

## Southern Illinois University

General Evaluation of Soil Residual Herbicides in Soybean.

Trial ID: 13-DSO-Residual      Location: De Soto, IL      Trial Year: 2013  
Investigator: Bryan Young

|                                                                                                             |  |                       |
|-------------------------------------------------------------------------------------------------------------|--|-----------------------|
| <b>Trial Status:</b> F one-year/final<br><b>Initiation Date:</b> 5-24-13<br><b>Completion Date:</b> 7-19-13 |  | <b>Trial Location</b> |
| <b>City:</b> De Soto <b>Country:</b> USA<br><b>State/Prov.:</b> Illinois IL<br><b>Postal Code:</b> 62924    |  |                       |

**Objectives:**  
Determine which herbicide for use in soybean has the greatest level of residual waterhemp control.

|                                                                                                                                                                                                                                               |                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Contacts</b>                                                                                                                                                                                                                               |                                                                                                                                |
| <b>Study Director:</b> Bryan Young<br><b>Organization:</b> Southern Illinois University<br><b>Address:</b> 1205 Lincoln Drive - AG 176 - MC 4415<br><b>City+State/Prov:</b> Carbondale IL<br><b>Postal Code:</b> 62901<br><b>Country:</b> USA | <b>Title:</b> Professor<br><b>Phone No.:</b> 618-453-7679<br><b>Mobile No.:</b> 618-713-6471<br><b>E-mail:</b> bgyoung@siu.edu |

|                                                                                                                             |                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Crop Description</b>                                                                                                     |                                                                                                                                                                             |
| <b>Crop 1:</b> GLXMA Glycine max      Soybean<br><b>Variety:</b> AG3832 <b>BBCH Scale:</b> BSOY<br><b>Description:</b> RR2Y | <b>Planting Date:</b> 5-24-13<br><b>Planting Method:</b> SEEDED<br><b>Planting Rate, Unit:</b> 145000 S/A<br><b>Depth, Unit:</b> 1.75 IN<br><b>Row Spacing, Unit:</b> 30 IN |

|                                                                                                                                                                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Pest Description</b>                                                                                                                                               |  |
| <b>Pest 1 Type:</b> W <b>Code:</b> AMATA <i>Amaranthus rudis</i> Sauer<br><b>Common Name:</b> waterhemp, common<br><b>Description:</b> glyphosate-resistant waterhemp |  |

| <b>Site and Design</b>                                                                                                                                            |                                                                                                                                                                    |      |               |      |    |       |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------|------|----|-------|------|
| <b>Treated Plot Width:</b> 6.67 FT <b>Total Plot Width:</b> 10 FT<br><b>Treated Plot Length:</b> 30 FT <b>Total Plot Length:</b> 30 FT                            | <b>Site Type:</b> FIELD<br><b>Experimental Unit:</b> 1 PLOT<br><b>Tillage Type:</b> NOTILL no-till<br><b>Study Design:</b> RACOB L Randomized Complete Block (RCB) |      |               |      |    |       |      |
| <b>Replications:</b> 3<br><b>Untreated Arrangement:</b> INCLUDED single control randomized in each block                                                          |                                                                                                                                                                    |      |               |      |    |       |      |
| <table border="1" style="width: 100%;"> <tr> <th>No.</th> <th>Previous Crop</th> <th>Year</th> </tr> <tr> <td>1.</td> <td>GLXMA</td> <td>2012</td> </tr> </table> |                                                                                                                                                                    | No.  | Previous Crop | Year | 1. | GLXMA | 2012 |
| No.                                                                                                                                                               | Previous Crop                                                                                                                                                      | Year |               |      |    |       |      |
| 1.                                                                                                                                                                | GLXMA                                                                                                                                                              | 2012 |               |      |    |       |      |

| <b>Maintenance</b>                                                                                                                                                           |                                   |                          |    |                                   |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------|----|-----------------------------------|--|
| <table border="1" style="width: 100%;"> <tr> <th>No.</th> <th>Maintenance Product Name</th> </tr> <tr> <td>1.</td> <td>N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A</td> </tr> </table> | No.                               | Maintenance Product Name | 1. | N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A |  |
| No.                                                                                                                                                                          | Maintenance Product Name          |                          |    |                                   |  |
| 1.                                                                                                                                                                           | N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A |                          |    |                                   |  |

| <b>Soil Description</b>                                                                                                                                                                                        |          |         |          |      |    |    |      |   |     |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|----------|------|----|----|------|---|-----|------|
| <b>% Sand:</b> 15.4 <b>% OM:</b> 2.15 <b>Texture:</b> SIL silt loam<br><b>% Silt:</b> 64.7 <b>pH:</b> 6.9 <b>Soil Name:</b> Okaw<br><b>% Clay:</b> 19.9 <b>CEC:</b> 12.4                                       |          |         |          |      |    |    |      |   |     |      |
| <b>Additional Measured Elements</b>                                                                                                                                                                            |          |         |          |      |    |    |      |   |     |      |
| <table border="1" style="width: 100%;"> <tr> <th>Element</th> <th>Quantity</th> <th>Unit</th> </tr> <tr> <td>P1</td> <td>94</td> <td>lb/A</td> </tr> <tr> <td>K</td> <td>468</td> <td>lb/A</td> </tr> </table> |          | Element | Quantity | Unit | P1 | 94 | lb/A | K | 468 | lb/A |
| Element                                                                                                                                                                                                        | Quantity | Unit    |          |      |    |    |      |   |     |      |
| P1                                                                                                                                                                                                             | 94       | lb/A    |          |      |    |    |      |   |     |      |
| K                                                                                                                                                                                                              | 468      | lb/A    |          |      |    |    |      |   |     |      |

|                                                                                                           |                               |
|-----------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>Moisture and Weather Conditions</b>                                                                    |                               |
| <b>Overall Moisture Conditions:</b> NORMAL<br><b>Closest Weather Station:</b> SOUTHERN IL AIRPORT (93810) | <b>Distance, Unit:</b> 1.5 MI |

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| No. | Date    | Amount | Unit | Type | Type Description | Interval | Unit | Min Temp | Max Temp | Temp Unit |
|-----|---------|--------|------|------|------------------|----------|------|----------|----------|-----------|
| 1.  | 5-3-13  | 1.33   | IN   | RAIN | rain             | 3        | DAY  |          |          |           |
| 2.  | 5-5-13  | 0.75   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 3.  | 5-6-13  |        |      |      |                  | 7        | DAY  | 41       | 80       | F         |
| 4.  | 5-10-13 | 0.17   | IN   | RAIN | rain             | 3        | DAY  |          |          |           |
| 5.  | 5-13-13 |        |      |      |                  | 7        | DAY  | 37       | 87       | F         |
| 6.  | 5-16-13 | 0.23   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 7.  | 5-20-13 |        |      |      |                  | 7        | DAY  | 43       | 85       | F         |
| 8.  | 5-21-13 | 0.91   | IN   | RAIN | rain             | 1        | DAY  |          |          |           |
| 9.  | 5-27-13 |        |      |      |                  | 7        | DAY  | 59       | 86       | F         |
| 10. | 5-31-13 | 0.7    | IN   | RAIN | rain             | 3        | DAY  |          |          |           |
| 11. | 6-1-13  | 1.67   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 12. | 6-3-13  |        |      |      |                  | 7        | DAY  | 50       | 82       | F         |
| 13. | 6-10-13 | 0.13   | IN   | RAIN | rain             | 5        | DAY  |          |          |           |
| 14. | 6-10-13 |        |      |      |                  | 7        | DAY  | 57       | 93       | F         |
| 15. | 6-17-13 | 0.36   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 16. | 6-17-13 |        |      |      |                  | 7        | DAY  | 61       | 92       | F         |
| 17. | 6-22-13 | 0.34   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 18. | 6-24-13 |        |      |      |                  | 7        | DAY  | 64       | 93       | F         |
| 19. | 6-26-13 | 1.25   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 20. | 6-30-13 | 0.3    | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 21. | 7-1-13  |        |      |      |                  | 7        | DAY  | 57       | 88       | F         |
| 22. | 7-2-13  | 1.16   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |
| 23. | 7-8-13  |        |      |      |                  | 7        | DAY  | 59       | 92       | F         |
| 24. | 7-14-13 | 0.05   | IN   | RAIN | rain             | 5        | DAY  |          |          |           |
| 25. | 7-15-13 |        |      |      |                  | 7        | DAY  | 68       | 93       | F         |
| 26. | 7-20-13 | 1.24   | IN   | RAIN | rain             | 2        | DAY  |          |          |           |

## Application Description

|                              | A       |
|------------------------------|---------|
| Application Date:            | 5-24-13 |
| Appl. Start Time:            | 13:50   |
| Appl. Stop Time:             | 14:30   |
| Application Method:          | Spray   |
| Application Timing:          | PRE     |
| Application Placement:       | BROSOI  |
| Applied By:                  | NTH     |
| Air Temperature, Unit:       | 82 F    |
| % Relative Humidity:         | 31      |
| Wind Velocity, Unit:         | 2 MPH   |
| Wind Direction:              | N       |
| Dew Presence (Y/N):          | N       |
| Soil Temperature, Unit:      | 77 F    |
| Soil Moisture:               | NORMAL  |
| % Cloud Cover:               | 0       |
| Next Moisture Occurred On:   | 5-30-13 |
| Time to Next Moisture, Unit: | 6 DAY   |

## Crop Stage At Each Application

|                          | A     |
|--------------------------|-------|
| Crop 1 Code, BBCH Scale: | GLXMA |
| Stage Scale Used:        | DESC  |
| Stage Majority, Percent: | NA    |

## Pest Stage At Each Application

|                           | A       |
|---------------------------|---------|
| Pest 1 Code, Type, Scale: | AMATA W |
| Stage Majority, Percent:  | NA      |

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|                                  | <b>A</b>    |
|----------------------------------|-------------|
| <b>Appl. Equipment:</b>          | CO2 sprayer |
| <b>Equipment Type:</b>           | BACSPR      |
| <b>Operation Pressure, Unit:</b> | 30      PSI |
| <b>Nozzle Type:</b>              | XR          |
| <b>Nozzle Size:</b>              | 8002        |
| <b>Boom Length, Unit:</b>        | 6.67 FT     |
| <b>Spray Volume, Unit:</b>       | 15      GPA |

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| Pest Code<br>Crop Code<br>Rating Date<br>Rating Type<br>Rating Unit<br>Rating Timing<br>Trt-Eval Interval |                                 |                 |           |                                 |                         |            | GLXMA<br>6-7-13<br>Injury<br>Percent | GLXMA<br>6-21-13<br>Injury<br>Percent | GLXMA<br>7-19-13<br>Injury<br>Percent | AMATA-HR<br>6-21-13<br>Control<br>Percent | AMATA-HR<br>7-19-13<br>Control<br>Percent |
|-----------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|-----------|---------------------------------|-------------------------|------------|--------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------|-------------------------------------------|
|                                                                                                           |                                 |                 |           |                                 |                         |            | 14 DA-A                              | 28 DA-A                               | 56 DA-A                               | 28 DA-A                                   | 56 DA-A                                   |
| Trt No.                                                                                                   | Treatment Name                  | Form Conc       | Form Type | Rate Rate                       | Other Rate              | Other Rate | Growth Unit                          | Appl Stage                            | Code                                  |                                           |                                           |
| 1                                                                                                         | NONTREATED                      |                 |           |                                 |                         |            |                                      |                                       |                                       | 0 f                                       | 0 g                                       |
| 2                                                                                                         | SONIC                           | 70 WG           |           | 0.28 lb ai/a                    | 6.4 oz/a                |            | PRE                                  | A                                     |                                       | 97 a                                      | 78 a                                      |
| 3                                                                                                         | ENVIVE                          | 41.3 WG         |           | 0.129 lb ai/a                   | 5 oz/a                  |            | PRE                                  | A                                     |                                       | 97 a                                      | 43 cde                                    |
| 4                                                                                                         | MATADOR S                       | 100 SC          |           | 3 pt/a                          | 3 pt/a                  |            | PRE                                  | A                                     |                                       | 93 abc                                    | 45 cde                                    |
| 5                                                                                                         | INTIMIDATOR                     | 4.81 SL         |           | 1.8 lb ai/a                     | 3 pt/a                  |            | PRE                                  | A                                     |                                       | 97 a                                      | 57 bc                                     |
| 6                                                                                                         | ZIDUA                           | 85 WG           |           | 0.133 lb ai/a                   | 2.5 oz/a                |            | PRE                                  | A                                     |                                       | 96 a                                      | 43 cde                                    |
| 7                                                                                                         | STATEMENT                       | 5.25 EC         |           | 1.31 lb ai/a                    | 32 fl oz/a              |            | PRE                                  | A                                     |                                       | 94 ab                                     | 55 bc                                     |
| 8                                                                                                         | STATEMENT                       | 5.25 EC         |           | 1.64 lb ai/a                    | 40 fl oz/a              |            | PRE                                  | A                                     |                                       | 97 a                                      | 55 bc                                     |
| 9                                                                                                         | PREFIX                          | 5.29 EC         |           | 1.32 lb ai/a                    | 32 fl oz/a              |            | PRE                                  | A                                     |                                       | 96 a                                      | 62 abc                                    |
| 10                                                                                                        | PREFIX                          | 5.29 EC         |           | 1.65 lb ai/a                    | 40 fl oz/a              |            | PRE                                  | A                                     |                                       | 97 a                                      | 58 bc                                     |
| 11                                                                                                        | VALOR SX                        | 51 WG           |           | 0.08 lb ai/a                    | 2.5 oz/a                |            | PRE                                  | A                                     |                                       | 88 cd                                     | 33 ef                                     |
| 12                                                                                                        | FIERCE                          | 76 WG           |           | 0.178 lb ai/a                   | 3.75 oz/a               |            | PRE                                  | A                                     |                                       | 97 a                                      | 47 cde                                    |
| 13                                                                                                        | FIERCE<br>VALOR SX              | 76 WG<br>51 WG  |           | 0.178 lb ai/a<br>0.016 lb ai/a  | 3.75 oz/a<br>0.5 oz/a   |            | PRE<br>PRE                           | A<br>A                                |                                       | 97 a                                      | 70 ab                                     |
| 14                                                                                                        | FIERCE XLT<br>FIERCE<br>CLASSIC | 76 WG<br>25 WG  |           | 0.178 lb ai/a<br>0.0213 lb ai/a | 3.75 oz/a<br>1.36 oz/a  |            | PRE<br>PRE<br>PRE                    | A<br>A<br>A                           |                                       | 98 a                                      | 53 bcd                                    |
| 15                                                                                                        | BOUNDARY                        | 6.5 EC          |           | 1.22 lb ai/a                    | 1.5 pt/a                |            | PRE                                  | A                                     |                                       | 90 bcd                                    | 35 def                                    |
| 16                                                                                                        | VERDICT<br>OUTLOOK              | 5.57 EC<br>6 EC |           | 0.218 lb ai/a<br>0.47 lb ai/a   | 5 fl oz/a<br>10 fl oz/a |            | PRE<br>PRE                           | A<br>A                                |                                       | 91 bcd                                    | 32 ef                                     |
| 17                                                                                                        | LINEX                           | 4 SC            |           | 1 lb ai/a                       | 2 pt/a                  |            | PRE                                  | A                                     |                                       | 88 d                                      | 45 cde                                    |
| 18                                                                                                        | SENCOR                          | 75 WG           |           | 0.375 lb ai/a                   | 8 oz/a                  |            | PRE                                  | A                                     |                                       | 75 e                                      | 22 f                                      |
| LSD (P=.05)                                                                                               |                                 |                 |           |                                 |                         |            | 2.8                                  | 5.1                                   | 0.0                                   | 5.2                                       | 19.0                                      |
| Standard Deviation                                                                                        |                                 |                 |           |                                 |                         |            | 1.7                                  | 3.1                                   | 0.0                                   | 3.1                                       | 11.4                                      |
| CV                                                                                                        |                                 |                 |           |                                 |                         |            | 52.73                                | 26.57                                 | 0.0                                   | 3.51                                      | 24.63                                     |
| Replicate F                                                                                               |                                 |                 |           |                                 |                         |            | 2.289                                | 1.188                                 | 0.000                                 | 1.260                                     | 1.008                                     |
| Replicate Prob(F)                                                                                         |                                 |                 |           |                                 |                         |            | 0.1168                               | 0.3170                                | 1.0000                                | 0.2965                                    | 0.3758                                    |
| Treatment F                                                                                               |                                 |                 |           |                                 |                         |            | 17.991                               | 19.527                                | 0.000                                 | 161.552                                   | 7.543                                     |
| Treatment Prob(F)                                                                                         |                                 |                 |           |                                 |                         |            | 0.0001                               | 0.0001                                | 1.0000                                | 0.0001                                    | 0.0001                                    |

Means followed by same letter do not significantly differ (P=.05, LSD)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trial Comments

1. Protocol: SIU, Loveland, Cheminova, Valent.
2. Ratings: CI at 14 DAT; CI/WC at 28 and 56 DAT.
3. Blanket burndown application of glyphosate (1.5 lbae/A) plus Salvo (12 floz/A) was applied to all plots on 4-2-13.  
Blanket of Gramoxone to be applied to all plots prior to planting.
4. No yield.
5. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
6. Not harvested.