

Herbicide Safety and Weed Control Comparison in Spring Seeded Tall Fescue

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SUMMARY: Early spring preemergence herbicides are often necessary in Indiana to prevent troublesome annual grassy weeds such as crabgrass and goosegrass. However, all preemergence herbicides (except Tupersan) work to prevent the emergence of turfgrass seeds as well as weed seeds, so a turf manager cannot use a preemergence herbicide if they plan on seeding in the spring. Postemergence herbicides can also be used to control crabgrass and other weeds in spring when seeding turf. The objective of this experiment was to evaluate six products at three different application timings for use in establishing tall fescue from seed in the spring. Tall fescue coverage was highest (>55%) when Tenacity was applied at 8 oz/A on the day of seeding or the day of emergence, and when Tupersan was applied at seeding at 12 lb/A. Crabgrass coverage when rated on 11 August was lowest for Tenacity, Tupersan and Drive XLR8 applied at seeding; Tenacity, Drive and SquareOne applied at emergence; and Tenacity applied at 2WAE. The purpose of this experiment was to test the efficacy of a single application of specific products at a specific timing. However, many of the product labels recommend more than a single application for best results. Turf managers should use this research to help choose the optimum product and timing for an application with the intention to scout the location and make a follow-up application for weed control at a later date for best results and optimum establishment.

Early spring preemergence herbicides are often necessary in Indiana to prevent troublesome annual grassy weeds such as crabgrass and goosegrass. Additionally, these applications help to prevent the emergence of some broadleaf weeds. Most preemergence herbicides work to kill weeds by preventing cell division causing death to weed seedlings shortly after they germinate. All preemergence herbicides (except Tupersan) work to prevent the emergence of turfgrass seeds as well as weed seeds, so a turf manager cannot use a preemergence herbicide if they plan on seeding in the spring. As mentioned, Tupersan (siduron) may be used for preemergence control of annual

grassy weeds in newly seeded cool-season turf. This herbicide is more expensive and short-lived, but it is the only safe preemergence herbicide to apply at the time of seeding.

Another strategy is to use a postemergence herbicide instead of a preemergence herbicide to control crabgrass and other weeds in late May and June that is safe to use on seedling turf. Options include Drive XLR8 (quinclorac), Quicksilver (carfentrazone), Tenacity (mesotrione), and SquareOne (quinclorac + carfentrazone). These products can be most safely used very soon after seeding to control crabgrass (see label for exact details on each turf species). If the seedlings are more mature (have been mown 2-3 times following their emergence) then other products such as Q4 Plus (quinclorac + sulfentrazone + 2,4-D + dicamba), Onetime (quinclorac + MCPP + dicamba), or Solitare (quinclorac + sulfentrazone) can also be used. The objective of this experiment was to evaluate six products at three different application timings for use in establishing tall fescue from seed in the spring.

ADDITIONAL INDEX WORDS:

aminocyclopyrachlor; carfentrazone; Drive XLR8; *Festuca arundinacea*; Imprelis; mesotrione; QuickSilver; quinclorac; siduron; SquareOne; Tenacity; Tupersan.

MATERIALS AND METHODS

The experiment was conducted at the W.H. Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. The area had been fallow for a year and had a history of weed pressure. Tall fescue was seeded on 19 May 2011 at 7 lbs/1000 ft² and plots were covered initially with a seed germination blanket to reduce seed movement prior to germination. The cover was removed prior to emergence following germination. Plots were also overseeded with large crabgrass, yellow nutsedge (tubers), ragweed, and purslane at the same time as the tall fescue. Yellow nutsedge tubers, 10 per plot, were inserted 1 inch deep on a grid so plants could be counted.

Experimental design was a 7 (herbicides) × 3 (timings) factorial in a randomized complete block with three replications and an individual plot size of 25 ft². The seven herbicide treatments were Tenacity at 8 fl oz/A, Tupersan at 12 lb/A, Drive XLR8 at 64 oz/A, SquareOne at 12 oz/A, Imprelis at 4.5 fl oz/A, QuickSilver at 2.1 oz/A, and the Untreated check. The three timings were day of seeding (19 May), at emergence (30 May), and 2 weeks after emergence (13 June). Plots were mown as needed at 3 inches. Plots were treated with herbicides on 19 May, 30 May, and 13 June. Herbicides were applied in 80 gpa water with a CO₂-pressurized sprayer at 30 psi. A non-ionic surfactant at the rate of 0.25 % v/v was included with the Tenacity treatments applied 30 May and 13 June. Plots were visually rated for percent weed and turf coverage. All data were analyzed using SAS (SAS Institute, Inc). Means were separated using Fisher's protected least significant difference when F tests were significant at $\alpha=0.05$.

RESULTS AND DISCUSSION

Tall fescue coverage was highest (>55%) when Tenacity was applied at 8 oz/A on the day of seeding or the day of emergence, and when Tupersan was applied at seeding at 12 lb/A (Fig. 1; Table 1). Goosegrass coverage at the end of the study on 11 August was inconsistent across treatments and not likely reliable do to inconsistent distribution as the untreated check was among the treatments with the lowest coverage (Table 2). Purslane coverage was generally highest among Tenacity and Drive XLR8 treatments (Table 2). Crabgrass coverage when rated on 11 August was lowest for Tenacity, Tupersan and Drive XLR8 applied at

seeding; Tenacity, Drive and SquareOne applied at emergence; and Tenacity applied at 2WAE (Table 2).

The purpose of this experiment was to test the efficacy of a single application of specific products at a specific timing. However, many of the product labels recommend more than a single application for best results. Turf managers should use this research to help choose the optimum product and timing for an application with the intention to scout the location and make a follow-up application for weed control at a later date for best results and optimum establishment. In this experiment Tenacity provided the best results at seeding and emergence, but Tupersan also produced good results when applied at seeding.

Timing/Herbicide	Tenacity	Tupersan	Drive XLR8	SquareOne	Imprelis	Quicksilver	Untreated
At Seeding (19 May)							
At Emergence (30 May)							

Fig. 1. Turf and weed coverage on 13 June 2011 for the first two application timings and the seven herbicide treatments. These photos provide evidence of the effectiveness of the applications at emergence, but Tenacity and Tupersan applied at seeding also proved to be successful treatments in the final analysis despite their appearance in these photos.

Table 1. Herbicide effects on tall fescue coverage.

Treatments Herbicide	timing	Tall fescue coverage		
		6 July	3 Aug	11 Aug
		%		
Tenacity	DOS ^a	17	58 ab ^b	58 a
Tupersan	DOS	11	57 ab	56 a
Drive XLR8	DOS	4	3 c	8 b
SquareOne	DOS	4	3 c	5 b
Imprelis	DOS	1	1 c	2 b
QuickSilver	DOS	0	0 c	2 b
Untreated	DOS	2	1 c	2 b
Tenacity	AE	7	88 a	80 a
Tupersan	AE	7	28 bc	22 b
Drive XLR8	AE	6	0 c	2 b
SquareOne	AE	27	12 c	17 b
Imprelis	AE	13	25 bc	17 b
QuickSilver	AE	17	2 c	3 b
Untreated	AE	1	1 c	2 b
Tenacity	2WAE	5	10 c	22 b
Tupersan	2WAE	1	0 c	2 b
Drive XLR8	2WAE	17	3 c	6 b
SquareOne	2WAE	7	0 c	0 b
Imprelis	2WAE	8	7 c	5 b
QuickSilver	2WAE	11	6 c	5 b
Untreated	2WAE	2	1 c	1 b
ANOVA				
Herbicide		NS	<0.0001	<0.0001
Time		NS	0.0184	0.0227
Herbicide × Time		NS	0.0302	0.0461

^a DOS = day of seeding; AE = at emergence; 2WAE = two weeks after emergence.

^b Within columns, means followed by the same letter are similar.

Table 2. Herbicide effects on goosegrass, crabgrass, and purslane coverage.

Treatments Herbicide	timing	Coverage on 11 Aug		
		Goosegrass	Crabgrass	Purslane
		%		
Tenacity	DOS ^a	1 d ^b	38 cde	7 de
Tupersan	DOS	2 d	35 cde	1 e
Drive XLR8	DOS	18 bcd	43 bcde	29 bc
SquareOne	DOS	5 d	88 ab	1 e
Imprelis	DOS	2 d	91 a	1 e
QuickSilver	DOS	1 d	96 a	1 e
Untreated	DOS	1 d	92 a	8 de
Tenacity	AE	0 d	0 e	18 cd
Tupersan	AE	7 d	64 abcd	1 e
Drive XLR8	AE	43 b	0 e	55 a
SquareOne	AE	72 a	0 e	4 de
Imprelis	AE	11 cd	57 abcd	0 e
QuickSilver	AE	4 d	91 a	0 e
Untreated	AE	0 d	89 a	5 de
Tenacity	2WAE	5 d	27 de	35 b
Tupersan	2WAE	7 d	90 a	2 e
Drive XLR8	2WAE	5 d	68 abcd	15 cde
SquareOne	2WAE	23 bcd	73 abc	0 e
Imprelis	2WAE	35 bc	57 abcd	0 e
QuickSilver	2WAE	16 bcd	74 abc	0 e
Untreated	2WAE	9 cd	88 ab	7 de
ANOVA				
Herbicide		0.0017	<0.0001	<0.0001
Time		0.0179	0.0043	NS
Herbicide × Time		0.0091	0.0180	0.0018

^a DOS = day of seeding; AE = at emergence; 2WAE = two weeks after emergence.

^b Within columns, means followed by the same letter are similar.