

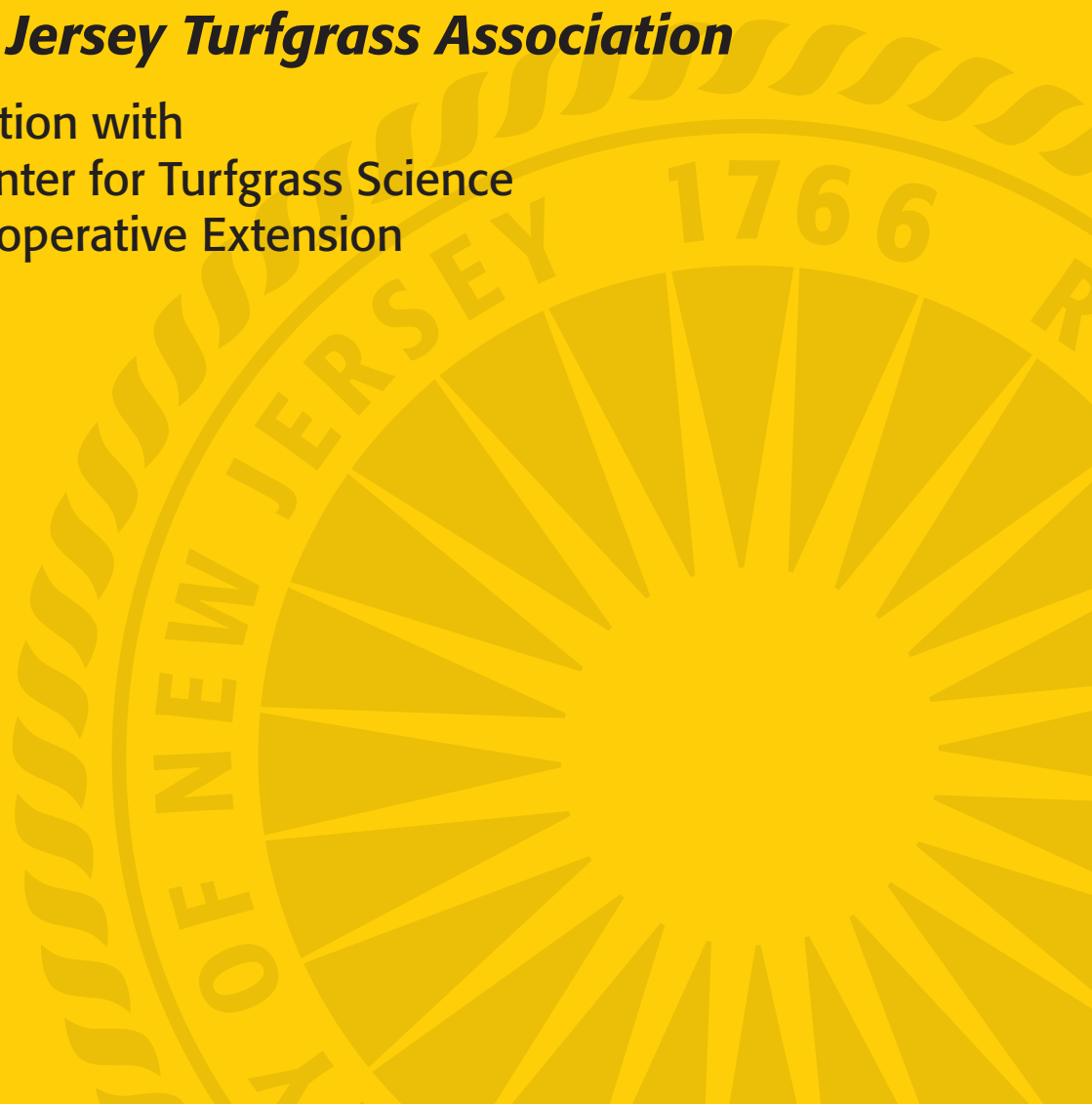
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This publication includes lecture notes of papers presented at the 2011 GREEN EXPO Turf and Landscape Conference. Publication of these lectures provides a readily available source of information

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.

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

RESPONSE OF TALL FESCUE TO WEAR AND TRAFFIC STRESSES IN 2011

Bradley S. Park, James A. Murphy, T. J. Lawson, William K. Dickson,
Joseph B. Clark, and William A. Meyer¹

Turfgrass managers can create more durable home lawns, parks, and sports fields by establishing traffic stress tolerant cultivars of Kentucky bluegrass (*Poa pratensis* L.), tall fescue (*Festuca arundinacea* Schreb.), perennial ryegrass (*Lolium perenne* L.), or mixtures of these species.

Tall fescue is a cool-season turfgrass species well adapted to the transition zone and is a good choice for expansive recreational areas where a uniform wear-resistant surface is required (Juska et al. 1969). Older tall fescue cultivars exhibited non-uniform mixes with other commonly used cool-season turfgrasses due to low shoot density and coarse leaf texture. As a result, turfgrass managers established other turfgrasses in areas where a higher quality turf was desired (Beard, 1973). Breeding improvements, initiated 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. These improved tall fescue cultivars can provide a higher quality turf for lawns, parks, and sports fields (Bokmeyer et al., 2008).

Traffic, the most frequent and damaging stress to turfgrasses used as a sports turf (Minner et al., 1993), is characterized by the individual stresses of wear, soil compaction, divoting, and soil displacement (Beard, 1973). Wear injury affects above-ground plant parts and is defined as the immediate result of crushing, tearing, and shearing actions of foot and vehicular traffic; soil compaction can produce chronic stresses associated with increased soil bulk density, loss of soil structure, and reduced aeration, water infiltration, and water storage (Beard et al., 1974; Shearman, 1988).

Carrow (1980) reported that tall fescue cover declined with increasing levels of compaction and that tall fescue was more susceptible to compaction stresses compared to Kentucky bluegrass and perennial ryegrass.

There is a growing body of traffic (wear and compaction) tolerance data for newer tall fescue cultivars. Park et al. (2004) and Bughrara (2007) identified entries within the 2001 NTEP Tall Fescue Test that had improved traffic tolerance. Additionally, Park et al. (2009a) identified wear tolerant entries within the 2005 Cooperative Turfgrass Breeder's Test (CTBT) Tall Fescue Trial (<http://www.ctbt-us.info/>) and the 2006 NTEP Tall Fescue Test. Park et al. (2008, 2009b, 2010, 2011) have annually reported on seasonal traffic tolerance of tall fescue cultivars and selections in the 2006 NTEP Tall Fescue Test.

Initiated in 2004, CTBT has sponsored Kentucky bluegrass, perennial ryegrass, and tall fescue evaluations across numerous geographic and climatically diverse locations in the United States. A significant number of entries in these trials are experimental selections. This is an indication of the effort turfgrass breeders are making to improve these species.

Tall fescue cultivar recommendations are needed for sports fields that receive play at a specific time of the year (spring, summer, or fall). The objective of Study 1 (2006 NTEP Tall Fescue Test) was to assess the traffic tolerance and recovery of tall fescue to traffic stress applied during spring 2011.

It would be beneficial for turfgrass breeders to have access to wear tolerance data for newer tall

¹Sports Turf Education and Research Coordinator, Extension Specialist in Turfgrass Management, Research Farm Supervisor I, Turfgrass Research Farm Supervisor, Principle Laboratory Technician, and Research Professor, respectively, New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ 08901-8520.

fescue experimental selections as well as existing, commercially-available cultivars. The objective of Study 2 was to assess the wear tolerance and recovery of tall fescue cultivars and experimental selections comprising the 2010 CTBT tall fescue trial.

STUDY 1: 2006 NTEP TALL FESCUE TEST

MATERIALS AND METHODS

Evaluation Trial

The 113 entries of the 2006 NTEP tall fescue trial as well as CE-2, CE-4, BBM, Titanium, and ATE were established in September 2006 as 6.0 x 5.0 ft plots on a well-drained loam (sand = 33%; silt = 41%; clay = 26%) at the Horticultural Research Farm II in North Brunswick, NJ. During May through November 2011, the trial was evaluated for tolerance to and recovery from traffic applied in May (spring) 2011. Traffic had been previously applied to the plots in October (fall) 2007 (Park et al., 2008), July (summer) 2008 (Park et al., 2009b), April (spring) and October (fall) 2009 (Park et al., 2010), and July (summer) 2010 (Park et al., 2011).

Soil test results from December 2010 indicated that the soil pH was 6.3; soil phosphorous (P) and potassium (K) were 91 and 295 lb per acre, respectively. The test was mowed approximately once per week with a rotary mower at a height of 3.0-inch. The test was not irrigated in 2011. A total of 0.9 lb nitrogen (N) per 1000 ft² was applied in 2011 (0.5 and 0.4 lb N per 1000 ft² on 22 April and 21 June 2011, respectively).

Traffic Simulation

Both wear and compaction stresses (traffic) were applied to the trial. Wear was applied using a modified version of a simulator described by Bonos et al. (2001). The machine was operated at a ground speed of 2.5 miles per hour (mph) and 250 rpm for the paddles. A total of 24 passes of the wear simulator were applied to one-half of each plot over two days: 12 passes on 11 May and 12 passes on 12 May 2011. Every other pass was made in the opposing direction of the previous pass and was made on the same one-half of each plot that received traffic in 2007 though 2010.

The traffic treatment was completed with ten passes of a vibratory pavement roller (operating weight = 2586 lb; centrifugal force with vibratory function engaged = 3000 lb) on 17 May 2011 over the same portion of the plots that received wear. Similar to wear treatment, every other pass of the roller was made in the opposing direction of the previous pass.

Plot Evaluation

Tall fescue tolerance to wear and compaction stresses were assessed during spring 2011. Visual ratings of fullness of turfgrass canopy (FTC) were taken before wear on 9 May 2011. Fullness of turfgrass canopy was rated on a 0 to 100% scale where 0 = absence of turfgrass canopy and 100 = full canopy. Following compaction treatment, turfgrass quality and FTC were rated on 25 May 2011 (8 days after compaction [DAC]) to assess tolerance to traffic. Traffic tolerance was visually assessed using a 1 to 9 scale (9 = most dense, uniform turfgrass canopy and least tissue bruising after traffic).

Recovery from traffic was visually evaluated on 10 June, 29 June, and 31 October 2011 (24, 43, and 167 DAC, respectively) using a 1 to 9 scale and by assessing FTC.

The non-trafficked one-half portion of each plot was rated throughout the growing season 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).

Spring green-up was rated as a separate characteristic on 7 April 2011 on the non-trafficked section of each plot. Genetic color and leaf texture were rated on 17 November 2011 on the one-half of each plot that did not receive traffic. A 1 to 9 scale was utilized for these ratings where 9 equaled the best turf characteristic (i.e. earliest spring green-up, darkest green color, and finest leaf texture).

Trafficked and non-trafficked 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 AND DISCUSSION

Traffic Responses in Spring 2011

Tolerance to spring traffic. Entries with the greatest FTC and traffic tolerance rating (1 to 9 scale) on 25 May 2011 (8 DAC) were Traverse SRP (RK-1), LS 1200 (SC-1), Spyder LS (Z-2000), Faith (K06-WA), Finelawn Xpress (RP 2), Fat Cat (IS-TF-161), Firecracker LS (MVS-MST), Falcon V (ATM), Bullseye, RK 4, RK 5, Shenandoah Elite (RK 6), Jamboree (IS-TF-128), Catalyst (NA-BT-1), Essential (IS-TF-154), and Tanzania (IS-TF-159) (Table 1). Entries with the lowest FTC and poorest traffic tolerance on 25 May 2011 (8 DAC) were Silverado, 06-WALK, Hunter, Aristotle, Renovate (LS-11), AST9003 (AST-1), Kentucky 31, Padre, Compete (LS-06), AST 7001, AST9001 (AST-3), and PSG-TTRH (Table 1).

Recovery from spring traffic. Entries with the greatest FTC and best recovery rating (1 to 9 scale) on 10 June 2011 (24 DAC) were Traverse SRP (RK-1), Jamboree (IS-TF-128), MVS-1107, Finelawn Xpress (RP 2), Falcon V (ATM), Catalyst (NA-BT-1), Spyder LS (Z-2000), RK 4, Bullseye, Tanzania (IS-TF-159), Gazelle II (PST-5HP), LS 1200 (SC-1), RK 5, JT-36, Fat Cat (IS-TF-161), Essential (IS-TF-154), Faith (K06-WA), Shenandoah III (SH 3), Firecracker LS (MVS-MST), Talladega (RP 3), PSG-82BR, and Wolfpack II (PST-5WMB) (Table 1). Crossfire 3 (Col-J), AST 7002, AST7003, AST1001 (AST-4), LS 1010 (ATF 1328), AST9003 (AST-1), GWTF, PSG-RNDR, 06-WALK, Renovate (LS-11), 0312, and Kentucky 31 had the poorest recovery and least FTC on 10 June 2011 (24 DAC) (Table 1).

Catalyst (NA-BT-1), Traverse SRP (RK-1), RK 4, Jamboree (IS-TF-128), Finelawn Xpress (RP 2), MVS-1107, Tanzania (IS-TF-159), Faith (K06-WA), Firecracker LS (MVS-MST), Wolfpack II (PST-5WMB), Sidewinder (IS-TF-138), Cochise IV (RKCL), Gazelle II (PST-5HP), Shenandoah Elite (RK 6), LS 1200 (SC-1), RK 5, Turbo, Falcon V (ATM), Hemi, JT-42, JT-36, Spyder LS (Z-2000), Bullseye, Speedway (STR-8BPDX), Essential (IS-TF-154), CE-2, Raptor II (MVS-TF-158), Talladega (RP 3), J-140, ATE, Skyline, and Turbo Rz (BurlTF8) exhibited the best recovery and greatest FTC on 29 June 2011 (43 DAC) (Table 1). Kentucky 31 and 0312 had the poorest recovery and least FTC on 29 June 2011 (43 DAC) (Table 1).

Entries with the best recovery and greatest FTC on 31 October 2011 (167 DAC) were Falcon V (ATM), LS 1200 (SC-1), Faith (K06-WA), Catalyst (NA-BT-1), Firecracker LS (MVS-MST), Bullseye, Turbo, Traverse SRP (RK-1), Essential (IS-TF-154), Wolfpack II (PST-5WMB), Shenandoah III (SH 3), Falcon NG (CE 1), Jamboree (IS-TF-128), Shenandoah Elite (RK 6), Tanzania (IS-TF-159), ATE, Garrison (IS-TF-153), Hemi, and Mustang 4 (M4) (Table 1). Kentucky 31 had the poorest recovery and least FTC on 31 October 2011 (167 DAC) (Table 1).

Non-trafficked Portion of Plots

Tall fescue cultivars and selections that had the best multi-year (2007-2011 average) turfgrass quality were Bullseye, Cochise IV (RKCL), Catalyst (NA-BT-1), RK 5, Wolfpack II (PST-5WMB), Turbo, Falcon V (ATM), Monet (LTP-610 CL), Mustang 4 (M4), Cannavaro (DP 50-9440), Firecracker LS (MVS-MST), Faith (K06-WA), Essential (IS-TF-154), Speedway (STR-8BPDX), Tanzania (IS-TF-159), Shenandoah Elite (RK 6), Van Gogh (LTP-RK2), Hemi, Greenbrooks (TG 50-9460), Finelawn Xpress (RP 2), Rhambler SRP (Rhambler), and RK 4 (Table 2). Entries with the best average turfgrass quality in 2011 (April to October) were Monet (LTP-610 CL), RK 5, Catalyst (NA-BT-1), Wolfpack II (PST-5WMB), Rhambler SRP (Rhambler), Traverse SRP (RK-1), Van Gogh (LTP-RK2), Mustang 4 (M4), Essential (IS-TF-154), Tanzania (IS-TF-159), Falcon V (ATM), Bullseye, Cochise IV (RKCL), Turbo, Tulsa Time (Tulsa III), Garrison (IS-TF-153), 3rd Millennium SRP, Faith (K06-WA), Firenza, Speedway (STR-8BPDX), Jamboree (IS-TF-128), Firecracker LS (MVS-MST), Hemi, BBM, Cannavaro (DP 50-9440), and Shenandoah Elite (RK 6) (Table 2).

Kentucky 31 had the poorest average turfgrass quality during 2007 to 2011 and the poorest turfgrass quality in 2011 (Table 2). Biltmore, 0312, Rembrandt, STR-8GRQR, Hunter, PSG-TTRH, 06-WALK, AST 7001, PSG-RNDR, Einstein, Magellan, BAR Fa 6363, GO-1BFD, Lindbergh, PSG-TTST, Plato, Aristotle, and Silverado had only fair turf quality (< 5.0) during 2007 to 2011 (Table 2).

Entries with the most the rapid spring green-up on 7 April 2011 were Kentucky 31, GO-1BFD, Catalyst (NA-BT-1), Wolfpack II (PST-5WMB), Falcon V (ATM), LS 1200 (SC-1), Van Gogh (LTP-RK2), Traverse SRP (RK-1), Faith (K06-WA), and Falcon NG (CE 1) (Table 2). Entries with delayed spring green-

up on 7 April 2011 were Corona (Col-M), JT-45, Hudson (DKS), AST7003, JT-36, AST9002 (AST-2), BAR Fa 6363, Renovate (LS-11), AST9003 (AST-1), Xtremegreen (BGR-TF2), Tahoe II, PSG-TTRH, Raptor II (MVS-TF-158), Fat Cat (IS-TF-161), JT-42, Sunset Gold (KZ-2), JT-33, AST 7001, JT-41, Terrier (IS-TF-135), Skyline, Trio (IS-TF-152), AST1001 (AST-4), Toccoa (IS-TF-151), and Sidewinder (IS-TF-138) (Table 2).

Entries with the darkest green genetic color on 17 November 2011 were Hunter, Stetson II (NA-SS), AST9003 (AST-1), AST 7001, AST9001 (AST-3), 0312, AST7003, Sunset Gold (KZ-2), AST1001 (AST-4), Toccoa (IS-TF-151), Compete (LS-06), Crossfire 3 (Col-J), Corona (Col-M), Renovate (LS-11), Xtremegreen (BGR-TF2), Fat Cat (IS-TF-161), Gold Medallion (KZ-1), AST 7002, Integrity (BGR-TF1), RNP, Darlington (CS-TF1), Hudson (DKS), AST9002 (AST-2), and Trio (IS-TF-152) (Table 2). Kentucky 31 had the lightest green color on 17 November 2011 (Table 2). Other entries that had lighter green genetic color (< 4.0) on 17 November 2011 were GO-1BFD, PSG-TTST, and Silverado (Table 2).

Entries with the finest leaf texture on 17 November 2011 were Tanzania (IS-TF-159), Wolfpack II (PST-5WMB), RK 5, Cannavaro (DP 50-9440), Bullseye, Rhambler SRP, (Rhambler), Turbo, Faith (K06-WA), Speedway (STR-8BPDx), Sidewinder (IS-TF-138), Shenandoah III (SH 3), Monet (LTP-610 CL), Firecracker LS (MVS-MST), Catalyst (NA-BT-1), LS 1200 (SC-1), Garrison (IS-TF-153), J-140, Raptor II (MVS-TF-158), RK 4, Jamboree (IS-TF-128), Essential (IS-TF-154), Falcon V (ATM), Traverse SRP (RK-1), Van Gogh (LTP-RK2), Cochise IV (RKCL), Shenandoah Elite (RK 6), Rocket (IS-TF-147), Mustang 4 (M4), and Gazelle II (PST-5HP) (Table 2). Kentucky 31 had the coarsest leaf texture on 17 November 2011 (Table 2). Other entries with coarse leaf texture (< 4.0) were AST 7001, 0312, 06-WALK, PSG-RNDR, Aristotle, and Silverado (Table 2).

STUDY 2: 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 soil at the Horticultural Research Farm II in North Brunswick, NJ in 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. During July through October 2011, the trial was evaluated for tolerance to and recovery from wear applied in July 2011.

Soil test results from December 2010 indicated that the soil pH was 5.6; soil P and K were 223 and 251 lb per acre, respectively. The test was mowed approximately 2 times a week with a reel mower at a height of 1.5-inch. The test was minimally irrigated in 2011 to prevent severe drought stress. A total of 3.7 lb N per 1000 ft² was applied in 2011 (0.4, 0.4, 0.8, 0.7, 0.5, and 0.9 lb N per 1000 ft² on 22 April, 17 May, 10 June, 22 June, 6 July, and 2 September, respectively).

The trial was inoculated with the fungus that causes brown patch (*Rhizoctonia solani*) on 6 July 2011 at a rate of 2.6 oz inoculum per 1000 ft². On 28 November 2011, calcitic limestone (calcium = 34.8%; magnesium = 2.5%; calcium carbonate equivalent [CCE] = 97.1%) was applied at 19.0 lb per 1000 ft² per soil test recommendations to elevate soil pH.

Wear Stress

Wear was applied to the trial using the paddling machine (Bonos et al., 2001) operated at a ground speed of 2.5 mph and 250 rpm for the paddles. A total of 16 passes were applied to approximately one-half of each plot: 4 passes on 7 July 2011; 4 passes on 11 July 2011; 4 passes on 14 July 2011; and 4 passes on 18 July 2011. Every other pass was made in the opposing direction of the previous pass.

Plot Evaluation

The non-wear portion of each plot was visually rated for establishment 22 days after seeding on 24 September 2010 and turfgrass 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) from May through October using a 1 to 9 scale where 9 equaled the best turfgrass cover and greatest plant height and best turf quality.

Tall fescue tolerance to wear stress was visually rated on 22 July 2011 (4 days after termination

of wear [DATW] to using a 1 to 9 scale (9 = most dense, uniform turfgrass canopy, and least tissue bruising after traffic). Recovery from wear damage was visually rated on 2 August (4 DATW), 17 August (15 DATW), 26 September (70 DATW), and 26 October 2011 (100 DATW).

Brown patch susceptibility of the non-wear section of plots was assessed on 29 June, 14 July, 1 August, and 17 August 2011 using a 1 to 9 scale where 9 equaled the least disease.

Wear and non-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 $p \leq 0.05$.

Wear Responses in Summer 2010

Wear tolerance. The following entries had the best wear tolerance 4 DATW: ATF1611, ATF1550, Falcon IV, Bullseye, Mustang 4, ATF1614, PPG-TF 117, Raptor II, IS-TF 217, 6351, PPG-TF 101, PPG-TF 115, Essential, PST-5DVD-07, Coronado TDH, ATF1569, ATF1618, ATF1620, Shenandoah III, PPG-TF 102, PPG-TF 116, Crossfire 3, IS-TF 215, IS-TF 223, ATF1567, ATF1609, ATF1548, ATF1551, ATF1621, Rebel Exeda, PSG 5908, Corona, IS-TF 197, PST-5V4, PST-5FDR, PST-5AWT, ATF1571, ATF1610, Finelawn Xpress, LW, PPG-TF 105, Firecracker LS, IS-TF 227, IS-TF 234C, PST-5LIV, PST-5SDT, PST-5GRB, ATF1547, Rhambler, Shenandoah Elite, PSG 07-5, STR 86QRH, Gazelle II, PST-R5NW, ATF1570, and ATF1613 (Table 3).

Entries with the poorest wear tolerance 4 DATW were 3rd Millennium, Catalyst, PPG-TF 106, Titanium LS, PSG 07-9, IS-TF 224, PST-5MCD, Wolfpack II, ATF1549, FCE3, PSG 6008, PSG 8308, PST-5YMY, PST-5SDS, Falcon V, PSG3905, PST-5R05, PST-5MVD, ATF1568, PST-5DRP, ATF1491, IS-TF 226, PST-5SXD, Spyder LS, PST-5T8E, ATF1608, ATF1619, and Kentucky 31 (Table 3).

Recovery from wear stress. Entries that exhibited the best recovery at 15 and 30 DATW were ATF1551, ATF1611, Falcon IV, ATF1571, ATF1569, IS-TF 217, ATF1550, PPG-TF 117, Bullseye, PPG-TF 101, ATF1621, Crossfire 3, PPG-TF 115, PST-5V4, Coronado TDH, IS-TF 215, IS-TF 223, PST-5DVD-07, Corona, Raptor II, ATF1618, PST-5FDR, Essential, PST-5AWT, IS-TF 197, Mustang

4, ATF1620, 6351, ATF1548, and Shenandoah III (Table 3).

Entries with the poorest recovery at 15 and 30 DATW were IS-TF 225, PST-5YMY, PST-5GRB, IS-TF 219, ATF1610, ATF1549, PPG-TF 102, Finelawn Xpress, ATF1570, Wolfpack II, IS-TF 234C, IS-TF 231C, LW, Rhambler, 3rd Millennium, ATF1613, ATF1612, PPG-TF 106, Shenandoah Elite, ATF1568, PSG 8308, Titanium LS, PST-5SLV, PSG 709509, PST-5SXR, Firecracker LS, Traverse, PST-5DRP, PST-5MVD, FCE3, PSG 5908, ATF1566, PSG 8SP1, PST-5SDS, PSG 07-5, PSG3905, PSG 07-9, IS-TF 233C, PSG 8GRTR, ATF1491, PST-5LIV, Kentucky 31, PST-5T8E, Catalyst, Falcon V, PST-5R05, ATF1619, Spyder LS, PST-5SXD, IS-TF 226, PSG 6008, and ATF1608 (Table 3).

Entries that had the best recovery at 70 and 100 DATW were ATF1611, ATF1621, ATF1569, PPG-TF 117, IS-TF 223, PST-5MCD, Bullseye, ATF1551, ATF1550, PPG-TF 105, PST-5SIS, Raptor II, IS-TF 217, Essential, 6351, PST-5DKB, IS-TF 197, ATF1614, Falcon IV, Corona, ATF1571, ATF1567, ATF1609, PST-5V4, PSG 82BPRH, Rebel Exeda, IS-TF 224, PPG-TF 115, PST-5YMY, ATF1613, PPG-TF 101, PST-5DVD-07, ATF1618, ATF1620, IS-TF 231C, Crossfire 3, PST-5R20, PPG-TF 116, ATF1570, Shenandoah III, PPG-TF 106, IS-TF 215, ATF1548, ATF1566, IS-TF 227, PST-5SDT, Gazelle II, PST-5GRB, PPG-TF 102, Finelawn Xpress, ATF1547, Mustang 4, 3rd Millennium, PST-5BGR, Rhambler, and ATF1610 (Table 3).

IS-TF 233C, PST-5LIV, PSG 8GRTR, PST-5T8E, PST-5R05, PSG 8308, ATF1491, IS-TF 226, Falcon V, PSG 6008, Spyder LS, and Kentucky 31 exhibited the poorest recovery 70 and 100 DATW (Table 3).

Non-wear Portion of Plots

Entries that exhibited better turfgrass establishment on 24 September 2010 were Kentucky 31, PST-5BGR, 3rd Millennium, Catalyst, Finelawn Xpress, Shenandoah Elite, PSG 82BPRH, LW, Falcon V, Firecracker LS, STR 86QRH, Corona, PST-5YMY, PST-5R05, Penn 1901, FCE3, PPG-TF 102, Spyder LS, Titanium LS, PSG 8308, PSG 5908, PSG 08-6, PSG 8GRTR, IS-TF 223, and Rebel Exeda (Table 4). The poorest turfgrass establishment on 24 September 2010 was exhibited by PST-5SLV, IS-TF 224, IS-TF 215, IS-TF 226, and IS-TF 219 (Table 4).

The best average turfgrass quality (May to October) in 2011 was exhibited by PPG-TF 106, ATF1608, IS-TF 224, Essential, Bullseye, IS-TF 223, LW, IS-TF 225, ATF1571, ATF1612, Falcon V, PPG-TF 102, 6351, PST-5GRB, ATF1611, PPG-TF 116, IS-TF 197, IS-TF 227, ATF1550, Shenandoah Elite, IS-TF 233C, ATF1610, PPG-TF 105, ATF1549, 3rd Millennium, Wolfpack II, Catalyst, PSG 709509, IS-TF 217, ATF1613, Finelawn Xpress, ATF1621, PST-5DKB, PPG-TF 101, IS-TF 230B, PSG 07-5, ATF1614, ATF1609, PPG-TF 117, PST-5DVD-07, PSG 5908, PST-5V4, PST-5MCD, and PST-5AWT (Table 4). Kentucky 31 had the poorest average turfgrass quality in 2011 (Table 4). PST-5YMY, PST-5LIV, PSG 8SP1, PST-5FDR, STR 86QRH, PSG 8308, PSG 8GRTR, ATF1491, and Coronado TDH also exhibited poor average turfgrass quality (< 4.0) in 2011 (Table 4).

Analysis of variance determined that there was no significant entry effect for brown patch data collected on 14 July and 1 August 2011; thus, entry means for these two rating dates are not presented.

Entries that exhibited the least brown patch on 29 June and 17 August 2011 were IS-TF 224, ATF1550, Bullseye, Essential, ATF1613, ATF1570, PST-5YMY, ATF1611, ATF1571, PPG-TF 115, 6351, ATF1547, PPG-TF 105, IS-TF 227, 3rd Millennium, Traverse, ATF1612, ATF1621, PPG-TF 117, ATF1551, PST-5SDT, ATF1568, ATF1608, PST-5DVD-07, LW, IS-TF 217, PPG-TF 101, ATF1549, PST-5V4, PPG-TF 106, PPG-TF 102, Finelawn Xpress, ATF1609, ATF1548, PST-5AWT, PSG 07-5, IS-TF 223, Falcon V, ATF1569, PPG-TF 116, ATF1614, PST-R5NW, Shenandoah Elite, ATF1567, PST-5MVD, Rhambler, ATF1610, PST-5R05, Kentucky 31, PST-5DKB and Corona (Table 4).

PSG 5908, PST-5LIV, PST-5SXD, PSG 8GRTR, STR 86QRH, ATF1619, PSG3905, and Spyder LS exhibited the most brown patch on 29 June and 17 August 2011 (Table 4).

DISCUSSION

In Study 1, entries that exhibited good average turfgrass quality during 2007 to 2011 tended to have good FTC at 8 DAC ($r = 0.71$; $n = 118$). Similarly, average turfgrass quality during 2007 to 2011 was

positively correlated with traffic tolerance (1 to 9 scale) at 8 DAC ($r = 0.68$; $n = 118$). Entries that had the best average turfgrass quality during 2007 to 2011 and had the best FTC or traffic tolerance 8 DAC in spring 2011 were Finelawn Xpress (RP 2), Faith (K06-WA), Firecracker LS (MVS-MST), RK 4, Bullseye, Falcon V (ATM), RK 5, Shenandoah Elite (RK 6), Catalyst (NA-BT-1), Tanzania (IS-TF-159), Essential (IS-TF-154), Cannavaro (DP 50-9440), Turbo, Greenbrooks (TG 50-9460), and Mustang 4 (M4).

Analysis of Study 2 data indicated that those entries with better average turfgrass quality in 2011 tended to have less brown patch susceptibility (average of 29 June, 14 July, 1 August, and 17 August 2011 rating dates) ($r = 0.63$; $n = 104$). Surprisingly, average turfgrass quality in 2011 was poorly correlated with wear tolerance on 22 July 2011 ($r = 0.36$; $n = 104$). Intense brown patch pressure during summer 2011 resulted in a decline in turfgrass quality among some entries in Study 2 and likely reduced the correlation between turfgrass quality and wear tolerance previously reported (Park et al., 2009a and Park et al., 2010).

Selection of tall fescue cultivars for use on sports field should consider tolerance to traffic stresses and recovery as well as turfgrass quality and brown patch disease resistance.

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Table 1. Traffic tolerance and recovery of tall fescue cultivars and selections during spring 2011. The turf trial was seeded in September 2006 at North Brunswick, NJ. (Includes all entries of the 2006 National Turfgrass Evaluation Program (NTEP) Tall Fescue Test.)

	Cultivar or Selection	Before	---Traffic Tolerance ¹ ---		-----Recovery-----					
		Wear	8 DAC ²		24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		9 May	25 May	25 May	10 June	29 June	31 Oct.	10 June	29 June	31 Oct.
		2011	2011	2011	2011	2011	2011	2011	2011	2011
			--0 to 100% scale ³ --	1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
1	Traverse SRP (RK-1)	96.7	73.3	7.7	66.7	75.0	88.3	7.0	7.7	7.7
2	LS 1200 (SC-1)	91.7	66.7	7.0	55.0	71.7	85.0	6.3	7.0	8.3
3	Spyder LS (Z-2000)	83.3	66.7	7.0	61.7	63.3	65.0	6.3	7.0	4.7
4	Faith (K06-WA)	93.3	65.0	7.0	56.7	66.7	81.7	6.0	7.3	8.3
5	Finelawn Xpress (RP 2)	98.3	65.0	7.0	60.0	71.7	80.0	6.7	7.3	5.7
6	Fat Cat (IS-TF-161)	81.7	65.0	6.7	58.3	56.7	75.0	6.0	6.7	6.7
7	Firecracker LS (MVS-MST)	98.3	65.0	6.3	56.7	66.7	86.7	5.7	7.3	8.0
8	Falcon V (ATM)	100.0	61.7	6.7	58.3	66.7	90.0	6.7	7.0	8.3
9	Bullseye	95.0	61.7	6.7	60.0	63.3	83.3	6.3	7.0	8.0
10	RK 4	91.7	61.7	6.7	61.7	68.3	73.3	6.3	7.7	7.0
11	RK 5	91.7	58.3	6.7	55.0	68.3	78.3	6.3	7.0	6.7
12	Shenandoah Elite (RK 6)	91.7	58.3	6.3	53.3	60.0	85.0	5.3	7.3	7.0
13	Jamboree (IS-TF-128)	95.0	56.7	7.0	65.0	61.7	85.0	7.0	7.7	7.0
14	Catalyst (NA-BT-1)	96.7	56.7	6.3	63.3	73.3	90.0	6.3	8.0	8.0
15	Essential (IS-TF-154)	96.7	56.7	5.7	58.3	61.7	88.3	6.0	7.0	7.3
16	Tanzania (IS-TF-159)	91.7	56.7	5.7	56.7	68.3	83.3	6.3	7.3	7.0
17	Trio (IS-TF-152)	81.7	55.0	6.3	43.3	55.0	78.3	5.0	6.7	6.7
18	MVS-1107	86.7	53.3	6.0	61.7	70.0	78.3	6.7	7.3	6.7
19	Turbo	91.7	53.3	5.7	53.3	68.3	81.7	6.0	7.0	8.0
20	Cannavaro (DP 50-9440)	95.0	53.3	5.7	43.3	51.7	76.7	4.3	6.0	7.7

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(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	Before	---Traffic Tolerance ¹ ---		-----Recovery-----					
		Wear	8 DAC ²		24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		9 May	25 May	25 May	24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		2011	2011	2011	10 June	29 June	31 Oct.	10 June	29 June	31 Oct.
					2011	2011	2011	2011	2011	2011
			--0 to 100% scale ³ --	1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
21	JT-36	80.0	53.3	5.7	55.0	65.0	61.7	6.3	7.0	5.3
22	ATE	83.3	53.3	5.0	51.7	60.0	83.3	5.0	6.7	7.0
23	Sidewinder (IS-TF-138)	78.3	53.3	5.0	43.3	65.0	71.7	5.0	7.3	5.7
24	Escalade	85.0	53.3	4.7	46.7	61.7	70.0	5.3	6.0	5.7
25	Shenandoah III (SH 3)	95.0	51.7	6.0	56.7	51.7	83.3	6.0	6.3	7.3
26	Talladega (RP 3)	83.3	51.7	6.0	56.7	63.3	80.0	5.7	6.7	6.3
27	Gazelle II (PST-5HP)	86.7	51.7	6.0	56.7	63.3	75.0	6.3	7.3	6.3
28	Garrison (IS-TF-153)	85.0	51.7	5.7	46.7	53.3	83.3	5.3	6.0	7.0
29	J-140	88.3	51.7	5.7	50.0	60.0	61.7	5.3	6.7	6.3
30	Rhambler SRP (Rhambler)	85.0	51.7	5.3	46.7	61.7	76.7	4.7	6.0	7.7
31	CE-2	83.3	51.7	5.3	53.3	60.0	71.7	6.0	7.0	6.3
32	Falcon NG (CE 1)	85.0	51.7	5.0	51.7	58.3	83.3	5.7	6.0	7.3
33	Hemi	85.0	51.7	5.0	53.3	66.7	80.0	5.7	7.0	7.0
34	Mustang 4 (M4)	90.0	50.0	5.7	50.0	53.3	78.3	5.0	6.0	7.0
35	Greenbrooks (TG 50-9460)	88.3	50.0	5.7	45.0	56.7	68.3	5.3	5.3	6.0
36	Wolfpack II (PST-5WMB)	88.3	50.0	5.0	55.0	65.0	83.3	5.3	7.3	7.3
37	Cochise IV (RKCL)	95.0	50.0	5.0	45.0	65.0	76.7	4.7	7.3	7.0
38	Raptor II (MVS-TF-158)	81.7	50.0	5.0	48.3	65.0	73.3	5.0	6.7	6.3
39	Speedway (STR-8BPDx)	88.3	50.0	4.7	50.0	63.3	78.3	5.3	7.0	6.0
40	PSG-85QR	88.3	48.3	5.0	51.7	56.7	75.0	5.0	6.3	6.7

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(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	Before	---Traffic Tolerance ¹ ---		-----Recovery-----					
		Wear	8 DAC ²		24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		9 May	25 May	25 May	10 June	29 June	31 Oct.	10 June	29 June	31 Oct.
		2011	2011	2011	2011	2011	2011	2011	2011	2011
			--0 to 100% scale ³ --	1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
41	Rebel IV	88.3	46.7	5.7	50.0	53.3	70.0	5.3	6.0	5.7
42	Van Gogh (LTP-RK2)	96.7	46.7	5.3	41.7	56.7	75.0	4.0	6.7	7.0
43	Honky Tonk (RAD-TF17)	80.0	46.7	5.0	46.7	46.7	60.0	4.7	6.7	5.0
44	Pedigree (ATF-1199)	90.0	45.0	6.0	50.0	51.7	63.3	5.3	6.0	5.0
45	Rocket (IS-TF-147)	85.0	45.0	5.0	51.7	48.3	80.0	5.7	6.7	6.7
46	PSG-82BR	88.3	45.0	5.0	55.0	53.3	75.0	5.7	6.3	6.3
47	Turbo Rz (Burl-TF8)	81.7	45.0	4.7	50.0	61.7	71.7	6.0	6.3	5.3
48	JT-41	80.0	43.3	5.0	45.0	55.0	61.7	5.3	6.0	5.0
49	PSG-TTST	75.0	43.3	4.3	43.3	51.7	58.3	3.7	4.3	4.3
50	STR-8BB5	86.7	41.7	5.0	36.7	53.3	66.7	3.7	5.3	5.3
51	Toccoa (IS-TF-151)	81.7	41.7	4.7	41.7	55.0	70.0	5.3	5.3	5.3
52	JT-42	83.3	41.7	4.7	51.7	66.7	68.3	5.3	7.0	5.0
53	BBM	88.3	41.7	4.3	41.7	50.0	76.7	4.0	6.0	6.7
54	Braveheart (DP 50-9407)	78.3	41.7	4.0	35.0	51.7	71.7	3.3	5.7	7.0
55	MVS-341	76.7	41.7	4.0	46.7	56.7	68.3	5.0	5.7	5.7
56	3rd Millennium SRP	83.3	41.7	3.7	45.0	53.3	65.0	4.3	6.0	5.3
57	Sunset Gold (KZ-2)	75.0	41.7	3.7	41.7	46.7	61.7	4.0	5.0	5.3
58	Cezanne Rz (LTP-CRL)	81.7	40.0	5.0	45.0	55.0	70.0	5.0	6.0	6.0
59	Falcon IV	83.3	40.0	4.7	50.0	58.3	70.0	5.7	5.7	5.3
60	SR 8650 (STR-8LMM)	76.7	40.0	4.7	38.3	46.7	66.7	3.3	5.0	5.3

(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	Before	---Traffic Tolerance ¹ ---		-----Recovery-----					
		Wear	8 DAC ²		24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		9 May	25 May	25 May	10 June	29 June	31 Oct.	10 June	29 June	31 Oct.
		2011	2011	2011	2011	2011	2011	2011	2011	2011
			--0 to 100% scale ³ --	1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
	61 Plato	66.7	40.0	4.7	38.3	38.3	50.0	3.7	3.7	3.3
	62 Terrier (IS-TF-135)	76.7	40.0	4.3	41.7	53.3	73.3	4.3	5.7	6.3
	63 Skyline	80.0	40.0	4.3	51.7	63.3	71.7	5.3	6.3	7.0
	64 BAR Fa 6253	85.0	40.0	4.3	43.3	46.7	70.0	4.3	5.0	5.3
	65 Tahoe II	76.7	40.0	4.0	46.7	58.3	65.0	4.7	5.7	4.7
	66 J-130	86.7	40.0	4.0	38.3	41.7	63.3	3.7	3.3	5.0
	67 GE-1	76.7	40.0	3.7	38.3	55.0	71.7	4.3	5.3	5.7
315	68 Xtremegreen (BGR-TF2)	78.3	40.0	3.3	40.0	58.3	53.3	4.3	6.0	3.7
	69 STR-8GRQR	80.0	38.3	4.7	45.0	61.7	68.3	4.7	5.0	4.7
	70 Justice	86.7	38.3	4.7	40.0	53.3	60.0	4.3	5.7	5.7
	71 06-DUST	76.7	38.3	3.7	40.0	48.3	66.7	3.3	5.3	5.3
	72 Stetson II (NA-SS)	71.7	38.3	3.7	40.0	46.7	61.7	3.7	5.3	4.7
	73 Rembrandt	73.3	36.7	4.3	40.0	55.0	58.3	4.7	4.7	4.7
	74 Monet (LTP-610 CL)	83.3	36.7	4.0	45.0	55.0	71.7	5.0	6.0	7.3
	75 Integrity (BGR-TF1)	76.7	36.7	3.7	41.7	51.7	65.0	4.3	5.7	4.7
	76 Darlington (CS-TF1)	73.3	36.7	3.7	35.0	51.7	56.7	3.3	5.0	4.0
	77 CE-4	75.0	35.0	4.3	38.3	50.0	68.3	4.3	5.7	6.0
	78 Hudson (DKS)	68.3	35.0	4.0	38.3	51.7	50.0	4.3	5.3	4.0
	79 Corona (Col-M)	78.3	35.0	3.7	41.7	43.3	55.0	3.7	4.7	4.7
	80 Lindbergh	65.0	35.0	3.7	38.3	46.7	48.3	3.0	5.3	3.7

(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

Cultivar or Selection	Before Wear	---Traffic Tolerance ¹ --- 8 DAC ²		-----Recovery-----					
	9 May 2011	25 May 2011	25 May 2011	24 DAC 10 June 2011	43 DAC 29 June 2011	167 DAC 31 Oct. 2011	24 DAC 10 June 2011	43 DAC 29 June 2011	167 DAC 31 Oct. 2011
	--0 to 100% scale ³ --		1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
81 JT-45	85.0	35.0	3.3	41.7	46.7	68.3	4.0	4.3	5.0
82 JT-33	73.3	35.0	3.3	38.3	48.3	65.0	4.0	4.3	4.7
83 RNP	71.7	35.0	3.3	33.3	45.0	53.3	3.3	5.7	3.7
84 LS 1010 (ATF 1328)	76.7	35.0	2.7	36.7	53.3	63.3	2.7	4.7	5.3
85 Umbrella (DP 50-9411)	81.7	33.3	3.7	36.7	55.0	71.7	3.3	5.3	7.0
86 Tulsa Time (Tulsa III)	85.0	33.3	3.7	46.7	60.0	65.0	4.7	5.7	5.7
87 Gold Medallion (KZ-1)	80.0	33.3	3.7	35.0	48.3	61.7	3.3	5.0	4.3
88 Crossfire 3 (Col-J)	73.3	33.3	3.7	33.3	45.0	53.3	3.0	4.7	3.7
89 BAR Fa 6363	78.3	33.3	3.3	36.7	46.7	48.3	3.3	3.3	3.7
90 AST9002 (AST-2)	80.0	33.3	3.0	41.7	45.0	63.3	3.3	4.0	4.7
91 GWTF	81.7	33.3	3.0	31.7	50.0	60.0	2.7	4.7	5.7
92 AST7003	76.7	31.7	3.7	30.0	36.7	55.0	3.0	4.3	4.7
93 Titanium LS (MVS-BB-1)	83.3	31.7	3.0	43.3	45.0	76.7	4.3	5.3	6.3
94 Magellan	78.3	31.7	3.0	45.0	58.3	65.0	4.3	5.7	5.3
95 Col-1	85.0	31.7	3.0	40.0	41.7	58.3	3.7	4.7	5.0
96 AST1001 (AST-4)	76.7	31.7	2.7	30.0	43.3	56.7	3.0	4.3	4.7
97 Einstein	65.0	30.0	3.7	40.0	45.0	56.7	4.0	4.3	4.7
98 Reunion (LS-03)	71.7	30.0	3.7	35.0	36.7	53.3	3.3	4.7	4.7
99 Biltmore	73.3	30.0	3.3	38.3	51.7	50.0	4.0	4.7	4.0
100 AST 7002	76.7	30.0	2.7	33.3	46.7	65.0	3.0	4.3	5.0

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(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	Before	---Traffic Tolerance ¹ ---		-----Recovery-----					
		Wear	8 DAC ²		24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		9 May	25 May	25 May	24 DAC	43 DAC	167 DAC	24 DAC	43 DAC	167 DAC
		2011	2011	2011	10 June	29 June	31 Oct.	10 June	29 June	31 Oct.
					2011	2011	2011	2011	2011	2011
			--0 to 100% scale ³ --	1 to 9 scale ⁴	-----0 to 100% scale-----			-----1 to 9 scale-----		
101	Titanium	76.7	30.0	2.7	38.3	45.0	61.7	3.7	4.7	5.0
102	GO-1BFD	78.3	30.0	2.7	38.3	50.0	60.0	3.3	4.7	5.3
103	0312	73.3	30.0	2.3	26.7	36.7	46.7	1.7	2.3	3.0
104	Ninja 3 (ATF 1247)	78.3	28.3	3.3	36.7	55.0	60.0	3.7	5.3	5.0
105	AST9001 (AST-3)	78.3	28.3	3.0	30.0	43.3	51.7	3.3	4.3	4.7
106	PSG-TTRH	76.7	28.3	3.0	35.0	41.7	46.7	3.3	4.0	4.0
107	PSG-RNDR	81.7	26.7	3.3	31.7	35.0	48.3	2.7	3.7	4.0
108	Padre	76.7	26.7	3.0	40.0	40.0	61.7	4.0	3.7	4.3
109	AST 7001	71.7	26.7	2.7	38.3	43.3	56.7	3.0	5.0	4.0
110	Compete (LS-06)	71.7	26.7	2.7	33.3	53.3	55.0	3.3	5.0	5.3
111	Firenza	91.7	25.0	3.3	35.0	50.0	71.7	3.3	5.0	6.3
112	Silverado	63.3	25.0	3.0	33.3	36.7	45.0	3.3	3.3	3.0
113	06-WALK	73.3	25.0	2.7	35.0	41.7	51.7	2.3	4.0	3.3
114	Hunter	76.7	25.0	2.7	35.0	33.3	50.0	3.3	4.3	4.3
115	Aristotle	55.0	25.0	2.7	35.0	41.7	35.0	3.3	3.3	3.3
116	Renovate (LS-11)	71.7	25.0	1.7	26.7	41.7	53.3	2.0	4.0	5.0
117	AST9003 (AST-1)	78.3	23.3	2.3	33.3	38.3	56.7	2.7	3.3	4.3
118	Kentucky 31	50.0	11.7	1.0	25.0	23.3	30.0	1.3	1.0	1.3

(Continued)

Table 1. 2006 NTEP tall fescue test (continued).

Cultivar or Selection	Before Wear	---Traffic Tolerance ¹ ---		-----Recovery-----							
	9 May 2011	8 DAC ²	25 May 2011	25 May 2011	24 DAC 10 June 2011	43 DAC 29 June 2011	167 DAC 31 Oct. 2011	24 DAC 10 June 2011	43 DAC 29 June 2011	167 DAC 31 Oct. 2011	
LSD at 5% =	8.8	--0 to 100% scale ³ --	17.5	1 to 9 scale ⁴	2.0	12.8	15.5	12.8	1.8	1.7	1.5
					-----0 to 100% scale-----				-----1 to 9 scale-----		

¹Traffic tolerance rated after 24 wear passes and 10 compaction passes

²DAC = days after compaction

³Fullness of turfgrass canopy using a 0 to 100% scale (0 = absence of a turfgrass canopy to 100 = full canopy)

⁴Traffic tolerance and recovery rated on a 1 to 9 scale (9 = fullest turfgrass canopy, most uniform ground cover, and least leaf tissue bruising)

Table 2. Performance of tall fescue cultivars and selections without traffic stress in a turf trial seeded in September 2006 at North Brunswick, NJ. (Includes all entries of the 2006 National Turfgrass Evaluation Program (NTEP) Tall Fescue Test.)

	Cultivar or Selection	-----Turfgrass Quality ¹ -----					Spring Green-up ² 7 April 2011	Genetic Color ³ 17 Nov. 2011	Leaf Texture ⁴ 17 Nov. 2011	
		2007-2011 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	2010 Avg.				2011 Avg.
1	Bullseye	7.9	7.9	8.4	8.2	8.1	6.8	5.7	5.7	8.7
2	Cochise IV (RKCL)	7.8	7.3	8.1	8.2	8.4	6.7	6.7	6.7	7.7
3	Catalyst (NA-BT-1)	7.7	7.2	8.0	7.9	8.0	7.4	7.7	4.3	8.3
4	RK 5	7.6	7.3	7.8	7.8	7.7	7.6	5.3	6.0	9.0
5	Wolfpack II (PST-5WMB)	7.6	7.1	7.9	8.2	7.6	7.3	7.7	6.0	9.0
6	Turbo	7.6	7.1	8.0	7.9	8.2	6.7	5.3	6.3	8.3
7	Falcon V (ATM)	7.6	7.4	7.7	8.0	7.8	6.8	7.7	5.3	8.0
8	Monet (LTP-610 CL)	7.4	7.5	7.5	7.3	7.2	7.7	5.7	5.3	8.3
9	Mustang 4 (M4)	7.4	6.7	7.7	8.2	7.6	6.9	5.7	5.7	7.7
10	Cannavaro (DP 50-9440)	7.4	7.2	8.0	7.2	8.2	6.4	3.3	4.7	9.0
11	Firecracker LS (MVS-MST)	7.3	7.4	7.8	7.4	7.5	6.5	4.7	4.7	8.3
12	Faith (K06-WA)	7.3	6.5	7.6	7.8	7.8	6.6	7.0	6.0	8.3
13	Essential (IS-TF-154)	7.2	7.3	7.1	7.3	7.4	6.9	5.3	5.7	8.0
14	Speedway (STR-8BPDX)	7.2	7.0	7.5	7.5	7.7	6.6	6.0	6.0	8.3
15	Tanzania (IS-TF-159)	7.2	6.5	7.7	7.2	7.6	6.9	3.3	6.3	9.0
16	Van Gogh (LTP-RK2)	7.2	6.2	6.9	8.0	8.0	6.9	7.3	5.0	8.0
17	Hemi	7.2	7.1	7.4	7.1	7.6	6.5	4.3	4.7	7.3
18	Shenandoah Elite (RK 6)	7.2	6.8	7.7	7.5	7.6	6.4	4.3	6.0	7.7
19	Greenbrooks (TG 50-9460)	7.2	7.3	7.7	7.4	7.5	5.9	6.7	5.3	7.0
20	Finelawn Xpress (RP 2)	7.1	6.6	7.3	7.6	8.2	6.0	5.0	6.0	6.7
21	Rhambler SRP (Rhambler)	7.1	7.0	7.4	6.7	6.9	7.3	6.7	5.0	8.7
22	RK 4	7.1	6.8	7.0	7.9	7.3	6.3	5.3	6.0	8.0
23	Firenza	7.0	6.6	7.4	7.2	7.3	6.6	5.7	5.7	7.3
24	Spyder LS (Z-2000)	7.0	7.4	6.7	7.6	7.6	5.6	4.7	7.0	6.3
25	LS 1200 (SC-1)	7.0	7.4	7.0	7.6	7.6	5.3	7.7	7.3	8.0

(Continued)

Table 2. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	-----Turfgrass Quality ¹ -----					Spring Green-up ² 7 April 2011	Genetic Color ³ 17 Nov. 2011	Leaf Texture ⁴ 17 Nov. 2011	
		2007-2011 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	2010 Avg.				2011 Avg.
26	Garrison (IS-TF-153)	7.0	6.2	7.1	7.6	7.3	6.6	5.3	6.3	8.0
27	Jamboree (IS-TF-128)	7.0	6.7	7.0	7.1	7.5	6.5	4.7	6.0	8.0
28	3rd Millennium SRP	6.9	6.7	7.2	7.0	7.0	6.6	6.0	6.3	7.0
29	Shenandoah III (SH 3)	6.9	6.8	7.0	7.7	7.5	5.5	6.3	5.7	8.3
30	Traverse SRP (RK-1)	6.9	6.2	6.6	7.1	7.1	7.2	7.3	5.3	8.0
31	Talladega (RP 3)	6.8	6.9	6.7	7.1	7.4	5.6	3.7	5.3	6.7
32	ATE	6.7	7.0	6.7	6.6	6.9	6.2	6.3	5.3	6.7
33	STR-8BB5	6.6	6.4	6.7	6.7	7.2	6.3	4.3	5.7	7.3
34	J-140	6.6	6.4	6.5	6.8	7.2	6.1	5.3	6.3	8.0
35	Raptor II (MVS-TF-158)	6.6	6.7	6.8	6.6	7.0	6.0	2.3	6.3	8.0
36	Sidewinder (IS-TF-138)	6.6	6.3	6.0	6.7	7.6	6.3	1.3	6.0	8.3
37	Braveheart (DP 50-9407)	6.6	6.5	7.3	6.6	6.6	6.0	5.0	6.0	6.7
38	BBM	6.6	6.3	6.5	6.5	7.3	6.5	5.7	5.7	7.3
39	Rocket (IS-TF-147)	6.5	6.0	6.8	7.0	7.2	5.5	4.3	6.0	7.7
40	SR 8650 (STR-8LMM)	6.3	6.3	6.4	6.9	6.5	5.5	5.3	6.0	6.3
41	PSG-82BR	6.3	5.9	6.2	6.8	6.9	5.4	6.0	5.7	6.7
42	Corona (Col-M)	6.2	5.7	5.8	6.5	6.9	6.2	3.0	8.0	5.7
43	Gazelle II (PST-5HP)	6.2	5.8	6.5	6.3	6.5	6.0	4.7	5.7	7.7
44	Reunion (LS-03)	6.2	6.0	5.9	6.2	6.6	6.3	4.7	7.0	6.7
45	Titanium LS (MVS-BB-1)	6.1	5.9	6.0	6.3	6.4	6.2	6.7	4.7	7.3
46	Cezanne Rz (LTP-CRL)	6.1	5.6	6.0	6.4	6.2	6.3	6.0	5.3	7.0
47	Escalade	6.1	6.6	6.5	6.2	5.7	5.4	5.7	4.7	6.7
48	Falcon NG (CE 1)	6.0	6.0	6.3	6.1	5.6	6.0	7.0	4.0	6.7
49	Trio (IS-TF-152)	6.0	5.9	6.1	5.7	6.7	5.6	1.7	7.7	6.7
50	PSG-85QR	6.0	5.3	6.1	5.8	6.4	6.3	5.3	5.7	7.0

(Continued)

Table 2. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	-----Turfgrass Quality ¹ -----					Spring Green-up ² 7 April 2011	Genetic Color ³ 17 Nov. 2011	Leaf Texture ⁴ 17 Nov. 2011	
		2007-2011 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	2010 Avg.				2011 Avg.
51	JT-45	6.0	5.5	6.2	5.8	6.6	5.8	3.0	6.3	6.7
52	Tulsa Time (Tulsa III)	5.9	5.4	5.4	5.8	6.3	6.7	4.0	5.7	7.3
53	Integrity (BGR-TF1)	5.9	6.0	6.3	6.3	5.6	5.2	3.7	7.7	5.3
54	CE-4	5.9	6.2	5.8	5.2	5.9	6.3	5.7	5.3	6.0
55	RNP	5.9	6.2	5.9	5.5	5.9	5.9	3.3	7.7	5.3
56	CE-2	5.9	6.2	6.4	5.6	5.8	5.5	6.3	5.3	5.7
57	Compete (LS-06)	5.8	5.6	6.6	5.7	6.0	5.3	3.3	8.0	5.3
58	Umbrella (DP 50-9411)	5.8	5.8	5.7	6.0	6.3	5.2	5.7	6.3	6.3
59	JT-41	5.8	6.1	5.3	5.9	6.0	6.0	2.0	6.7	6.0
60	GE-1	5.8	5.8	5.5	6.1	6.0	5.5	4.7	5.3	6.7
61	J-130	5.8	5.7	5.9	6.2	6.1	4.9	4.7	7.0	5.3
62	Hudson (DKS)	5.7	6.2	5.7	5.1	5.9	5.8	3.0	7.7	4.7
63	Terrier (IS-TF-135)	5.7	5.8	6.0	5.7	6.3	4.9	2.0	6.3	5.7
64	Justice	5.7	5.2	5.2	5.8	6.3	6.0	6.0	6.0	5.7
65	BAR Fa 6253	5.7	5.5	6.7	5.1	6.2	4.9	6.3	5.7	5.7
66	Ninja 3 (ATF 1247)	5.6	5.1	5.9	5.4	5.5	6.1	5.7	5.3	6.3
67	Col-1	5.6	5.1	5.6	5.4	5.9	5.9	3.3	6.0	6.3
68	Renovate (LS-11)	5.6	5.3	5.8	6.1	5.5	5.2	2.7	8.0	5.7
69	Rebel IV	5.6	6.1	5.5	5.4	6.1	5.1	5.7	5.0	5.3
70	MVS-1107	5.6	4.8	5.9	5.4	5.7	6.0	4.7	4.0	6.7
71	AST9001 (AST-3)	5.6	5.9	5.8	5.6	5.5	5.1	3.3	8.3	5.7
72	Skyline	5.5	5.2	5.6	5.7	5.9	5.2	2.0	6.3	5.7
73	Fat Cat (IS-TF-161)	5.5	5.7	6.0	5.2	5.7	4.9	2.3	8.0	5.7
74	Falcon IV	5.5	5.8	4.8	5.5	5.8	5.7	6.3	4.3	6.0
75	JT-42	5.5	5.6	5.7	5.2	5.8	5.2	2.3	5.0	5.3

(Continued)

Table 2. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	-----Turfgrass Quality ¹ -----					Spring Green-up ² 7 April 2011	Genetic Color ³ 17 Nov. 2011	Leaf Texture ⁴ 17 Nov. 2011	
		2007-2011 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	2010 Avg.				2011 Avg.
76	AST1001 (AST-4)	5.5	5.9	5.7	5.2	5.3	5.1	1.7	8.3	4.3
77	Gold Medallion (KZ-1)	5.5	5.7	5.7	5.5	6.0	4.6	4.0	7.7	5.7
78	Honky Tonk (RAD-TF17)	5.4	5.5	5.4	5.4	5.5	5.3	5.7	6.7	5.3
79	Crossfire 3 (Col-J)	5.4	5.7	5.3	5.4	5.6	5.1	3.3	8.0	5.3
80	Toccoa (IS-TF-151)	5.4	5.6	6.0	5.1	5.5	4.9	1.7	8.3	6.7
81	Pedigree (ATF-1199)	5.4	5.0	5.8	5.8	5.8	4.7	4.7	5.7	5.7
82	AST7003	5.4	5.8	5.0	5.6	6.1	4.6	3.0	8.3	5.0
83	06-DUST	5.4	5.1	5.6	5.5	5.3	5.4	4.3	5.7	5.3
84	JT-36	5.4	5.5	5.5	4.9	5.8	5.3	3.0	5.7	5.7
85	AST9003 (AST-1)	5.4	5.1	6.2	5.6	5.6	4.6	2.7	8.7	5.3
86	Padre	5.4	5.7	5.8	5.5	5.8	4.3	6.0	5.7	4.7
87	Sunset Gold (KZ-2)	5.4	5.5	5.2	5.5	5.6	4.7	2.3	8.3	5.3
88	Turbo Rz (Burl-TF8)	5.3	5.3	5.3	5.2	5.5	5.2	5.3	4.0	5.0
89	LS 1010 (ATF 1328)	5.2	5.5	4.8	5.4	5.7	4.8	3.7	7.3	6.7
90	Titanium	5.2	5.2	5.7	5.3	5.3	4.5	6.0	5.7	4.3
91	GWTF	5.2	5.3	5.3	5.2	5.2	4.7	3.7	7.0	5.0
92	AST 7002	5.1	5.1	5.6	5.0	5.1	5.0	4.0	7.7	5.0
93	Stetson II (NA-SS)	5.1	5.1	5.3	5.0	5.4	4.9	4.0	8.7	4.3
94	Xtremegreen (BGR-TF2)	5.1	5.3	4.7	5.2	5.4	4.9	2.7	8.0	4.7
95	AST9002 (AST-2)	5.1	6.0	5.2	4.9	5.4	4.2	3.0	7.7	4.7
96	Tahoe II	5.1	5.7	5.4	4.6	5.0	4.7	2.7	5.7	5.3
97	MVS-341	5.1	5.6	5.1	4.7	5.2	5.0	5.3	5.0	5.0
98	JT-33	5.0	5.6	5.2	4.6	5.1	4.7	2.3	5.7	5.3
99	Darlington (CS-TF1)	5.0	5.7	6.0	4.1	5.1	4.2	3.3	7.7	4.7
100	Biltmore	4.9	4.9	4.6	5.0	5.3	4.5	4.3	6.3	4.3

(Continued)

Table 2. 2006 NTEP tall fescue test (continued).

	Cultivar or Selection	-----Turfgrass Quality ¹ -----					Spring Green-up ² 7 April 2011	Genetic Color ³ 17 Nov. 2011	Leaf Texture ⁴ 17 Nov. 2011	
		2007-2011 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	2010 Avg.				2011 Avg.
101	0312	4.9	5.3	4.5	5.0	5.7	4.1	3.3	8.3	3.7
102	Rembrandt	4.8	5.4	4.8	5.0	4.3	4.8	6.7	4.0	5.0
103	STR-8GRQR	4.8	4.6	4.9	4.1	5.1	5.1	4.3	4.3	5.3
104	Hunter	4.8	5.0	4.6	4.8	5.1	4.3	3.3	9.0	4.3
105	PSG-TTRH	4.7	4.9	5.0	4.3	5.0	4.4	2.7	6.7	4.3
106	06-WALK	4.7	5.1	5.0	4.3	4.3	4.6	4.7	7.0	3.3
107	AST 7001	4.6	5.0	5.1	4.1	4.9	3.9	2.3	8.7	3.7
108	PSG-RNDR	4.4	4.1	4.0	4.5	4.8	5.0	4.3	7.0	3.3
109	Einstein	4.4	5.2	4.2	4.5	4.2	4.2	5.7	6.0	4.3
110	Magellan	4.4	4.8	4.4	3.9	4.7	4.1	5.0	5.3	4.7
111	BAR Fa 6363	4.4	4.5	4.6	4.3	4.5	4.1	3.0	7.0	4.0
112	GO-1BFD	4.2	4.2	4.5	4.3	3.8	4.4	8.0	3.3	4.7
113	Lindbergh	4.1	4.3	4.4	3.7	3.7	4.4	3.3	4.7	5.0
114	PSG-TTST	3.9	4.2	3.9	3.4	3.9	4.3	5.3	2.7	4.7
115	Plato	3.6	4.3	4.0	3.1	3.3	3.6	5.0	4.3	4.3
116	Aristotle	3.4	3.9	4.0	2.8	2.9	3.4	5.7	6.3	3.0
117	Silverado	3.0	3.5	3.4	2.7	2.5	2.9	4.0	2.7	2.7
118	Kentucky 31	1.1	1.1	1.1	1.0	1.0	1.2	8.7	1.0	1.0
	LSD at 5% =									
	LSD at 5% =	0.8	1.0	1.2	1.2	1.0	1.3	1.9	1.5	1.6

¹9 = best turfgrass quality

²9 = earliest spring green-up

³9 = darkest genetic green color

⁴9 = finest leaf texture

Table 3. Tolerance and recovery of tall fescue cultivars and selections subjected to wear in July 2011 in a turf trial established 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	Recovery ¹				
	Tolerance ¹ 4 DATW ² 22 July 2011	15 DATW 2 Aug. 2011	30 DATW 17 Aug. 2011	70 DATW 26 Sept. 2011	100 DATW 26 Oct. 2011	
1 ATF1611	7.7	6.3	6.7	9.0	8.0	
2 ATF1550	7.7	5.7	6.0	8.0	7.3	
3 Bullseye	7.3	6.0	5.7	8.0	8.3	
4 Falcon IV	7.3	6.3	6.3	7.7	6.3	
5 ATF1614	7.0	4.3	5.3	7.7	7.3	
6 Mustang 4	7.0	5.0	4.7	6.7	7.0	
7 PPG-TF 117	6.7	4.7	6.0	8.3	8.3	
8 IS-TF 217	6.7	6.0	6.0	7.7	8.0	
9 Raptor II	6.7	6.0	5.0	8.0	6.7	
10 Essential	6.3	4.7	4.7	7.7	8.0	
11 6351	6.3	5.7	4.3	7.7	8.0	
12 ATF1569	6.3	5.7	6.0	8.7	7.7	
13 ATF1618	6.3	6.0	5.0	7.0	7.7	
14 PST-5DVD-07	6.3	5.0	5.0	7.0	7.7	
15 ATF1620	6.3	4.7	4.7	7.0	7.3	
16 PPG-TF 115	6.3	4.7	5.3	7.3	6.7	
17 PPG-TF 101	6.3	5.7	5.7	7.3	6.3	
18 Coronado TDH	6.3	6.0	5.3	5.7	6.3	
19 ATF1621	6.0	5.3	5.7	8.7	8.3	
20 IS-TF 223	6.0	5.3	5.0	8.3	8.3	
21 ATF1551	6.0	7.3	7.0	8.0	8.0	
22 ATF1567	6.0	4.3	4.7	7.3	8.0	
23 ATF1609	6.0	4.0	4.7	7.3	7.7	
24 Rebel Exeda	6.0	3.7	4.3	7.3	7.3	
25 PPG-TF 102	6.0	3.3	3.7	6.7	7.3	
26 Crossfire 3	6.0	5.0	5.7	7.0	7.0	
27 PPG-TF 116	6.0	3.7	4.3	7.0	7.0	
28 Shenandoah III	6.0	5.7	4.3	7.0	6.7	
29 IS-TF 215	6.0	6.3	5.3	7.0	6.3	
30 ATF1548	6.0	4.7	4.3	7.0	6.3	
31 ATF1571	5.7	5.3	6.0	7.3	8.3	
32 IS-TF 197	5.7	6.0	4.7	7.7	7.7	
33 PST-5AWT	5.7	4.7	4.7	6.3	7.7	
34 PST-5V4	5.7	5.0	5.3	7.3	7.3	
35 PSG 5908	5.7	3.0	3.0	6.0	7.0	

(Continued)

Table 3. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Wear	Recovery ¹			
	Tolerance ¹ 4 DATW ² 22 July 2011	15 DATW 2 Aug. 2011	30 DATW 17 Aug. 2011	70 DATW 26 Sept. 2011	100 DATW 26 Oct. 2011
36 Corona	5.7	4.7	5.0	7.7	6.3
37 ATF1610	5.7	3.7	3.7	6.7	6.3
38 PST-5FDR	5.7	4.7	5.0	6.0	6.0
39 PPG-TF 105	5.3	4.3	5.3	8.0	7.3
40 IS-TF 227	5.3	3.3	5.0	6.7	7.3
41 PST-5SDT	5.3	4.0	4.7	6.7	7.3
42 Finelawn Xpress	5.3	3.0	3.7	6.7	7.3
43 PST-5GRB	5.3	3.0	3.7	6.7	7.3
44 ATF1547	5.3	4.0	4.7	6.7	7.0
45 Firecracker LS	5.3	3.7	3.3	6.3	7.0
46 LW	5.3	2.7	3.3	6.3	6.7
47 IS-TF 234C	5.3	3.3	3.7	6.3	6.0
48 PST-5LIV	5.3	3.7	2.3	5.3	5.3
49 Gazelle II	5.0	3.3	4.0	6.7	7.3
50 ATF1570	5.0	4.0	3.7	7.0	7.0
51 Shenandoah Elite	5.0	2.7	3.3	5.7	7.0
52 ATF1613	5.0	3.0	3.3	7.3	6.7
53 Rhambler	5.0	1.7	3.3	6.7	6.7
54 STR 86QRH	5.0	5.3	3.3	6.0	6.3
55 PSG 07-5	5.0	3.0	2.7	5.7	6.0
56 PST-R5NW	5.0	4.0	4.3	6.0	5.7
57 PST-5DKB	4.7	3.7	4.7	7.7	7.7
58 IS-TF 230B	4.7	4.3	4.0	6.3	7.7
59 PSG 82BPRH	4.7	4.0	4.3	7.3	7.3
60 IS-TF 231C	4.7	3.0	3.7	7.0	7.3
61 PST-5R20	4.7	3.3	4.7	7.0	7.0
62 IS-TF 219	4.7	3.7	3.7	6.3	7.0
63 PST-5SIS	4.7	4.0	5.0	8.0	6.7
64 ATF1566	4.7	3.3	3.0	7.0	6.3
65 Penn 1901	4.7	5.0	4.0	6.0	6.3
66 Traverse	4.7	3.0	3.0	6.0	6.3
67 PST-5SLV	4.7	2.3	3.3	5.3	6.3
68 PSG 709509	4.7	3.3	3.3	5.7	5.7
69 PSG 08-6	4.7	4.3	2.3	6.0	5.3
70 IS-TF 233C	4.7	2.0	2.7	5.3	5.3

(Continued)

Table 3. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Wear	Recovery ¹			
	Tolerance ¹ 4 DATW ² 22 July 2011	15 DATW 2 Aug. 2011	30 DATW 17 Aug. 2011	70 DATW 26 Sept. 2011	100 DATW 26 Oct. 2011
71 ATF1612	4.3	2.7	3.3	5.7	7.3
72 PST-5BGR	4.3	4.3	4.3	6.7	6.7
73 PST-5SXR	4.3	2.7	3.3	6.0	6.0
74 IS-TF 225	4.3	3.0	3.7	5.7	6.0
75 PSG 8SP1	4.3	2.7	3.0	6.0	5.3
76 PSG 8GRTR	4.3	2.7	2.7	5.0	5.3
77 PST-5MCD	4.0	4.0	4.7	8.3	7.0
78 IS-TF 224	4.0	3.7	4.3	7.3	7.0
79 3rd Millennium	4.0	3.3	3.3	6.7	7.0
80 ATF1549	4.0	3.0	3.7	6.0	7.0
81 Titanium LS	4.0	3.0	3.3	6.0	7.0
82 PPG-TF 106	4.0	2.3	3.3	7.0	6.7
83 Wolfpack II	4.0	3.7	3.7	6.0	6.3
84 Catalyst	4.0	2.3	2.0	5.7	6.0
85 PSG 07-9	4.0	3.0	2.7	4.0	5.7
86 PST-5YMY	3.7	3.7	3.7	7.3	6.7
87 PST-5SDS	3.7	3.3	3.0	6.3	6.0
88 FCE3	3.7	3.3	3.0	6.0	5.7
89 PSG 8308	3.7	2.7	3.3	4.7	5.0
90 PSG 6008	3.7	2.0	1.3	3.0	4.7
91 ATF1568	3.3	3.3	3.3	6.3	6.7
92 PST-5MVD	3.3	2.7	3.0	5.7	6.3
93 PSG3905	3.3	2.0	2.7	5.7	5.7
94 PST-5R05	3.3	2.0	1.7	4.7	5.3
95 Falcon V	3.3	1.7	1.7	4.0	5.0
96 PST-5DRP	3.0	2.3	3.0	6.0	6.0
97 ATF1491	3.0	2.3	2.3	4.7	5.0
98 PST-5SXD	2.7	1.7	1.7	4.0	6.0
99 IS-TF 226	2.7	1.3	1.3	4.0	5.3
100 ATF1619	2.3	1.7	1.7	5.3	5.7
101 ATF1608	2.3	1.3	1.0	4.3	5.7
102 PST-5T8E	2.3	1.3	2.0	5.0	5.3
103 Spyder LS	2.3	1.7	1.7	3.0	4.3
104 Kentucky 31	1.3	1.3	2.0	3.0	3.0

(Continued)

Table 3. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Wear Tolerance ¹	-----Recovery ¹ -----			
	4 DATW ² 22 July 2011	15 DATW 2 Aug. 2011	30 DATW 17 Aug. 2011	70 DATW 26 Sept. 2011	100 DATW 26 Oct. 2011
LSD at 15% =	2.7	2.8	2.8	2.6	2.3

¹ Wear tolerance and recovery rated on a 1 to 9 scale, where 9 = fullest turfgrass canopy, most uniform ground cover, and least leaf tissue bruising

² DATW = days after termination of wear

Table 4. Performance of tall fescue cultivars and selections without wear in a turf trial established in September 2010 at North Brunswick, NJ. (Includes all entries of the 2010 Cooperative Turfgrass Breeders Test (CTBT) Tall Fescue Trial.)

Cultivar or Selection	Establishment ¹ 24 Sept. 2010	-----Turfgrass Quality ² -----							---Brown Patch ³ ---	
		2011 Avg.	May 2011	June 2011	July 2011	Aug. 2011	Sept. 2011	Oct. 2011	29 June 2011	17 Aug. 2011
1 PPG-TF 106	5.3	7.1	6.7	7.0	8.3	5.3	7.7	7.7	7.7	4.7
2 ATF1608	5.3	7.1	7.0	6.3	6.7	6.3	8.0	8.0	7.7	6.0
3 IS-TF 224	3.3	6.9	6.3	6.7	6.3	5.0	8.3	8.7	8.7	5.7
4 Essential	7.0	6.8	6.3	6.3	7.3	5.7	7.7	7.3	8.3	5.7
5 Bullseye	6.3	6.8	8.0	7.3	7.7	4.0	7.0	6.7	8.3	5.7
6 IS-TF 223	7.3	6.7	5.7	6.3	8.3	5.3	7.0	7.3	7.3	6.0
7 IS-TF 225	6.0	6.6	8.0	5.3	4.7	6.7	8.3	6.7	5.3	6.7
8 LW	7.7	6.6	7.0	7.3	6.7	4.0	7.7	7.0	7.7	5.3
9 ATF1571	5.3	6.6	7.3	6.0	6.3	5.7	7.0	7.0	8.0	5.7
10 ATF1612	6.7	6.4	7.0	6.7	6.0	4.0	7.3	7.7	8.0	4.7
11 Falcon V	7.7	6.3	6.7	7.3	5.0	3.7	7.7	7.7	7.3	5.7
12 PPG-TF 102	7.3	6.3	6.7	6.3	5.0	4.7	7.7	7.7	7.7	4.7
13 PST-5GRB	6.3	6.3	6.3	6.0	5.3	4.7	7.7	7.7	6.3	6.3
14 ATF1611	5.0	6.3	6.0	5.7	7.3	4.7	7.3	7.0	8.0	6.0
15 6351	6.7	6.3	7.0	6.7	6.0	4.3	7.0	6.7	8.0	5.3
16 PPG-TF 116	4.7	6.3	6.7	6.3	5.3	5.3	6.7	7.3	7.3	5.3
17 IS-TF 227	5.0	6.2	7.0	6.0	4.3	4.7	7.7	7.7	8.0	4.7
18 IS-TF 197	6.7	6.2	6.7	6.3	7.0	2.3	7.3	7.7	7.7	3.7
19 ATF1550	6.7	6.2	6.7	7.3	6.0	4.3	6.7	6.3	8.7	5.0
20 ATF1610	6.0	6.2	6.3	6.0	6.7	4.3	7.3	6.3	7.0	5.3
21 PPG-TF 105	5.3	6.2	5.3	7.3	6.0	4.7	7.0	6.7	8.0	4.7
22 Shenandoah Elite	8.0	6.2	8.0	6.0	3.7	4.3	7.7	7.3	7.3	4.3
23 IS-TF 233C	7.0	6.2	8.3	7.3	5.0	2.7	6.3	7.3	7.0	2.3
24 ATF1549	6.3	6.1	5.3	6.0	5.7	4.7	7.7	7.0	7.7	5.0
25 3rd Millennium	8.3	6.0	6.0	6.3	5.3	4.3	7.3	6.7	8.0	4.7

(Continued)

Table 4. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Establishment ¹ 24 Sept. 2010	-----Turfgrass Quality ² -----							---Brown Patch ³ ---	
		2011 Avg.	May 2011	June 2011	July 2011	Aug. 2011	Sept. 2011	Oct. 2011	29 June 2011	17 Aug. 2011
26 Wolfpack II	5.7	6.0	6.0	6.0	6.3	4.3	7.0	6.3	6.7	4.3
27 IS-TF 217	4.0	6.0	7.7	6.0	7.0	3.3	6.0	6.0	7.7	5.0
28 Catalyst	8.3	6.0	7.0	6.3	5.7	3.0	7.0	6.7	7.3	3.7
29 PSG 709509	4.7	6.0	7.3	7.7	6.0	3.3	5.7	5.7	7.7	3.3
30 ATF1613	4.7	5.9	5.7	7.0	4.0	4.7	7.3	7.0	8.3	4.7
31 Finelawn Xpress	8.3	5.9	7.7	7.3	4.7	3.3	6.3	6.0	7.7	4.7
32 ATF1621	5.0	5.9	6.0	6.0	6.0	4.0	6.7	6.7	8.0	4.3
33 PST-5DKB	4.3	5.9	4.7	7.0	5.7	4.7	6.3	7.0	7.0	4.3
34 PPG-TF 101	7.0	5.9	7.0	6.3	7.3	2.7	5.3	6.7	7.7	5.0
35 ATF1614	5.0	5.8	5.0	5.3	6.7	4.7	6.3	7.0	7.3	5.0
36 PPG-TF 117	4.0	5.8	5.7	6.7	4.7	3.3	7.3	7.3	8.0	4.3
37 ATF1609	4.7	5.8	7.0	6.7	4.0	3.7	7.3	6.3	7.7	4.3
38 PSG 07-5	6.0	5.8	7.7	6.3	6.7	3.3	5.3	5.7	7.7	4.0
39 IS-TF 230B	6.3	5.8	6.3	5.7	5.7	3.3	7.0	7.0	7.0	3.7
40 PST-5DVD-07	6.7	5.8	6.0	6.3	6.0	5.0	6.3	5.0	7.7	5.7
41 PSG 5908	7.3	5.7	6.7	5.3	5.0	3.3	7.0	7.0	6.0	3.3
42 PST-5V4	7.0	5.7	7.0	5.7	5.7	4.7	6.0	5.3	7.7	4.7
43 PST-5AWT	6.3	5.7	6.3	6.3	4.3	3.7	6.7	7.0	7.7	4.3
44 PST-5MCD	6.7	5.7	4.0	7.0	5.7	3.7	7.3	6.3	8.0	3.7
45 IS-TF 219	2.0	5.6	6.7	5.0	4.7	6.7	5.3	5.3	6.7	5.7
46 ATF1569	5.3	5.6	5.0	5.7	5.7	4.7	6.7	6.0	7.3	5.3
47 IS-TF 226	2.3	5.6	7.7	6.3	3.0	3.7	6.7	6.3	6.7	3.3
48 IS-TF 234C	5.7	5.5	7.3	6.7	4.7	2.3	5.7	6.3	7.7	3.0
49 Rhambler	5.7	5.5	5.7	5.7	7.0	3.0	6.0	5.7	7.0	5.3
50 Traverse	5.7	5.5	6.0	5.7	5.7	5.0	5.7	5.0	8.0	4.7

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(Continued)

Table 4. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Establishment ¹ 24 Sept. 2010	-----Turfgrass Quality ² -----							---Brown Patch ³ ---	
		2011 Avg.	May 2011	June 2011	July 2011	Aug. 2011	Sept. 2011	Oct. 2011	29 June 2011	17 Aug. 2011
51 Raptor II	6.3	5.5	6.0	6.3	6.3	2.3	6.3	5.7	7.0	3.3
52 Firecracker LS	7.7	5.5	7.0	6.3	4.3	2.0	6.3	6.7	7.7	2.7
53 Corona	7.7	5.4	7.0	5.7	5.7	3.0	5.3	6.0	7.0	4.3
54 ATF1567	5.0	5.4	6.0	5.7	5.0	4.0	5.7	6.3	7.3	4.0
55 PST-5R05	7.7	5.4	6.7	6.0	5.7	3.7	5.3	5.0	7.0	5.3
56 PPG-TF 115	5.7	5.3	5.7	5.0	4.3	5.3	5.7	6.0	8.0	5.7
57 Shenandoah III	6.7	5.3	5.0	6.3	4.3	2.7	7.0	6.7	8.3	3.0
58 Rebel Exeda	7.3	5.3	6.3	7.7	3.7	3.0	6.0	5.3	8.3	3.0
59 ATF1548	5.7	5.3	6.3	5.7	4.0	4.0	6.3	5.3	7.7	4.3
60 ATF1551	7.0	5.3	4.3	5.0	6.7	4.0	5.7	6.0	8.0	4.0
61 Gazelle II	6.3	5.3	5.0	6.3	6.0	2.7	6.0	5.7	7.3	3.7
62 ATF1570	5.3	5.2	6.7	6.0	4.0	3.7	5.7	5.3	8.3	4.3
63 PST-5SDT	5.3	5.1	4.7	4.7	7.0	2.7	5.7	6.0	8.0	4.0
64 PST-5SLV	3.7	5.1	5.7	5.3	3.3	4.3	6.3	5.7	8.0	3.7
65 FCE3	7.3	5.0	6.0	5.0	7.0	2.0	5.3	5.0	8.0	3.7
66 IS-TF 215	2.3	5.0	6.0	5.7	6.3	2.3	4.3	5.3	8.7	2.3
67 ATF1568	7.0	5.0	6.0	5.3	3.3	4.0	5.7	5.3	8.0	4.0
68 PSG 82BPRH	8.0	5.0	6.0	4.3	4.0	3.3	5.3	6.7	6.3	3.7
69 Mustang 4	6.0	4.9	6.0	6.7	3.3	2.7	5.7	5.3	9.0	3.0
70 IS-TF 231C	6.0	4.9	6.7	6.0	3.0	2.7	5.7	5.7	8.3	2.0
71 PST-5SIS	7.0	4.9	4.0	5.0	5.7	5.3	4.7	4.7	6.0	6.0
72 PST-5R20	5.0	4.9	4.3	5.0	5.7	5.0	5.0	4.3	6.7	5.0
73 PST-5DRP	7.0	4.9	5.0	4.3	4.0	4.0	6.7	5.3	6.0	4.7
74 PST-5MVD	5.3	4.9	4.3	5.3	4.0	3.0	6.3	6.3	7.3	4.0
75 Spyder LS	7.3	4.9	7.0	4.7	2.3	4.0	5.7	5.7	5.0	2.7

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(Continued)

Table 4. 2010 CTBT tall fescue trial (continued).

	Cultivar or Selection	Establishment ¹ 24 Sept. 2010	-----Turfgrass Quality ² -----						---Brown Patch ³ ---		
			2011 Avg.	May 2011	June 2011	July 2011	Aug. 2011	Sept. 2011	Oct. 2011	29 June 2011	17 Aug. 2011
76	ATF1547	5.0	4.8	3.3	5.0	7.0	3.7	5.0	5.0	8.0	5.0
77	Titanium LS	7.3	4.8	5.0	4.7	5.7	3.3	5.7	4.7	7.7	3.7
78	ATF1620	6.0	4.8	4.7	6.0	4.0	2.0	6.0	6.0	8.0	1.7
79	PSG 07-9	5.0	4.7	6.3	6.0	2.3	2.0	6.0	5.3	7.7	2.3
80	ATF1618	5.0	4.7	4.0	4.7	5.3	3.0	5.0	6.0	7.3	3.3
81	Falcon IV	5.7	4.6	4.3	6.0	5.0	2.3	5.7	4.3	8.3	2.7
82	PST-R5NW	5.3	4.6	5.3	4.7	6.7	3.3	3.7	4.0	7.3	4.3
83	PSG 08-6	7.3	4.6	4.0	5.7	5.0	2.7	5.0	5.0	7.7	3.3
84	ATF1566	6.0	4.6	4.0	5.0	4.3	3.0	5.3	5.7	7.3	2.7
85	PSG 6008	6.0	4.5	6.7	7.3	3.3	1.7	4.0	4.0	6.7	1.7
86	PST-5SXR	6.7	4.4	5.3	5.0	3.3	2.7	5.0	5.3	7.0	3.3
87	Crossfire 3	6.3	4.4	5.0	4.7	4.0	2.7	5.3	5.0	7.0	2.7
88	PST-5BGR	9.0	4.4	6.0	4.7	4.0	2.7	4.7	4.3	7.0	2.3
89	PST-5SXD	5.0	4.4	5.0	5.3	3.7	1.7	5.0	5.7	6.0	2.3
90	PST-5SDS	5.3	4.2	4.0	5.0	4.7	2.7	4.3	4.7	7.0	1.3
91	PST-5T8E	6.3	4.2	4.7	3.3	3.0	5.0	4.7	4.3	4.0	4.3
92	PSG3905	5.7	4.2	5.7	4.3	3.0	2.3	5.0	4.7	5.0	2.7
93	ATF1619	5.0	4.0	4.3	4.0	2.7	3.7	4.7	5.0	5.3	3.7
94	Penn 1901	7.7	4.0	3.7	4.3	4.7	2.7	4.0	4.7	6.3	2.7
95	PST-5YMY	7.7	3.9	2.7	3.0	5.3	4.7	4.3	3.7	8.0	6.3
96	PST-5LIV	7.0	3.9	4.7	4.7	4.0	2.3	4.3	3.7	6.0	2.7
97	PSG 8SP1	7.0	3.8	5.0	5.3	1.7	2.3	4.0	4.7	6.3	2.0
98	PST-5FDR	6.7	3.8	5.3	4.7	3.0	2.0	3.7	4.0	6.7	2.3
99	STR 86QRH	7.7	3.7	6.3	4.3	1.3	1.7	4.0	4.7	5.7	1.0
100	PSG 8308	7.3	3.7	3.3	4.0	4.0	2.7	3.3	4.7	5.7	4.0

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(Continued)

Table 4. 2010 CTBT tall fescue trial (continued).

Cultivar or Selection	Establishment ¹ 24 Sept. 2010	-----Turfgrass Quality ² -----							---Brown Patch ³ ---	
		2011 Avg.	May 2011	June 2011	July 2011	Aug. 2011	Sept. 2011	Oct. 2011	29 June 2011	17 Aug. 2011
101 ATF1491	6.7	3.6	2.7	3.7	5.0	3.0	3.3	4.0	6.7	3.3
102 PSG 8GRTR	7.3	3.6	4.0	4.3	4.3	1.0	3.7	4.3	6.0	2.0
103 Coronado TDH	5.3	3.5	4.0	5.0	2.7	2.3	3.7	3.7	7.3	3.0
104 Kentucky 31	9.0	1.2	1.0	1.0	1.0	2.3	1.0	1.0	7.0	4.7
LSD at 5% =	1.7	1.4	2.0	2.0	ns	2.4	2.1	1.7	2.0	2.7

¹9 = best establishment; most complete turfgrass cover and greatest plant height

²9 = best turfgrass quality

³9 = least disease