

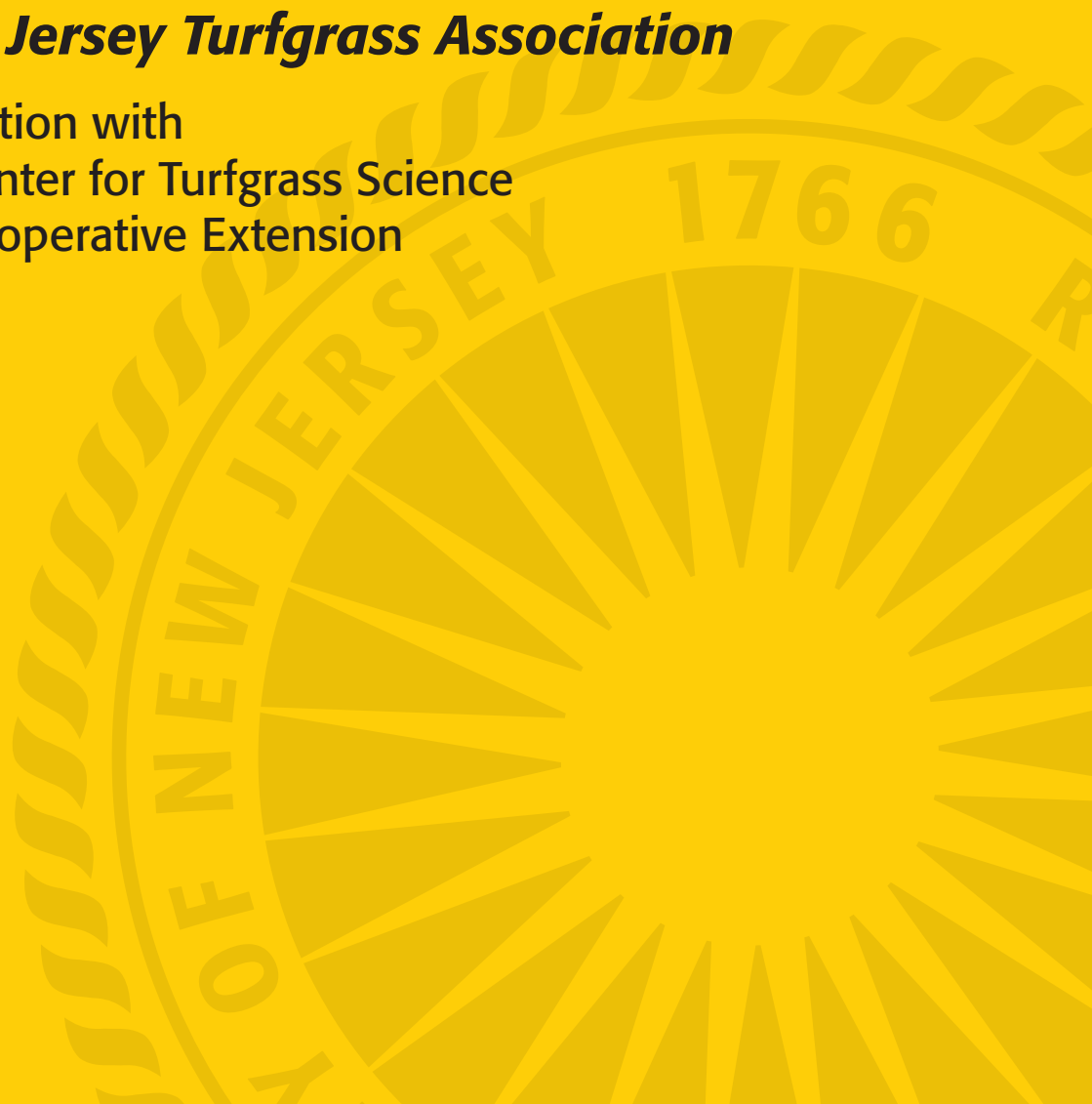
# RUTGERS

New Jersey Agricultural  
Experiment Station

## **2012 Turfgrass Proceedings**

***The New Jersey Turfgrass Association***

In Cooperation with  
Rutgers Center for Turfgrass Science  
Rutgers Cooperative Extension



# **2012 RUTGERS TURFGRASS PROCEEDINGS**

of the

## **GREEN EXPO Turf and Landscape Conference**

**December 4-6, 2012**

**Trump Taj Mahal**

**Atlantic City, New Jersey**

The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey in cooperation with the New Jersey Turfgrass Association. The purpose of this document is to provide a forum for the dissemination of information and the exchange of ideas and knowledge. The proceedings provide turfgrass managers, research scientists, extension specialists, and industry personnel with opportunities to communicate with co-workers. Through this forum, these professionals also reach a more general audience, which includes the public.

This publication includes lecture notes of papers presented at the 2012 GREEN EXPO Turf and Landscape Conference. Publication of these lectures provides a readily available source of information

covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

This proceedings also includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to Barbara Fitzgerald, Anne Diglio, and Ann Jenkins for administrative and secretarial support.

Dr. Ann Brooks Gould, Editor  
Dr. Bruce B. Clarke, Coordinator

## RESPONSE OF TALL FESCUE TO WEAR DURING 2012

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Tall fescue (*Festuca arundinacea* Schreb.), a cool-season turfgrass species well adapted to the transition zone, is a sound choice for large recreational areas where a uniform wear-resistant surface is needed (Juska et al., 1969). Tall fescue breeding improvements, beginning with the release of Rebel in 1979 (Funk et al., 1981), have resulted in a large selection of tall fescue cultivars with darker color, finer leaf texture, lower growth habit, denser turf canopy, and increased resistance to disease compared to older cultivars that exhibited low shoot density and coarse leaf texture. Improved tall fescue cultivars can provide a higher quality turf for lawns, parks, and sports fields (Bokmeyer et al., 2008).

The traffic (wear and compaction) tolerance of newer tall fescue cultivars has been increasingly investigated. Park et al. (2004) and Bughara (2007) identified entries within the 2001 NTEP Tall Fescue Test that had improved traffic tolerance. Additionally, Park et al. (2009a) identified entries with better wear and traffic tolerance within the 2005 Cooperative Turfgrass Breeders Test (CTBT) Tall Fescue Trial (<http://www.ctbt-us.info/>) and the 2006 NTEP Tall Fescue Test, respectively. The wear tolerance of entries comprising the 2010 CTBT Tall Fescue Trial (Park et al., 2012) and seasonal traffic tolerance of tall fescue cultivars and selections in the 2006 NTEP Tall Fescue Test (Park et al., 2008, 2009b, 2010, 2011, 2012) have been annually reported in the Rutgers Turfgrass Proceedings.

In 2004, CTBT began sponsoring Kentucky bluegrass (*Poa pratensis* L.), perennial ryegrass (*Lolium perenne* L.), and tall fescue evaluations across numerous geographic and climatically diverse loca-

tions in the United States. A significant number of these are experimental selections, an indication of the effort turfgrass breeders are making to improve these species.

Turfgrass breeders would benefit from having access to wear tolerance data for newer tall fescue experimental selections as well as existing, commercially-available cultivars. The objective of this study was to assess the wear tolerance tall fescue cultivars and experimental selections comprising the 2010 CTBT tall fescue trial.

### MATERIALS AND METHODS

#### Evaluation Trial

The 104 entries of the 2010 CTBT tall fescue trial were seeded on 2 September 2010 as 5.5 x 3.5 ft plots on a loam at the Rutgers Horticultural Research Farm II in North Brunswick, NJ. The field was within a low-lying area of the research farm surrounded by woods on three sides and a row of trees on the fourth side, which decreased air circulation across the trial.

Soil test results from November 2011 indicated that the soil pH was 6.0; soil phosphorous (P) and potassium (K) were 259 and 435 lb per acre, respectively. The test was mowed approximately 2 times a week with a reel mower at a height of 1.5 inches. The test was minimally irrigated in 2012 to prevent severe drought stress. A total of 0.9 lb nitrogen (N) per 1000 ft<sup>2</sup> was applied in 2012 (0.5 and 0.4 lb N per 1000 ft<sup>2</sup> on 22 March and 13 May, respectively).

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## Wear Stress

Wear was applied to the trial using a modified machine similar to that described by Bonos et al. (2001) operated at a ground speed of 2.5 miles per hour (mph) and 250 rpm for the paddles. Two (2) passes per week were applied to approximately one-half of each plot (the portion of the plot that did not receive wear during 2011) during 8 June through 22 October 2012 (21 weeks; 42 total passes). Every other pass was made in the opposing direction of the previous pass.

## Plot Evaluation

Tall fescue tolerance to wear was visually assessed during 2012 using a 1 to 9 scale (9 = most dense, uniform turfgrass canopy, and least tissue bruising after traffic) on 28 June, 26 July, 29 August, 26 September, and 2 November 2012.

The non-worn one-half portion of each plot was rated for visual turf quality (i.e., overall appearance, turf color, uniformity, density, mowing quality, reduced rate of vertical growth, leaf texture, and freedom from insect and/or disease damage) on 23 April, 29 May, and 2 November 2012.

Spring green-up was visually rated on 23 March 2012 on the non-trafficked section of each plot using a 1 to 9 scale where 9 equaled the earliest spring green-up. Brown patch disease (caused by *Rhizoctonia solani*) susceptibility of the non-wear section of plots was assessed on 29 May and 14 August 2012 using a 1 to 9 scale where 9 equaled the least disease.

Wear and no-wear data were analyzed separately. The experimental design was a randomized complete block design with three replications. All data were subjected to analysis of variance and means were separated using the Fisher's protected least significant difference (LSD) test at  $p \leq 0.05$ .

## RESULTS: WEAR RESPONSE DURING 2012

### Wear Tolerance

The turf density and uniformity of tall fescue cultivars and experimental selections gradually declined as the number of wear passes increased during 2012. Analysis of variance determined that

there was no significant entry effect for wear tolerance data collected after 42 wear machine passes (2 November 2012); thus mean separation for entries was not performed for this rating date.

Entries with the best wear tolerance after 26 and 34 passes were PST-5GRB, ATF1618, IS-TF 219, PST-5AWT, PST-5V4, Rebel Exeda, ATF1548, PST-5LIV, Falcon IV, PST-5YMY, PST-5SIS, PST-5DVD-07, PSG 82BPRH, PST-5R05, PST-5MCD, ATF1566, PSG 8SP1, PPG-TF 117, PST-5SLV, Traverse, IS-TF 233C, PST-5R20, PSG 709509, Coronado TDH, and PST-R5NW (Table 1). PST-5GRB had the best wear tolerance after 16 wear passes in 2011 and 8, 16, 26, and 34 wear passes in 2012.

Catalyst, Wolfpack II, PSG 07-5, PST-5SXD, ATF1547, IS-TF 231C, PSG 07-9, PST-5T8E, Penn 1901, PSG3905, PSG 8308, PSG 6008, and Crossfire 3 had the poorest wear tolerance after 16, 26, and 34 passes; Kentucky 31 exhibited the poorest wear tolerance after 16 passes in 2011 and after 8, 16, 26, and 34 passes in 2012 (Table 1).

### Non-wear Portion of Plots

The best multi-year average turfgrass quality during 2011-2012 was exhibited by ATF1608, PPG-TF 106, IS-TF 224, ATF1611, IS-TF 223, Essential, IS-TF 227, PST-5GRB, ATF1571, ATF1612, ATF1613, Falcon V, PPG-TF 102, ATF1610, ATF1549, ATF1621, ATF1609, Shenandoah Elite, PPG-TF 116, 6351, ATF1550, Finelawn Xpress, Bullseye, IS-TF 233C, IS-TF 217, LW, PPG-TF 105, PST-5AWT, and ATF1614 (Table 2).

Kentucky 31 had the poorest average 2011-2012 turfgrass quality (Table 2). Other entries that exhibited poor average turfgrass quality (< 4.0) during 2011-2012 were STR 86QRH, ATF1491, Coronado TDH, and PSG 8GRTR.

Kentucky 31 exhibited the earliest spring green-up on 23 March 2012 (Table 2). Entries that exhibited the poorest spring green-up on 23 March 2012 were Firecracker LS, ATF1613, PSG 709509, PST-R5NW, PST-5T8E, PSG 8308, 3rd Millennium, Corona, 6351, PST-5LIV, PPG-TF 115, PPG-TF 101, PST-5R05, PSG 08-6, PSG 07-9, PST-5BGR, IS-TF 225, PSG3905, FCE3, Crossfire 3, IS-TF 226, PSG 6008, Spyder LS, PSG 5908, PPG-TF 117, Penn 1901, IS-TF 234C, PSG 07-5, IS-TF 230B, STR 86QRH, PST-5FDR, Raptor II, and IS-TF 231C.

Entries that exhibited the least brown patch on 29 May and 14 August 2012 were ATF1611, IS-TF 219, PST-5YMY, PPG-TF 102, IS-TF 225, Shenandoah Elite, PST-5GRB, and ATF1610 (Table 2).

Entries that were the most susceptible to brown patch on 29 May and 14 August 2012 were IS-TF 231C, PST-5BGR, PST-5SXD, Spyder LS, Crossfire 3, PSG 8GRTR, PST-5SLV, 3rd Millennium, PSG 07-9, PST-R5NW, ATF1569, PSG 6008, PSG 08-6, IS-TF 215, ATF1549, Penn 1901, and Traverse (Table 2).

## DISCUSSION

Average turf quality in 2012 was poorly correlated with wear tolerance after 34 passes on 26 September 2012 ( $r = 0.07$ ;  $n = 104$ ). Park et al. (2012) reported a poor correlation between these parameters in this trial for 2011 data and attributed this to brown patch pressure during summer and a subsequent decline in turfgrass quality among some entries.

Data revealed that entries with less brown patch susceptibility on 14 August 2012 tended to have better wear tolerance on 26 September 2012 ( $r = 0.54$ ;  $n = 104$ ). The turf canopies of entries affected by severe brown patch were likely more susceptible to the rotating, abrasive wear caused by the wear machine throughout summer and early fall 2012.

Selection of tall fescue cultivars for use on sports fields should consider tolerance to and recovery from wear and/or traffic as well as turfgrass quality and brown patch susceptibility. Ongoing field research evaluating tall fescue for turfgrass quality, brown patch susceptibility, and tolerance to traffic stresses resulted in the publication of a practitioner-focused Rutgers Cooperative Research and Extension Fact Sheet entitled, Tall Fescue Varieties for New Jersey Sports Fields (<http://njaes.rutgers.edu/pubs/fs1186/tall-fescue-varieties-for-nj-sports-fields.asp>).

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Table 1. Wear tolerance of tall fescue cultivars and selections during 2011-2012 in a turf trial seeded in September 2010 at North Brunswick, NJ. (Includes all entries of the 2010 Cooperative Turfgrass Breeders Test (CTBT) Tall Fescue Trial.)

Cultivar or Selection	-----Wear Tolerance <sup>1</sup> -----					
	16 Passes 22 July 2011	8 Passes 28 June 2012	16 Passes 26 July 2012	26 Passes 29 Aug. 2012	34 Passes 26 Sept. 2012	42 Passes 2 Nov. 2012
1 PST-5GRB	5.3	9.0	9.0	6.3	6.0	5.0
2 ATF1618	6.3	7.3	7.0	5.3	5.7	5.3
3 IS-TF 219	4.7	7.0	5.7	6.0	5.3	4.7
4 PST-5AWT	5.7	8.0	6.7	6.3	5.0	4.7
5 PST-5V4	5.7	8.0	6.3	6.0	5.0	4.0
6 Rebel Exeda	6.0	7.3	6.3	6.0	5.0	4.3
7 ATF1548	6.0	7.0	6.7	5.7	5.0	3.3
8 PST-5LIV	5.3	7.3	5.7	4.7	5.0	5.0
9 Falcon IV	7.3	6.7	5.0	4.7	5.0	4.0
10 PST-5YMY	3.7	7.7	7.0	5.3	4.7	4.0
11 PST-5SIS	4.7	7.3	6.7	5.3	4.7	5.0
12 PST-5DVD-07	6.3	6.7	5.7	6.3	4.3	3.7
13 PSG 82BPRH	4.7	6.3	5.7	6.0	4.3	2.7
14 PST-5R05	3.3	7.3	6.3	5.7	4.3	3.7
15 PST-5MCD	4.0	7.7	7.3	5.3	4.3	4.3
16 ATF1566	4.7	7.0	5.3	5.3	4.3	3.0
17 PSG 8SP1	4.3	5.7	4.7	5.3	4.3	4.0
18 PPG-TF 117	6.7	7.3	6.7	5.0	4.3	3.7
19 PST-5SLV	4.7	6.3	5.0	4.7	4.3	3.3
20 Traverse	4.7	7.7	6.3	4.3	4.3	3.7
21 STR 86QRH	5.0	6.3	5.0	4.0	4.3	3.7
22 IS-TF 233C	4.7	7.7	6.7	5.7	4.0	4.0
23 PST-5R20	4.7	7.7	6.3	5.0	4.0	2.7
24 PSG 709509	4.7	6.7	5.7	4.7	4.0	4.0
25 Coronado TDH	6.3	6.3	4.7	4.7	4.0	4.0
26 PST-R5NW	5.0	7.0	5.3	4.3	4.0	4.0
27 ATF1551	6.0	7.3	7.0	3.3	4.0	3.0
28 PST-5BGR	4.3	7.7	5.3	3.3	4.0	3.7
29 IS-TF 217	6.7	7.0	5.3	5.3	3.7	4.7
30 ATF1611	7.7	9.0	8.3	5.0	3.7	4.3
31 Essential	6.3	9.0	7.7	5.0	3.7	3.3
32 PPG-TF 116	6.0	7.3	7.0	4.7	3.7	4.3
33 ATF1550	7.7	7.0	6.3	4.7	3.7	3.7
34 FCE3	3.7	7.0	5.7	4.7	3.7	3.7
35 ATF1619	2.3	7.3	5.7	4.3	3.7	4.0

(Continued)

Table 1. Wear tolerance of tall fescue trial, CTBT (continued).

Cultivar or Selection	-----Wear Tolerance <sup>1</sup> -----					
	16 Passes 22 July 2011	8 Passes 28 June 2012	16 Passes 26 July 2012	26 Passes 29 Aug. 2012	34 Passes 26 Sept. 2012	42 Passes 2 Nov. 2012
36 PSG 8GRTR	4.3	5.0	4.0	4.3	3.7	3.3
37 PSG 08-6	4.7	5.7	4.3	4.0	3.7	4.0
38 ATF1491	3.0	6.0	5.7	3.7	3.7	4.0
39 IS-TF 215	6.0	7.0	5.3	3.3	3.7	3.3
40 PSG 5908	5.7	5.7	4.7	5.0	3.3	3.3
41 PST-5SDT	5.3	7.3	6.0	4.7	3.3	4.0
42 PST-5SDS	3.7	6.3	4.7	4.7	3.3	2.7
43 PPG-TF 101	6.3	7.7	6.0	4.3	3.3	4.0
44 IS-TF 234C	5.3	7.7	6.0	4.3	3.3	3.3
45 PST-5SXR	4.3	7.7	6.0	4.3	3.3	3.7
46 PSG3905	3.3	5.3	3.7	4.3	3.3	3.3
47 IS-TF 230B	4.7	7.7	5.7	4.0	3.3	2.0
48 PST-5MVD	3.3	6.7	5.7	4.0	3.3	3.7
49 PST-5DRP	3.0	6.0	5.0	4.0	3.3	3.0
50 ATF1571	5.7	7.7	5.3	3.7	3.3	4.0
51 PPG-TF 106	4.0	8.3	6.7	3.3	3.3	3.7
52 PSG 8308	3.7	5.7	3.7	3.3	3.3	3.0
53 Penn 1901	4.7	5.7	4.0	3.0	3.3	2.3
54 ATF1567	6.0	7.7	6.0	5.0	3.0	3.0
55 IS-TF 227	5.3	8.3	7.3	4.3	3.0	3.0
56 IS-TF 226	2.7	7.0	7.0	4.3	3.0	3.3
57 Corona	5.7	6.0	5.3	4.3	3.0	3.7
58 ATF1547	5.3	6.3	4.3	4.0	3.0	2.3
59 Titanium LS	4.0	7.0	5.3	3.7	3.0	3.0
60 Crossfire 3	6.0	5.3	3.3	3.7	3.0	2.7
61 ATF1569	6.3	7.7	6.3	3.3	3.0	3.7
62 Shenandoah III	6.0	8.3	6.0	3.3	3.0	3.7
63 ATF1570	5.0	7.0	5.3	3.3	3.0	3.3
64 Mustang 4	7.0	7.3	6.3	5.3	2.7	4.0
65 PPG-TF 115	6.3	7.0	5.7	5.3	2.7	2.7
66 IS-TF 225	4.3	7.7	6.7	5.0	2.7	2.7
67 Shenandoah Elite	5.0	7.3	6.0	5.0	2.7	3.3
68 ATF1610	5.7	7.3	6.0	5.0	2.7	3.0
69 PPG-TF 102	6.0	8.0	7.0	4.7	2.7	3.0
70 Bullseye	7.3	8.3	6.3	4.3	2.7	3.7

(Continued)

Table 1. Wear tolerance of tall fescue trial, CTBT (continued).

Cultivar or Selection	-----Wear Tolerance <sup>1</sup> -----					
	16 Passes 22 July 2011	8 Passes 28 June 2012	16 Passes 26 July 2012	26 Passes 29 Aug. 2012	34 Passes 26 Sept. 2012	42 Passes 2 Nov. 2012
71 PPG-TF 105	5.3	8.0	6.0	4.3	2.7	2.7
72 IS-TF 197	5.7	8.0	5.7	4.3	2.7	3.3
73 Finelawn Xpress	5.3	7.7	5.7	4.3	2.7	3.3
74 PST-5FDR	5.7	7.3	5.3	4.0	2.7	2.3
75 ATF1613	5.0	8.3	7.0	3.7	2.7	2.3
76 Gazelle II	5.0	8.0	6.0	3.7	2.7	3.0
77 LW	5.3	7.7	5.3	3.3	2.7	2.3
78 ATF1620	6.3	6.3	5.3	3.3	2.7	3.7
79 Kentucky 31	1.3	3.3	3.0	3.3	2.7	2.3
80 Rhambler	5.0	7.7	6.7	3.0	2.7	3.0
81 IS-TF 224	4.0	9.0	8.0	4.3	2.3	3.3
82 ATF1549	4.0	7.7	6.3	4.0	2.3	2.7
83 Catalyst	4.0	6.7	4.7	4.0	2.3	2.7
84 PST-5DKB	4.7	6.0	6.0	3.7	2.3	3.0
85 Raptor II	6.7	7.0	5.3	3.7	2.3	2.3
86 IS-TF 231C	4.7	6.0	4.3	3.7	2.3	2.7
87 ATF1612	4.3	7.3	7.3	3.3	2.3	2.7
88 ATF1609	6.0	7.7	6.0	3.3	2.3	3.3
89 ATF1614	7.0	7.7	5.7	3.3	2.3	3.0
90 IS-TF 223	6.0	7.0	5.7	3.3	2.3	3.7
91 PST-5T8E	2.3	5.7	4.0	3.3	2.3	1.7
92 6351	6.3	8.0	7.0	2.7	2.3	3.3
93 ATF1621	6.0	7.3	5.7	3.7	2.0	2.7
94 ATF1568	3.3	6.3	5.3	3.3	2.0	2.0
95 Wolfpack II	4.0	6.7	4.7	3.3	2.0	2.3
96 Spyder LS	2.3	6.3	5.0	3.0	2.0	2.0
97 PSG 07-9	4.0	6.3	4.3	3.0	2.0	3.0
98 PSG 6008	3.7	5.0	3.7	3.0	2.0	2.7
99 Falcon V	3.3	8.3	7.0	3.7	1.7	3.0
100 ATF1608	2.3	7.3	6.3	3.3	1.7	2.3
101 Firecracker LS	5.3	7.0	5.0	2.7	1.7	2.3
102 PSG 07-5	5.0	5.3	4.7	2.3	1.7	1.3
103 3rd Millennium	4.0	7.0	5.0	2.7	1.3	2.3
104 PST-5SXD	2.7	7.0	4.7	2.3	1.3	2.3
LSD at 5% =	2.7	1.6	1.9	2.1	2.0	ns

<sup>1</sup>9 = best wear tolerance (fullest turfgrass canopy, most uniform ground cover, and least tissue bruising)



Table 2. Performance of tall fescue cultivars and selections without wear in a turf trial seeded in September 2010 at North Brunswick, NJ. (Includes all entries of the 2010 Cooperative Turfgrass Breeders Test (CTBT) Tall Fescue Trial.)

Cultivar or Selection	-----Turfgrass Quality <sup>1</sup> -----			Spring	----Brown Patch <sup>3</sup> ----	
	2011-2012 Avg.	2011 Avg.	2012 Avg.	Green-up <sup>2</sup> 23 March 2012	29 May 2012	14 Aug. 2012
1 ATF1608	7.0	7.1	6.9	6.0	5.7	4.7
2 PPG-TF 106	6.9	7.1	6.8	4.3	6.0	5.0
3 IS-TF 224	6.9	6.9	6.9	3.3	6.3	5.0
4 ATF1611	6.8	6.3	7.3	5.0	6.3	5.3
5 IS-TF 223	6.7	6.7	6.8	4.7	5.0	5.3
6 Essential	6.7	6.8	6.7	5.0	5.3	5.0
7 IS-TF 227	6.6	6.2	7.0	4.0	6.0	5.0
8 PST-5GRB	6.6	6.3	6.9	5.0	5.3	7.3
9 ATF1571	6.5	6.6	6.4	5.0	5.0	4.0
10 ATF1612	6.4	6.4	6.4	4.7	6.3	4.3
11 ATF1613	6.4	5.9	6.9	2.7	6.7	4.0
12 Falcon V	6.4	6.3	6.4	5.3	6.3	5.0
13 PPG-TF 102	6.4	6.3	6.4	4.0	6.0	6.0
14 ATF1549	6.3	6.1	6.5	4.7	4.3	3.7
15 ATF1610	6.3	6.2	6.4	4.7	5.3	6.0
16 ATF1621	6.3	5.9	6.7	5.3	4.7	3.7
17 ATF1609	6.2	5.8	6.6	4.3	5.0	2.3
18 Shenandoah Elite	6.2	6.2	6.2	4.0	5.7	5.7
19 PPG-TF 116	6.2	6.3	6.1	4.3	4.7	5.0
20 6351	6.2	6.3	6.0	2.3	5.3	3.0
21 ATF1550	6.2	6.2	6.1	5.7	4.0	5.0
22 Finelawn Xpress	6.1	5.9	6.3	3.3	6.0	5.0
23 Bullseye	6.1	6.8	5.4	3.3	5.0	4.0
24 IS-TF 233C	6.1	6.2	6.0	3.3	5.0	5.7
25 IS-TF 217	6.0	6.0	6.1	4.3	5.7	4.3
26 LW	6.0	6.6	5.4	4.0	3.7	4.7
27 PPG-TF 105	6.0	6.2	5.8	3.0	4.3	5.0
28 PST-5AWT	6.0	5.7	6.2	3.3	4.0	6.3
29 ATF1614	6.0	5.8	6.1	5.0	4.0	5.0
30 IS-TF 234C	5.9	5.5	6.3	1.0	6.3	3.7
31 IS-TF 225	5.9	6.6	5.2	2.0	5.7	6.7
32 PPG-TF 101	5.9	5.9	5.9	2.3	4.7	5.3
33 Catalyst	5.9	6.0	5.8	5.0	5.0	4.3
34 IS-TF 226	5.9	5.6	6.1	1.7	6.0	3.3
35 PSG 709509	5.8	6.0	5.7	2.7	4.3	4.7

(Continued)

Table 2. Tall fescue trial without wear, CTBT (continued).

Cultivar or Selection	-----Turfgrass Quality <sup>1</sup> -----			Spring	----Brown Patch <sup>3</sup> ----	
	2011- 2012 Avg.	2011 Avg.	2012 Avg.	Green-up <sup>2</sup> 23 March 2012	29 May 2012	14 Aug. 2012
36 Shenandoah III	5.8	5.3	6.2	6.0	4.7	3.7
37 ATF1567	5.8	5.4	6.1	4.7	4.0	4.7
38 Firecracker LS	5.7	5.5	6.0	2.7	7.0	3.7
39 ATF1570	5.7	5.2	6.2	5.0	7.3	4.0
40 Traverse	5.7	5.5	5.9	6.3	4.3	3.3
41 IS-TF 219	5.7	5.6	5.8	3.3	6.0	7.0
42 IS-TF 197	5.7	6.2	5.1	3.7	4.3	4.3
43 Rebel Exeda	5.6	5.3	5.9	4.7	4.3	7.0
44 PST-5DVD-07	5.6	5.8	5.4	4.0	4.0	6.3
45 Rhambler	5.6	5.5	5.7	5.7	4.7	3.0
46 PST-5MCD	5.6	5.7	5.4	4.7	3.7	5.3
47 PST-5DKB	5.6	5.9	5.2	3.7	4.3	5.3
48 Corona	5.6	5.4	5.7	2.3	5.3	4.3
49 Wolfpack II	5.6	6.0	5.1	3.7	5.3	3.7
50 3rd Millennium	5.5	6.0	5.0	2.7	3.7	3.7
51 ATF1569	5.5	5.6	5.3	5.3	4.0	3.7
52 PSG 5908	5.5	5.7	5.2	1.3	4.3	5.3
53 PST-5R05	5.5	5.4	5.5	2.3	4.3	5.3
54 PPG-TF 117	5.4	5.8	5.0	1.3	4.3	4.7
55 PST-5MVD	5.4	4.9	5.9	3.3	5.0	4.7
56 IS-TF 230B	5.4	5.8	4.9	1.0	5.0	4.3
57 Gazelle II	5.4	5.3	5.4	3.7	4.7	3.7
58 PST-5V4	5.4	5.7	5.0	4.0	3.3	6.7
59 ATF1551	5.3	5.3	5.2	5.0	4.0	4.0
60 PST-5R20	5.2	4.9	5.6	4.0	5.0	5.7
61 Mustang 4	5.2	4.9	5.5	4.7	6.0	4.7
62 Raptor II	5.2	5.5	4.9	1.0	3.7	4.0
63 ATF1548	5.2	5.3	5.1	4.3	4.0	6.3
64 PPG-TF 115	5.2	5.3	5.0	2.3	5.0	4.7
65 PST-5SDT	5.2	5.1	5.2	4.7	3.3	4.3
66 PSG 07-5	5.1	5.8	4.4	1.0	5.3	3.0
67 PST-5SIS	5.1	4.9	5.3	5.0	5.0	5.0
68 IS-TF 215	5.1	5.0	5.2	3.0	4.3	3.7
69 ATF1620	5.1	4.8	5.3	3.7	5.3	3.7
70 PST-5DRP	5.0	4.9	5.1	3.0	4.7	4.7

(Continued)

Table 2. Tall fescue trial without wear, CTBT (continued).

Cultivar or Selection	-----Turfgrass Quality <sup>1</sup> -----			Spring	----Brown Patch <sup>3</sup> ----	
	2011-2012 Avg.	2011 Avg.	2012 Avg.	Green-up <sup>2</sup> 23 March 2012	29 May 2012	14 Aug. 2012
71 ATF1568	5.0	5.0	5.0	4.3	4.0	4.0
72 PST-5SLV	4.9	5.1	4.7	4.7	2.7	3.7
73 Titanium LS	4.9	4.8	4.9	4.3	4.7	3.3
74 ATF1618	4.8	4.7	5.0	5.0	3.3	4.3
75 IS-TF 231C	4.8	4.9	4.7	1.0	3.3	3.7
76 PST-R5NW	4.8	4.6	4.9	2.7	4.0	3.7
77 FCE3	4.7	5.0	4.4	2.0	4.3	4.3
78 PST-5YMY	4.7	3.9	5.5	5.7	6.0	6.3
79 Falcon IV	4.7	4.6	4.8	4.0	4.7	5.3
80 PSG 82BPRH	4.7	5.0	4.4	3.0	3.3	5.0
81 PSG 07-9	4.7	4.7	4.7	2.3	3.7	3.7
82 PSG 08-6	4.7	4.6	4.8	2.3	4.3	3.7
83 ATF1566	4.7	4.6	4.8	4.0	3.7	5.3
84 PST-5SXR	4.6	4.4	4.8	3.7	3.3	4.3
85 Spyder LS	4.6	4.9	4.3	1.7	3.0	3.7
86 PST-5SXD	4.6	4.4	4.8	3.7	3.3	1.7
87 PST-5SDS	4.5	4.2	4.8	3.0	4.7	4.0
88 ATF1619	4.5	4.0	4.9	3.3	5.0	5.0
89 PST-5BGR	4.4	4.4	4.3	2.3	3.3	3.7
90 PST-5FDR	4.3	3.8	4.8	1.0	4.0	4.0
91 Penn 1901	4.3	4.0	4.6	1.3	4.3	3.7
92 PST-5LIV	4.3	3.9	4.6	2.3	5.0	5.3
93 PSG 8SP1	4.2	3.8	4.6	4.3	4.7	6.7
94 Crossfire 3	4.2	4.4	3.9	2.0	3.0	3.0
95 PSG3905	4.2	4.2	4.1	2.0	5.0	4.7
96 PSG 8308	4.1	3.7	4.5	2.7	3.7	4.0
97 PSG 6008	4.1	4.5	3.7	1.7	4.0	3.0
98 ATF1547	4.0	4.8	3.2	3.3	2.3	4.0
99 PST-5T8E	4.0	4.2	3.9	2.7	3.7	4.3
100 STR 86QRH	3.9	3.7	4.1	1.0	4.7	4.3
101 ATF1491	3.8	3.6	3.9	4.0	3.3	4.3
102 Coronado TDH	3.7	3.5	3.9	3.0	3.7	5.0
103 PSG 8GRTR	3.6	3.6	3.6	3.0	2.7	3.7
104 Kentucky 31	1.1	1.2	1.0	8.7	4.7	5.7

(Continued)

Table 2. Tall fescue trial without wear, CTBT (continued).

Cultivar or Selection	-----Turfgrass Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup>	----Brown Patch <sup>3</sup> ----	
	2011-2012 Avg.	2011 Avg.	2012 Avg.	23 March 2012	29 May 2012	14 Aug. 2012
LSD at 5% =	1.0	1.4	1.3	1.7	2.1	2.1

<sup>1</sup>9 = best turfgrass quality

<sup>2</sup>9 = earliest spring green-up

<sup>3</sup>9 = least disease