

Control of PPO-Resistant Waterhemp in a Soybean/Corn Rotation.

Project Code: 05-PPO-SBCN Location: Serento, IL  
 Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Serento IL 62086 USA  
 Trial Status: Final Updated: 11-14-05

**Objective:**

Evaluate the long-term benefits of utilizing multiple herbicide mode of action in a soybean/corn rotation for control of PPO-resistant waterhemp.

| Weed Code | Common Name             | Scientific Name        |
|-----------|-------------------------|------------------------|
| 1.        | AMATA waterhemp, common | Amaranthus rudis Sauer |
| 2.        | SETFA foxtail, giant    | Setaria faberi Herrm.  |

**Crop 1:** ZEAMX corn, field  
**Planting Method:** Seeded **Planting Date:** 5-22-03  
**Rate:** 28000 S/A **Depth:** 1.5 IN  
**Row Spacing:** 30 IN

**Crop 2:** GLXMA soybean  
**Planting Method:** Seeded **Planting Date:** 5-11-04  
**Rate:** 75 lb/A **Depth:** 1.0 IN  
**Row Spacing:** 30 IN

**Crop 3:** ZEAMX corn, field **Variety:** Tristler S247 BT/RR  
**Planting Method:** Seeded **Planting Date:** 4-10-05  
**Rate:** 28000 S/A **Depth:** 1.5 IN  
**Row Spacing:** 30 IN

**Plot Width, Unit:** 10 FT **Plot Length, Unit:** 30 FT **Reps:** 3  
**Tillage Type:** Reduced-Till **Study Design:** Randomized complete block  
**Previous Crop, Year:** GLXMA, 2002

**APPLICATION DESCRIPTION**

|                             | A        | B          | C          | D        | E        |
|-----------------------------|----------|------------|------------|----------|----------|
| <b>Application Date:</b>    | 05-13-04 | 06-28-04   | 07-07-04   | 04-10-05 | 05-24-05 |
| <b>Time of Day:</b>         | 15:00    | 14:00      | 14:00      | 12:20    |          |
| <b>Application Method:</b>  | Spray    | Spray      | Spray      | Spray    | Spray    |
| <b>Application Timing:</b>  | PRE-SB   | 4-6"W-SB-1 | 4-6"W-SB-2 | PRE-CN   | 6-10"CN  |
| <b>Applic. Placement:</b>   | BROSOI   | BROFOL     | BROFOL     | BROSOI   | BROFOL   |
| <b>Air Temp., Unit:</b>     | 86 F     | 80 F       | 78 F       | 79 F     | 64 F     |
| <b>% Relative Humidity:</b> | 98       | 40         | 72         | 44       | 64       |
| <b>Wind Velocity, Unit:</b> | 5 MPH    | 8 MPH      | 3 MPH      | 14 MPH   | 5-15 MPH |
| <b>Soil Moisture:</b>       | NORMAL   | BELNOR     | ABONOR     | NORMAL   | NORMAL   |

**CROP STAGE AT EACH APPLICATION**

|                            | A        | B           | C        | D        | E           |
|----------------------------|----------|-------------|----------|----------|-------------|
| <b>Crop 1 Code, Stage:</b> | ZEAMX NA | ZEAMX NA    | ZEAMX NA | ZEAMX NA | ZEAMX V3-V4 |
| <b>Height, Unit:</b>       | NA NA    | NA NA       | NA NA    | NA NA    | 10 IN       |
| <b>Crop 2 Code, Stage:</b> | GLXMA NA | GLXMA V4-V6 | GLXMA R1 | GLXMA NA | GLXMA NA    |
| <b>Height, Unit:</b>       | NA NA    | 8-12 IN     | 15-16 IN | NA NA    | NA NA       |
| <b>Crop 3 Code, Stage:</b> | ZEAMX NA | ZEAMX NA    | ZEAMX NA | ZEAMX NA | ZEAMX V3-V4 |
| <b>Height, Unit:</b>       | NA NA    | NA NA       | NA NA    | NA NA    | 10 IN       |

**WEED STAGE AT EACH APPLICATION**

|                         | A | B      | C      | D | E      |
|-------------------------|---|--------|--------|---|--------|
| <b>Weed 1 Code:</b>     |   | AMATA  | AMATA  |   | AMATA  |
| <b>Stage (leaves):</b>  |   | 2-10   | 5-12   |   | 4-16   |
| <b>Height (inches):</b> |   | 1-6    | 4-16   |   | 2-8    |
| <b>Density:</b>         |   | Medium | Medium |   | High   |
| <b>Weed 2 Code:</b>     |   |        |        |   | SETFA  |
| <b>Stage (leaves):</b>  |   |        |        |   | 3-6    |
| <b>Height (inches):</b> |   |        |        |   | 6-8    |
| <b>Density:</b>         |   |        |        |   | Medium |

**APPLICATION EQUIPMENT**

|                            | A           | B           | C           | D           | E           |
|----------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Appl. Equipment:</b>    | CO2 sprayer | CO2 sprayer | CO2 sprayer | CO2 sprayer | CO2 sprayer |
| <b>Operating Pressure:</b> | 40 PSI      | 40 PSI      | 40 PSI      | 40 PSI      | 40 PSI      |
| <b>Nozzle Type:</b>        | Flat fan    | Flat fan    | Flat fan    | Flat fan    | Flat fan    |
| <b>Nozzle Size:</b>        | 8003        | 8002        | 8003        | 8002        | 8002        |
| <b>Boom Length, Unit:</b>  | 7.5 FT      | 7.5 FT      | 7.5 FT      | 7.5 FT      | 7.5 FT      |
| <b>Spray Volume, Unit:</b> | 20 GPA      | 20 GPA      | 20 GPA      | 20 GPA      | 20 GPA      |

**NOTES:**

Control of PPO-Resistant Waterhemp in a Soybean/Corn Rotation.

Project Code: 05-PPO-SBCN Location: Serento, IL  
 Investigator: Bryan Young

| Weed Code         |                 |           |           |       |           |           |           | ZEAMX      | ZEAMX     | ZEAMX    | AMATA    | AMATA    | AMATA    |
|-------------------|-----------------|-----------|-----------|-------|-----------|-----------|-----------|------------|-----------|----------|----------|----------|----------|
| Crop Code         |                 |           |           |       |           |           |           | Injury     | Injury    | Injury   | Control  | Control  | Control  |
| Rating Data Type  |                 |           |           |       |           |           |           | Percent    | Percent   | Percent  | Percent  | Percent  | Percent  |
| Rating Unit       |                 |           |           |       |           |           |           | 05-24-05   | 06-07-05  | 07-12-05 | 05-24-05 | 06-07-05 | 07-12-05 |
| Rating Date       |                 |           |           |       |           |           |           | 0 DA-E     | 14 DA-E   | 49 DA-E  | 0 DA-E   | 14 DA-E  | 49 DA-E  |
| Trt-Eval Interval |                 |           |           |       |           |           |           |            |           |          |          |          |          |
| Trt No.           | Treatment Name  | Form Conc | Form Type | Rate  | Rate Unit | Prod Rate | Prod Unit | Grow Stg   | Appl Code |          |          |          |          |
| 1                 | NONTREATED      |           |           |       |           |           |           |            |           | 0        | 0        | 0        |          |
| 2                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-1 | B         | 0        | 0        | 0        |          |
| 2                 | FUSION          | 2.56      | EC        | 0.2   | lb ai/a   | 10        | oz/a      | 4-6"W-SB-1 | B         |          |          |          |          |
| 2                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-1 | B         |          |          |          |          |
| 2                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-1 | B         |          |          |          |          |
| 2                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a   | 2.25      | qt/a      | PRE-CN     | D         |          |          |          |          |
| 3                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-1 | B         | 0        | 0        | 0        |          |
| 3                 | FUSION          | 2.56      | EC        | 0.2   | lb ai/a   | 10        | oz/a      | 4-6"W-SB-1 | B         |          |          |          |          |
| 3                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-1 | B         |          |          |          |          |
| 3                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-1 | B         |          |          |          |          |
| 3                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a   | 3.2       | pt/a      | PRE-CN     | D         |          |          |          |          |
| 3                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a   | 3         | fl oz/a   | 6-10"CN    | E         |          |          |          |          |
| 3                 | AATREX          | 90        | WG        | 0.25  | lb ai/a   | 4.44      | oz/a      | 6-10"CN    | E         |          |          |          |          |
| 3                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 3                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 4                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a   | 1.8       | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 4                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 4                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 4                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 4                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a   | 2.25      | qt/a      | PRE-CN     | D         |          |          |          |          |
| 5                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a   | 1.33      | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 5                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 5                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 5                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 5                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a   | 2.25      | qt/a      | PRE-CN     | D         |          |          |          |          |
| 6                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a   | 1.8       | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 6                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 6                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 6                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 6                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a   | 3.2       | pt/a      | PRE-CN     | D         |          |          |          |          |
| 6                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a   | 3         | fl oz/a   | 6-10"CN    | E         |          |          |          |          |
| 6                 | AATREX          | 90        | WG        | 0.25  | lb ai/a   | 4.44      | oz/a      | 6-10"CN    | E         |          |          |          |          |
| 6                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 6                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 7                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a   | 1.33      | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 7                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a   | 20        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 7                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 7                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 4-6"W-SB-2 | C         |          |          |          |          |
| 7                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a   | 3.2       | pt/a      | PRE-CN     | D         |          |          |          |          |
| 7                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a   | 3         | fl oz/a   | 6-10"CN    | E         |          |          |          |          |
| 7                 | AATREX          | 90        | WG        | 0.25  | lb ai/a   | 4.44      | oz/a      | 6-10"CN    | E         |          |          |          |          |
| 7                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 7                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 8                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a   | 1.8       | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 8                 | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a   | 23        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 8                 | AMS             | 100       | DRY       | 2.5   | lb ai/a   | 2.5       | lb/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 8                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a   | 2.25      | qt/a      | PRE-CN     | D         |          |          |          |          |
| 9                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a   | 1.33      | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 9                 | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a   | 23        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 9                 | AMS             | 100       | DRY       | 2.5   | lb ai/a   | 2.5       | lb/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 9                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a   | 2.25      | qt/a      | PRE-CN     | D         |          |          |          |          |
| 10                | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a   | 1.8       | pt/a      | PRE-SB     | A         | 0        | 0        | 0        |          |
| 10                | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a   | 23        | oz/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 10                | AMS             | 100       | DRY       | 2.5   | lb ai/a   | 2.5       | lb/a      | 4-6"W-SB-2 | C         |          |          |          |          |
| 10                | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a   | 3.2       | pt/a      | PRE-CN     | D         |          |          |          |          |
| 10                | CALLISTO        | 4         | SC        | 0.094 | lb ai/a   | 3         | fl oz/a   | 6-10"CN    | E         |          |          |          |          |
| 10                | AATREX          | 90        | WG        | 0.25  | lb ai/a   | 4.44      | oz/a      | 6-10"CN    | E         |          |          |          |          |
| 10                | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v     | 1         | % v/v     | 6-10"CN    | E         |          |          |          |          |
| 10                | 28% UAN         | 100       | LIQ       | 2.0   | % v/v     | 2         | % v/v     | 6-10"CN    | E         |          |          |          |          |

Control of PPO-Resistant Waterhemp in a Soybean/Corn Rotation.

Project Code: 05-PPO-SBCN Location: Serento, IL  
 Investigator: Bryan Young

| Weed Code         |                 |           |           |       |         |           |           | ZEAMX      | ZEAMX     | ZEAMX    | AMATA    | AMATA    | AMATA     |           |        |
|-------------------|-----------------|-----------|-----------|-------|---------|-----------|-----------|------------|-----------|----------|----------|----------|-----------|-----------|--------|
| Crop Code         |                 |           |           |       |         |           |           | Injury     | Injury    | Injury   | Control  | Control  | Control   |           |        |
| Rating Data Type  |                 |           |           |       |         |           |           | Percent    | Percent   | Percent  | Percent  | Percent  | Percent   |           |        |
| Rating Unit       |                 |           |           |       |         |           |           | 05-24-05   | 06-07-05  | 07-12-05 | 05-24-05 | 06-07-05 | 07-12-05  |           |        |
| Rating Date       |                 |           |           |       |         |           |           | 0 DA-E     | 14 DA-E   | 49 DA-E  | 0 DA-E   | 14 DA-E  | 49 DA-E   |           |        |
| Trt-Eval Interval |                 |           |           |       |         |           |           |            |           |          |          |          |           |           |        |
| Trt No.           | Treatment Name  | Form Conc | Form Type | Rate  | Unit    | Prod Rate | Prod Unit | Grow Stg   | Appl Code |          |          |          |           |           |        |
| 11                | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a | 1.33      | pt/a      | PRE-SB     | A         | 0        | 0        | 0        | 98        |           |        |
| 11                | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a | 23        | oz/a      | 4-6"W-SB-2 | C         |          |          |          | 99        |           |        |
| 11                | AMS             | 100       | DRY       | 2.5   | lb ai/a | 2.5       | lb/a      | 4-6"W-SB-2 | C         |          |          |          | 99        |           |        |
| 11                | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |          |          |          |           |           |        |
| 11                | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |          |          |          |           |           |        |
| 11                | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |          |          |          |           |           |        |
| 11                | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |          |          |          |           |           |        |
| 11                | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |          |          |          |           |           |        |
| LSD (P=.05)       |                 |           |           |       |         |           |           |            |           | 0.0      | 0.0      | 0.0      | 0.8       | 0.3       | 0.0    |
| Replicate F       |                 |           |           |       |         |           |           |            |           | 0.000    | 0.000    | 0.000    | 0.000     | 1.000     | 0.000  |
| Replicate Prob(F) |                 |           |           |       |         |           |           |            |           | 1.0000   | 1.0000   | 1.0000   | 1.0000    | 0.3855    | 1.0000 |
| Treatment F       |                 |           |           |       |         |           |           |            |           | 0.000    | 0.000    | 0.000    | 11410.391 | 88150.610 | 0.000  |
| Treatment Prob(F) |                 |           |           |       |         |           |           |            |           | 1.0000   | 1.0000   | 1.0000   | 0.0001    | 0.0001    | 1.0000 |

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| Weed Code         |                 |           |           |       |         | SETFA     | SETFA     | AMATA      | AMATA     |    |    |    |    |
|-------------------|-----------------|-----------|-----------|-------|---------|-----------|-----------|------------|-----------|----|----|----|----|
| Crop Code         |                 |           |           |       |         | Control   | Control   | Plants     | Plants    |    |    |    |    |
| Rating Data Type  |                 |           |           |       |         | Percent   | Percent   | 1.0 m2     | 1.0 m2    |    |    |    |    |
| Rating Unit       |                 |           |           |       |         | 05-24-05  | 06-07-05  | 05-24-05   | 06-21-05  |    |    |    |    |
| Rating Date       |                 |           |           |       |         | 0 DA-E    | 14 DA-E   | 0 DA-E     | 28 DA-E   |    |    |    |    |
| Trt-Eval Interval |                 |           |           |       |         |           |           |            |           |    |    |    |    |
| Trt No.           | Treatment Name  | Form Conc | Form Type | Rate  | Unit    | Prod Rate | Prod Unit | Grow Stg   | Appl Code |    |    |    |    |
| 1                 | NONTREATED      |           |           |       |         |           |           |            |           | 0  | 0  | 73 | 51 |
| 2                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-1 | B         | 98 | 96 | 0  | 1  |
| 2                 | FUSION          | 2.56      | EC        | 0.2   | lb ai/a | 10        | oz/a      | 4-6"W-SB-1 | B         |    |    |    |    |
| 2                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-1 | B         |    |    |    |    |
| 2                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-1 | B         |    |    |    |    |
| 2                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a | 2.25      | qt/a      | PRE-CN     | D         |    |    |    |    |
| 3                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-1 | B         | 98 | 98 | 0  | 0  |
| 3                 | FUSION          | 2.56      | EC        | 0.2   | lb ai/a | 10        | oz/a      | 4-6"W-SB-1 | B         |    |    |    |    |
| 3                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-1 | B         |    |    |    |    |
| 3                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-1 | B         |    |    |    |    |
| 3                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |    |    |    |    |
| 3                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |    |    |    |    |
| 3                 | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |    |    |    |    |
| 3                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 3                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 4                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a | 1.8       | pt/a      | PRE-SB     | A         | 99 | 98 | 0  | 0  |
| 4                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 4                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 4                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 4                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a | 2.25      | qt/a      | PRE-CN     | D         |    |    |    |    |
| 5                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a | 1.33      | pt/a      | PRE-SB     | A         | 99 | 98 | 0  | 0  |
| 5                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 5                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 5                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 5                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a | 2.25      | qt/a      | PRE-CN     | D         |    |    |    |    |
| 6                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a | 1.8       | pt/a      | PRE-SB     | A         | 98 | 98 | 1  | 0  |
| 6                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 6                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 6                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 6                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |    |    |    |    |
| 6                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |    |    |    |    |
| 6                 | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |    |    |    |    |
| 6                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 6                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 7                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a | 1.33      | pt/a      | PRE-SB     | A         | 98 | 98 | 0  | 0  |
| 7                 | FLEXSTAR        | 1.88      | EC        | 0.294 | lb ai/a | 20        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 7                 | DESTINY MSO     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 7                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 4-6"W-SB-2 | C         |    |    |    |    |
| 7                 | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |    |    |    |    |
| 7                 | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |    |    |    |    |
| 7                 | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |    |    |    |    |
| 7                 | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 7                 | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 8                 | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a | 1.8       | pt/a      | PRE-SB     | A         | 99 | 99 | 0  | 0  |
| 8                 | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a | 23        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 8                 | AMS             | 100       | DRY       | 2.5   | lb ai/a | 2.5       | lb/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 8                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a | 2.25      | qt/a      | PRE-CN     | D         |    |    |    |    |
| 9                 | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a | 1.33      | pt/a      | PRE-SB     | A         | 99 | 98 | 0  | 0  |
| 9                 | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a | 23        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 9                 | AMS             | 100       | DRY       | 2.5   | lb ai/a | 2.5       | lb/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 9                 | LUMAX           | 3.94      | L         | 2.22  | lb ai/a | 2.25      | qt/a      | PRE-CN     | D         |    |    |    |    |
| 10                | BOUNDARY        | 6.5       | EC        | 1.46  | lb ai/a | 1.8       | pt/a      | PRE-SB     | A         | 98 | 98 | 0  | 0  |
| 10                | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a | 23        | oz/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 10                | AMS             | 100       | DRY       | 2.5   | lb ai/a | 2.5       | lb/a      | 4-6"W-SB-2 | C         |    |    |    |    |
| 10                | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |    |    |    |    |
| 10                | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |    |    |    |    |
| 10                | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |    |    |    |    |
| 10                | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |    |    |    |    |
| 10                | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |    |    |    |    |

## Control of PPO-Resistant Waterhemp in a Soybean/Corn Rotation.

Project Code: 05-PPO-SBCN Location: Serento, IL  
 Investigator: Bryan Young

|                   |          |          |          |          |
|-------------------|----------|----------|----------|----------|
| Weed Code         | SETFA    | SETFA    | AMATA    | AMATA    |
| Crop Code         |          |          |          |          |
| Rating Data Type  | Control  | Control  | Plants   | Plants   |
| Rating Unit       | Percent  | Percent  | 1.0 m2   | 1.0 m2   |
| Rating Date       | 05-24-05 | 06-07-05 | 05-24-05 | 06-21-05 |
| Trt-Eval Interval | 0 DA-E   | 14 DA-E  | 0 DA-E   | 28 DA-E  |

| Trt No.           | Treatment Name  | Form Conc | Form Type | Rate  | Unit    | Prod Rate | Prod Unit | Grow Stg   | Appl Code |          |          |         |        |
|-------------------|-----------------|-----------|-----------|-------|---------|-----------|-----------|------------|-----------|----------|----------|---------|--------|
| 11                | DUAL II MAGNUM  | 7.64      | EC        | 1.27  | lb ai/a | 1.33      | pt/a      | PRE-SB     | A         | 98       | 97       | 1       | 0      |
| 11                | TOUCHDOWN TOTAL | 4.17      | SC        | 0.75  | lb ae/a | 23        | oz/a      | 4-6"W-SB-2 | C         |          |          |         |        |
| 11                | AMS             | 100       | DRY       | 2.5   | lb ai/a | 2.5       | lb/a      | 4-6"W-SB-2 | C         |          |          |         |        |
| 11                | BICEP II MAGNUM | 5.5       | L         | 2.2   | lb ai/a | 3.2       | pt/a      | PRE-CN     | D         |          |          |         |        |
| 11                | CALLISTO        | 4         | SC        | 0.094 | lb ai/a | 3         | fl oz/a   | 6-10"CN    | E         |          |          |         |        |
| 11                | AATREX          | 90        | WG        | 0.25  | lb ai/a | 4.44      | oz/a      | 6-10"CN    | E         |          |          |         |        |
| 11                | PREMIUM COC     | 100       | LIQ       | 1.0   | % v/v   | 1         | % v/v     | 6-10"CN    | E         |          |          |         |        |
| 11                | 28% UAN         | 100       | LIQ       | 2.0   | % v/v   | 2         | % v/v     | 6-10"CN    | E         |          |          |         |        |
| LSD (P=.05)       |                 |           |           |       |         |           |           |            |           | 1.5      | 1.6      | 5.7     | 6.3    |
| Replicate F       |                 |           |           |       |         |           |           |            |           | 0.120    | 0.301    | 0.976   | 0.833  |
| Replicate Prob(F) |                 |           |           |       |         |           |           |            |           | 0.8876   | 0.7434   | 0.3939  | 0.4494 |
| Treatment F       |                 |           |           |       |         |           |           |            |           | 3472.288 | 2886.268 | 129.376 | 52.951 |
| Treatment Prob(F) |                 |           |           |       |         |           |           |            |           | 0.0001   | 0.0001   | 0.0001  | 0.0001 |

## Trial Comments

1. Protocol: Syngenta.
2. Ratings: CI and WC prior to POST, 14, 28 and 49 DA POST.
3. Weed counts (waterhemp) per square meter prior to POST and 28 DA last treatment.
4. Refer to 03-PPO-SBCN and 04-PPO-SBCN for data from previous treatments in the 3-year rotation study.
5. DA-E = days after 6-10"CN application. 1.0 m2 = One square meter.