

MSU Weed Science Research Program

One-pass early postemergence strategies for weed control in corn

Trial ID: C02-12 Study Dir.: Sprague, Powell  
 Conducted: T-17 Campus Investigator: Christy Sprague

**Date Planted:** May/21/2012 **Row Spacing:** 30 IN  
**Variety:** Pioneer 9855HR **No. of Reps:** 4  
**Population:** 31,000 seeds/acre **% OM:** 3.7  
**Soil Type:** Loam **pH:** 6.0  
**Plot Size:** 10 X 40 FT **Design:** RANDOMIZED COMPLETE BLOCK

**Tillage:** Spring chisel plow, spring soil finish  
**Fertilizer:** 300 lb/acre urea broadcast, 125 lb/acre 19-19-19 with planter

**Crop and Weed Description**

| Weed | Code  | Common Name            | Scientific Name             |
|------|-------|------------------------|-----------------------------|
| 1.   | ANGR  | mainly foxtail species | SETARIA SP.                 |
| 2.   | CHEAL | LAMBSQUARTERS, COMMON  | CHENOPODIUM ALBUM L.        |
| 3.   | AMAPO | AMARANTH, POWELL       | AMARANTHUS POWELLII S.WATS. |
| 4.   | AMBEL | RAGWEED, COMMON        | AMBROSIA ARTEMISIIFOLIA L.  |
| 5.   | ABUTH | VELVETLEAF             | ABUTILON THEOPHRASTI MEDIK. |
| Crop | Code  | Common Name            |                             |
| 1.   | ZEAMX | CORN                   |                             |

**Application Description**

**Application Timing:** A  
 EPOS  
**Date Treated:** Jun/14/2012  
**Time Treated:** 3:30 pm  
**% Cloud Cover:** 20  
**Air Temp., Unit:** 83 F  
**% Relative Humidity:** 30  
**Wind Speed/Unit/Dir:** 8 mph E  
**Soil Temp., Unit:** 79 F  
**Soil/Leaf Surface M:** 5 5  
**Soil Moist (1=w 5=d):** 5

**Crop Stage at Each Application**

**Crop Name:** A  
 ZEAMX  
**Height (In.):** 4-9"  
**Stage (L):** V4

**Weed Stage at Each Application**

**Weed 1 Name:** A  
 ANGR  
**Height (In.):** 3"  
**Stage (L):** 4  
**Weed 2 Name:** CHEAL  
**Height (In.):** 2"  
**Stage (L):** 4  
**Weed 3 Name:** AMAPO  
**Height (In.):** 2"  
**Stage (L):** 4  
**Weed 4 Name:** AMBEL  
**Height (In.):** 2"  
**Stage (L):** 4  
**Weed 5 Name:** ABUTH  
**Height (In.):** 2"  
**Stage (L):** 4

**Weed Density (plants/sq. ft.)**

**1**  
**Date:** Jul/09/2012  
**Weed Name:** ANGR  
**Density:** 2  
**Date:** Jul/09/2012  
**Weed Name:** CHEAL  
**Density:** 17  
**Date:** Jul/09/2012  
**Weed Name:** AMAPO  
**Density:** 1  
**Date:** Jul/09/2012  
**Weed Name:** AMBEL  
**Density:** 12  
**Date:** Jul/09/2012  
**Weed Name:** ABUTH  
**Density:** 1

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| Appl | Sprayer | Speed | Nozzle | Application Equipment |               |                |                   | GPA | Carrier | PSI |
|------|---------|-------|--------|-----------------------|---------------|----------------|-------------------|-----|---------|-----|
|      |         |       |        | Nozzle Size           | Nozzle Height | Nozzle Spacing | Nozzle Boom Width |     |         |     |
| A    | Cub     | 3.8   | AIXR   | 11003                 | 25"           | 20"            | 100"              | 19  | Water   | 28  |

## MSU Weed Science Research Program

One-pass early postemergence strategies for weed control in corn

Trial ID: C02-12 Study Dir.: Sprague, Powell  
 Conducted: T-17 Campus Investigator: Christy Sprague

| Weed Code          | ANGR        | CHEAL       | AMAPO       | AMBEL       |
|--------------------|-------------|-------------|-------------|-------------|
| Crop Code          | ZEAMX       |             |             |             |
| Rating Data Type   | injury      | control     | control     | control     |
| Rating Unit        | percent     | percent     | percent     | percent     |
| Rating Date        | Jun/21/2012 | Jun/21/2012 | Jun/21/2012 | Jun/21/2012 |
| Trt-Eval Interval  | 7 DA-A      | 7 DA-A      | 7 DA-A      | 7 DA-A      |
| ARM Action Codes   |             |             |             |             |
| # Subsamples, Dec. | 0           | 0           | 0           | 0           |

| Trt No. | Treatment Name       | Form Conc | Form Type | Rate | Rate Unit  | Grow Stg | Appl Code |    |    |    |    |    |
|---------|----------------------|-----------|-----------|------|------------|----------|-----------|----|----|----|----|----|
| 1       | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         | 0  | 99 | 78 | 99 | 87 |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 2       | AAtrex               | 4         | L         | 1.25 | qt/a       | EPOS A   | A         | 0  | 99 | 99 | 99 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 3       | Harness Xtra         | 5.6       | L         | 2    | qt/a       | EPOS A   | A         | 7  | 99 | 99 | 99 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 4       | Impact               | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 0  | 99 | 99 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Warrant              | 3         | L         | 3    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | L         | 0.5  | % v/v      | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 5       | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 1  | 99 | 99 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | qt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Zidua                | 85        | WG        | 2.5  | oz/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | L         | 1    | % v/v      | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 6       | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 5  | 99 | 99 | 99 | 99 |
|         | Guardsman Max        | 5         | L         | 3.5  | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | L         | 1    | % v/v      | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 7       | Halex GT             | 4.38      | L         | 3.6  | pt/a       | EPOS A   | A         | 0  | 99 | 99 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Activator 90         |           | L         | 0.25 | % v/v      | EPOS A   | A         |    |    |    |    |    |
|         | AMS                  |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 8       | Untreated            |           |           |      |            |          |           | 0  | 0  | 0  | 0  | 0  |
| 9       | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A         | 0  | 99 | 99 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 10      | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A         | 13 | 99 | 99 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Clarity              | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 11      | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A         | 5  | 99 | 99 | 99 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |
| 12      | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A         | 4  | 99 | 99 | 99 | 99 |
|         | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A         |    |    |    |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |    |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |    |    |    |

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|                    |  |  |  |  |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|--|--|--|--|
| Weed Code          |  |  |  |  |  |  |  |  |  |  |
| Crop Code          |  |  |  |  |  |  |  |  |  |  |
| Rating Data Type   |  |  |  |  |  |  |  |  |  |  |
| Rating Unit        |  |  |  |  |  |  |  |  |  |  |
| Rating Date        |  |  |  |  |  |  |  |  |  |  |
| Trt-Eval Interval  |  |  |  |  |  |  |  |  |  |  |
| ARM Action Codes   |  |  |  |  |  |  |  |  |  |  |
| # Subsamples, Dec. |  |  |  |  |  |  |  |  |  |  |

| Trt         | Treatment        | Form | Form | Rate | Grow       | Appl   |      |       |     |      |     |      |
|-------------|------------------|------|------|------|------------|--------|------|-------|-----|------|-----|------|
| No.         | Name             | Conc | Type | Rate | Unit       | Stg    | Code |       |     |      |     |      |
| 13          | Cadet            | 0.91 | L    | 0.6  | fl oz/a    | EPOS A | 5    | 99    | 99  | 99   |     |      |
|             | Hornet           | 68.5 | WG   | 3    | oz/a       | EPOS A |      |       |     |      |     |      |
|             | AAtrex           | 4    | L    | 1.5  | qt/a       | EPOS A |      |       |     |      |     |      |
|             | Roundup PowerMax | 4.5  | SL   | 22   | fl oz/a    | EPOS A |      |       |     |      |     |      |
|             | AMS              |      | WG   | 17   | lb/100 gal | EPOS A |      |       |     |      |     |      |
| 14          | Dual II Magnum   | 7.64 | L    | 1.33 | pt/a       | EPOS A | 3    | 98    | 99  | 99   |     |      |
|             | AAtrex           | 4    | L    | 1.25 | qt/a       | EPOS A |      |       |     |      |     |      |
|             | Roundup PowerMax | 4.5  | SL   | 22   | fl oz/a    | EPOS A |      |       |     |      |     |      |
|             | AMS              |      | WG   | 17   | lb/100 gal | EPOS A |      |       |     |      |     |      |
| LSD (P=.05) |                  |      |      |      |            |        |      | 2.1   | 0.9 | 2.5  | 0.0 | 3.8  |
| CV          |                  |      |      |      |            |        |      | 48.75 | 0.7 | 1.91 | 0.0 | 2.95 |

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

## MSU Weed Science Research Program

| Weed Code          |                      |           |           |      |            |          | ABUTH       |             | ANGR        | CHEAL       | AMAPO       |    |
|--------------------|----------------------|-----------|-----------|------|------------|----------|-------------|-------------|-------------|-------------|-------------|----|
| Crop Code          |                      |           |           |      |            |          |             | ZEAMX       |             |             |             |    |
| Rating Data Type   |                      |           |           |      |            |          | control     | injury      | control     | control     | control     |    |
| Rating Unit        |                      |           |           |      |            |          | percent     | percent     | percent     | percent     | percent     |    |
| Rating Date        |                      |           |           |      |            |          | Jun/21/2012 | Jun/28/2012 | Jun/28/2012 | Jun/28/2012 | Jun/28/2012 |    |
| Trt-Eval Interval  |                      |           |           |      |            |          | 7 DA-A      | 14 DA-A     | 14 DA-A     | 14 DA-A     | 14 DA-A     |    |
| ARM Action Codes   |                      |           |           |      |            |          |             |             |             |             |             |    |
| # Subsamples, Dec. |                      |           |           |      |            |          | 0           | 0           | 0           | 0           | 0           |    |
| Trt No.            | Treatment Name       | Form Conc | Form Type | Rate | Rate Unit  | Grow Stg | Appl Code   |             |             |             |             |    |
| 1                  | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           | 98          | 0           | 99          | 93          | 99 |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 2                  | AAtrex               | 4         | L         | 1.25 | qt/a       | EPOS A   | A           | 99          | 0           | 99          | 99          | 99 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 3                  | Harness Xtra         | 5.6       | L         | 2    | qt/a       | EPOS A   | A           | 99          | 6           | 99          | 99          | 99 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 4                  | Impact               | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 0           | 99          | 99          | 99 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Warrant              | 3         | L         | 3    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | L         | 0.5  | % v/v      | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 5                  | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 0           | 98          | 99          | 99 |
|                    | AAtrex               | 4         | L         | 1    | qt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Zidua                | 85        | WG        | 2.5  | oz/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | L         | 1    | % v/v      | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 6                  | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 5           | 99          | 99          | 99 |
|                    | Guardsman Max        | 5         | L         | 3.5  | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | L         | 1    | % v/v      | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 7                  | Halex GT             | 4.38      | L         | 3.6  | pt/a       | EPOS A   | A           | 99          | 0           | 99          | 99          | 99 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Activator 90         |           | L         | 0.25 | % v/v      | EPOS A   | A           |             |             |             |             |    |
|                    | AMS                  |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 8                  | Untreated            |           |           |      |            |          |             | 0           | 0           | 0           | 0           | 0  |
| 9                  | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A           | 99          | 0           | 99          | 99          | 99 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 10                 | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A           | 99          | 2           | 99          | 99          | 99 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Clarity              | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 11                 | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A           | 99          | 5           | 99          | 99          | 99 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 12                 | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A           | 99          | 3           | 99          | 99          | 99 |
|                    | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |
| 13                 | Cadet                | 0.91      | L         | 0.6  | fl oz/a    | EPOS A   | A           | 99          | 4           | 99          | 99          | 99 |
|                    | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A           |             |             |             |             |    |
|                    | AAtrex               | 4         | L         | 1.5  | qt/a       | EPOS A   | A           |             |             |             |             |    |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |    |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |    |

## MSU Weed Science Research Program

| Weed Code          | ABUTH       |      |      |            |      | ZEAMX       |    |   |  |  | ANGR        |  |    |  |  | CHEAL       |  |    |  |  | AMAPO       |  |    |  |  |  |  |
|--------------------|-------------|------|------|------------|------|-------------|----|---|--|--|-------------|--|----|--|--|-------------|--|----|--|--|-------------|--|----|--|--|--|--|
| Crop Code          | control     |      |      |            |      | injury      |    |   |  |  | control     |  |    |  |  | control     |  |    |  |  | control     |  |    |  |  |  |  |
| Rating Data Type   | percent     |      |      |            |      | percent     |    |   |  |  | percent     |  |    |  |  | percent     |  |    |  |  | percent     |  |    |  |  |  |  |
| Rating Unit        | percent     |      |      |            |      | percent     |    |   |  |  | percent     |  |    |  |  | percent     |  |    |  |  | percent     |  |    |  |  |  |  |
| Rating Date        | Jun/21/2012 |      |      |            |      | Jun/28/2012 |    |   |  |  | Jun/28/2012 |  |    |  |  | Jun/28/2012 |  |    |  |  | Jun/28/2012 |  |    |  |  |  |  |
| Trt-Eval Interval  | 7 DA-A      |      |      |            |      | 14 DA-A     |    |   |  |  | 14 DA-A     |  |    |  |  | 14 DA-A     |  |    |  |  | 14 DA-A     |  |    |  |  |  |  |
| ARM Action Codes   |             |      |      |            |      |             |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| # Subsamples, Dec. | 0           |      |      |            |      | 0           |    |   |  |  | 0           |  |    |  |  | 0           |  |    |  |  | 0           |  |    |  |  |  |  |
| Trt Treatment      | Form        | Form | Rate | Grow       | Appl |             |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| No. Name           | Conc        | Type | Rate | Unit       | Stg  | Code        |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| 14 Dual II Magnum  | 7.64        | L    | 1.33 | pt/a       | EPOS | A           | 99 | 1 |  |  |             |  | 99 |  |  |             |  | 99 |  |  |             |  | 99 |  |  |  |  |
| AAtrex             | 4           | L    | 1.25 | qt/a       | EPOS | A           |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| Roundup PowerMax   | 4.5         | SL   | 22   | fl oz/a    | EPOS | A           |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| AMS                |             | WG   | 17   | lb/100 gal | EPOS | A           |    |   |  |  |             |  |    |  |  |             |  |    |  |  |             |  |    |  |  |  |  |
| LSD (P=.05)        | 0.8         |      |      |            |      | 1.8         |    |   |  |  | 1.1         |  |    |  |  | 0.6         |  |    |  |  | 0.0         |  |    |  |  |  |  |
| CV                 | 0.58        |      |      |            |      | 73.32       |    |   |  |  | 0.83        |  |    |  |  | 0.44        |  |    |  |  | 0.0         |  |    |  |  |  |  |

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

## MSU Weed Science Research Program

|                    |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| Weed Code          | AMBEL       | ABUTH       |             | ANGR        | CHEAL       |
| Crop Code          |             |             | ZEAMX       |             |             |
| Rating Data Type   | control     | control     | injury      | control     | control     |
| Rating Unit        | percent     | percent     | percent     | percent     | percent     |
| Rating Date        | Jun/28/2012 | Jun/28/2012 | Jul/16/2012 | Jul/16/2012 | Jul/16/2012 |
| Trt-Eval Interval  | 14 DA-A     | 14 DA-A     | 32 DA-A     | 32 DA-A     | 32 DA-A     |
| ARM Action Codes   |             |             |             |             |             |
| # Subsamples, Dec. | 0           | 0           | 0           | 0           | 0           |

| Trt No. | Treatment Name       | Form Conc | Form Type | Rate | Rate Unit  | Grow Stg | Appl Code |    |    |   |    |    |
|---------|----------------------|-----------|-----------|------|------------|----------|-----------|----|----|---|----|----|
| 1       | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         | 95 | 99 | 0 | 97 | 81 |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 2       | AAtrex               | 4         | L         | 1.25 | qt/a       | EPOS A   | A         | 99 | 99 | 0 | 98 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 3       | Harness Xtra         | 5.6       | L         | 2    | qt/a       | EPOS A   | A         | 99 | 99 | 0 | 98 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 4       | Impact               | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 99 | 99 | 0 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Warrant              | 3         | L         | 3    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | L         | 0.5  | % v/v      | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 5       | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 99 | 99 | 0 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | qt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Zidua                | 85        | WG        | 2.5  | oz/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | L         | 1    | % v/v      | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 6       | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A         | 99 | 99 | 0 | 99 | 99 |
|         | Guardsman Max        | 5         | L         | 3.5  | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | L         | 1    | % v/v      | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 7       | Halex GT             | 4.38      | L         | 3.6  | pt/a       | EPOS A   | A         | 99 | 99 | 0 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Activator 90         |           | L         | 0.25 | % v/v      | EPOS A   | A         |    |    |   |    |    |
|         | AMS                  |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 8       | Untreated            |           |           |      |            |          |           | 0  | 0  | 0 | 0  | 0  |
| 9       | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A         | 99 | 99 | 0 | 99 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 10      | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A         | 99 | 99 | 0 | 98 | 99 |
|         | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Clarity              | 4         | L         | 1    | pt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 11      | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A         | 99 | 99 | 5 | 98 | 99 |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 12      | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A         | 99 | 99 | 4 | 99 | 99 |
|         | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |
| 13      | Cadet                | 0.91      | L         | 0.6  | fl oz/a    | EPOS A   | A         | 99 | 99 | 4 | 98 | 99 |
|         | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A         |    |    |   |    |    |
|         | AAtrex               | 4         | L         | 1.5  | qt/a       | EPOS A   | A         |    |    |   |    |    |
|         | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A         |    |    |   |    |    |
|         |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A         |    |    |   |    |    |

## MSU Weed Science Research Program

| Weed Code          | AMBEL       | ABUTH       | ZEAMX         | ANGR        | CHEAL       |
|--------------------|-------------|-------------|---------------|-------------|-------------|
| Crop Code          |             |             |               |             |             |
| Rating Data Type   | control     | control     | injury        | control     | control     |
| Rating Unit        | percent     | percent     | percent       | percent     | percent     |
| Rating Date        | Jun/28/2012 | Jun/28/2012 | Jul/16/2012   | Jul/16/2012 | Jul/16/2012 |
| Trt-Eval Interval  | 14 DA-A     | 14 DA-A     | 32 DA-A       | 32 DA-A     | 32 DA-A     |
| ARM Action Codes   |             |             |               |             |             |
| # Subsamples, Dec. | 0           | 0           | 0             | 0           | 0           |
| Trt Treatment      | Form        | Form        | Rate          | Grow        | Appl        |
| No. Name           | Conc        | Type        | Rate Unit     | Stg         | Code        |
| 14 Dual II Magnum  | 7.64        | L           | 1.33 pt/a     | EPOS A      | 99          |
| AAtrex             | 4           | L           | 1.25 qt/a     | EPOS A      |             |
| Roundup PowerMax   | 4.5         | SL          | 22 fl oz/a    | EPOS A      |             |
| AMS                |             | WG          | 17 lb/100 gal | EPOS A      |             |
| LSD (P=.05)        | 1.4         | 0.3         | 0.7           | 1.8         | 1.8         |
| CV                 | 1.1         | 0.21        | 54.69         | 1.39        | 1.42        |

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



## MSU Weed Science Research Program

| Weed Code          |                      |           |           |      |            |          | AMAPO       | AMBEL       | ABUTH       |             |             |     |
|--------------------|----------------------|-----------|-----------|------|------------|----------|-------------|-------------|-------------|-------------|-------------|-----|
| Crop Code          |                      |           |           |      |            |          |             |             |             | ZEAMX       | ZEAMX       |     |
| Rating Data Type   |                      |           |           |      |            |          | control     | control     | control     | moisture    | yield       |     |
| Rating Unit        |                      |           |           |      |            |          | percent     | percent     | percent     | percent     | bu/acre     |     |
| Rating Date        |                      |           |           |      |            |          | Jul/16/2012 | Jul/16/2012 | Jul/16/2012 | Nov/09/2012 | Nov/09/2012 |     |
| Trt-Eval Interval  |                      |           |           |      |            |          | 32 DA-A     | 32 DA-A     | 32 DA-A     | 148 DA-A    | at 15% M    |     |
| ARM Action Codes   |                      |           |           |      |            |          |             |             |             |             | TY1         |     |
| # Subsamples, Dec. |                      |           |           |      |            |          | 0           | 0           | 0           | 1           | 0           |     |
| Trt No.            | Treatment Name       | Form Conc | Form Type | Rate | Rate Unit  | Grow Stg | Appl Code   |             |             |             |             |     |
| 1                  | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           | 99          | 91          | 98          | 18.7        | 206 |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 2                  | AAtrex               | 4         | L         | 1.25 | qt/a       | EPOS A   | A           | 99          | 99          | 99          | 18.7        | 215 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 3                  | Harness Xtra         | 5.6       | L         | 2    | qt/a       | EPOS A   | A           | 99          | 99          | 99          | 19.3        | 203 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 4                  | Impact               | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 99          | 98          | 18.8        | 211 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Warrant              | 3         | L         | 3    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | L         | 0.5  | % v/v      | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 5                  | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 19.6        | 216 |
|                    | AAtrex               | 4         | L         | 1    | qt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Zidua                | 85        | WG        | 2.5  | oz/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | L         | 1    | % v/v      | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 6                  | Armezon              | 2.8       | L         | 0.75 | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 19.3        | 201 |
|                    | Guardsman Max        | 5         | L         | 3.5  | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | L         | 1    | % v/v      | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 7                  | Halex GT             | 4.38      | L         | 3.6  | pt/a       | EPOS A   | A           | 99          | 99          | 99          | 19.5        | 204 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Activator 90         |           | L         | 0.25 | % v/v      | EPOS A   | A           |             |             |             |             |     |
|                    | AMS                  |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 8                  | Untreated            |           |           |      |            |          |             | 0           | 0           | 0           | 18.7        | 141 |
| 9                  | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A           | 99          | 99          | 97          | 19.2        | 217 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 10                 | Capreno              | 3.45      | L         | 3    | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 18.5        | 210 |
|                    | AAtrex               | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Clarity              | 4         | L         | 1    | pt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 11                 | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 18.5        | 202 |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 12                 | Anthem ATZ           | 4.5       | L         | 32   | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 18.8        | 208 |
|                    | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |
| 13                 | Cadet                | 0.91      | L         | 0.6  | fl oz/a    | EPOS A   | A           | 99          | 99          | 99          | 19.0        | 211 |
|                    | Hornet               | 68.5      | WG        | 3    | oz/a       | EPOS A   | A           |             |             |             |             |     |
|                    | AAtrex               | 4         | L         | 1.5  | qt/a       | EPOS A   | A           |             |             |             |             |     |
|                    | Roundup PowerMax AMS | 4.5       | SL        | 22   | fl oz/a    | EPOS A   | A           |             |             |             |             |     |
|                    |                      |           | WG        | 17   | lb/100 gal | EPOS A   | A           |             |             |             |             |     |

MSU Weed Science Research Program

|                    |                  |           |           |      |            |             |             |             |             |             |
|--------------------|------------------|-----------|-----------|------|------------|-------------|-------------|-------------|-------------|-------------|
| Weed Code          |                  |           |           |      |            | AMAPO       | AMBEL       | ABUTH       |             |             |
| Crop Code          |                  |           |           |      |            |             |             |             |             |             |
| Rating Data Type   |                  |           |           |      |            | control     | control     | control     | ZEAMX       | ZEAMX       |
| Rating Unit        |                  |           |           |      |            | percent     | percent     | percent     | moisture    | yield       |
| Rating Date        |                  |           |           |      |            | Jul/16/2012 | Jul/16/2012 | Jul/16/2012 | Nov/09/2012 | Nov/09/2012 |
| Trt-Eval Interval  |                  |           |           |      |            | 32 DA-A     | 32 DA-A     | 32 DA-A     | 148 DA-A    | at 15% M    |
| ARM Action Codes   |                  |           |           |      |            |             |             |             |             | TY1         |
| # Subsamples, Dec. |                  |           |           |      |            | 0           | 0           | 0           | 1           | 0           |
| Trt No.            | Treatment Name   | Form Conc | Form Type | Rate | Unit       | Grow Stg    | Appl Code   |             |             |             |
| 14                 | Dual II Magnum   | 7.64      | L         | 1.33 | pt/a       | EPOS A      | 99          | 99          | 99          | 18.8        |
|                    | AAtrex           | 4         | L         | 1.25 | qt/a       | EPOS A      |             |             |             | 203         |
|                    | Roundup PowerMax | 4.5       | SL        | 22   | fl oz/a    | EPOS A      |             |             |             |             |
|                    | AMS              |           | WG        | 17   | lb/100 gal | EPOS A      |             |             |             |             |
| LSD (P=.05)        |                  |           |           |      |            |             | 0.2         | 1.9         | 1.4         | 0.86        |
| CV                 |                  |           |           |      |            |             | 0.15        | 1.43        | 1.08        | 3.15        |

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