

Tenacity Turf Safety for Postemergence Applications

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Objectives

The objectives of this study were to determine turf safety with Tenacity using a boom application versus a handheld application gun. Turf safety was to be determined on both perennial ryegrass and tall fescue at one, two, and three times the labeled rate for each species, respectively, applied two times (21 days apart) during the growing season.

Materials

This study was conducted at the Iowa State University Horticulture Research Station. The soil in the study areas is a disturbed Nicollet clay soil, with a monoculture of 'Millennium II' tall fescue for the turf safety trial on tall fescue. The perennial ryegrass used for the ryegrass safety aspect of the trial was a blend of 38% 'Divine', 34% 'Majesty', and 25% 'Secretariat' perennial ryegrass. The study areas were designed as randomized complete block designs with three replications each.

The first treatment (Tables 1 & 2) was applied 21 May and the sequential application was made 11 June. Treatments applied using a boom were applied using a CO₂ backpack sprayer at 40 psi, and a spray volume equivalency rate of two gallons/1000ft², using TeeJet[®] 8002VS nozzles. Treatments applied using the handheld gun were applied using a Lesco Chemlawn gun with a 1.5 gallons per minute nozzle that was modified to allow full coverage of the plot area (25ft²).

Data collected included overall grass quality in the plots, percentage damage, and crabgrass ratings at the end of the season for both the ryegrass (Tables 3 & 4) and the tall fescue (Tables 5 & 6). Additional data were taken for percentage damage on the tall fescue because of the severe damage observed to the particular cultivar used. Photographs were also taken each date that data were recorded.

Results

Quality data for the perennial ryegrass plots are in Table 3, and quality data for the tall fescue plots are in Table 5. Percentage damage data for the ryegrass plots are in Table 4, and percentage damage data for the tall fescue plots are in Table 6. Because of the amount of data in these studies, and the comparisons that could be made, we will not go into great detail comparing each treatment to each other at all dates.

In general, perennial ryegrass plots treated with the Chemlawn gun were either no different than plots treated with the spray boom, or had slightly lower quality ratings than the plots treated with the boom (Table 3). The same basic trend was observed on the tall fescue plots. Fescue plots treated with the Chemlawn gun were either no different than fescue plots treated with the spray boom, or had slightly lower quality ratings (Table 5).

The reason for the lower quality ratings on plots treated with the Chemlawn gun could possibly be attributed to the fact that sections of the plots may have received uneven concentrations of Tenacity, whereas the plots treated with the boom sprayer had a more uniform application.

Looking at the percentage damage to the plots, there are similar trends to that of the quality data for both the ryegrass and tall fescue. We see that the plots treated with the Chemlawn gun had a higher percentage of damage than the plots treated with spray boom, or there was no difference (Tables 4 & 6). There may be one exception to that trend in the tall fescue plots for the rating date six weeks after the second application for the highest rate. In this case, there remained more damage to the boom-treated plots than to the Chemlawn-treated plots (Table 6).

The tall fescue trial appeared to be hit especially hard from the second application of Tenacity. One hypothesis as to why this happened may be due to the fact that it was an exceptionally hot and humid couple of weeks that may have intensified the effect of the Tenacity. The photographs illustrate the point and are quite striking. Because of the severe damage it caused, this is most likely why there are higher crabgrass populations in the plots treated with the higher rates. However, there was no significant difference between treated plots for crabgrass populations.

Table 1. Treatment list, frequency, and application method for tall fescue study

TRT	Product	Formulation	Rate	Units	Frequency/Timing	ml/plot	Spray volume (gallons/1000ft ²)	Application method
1	Control							
2	Tenacity	4 SC	8	fl oz/A	2 app, 3 wks apart	0.136	2	Lawn care gun
3	Tenacity	4 SC	16	fl oz/A	2 app, 3 wks apart	0.272	2	Lawn care gun
4	Tenacity	4 SC	24	fl oz/A	2 app, 3 wks apart	0.408	2	Lawn care gun
5	Tenacity	4 SC	8	fl oz/A	2 app, 3 wks apart	0.136	2	Flat fan boom
6	Tenacity	4 SC	16	fl oz/A	2 app, 3 wks apart	0.272	2	Flat fan boom
7	Tenacity	4 SC	24	fl oz/A	2 app, 3 wks apart	0.408	2	Flat fan boom

Table 2. Treatment list, frequency, and application method for perennial ryegrass study.

TRT	Product	Formulation	Rate	Units	Frequency/Timing	Spray volume (gallons/1000ft ²)	ml/plot	Application method
1	Control						0	
2	Tenacity	4 SC	5	fl oz/A	2 app, 3 wks apart	2	0.085	Lawn care gun
3	Tenacity	4 SC	10	fl oz/A	2 app, 3 wks apart	2	0.17	Lawn care gun
4	Tenacity	4 SC	15	fl oz/A	2 app, 3 wks apart	2	0.255	Lawn care gun
5	Tenacity	4 SC	5	fl oz/A	2 app, 3 wks apart	2	0.085	Flat fan boom
6	Tenacity	4 SC	10	fl oz/A	2 app, 3 wks apart	2	0.17	Flat fan boom
7	Tenacity	4 SC	15	fl oz/A	2 app, 3 wks apart	2	0.255	Flat fan boom

Table 3. Perennial ryegrass quality ratings. Ratings based on 9-1 scale, with 9 = highest quality; 1 = lowest quality; 6 = minimally acceptable turf.

Treatment	Quality						
	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul
1	9.0	9.0	9.0	9.0	9.0	9.0	9.0
2	8.0	5.7	8.0	7.3	7.7	7.3	8.3
3	7.0	3.0	6.3	5.3	4.3	5.3	7.7
4	6.0	2.0	5.0	3.0	2.7	4.0	6.3
5	7.3	7.0	7.7	7.7	7.7	7.7	9.0
6	7.0	4.7	7.7	6.3	5.0	6.3	9.0
7	6.3	3.3	7.0	4.0	3.3	4.3	8.3
LSD (0.05)	0.6	0.7	0.7	0.8	1.0	1.3	0.7

Table 4. Perennial ryegrass percentage damage and crabgrass percentage cover.

Treatment	Percentage damage							Crabgrass
	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	18-Aug
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7
2	8.3	15.0	2.3	3.7	3.0	3.7	1.7	4.7
3	18.3	41.7	13.3	18.3	28.3	16.7	3.3	6.0
4	40.0	66.7	25.0	68.3	53.3	35.0	13.3	6.7
5	11.7	5.0	1.3	4.3	3.0	2.0	0.0	3.0
6	15.0	26.7	3.0	10.0	21.7	9.0	0.0	4.3
7	31.7	33.3	8.3	36.7	35.0	33.3	2.0	7.7
LSD (0.05)	13.5	11.9	6.1	7.0	8.3	7.7	2.9	NS

Table 5. Tall fescue quality ratings. Ratings based on 9-1 scale, with 9 = highest quality; 1 = lowest quality; 6 = minimally acceptable turf.

Treatment	Quality						
	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul
1	9.0	9.0	9.0	9.0	9.0	9.0	9.0
2	8.0	6.3	7.3	5.7	4.3	4.7	6.7
3	7.0	3.3	5.7	3.7	2.3	2.7	5.0
4	6.7	2.0	2.0	2.0	1.0	2.0	3.0
5	7.3	6.7	8.0	5.3	4.7	5.3	7.3
6	7.0	4.7	7.0	4.0	2.3	3.0	5.0
7	6.7	3.0	4.3	3.0	1.3	1.3	2.7
LSD (0.05)	1.0	1.0	1.4	0.7	0.8	1.1	1.4

Table 6. Tall fescue percentage damage and crabgrass percentage cover.

Treatment	Percentage damage									Crabgrass
	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	23-Jul	6-Aug	18-Aug
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.0
2	10.0	10.0	5.7	33.3	38.3	23.3	10.0	5.7	5.0	4.3
3	13.3	58.3	23.3	56.7	71.7	50.0	21.7	16.7	13.3	13.0
4	25.0	81.7	68.3	85.0	88.3	75.0	46.7	28.3	23.3	12.7
5	15.0	8.3	1.0	33.3	33.3	20.0	12.7	2.7	4.0	2.0
6	21.7	38.3	10.3	58.3	66.7	48.3	16.7	15.3	7.3	6.3
7	26.7	76.7	35.0	75.0	91.7	81.7	51.7	38.3	23.3	16.7
LSD (0.05)	NS	12.5	13.9	9.3	18.7	15.0	11.9	9.8	7.9	NS