CONTRO                            | PHYGEN              | CONTRO                           | CONTRO                             | CONTRO                            |       |       |
| Rating Unit   | %  | %                                 | %                   | %                                | %                                  | %                                 |       |       |
| Number of Subsamples  | 1  | 1                                 | 1                   | 1                                | 1                                  | 1                                 |       |       |
| Days After First/Last Applic.                                       | 26 4   | 26 4                              | 36 14               | 36 14                            | 36 14                              | 36 14                             |       |       |
| Tri-Eval Interval   | 4 DA-B   | 4 DA-B                            | 14 DA-B             | 14 DA-B                          | 14 DA-B                            | 14 DA-B                           |       |       |
| Days After Emergence  | 19 DE-1  | 19 DE-1                           | 29 DE-1             | 29 DE-1                          | 29 DE-1                            | 29 DE-1                           |       |       |
| ARM Action Codes  | P  | P                                 | P                   | P                                | P                                  | P                                 |       |       |
| Number of Decimals  | 0  | 0                                 | 0                   | 0                                | 0                                  | 0                                 |       |       |
| Tri Treatment<br>No. Name   | Rate<br>Rate Unit  | Appl<br>Code                      | 7                   | 8                                | 9                                  | 10                                | 11    | 12    |
| 1 Untreated Check   |  |                                   | 0 d                 | 0 d                              | 0 b                                | 0 f                               | 0 b   | 0 b   |
| 2 BROADAXE<br>TOUCHDOWN TOTAL<br>N-PAK - AMS                        | 25 fl oz/a A<br>32 fl oz/a B<br>2.5 % v/v B                          |                                   | 95 bc               | 96 abc                           | 0 b                                | 78 cde                            | 100 a | 100 a |
| 3 BROADAXE<br>FLEXSTAR GT 3.5<br>MSO ULTRA<br>N-PAK - AMS           | 25 fl oz/a A<br>3.5 pt/a B<br>1 % v/v B<br>2.5 % v/v B               |                                   | 100 a               | 99 a                             | 6 a                                | 98 a                              | 100 a | 100 a |
| 4 TRICOR<br>BOUNDARY<br>FLEXSTAR GT 3.5<br>MSO ULTRA<br>N-PAK - AMS | 3 oz wt/a A<br>1.75 pt/a A<br>3.5 pt/a B<br>1 % v/v B<br>2.5 % v/v B |                                   | 100 a               | 100 a                            | 6 a                                | 96 ab                             | 100 a | 100 a |
| 5 CLASSIC<br>BROADAXE<br>TOUCHDOWN TOTAL<br>N-PAK - AMS             | 1.25 oz wt/a A<br>25 fl oz/a A<br>32 fl oz/a B<br>2.5 % v/v B        |                                   | 95 bc               | 96 abc                           | 0 b                                | 75 de                             | 100 a | 100 a |
| 6 SONIC<br>DURANGO DMA<br>N-PAK - AMS                               | 4.5 oz wt/a A<br>32 fl oz/a B<br>2.5 % v/v B                         |                                   | 95 bc               | 98 ab                            | 0 b                                | 84 bcd                            | 100 a | 100 a |
| 7 SONIC<br>DURANGO DMA<br>N-PAK - AMS                               | 6 oz wt/a A<br>32 fl oz/a B<br>2.5 % v/v B                           |                                   | 95 bc               | 94 bc                            | 1 b                                | 79 cde                            | 100 a | 98 a  |

# Purdue Weed Science

| Pest Type                     | W Weed          | W Weed         |           | W Weed        | W Weed          | W Weed         |          |          |
|-------------------------------|-----------------|----------------|-----------|---------------|-----------------|----------------|----------|----------|
| Pest Code                     | CHEAL           | SETPU          |           | AMBTR         | CHEAL           | SETPU          |          |          |
| Pest Name                     | Common lambsqu> | yellow foxtail |           | Giant ragweed | Common lambsqu> | yellow foxtail |          |          |
| Crop Code                     |                 |                | GLXMA     |               |                 |                |          |          |
| Crop Name                     |                 |                | Soybean   |               |                 |                |          |          |
| Part Rated                    | PLOT P          | PLOT P         | PLOT C    | PLOT P        | PLOT P          | PLOT P         |          |          |
| Rating Date                   | 6/9/2015        | 6/9/2015       | 6/19/2015 | 6/19/2015     | 6/19/2015       | 6/19/2015      |          |          |
| Rating Type                   | CONTRO          | CONTRO         | PHYGEN    | CONTRO        | CONTRO          | CONTRO         |          |          |
| Rating Unit                   | %               | %              | %         | %             | %               | %              |          |          |
| Number of Subsamples          | 1               | 1              | 1         | 1             | 1               | 1              |          |          |
| Days After First/Last Applic. | 26 4            | 26 4           | 36 14     | 36 14         | 36 14           | 36 14          |          |          |
| Trt-Eval Interval             | 4 DA-B          | 4 DA-B         | 14 DA-B   | 14 DA-B       | 14 DA-B         | 14 DA-B        |          |          |
| Days After Emergence          | 19 DE-1         | 19 DE-1        | 29 DE-1   | 29 DE-1       | 29 DE-1         | 29 DE-1        |          |          |
| ARM Action Codes              | P               | P              | P         | P             | P               | P              |          |          |
| Number of Decimals            | 0               | 0              | 0         | 0             | 0               | 0              |          |          |
| Trt Treatment                 | Rate            | Appl           |           |               |                 |                |          |          |
| No. Name                      | Rate Unit       | Code           | 7         | 8             | 9               | 10             | 11       | 12       |
| 8 SONIC                       | 6 oz wt/a A     |                | 94 c      | 93 c          | 0 b             | 70 e           | 100 a    | 100 a    |
| FIRSTRATE                     | 0.3 oz wt/a B   |                |           |               |                 |                |          |          |
| DURANGO DMA                   | 32 fl oz/a B    |                |           |               |                 |                |          |          |
| N-PAK - AMS                   | 2.5 % v/v B     |                |           |               |                 |                |          |          |
| 9 SURVEIL                     | 2.8 oz wt/a A   |                | 96 b      | 94 bc         | 0 b             | 89 abc         | 100 a    | 98 a     |
| DURANGO DMA                   | 32 fl oz/a B    |                |           |               |                 |                |          |          |
| N-PAK - AMS                   | 2.5 % v/v B     |                |           |               |                 |                |          |          |
| 10 SURVEIL                    | 4.2 oz wt/a A   |                | 99 a      | 98 ab         | 0 b             | 90 abc         | 100 a    | 100 a    |
| DURANGO DMA                   | 32 fl oz/a B    |                |           |               |                 |                |          |          |
| N-PAK - AMS                   | 2.5 % v/v B     |                |           |               |                 |                |          |          |
| LSD P=.05                     | 2.1             |                | 2.1       | 5.0           | 2.1             | 13.2           | .        | 2.7      |
| Standard Deviation            | 1.4             |                | 1.4       | 3.4           | 1.4             | 9.1            | 0.0      | 1.9      |
| CV                            | 1.63            |                | 1.63      | 3.95          | 103.21          | 12.03          | 0.0      | 2.1      |
| Bartlett's X2                 | 0.0             |                | 0.0       | 4.055         | 0.0             | 15.739         | 0.0      | 9.596    |
| P(Bartlett's X2)              | .               |                | .         | 0.773         | .               | 0.046*         | .        | 0.008*   |
| Skewness                      | -2.7346*        |                | -2.7346*  | -2.6942*      | 1.9494*         | -1.9079*       | -2.7717* | -2.7525* |
| Kurtosis                      | 5.8538*         |                | 5.8538*   | 5.7087*       | 3.0421*         | 3.0004*        | 5.9791*  | 5.9094*  |
| Replicate F                   | 0.310           |                | 0.310     | 0.053         | 0.310           | 2.599          | 0.000    | 0.477    |
| Replicate Prob(F)             | 0.8177          |                | 0.8177    | 0.9834        | 0.8177          | 0.0728         | 1.0000   | 0.7007   |
| Treatment F                   | 1860.862        |                | 1860.862  | 317.639       | 13.414          | 38.047         | 0.000    | 1116.882 |
| Treatment Prob(F)             | 0.0001          |                | 0.0001    | 0.0001        | 0.0001          | 0.0001         | 1.0000   | 0.0001   |

# Purdue Weed Science

| Pest Type<br>Pest Code<br>Pest Name |                 |              | W Weed<br>AMBTR<br>Giant ragweed | W Weed<br>CHEAL<br>Common lambsqu> | W Weed<br>SETPU<br>yellow foxtail |       |
|-------------------------------------|-----------------|--------------|----------------------------------|------------------------------------|-----------------------------------|-------|
| Crop Code                           |                 |              |                                  |                                    |                                   |       |
| Crop Name                           |                 |              |                                  |                                    |                                   |       |
| Part Rated                          |                 |              | PLOT P                           | PLOT P                             | PLOT P                            |       |
| Rating Date                         |                 |              | 7/1/2015                         | 7/1/2015                           | 7/1/2015                          |       |
| Rating Type                         |                 |              | CONTRO                           | CONTRO                             | CONTRO                            |       |
| Rating Unit                         |                 |              | %                                | %                                  | %                                 |       |
| Number of Subsamples                |                 |              | 1                                | 1                                  | 1                                 |       |
| Days After First/Last Applic.       |                 |              | 48 26                            | 48 26                              | 48 26                             |       |
| Trt-Eval Interval                   |                 |              | 26 DA-B                          | 26 DA-B                            | 26 DA-B                           |       |
| Days After Emergence                |                 |              | 41 DE-1                          | 41 DE-1                            | 41 DE-1                           |       |
| ARM Action Codes                    |                 |              | P                                | P                                  | P                                 |       |
| Number of Decimals                  |                 |              | 0                                | 0                                  | 0                                 |       |
| Trt No.                             | Treatment Name  | Rate Unit    | Appl Code                        | 13                                 | 14                                | 15    |
| 1                                   | Untreated Check |              |                                  | 0 d                                | 0 b                               | 0 b   |
| 2                                   | BROADAXE        | 25 fl oz/a   | A                                | 86 abc                             | 100 a                             | 99 a  |
|                                     | TOUCHDOWN TOTAL | 32 fl oz/a   | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |
| 3                                   | BROADAXE        | 25 fl oz/a   | A                                | 98 a                               | 100 a                             | 100 a |
|                                     | FLEXSTAR GT 3.5 | 3.5 pt/a     | B                                |                                    |                                   |       |
|                                     | MSO ULTRA       | 1 % v/v      | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |
| 4                                   | TRICOR          | 3 oz wt/a    | A                                | 97 a                               | 100 a                             | 100 a |
|                                     | BOUNDARY        | 1.75 pt/a    | A                                |                                    |                                   |       |
|                                     | FLEXSTAR GT 3.5 | 3.5 pt/a     | B                                |                                    |                                   |       |
|                                     | MSO ULTRA       | 1 % v/v      | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |
| 5                                   | CLASSIC         | 1.25 oz wt/a | A                                | 84 bc                              | 100 a                             | 100 a |
|                                     | BROADAXE        | 25 fl oz/a   | A                                |                                    |                                   |       |
|                                     | TOUCHDOWN TOTAL | 32 fl oz/a   | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |
| 6                                   | SONIC           | 4.5 oz wt/a  | A                                | 89 abc                             | 100 a                             | 96 a  |
|                                     | DURANGO DMA     | 32 fl oz/a   | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |
| 7                                   | SONIC           | 6 oz wt/a    | A                                | 79 c                               | 100 a                             | 94 a  |
|                                     | DURANGO DMA     | 32 fl oz/a   | B                                |                                    |                                   |       |
|                                     | N-PAK - AMS     | 2.5 % v/v    | B                                |                                    |                                   |       |

## Purdue Weed Science

| Pest Type                     | W Weed                      | W Weed             | W Weed             |
|-------------------------------|-----------------------------|--------------------|--------------------|
| Pest Code                     | AMBTR                       | CHEAL              | SETPU              |
| Pest Name                     | Giant ragweed               | Common lambsqu>    | yellow foxtail     |
| Crop Code                     |                             |                    |                    |
| Crop Name                     |                             |                    |                    |
| Part Rated                    |                             |                    |                    |
| Rating Date                   | PLOT P<br>7/1/2015          | PLOT P<br>7/1/2015 | PLOT P<br>7/1/2015 |
| Rating Type                   | CONTRO                      | CONTRO             | CONTRO             |
| Rating Unit                   | %                           | %                  | %                  |
| Number of Subsamples          | 1                           | 1                  | 1                  |
| Days After First/Last Applic. | 48 26                       | 48 26              | 48 26              |
| Tri-Eval Interval             | 26 DA-B                     | 26 DA-B            | 26 DA-B            |
| Days After Emergence          | 41 DE-1                     | 41 DE-1            | 41 DE-1            |
| ARM Action Codes              | P                           | P                  | P                  |
| Number of Decimals            | 0                           | 0                  | 0                  |
| Tri Treatment No. Name        | Rate Appl<br>Rate Unit Code |                    |                    |
|                               |                             | 13                 | 14                 |
| 8 SONIC                       | 6 oz wt/a A                 | 80 bc              | 100 a              |
| FIRSTRATE                     | 0.3 oz wt/a B               |                    |                    |
| DURANGO DMA                   | 32 fl oz/a B                |                    |                    |
| N-PAK - AMS                   | 2.5 % v/v B                 |                    |                    |
| 9 SURVEIL                     | 2.8 oz wt/a A               | 91 ab              | 100 a              |
| DURANGO DMA                   | 32 fl oz/a B                |                    |                    |
| N-PAK - AMS                   | 2.5 % v/v B                 |                    |                    |
| 10 SURVEIL                    | 4.2 oz wt/a A               | 90 abc             | 100 a              |
| DURANGO DMA                   | 32 fl oz/a B                |                    |                    |
| N-PAK - AMS                   | 2.5 % v/v B                 |                    |                    |
| LSD P=.05                     | 12.2                        | .                  | 6.9                |
| Standard Deviation            | 8.4                         | 0.0                | 4.7                |
| CV                            | 10.64                       | 0.0                | 5.36               |
| Bartlett's X2                 | 16.017                      | 0.0                | 19.155             |
| P(Bartlett's X2)              | 0.042*                      | .                  | 0.002*             |
| Skewness                      | -2.2208*                    | -2.7717*           | -2.6581*           |
| Kurtosis                      | 4.0237*                     | 5.9791*            | 5.5506*            |
| Replicate F                   | 1.492                       | 0.000              | 0.721              |
| Replicate Prob(F)             | 0.2392                      | 1.0000             | 0.5481             |
| Treatment F                   | 45.843                      | 0.000              | 172.855            |
| Treatment Prob(F)             | 0.0001                      | 1.0000             | 0.0001             |

# Purdue Weed Science

## Market Development

Trial ID: 15S-THP-CTS-16      Location: TPAC    Trial Year: 2015  
Protocol ID: 15S-THP-CTS-16    Investigator: Dr. Bill Johnson  
Project ID:                      Study Director: Joe Ikley  
   Sponsor Contact:

### Pest Type

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

### Pest Code

AMBTR, Ambrosia trifida, = US

CHEAL, Chenopodium album, = US

SETPU, Setaria pumila, = US

### Crop Code

GLXMA, BSOY, Glycine max, = US

### Part Rated

PLOT = plot

C = Crop is Part Rated

P = Pest is Part Rated

### Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

### Rating Unit

% = percent

### ARM Action Codes

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