

Southern Illinois University

Fomesafen Nozzle by Adjuvant Study - Winfield Solutions.

Trial ID: 12-DSO-FomeATV  
 Location: De Soto, IL

Investigator: Bryan Young

| General Trial Information               |                         |
|---|-------------------------|
| <b>Study Director:</b> Bryan Young      | <b>Title:</b> Professor |
| <b>Investigator:</b> Bryan Young        |                         |
| <b>Trial Status:</b> F - one-year/final |                         |
| <b>Initiation Date:</b> 4-29-12         |                         |
| Trial Location                          |                         |
| <b>City:</b> De Soto                    |                         |
| <b>State/Prov.:</b> IL                  |                         |
| <b>Postal Code:</b> 62924               |                         |
| <b>Country:</b> USA                     |                         |

**Objectives:**  
 Evaluate the effect of Interlock and spray nozzles on the efficacy of waterhemp control with fomesafen.

| Personnel   |                                 |
|---|---------------------------------|
| <b>Study Director:</b> Bryan Young                    | <b>Title:</b> Professor         |
| <b>Investigator:</b> Bryan Young                      |                                 |
| <b>Affiliation:</b> Southern Illinois University      |                                 |
| <b>Address:</b> 1205 Lincoln Drive - AG 176 - MC 4415 |                                 |
| <b>Location:</b> Carbondale IL                        |                                 |
| <b>Postal Code:</b> 62901                             | <b>E-mail:</b> bgyoung@siu.edu  |
| <b>Phone No.:</b> 618-453-7679                        | <b>Mobile No.:</b> 618-713-6471 |

| Crop Description                         |                               |
|--|-------------------------------|
| <b>Crop 1:</b> GLXMA Glycine max Soybean | <b>Description:</b> RR2Y      |
| <b>Variety:</b> AG3832                   | <b>Planting Date:</b> 4-29-12 |
| <b>BBCH Scale:</b> BSOY                  | <b>Rate, Unit:</b> 155000 S/A |
| <b>Planting Method:</b> SEEDED Seeded    |                               |
| <b>Depth, Unit:</b> 2 IN                 |                               |
| <b>Row Spacing, Unit:</b> 30 IN          |                               |

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

| Site and Design                 |   |
|---------------------------------|---|
| <b>Plot Width, Unit:</b> 10 FT  | <b>Site Type:</b> FIELD field                               |
| <b>Plot Length, Unit:</b> 40 FT |   |
| <b>Plot Area, Unit:</b> 400 FT2 | <b>Tillage Type:</b> NOTILL no-till                         |
| <b>Replications:</b> 3          | <b>Study Design:</b> RACOBL Randomized Complete Block (RCB) |

| No. | Previous Crop | Year |
|-----|---------------|------|
| 1.  | GLXMA         | 2011 |

| Maintenance |                                      |
|-------------|--------------------------------------|
| No.         | Maintenance Treatment Name           |
| 1.          | N 27 LB/A, P205 69 LB/A, K20 90 LB/A |

| Soil Description              |                   |      |
|-------------------------------|-------------------|------|
| <b>% Sand:</b> 15.4           | <b>% OM:</b> 2.15 |      |
| <b>% Silt:</b> 64.7           | <b>pH:</b> 6.9    |      |
| <b>% Clay:</b> 19.9           | <b>CEC:</b> 12.4  |      |
| <b>Texture:</b> SIL SILT LOAM |                   |      |
| <b>Soil Name:</b> OKAW        |                   |      |
| Additional Measured Elements  |                   |      |
| Element                       | Quantity          | Unit |
| P1                            | 94                | LB/A |
| K                             | 468               | LB/A |

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

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## Application Description

|                         | A       |
|-------------------------|---------|
| Application Date:       | 6-15-12 |
| Time of Day:            | 16:00   |
| Application Method:     | Spray   |
| Application Timing:     | 8-12"W  |
| Application Placement:  | BROFOL  |
| Applied By:             | JRK     |
| Air Temperature, Unit:  | 92 F    |
| % Relative Humidity:    | 41      |
| Wind Velocity, Unit:    | 4 MPH   |
| Wind Direction:         | SE      |
| Dew Presence (Y/N):     | N no    |
| Soil Temperature, Unit: | 85 F    |
| Soil Moisture:          | BELNOR  |
| % Cloud Cover:          | 5       |
| Next Rain Occurred On:  | 6-17-12 |

## Crop Stage At Each Application

|                          | A          |
|--------------------------|------------|
| Crop 1 Code, BBCH Scale: | GLXMA BSOY |
| Stage Scale Used:        | DESC       |
| Stage Majority, Percent: | V5         |
| Stage Minimum, Percent:  | V4         |
| Stage Maximum, Percent:  | V5         |
| Height, Unit:            | 14 IN      |
| Height Minimum, Maximum: | 12 14      |

## Pest Stage At Each Application

|                           | A            |
|---------------------------|--------------|
| Pest 1 Code, Type, Scale: | AMATA W DESC |
| Stage Majority, Percent:  | 12           |
| Stage Minimum, Percent:   | 4            |
| Stage Maximum, Percent:   | 30           |
| Height, Unit:             | 9 IN         |
| Height Minimum, Maximum:  | 2 22         |
| Density, Unit:            | 15 FT2       |

## Application Equipment

|                     | A           |
|---------------------|-------------|
| Appl. Equipment:    | C02 sprayer |
| Equipment Type:     | ALTEVE      |
| Nozzle Type:        | See         |
| Nozzle Size:        | comment     |
| Boom Length, Unit:  | 6.67 FT     |
| Spray Volume, Unit: | 10 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>6-22-12<br>Injury<br>Percent | GLXMA<br>6-29-12<br>Injury<br>Percent | GLXMA<br>7-13-12<br>Injury<br>Percent |
|---|--|-----------|-----------|---|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
|   |  |           |           |   |                                      | 7 DA-A                                | 14 DA-A                               | 28 DA-A                               |
| Trt No.   | Treatment Name   | Form Conc | Form Type | Rate Unit                               | Other Rate                           | Other Unit                            | Growth Stage                          | Appl Code                             |
| 1   | FINE TJ60 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                      | 1.88      | EC        | 0.353 lb ai/a<br>2.5 % v/v              | 24 fl oz/a<br>2.5 % v/v              |                                       | 8-12"W A<br>8-12"W A                  |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 9 e 6 ab 3 a                          |
| 2   | FINE TJ60 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG         | 1.88      | EC        | 0.353 lb ai/a<br>4 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>4 fl oz/a<br>2.5 % v/v |                                       | 8-12"W A<br>8-12"W A<br>8-12"W A      |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 10 de 6 ab 3 a                        |
| 3   | MEDIUM XR 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                      | 1.88      | EC        | 0.353 lb ai/a<br>2.5 % v/v              | 24 fl oz/a<br>2.5 % v/v              |                                       | 8-12"W A<br>8-12"W A                  |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 9 e 6 ab 3 a                          |
| 4   | MEDIUM XR 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG         | 1.88      | EC        | 0.353 lb ai/a<br>4 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>4 fl oz/a<br>2.5 % v/v |                                       | 8-12"W A<br>8-12"W A<br>8-12"W A      |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 9 e 5 b 3 a                           |
| 5   | COARSE AIXR 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                     | 1.88      | EC        | 0.353 lb ai/a<br>2.5 % v/v              | 24 fl oz/a<br>2.5 % v/v              |                                       | 8-12"W A<br>8-12"W A                  |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 11 cd 6 ab 3 a                        |
| 6   | COARSE AIXR 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG        | 1.88      | EC        | 0.353 lb ai/a<br>4 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>4 fl oz/a<br>2.5 % v/v |                                       | 8-12"W A<br>8-12"W A<br>8-12"W A      |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 13 bc 7 a 3 a                         |
| 7   | VC-XC AI 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                        | 1.88      | EC        | 0.353 lb ai/a<br>2.5 % v/v              | 24 fl oz/a<br>2.5 % v/v              |                                       | 8-12"W A<br>8-12"W A                  |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 10 de 6 ab 3 a                        |
| 8   | VC-XC AI 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG           | 1.88      | EC        | 0.353 lb ai/a<br>4 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>4 fl oz/a<br>2.5 % v/v |                                       | 8-12"W A<br>8-12"W A<br>8-12"W A      |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 15 a 7 a 3 a                          |
| 9   | ULTRA COARSE TTI 11004 @ 43.5 PSI<br>12.3 MPH<br>FLEXSTAR<br>CLASS ACT NG              | 1.88      | EC        | 0.353 lb ai/a<br>2.5 % v/v              | 24 fl oz/a<br>2.5 % v/v              |                                       | 8-12"W A<br>8-12"W A                  |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 14 ab 7 a 3 a                         |
| 10  | ULTRA COARSE TTI 11004 @ 43.5 PSI<br>12.3 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG | 1.88      | EC        | 0.353 lb ai/a<br>4 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>4 fl oz/a<br>2.5 % v/v |                                       | 8-12"W A<br>8-12"W A<br>8-12"W A      |                                       |
|   |  | 100       | SL        |   |                                      |                                       |                                       | 15 a 7 a 3 a                          |

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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|                    |                |           |           |           |            |            |             |            |        |        |        |
|--------------------|----------------|-----------|-----------|-----------|------------|------------|-------------|------------|--------|--------|--------|
| Pest Code          |                |           |           |           |            |            |             |            |        |        |        |
| Crop Code          |                |           |           |           |            |            |             |            |        |        |        |
| Rating Date        |                |           |           |           |            |            |             |            |        |        |        |
| Rating Type        |                |           |           |           |            |            |             |            |        |        |        |
| Rating Unit        |                |           |           |           |            |            |             |            |        |        |        |
| Rating Timing      |                |           |           |           |            |            |             |            |        |        |        |
| Trt-Eval Interval  |                |           |           |           |            |            |             |            |        |        |        |
|                    |                |           |           |           |            |            |             |            |        |        |        |
| Trt No.            | Treatment Name | Form Conc | Form Type | Rate Rate | Other Rate | Other Rate | Growth Unit | Appl Stage |        |        |        |
| 11                 | NONTREATED     |           |           |           |            |            |             |            | f      | c      |        |
|                    |                |           |           |           |            |            |             |            |        |        |        |
| LSD (P=.05)        |                |           |           |           |            |            |             |            | 1.8    | 1.4    | 0.0    |
| Standard Deviation |                |           |           |           |            |            |             |            | 1.1    | 0.8    | 0.0    |
| CV                 |                |           |           |           |            |            |             |            | 10.07  | 14.09  | 0.0    |
| Replicate F        |                |           |           |           |            |            |             |            | 0.108  | 0.577  | 0.000  |
| Replicate Prob(F)  |                |           |           |           |            |            |             |            | 0.8981 | 0.5707 | 1.0000 |
| Treatment F        |                |           |           |           |            |            |             |            | 47.232 | 19.087 | 0.000  |
| Treatment Prob(F)  |                |           |           |           |            |            |             |            | 0.0001 | 0.0001 | 1.0000 |

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Location: De Soto, IL

Investigator: Bryan Young

| Pest Code   | AMATA-HR  | AMATA-HR  | AMATA-HR                |                         |                         |                                  |           |        |       |       |
|---|-----------|-----------|-------------------------|-------------------------|-------------------------|----------------------------------|-----------|--------|-------|-------|
| Crop Code   | 6-22-12   | 6-29-12   | 7-13-12                 |                         |                         |                                  |           |        |       |       |
| Rating Date   | Control   | Control   | Control                 |                         |                         |                                  |           |        |       |       |
| Rating Type   | Percent   | Percent   | Percent                 |                         |                         |                                  |           |        |       |       |
| Rating Unit   | 7 DA-A    | 14 DA-A   | 28 DA-A                 |                         |                         |                                  |           |        |       |       |
| Rating Timing   |           |           |                         |                         |                         |                                  |           |        |       |       |
| Trt-Eval Interval   |           |           |                         |                         |                         |                                  |           |        |       |       |
| Trt Treatment No. Name  | Form Conc | Form Type | Rate Unit               | Other Rate              | Other Rate              | Growth Unit                      | Appl Code |        |       |       |
| 1 FINE TJ60 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                       | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 24 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>2.5 % v/v | 8-12"W A<br>8-12"W A             |           | 46 abc | 51 ab | 48 ab |
| 2 FINE TJ60 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG          | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 4 fl oz/a<br>2.5 % v/v  | 4 fl oz/a<br>2.5 % v/v  | 8-12"W A<br>8-12"W A<br>8-12"W A |           | 38 bc  | 45 b  | 42 b  |
| 3 MEDIUM XR 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                       | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 24 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>2.5 % v/v | 8-12"W A<br>8-12"W A             |           | 36 c   | 47 b  | 43 ab |
| 4 MEDIUM XR 11003 @ 43.5 PSI<br>9.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG          | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 4 fl oz/a<br>2.5 % v/v  | 4 fl oz/a<br>2.5 % v/v  | 8-12"W A<br>8-12"W A<br>8-12"W A |           | 41 bc  | 48 ab | 48 ab |
| 5 COARSE AIXR 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                      | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 24 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>2.5 % v/v | 8-12"W A<br>8-12"W A             |           | 38 bc  | 47 b  | 42 b  |
| 6 COARSE AIXR 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG         | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 4 fl oz/a<br>2.5 % v/v  | 4 fl oz/a<br>2.5 % v/v  | 8-12"W A<br>8-12"W A<br>8-12"W A |           | 48 ab  | 63 a  | 57 a  |
| 7 VC-XC AI 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>CLASS ACT NG                         | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 24 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>2.5 % v/v | 8-12"W A<br>8-12"W A             |           | 37 c   | 54 ab | 47 ab |
| 8 VC-XC AI 11004 @ 50 PSI<br>13.4 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG            | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 4 fl oz/a<br>2.5 % v/v  | 4 fl oz/a<br>2.5 % v/v  | 8-12"W A<br>8-12"W A<br>8-12"W A |           | 44 abc | 63 a  | 50 ab |
| 9 ULTRA COARSE TTI 11004 @ 43.5 PSI<br>12.3 MPH<br>FLEXSTAR<br>CLASS ACT NG               | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 24 fl oz/a<br>2.5 % v/v | 24 fl oz/a<br>2.5 % v/v | 8-12"W A<br>8-12"W A             |           | 45 abc | 57 ab | 52 ab |
| 10 ULTRA COARSE TTI 11004 @ 43.5 PSI<br>12.3 MPH<br>FLEXSTAR<br>INTERLOCK<br>CLASS ACT NG | 1.88      | EC        | 0.353 lb ai/a<br>100 SL | 4 fl oz/a<br>2.5 % v/v  | 4 fl oz/a<br>2.5 % v/v  | 8-12"W A<br>8-12"W A<br>8-12"W A |           | 53 a   | 58 ab | 50 ab |

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| Pest Code              | AMATA-HR                      | AMATA-HR                   | AMATA-HR               |
|------------------------|-------------------------------|----------------------------|------------------------|
| Crop Code              |                               |                            |                        |
| Rating Date            | 6-22-12                       | 6-29-12                    | 7-13-12                |
| Rating Type            | Control                       | Control                    | Control                |
| Rating Unit            | Percent                       | Percent                    | Percent                |
| Rating Timing          |                               |                            |                        |
| Trt-Eval Interval      | 7 DA-A                        | 14 DA-A                    | 28 DA-A                |
| Trt Treatment No. Name | Form Form Conc Type Rate Unit | Other Other Rate Rate Unit | Growth Appl Stage Code |
| 11 NONTREATED          | 0 d                           | 0 c                        | 0 c                    |
| LSD (P=,05)            | 10.3                          | 16.4                       | 13.8                   |
| Standard Deviation     | 6.1                           | 9.7                        | 8.1                    |
| CV                     | 15.72                         | 19.92                      | 18.67                  |
| Replicate F            | 4.346                         | 0.788                      | 2.391                  |
| Replicate Prob(F)      | 0.0271                        | 0.4684                     | 0.1172                 |
| Treatment F            | 15.592                        | 9.694                      | 10.379                 |
| Treatment Prob(F)      | 0.0001                        | 0.0001                     | 0.0001                 |

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Trial Comments

1. Protocol: Winfield Solutions.
2. Ratings: CI/WC at 7, 14 and 28 DAT.
3. Nozzle type/size, application PSI, and application speed are per treatment, see treatment list.
4. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
5. Not harvested.