

## 2014 Johnsongrass Control x Mowing Timing Trial

### *Introduction*

Johnsongrass (*Sorghum halepense*) is a perennial warm season grass, listed as a noxious weed in Kentucky, that is a common problem on right-of-ways. There are a number of herbicides labeled and available to control johnsongrass on right-of-ways. A key to achieving high levels of Johnsongrass control is translocation of the herbicide from the leaves to the rhizomes. However, routine mowing as part of roadside management could reduce Johnsongrass control by removing leaf material along with the herbicide applied to it before translocation occurs. A practical question for managers is how long after herbicide application do they need to wait before mowing without reducing herbicide efficacy on johnsongrass.

### *Materials and Methods*

This study was initiated August 14, 2014 at an interchange near Bardstown KY. Four herbicide treatments (Outrider [sulfosulfuron] 0.25 oz/A, Fusilade II [fluazifop] 6 oz/A, Acclaim Extra [fenoxaprop] 2.8 oz/A, and Acclaim Extra plus Fusilade II [0.5 and 3.5 oz/A] were applied to 10 ft x 60 ft strips. Applications were made at 30 gallons per acre carrier volume and either a surfactant or crop oil concentrate (Table 1). The herbicide treatments were applied when johnsongrass plants were on average 36 inches tall with a range from 20 to 48 inches in height. Six mowing treatments, the same day as herbicide treatment, one day after herbicide treatment (AHT), 2 days AHT, one week AHT, two weeks AHT, or no mowing (Table 2) were performed as 10 ft x 40 ft strips across the herbicide treatments in a split block design, replicated three times. Mowing height was 4 inches. Visual assessments of percent johnsongrass control were done 34 (9/17/2014) and 70 (10/23/2014) days after herbicide treatment (DAT). Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at  $p = 0.05$ .

### *Results and Discussion*

Differences in johnsongrass regrowth between herbicide treatments were visible by 14 DAT. There was also an interaction between herbicide treatments and mowing after treatment. These differences were more evident 34 DAT (Table 3). Outrider provided greater control (83%) than the other three herbicides when the johnsongrass was mowed the same day as treatment. Because Outrider can be taken up from the soil as well as the leaves, delaying mowing may not be as critical as for Acclaim and Fusilade II. These are only active through the leaves. In addition, it is possible the Outrider was translocated to the rhizomes more rapidly than Acclaim Extra or Fusilade II. However, Outrider provided less control than the other herbicide treatments 34 DAT when the johnsongrass was not mowed. Control with Acclaim Extra was the most sensitive to mowing. Only with a two-week delay before mowing was the control with Acclaim equivalent to no mowing 34 DAT. Control 34 DAT with Fusilade II or Fusilade II plus Acclaim Extra, on the other hand, was the same as the unmowed treatment if mowing was delayed only for one day.

Johnsongrass regrowth was visible in some of the treatment combinations 70 DAT and resulted in lower control ratings than 34 DAT, particularly plots for Acclaim Extra, Fusilade II and Acclaim Extra plus Fusilade II that were mowed the same day as treatment (Table 4). Interestingly, unmowed plots treated with Outrider had lower control than the mowed plots. However, there was no difference in control with Outrider between the mowing treatments. As at 34 DAT, mowing the same day as treatment did not reduce control with Outrider. Among the four herbicide treatments, the mowing delays needed for maximum control were as follows: Outrider, 0 days, Fusilade II and Fusilade II plus Acclaim Extra, 1 day, and Acclaim Extra two weeks. With an appropriate delay in mowing, all treatments could provide 88% or better control 70 DAT.

In summary, mowing timing after application did affect herbicide efficacy. Our initial results suggest that mowing 1 or 2 days after application will not reduce the efficacy of Outrider, Fusilade, or Acclaim + Fusilade. However, one should wait 2 weeks before mowing if Acclaim Extra alone was applied. Assessments of johnsongrass control from these treatments will be done again in 2015.

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**Table 1. Herbicide Treatments and Active Ingredients for Mowing x Johnsongrass Control Trial**

| Treatment | Product Name  | Rate | Rate Unit | Active Ingredient(s) | ai Rate (per acre) |
|-----------|---------------|------|-----------|----------------------|--------------------|
| 1         | Outrider      | 1    | OZ/A      | sulfosulfuron        | 0.25 oz            |
|           | Activator 90  | 0.25 | % V/V     |                      |                    |
| 2         | Fusilade II   | 24   | FL OZ/A   | fluazifop            | 6 oz               |
|           | Activator 90  | 0.25 | % V/V     |                      |                    |
| 3         | Acclaim Extra | 39   | FL OZ/A   | fexoxaprop           | 2.8 oz             |
|           | Activator 90  | 0.25 | % V/V     |                      |                    |
| 4         | Acclaim Extra | 7    | FL OZ/A   | fexoxaprop           | 0.5 oz             |
|           | Fusilade II   | 14   | FL OZ/A   |                      |                    |
|           | COC           | 1    | % V/V     |                      |                    |

**Table 2. Timing of Mowing Treatments**

| Treatment | Timing of Mowing Treatment          |
|-----------|-------------------------------------|
| 1         | Same day as herbicide application   |
| 2         | 1 Day after herbicide application   |
| 3         | 2 Days after herbicide application  |
| 4         | 1 Week after herbicide application  |
| 5         | 2 Weeks after herbicide application |
| 6         | No Mowing                           |

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**Table 3: Johnsongrass Control (%) 34 Days after Treatment**

| <b>Mowing Time after Application</b> | <b>Outrider</b>           | <b>Fusilade II</b> | <b>Acclaim Extra</b> | <b>Acclaim + Fusilade</b> |
|--------------------------------------|---------------------------|--------------------|----------------------|---------------------------|
| Same day                             | 83 <i>cd</i> <sup>1</sup> | 39 <i>gh</i>       | 45 <i>g</i>          | 30 <i>h</i>               |
| 1 Day                                | 97 <i>ab</i>              | 90 <i>abcd</i>     | 65 <i>f</i>          | 87 <i>bcd</i>             |
| 2 Days                               | 98 <i>a</i>               | 91 <i>abcd</i>     | 68 <i>f</i>          | 91 <i>abcd</i>            |
| 1 Week                               | 99 <i>a</i>               | 92 <i>abcd</i>     | 72 <i>ef</i>         | 93 <i>abc</i>             |
| 2 Weeks                              | 99 <i>a</i>               | 95 <i>ab</i>       | 83 <i>cd</i>         | 93 <i>abc</i>             |
| No Mowing                            | 70 <i>f</i>               | 87 <i>bcd</i>      | 82 <i>de</i>         | 87 <i>bcd</i>             |

<sup>1</sup>Means followed by the same letter are not different according to Fisher's Protected LSD at  $P < 0.05$ .

**Table 4: Johnsongrass Control (%) 70 Days after Treatment**

| <b>Mowing Time after Application</b> | <b>Outrider</b>           | <b>Fusilade II</b> | <b>Acclaim Extra</b> | <b>Acclaim + Fusilade</b> |
|--------------------------------------|---------------------------|--------------------|----------------------|---------------------------|
| Same day                             | 88 <i>ab</i> <sup>1</sup> | 0 <i>f</i>         | 17 <i>ef</i>         | 14 <i>ef</i>              |
| 1 Day                                | 99 <i>a</i>               | 94 <i>a</i>        | 37 <i>de</i>         | 96 <i>a</i>               |
| 2 Days                               | 100 <i>a</i>              | 97 <i>a</i>        | 47 <i>cd</i>         | 98 <i>a</i>               |
| 1 Week                               | 100 <i>a</i>              | 97 <i>a</i>        | 67 <i>bc</i>         | 99 <i>a</i>               |
| 2 Weeks                              | 100 <i>a</i>              | 100 <i>a</i>       | 94 <i>a</i>          | 99 <i>a</i>               |
| No Mowing                            | 93 <i>a</i>               | 99 <i>a</i>        | 92 <i>a</i>          | 97 <i>a</i>               |

<sup>1</sup>Means followed by the same letter are not different according to Fisher's Protected LSD at  $P < 0.05$ .