

## Evaluation of Tavium in Dicamba Tolerant Soybeans at Rochester, MN in 2018.

Behnken, Lisa M., Ryan P. Miller, Fritz R. Breitenbach and Andrew Poss.

The objective of this trial was to evaluate the performance of herbicide programs that included s-metolachlor plus dicamba premix, *Tavium*, in dicamba tolerant soybeans at Rochester, MN in 2018. The research site was a loamy sand with a pH of 6.4, O.M. of 2.2%, and soil test P and K levels of 31 ppm and 123 ppm, respectively. ASGROW AG19X8 XTEND soybean was planted May 24, 2018 at 1.5 inches deep in 30-inch rows at 165,000 seeds per acre. Soybean emergence date was May 29, 2018. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi with a ground speed of 4.0 mph using TTI 110015 spray tips. Evaluations were taken on June 11, 22, 29, July 10, 18 and September 24, 2018. Application dates, environmental conditions, and weed stages are in Table 1. Performance ratings for control of giant ragweed, common lambsquarters, common waterhemp and grass and crop response are in Tables 2 through 6, respectively. Common waterhemp population at this site is Group-9 and Group-14 susceptible. Giant ragweed is Group-9 susceptible.

### DISCUSSION

Dicamba can provide excellent giant ragweed control when applied postemergence. In this study, seven PRE herbicides provided a range of giant ragweed control from 10% with BroadAxe at 25 fl oz/a, up to 87% for Prefix at 32 fl oz/a. Seven of the POST herbicide programs included dicamba and resulted in 99% control of giant ragweed after application and for the remainder of the season. *Tavium* at 56.6 fl oz/a applied POST also provided 99% control of giant ragweed after application and for the remainder of the season. The addition of s-metolachlor with dicamba (*Tavium*) should provide extended residual control of many small seeded broadleaf and grassy weeds compared to the herbicide programs with no layered residual. However, we were not able to evaluate this in 2018 because the PRE herbicide programs provided excellent (99%) control of common lambsquarters, common waterhemp and grassy weeds prior to application of the POST herbicides. Control remained at 99% for the entire season. Soybean response was 24-30% injury with *Tavium*, 38% injury with Dual II Magnum and only 13-14% with XtendiMax or Engenia plus Roundup PowerMax, Table 6. Note: Treatments included in this trial contain unregistered products. (University of Minnesota Extension Regional Office, Rochester.)

**Table 1. Application timing, plant stage, environmental conditions.**

| Date  | May 24  | June 23    |
|---|---------|------------|
| <b>Treatment</b>                              | PRE (A) | POST I (B) |
| <b>Temperature (F)</b>                        |         |            |
| Air   | 83.0    | 76.0       |
| Soil  | 67.6    | 74.0       |
| <b>Relative Humidity (%)</b>                  | 56      | 66         |
| <b>Wind (mph)</b>                             | 21      | 3          |
| <b>Soil Moisture</b>                          | Normal  | Normal     |
| <b>Soybean</b>                                |         |            |
| Stage   |         | V4         |
| Height (inch)                                 |         | 9.0        |
| <b>Giant ragweed</b>                          |         |            |
| Weed density (ft <sup>2</sup> )               |         | 3.3        |
| Height (inch)                                 |         | 9.0        |
| <b>Common Lambsquarters</b>                   |         |            |
| Weed density (ft <sup>2</sup> )               |         |            |
| Height (inch)                                 |         | 5.25       |
| <b>Common Waterhemp</b>                       |         |            |
| Weed density (ft <sup>2</sup> )               |         | 10.5       |
| Height (inch)                                 |         | 5.5        |
| <b>Grass species</b>                          |         |            |
| Weed density (ft <sup>2</sup> )               |         | 4.8        |
| Height (inch)                                 |         | 5.6        |
| <b>Rainfall after each application (inch)</b> |         |            |
| Week 1  | 1.39    | 2.89       |
| Week 2  | 0.0     | 2.47       |
| Week 3  | 0.93    | 1.26       |

**Table 2. Giant ragweed control with PRE herbicides followed by POST Tavium plus Roundup PowerMax in dicamba tolerant soybean at Rochester, Minnesota in 2018.**

| Pest Code<br>Pest Name<br>Rating Date   |  |      |      | AMBTR<br>GIANT RAGWEED |         |             |            |             |            |             |            |             |            |             |            |           |
|---|--|------|------|------------------------|---------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-----------|
|   |  |      |      | Jun-11-2018            |         | Jun-22-2018 |            | Jun-29-2018 |            | Jul-10-2018 |            | Jul-18-2018 |            | Sep-24-2018 |            |           |
| Trt Treatment                           |  | Rate | Appl | PERCENT CONTROL (%)    |         |             |            |             |            |             |            |             |            |             |            |           |
| 1 UNTREATED CHECK                       |  |      |      | 0                      | e       | 0           | f          | 0           | d          | 0           | c          | 0           | b          | 0           | b          |           |
| <b>PRE (5/24/18) / POST I (6/23/18)</b> |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| 2 BOUNDARY                              |  |      |      | 1.8                    | pt/a    | A           | 13         | d           | 11         | e           | 86         | c           | 99         | a           | 99         | a         |
| TAVIUM                                  |  |      |      | 56.6                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 3 BROADAXE XC                           |  |      |      | 25                     | fl oz/a | A           | 10         | d           | 10         | e           | 84         | c           | 99         | b           | 99         | a         |
| TAVIUM                                  |  |      |      | 56.5                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 4 PREFIX                                |  |      |      | 32                     | fl oz/a | A           | 87         | a           | 83         | a           | 94         | a           | 99         | a           | 99         | a         |
| TAVIUM                                  |  |      |      | 56.5                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 5 VALOR XLT                             |  |      |      | 2.5                    | oz wt/a | A           | 63         | c           | 46         | d           | 85         | c           | 99         | a           | 99         | a         |
| XTENDIMAX                               |  |      |      | 22                     | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 6 ZIDUA PRO                             |  |      |      | 4.5                    | fl oz/a | A           | 83         | a           | 79         | ab          | 93         | ab          | 99         | a           | 99         | a         |
| ENGENIA                                 |  |      |      | 12.8                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 7 AUTHORITY FIRST                       |  |      |      | 6.4                    | oz wt/a | A           | 83         | a           | 74         | bc          | 92         | ab          | 99         | b           | 99         | a         |
| DUAL MAGNUM                             |  |      |      | 16                     | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 40                     | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| 8 FIERCE MTZ                            |  |      |      | 16                     | fl oz/a | A           | 76         | b           | 68         | c           | 91         | b           | 99         | a           | 99         | a         |
| XTENDIMAX                               |  |      |      | 22                     | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| ROUNDUP                                 |  |      |      | 28.4                   | fl oz/a | B           |            |             |            |             |            |             |            |             |            |           |
| POWERMAX                                |  |      |      |                        |         |             |            |             |            |             |            |             |            |             |            |           |
| DRA                                     |  |      |      | 0.5                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| CLASS ACT RIDION                        |  |      |      | 1.0                    | % v/v   | B           |            |             |            |             |            |             |            |             |            |           |
| <b>LSD P=.10</b>                        |  |      |      |                        |         |             | <b>6.6</b> |             | <b>7.8</b> |             | <b>3.3</b> |             | <b>0.5</b> |             | <b>0.4</b> | <b>NS</b> |

**Table 3. Common lambsquarters control with PRE herbicides followed by POST Tavium plus Roundup PowerMax in dicamba tolerant soybean at Rochester, Minnesota in 2018.**

| Pest Code                               |                  |              |      | CHEAL<br>COMMON LAMBSQUARTERS |   |             |   |             |   |             |   |             |   |             |   |
|---|------------------|--------------|------|-------------------------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-------------|---|
|   |                  |              |      | Jun-11-2018                   |   | Jun-22-2018 |   | Jun-29-2018 |   | Jul-10-2018 |   | Jul-18-2018 |   | Sep-24-2018 |   |
| Trt                                     | Treatment        | Rate         | Appl | PERCENT CONTROL (%)           |   |             |   |             |   |             |   |             |   |             |   |
| 1                                       | UNTREATED CHECK  |              |      | 0                             | b | 0           | c | 0           | b | 0           | b | 0           | b | 0           | b |
| <b>PRE (5/24/18) / POST I (6/23/18)</b> |                  |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
| 2                                       | BOUNDARY         | 1.8 pt/a     | A    | 99                            | a | 99          | b | 99          | a | 99          | a | 99          | a | 99          | a |
|   | TAVIUM           | 56.6 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 3                                       | BROADAXE XC      | 25 fl oz/a   | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | TAVIUM           | 56.5 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 4                                       | PREFIX           | 32 fl oz/a   | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | TAVIUM           | 56.5 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 5                                       | VALOR XLT        | 2.5 oz wt/a  | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | XTENDIMAX        | 22 fl oz/a   | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 6                                       | ZIDUA PRO        | 4.5 fl oz/a  | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | ENGENIA          | 12.8 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 7                                       | AUTHORITY FIRST  | 6.4 oz wt/a  | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | DUAL MAGNUM      | 16 fl oz/a   | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 40 fl oz/a   | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| 8                                       | FIERCE MTZ       | 16 fl oz/a   | A    | 99                            | a | 99          | a | 99          | a | 99          | a | 99          | a | 99          | a |
|   | XTENDIMAX        | 22 fl oz/a   | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | ROUNDUP          | 28.4 fl oz/a | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | POWERMAX         |              |      |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | DRA              | 0.5 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
|   | CLASS ACT RIDION | 1.0 % v/v    | B    |                               |   |             |   |             |   |             |   |             |   |             |   |
| <b>LSD P=10</b>                         |                  |              |      | <b>NS</b>                     |   | <b>0.2</b>  |   | <b>NS</b>   |   | <b>NS</b>   |   | <b>NS</b>   |   | <b>NS</b>   |   |

**Table 4. Common waterhemp control with PRE herbicides followed by POST Tavium plus Roundup PowerMax in dicamba tolerant soybean at Rochester, Minnesota in 2018.**

| Pest Code                               | AMATA<br>COMMON WATERHEMP |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|---|---------------------------|-------------|-------------|---------------------|-------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|---|
|   | Jun-11-2018               | Jun-22-2018 | Jun-29-2018 | Jul-10-2018         | Jul-18-2018 | Sep-24-2018 |           |           |           |           |           |           |            |   |
| Trt                                     | Treatment                 | Rate        | Appl        | PERCENT CONTROL (%) |             |             |           |           |           |           |           |           |            |   |
| 1                                       | UNTREATED CHECK           |             |             | 0                   | b           | 0           | c         | 0         | b         | 0         | b         | 0         | c          |   |
| <b>PRE (5/24/18) / POST I (6/23/18)</b> |                           |             |             |                     |             |             |           |           |           |           |           |           |            |   |
| 2                                       | BOUNDARY                  | 1.8         | pt/a        | A                   | 99          | a           | 99        | a         | 99        | a         | 99        | a         | 99         | b |
|   | TAVIUM                    | 56.6        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 3                                       | BROADAXE XC               | 25          | fl oz/a     | A                   | 99          | a           | 99        | a         | 99        | a         | 99        | a         | 99         | a |
|   | TAVIUM                    | 56.5        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 4                                       | PREFIX                    | 32          | fl oz/a     | A                   | 99          | a           | 99        | a         | 99        | a         | 99        | a         | 99         | a |
|   | TAVIUM                    | 56.5        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 5                                       | VALOR XLT                 | 2.5         | oz wt/a     | A                   | 99          | a           | 98        | b         | 99        | a         | 99        | a         | 99         | a |
|   | XTENDIMAX                 | 22          | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 6                                       | ZIDUA PRO                 | 4.5         | fl oz/a     | A                   | 99          | a           | 99        | a         | 99        | a         | 99        | a         | 99         | a |
|   | ENGENIA                   | 12.8        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 7                                       | AUTHORITY FIRST           | 6.4         | oz wt/a     | A                   | 99          | a           | 99        | ab        | 99        | a         | 99        | a         | 99         | a |
|   | DUAL MAGNUM               | 16          | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 40          | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| 8                                       | FIERCE MTZ                | 16          | fl oz/a     | A                   | 99          | a           | 99        | a         | 99        | a         | 99        | a         | 99         | a |
|   | XTENDIMAX                 | 22          | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | ROUNDUP                   | 28.4        | fl oz/a     | B                   |             |             |           |           |           |           |           |           |            |   |
|   | POWERMAX                  |             |             |                     |             |             |           |           |           |           |           |           |            |   |
|   | DRA                       | 0.5         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
|   | CLASS ACT RIDION          | 1.0         | % v/v       | B                   |             |             |           |           |           |           |           |           |            |   |
| <b>LSD P=.10</b>                        |                           |             |             |                     | <b>NS</b>   | <b>0.7</b>  | <b>NS</b> | <b>NS</b> | <b>NS</b> | <b>NS</b> | <b>NS</b> | <b>NS</b> | <b>0.2</b> |   |



**Table 6. Soybean response to PRE herbicides followed by POST Tavium plus Roundup PowerMax in dicamba tolerant soybean at Rochester, Minnesota in 2018.**

| Pest Code<br>Rating Date                |                  |      |         |                    | SOYBEAN RESPONSE |   |             |    |             |   |
|---|------------------|------|---------|--------------------|------------------|---|-------------|----|-------------|---|
|   |                  |      |         |                    | Jun-11-2018      |   | Jun-29-2018 |    | Jul-10-2018 |   |
| Trt                                     | Treatment        | Rate | Appl    | PERCENT INJURY (%) |                  |   |             |    |             |   |
| 1                                       | UNTREATED CHECK  |      |         | 0                  | b                | 0 | e           | 0  | e           |   |
| <b>PRE (5/24/18) / POST I (6/23/18)</b> |                  |      |         |                    |                  |   |             |    |             |   |
| 2                                       | BOUNDARY         | 1.8  | pt/a    | A                  | 10               | a | 26          | bc | 10          | b |
|   | TAVIUM           | 56.6 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 3                                       | BROADAXE XC      | 25   | fl oz/a | A                  | 10               | a | 30          | b  | 10          | b |
|   | TAVIUM           | 56.5 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 4                                       | PREFIX           | 32   | fl oz/a | A                  | 11               | a | 24          | c  | 10          | b |
|   | TAVIUM           | 56.5 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 5                                       | VALOR XLT        | 2.5  | oz wt/a | A                  | 10               | a | 14          | d  | 8           | c |
|   | XTENDIMAX        | 22   | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 6                                       | ZIDUA PRO        | 4.5  | fl oz/a | A                  | 0                | b | 13          | d  | 8           | c |
|   | ENGENIA          | 12.8 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 7                                       | AUTHORITY FIRST  | 6.4  | oz wt/a | A                  | 0                | b | 38          | a  | 15          | a |
|   | DUAL MAGNUM      | 16   | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 40   | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| 8                                       | FIERCE MTZ       | 16   | fl oz/a | A                  | 10               | a | 14          | d  | 5           | d |
|   | XTENDIMAX        | 22   | fl oz/a | B                  |                  |   |             |    |             |   |
|   | ROUNDUP POWERMAX | 28.4 | fl oz/a | B                  |                  |   |             |    |             |   |
|   | DRA              | 0.5  | % v/v   | B                  |                  |   |             |    |             |   |
|   | CLASS ACT RIDION | 1.0  | % v/v   | B                  |                  |   |             |    |             |   |
| <b>LSD P=.10</b>                        |                  |      |         |                    | <b>2.1</b>       |   | <b>4.1</b>  |    | <b>1.8</b>  |   |