

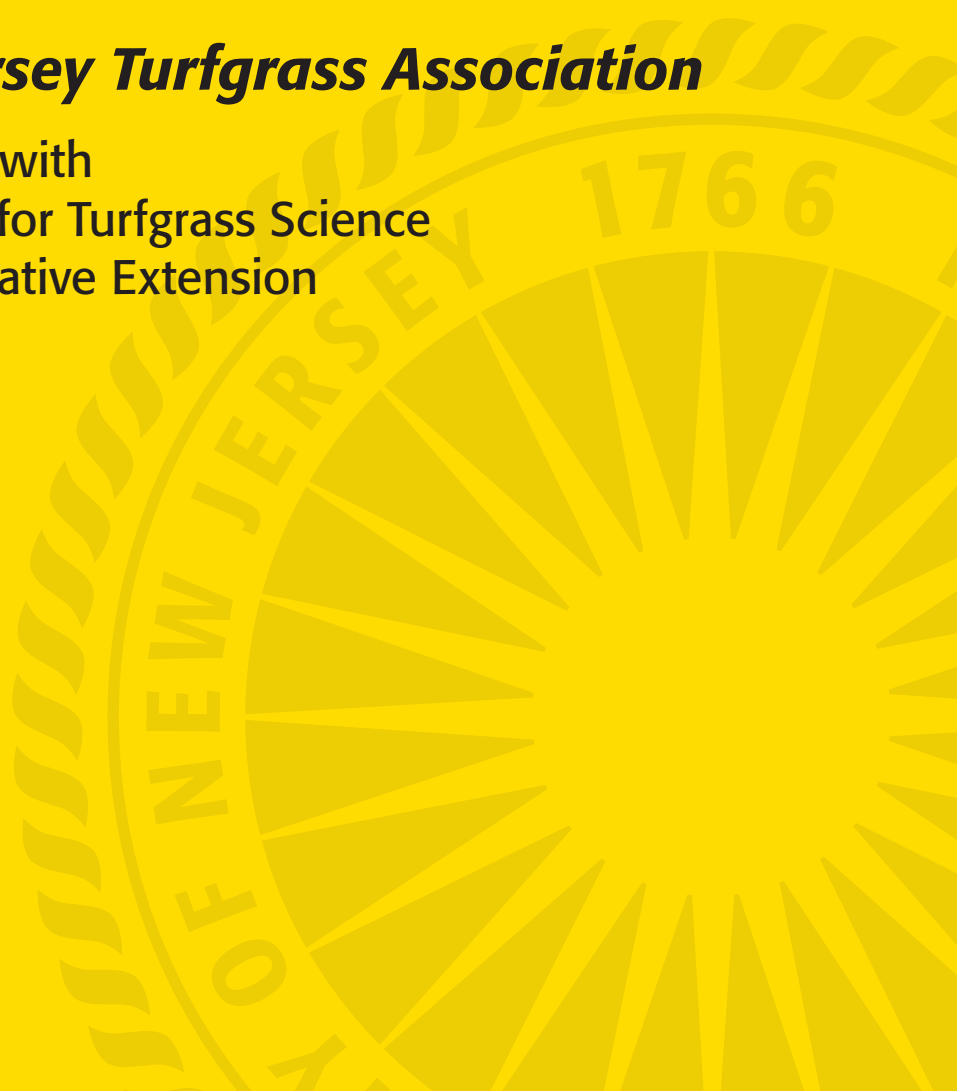
RUTGERS

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In Cooperation with
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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 2009 New Jersey Turfgrass Expo. Publication of these lectures provides a readily avail-

able 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

PERFORMANCE OF TALL FESCUE CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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Tall fescue [*Lolium arundinacea* (Schreb.) Darbysh.] is a cool-season grass native to Europe and parts of Africa (Buckner et al. 1979). Tall fescue was originally planted as a forage grass, and it was not until the release of the first tall fescue cultivars in the 1940s that its utility expanded to low maintenance situations. Although tall fescue thrives in a broad range of environments, due in large part to excellent heat and drought tolerance, these earlier cultivars lacked the overall turf quality needed for use in home lawns.

Tall fescue made its way into the turfgrass market with the release of the cultivar Rebel in 1979 (Funk et al. 1981). Since that time, turf breeders have improved the grass to produce cultivars with a darker color, finer leaf texture, lower growth habit, dense turf canopy, and increased resistance to diseases (Watkins and Meyer, 2004). Recent tall fescue releases can now be used effectively for a number of medium-high maintenance turf situations including athletic fields, parks, home lawns, and roughs on some golf courses. The deep root system that tall fescue develops enables it to access soil moisture deep in soil profile. This species is also widely adaptive to many soil types and does not require as many fertilizer inputs as most other cool-season turfgrasses. Many of the improved tall fescue cultivars are comparable to other cool-season turfgrass species in terms of turf quality at mowing heights of inches and higher.

The current challenge facing tall fescue breeders is to improve disease resistance, spreading ability, and the overall competitive nature of tall fescue cultivars. In the Rutgers Turfgrass Breeding Program, several research trials have been implemented to address these specific challenges. For example, the incorporation of endophytes into tall fescue cultivars

has been a primary goal in recent years. Endophytes are fungi that live in the leaf sheath and stem tissues of tall fescue plants and produce different alkaloids that have been shown to enhance plant tolerance to insect feeding (Funk et al., 1993). In other studies, inoculation and screening techniques have been implemented to improve tall fescue cultivars and selections for disease resistance as well as increased wear tolerance. To compliment the development of new selection techniques, plant breeders continue to collect germplasm with beneficial genes that can be incorporated into the breeding program.

PROCEDURES

Field Establishment and Maintenance

Four tall fescue trials were established at the Rutgers Plant Biology and Pathology Research and Extension Farm at Adelphia, NJ between 2005 and 2008 (Tables 1 to 4). All tests were established in September by hand sowing 0.88 oz of seed per 3 x 5 ft plot (3.7 lb/1000 ft²). All tests were arranged in randomized complete block design with three replications, and each plot had a 6-inch unseeded border to limit contamination. Broadleaf weeds were controlled with spring or fall applications of 2,4-D, dicamba (Banvel), and MCPP. Dithiopyr (Dimension) was applied in spring to control annual grassy weeds. In July, metalaxyl (Subdue) was applied to prevent Pythium blight.

Single applications of fertilizer did not exceed 1.0 lb nitrogen/ 1000 ft². The amount and timing of nitrogen applied to the turf was varied to encourage disease and other stresses. Field trials were mowed regularly (approximately 1 to 2 times per week) with

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reel mowers to maintain a 1.5-inch height of cut. The annual rate of nitrogen applied as well as mowing height for each test is presented in Table 5. Based on soil test results, lime was applied as needed to maintain a pH of 6.0 to 6.5. Irrigation was applied to each test as needed to avoid wilting.

Visual Assessment

All tests were rated throughout growing season for visual turf quality (i.e. overall appearance, turf color, uniformity, density, mowing quality, reduced rate of vertical growth, leaf texture, and damage due to insects and diseases). Other ratings such as spring green-up color, wear tolerance, density, and damage due to specific diseases were documented when significant differences were evident. All ratings were based on a 1 to 9 scale, where 9 represented the best turf characteristics. Plots were evaluated by a number of turfgrass specialists to reduce the impact of personal bias for particular characteristics. All data were summarized and subjected to an analysis of variance. Means were separated using Fisher's protected least significant difference (LSD) means separation test.

Inoculation

The tall fescue trial established in 2008 (Table 4) was screened for resistance to brown patch following field inoculation with two isolates of *Rhizoctonia solani* Kühn, the casual fungus of this disease. Inoculum was prepared by growing two isolates of *R. solani* on sterilized Kentucky bluegrass (*Poa pratensis* L.) seed following the method described by Bonos et al. (2003). The prepared inoculum was then placed in a drop spreader and applied to the field at a rate of 0.2 g/m² in the month of June. To ensure favorable was applied to the field immediately after inoculation.

Wear Application

A novel wear machine (Bonos et al. 2001) was used to apply wear uniformly over each turf plot in the tall fescue trial established in 2007 (Table 3). The wear was applied to one-half of each turf plot, leaving the unworn half as control. Wear was applied by passing the machine over each plot in one direction and then returning over each plot in the opposite direction. Wear was applied on 10, 15, and 22 June and 6 and 28 July, 2009. A total of 4 passes of the wear machine were applied on each treatment date.

RESULTS AND DISCUSSION

Results of tall fescue tests are found in Tables 1 through 4. All tests are ranked overall (multi-year) turf quality averages. A high quality average is generally indicative of better disease resistance, a dark green color, greater turf density and uniformity, fine leaf texture, lower growth habit, improved mowing quality, and less damage due to insects.

Turf Quality

Cultivars such as Shenandoah Elite, Falcon V, Faith, Braveheart, Shenandoah III, Mustang 4, Van Gogh, Wolf pack II, Cochise IV, Traverse SRP, Jamboree, Greenbrooks, PST-Syn 5POL, BB-5 Comp, Titanium LS, Essentials, Cannavaro, and RK-5 Comp performed consistently well in multiple trials from 2006 to 2009. Higher turf quality increases the utility of tall fescue in athletic fields, school grounds, sod farms, lawns and parks. Turf quality characteristics include canopy density, uniformity, lower growth habit, finer leaf texture, dark green color, and resistance to disease or environmental stress.

Disease Resistance

Brown patch is a significant problem for tall fescue turfs in warm, humid environments. As yet, there are no turf-type tall fescue cultivars with complete resistance to this disease. The data in Table 4 illustrate significant resistance to brown patch in cultivars such as Falcon V, 3rd Millennium SRP, Faith, Shenandoah III, Shenandoah Elite, and Mustang 4, exhibiting improved resistance to Brown Patch in multiple trials.

Wear Tolerance

One characteristic that limits the use of tall fescue turf in situations such as athletic fields is its slow recovery after traffic stress. Turfgrass managers have made significant and effective improvements to the ability of tall fescue to recover from wear. The wear tolerance of entries subjected to total of 22 passes of a wear simulator is shown in Table 3. The cultivars and selections Falcon V, Mustang 4, Shenandoah III, Finelawn Xpress, Cochise IV, and Shenandoah Elite displayed improved wear tolerance compared to others entries in the trial.

Spring Green-Up

Spring green up is the measure of the active growth in early spring or late winter after the recovering from dormancy in winter season. Spring green-up is influenced by temperature and photoperiod in the growing region. Tall fescue cultivars such as Shenandoah III, Faith, Cochise IV, Falcon V, Catelyst, Finelawn Xpress, and Shenandoah Elite exhibited earlier spring green-up than other cultivars and selections in the trial (Table 2).

Establishment

Improved establishment of tall fescue after sowing makes a sward denser and reduces soil erosion. Cultivars with improved establishment are demanded by turfgrass managers, sod growers, and consumers. Rapid establishment is an objective for turf breeders to improve germination and tillering rate. Cultivars that exhibited rapid establishment in 2008 (Table 4) were Faith, Falcon V, Cochise IV, Shenandoah Elite, Shenandoah III, and 3rd Millennium SRP.

SUMMARY

To increase the acceptance of tall fescue in turfgrass market, turfgrass breeders at Rutgers have made consistent efforts to improve tall fescue cultivars and selections. Resistance to brown patch is one the primary goals of the breeding program, and wear tolerance in tall fescue is improved by applying a wear simulator treatment to single plot progenies. Incorporation of endophytes in tall fescue would increase the utility of this turfgrass in certain stress situations. These well-focused efforts help to make tall fescue one of the most widely accepted cool-season turfgrasses in the United States.

ACKNOWLEDGMENTS

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Table 1. Performance of tall fescue cultivars and selections in a turf trial established in September 2005 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----				
	2006-2009 Avg.	2006 Avg.	2007 Avg.	2008 Avg.	2009 Avg.
1 BB-5 Comp	6.8	6.8	7.0	6.6	7.0
2 RK-5 Comp	6.8	6.9	6.9	6.7	6.6
3 BB-2 Comp	6.7	6.8	6.8	7.0	6.3
4 Braveheart	6.7	6.7	6.5	6.6	6.9
5 Shenandoah Elite	6.7	6.9	6.7	6.6	6.5
6 Van Gogh	6.6	6.6	6.5	6.5	6.8
7 Traverse SRP	6.6	6.3	6.8	6.5	6.7
8 Jamboree	6.5	5.7	6.8	6.6	6.8
9 Essential	6.5	6.5	6.2	6.9	6.2
10 Greenbrooks	6.5	6.0	6.4	6.7	6.8
11 RK-4 Comp	6.5	6.3	6.6	6.4	6.5
12 Cannavaro	6.4	6.1	6.3	6.8	6.4
13 PST-Syn 5POL	6.4	6.3	6.2	6.2	6.9
14 3rd Millennium SRP	6.4	6.4	6.6	6.3	6.2
15 BBM	6.3	6.7	5.8	6.4	6.3
16 Shenandoah III	6.3	6.4	6.2	6.2	6.3
17 Titanium LS	6.3	6.0	6.2	6.3	6.6
18 Trio	6.2	6.0	6.3	6.7	5.9
19 IS-TF 131	6.1	5.8	6.1	6.5	6.0
20 SR 8650	6.0	6.3	5.8	5.9	6.2
21 CE-3	6.0	6.4	5.7	5.7	6.1
22 IS-TF 137	6.0	5.7	6.1	6.2	5.9
23 Falcon NG	6.0	5.9	5.9	5.4	6.6
24 RAD-TF28	6.0	5.8	6.5	5.8	5.7
25 Umbrella	6.0	5.8	6.2	6.0	5.7
26 Turbo RZ	5.9	5.5	6.7	5.7	5.9
27 IS-TF 139	5.9	5.9	6.0	5.7	6.1
28 Dynamic II	5.9	5.8	6.0	5.6	6.3
29 PST-Syn 5DSL	5.9	5.7	5.7	5.9	6.1
30 TF2	5.8	5.6	6.1	5.4	6.2
31 IS-TF 130	5.8	5.6	5.9	5.5	6.1
32 PSG 44 Bulk-05	5.8	6.1	5.5	6.0	5.6
33 RAD-TF29	5.8	5.6	5.9	5.6	6.0
34 Inferno	5.8	5.8	5.6	5.6	6.1
35 Falcon IV	5.7	6.1	6.0	4.9	5.9

(Continued)

Table 1 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				
	2006-2009 Avg.	2006 Avg.	2007 Avg.	2008 Avg.	2009 Avg.
36 RAD-TF34	5.7	5.6	5.9	5.1	6.2
37 RAD-TF22	5.7	5.4	5.8	5.8	5.9
38 TAHEO II	5.7	5.9	5.9	5.6	5.3
39 RAD-TF32	5.7	5.8	5.7	5.5	5.7
40 PSG 43-Bulk-05	5.7	6.1	5.6	5.6	5.5
41 Terrier	5.7	6.0	6.1	5.5	5.1
42 Cezzane	5.7	6.3	5.6	5.4	5.4
43 Rocket	5.7	5.6	5.5	5.6	6.0
44 ATF 1234	5.7	5.5	5.8	5.7	5.7
45 Ninja 3	5.7	6.1	5.7	5.4	5.3
46 PSG 39-Bulk-05	5.7	6.0	6.0	5.5	5.1
47 IS-TF 118	5.6	6.0	6.0	5.4	5.1
48 TF9	5.6	5.8	5.4	5.9	5.4
49 PSG 32-Bulk-05	5.6	5.6	5.2	5.9	5.8
50 CE-4 Comp	5.6	6.1	5.3	5.4	5.4
51 Sidewinder	5.6	5.7	5.8	5.5	5.2
52 TF21	5.5	5.3	5.6	5.6	5.5
53 DaVinci	5.5	6.1	5.2	5.4	5.3
54 PST-Syn 5COR	5.5	6.0	5.3	5.3	5.4
55 PSG 33-Bulk-05	5.5	5.9	5.5	5.2	5.2
56 ATF 1223	5.4	6.0	5.2	5.3	5.3
57 SR 8550	5.4	6.0	5.5	5.0	5.1
58 IS-TF 132	5.4	5.5	5.4	5.5	5.1
59 ATF 1245	5.4	5.7	5.6	5.0	5.3
60 Honkey Tonk	5.4	5.7	5.7	5.2	5.0
61 Pedigree	5.4	5.9	5.1	5.2	5.3
62 PSG 41-Bulk-05	5.4	5.5	5.1	5.5	5.5
63 ATF 1213	5.4	5.7	5.2	5.4	5.1
64 Guardian 21	5.4	6.0	5.4	5.1	4.9
65 PST-Syn 5JAG	5.4	5.6	5.2	5.1	5.5
66 PST-Syn 5BGR	5.3	5.6	5.7	5.0	4.9
67 IS-TF 94	5.3	6.3	5.4	5.2	4.4
68 Bingo	5.3	6.0	5.2	5.0	4.9
69 Innovator	5.3	5.7	5.1	5.1	5.3
70 Banshee	5.3	5.5	5.5	5.1	5.0

(Continued)

Table 1 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				
	2006-2009 Avg.	2006 Avg.	2007 Avg.	2008 Avg.	2009 Avg.
71 ATF 1236	5.3	5.7	5.3	5.2	4.9
72 STR 8Rhz 8K	5.3	5.4	5.3	5.2	5.2
73 RAD-TF19	5.3	5.5	5.7	5.3	4.6
74 ATF 1200	5.3	5.3	5.1	5.3	5.3
75 PST-Syn 5DR5	5.2	5.6	5.4	5.2	4.7
76 RAD-TF33	5.2	5.2	5.2	5.1	5.5
77 Rebel Advance	5.2	5.8	5.1	5.2	4.9
78 RAD-TF31	5.2	5.6	5.7	4.8	4.8
79 RAD-TF16	5.2	5.5	5.2	5.3	4.8
80 CE-2 Comp	5.2	6.0	5.1	4.7	4.8
81 PST-Syn 5MED	5.2	5.6	5.1	4.9	5.0
82 STR GrandellRh	5.1	6.0	5.2	4.8	4.6
83 Skyline	5.1	5.7	5.1	5.0	4.5
84 STR 8Rhz 9K	5.1	5.8	5.0	4.7	4.9
85 RAD-TF10	5.1	5.3	5.1	5.2	4.7
86 PSG 36-Bulk-05	5.1	5.8	5.0	5.0	4.6
87 PST-5BAB	5.1	5.6	5.1	4.9	4.7
88 Avenger	5.1	5.8	5.2	4.8	4.6
89 PSG 42-Bulk-05	5.1	5.9	4.5	5.1	4.7
90 Raptor	5.0	5.7	4.8	5.1	4.5
91 Virtue II	5.0	5.4	4.7	4.9	5.1
92 Apache III	5.0	6.0	4.9	4.4	4.6
93 STR 8Rhz 1K	5.0	5.5	5.0	4.6	4.7
94 Corgi	5.0	5.7	4.6	4.7	4.9
95 Cortez II	4.9	5.6	4.9	4.7	4.5
96 ATF 1226	4.9	5.7	4.8	4.7	4.5
97 Titanium	4.9	5.8	5.0	4.6	4.3
98 Matador GT	4.9	6.0	4.8	4.2	4.6
99 Hounddog 6	4.9	5.7	4.9	4.7	4.3
100 PST-Syn 5MSD	4.9	5.0	4.8	5.0	4.7
101 STR 8Rhz 18K	4.9	5.1	4.9	4.8	4.7
102 Solara	4.9	5.4	5.0	4.6	4.4
103 PSG 21-Bulk-05	4.9	5.7	4.7	4.7	4.4
104 Blackwatch	4.8	5.8	4.6	4.3	4.6
105 TF30	4.8	5.0	4.7	5.0	4.6

(Continued)

Table 1 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				
	2006-2009 Avg.	2006 Avg.	2007 Avg.	2008 Avg.	2009 Avg.
106 Shenandoah Sport	4.8	5.2	4.8	4.6	4.5
107 STR 8600Rh	4.8	5.5	4.7	4.6	4.2
108 PSG 20-Bulk-05	4.8	5.0	5.0	5.0	4.1
109 Cochise III	4.7	5.5	5.0	4.3	4.1
110 Cayenne	4.7	5.3	4.3	4.5	4.6
111 03-5 TF#3-04	4.7	5.3	4.7	4.6	4.1
112 Silverado II	4.7	5.8	4.5	4.4	4.1
113 Rembrandt	4.7	5.7	4.1	4.7	4.3
114 STR TitLtdRh	4.7	5.2	5.1	4.5	3.8
115 SRT DDMRh	4.6	5.2	4.6	4.7	4.1
116 TF35	4.6	5.4	4.5	4.6	3.9
117 Silverstar	4.6	5.6	4.1	4.3	4.4
118 SR 8600	4.6	5.5	4.5	4.3	4.1
119 ATF 1246	4.6	5.2	4.5	4.4	4.2
120 PSG 31-Bulk-05	4.5	4.8	4.6	4.5	4.3
121 PST-Syn 5SL5	4.5	5.1	4.1	4.4	4.5
122 STR RenRh	4.5	5.8	4.3	4.1	3.9
123 Ninja II	4.5	5.1	4.5	4.3	4.2
124 Blade Runner	4.5	5.4	4.3	4.3	4.1
125 STR 8RhZ 13K	4.5	5.5	4.2	4.2	4.1
126 Picasso	4.5	5.3	4.2	4.2	4.2
127 Grande II	4.5	5.5	4.2	4.2	3.9
128 PST-Syn 5DZ5	4.4	4.7	4.1	4.4	4.3
129 STR 8RhZ 14K	4.4	5.4	4.2	4.2	3.7
130 STR Reg SRh	4.3	5.1	4.4	4.1	3.7
131 STR 8RhZ 19K	4.3	5.4	3.9	4.2	3.7
132 Regiment II	4.3	5.3	4.5	4.0	3.5
133 PST-Syn 5WP	4.3	4.7	4.3	3.9	4.3
134 Constitution	4.3	5.3	3.9	4.0	3.9
135 Prestige	4.3	4.7	4.5	4.0	3.9
136 Masterpiece	4.3	5.2	4.0	4.2	3.8
137 STR 8RhZ 10K	4.3	4.7	4.2	4.2	4.1
138 Jaguar 4	4.2	5.1	4.1	4.2	3.5
139 Arid 3	4.2	5.2	4.2	4.0	3.3
140 Quest	4.2	5.1	4.1	3.7	3.8

(Continued)

Table 1 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				
	2006-2009 Avg.	2006 Avg.	2007 Avg.	2008 Avg.	2009 Avg.
141 Watchdog	4.1	5.1	3.9	3.5	4.1
142 PST-Syn 5SMG	4.1	4.8	3.9	4.0	3.7
143 PST-Syn 5SEG	4.1	4.5	3.8	4.1	3.9
144 PST-5Z5 Bulk	4.0	4.3	3.9	4.0	3.9
145 SR 8550	4.0	4.8	3.7	3.6	4.0
146 STR 8MO1	4.0	4.6	3.6	3.8	4.0
147 Rhizing Star	4.0	4.5	3.9	3.7	3.7
148 PST-Syn 5ZR	3.9	4.3	3.7	4.0	3.7
149 Endeavor	3.9	4.7	4.0	3.7	3.5
150 IS-TF 134	3.9	4.5	4.0	3.7	3.5
151 ATF 1166	3.9	4.5	3.6	4.0	3.5
152 Tom Cat	3.9	4.6	3.5	3.7	3.5
153 PST-Syn 580Z	3.8	4.7	3.5	3.6	3.6
154 Expedition	3.8	4.8	3.5	3.9	3.2
155 PST-53X Bulk	3.6	4.0	3.3	3.6	3.6
156 Titan Ltd.	3.6	4.7	3.2	3.4	3.2
157 PST-Syn 525G	3.6	4.4	3.7	3.3	3.1
158 Tulsa II	3.6	4.4	3.4	3.3	3.2
159 Pixie	3.6	4.6	3.2	3.4	3.0
160 Jaguar 3	3.5	4.1	3.2	3.2	3.5
161 Falcon III	3.2	4.1	2.7	3.2	2.7
162 KY-31	1.1	1.0	1.0	1.2	1.0
LSD at 5% =	0.6	0.7	0.9	0.7	0.9

¹9 = best turf quality

Table 2. Performance of tall fescue cultivars and selections in a turf trial established in September 2006 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
1 SP2 comp	6.8	6.6	7.0	6.7	7.0
2 Faith	6.7	6.7	7.0	6.3	6.7
3 Cochise IV	6.6	6.5	7.0	6.2	7.0
4 Cannavaro	6.3	6.2	6.4	6.2	5.7
5 SP1 comp	6.3	6.5	6.4	5.9	5.7
6 ATF 1354	6.2	5.7	6.4	6.4	6.3
7 IS-TF-128	6.1	5.9	6.2	6.3	6.0
8 ATF 1352	6.1	5.7	6.4	6.3	6.7
9 IS-TF-159	6.1	6.0	6.1	6.1	4.7
10 SC-1	6.0	5.7	6.5	6.0	6.7
11 Falcon V	6.0	5.7	6.4	6.0	6.3
12 Bonanza II	6.0	5.6	6.2	6.1	7.0
13 Firecracker LS	6.0	5.7	6.2	6.0	6.0
14 RK 4	6.0	5.8	6.1	6.0	5.3
15 Van Gogh	6.0	5.8	6.2	5.8	6.3
16 Rhambler SRP	5.9	5.6	6.1	6.2	6.7
17 Monet	5.9	5.6	6.5	5.7	6.3
18 Turbo	5.9	5.4	6.3	6.0	5.7
19 Shenandoah Elite	5.9	5.7	6.1	5.8	6.3
20 ATF 1353	5.9	5.4	6.2	6.0	6.3
21 RK 5	5.9	5.6	6.1	5.8	6.0
22 IS-TF 137	5.8	5.9	5.7	5.9	5.0
23 Hemi	5.8	5.5	6.1	5.9	5.7
24 Traverse SRP	5.8	5.4	6.0	6.0	6.7
25 PSG 75-A-06	5.8	5.9	5.8	5.7	5.7
26 Bullseye	5.8	5.3	6.2	5.8	5.3
27 STR-8BPDx	5.8	5.6	5.9	5.8	7.0
28 Essential	5.7	5.3	5.9	6.0	5.7
29 Firenze	5.7	5.7	5.9	5.6	6.0
30 Finelawn Xpress	5.7	5.8	5.6	5.7	7.0
31 Six Point	5.7	5.8	5.7	5.6	6.3
32 PSG 77-C-06	5.7	5.4	6.0	5.7	6.0
33 Shenandoah III	5.7	5.3	6.2	5.6	7.3
34 PST-Syn-5DZP	5.7	5.9	5.4	5.8	6.3
35 Garrison	5.7	5.5	5.7	5.8	5.7

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
36 RAD-TF28	5.7	5.5	5.4	6.1	5.3
37 Spyder LS	5.7	5.6	5.5	5.9	5.7
38 Fat Cat	5.7	5.9	5.7	5.4	5.0
39 Sidewinder	5.7	5.5	5.6	5.8	5.7
40 Millennium SRP	5.6	5.8	5.7	5.4	6.3
41 M4	5.6	5.7	5.5	5.7	6.0
42 Braveheart	5.6	5.6	5.7	5.6	6.0
43 Toccoa	5.6	5.6	5.7	5.6	5.0
44 Catelyst	5.6	5.2	5.9	5.6	7.3
45 Trio	5.6	5.9	5.4	5.4	4.3
46 CO3 comp	5.5	5.6	5.5	5.5	5.7
47 MVS-TF-158	5.5	5.4	5.4	5.7	4.3
48 PSG 55-B-06	5.5	5.9	5.2	5.5	5.7
49 Terrier	5.5	5.7	5.3	5.6	4.7
50 PST-5SXY Bulk	5.5	5.0	5.7	5.8	6.7
51 PSG 55-C-06	5.5	5.6	5.4	5.5	6.0
52 BBM	5.5	5.1	5.8	5.7	6.3
53 CE3 comp	5.5	5.2	5.7	5.6	5.7
54 Wolfpack II	5.5	5.3	5.6	5.6	6.3
55 ATF 1329	5.5	5.4	5.5	5.6	5.0
56 ATF 1346	5.5	5.5	5.3	5.6	6.3
57 IS-TF 160	5.5	5.5	5.4	5.6	5.7
58 Greenbrooks	5.5	5.5	5.8	5.1	6.7
59 STR 8 Rhz 8K	5.5	5.2	5.5	5.7	4.0
60 PSG 23-06	5.5	5.5	5.5	5.3	6.3
61 AR4 comp	5.5	6.1	5.2	5.1	6.0
62 PSG 21-AB-06	5.5	5.4	5.6	5.4	5.3
63 PSG 67-B-06	5.5	5.4	5.4	5.5	7.0
64 RNP	5.4	6.2	5.3	4.8	4.3
65 ATF 1245	5.4	5.5	5.5	5.3	6.0
66 MVS 3609	5.4	5.4	5.3	5.5	5.7
67 PSG 67-C-06	5.4	5.5	5.4	5.3	5.7
68 Talladega	5.4	5.6	5.4	5.2	5.0
69 ATF 1284	5.4	5.7	5.3	5.2	5.0
70 PST-Syn-56Y	5.4	5.5	5.3	5.2	6.7

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
71 ATF 1328	5.3	5.7	5.5	4.8	4.7
72 AR2 comp	5.3	5.3	5.3	5.4	5.3
73 Umbrella	5.3	5.0	5.6	5.4	6.0
74 Rocket	5.3	5.1	5.4	5.4	5.0
75 PST-5DVD Bulk	5.3	5.1	5.4	5.5	5.3
76 RAD-TF33	5.3	5.6	5.4	5.0	6.0
77 AST 9003	5.3	6.0	5.2	4.8	3.7
78 Honkey Tonk	5.3	5.5	5.2	5.2	6.0
79 AR3 comp	5.3	5.4	5.2	5.3	6.3
80 BGR-TF2	5.3	5.8	5.2	4.8	5.0
81 Tulsa Time	5.3	5.6	5.2	5.0	4.3
82 Justice	5.3	5.1	5.5	5.2	6.3
83 ATF 1324	5.3	5.3	5.5	5.0	5.3
84 Dynamic II	5.3	5.0	5.4	5.4	6.3
85 BGR-TF1	5.3	5.8	5.2	4.8	5.3
86 STR 86QRH	5.2	4.9	5.4	5.4	6.0
87 SR 8650	5.2	5.3	5.0	5.3	3.7
88 IS-TF 155	5.2	5.5	4.8	5.4	5.7
89 RAD-TF29	5.2	5.2	5.1	5.4	5.3
90 ATF 1328	5.2	5.7	5.3	4.6	4.7
91 Inferno	5.2	5.8	5.0	4.9	5.3
92 Darlington	5.2	5.6	5.2	4.8	4.3
93 RAD-TF31	5.2	5.0	5.4	5.3	6.0
94 J-140	5.2	5.1	5.3	5.2	6.0
95 Titanium LS	5.2	5.1	5.4	5.1	6.3
96 KZ-1	5.2	5.8	5.2	4.6	4.3
97 RAD-TF27	5.2	5.3	5.0	5.3	5.3
98 GE-1	5.2	5.1	5.2	5.2	5.7
99 JT-45	5.2	5.8	5.1	4.6	4.7
100 CE 4	5.2	5.5	5.1	4.9	5.7
101 IS-TF 118	5.2	5.3	5.3	4.9	4.0
102 Ninja 3	5.1	5.3	5.2	4.9	5.7
103 DaVinci	5.1	5.2	5.2	5.0	5.0
104 Compete	5.1	5.4	5.2	4.8	5.0
105 JT-41	5.1	5.4	5.3	4.7	4.7

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
106 ATF 1248	5.1	5.0	4.9	5.5	5.3
107 Reunion	5.1	5.2	5.5	4.6	4.7
108 PSG-85QR	5.1	4.8	5.3	5.1	5.7
109 AST 9001	5.1	5.9	5.0	4.4	4.7
110 Banshee	5.1	5.3	4.8	5.1	4.3
111 Cezanne RZ	5.1	5.0	5.2	4.9	4.3
112 Renovate	5.1	5.8	4.8	4.6	4.0
113 MVS-341	5.1	5.2	5.0	4.9	5.7
114 BAR Fa 6253	5.1	4.9	5.6	4.7	6.7
115 PST-R5W3	5.0	4.8	5.2	5.1	6.3
116 ATF 1334	5.0	5.0	5.1	5.0	3.7
117 STR-8BB5	5.0	4.9	4.9	5.3	5.3
118 Crossfire 3	5.0	5.6	4.9	4.5	4.3
119 ATF 1325	5.0	5.3	5.0	4.8	5.3
120 MVS 1200	5.0	4.9	5.0	5.2	5.7
121 Pedigree	5.0	5.0	5.1	4.9	5.7
122 RAD-TF35	5.0	4.8	5.1	5.1	4.7
123 RAD-TF30	5.0	4.7	5.3	5.0	5.0
124 Escalade	5.0	4.8	5.3	4.9	5.0
125 J-130	5.0	5.2	5.3	4.4	4.7
126 RAD-TF32	5.0	4.9	4.9	5.2	5.0
127 Falcon IV	5.0	5.2	4.9	4.8	6.0
128 PST-Syn-5WPM	5.0	4.8	5.1	5.0	7.7
129 PST-5KB	5.0	5.5	5.0	4.4	4.3
130 Rebel IV	4.9	5.1	5.0	4.7	5.7
131 PST-5H20 Bulk	4.9	4.9	5.0	4.9	6.0
132 PSG 19-r3-06	4.9	5.1	4.9	4.9	5.0
133 ATF 1344	4.9	5.0	5.0	4.8	5.0
134 PST-5BGR-06	4.9	4.5	5.3	5.0	5.3
135 GWTF	4.9	5.6	4.8	4.4	4.0
136 CO2 comp	4.9	4.9	4.9	5.0	6.7
137 Prospect	4.9	5.2	4.7	4.8	6.0
138 PSG-TTRH	4.9	5.1	5.0	4.6	5.3
139 Cortez II	4.9	5.2	5.1	4.4	4.0
140 PST-5JG6 Bulk	4.9	4.8	5.0	4.9	7.0

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
141 SR 8600	4.9	5.4	4.7	4.6	7.3
142 Rebel Advance	4.9	4.9	5.0	4.8	4.7
143 AR1 comp	4.9	4.6	5.1	5.0	5.3
144 ATF 1321	4.9	5.1	5.0	4.5	4.3
145 ATF 1358	4.9	5.0	4.8	4.9	6.3
146 RAD-TF40	4.9	5.2	4.7	4.8	5.7
147 Stetson II	4.9	5.4	4.9	4.4	5.7
148 ATF 1327	4.9	5.0	4.9	4.7	4.7
149 JT-33	4.9	5.2	4.7	4.7	4.3
150 ATF 1112	4.9	5.0	4.9	4.8	5.7
151 PSG 62-A-06	4.9	5.0	4.9	4.7	4.7
152 JT-42	4.9	5.1	5.0	4.5	4.0
153 CE 2	4.9	5.0	4.8	4.8	5.3
154 ATF 1357	4.9	5.0	5.0	4.6	6.3
155 Corona	4.9	5.3	4.7	4.5	4.3
156 KZ-2	4.9	5.3	4.7	4.6	3.3
157 ATF 1330	4.9	5.0	4.9	4.6	4.7
158 Innovator	4.9	5.0	4.8	4.8	4.3
159 ATF 1360	4.8	5.0	4.9	4.7	5.3
160 Hounddog 6	4.8	5.3	4.6	4.6	4.3
161 PST-5LIV	4.8	4.8	4.9	4.8	5.3
162 Finelawn Elite	4.8	5.0	4.7	4.8	7.0
163 Gazelle II	4.8	4.5	5.2	4.8	4.7
164 ATF 1331	4.8	5.1	4.7	4.7	5.0
165 Bingo	4.8	5.4	4.7	4.4	5.3
166 AST 7002	4.8	5.1	5.0	4.3	5.0
167 JT-36	4.8	4.7	5.0	4.7	4.0
168 AST 1001	4.8	5.1	5.0	4.3	4.0
169 Apache III	4.8	4.8	4.9	4.7	4.7
170 PSG 18-A-06	4.8	5.0	4.8	4.7	6.0
171 PSG 19 r4-06	4.8	5.0	4.9	4.5	4.7
172 PSG 20 bulk-06	4.8	5.0	4.6	4.9	5.7
173 PSG-82BR	4.8	4.7	4.9	4.9	6.0
174 AST 7003	4.8	5.5	4.6	4.2	4.3
175 PST-5V4	4.8	4.8	4.9	4.7	6.0

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
176 Einstein	4.8	4.9	5.0	4.4	6.0
177 Avenger	4.8	5.1	4.7	4.5	5.7
178 Skyline	4.8	5.0	4.7	4.6	4.3
179 AST 7001	4.8	5.3	4.6	4.4	3.7
180 Raptor	4.8	5.3	4.2	4.7	4.7
181 PST-5R56	4.8	4.6	4.8	4.9	5.3
182 Guardian 21	4.8	5.0	4.6	4.6	5.3
183 Titanium	4.7	5.1	4.8	4.3	5.7
184 Cochise III	4.7	5.2	4.6	4.5	5.0
185 Tahoe II	4.7	5.0	4.6	4.6	4.7
186 Hunter	4.7	5.7	4.5	3.9	4.3
187 ATF 1200	4.7	4.9	4.7	4.6	6.0
188 PST-R5EP	4.7	4.7	4.7	4.7	7.7
189 PSG 9-A-06	4.7	4.8	4.6	4.7	5.0
190 Prestige	4.7	5.2	4.5	4.5	5.7
191 BAR Fa 6363	4.7	5.0	4.6	4.5	5.7
192 Falcon NG	4.7	4.6	4.8	4.7	5.3
193 Turbo RZ	4.7	4.6	5.0	4.5	4.3
194 Matador GT	4.7	4.8	4.6	4.7	4.0
195 ATF 1338	4.7	4.8	5.0	4.3	4.3
196 Blackwatch	4.7	5.1	4.7	4.3	5.0
197 Tombstone	4.7	5.2	4.8	4.0	4.3
198 Col-1	4.7	5.0	4.6	4.4	5.0
199 STR 8GRQR	4.7	4.6	4.8	4.7	5.7
200 ATF 1336	4.7	4.7	4.6	4.7	4.3
201 Tuxedo	4.7	5.1	4.6	4.3	4.7
202 ATF 1345	4.7	4.8	4.7	4.5	5.7
203 PSG 20-r4-06	4.7	5.1	4.7	4.2	5.0
204 ATF 1323	4.6	5.2	4.6	4.2	4.7
205 PSG 19-r8-06	4.6	5.0	4.6	4.3	5.7
206 ATF 1107	4.6	4.8	4.4	4.7	6.3
207 ATF 1335	4.6	4.8	4.5	4.6	4.0
208 ATF 1326	4.6	5.3	4.3	4.3	4.7
209 PSG 19 bulk-06	4.6	4.9	4.5	4.5	5.0
210 Rebel Exceda	4.6	4.9	4.9	4.1	5.3

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
211 MVS-1107	4.6	4.5	4.6	4.7	5.7
212 Hudson	4.6	4.7	4.7	4.4	4.3
213 Scorpion II	4.6	5.0	4.6	4.2	5.0
214 ATF 1332	4.6	5.1	4.3	4.3	5.0
215 ATF 1333	4.6	4.8	4.7	4.3	4.7
216 ATF 1342	4.6	4.9	4.3	4.5	5.0
217 PSG 19-r5-06	4.6	5.0	4.4	4.4	5.3
218 Virtue II	4.6	4.4	4.6	4.8	7.0
219 0312	4.6	5.0	4.4	4.3	4.0
220 ATF 1283	4.6	5.0	4.4	4.3	5.3
221 ATF 1318	4.6	5.0	4.4	4.3	4.3
222 ATF 1320	4.6	4.9	4.5	4.3	4.3
223 06-DUST	4.5	4.4	5.0	4.3	5.3
224 STR Tit QR	4.5	4.7	4.6	4.3	5.0
225 ATF 1262	4.5	4.7	4.6	4.3	5.3
226 PSG 20-r5-06	4.5	4.8	4.6	4.1	5.3
227 CM comp	4.5	4.6	4.5	4.6	6.7
228 PST-51L4	4.5	4.7	4.4	4.4	5.3
229 PSG 19-r1-06	4.5	4.5	4.5	4.5	5.7
230 PSG 19-r2-06	4.5	4.6	4.7	4.2	4.7
231 PST-5GZ6 Bulk	4.5	4.9	4.3	4.3	3.3
232 SR 8550	4.5	4.8	4.5	4.1	4.3
233 Signia	4.5	4.8	4.4	4.3	4.7
234 ATF 1339	4.5	5.1	4.2	4.1	4.0
235 Magellan	4.5	4.8	4.4	4.3	5.0
236 AST 9002	4.5	5.0	4.5	3.9	4.3
237 PST-5SIS	4.5	4.2	4.6	4.6	7.0
238 PSG 13-AB-06	4.5	4.4	4.5	4.5	4.7
239 Forte	4.5	4.9	4.4	4.1	5.3
240 Blade Runner	4.4	4.8	4.4	4.1	6.3
241 PSG 18-r4-06	4.4	4.5	4.5	4.4	5.3
242 Dakota	4.4	4.6	4.5	4.2	3.3
243 ATF 1343	4.4	4.9	4.3	4.1	3.3
244 Silverstar	4.4	4.8	4.5	4.0	6.0
245 Rembrandt	4.4	4.3	4.6	4.4	7.3

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
246 ATF 1341	4.4	4.6	4.6	4.0	4.3
247 ATF 1359	4.4	4.9	4.1	4.2	5.0
248 PSG-RNDR	4.4	4.6	4.6	4.0	4.3
249 Montana	4.4	4.8	4.3	4.2	4.3
250 CO1 comp	4.4	4.5	4.4	4.2	4.7
251 PSG 18 bulk-06	4.4	4.5	4.3	4.3	4.3
252 Silverado II	4.4	4.5	4.7	4.0	6.3
253 PST-R5B4 Bulk	4.4	4.5	4.3	4.3	5.7
254 STR Reg QRD	4.3	4.8	4.3	3.9	3.3
255 PSG 19-r6-06	4.3	4.3	4.6	4.1	4.3
256 Padre	4.3	4.6	4.7	3.7	6.7
257 Regiment II	4.3	4.7	4.0	4.3	5.0
258 PSG 20-r3-06	4.3	4.6	4.2	4.1	5.0
259 Rebel Pro	4.3	4.5	4.4	4.0	6.0
260 ATF 1337	4.3	4.4	4.2	4.2	4.3
261 Grande II	4.3	4.9	4.0	3.9	4.0
262 Rebel Sentry	4.3	4.6	4.0	4.2	3.7
263 PSG 20-r1-06	4.3	4.3	4.3	4.2	5.3
264 PSG 20-r2-06	4.2	4.4	4.4	4.0	5.7
265 PSG 18-r3-06	4.2	4.1	4.4	4.2	5.3
266 GO-1BFD	4.2	4.1	4.3	4.2	7.3
267 PST-5MTV Bulk	4.2	4.3	4.0	4.3	5.0
268 06-WALK	4.2	4.6	4.1	3.9	4.3
269 STR 86 QRD	4.2	4.5	4.1	4.0	3.7
270 Biltmore	4.2	4.6	4.3	3.6	4.3
271 ATF 1340	4.2	4.4	4.1	3.9	3.7
272 PSG 10-A-06	4.1	4.1	4.2	4.1	5.3
273 PSG 18-15-06	4.1	4.4	4.0	4.0	5.0
274 Greenkeeper	4.1	4.3	4.2	3.9	4.7
275 Constitution	4.1	4.4	4.0	3.8	5.0
276 Lindbergh	4.0	4.2	4.2	3.7	5.3
277 PST-5GH4	4.0	4.3	4.1	3.7	4.3
278 Five Point	4.0	3.7	4.1	4.3	5.0
279 PSG 20-r1-06	4.0	4.0	4.0	4.1	6.0
280 Trooper	4.0	4.5	4.0	3.5	7.0

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 16 April 2009
	2007-2009 Avg.	2007 Avg.	2008 Avg.	2009 Avg.	
281 Plato	4.0	4.4	3.9	3.6	5.0
282 Tar Heel II	4.0	4.1	4.0	3.8	6.7
283 Greystone	4.0	3.9	4.0	4.1	6.3
284 PSG 18-r6-06	4.0	4.2	4.0	3.7	5.3
285 Aristotle	3.9	4.3	4.1	3.4	5.3
286 PSG 18-r2-06	3.9	3.8	4.2	3.8	5.0
287 PSG 19-r7-06	3.9	4.2	4.1	3.5	3.3
288 ATF 1350	3.9	4.0	4.0	3.8	8.0
289 STR TUQRD	3.9	3.9	4.2	3.6	5.0
290 AMF-107	3.8	4.2	4.3	2.9	8.7
291 Watchdog	3.8	4.1	4.1	3.1	6.7
292 PSG-TTST	3.7	4.1	3.6	3.3	3.7
293 Tulsa II	3.4	3.7	3.3	3.3	4.3
294 Titan Ltd	3.1	3.4	3.1	2.7	5.0
295 Silverado	2.9	3.3	3.1	2.4	6.3
296 Paraiso	2.9	3.4	2.9	2.4	8.0
297 Ky-31	1.1	1.2	1.0	1.1	8.7
LSD at 5% =	0.5	0.7	0.6	0.6	1.7

¹9 = best turf quality²9 = earliest spring green-up

Table 3. Performance of tall fescue cultivars and selections in a turf trial established in September 2007 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Wear ² Aug. 6 2009
	2008- 2009 Avg.	2008 Avg.	2009 Avg.	
1 LW Comp	7.0	6.7	7.3	5.7
2 IS-TF 161	6.4	6.3	6.6	6.3
3 IS-TF 153	6.4	6.3	6.5	6.0
4 POM Comp	6.4	6.4	6.3	5.3
5 BIZM Comp	6.3	6.1	6.5	6.3
6 FCE3	6.2	5.9	6.4	5.3
7 MVS-3609	6.1	5.9	6.3	6.0
8 Wolfpack II	6.1	5.7	6.5	5.7
9 Falcon V	6.1	5.8	6.4	6.3
10 Mustang 4	6.1	5.7	6.5	6.0
11 LC1 Comp	6.1	5.9	6.3	5.7
12 Sidewinder	6.0	6.1	5.9	5.0
13 Faith	6.0	6.1	5.8	4.7
14 IS-TF 177	6.0	5.8	6.1	5.7
15 Shenandoah III	5.9	5.6	6.3	5.7
16 IS-TF 155	5.9	5.9	5.9	5.0
17 ATF-1382	5.9	5.7	6.1	5.3
18 14-07 Bulk	5.9	5.9	5.8	4.3
19 Cochise IV	5.9	6.0	5.7	5.0
20 Spyder LS	5.9	5.9	5.8	5.7
21 IS-TF 175	5.8	5.5	6.2	5.7
22 PST-Syn-5AWT	5.8	5.6	6.1	5.0
23 RAD-TF50	5.8	5.7	6.0	5.7
24 PST-Syn-5A47	5.8	6.0	5.7	6.3
25 IS-TF 154	5.8	5.7	5.9	6.0
26 Rocket	5.8	5.9	5.7	5.0
27 BC2 Comp	5.8	5.6	6.0	5.0
28 BIZE Comp	5.8	5.5	6.0	5.3
29 Falcon IV	5.8	6.0	5.5	4.0
30 RAD-TF48	5.7	5.6	5.8	5.3
31 BC3 Comp	5.7	5.7	5.7	4.7
32 Matador GT	5.7	5.6	5.8	5.0
33 40-07 Bulk	5.7	5.6	5.7	5.3
34 Dynamic II	5.6	5.5	5.8	5.0
35 TR1 Comp	5.6	5.7	5.6	4.7

(Continued)

Table 3 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----			Wear ² Aug. 6 2009
	2008- 2009 Avg.	2008 Avg.	2009 Avg.	
36 TR2 Comp	5.6	5.5	5.7	5.3
37 RAD-TF46	5.6	5.3	5.8	5.3
38 RAD-TF49	5.6	5.4	5.7	4.3
39 34-07 Bulk	5.6	5.8	5.3	5.0
40 Ampac-152	5.5	5.7	5.4	4.7
41 ATE	5.5	5.1	5.9	5.3
42 RAD-TF24R	5.5	5.5	5.6	5.0
43 IS-TF 178	5.5	5.5	5.5	5.0
44 Finelawn Xpress	5.5	5.4	5.6	5.7
45 TR3 Comp	5.5	5.5	5.5	4.3
46 BIZL Comp	5.5	5.1	5.8	6.0
47 IS-TF 160	5.5	5.4	5.5	5.0
48 BBM	5.4	5.5	5.4	5.0
49 RAD-TF47	5.4	5.3	5.5	4.3
50 RAD-TF51	5.4	5.2	5.7	4.3
51 Shenandoah Elite	5.4	5.1	5.7	5.0
52 Inferno	5.4	5.4	5.5	5.0
53 IS-TF 179	5.4	5.4	5.4	5.3
54 STR 8DDOR	5.4	5.5	5.3	4.3
55 Hemi	5.4	5.2	5.5	4.3
56 BC1 Comp	5.4	5.4	5.3	5.0
57 PST-5BAB	5.4	5.7	5.0	4.3
58 RAD-TF52	5.4	5.5	5.2	4.3
59 41-07 Bulk	5.4	5.4	5.3	5.3
60 GG2 Comp	5.4	5.4	5.3	5.3
61 38-07 R-5	5.3	5.5	5.1	4.3
62 DDM QRH	5.3	5.4	5.3	4.0
63 GG3 Comp	5.3	5.3	5.3	4.7
64 ATF-1373	5.3	5.1	5.5	5.0
65 Gazelle II	5.3	5.2	5.3	4.7
66 ATF-1383	5.3	5.0	5.5	5.3
67 38-07 R-4	5.3	5.5	5.0	4.3
68 RAD-TF54	5.3	5.0	5.5	5.3
69 STR 86QRH	5.3	5.0	5.5	5.0
70 Apache III	5.2	5.0	5.5	5.3

(Continued)

Table 3 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----			Wear ² Aug. 6 2009
	2008- 2009 Avg.	2008 Avg.	2009 Avg.	
71 PST 5LIV BS	5.2	5.3	5.1	5.7
72 RAD-TF16	5.2	5.2	5.3	4.7
73 RAD-TF55	5.2	5.0	5.5	5.7
74 RAD-TF44	5.2	5.3	5.1	4.7
75 PST-Syn-5DKR	5.2	5.0	5.4	5.7
76 RAD-TF31	5.2	5.2	5.1	4.3
77 SRO 85 QRV	5.2	5.2	5.1	4.7
78 38-07 R-1	5.1	5.0	5.2	4.3
79 AR7 Comp	5.1	4.6	5.6	6.0
80 ATF 1236	5.1	5.1	5.1	5.0
81 CE-4	5.1	5.4	4.9	5.0
82 RNP	5.1	5.2	5.0	4.3
83 5JAG	5.1	5.1	5.1	5.0
84 ATF 1334	5.1	5.3	4.9	4.3
85 ATF-1294	5.1	5.1	5.1	4.7
86 Stonewall	5.1	5.3	4.9	3.7
87 38-07 R-11	5.1	5.1	5.1	5.0
88 AA3A4POL	5.1	5.2	4.9	3.3
89 ATF 1301	5.1	5.3	4.8	4.7
90 Falcon NG	5.1	4.9	5.2	4.3
91 Six Point	5.1	5.1	5.0	4.0
92 IS-TF 180	5.1	4.9	5.2	4.7
93 35-07 Bulk	5.0	5.1	4.9	4.7
94 38-07 R-2	5.0	5.1	4.9	3.0
95 AA3R16-5	5.0	5.3	4.7	4.3
96 PST-Syn-5JAE	5.0	4.9	5.1	4.3
97 Shenandoah Sport	5.0	5.3	4.7	4.3
98 38-07 R-8	5.0	5.2	4.9	3.0
99 PST-Syn-5SLE	5.0	5.2	4.8	3.3
100 SRO GRQR	5.0	5.1	4.9	5.3
101 Blade Runner	5.0	5.2	4.7	4.0
102 Ninja 3	5.0	4.7	5.2	4.3
103 RAD-TF45	5.0	4.8	5.1	4.7
104 SR 8550	5.0	4.9	5.0	4.3
105 PST-5BGR	4.9	5.1	4.8	4.3

(Continued)

Table 3 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----			Wear ² Aug. 6 2009
	2008- 2009 Avg.	2008 Avg.	2009 Avg.	
106 37-07 R-12	4.9	4.8	5.0	4.0
107 A4 Comb	4.9	5.2	4.6	4.0
108 SRO 8BB5	4.9	5.2	4.6	4.3
109 38-07 R-6	4.9	4.9	4.9	4.3
110 PST-Syn-5EW	4.9	5.0	4.8	4.7
111 Scorpion II	4.9	4.9	4.9	4.0
112 Guardian 21	4.9	5.1	4.6	5.0
113 38-07 Bulk	4.9	5.1	4.6	4.0
114 ATF 1327	4.9	5.0	4.7	4.0
115 Innovator	4.9	5.0	4.7	4.3
116 37-07 Bulk	4.8	4.9	4.8	4.0
117 ATF-1380	4.8	5.0	4.7	4.0
118 Rebel Advance	4.8	4.9	4.8	4.7
119 Endeavor II	4.8	4.8	4.8	5.0
120 Jaguar 4G	4.8	5.1	4.5	4.0
121 RAD-TF32	4.8	4.9	4.7	4.3
122 38-07 R-9	4.8	4.9	4.7	3.7
123 ATF-1381	4.8	4.8	4.7	4.7
124 PST-Syn-5EVA	4.8	4.7	4.8	4.7
125 AA2R25-7	4.7	4.6	4.8	4.0
126 PST-Syn-5ZT16	4.7	4.7	4.7	4.0
127 Fidelity	4.7	4.6	4.7	4.3
128 STR TitOR	4.7	4.6	4.8	4.7
129 38-07 R-7	4.7	4.9	4.4	3.7
130 Pedigree	4.7	4.8	4.5	4.3
131 ATF-1349	4.6	4.9	4.4	3.7
132 CIAZRH	4.6	4.6	4.7	4.0
133 Justice	4.6	4.7	4.5	4.0
134 Sitka	4.6	4.9	4.3	4.3
135 Blackwatch	4.6	4.9	4.3	4.0
136 PST-5DVD-07	4.6	4.6	4.6	4.7
137 SRO PSG TTRH	4.6	4.7	4.5	4.0
138 Grande II	4.6	4.9	4.2	4.7
139 PST-5SIS	4.6	4.5	4.7	4.3
140 Brockton	4.6	4.5	4.6	4.0

(Continued)

Table 3 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----			Wear ² Aug. 6 2009
	2008- 2009 Avg.	2008 Avg.	2009 Avg.	
141 SRO STR THQR	4.6	4.4	4.7	4.3
142 Virtue II	4.5	4.5	4.5	4.3
143 Cayenne	4.5	4.6	4.4	4.7
144 PST-5GH4	4.5	5.0	4.0	3.7
145 PST-Syn-5SL5-07	4.5	4.4	4.5	4.3
146 SR 8600	4.5	4.6	4.3	4.3
147 38-07 R-10	4.4	4.1	4.8	3.3
148 SRO PSG RNDR	4.4	4.5	4.4	4.0
149 22-07 Bulk	4.4	4.7	4.1	3.0
150 Turbo	4.4	4.5	4.3	3.7
151 Arid 3	4.4	4.2	4.5	3.0
152 Green Keeper	4.4	4.3	4.4	4.0
153 Quest	4.4	4.4	4.3	4.3
154 Empress	4.3	4.5	4.1	3.7
155 Silverado II	4.2	4.3	4.1	4.3
156 Watchdog	4.2	4.5	3.9	3.3
157 PSG TTST	4.2	4.2	4.2	4.0
158 Tar Heel II	4.2	4.3	4.0	3.7
159 Bingo	4.2	4.2	4.1	3.3
160 Regiment II	4.1	4.1	4.1	4.3
161 Wolfpack	3.9	3.8	4.1	4.3
162 Endeavor	3.9	4.3	3.4	3.3
163 Pixie	3.5	3.8	3.2	2.7
164 Titan Ltd	3.5	3.7	3.3	3.3
165 Jaguar 3	3.3	3.6	3.1	3.3
166 Amalia	1.8	1.9	1.8	2.7
167 PST-5CAN	1.0	1.0	1.1	1.0
LSD at 5% =	0.7	0.7	0.7	1.5

¹9 = best turf quality²9 = least damage due to wear (22 passes applied using a novel wear simulator)

Table 4. Performance of tall fescue cultivars and selections in a turf trial established in September 2008 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008
1 LSD Comp	6.8	6.3	6.0	7.0
2 PO1 Comp	6.8	6.3	6.0	6.0
3 LW	6.7	5.7	7.0	7.7
4 PSM 6351	6.7	6.7	6.7	7.0
5 Cochise IV	6.7	5.0	6.0	7.3
6 B23 Comp	6.5	6.0	5.3	6.3
7 TPC Comp	6.5	6.7	6.3	6.3
8 TPF Comp	6.5	5.7	6.3	7.3
9 Faith	6.4	5.3	7.0	8.3
10 IS-TF-177	6.4	4.7	5.3	4.7
11 IS-TF-178	6.4	5.7	4.7	6.0
12 IS-TF-179	6.3	6.0	7.0	5.3
13 Garrison	6.3	4.7	6.0	7.3
14 60-08-2	6.3	5.3	5.7	5.0
15 Firecracker LS	6.3	5.3	6.7	8.0
16 POM	6.3	6.3	4.0	3.3
17 PST-5AWT	6.3	6.0	4.0	5.0
18 Falcon V	6.2	6.0	6.0	8.0
19 Spyder LS	6.2	5.3	6.0	7.0
20 59-08-06	6.2	5.3	5.3	6.0
21 59-08-12	6.2	6.0	6.0	5.3
22 PST-5A4S	6.2	6.3	5.3	4.7
23 Shenandoah Elite	6.2	5.7	5.7	6.3
24 59-08-11	6.1	5.3	6.7	7.0
25 Mustang 4	6.1	5.7	6.0	4.3
26 60-08-8	6.1	5.0	5.7	4.0
27 Jamboree	6.1	5.3	7.0	6.7
28 RAD-TF57	6.1	6.0	6.7	6.3
29 SR 8650	6.1	5.7	5.3	6.7
30 Side Winder	6.1	5.0	5.7	7.3
31 59-08-02	6.0	4.7	6.7	5.7
32 PO3 Comp	6.0	5.7	7.0	6.3
33 RK4	6.0	4.7	5.3	5.0
34 60-08-9	6.0	4.3	6.0	4.7
35 IS-TF-175	6.0	4.7	5.0	5.0

(Continued)

Table 4 (continued).

Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008
36 60-08-5	5.9	4.7	5.7	5.7
37 BIZM	5.9	6.3	6.3	5.0
38 Fat Cat	5.9	5.0	6.3	6.3
39 GSD Comp	5.9	6.7	6.7	8.0
40 59-08-04	5.9	4.7	6.7	5.3
41 60-08-4	5.9	4.0	6.3	5.0
42 60-08-6	5.9	4.0	4.3	4.7
43 05FA-01	5.8	5.3	7.3	6.3
44 3rd Millennium	5.8	6.0	7.0	6.7
45 Shenandoah III	5.8	5.0	6.7	7.0
46 Finelawn Express	5.8	5.7	5.7	8.0
47 PCO Comp	5.8	5.3	6.7	6.7
48 PO2 Comp	5.8	5.0	6.7	7.0
49 STR 86QR	5.8	5.7	8.0	7.7
50 72-08-3	5.8	4.7	6.7	4.3
51 ATE	5.8	5.7	7.3	7.0
52 Essential	5.8	5.3	5.7	7.7
53 Rocket	5.8	5.0	7.0	6.7
54 Stingray	5.8	4.7	6.3	8.0
55 Van Gogh	5.8	5.7	6.7	7.3
56 59-08-01	5.7	5.0	5.7	5.0
57 RAD-TF60	5.7	5.0	6.3	5.7
58 Speedway	5.7	6.0	6.0	5.7
59 59-08 Bulk	5.7	5.3	6.7	5.3
60 60-08 Bulk	5.7	5.0	4.7	5.0
61 PSG 85QR	5.7	4.7	5.7	5.7
62 RNP	5.7	3.7	7.7	6.7
63 NSD Comp	5.7	5.7	6.3	7.3
64 Rambler	5.7	5.3	5.7	6.7
65 Tulsa Time	5.6	4.3	7.0	6.7
66 59-08-05	5.6	4.7	6.7	5.0
67 60-08-7	5.6	4.0	6.3	5.7
68 72-08 Bulk	5.6	5.7	6.0	5.0
69 72-08-1	5.6	5.3	5.7	5.3
70 ATF-1334	5.6	4.3	6.3	7.7

(Continued)

Table 4 (continued).

Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008	
71	BBM	5.6	6.3	6.7	7.7
72	TWA Comp	5.6	4.7	6.0	6.3
73	59-08-08	5.6	4.3	5.7	5.3
74	84-08-3	5.6	5.0	6.3	5.3
75	TF-152	5.6	4.7	7.0	6.3
76	60-08-10	5.5	4.0	6.7	5.7
77	ATF-1236	5.5	4.3	7.0	9.0
78	Inferno	5.5	5.3	6.3	6.3
79	PSG DDMQR	5.5	5.3	5.7	6.3
80	60-08-1	5.5	4.0	5.3	5.3
81	PSG 8AZRH2	5.5	5.7	5.7	5.0
82	Rebel Advance	5.5	5.0	7.3	7.7
83	SR 8550	5.5	4.7	6.7	7.3
84	59-08-03	5.5	3.7	6.0	5.0
85	59-08-10	5.5	4.3	7.3	6.0
86	Rebel IV	5.5	5.3	6.0	7.3
87	FSD Comp	5.4	4.7	6.0	7.3
88	RAD-TF58	5.4	4.7	6.7	6.3
89	60-08-3	5.4	3.3	5.3	4.7
90	84-08-2	5.4	5.3	4.7	5.3
91	PSG 8SP1	5.4	5.7	6.7	4.7
92	Signia	5.4	4.3	6.7	7.3
93	03FA-05	5.3	4.0	7.0	5.7
94	03FA-07	5.3	4.0	7.0	5.0
95	84-08 Bulk	5.3	5.0	6.3	5.0
96	Forte	5.3	5.3	6.7	7.0
97	Titanium LS	5.3	5.0	6.7	8.0
98	59-08-07	5.3	4.0	6.0	3.3
99	BSD Comp	5.3	4.0	6.3	7.3
100	Falcon IV	5.3	5.7	6.5	4.0
101	Monet	5.3	5.0	7.0	6.7
102	PST-5JAG-08	5.3	5.0	4.0	6.7
103	PST-5FDR	5.2	4.0	5.7	6.0
104	Shenandoah Sport	5.2	5.0	5.0	6.0
105	Six Point	5.2	5.3	4.7	8.0

(Continued)

Table 4 (continued).

	Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008
106	72-08-2	5.2	4.3	6.0	4.7
107	STR 8BBS	5.2	5.0	6.0	6.0
108	84-08-1	5.2	5.0	6.7	5.7
109	ATF-1301	5.2	3.7	6.7	5.0
110	Blackwatch	5.1	4.0	7.0	7.7
111	Falcon NG	5.1	4.7	7.0	8.7
112	PST-5JAG	5.1	5.0	6.7	7.7
113	RAD-TF-31	5.1	5.0	7.3	7.7
114	IS-TF-67	5.1	4.3	6.3	5.7
115	Jaguar 4G	5.1	4.0	6.3	7.7
116	STR 8GRQR	5.1	4.0	5.3	6.0
117	ATF-1294	5.1	5.0	5.3	7.3
118	Coronado TDH	5.1	6.0	7.0	7.7
119	Justice	5.1	4.7	7.0	8.7
120	RAD-TF59	5.1	4.7	6.3	4.7
121	Pedigree	5.0	5.3	7.3	7.0
122	Da Vinci	5.0	4.7	6.7	7.0
123	Rebel Exeda	5.0	4.0	6.3	7.0
124	84-08-4	4.9	5.3	6.5	4.3
125	Guardian 21	4.9	5.0	6.7	7.7
126	Picasso	4.9	4.7	7.0	5.7
127	Virtue II	4.9	5.0	6.0	6.3
128	CE4	4.9	5.0	7.3	7.7
129	RAD-TF56	4.9	3.3	6.3	4.7
130	Scorpion II	4.9	3.7	6.3	6.7
131	59-08-09	4.9	4.0	6.7	5.0
132	PSG 8AZRH	4.9	4.3	6.3	4.0
133	PST-5DVD-07	4.9	5.3	4.0	4.0
134	PST-5SXR	4.9	3.7	6.0	4.3
135	Traverse	4.9	5.0	6.7	6.3
136	Brockton	4.8	4.0	7.3	7.7
137	Cayenne	4.8	4.7	6.3	8.3
138	Ninja 3	4.8	4.3	7.0	7.7
139	PST-5R05	4.8	4.7	6.3	5.0
140	Crewcut II	4.8	3.7	6.7	7.3

(Continued)

Table 4 (continued).

Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008
141 Penn 1901	4.8	4.7	6.0	7.7
142 PSG RNDR	4.8	4.3	6.7	5.7
143 PSG TTQR	4.8	4.3	7.0	7.3
144 Quest	4.8	4.7	6.7	8.0
145 PST-Syn-R5B4	4.7	6.0	6.3	6.7
146 PST-5BAB	4.6	4.7	6.7	7.3
147 ATF-1327	4.6	4.7	5.3	4.3
148 Rebel Sentry	4.5	3.3	6.0	7.7
149 Grande II	4.5	3.3	6.7	3.3
150 PST-5SHZ-04	4.4	4.3	6.0	6.7
151 PSG TTRH	4.4	3.7	6.3	7.0
152 Rembrandt	4.4	5.0	6.0	8.0
153 Turbo	4.3	4.3	5.0	7.7
154 Durana	4.2	4.7	6.0	8.0
155 PST-Syn-5T8	4.2	5.0	6.3	4.7
156 PSG 8GRTR	4.2	2.3	6.7	4.3
157 Rebel Pro	4.1	4.0	6.0	7.0
158 Masterpiece	4.1	4.0	6.3	4.3
159 PSG TTST	4.0	4.0	6.3	6.3
160 PST-5SIS	4.0	5.3	6.7	6.7
161 Greystone	3.9	3.3	7.3	8.0
162 Prospect	3.9	4.3	7.0	8.0
163 Arid 3	3.9	3.3	7.0	7.7
164 Rebel 2000	3.9	4.0	7.3	5.7
165 Regiment II	3.9	3.3	7.0	2.3
166 SR 8600	3.8	3.7	7.0	3.0
167 Watchdog	3.7	3.3	6.3	4.3
168 Regiment II	3.5	4.0	6.7	1.3
169 Tulsa II	3.2	3.3	6.7	3.3
170 Grande	3.1	3.7	7.3	7.7
171 Durango	2.8	4.3	6.7	1.0
172 Rebel III	2.7	3.0	7.0	6.7
173 Jaguar 3	1.8	3.7	7.3	8.3

(Continued)

Table 4 (continued).

Cultivar or Selection	Turf Quality ¹ 2009 Avg.	Brown Patch ² Aug. 2009	Tenacity Damage ³ Sept. 2008	Establishment (%) Sept. 2008
LSD at 5% =	0.8	1.4	1.4	1.8

¹9 = best turf quality

²9 = least disease

³9 = least tenacity damage

Table 5. Yearly nitrogen (N) applied and mowing height (Ht) on tall fescue tests established at Adelphia, NJ.

	2005		2006		2007		2008		2009	
	N ¹	Ht ²	N	Ht	N	Ht	N	Ht	N	Ht
Table 1 (2005).....	4.3	1.5	2.3	1.5	3.3	1.5	3.3	1.5	2.3	1.5
Table 2 (2006).....			3.5	1.5	4.0	1.5	4.0	1.5	3.0	1.5
Table 3 (2007).....					4.0	1.5	3.5	1.5	2.3	1.5
Table 4 (2008).....							3.5	1.5	3.0	1.5

¹ Annual N applied (lb/1000 ft²)

² Mowing height in inches