# 2011/2012 Fall Spring Tall Fescue Seedhead Suppression Trial

*Introduction*

Seasonal management of cool season grasses in rights-of-way includes mowing and herbicide applications to meet safety and aesthetic requirements. Application of plant growth regulators (PGRs) to suppress seedhead development and growth can reduce the number of time consuming and costly mowings. Some herbicides also have seedhead suppression effects, depending on the rate and timing of application. However, these products can injure the turf causing discoloration, which is undesirable but in many cases is temporary. These products are normally applied in the spring, before seedhead emergence. Can fall applications also result in seedhead suppression the following spring?

*Materials and Methods*

For the second year, a trial was established at Spindletop Research Farm in Lexington KY with 21 treatments and 3 replications arranged in a randomized complete block design. Plots were 10 ft by 30 ft with running unsprayed checks (5 ft) between each of the plots. The treatment list included 10 products or tank mixes applied in the fall (December 3, 2011) and the same 10 treatments applied in the spring (March 27, 2012) plus an unsprayed control. All applications were at 20 gallons per acre and included a non-ionic surfactant at 0.25% v/v. Table 1 lists the herbicide treatments with their active ingredients and application rates. The manufacturer (Dow AgroSciences) has asked that we only identify the compound as GF-2703 in treatments 8 and 18. In most treatments a synthetic auxin (2,4-D, aminopyralid, or aminocyclopyrachlor) was included to increase the weed control spectrum but also as a "safener" to reduce damage to the grasses. Many of the treatments included metsulfuron methyl as the herbicide with seedhead suppression activity. There was a 5 fold difference in application rate between treatments 1 & 11 and 10 & 20. Metsulfuron methyl suppresses seedheads in tall fescue but not in other cool season grasses like orchard grass. The Plateau and Stronghold treatments are industry standards for seedhead suppression and growth reduction.

The tall fescue was 9 inches tall (2 green leaves per tiller) at the fall application and 12 inches, with 3 green leaves per tiller, at the spring application. At the fall application there was also buckhorn plantain at 4 inches and red clover at 4 inches. At the spring application the orchard grass was 10 to 13 inches tall while the Kentucky bluegrass was at 7 inches. The red clover was at 8 inches and buckhorn plantain was 6 to 8 inches tall.

Visual percent seedhead density was assessed by comparison to the running check strips 16 (4/12/2012), 31 (4/27/2012), 54 (5/20/2012), and 83 (6/18/2012) days after spring application (DASA). Tall fescue color was assessed by comparison to the running check strips 16, 31, 54, and 83 DASA. The color rating ranges from 0 (dead) to 9 (full green). The color of the check strips was set at 8. Canopy and seedhead heights were measured at all assessment dates. Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

*Results and Discussion*

There were no visible seedheads 16 DASA, seedheads were beginning to emerge 31 DASA, and were fully emerged 54 DASA (Table 2). The spring applications resulted in greater seedhead suppression than the fall applications (Table 2) in both years (previous trial results not shown here). Fall applications of four effective treatments ranged from 92 to 73% seedhead suppression (8 to 27% seedhead density) 54 DASA. These were Opensight without a safener (Trt. 4), Plateau (Trt. 5), GF-2703 (Trt. 8) and Streamline (Trt. 10). These same four treatments applied in the spring reduced seedheads from 100 to 85% (0 to 15% seedhead density) 54 DASA. The two spring applied treatments with 100% tall fescue seedhead suppression, in both years, were GF-2703 + aminopyralid (Trt. 18) and imazapic + 2,4-D (Trt. 15). Whether or not less than complete seedhead suppression is acceptable and a mowing cycle can be avoided would depend on factors such as the other grass species present and the degree of broadleaf weed control.

Most of the treatments effective at seedhead suppression also resulted in lower green color ratings (Table 3). 16 DASA Trt. 14 (Opensight without extra safener) had lower color ratings than Trt. 13 (Opensight with 2,4-D as safener). Green color of the two most effective spring applied treatments (Trt. 15 & 18) was less than the check strips 16 and 31 DASA. Sometimes turf that has been seedhead suppressed exhibits deeper green color later in the season. This was the case for the spring applied Plateau treatment (Trt. 15) 83 DASA.

*Table 1. Treatments, Active Ingredients and Application Rates for Tall Fescue Seedhead Suppression Trial*

| Trt. No. | Product Name | Rate | Rate Unit | Active Ingredient(s) | ai Rate (per acre) |
|---|---|---|---|---|---|
| 1 & 11 | Escort XP | 0.2 | OZ/A | metsulfuron methyl | 0.12 oz |
| | Formula 40 | 2 | QT/A | 2,4-D amine | 1.84 lb ae |
| 2 & 12 | Opensight | 2 | OZ/A | aminopyralid + metsulfuron methyl | 1.05 oz ae + 0.19 oz |
| | Formula 40 | 1 | PT/A | 2,4-D amine | 0.46 lb ae |
| 3 & 13 | Opensight | 2.5 | OZ/A | aminopyralid + metsulfuron methyl | 1.31 oz ae + 0.24 oz |
| | Formula 40 | 1 | PT/A | 2,4-D amine | 0,46 lb ae |
| 4 & 14 | Opensight | 2.5 | OZ/A | aminopyralid + metsulfuron methyl | 1.31 oz ae + 0.24 oz |
| 5 & 15 | Plateau | 4 | FL OZ/A | imazapic | 1.00 oz ae |
| | Formula 40 | 2 | QT/A | 2,4-D amine | 1.84 lb ae |
| 6 & 16 | Stronghold | 12 | FL OZ/A | mefluidide + imazethapyr + imazapyr | 2.20 oz ae + 0.53 oz ae + 0.01 oz ae |
| | Hi-Dep IVM | 2 | QT/A | 2,4-D amine | 1.90 lb ae |
| 7 & 17 | Roundup Pro | 6 | FL OZ/A | glyphosate | 2.26 oz ae |
| | Formula 40 | 2 | QT/A | 2,4-D amine | 1.84 lb ae |
| 8 & 18 | GF-2703 | 0.57 | OZ/A | | 0.29 oz |
| | Milestone VM | 7 | FL OZ/A | aminopyralid | 1.76 oz ae |
| 9 & 19 | Perspective | 4.76 | OZ/A | aminocyclopyrachlor + chlorsulfuron | 1.89 oz + 0.75 oz |
| 10 & 20 | Streamline | 4.76 | OZ/A | aminocyclopyrachlor + metsulfuron methyl | 1.89 oz + 0.60 oz |

*Table 2. Treatments, Tall Fescue Heights and Seedhead Densities for Tall Fescue Seedhead Suppression Trial*

| Trt. No. | Product Name | Rate | Rate Unit | Application Timing | Tall Fescue Height (in) | | | | Tall Fescue Seedhead (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 16 DASA | 31 DASA | 54 DASA | 83 DASA | 16 DASA | 31 DASA | 54 DASA | 83 DASA |
| 1 | Escort XP<br>Formula 40 | 0.2<br>2 | OZ/A<br>QT/A | Fall | 10 *bcd* | 16 *ab* | 46 *a* | 47 *abcd* | 0 | 12 *a* | 100 *a* | 100 *a* |
| 2 | Opensight<br>Formula 40 | 2<br>1 | OZ/A<br>PT/A | Fall | 10 *bc* | 18 *a* | 44 *ab* | 47 *abcd* | 0 | 12 *a* | 100 *a* | 100 *a* |
| 3 | Opensight<br>Formula 40 | 2.5<br>1 | OZ/A<br>PT/A | Fall | 10 *bcd* | 16 *ab* | 43 *ab* | 48 *abc* | 0 | 5 *abc* | 100 *a* | 100 *a* |
| 4 | Opensight | 2.5 | OZ/A | Fall | 10 *bc* | 14 *abc* | 41 *abc* | 47 *abcd* | 0 | 3 *abc* | 27 *ef* | 27 *de* |
| 5 | Plateau<br>Formula 40 | 4<br>2 | FL OZ/A<br>QT/A | Fall | 8 *f* | 11 *bcde* | 41 *abcd* | 43 *bcde* | 0 | 2 *bc* | 12 *fg* | 17 *efgh* |
| 6 | Stronghold<br>Hi-Dep IVM | 12<br>2 | FL OZ/A<br>QT/A | Fall | 9 *bcde* | 15 *abc* | 41 *abcd* | 48 *abc* | 0 | 3 *abc* | 93 *a* | 97 *a* |
| 7 | Roundup Pro<br>Formula 40 | 6<br>2 | FL OZ/A<br>QT/A | Fall | 10 *ab* | 18 *a* | 45 *ab* | 51 *a* | 0 | 10 *ab* | 100 *a* | 100 *a* |
| 8 | GF-2703<br>Milestone VM | 0.57<br>7 | OZ/A<br>FL OZ/A | Fall | 9 *cdef* | 8 *de* | 39 *abcde* | 44 *abcd* | 0 | 0 *c* | 8 *fg* | 20 *ef* |
| 9 | Perspective | 4.76 | OZ/A | Fall | 9 *bcdef* | 14 *abc* | 41 *abc* | 42 *cde* | 0 | 5 *abc* | 87 *ab* | 77 *b* |
| 10 | Streamline | 4.76 | OZ/A | Fall | 9 *bcdef* | 10 *bcde* | 31 *efg* | 45 *abcd* | 0 | 3 *abc* | 18 *fg* | 18 *efg* |
| 11 | Escort XP<br>Formula 40 | 0.2<br>2 | OZ/A<br>QT/A | Spring | 10 *bcd* | 14 *abcd* | 40 *abcd* | 47 *abcd* | 0 | 2 *bc* | 93 *a* | 100 *a* |
| 12 | Opensight<br>Formula 40 | 2<br>1 | OZ/A<br>PT/A | Spring | 8 *def* | 8 *de* | 37 *bcdef* | 40 *defg* | 0 | 0 *c* | 70 *bc* | 77 *b* |
| 13 | Opensight<br>Formula 40 | 2.5<br>1 | OZ/A<br>PT/A | Spring | 8 *def* | 9 *cde* | 36 *bcdef* | 41 *def* | 0 | 1 *c* | 53 *cd* | 50 *c* |
| 14 | Opensight | 2.5 | OZ/A | Spring | 8 *f* | 7 *e* | 26 *g* | 36 *efg* | 0 | 0 *c* | 15 *fg* | 13 *efgh* |
| 15 | Plateau<br>Formula 40 | 4<br>2 | FL OZ/A<br>QT/A | Spring | 8 *ef* | 7 *e* | 6 *h* | 17 *h* | 0 | 0 *c* | 0 *g* | 2 *gh* |
| 16 | Stronghold<br>Hi-Dep IVM | 12<br>2 | FL OZ/A<br>QT/A | Spring | 8 *f* | 7 *e* | 29 *fg* | 36 *efg* | 0 | 0 *c* | 5 *g* | 8 *fgh* |
| 17 | Roundup Pro<br>Formula 40 | 6<br>2 | FL OZ/A<br>QT/A | Spring | 8 *f* | 7 *e* | 32 *defg* | 36 *efg* | 0 | 0 *c* | 42 *de* | 40 *cd* |
| 18 | GF-2703<br>Milestone VM | 0.57<br>7 | OZ/A<br>FL OZ/A | Spring | 8 *ef* | 7 *e* | 6 *h* | 9 *i* | 0 | 0 *c* | 0 *g* | 0 *h* |
| 19 | Perspective | 4.76 | OZ/A | Spring | 8 *def* | 6 *e* | 33 *cdefg* | 34 *fg* | 0 | 0 *c* | 5 *g* | 10 *efgh* |
| 20 | Streamline | 4.76 | OZ/A | Spring | 8 *def* | 7 *e* | 26 *g* | 34 *g* | 0 | 0 *c* | 5 *g* | 7 *fgh* |
| 21 | Nontreated Check | | | | 12 *a* | 15 *abc* | 43 *a* | 50 *ab* | 0 | 2 *bc* | 100 *a* | 100 *a* |
| | | | | | * | * | * | * | | *ns* | * | * |

*Abbreviations: DASA: Days After Spring Application*

** Means within column followed by the same letter are not different according to Fisher's Protected LSD at P < 0.05.*

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*All herbicide treatments contained the adjuvant, Activator 90 at 0.25% v/v.*

*Table 3: Tall Fescue Color Ratings for Tall Fescue Seedhead Suppression Trial*

| Trt. No. | Product Name | Rate | Rate Unit | Application Timing | Tall Fescue Color (0-9) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 16 DASA | 31 DASA | 54 DASA | 83 DASA |
| 1 | Escort XP<br>Formula 40 | 0.2<br>2 | OZ/A<br>QT/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 2 | Opensight<br>Formula 40 | 2<br>1 | OZ/A<br>PT/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 3 | Opensight<br>Formula 40 | 2.5<br>1 | OZ/A<br>PT/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 4 | Opensight | 2.5 | OZ/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 5 | Plateau<br>Formula 40 | 4<br>2 | FL OZ/A<br>QT/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 6 | Stronghold<br>Hi-Dep IVM | 12<br>2 | FL OZ/A<br>QT/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 7 | Roundup Pro<br>Formula 40 | 6<br>2 | FL OZ/A<br>QT/A | Fall | 7.7 *ab* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 8 | GF-2703<br>Milestone VM | 0.57<br>7 | OZ/A<br>FL OZ/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 9 | Perspective | 4.76 | OZ/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 10 | Streamline | 4.76 | OZ/A | Fall | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |
| 11 | Escort XP<br>Formula 40 | 0.2<br>2 | OZ/A<br>QT/A | Spring | 7.3 *bc* | 7.7 *ab* | 8.0 *ab* | 8.0 *b* |
| 12 | Opensight<br>Formula 40 | 2<br>1 | OZ/A<br>PT/A | Spring | 7.7 *ab* | 7.0 *bc* | 8.0 *ab* | 8.0 *b* |
| 13 | Opensight<br>Formula 40 | 2.5<br>1 | OZ/A<br>PT/A | Spring | 7.7 *ab* | 6.7 *c* | 8.0 *ab* | 8.0 *b* |
| 14 | Opensight | 2.5 | OZ/A | Spring | 7.0 *cd* | 6.3 *cd* | 8.0 *ab* | 8.0 *b* |
| 15 | Plateau<br>Formula 40 | 4<br>2 | FL OZ/A<br>QT/A | Spring | 7.3 *bc* | 4.3 *e* | 8.3 *a* | 8.3 *a* |
| 16 | Stronghold<br>Hi-Dep IVM | 12<br>2 | FL OZ/A<br>QT/A | Spring | 7.0 *cd* | 6.7 *c* | 8.0 *ab* | 8.0 *b* |
| 17 | Roundup Pro<br>Formula 40 | 6<br>2 | FL OZ/A<br>QT/A | Spring | 6.0 *f* | 5.7 *d* | 8.0 *ab* | 8.0 *b* |
| 18 | GF-2703<br>Milestone VM | 0.57<br>7 | OZ/A<br>FL OZ/A | Spring | 6.7 *de* | 6.3 *cd* | 7.0 *c* | 8.0 *b* |
| 19 | Perspective | 4.76 | OZ/A | Spring | 7.3 *bc* | 6.3 *cd* | 7.7 *b* | 8.0 *b* |
| 20 | Streamline | 4.76 | OZ/A | Spring | 6.3 *ef* | 4.3 *e* | 8.0 *ab* | 8.0 *b* |
| 21 | Nontreated Check | | | | 8.0 *a* | 8.0 *a* | 8.0 *ab* | 8.0 *b* |

Abbreviations: DASA: Days After Spring Application

Means within column followed by the same letter are not different according to Fisher's Protected LSD at $P < 0.05$.

Note: Color of unsprayed check strips was set at 8.0 (0 = dead and 9 = full green)

All herbicide treatments contained the adjuvant, Activator 90 at 0.25% v/v.