

# Controlling Seedheads in Tall Fescue with Herbicides

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Experimentals were conducted over 2 years at four locations in Alabama to evaluate several herbicides for seedhead suppression in tall fescue turfs. Herbicides showing good activity (more than 50 percent seedhead reduction) included Sulfometuron, Metsulfuron, Chlorsulfuron at  $\frac{1}{8}$  to  $\frac{3}{4}$  oz a.i. (active ingredient) per acre, and Glyphosate at 4 to 8 oz a.i. per acre. Rates of Sulfometuron, Metsulfuron, and Chlorsulfuron as low as  $\frac{1}{8}$  oz a.i. per acre were effective in reducing seed heads. There was no difference between results for March 15 applications and those made on March 30 at the same location. Combinations of Glyphosate and Sulfometuron were not more efficacious than Sulfometuron applied alone at the same rate. The amount of seedhead suppression was highly correlated to the amount of injury to the tall fescue stands as reflected in appearance ratings. Injury to tall fescue stands from repeated annual use could be unacceptable in some instances.

Tall fescue is the predominant turf species on many acres of roadside in the northern half of Alabama. It has many characteristics that make it a useful species, including excellent cold and drought tolerance. The primary disadvantages of tall fescue are its rapid growth rate and numerous persistent seedheads, which grow to unattractive and unsafe heights. Tests were conducted at four sites in Alabama during 1984 and 1985 to evaluate several herbicides for their effect on seedhead production in tall fescue.

## MATERIALS AND METHODS

Tests in 1984 were located on I-65 in Chilton County near Clanton and on I-85 in Lee County near Auburn. In 1985 the tests were conducted on I-65 in Butler County near Greenville and on I-85 in Macon County near Tuskegee. In each case the experimental design was a randomized complete block with three replications. Plots were 10 × 25 ft in size. The herbicides (Table 1) were applied with a tractor-mounted sprayer in 26 gal of water per acre through flat fan nozzles spaced 20 in. apart on a boom.

The test sites were mowed front slopes having good to excellent stands of tall fescue. Two dates of application were included in the tests each year. The first application was made March 15 ± 2 days, and the second application was made April 1 ± 3 days. Appearance was evaluated by visual (color) ratings 1 month after the first application. Counts of seedheads were made about May 1. A second series of counts and general appearance ratings were made during the last week of May.

## RESULTS AND DISCUSSION

Most all treatments reduced seedheads at the Chilton County location in 1984 (Table 1). There was generally no response to rates of Chlorsulfuron or Metsulfuron at this location on either April 26 or May 22. Seedhead control from Chlorsulfuron was not influenced by the addition of surfactant. However, on May 22 Metsulfuron applied at  $\frac{1}{8}$  oz per acre produced more inhibition when surfactant was added at the March 15 application date, but the March 30 results were not affected by surfactant additions. Appearance effects paralleled those of seedhead inhibition for the most part. That is, applications of either Metsulfuron or Chlorsulfuron caused appearance to be reduced on April 10, regardless of rate or the presence of surfactant, or both. Little or no injury was detectable at the later evaluation date.

Sulfometuron effects on seedhead production were influenced by rate and added surfactant. Plots receiving less than  $\frac{1}{2}$  oz per acre had more seed heads than those receiving  $\frac{1}{2}$  oz or more at both dates of application and both locations. The response to added surfactant was significant when  $\frac{1}{8}$  oz of Sulfometuron was applied, but not when the rate was increased to  $\frac{1}{2}$  oz. Appearance was reduced by all rates in early April, but only by the higher rates in late May.

Combinations of Glyphosate and Sulfometuron gave better seedhead control in most instances than Glyphosate alone when evaluated in late May. There was no apparent advantage of the combination treatments over Sulfometuron alone.

The 1984 test on I-85 in Lee County was mowed by highway personnel before the second counts and appearance ratings could be obtained. Appearance ratings made on April 10, 1984, showed that all herbicide treatments were more injurious to tall fescue when applied March 15 than when application was made 2 weeks later (Table 2). Injury was not increased by the addition of surfactant to any of the herbicides tested at this location.

Seedhead control was enhanced when surfactant was added to  $\frac{1}{8}$ -oz rates of Sulfometuron or Metsulfuron, but not when added to Chlorsulfuron. Effective seedhead suppression was obtained at this location with rates of Sulfometuron above  $\frac{1}{4}$  oz per acre. Control from Chlorsulfuron or Metsulfuron was poor in this test. Combinations of Sulfometuron and Glyphosate were much more effective than comparable rates of Glyphosate applied alone. The results were similar to those obtained from the test near Clanton. However, effects of treatments on late season seedhead control were not obtained at this location.

TABLE 1 EFFECTS OF HERBICIDE TREATMENTS ON TALL FESCUE IN CHILTON COUNTY, ALABAMA, 1984

Application Rate (oz/acre)	Apr. 10 Appearance Rating <sup>a</sup> by Application Date		Apr. 26 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date		May 22 Appearance Rating by Application Date		May 22 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date	
	March 15	March 30	March 15	March 30	March 15	March 30	March 15	March 30
<b>Chlorsulfuron</b>								
1/8	60 b <sup>b</sup>	70 b	4 bc	10 ab	93 a	88 a	21 b	24 b
1/4	70 b	73 b	9 abc	9 abc	92 a	93 a	23 b	21 b
1/2	55 bc	63 b	8 abc	9 abc	87 a	87 a	17 b	25 b
3/4	53 bc	70 b	6 bc	5 bc	97 a	90 a	18 b	20 b
1/8 <sup>c</sup>	35 c	72 b	3 bc	7 bc	92 a	85 a	19 b	20 b
1/2 <sup>c</sup>	55 bc	73 b	4 bc	2 c	93 a	92 a	19 b	12 b
Check	90 a	90 a	14 a	14 a	94 a	94 a	35 a	35 a
<b>Metsulfuron</b>								
1/8	58 bcde <sup>b</sup>	68 bcd	7 bc	2 c	95 a	88	17 bc	15 bc
1/4 <sup>c</sup>	47 ef	55 cd	4 bc	1 c	93 a	73 a	18 bc	10 bc
1/2 <sup>c</sup>	50 def	72 bcd	3 bc	1 c	92 a	78 a	12 bc	10 bc
3/4 <sup>c</sup>	32 f	63 bcd	1 c	0 c	92 a	75 a	17 bc	8 c
1/8	63 bcde	67 bcd	10 ab	6 bc	87 a	85 a	36 a	23 bc
1/2	50 def	77 b	5 bc	5 bc	97 a	85 a	12 c	26 b
Check	90 a	90 a	14 a	14 a	94 a	94 a	35 a	35 a
<b>Sulfometuron</b>								
1/8	45 cdef <sup>b</sup>	72 b	1 b	12 a	93 ab	88 ab	12 b	11 b
1/4	57 bcd	67 bc	2 b	12 a	93 ab	88 ab	7 c	11 b
1/2	53 bcde	65 bc	4 b	4 b	83 abc	82 abc	12 b	17 b
3/4	52 bcde	62 bc	1 b	2 b	70 bcd	78 bc	11 b	4 c
1.0	28 f	65 bc	0 b	1 b	23 de	22 e	0 c	2 c
1/8 <sup>c</sup>	33 ef	68 b	0 b	2 b	87 ab	92 ab	3 c	9 c
1/2 <sup>c</sup>	37 def	63 bc	0 b	0 b	55 cd	45 d	0 c	3 c
Check	90 a	90 a	14 a	14 a	94 a	94 a	35 a	35 a
<b>Glyphosate and Sulfometuron<sup>d</sup></b>								
4	65 bcde <sup>c</sup>	70 b	6 b	4 b	87 abcd	90 abcd	21 b	10 bcdef
6	60 bcde	68 bc	3 b	3 b	93 ab	88 abcd	20 bc	17 bcde
8	47 cdefg	57 bcde	1 b	3 b	92 abc	85 abcde	12 bcde	9 bcdef
(4+1/4) <sup>e</sup>	43 efg	67 bcd	0 b	1 b	65 cde	85 abcde	1 f	6 bcdef
(4+1.0)	33 fg	63 bcde	0 b	0 b	17 f	20 f	1 f	1 f
(8+1/4)	28 g	45 defg	0 b	0 b	82 abcde	78 bcde	7 bcdef	6 bcdef
(8+1/2)	43 efg	62 bcde	0 b	0 b	63 de	63 e	3 def	3 de
(8+1.0)	27 g	65 bcde	0 b	0 b	15 f	28 f	0 f	1 f
Check	90 a	90 a	14 a	14 a	94 a	94 a	35 a	35 a

<sup>a</sup>Ratings based on 0 to 100 scale with 0 = bare ground and 100 = ideal turf.

<sup>b</sup>Means within columns not followed by the same letter are different ( $P = 0.05$ ) by Duncan's multiple-range test.

<sup>c</sup>Surfactant (X-77) added at the rate of 0.75 percent by volume to spray admixture.

<sup>d</sup>Surfactant (X-77) added at the rate of 0.5 percent by volume to spray admixture.

<sup>e</sup>First value = Glyphosate; second value = Sulfometuron.

TABLE 2 EFFECTS OF HERBICIDE TREATMENTS ON TALL  
FESCUE IN LEE COUNTY, ALABAMA, 1984

Application Rate (oz/acre)	Apr. 10 Appearance Rating <sup>a</sup> by Application Date		Apr. 27 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date	
	March 15	March 30	March 15	March 30
Chlorsulfuron				
1/8	58 bcdef <sup>b</sup>	67 bcd	32 abc	36 a
1/4	55 cdef	67 bcd	46 a	47 a
1/2	52 def	65 bcde	19 bcde	26 bcd
3/4	43 f	73 b	35 ab	13 cde
1/8 <sup>c</sup>	48 ef	68 bc	12 cde	32 abc
1/2 <sup>c</sup>	47 f	67 bcd	5 e	9 de
Check	83 a	83 a	34 ab	34 ab
Metsulfuron				
1/8	45 def <sup>b</sup>	63 bc	10 cde	14 bcde
1/4	42 ef	60 bcd	23 bcd	5 de
1/2	47 def	72 b	13 cde	10 de
3/4	35 f	60 bcd	9 cde	1 e
1/8 <sup>c</sup>	52 cde	67 bc	20 bcde	52 a
1/2 <sup>c</sup>	47 def	68 bc	29 bc	18 bcde
Check	83 a	83 a	34 ab	34 ab
Sulfometuron				
1/8	60 cde <sup>b</sup>	77 ab	24 a	22 ab
1/4	50 def	70 bc	16 bcd	20 bc
1/2	37 g	75 abc	2 d	8 bcd
3/4	40 fg	65 bcd	6 bcd	3 cd
1.0	38 g	65 bcd	1 d	0 d
1/8 <sup>c</sup>	47 efg	70 bc	1 d	5 cd
1/2 <sup>c</sup>	45 efg	70 bc	3 cd	1 d
Check	83 a	83 a	34 a	34 a
Glyphosate and Sulfometuron <sup>d</sup>				
4	48 bcde <sup>b</sup>	60 b	15 abcd	38 ab
6	37 defg	60 b	5 cd	10 bcd
8	35 efg	55 bc	9 bcd	4 cd
(4+1/4) <sup>e</sup>	38 cdefg	55 bc	4 cd	0 d
(4+1.0)	32 efg	57 b	1 d	3 d
(8+1/4)	30 fg	45 bcdef	2 d	1 d
(8+1/2)	23 gh	53 bcd	1 d	0 d
(8+1.0)	17 h	53 bcd	2 d	0 d
Check	83 a	83 a	34 a	34 a

<sup>a</sup>Ratings based on 0 to 100 scale with 0 = bare ground and 100 = ideal turf.

<sup>b</sup>Means within columns not followed by the same letter are different ( $P = 0.05$ ) by Duncan's multiple-range test.

<sup>c</sup>Surfactant (X-77) added at the rate of 0.75 percent by volume to spray admixture.

<sup>d</sup>Surfactant (X-77) added at the rate of 0.5 percent by volume to spray admixture.

<sup>e</sup>First value = Glyphosate; second value = Sulfometuron.

TABLE 3 EFFECTS OF HERBICIDE TREATMENTS ON TALL FESCUE IN BUTLER COUNTY, ALABAMA, 1985

Application Rate (oz/acre)	Apr. 17 Appearance Rating <sup>a</sup> by Application Date		May 2 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date		May 29 Appearance Rating by Application Date		May 29 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date	
	March 15	March 30	March 15	March 30	March 15	March 30	March 15	March 30
Chlorsulfuron								
1/8	68 bcd <sup>b</sup>	87 bcd	20 bc	8 c	58 a	55 a	24 bcd	14 d
1/4	77 bcd	90 bc	21 bc	20 bc	78 a	73 a	23 bcd	34 abc
1/2	75 cd	87 bcd	24 b	16 bc	68 a	70 a	33 abc	17 d
3/4	60 e	91 b	11 bc	15 bc	72 a	65 a	17 d	22 cd
1/8 <sup>c</sup>	70 de	82 bcd	17 bc	12 bc	58 a	70 a	23 bcd	22 cd
1/2 <sup>c</sup>	70 de	75 cd	17 bc	7 c	72 a	75 a	16 d	18 d
Check	99 a	99 a	47 a	47 a	73 a	73 a	38 a	38 a
Metsulfuron								
1/8	73 bcd <sup>b</sup>	83 bcd	9 bc	6 cde	70 ab	72 ab	14 b	14 b
1/4 <sup>c</sup>	77 bcd	80 bcd	9 bc	7 bcde	78 a	80 a	12 b	4 b
1/2 <sup>c</sup>	80 bcd	85 b	21 b	6 cde	67 ab	72 ab	10 b	3 b
3/4 <sup>c</sup>	45 e	63 de	4 de	1 e	58 ab	62 ab	7 b	1 b
1/8	65 cde	85 b	7 bcde	7 bcde	50 b	62 ab	12 b	18 b
1/2	73 bcd	82 bcd	12 bcde	6 cde	70 ab	63 ab	13 b	11 b
Check	99 a	99 a	47 a	47 a	73 a	73 ab	38 a	38 a
Sulfometuron								
1/8	78 b <sup>b</sup>	85 b	7 b	7 b	72 a	72 a	10 b	11 b
1/4	67 b	85 b	5 b	3 b	68 ab	60 abc	6 b	4 b
1/2	58 cd	75 bc	1 b	2 b	62 ab	50 abc	3 b	3 b
3/4	58 cd	78 b	0 b	2 b	43 bcd	33 cd	1 b	1 b
1.0	47 d	82 b	0 b	1 b	23 d	23 d	0 b	1 b
1/8 <sup>c</sup>	70 bcd	78 b	2 b	0 b	72 a	57 abc	7 b	1 b
1/2 <sup>c</sup>	58 cd	77 b	0 b	2 b	60 abc	52 abc	1 b	4 b
Check	99 a	99 a	47 a	47 a	73 a	73 a	38 a	38 a
Glyphosate and Sulfometuron <sup>d</sup>								
4	80 b <sup>b</sup>	82 b	15 b	2 c	75 a	65 ab	21 b	6 cd
6	73 bc	63 bcdefg	12 bc	2 c	63 abc	63 abc	17 bc	2 cd
8	65 bcdef	52 cdefgh	6 bc	1 c	77 a	68 ab	12 bcd	1 d
(4+1/4) <sup>e</sup>	43 fgh	50 defgh	2 c	0 c	58 abc	58 abc	4 cd	2 cd
(4+1.0)	48 efgh	50 defgh	1 c	1 c	43 bcde	32 defg	2 cd	1 d
(8+1/4)	50 efgh	40 gh	0 c	0 c	53 abc	22 efg	1 d	0 d
(8+1/2)	33 h	35 h	0 c	0 c	38 cdef	20 efg	0 d	0 d
(8+1.0)	35 h	32 h	0 c	0 c	13 g	18 fg	0 d	0 d
Check	99 a	99 a	47 a	47 a	73 a	73 a	38 a	38 a

<sup>a</sup>Ratings based on 0 to 100 scale with 0 = bare ground and 100 = ideal turf.

<sup>b</sup>Means within columns not followed by the same letter are different ( $P = 0.05$ ) by Duncan's multiple-range test.

<sup>c</sup>Surfactant (X-77) added at the rate of 0.75 percent by volume to spray admixture.

<sup>d</sup>Surfactant (X-77) added at the rate of 0.5 percent by volume to spray admixture.

<sup>e</sup>First value = Glyphosate; second value = Sulfometuron.

TABLE 4 EFFECTS OF HERBICIDE TREATMENTS ON TALL FESCUE IN MACON COUNTY, ALABAMA, 1985

Application Rate (oz/acre)	Apr. 17 Appearance Rating <sup>a</sup> by Application Date		May 2 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date		May 30 Appearance Rating by Application Date		May 30 Seedhead Counts (no./yd <sup>2</sup> ) by Application Date	
	March 15	March 30	March 15	March 30	March 15	March 30	March 15	March 30
Chlorsulfuron								
1/8	68 b <sup>b</sup>	75 b	7 c	7 c	57 ab	60 a	9 de	11 cde
1/4	82 b	78 b	20 b	11 bc	68 a	62 a	25 b	17 bcde
1/2	67 b	82 b	12 bc	14 bc	50 b	67 a	7 e	20 bcd
3/4	72 b	83 b	12 bc	7 c	57 ab	58 a	20 bc	14 bcde
1/8 <sup>c</sup>	82 b	85 b	16 bc	11 bc	72 a	68 a	20 bcd	8 de
1/2 <sup>c</sup>	72 b	85 b	7 c	12 bc	72 a	67 a	12 cde	20 bc
Check	99 a	99 a	32 a	32 a	70 a	70 a	40 a	40 a
Metsulfuron								
1/8 <sup>c</sup>	70 bc <sup>b</sup>	82 b	10 bc	4 c	57 ab	68 a	14 b	6 b
1/4 <sup>c</sup>	67 bc	82 b	14 b	11 bc	67 a	67 a	15 b	15 b
1/2 <sup>c</sup>	63 bc	70 bc	5 c	1 c	48 b	55 ab	5 b	8 b
3/4	53 c	75 b	6 bc	5 c	40 b	62 a	5 b	12 b
1/8	73 b	83 b	17 b	16 b	73 a	60 a	16 b	16 b
1/2	70 bc	77 b	7 bc	6 bc	57 ab	62 a	7 b	8 b
Check	99 a	99 a	32 a	32 a	70 a	70 a	40 a	40 a
Sulfometuron								
1/8	78 bcd <sup>b</sup>	85 b	10 b	3 b	63 ab	53 bcd	16 b	4 c
1/4	72 bcd	82 bc	3 b	0 b	65 a	52 abcde	3 c	2 b
1/2	75 bcd	82 bc	2 b	0 b	43 abcdef	38 abcdef	8 bc	1 c
3/4	62 cd	72 bcd	0 b	1 b	70 bcd	78 bc	11 b	4 c
1.0	58 d	73 bcd	1 b	0 b	25 cdef	17 f	1 c	0 c
1/8 <sup>c</sup>	62 cd	80 bcd	0 b	0 b	20 ef	40 abcdef	0 c	0 c
1/2 <sup>c</sup>	63 cd	80 bcd	0 b	0 b	40 abcdef	22 ef	4 c	0 c
Check	99 a	99 a	32 a	32 a	70 a	70 a	40 a	40 a
Glyphosate and Sulfometuron <sup>d</sup>								
4	70 bc <sup>b</sup>	67 bc	7 b	0 b	68 a	43 bcde	9 bc	2 c
6	73 b	58 bcd	6 b	0 b	67 a	70 ab	7 bc	5 bc
8	42 de	48 cdee	10 b	0 b	68 a	57 abc	17 b	1 c
(4+1/4) <sup>e</sup>	47 cde	48 cde	0 b	0 b	27 cde	37 bcd	1 c	0 c
(4+1.0)	40 de	53 bcde	0 b	0 b	20 de	32 bcde	0 c	0 c
(8+1/4)	47 cde	40 de	0 b	0 b	40 bcde	20 de	0 c	0 c
(8+1/2)	27 e	38 de	0 b	0 b	18 de	17 de	0 c	0 c
(8+1.0)	30 e	35 de	0 b	0 b	12 e	12 e	0 c	0 c
Check	99 a	99 a	32 a	32 a	70 a	70 a	40 a	40 a

<sup>a</sup>Ratings based on 0 to 100 scale with 0 = bare ground and 100 = ideal turf.<sup>b</sup>Means within columns not followed by the same letter are different ( $P = 0.05$ ) by Duncan's multiple-range test.<sup>c</sup>Surfactant (X-77) added at the rate of 0.75 percent by volume to spray admixture.<sup>d</sup>Surfactant (X-77) added at the rate of 0.5 percent by volume to spray admixture.<sup>e</sup>First value = Glyphosate; second value = Sulfometuron.

Results at both locations in 1985 were generally comparable with those from the 1984 experiments (Tables 3 and 4). Again no great response to rate, date, or surfactant from either Metsulfuron or Chlorsulfuron at either location was found in terms of seedhead suppression or turf appearance. All treatments reduced seedheads and decreased the appearance of the turf early in the season. Again, as in 1984, Sulfometuron responses were influenced by rate and, in some cases, by timing of applications. The rates above  $\frac{1}{2}$  oz per acre tended to cause more injury and seedhead reductions than the lower rates. There were no increases in seedhead control due to combinations of Glyphosate and Sulfometuron over the results from either herbicide applied alone.

Several herbicides, including Chlorsulfuron, Sulfometuron, Metsulfuron, and Glyphosate, offer control of seedheads in tall fescue. The timing of applications of these materials does not appear to be as critical as that of the currently used plant growth regulators. This factor would make it easier to work seedhead control applications into the vegetation management program.

It appears that Sulfometuron offers the most promise among the herbicides tested for control of tall fescue seedheads. The addition of Glyphosate to Sulfometuron increased injury to the tall fescue but did not increase control of seedheads. Chlorsulfuron and Metsulfuron were generally less effective than Sulfometuron.

One serious problem is the injury, which causes the turf to be unsightly for several weeks. This injury can lead to serious stand reductions, especially if the treatment is repeated annually. Of the materials tested, Sulfometuron and Glyphosate appear to offer the most promise for adequate seedhead control with acceptable injury to the turf.

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