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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, Cook College, 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 2003 New Jersey Turfgrass Expo. 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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TRAFFIC TOLERANCE OF COOL-SEASON TURFGRASSES

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Turfgrass traffic tolerance has been the focus of many research efforts over the past three decades (Hacker, 1987; Minner et al., 1993; Shearman and Beard, 1975; Taivalmaa et al., 1998). The demand for traffic tolerant turfgrasses has increased due to the increased use of sports fields, parks, golf courses and other recreational areas.

Traffic can produce four important stresses: wear, soil compaction, divoting, and soil displacement (Beard, 1973). Wear injury affects aboveground plant parts and is defined as the immediate result of crushing, tearing, and shearing actions of foot and vehicular traffic (Beard et al. 1974; Shearman, 1988). Injury from soil compaction is a chronic stress associated with increased soil bulk density, loss of soil structure, and reduced aeration and water infiltration rates (Beard et al., 1974; Shearman, 1988). The stresses of divoting and soil displacement are also important; however, these are not foci of this report.

Many traffic simulators have been developed that simulate specific types of traffic or wear (Bourgoin and Mansat, 1982; Cockerham and Brinkman, 1989; Evans, 1988; Shearman et al., 1974; Younger, 1961). Most of the simulators developed to mimic the effects of trampling also compact soil (Bourgoin and Mansat, 1982; Cockerham and Brinkman, 1989; Evans, 1988; Taivalmaa et al., 1998). A wear simulator developed by Shearman and co-workers in 1974 for small plot evaluations resulted in wear injury without soil compaction. Although very effective, these wear/traffic simulators were not designed to quickly travel across large numbers of turf plots in a relatively short period of time. Meyer et al. (1997) developed a wear simulator to quickly and uniformly apply wear to a large number of turfgrass evaluation plots.

Turfgrass species differ greatly in their ability to withstand the abrasion and compaction of traffic (Gaussoin, 1994). Wear tolerance of turfgrass species and mixtures has been evaluated by a number of researchers (Bourgoin and Mansat, 1982; Canaway, 1981; Fushley et al., 1982; Taivalmaa et al., 1998). Evaluation of cultivars within a particular species has also been conducted (Evans, 1988; Minner et al., 1993; Wood and Lwa, 1972), although data on recently developed cultivars are limited. A study of wear tolerance conducted by Bonos et al. (2001) evaluated a number of different cool-season turfgrass species for wear tolerance and identified cultivars with better wear tolerance. However, new cultivars develop at a steady rate and the performance of these cultivars has not been evaluated when subjected to traffic. As new cultivars are developed, recommendations on cultivars with improved traffic tolerance would be useful.

The objective of this study was to identify cultivars of Kentucky bluegrass (*Poa pratensis* L.), perennial ryegrass (*Lolium perenne* L.), and tall fescue (*Festuca arundinacea* Schreb.) that demonstrate improved traffic tolerance.

MATERIALS AND METHODS

Evaluation Trials

Cultivars and experimental selections of Kentucky bluegrass, perennial ryegrass, and tall fescue were evaluated under simulated wear and compaction during the growing seasons of 2002 and 2003. Evaluation trials included entries of the 2000 National Turfgrass Evaluation Program (NTEP) Kentucky bluegrass trial, established in August 2000; and the 2001

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NTEP tall fescue trial, established in August 2001. Two separate perennial ryegrass tests were evaluated: one test received traffic and was evaluated in 2002; the other test was received traffic and evaluated in 2003. Both perennial ryegrass trials were established in August 1999 and included entries of the 1999 NTEP perennial ryegrass test.

All tests were located at the Rutgers Horticultural Research Farm II in North Brunswick, NJ. The trials were established on well-drained, loamy soils. The experimental design of all trials was a randomized complete block design with three replications. The mowing height for the perennial ryegrass and tall fescue trials was 1.5 inches. The Kentucky bluegrass trial was maintained at 0.7 inches. The turf trials were mowed 3 to 5 times a week depending on species and growth rate. Annual nitrogen applications for each trial are reported in Table 1. Soil pH was maintained between 6.0 and 6.5 with agricultural limestone. The tests were irrigated to avoid drought stress.

Traffic Simulation

Wear. A wear simulator was developed using a M24C5A Sweepster as described by Bonos et al. (2001); the steel and nylon brush of the Sweeper was replaced with rubber paddles that are used on potato harvesters (Fig. 1A). The main axle on the machine was equipped with additional plates and rods to accommodate the size and shape of the rubber paddles (Figs. 1A and 1B). The increased length of the paddles

(13 inches) over the original steel brush required an axle extension (Fig. 1C) and a raised Sweepster hood (Fig. 1D). The modified Sweepster (4.9 ft wide) was mounted on a Toro Groundsmaster Model 322-D to create wear. Wear was applied on each date by passing over approximately one-half of each plot two or more times with the wear simulator, except the 1999 perennial ryegrass trial evaluated in 2002 which received traffic on the whole plot. Wear treatment frequencies ranged from 1 to 5 times a week. Total wear passes for each evaluation test are reported in Table 1.

Compaction. A 3.3 ft-wide Wacker roller (2970 lb) was used to create compaction. The roller was equipped with a vibrator, which was used to achieve greater compaction at some application dates. Total compaction passes for each evaluation test are reported in Table 1. Compaction was applied on each date by passing over approximately one-half of each plot (except perennial ryegrass trial in 2002 where the entire plot was compacted) two or more times with the roller, depending on the condition of the trials.

Evaluation of Traffic Tolerance

Turfgrass quality ratings were taken on trafficked portions of each plot and were used to visually assess traffic tolerance (i.e., overall appearance, uniformity, and density). All non-trafficked portions of each plot were rated throughout the growing season

Table 1. Nitrogen rate and total traffic passes administered to turfgrass evaluation tests in 2002 and 2003.

Evaluation Test	-----Nitrogen ¹ -----		-----Traffic (Passes)-----			
	2002	2003	-----Wear-----		---Compaction---	
			2002	2003	2002	2003
2000 KY bluegrass	4.3	4.4	132	178	42	20
1999 Perennial ryegrass ²	3.4	---	128	---	10	---
1999 Perennial ryegrass ³	---	2.3	---	156	---	16
2001 Tall fescue	4.5	3.8	70	130	20	20

¹ Annual Nitrogen applied (lb/1000 ft²)

² Test established in 1999 and trafficked and evaluated in 2002

³ Test established in 1999 and trafficked and evaluated in 2003

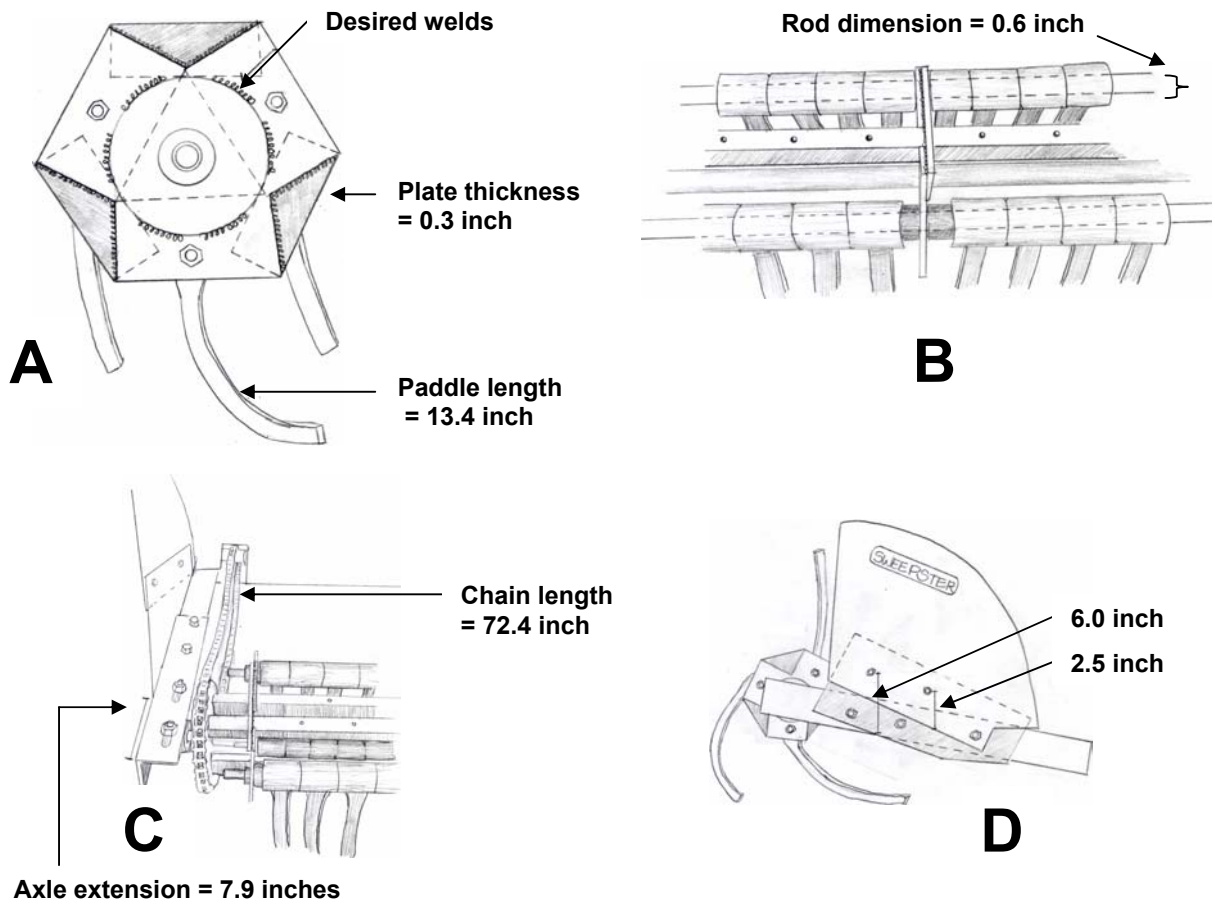


Figure 1. Illustrations of modifications made to the Sweepster frame and axle; a side view of the main axle showing added welds and plates to connect rods containing the paddles (A), a front view of the main axle showing added rods (B), a front view of the main axle showing axle and chain extensions (C), and a side view of the wear machine showing the raised hood modifications (D).

for non-trafficked 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). Other ratings such as spring green-up, color, density, and leaf texture were individually assessed. A 1 to 9 scale was utilized for all ratings where 9 equaled the best turf characteristic. All data were subjected to analysis of variance and means were separated using the Fisher's protected least significant difference.

RESULTS AND DISCUSSION

Commercially available Kentucky bluegrass cultivars that showed the highest 2-year turfgrass quality average under traffic (2002 and 2003) included: Princeton P-105, Avalanche, Award, Midnight II, Tsunami, NuDestiny, Ginney, Cabernet, Awesome, Barrister, Odyssey, Total Eclipse, Beyond, Impact, Liberator, and Bariris (Table 2). Commercially available cultivars that showed the poorest average turf quality under traffic were: Sonoma, Boutique, Blacksburg II, Marquis, Mercury, Kenblue, SR 2394, Goldrush, Blueridge, Jewel, Ascot, Boomerang, North Star, Wellington, Bodacious, Baron, Barzan, and York Harbor 4 (Table 2).

Among the top performing commercially available Kentucky bluegrass cultivars evaluated under traffic, Avalanche, Cabernet, and Bariris showed the earliest spring green-up in 2003 (Table 2). Good turfgrass traffic tolerance and early spring green-up are important characteristics for the selection of Kentucky bluegrasses for athletic fields used for spring sports.

The combined data for the 2002 and 2003 perennial ryegrass trials indicated the cultivars Prowler, SR 4350, Courage, Citation Fore, SR 4220, Stellar, Divine, Sierra, SR 4500, Pacesetter, Catalina II, Ascend, Manhattan 4, Line Drive, Racer II, Gator 3, IQ, Elfkin, Sol, ProTyme, Grand Slam 2L96, Radiant, Pleasure XL, Churchill, Exacta, Brightstar II, Esteem, Kokomo, Pentium, Inspire, Galaxy, Paragon, Mach 1, Premier, Jet, Secretariat, and Gallery produced the best turf quality under traffic. The commercially available perennial ryegrass cultivar Linn showed the lowest turfgrass quality under traffic in both 2002 and 2003 (Table 3).

Only 6 of these top 36 cultivars under traffic scored significantly greater than all others when evaluated for quality in the absence of traffic from 2000 through 2003 combined; these cultivars included: Citation Fore, SR 4220, Gator 3, Grand Slam 2L96,

Pentium, and Mach 1 (Table 3). Similarly, Citation Fore, Stellar, SR 4220, Radiant, Churchill, Kokomo, Mach 1, and Gallery, when evaluated in 2003, had the darkest color among the 36 cultivars showing the best traffic tolerance (Table 3). Thus, sports field managers selecting turfgrass cultivars for both appearance and traffic tolerance should note that many perennial ryegrass cultivars that perform well under traffic may not exhibit the most pleasing aesthetic characteristics such as dark green color, texture, and density.

Commercially available tall fescue cultivars that displayed the highest 2-year turfgrass quality average under traffic included: Elisa, Olympic Gold, Dominion, Titan Ltd, Jaguar 3, Masterpiece, Apache III, Bingo, Tulsa II, Blackwatch, Millennium, Finelawn Elite, Forte, Endeavor, SR 8550, Silverstar, Tar Heel, Falcon IV, Watchdog, Tar Heel II, Bravo, Coyote, 2nd Millennium, Falcon II, Barlexas, Padre, and SR 8600 (Table 4). Commercially available tall fescue cultivars that showed the lowest 2-year turfgrass quality under traffic were: Signia, Kentucky 31 E+, Rebel Exeda, Laramie, Justice, Constitution, Daytona, Davinci, Tuxedo, Plantation, Kitty Hawk 2000, Bon-sai, Avenger, and Pure Gold (Table 4).

The cultivars Bingo, Blackwatch, Finelawn Elite, Falcon IV, Tar Heel II, and Padre had high turf quality under both trafficked and non-trafficked conditions. High quality in the absence of traffic was attributable to dark green color, finer leaf texture, and/or high density (Table 4). For aesthetic purposes, including potential blends with Kentucky bluegrass cultivars, sports field managers should note that the following tall fescue cultivars showed good traffic tolerance but were characterized as having a light green color: Elisa, Olympic Gold, Titan Ltd, Jaguar 3, Tulsa II, Millennium, Endeavor, Silverstar, Tar Heel, Watchdog, Falcon II, and Barlexas (Table 4).

CONCLUSIONS

Numerous Kentucky bluegrass, perennial ryegrass, and tall fescue cultivars and selections showed good turfgrass performance compared to other cultivars and selections when subjected to traffic in 2002 and 2003. The challenges faced by sports field managers in overseeing high-use athletic field turf necessitate traffic tolerance evaluations of cool-season turfgrasses. When sports field managers are faced with the decision as to specific varieties to establish or overseed, these results provide a valuable resource.

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Table 2. Performance of Kentucky bluegrass cultivars and selections under traffic in a turf trial seeded in August 2000 at North Brunswick, NJ. (Includes all entries in the 2000 National Turfgrass Evaluation Program (NTEP) Kentucky Bluegrass Medium-High Maintenance Test.)

	Cultivar or Selection	-----Turf Quality ¹ -----						Color ³ 2003	Density ⁴ 2003
		-----Traffic-----			No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2001- 2003 Avg.	Spring Green-up ² 2003			
1	A93-478 (Brunswick)	7.0	7.6	6.4	6.6	7.3	2.3	7.7	
2	Princeton P-105	6.9	7.3	6.5	6.4	2.3	6.0	7.0	
3	Award	6.5	6.7	6.4	6.5	2.3	6.7	6.0	
4	Avalanche	6.5	6.6	6.4	6.3	7.3	5.7	6.0	
5	Tsunami	6.4	6.8	6.0	6.4	2.7	7.0	7.0	
6	Midnight II	6.4	6.7	6.1	6.2	2.7	6.0	6.3	
7	Ginney	6.3	6.1	6.4	5.8	3.0	7.0	6.3	
8	NuDestiny	6.3	6.4	6.2	6.6	3.0	6.3	7.0	
9	Awesome	6.2	6.2	6.2	5.9	2.0	6.7	6.0	
10	Cabernet	6.2	6.1	6.3	4.9	7.3	4.0	5.3	
11	Barrister	6.2	6.2	6.2	6.1	3.7	7.0	5.7	
12	Odyssey	6.1	6.1	6.1	5.9	3.3	5.7	5.7	
13	Total Eclipse	6.1	6.1	6.0	5.9	3.3	6.3	5.7	
14	Beyond	6.0	6.0	6.1	5.8	3.0	7.0	5.7	
15	J-1838	6.0	6.1	5.9	6.0	2.7	7.0	5.7	
16	Impact	5.9	6.1	5.9	6.3	3.0	6.7	6.0	
17	Bariris	5.9	5.6	6.1	4.5	6.0	5.0	5.7	
18	Liberator	5.9	5.9	5.9	6.0	2.7	6.0	6.0	
19	Serene	5.8	5.9	5.7	6.0	6.3	5.3	6.3	
20	Perfection	5.8	5.6	6.1	6.0	2.3	7.0	6.0	
21	Julia	5.7	5.8	5.6	4.2	4.7	6.0	4.7	
22	PST-161	5.6	5.7	5.5	5.4	7.0	5.0	6.0	
23	Moonshadow	5.5	6.1	5.0	5.4	4.0	5.7	5.3	
24	J-2885	5.5	5.5	5.5	5.2	4.0	7.0	6.3	
25	Jefferson	5.5	5.5	5.5	5.6	7.0	5.3	6.0	
26	Unknown	5.5	5.7	5.3	6.1	2.7	6.0	6.0	
27	Arcadia	5.5	5.7	5.2	6.0	3.0	6.0	6.0	
28	Excursion	5.4	5.4	5.5	5.4	2.3	6.7	5.3	
29	Bluestone	5.4	5.3	5.4	5.7	3.7	6.0	5.3	
30	J-1513	5.3	5.5	5.2	5.9	3.0	6.3	5.7	
31	Quantum Leap	5.3	5.4	5.2	5.2	3.0	6.3	5.7	
32	Midnight	5.3	5.5	5.1	6.1	4.0	6.0	5.7	
33	Moonlight	5.2	5.5	5.0	5.8	4.3	6.7	5.0	
34	Pp H7832	5.2	6.0	4.4	5.0	4.0	7.7	6.0	
35	A94-707	5.2	6.0	4.5	5.4	2.0	5.3	6.3	

(Continued)

Table 2 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ²	Color ³	Density ⁴
		-----Traffic-----		No Traffic				
		2002-2003 Avg.	2002 Avg.	2003 Avg.	2001-2003 Avg.	2003	2003	2003
36	Bar Pp 0468	5.2	5.3	5.0	4.8	4.0	3.0	5.7
37	A97-260	5.1	5.4	4.7	4.8	5.0	5.3	5.3
38	A98-1358	5.1	5.5	4.7	5.1	7.7	5.0	6.0
39	Limousine	5.1	5.5	4.6	4.4	4.7	4.7	5.7
40	Rugby II	5.0	5.0	5.1	5.8	2.7	7.0	6.3
41	A95-414	5.0	5.4	4.6	4.8	3.3	5.0	5.7
42	Brooklawn	5.0	5.2	4.8	5.3	8.3	5.7	5.3
43	NuGlade	5.0	5.3	4.7	5.7	2.7	6.3	6.3
44	J-2890	5.0	5.0	4.9	5.4	2.3	6.7	5.7
45	Baritone	4.9	4.9	5.0	3.8	5.3	6.0	5.0
46	Coventry	4.9	5.1	4.7	4.9	5.7	4.7	5.7
47	A95-1930	4.9	5.7	4.1	6.2	7.0	5.7	5.3
48	A98-1028	4.9	5.2	4.5	4.7	5.7	5.3	5.0
49	Eagleton	4.9	5.3	4.4	5.7	6.7	3.7	6.3
50	J-2561	4.9	4.9	4.8	5.1	3.3	6.0	5.3
51	Pick 453	4.9	4.9	4.8	4.2	2.3	6.7	6.0
52	Rythum	4.9	5.2	4.5	5.3	4.7	6.7	6.0
53	Champlain	4.8	5.2	4.5	5.2	2.3	6.3	6.7
54	Casablanca	4.8	5.2	4.3	4.6	3.7	4.0	5.3
55	Rampart	4.8	5.1	4.4	4.0	4.0	6.7	4.7
56	Everglade	4.7	4.7	4.8	5.0	4.3	6.3	5.7
57	B4-128A	4.7	5.1	4.2	4.9	5.0	4.7	7.3
58	HV 238	4.7	5.2	4.1	5.1	3.0	6.7	5.3
59	Chicago II	4.7	4.8	4.5	5.0	3.3	8.0	6.3
60	Brilliant	4.7	5.0	4.4	4.5	4.0	3.3	5.7
61	A97-1715	4.7	5.1	4.2	5.0	5.3	6.7	4.7
62	PST-1804	4.7	4.9	4.4	5.0	6.3	4.7	5.7
63	A98-3368	4.7	5.0	4.3	5.0	3.0	5.7	5.7
64	DLF-76-9032	4.6	4.8	4.3	3.9	2.3	4.3	4.7
65	A98-305	4.6	4.7	4.4	4.6	4.0	3.7	5.7
66	H92-558	4.5	4.6	4.3	4.1	3.3	6.7	4.3
67	A97-1328	4.5	4.8	4.2	4.2	3.0	3.3	5.7
68	Apollo	4.4	5.3	3.6	4.1	2.7	3.7	5.0
69	Royce	4.4	4.6	4.1	4.8	3.0	3.7	6.0
70	Yvette	4.4	5.1	3.7	4.9	3.3	4.7	6.3

(Continued)

Table 2 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ²	Color ³	Density ⁴
		-----Traffic-----		No Traffic				
		2002-2003 Avg.	2002 Avg.	2003 Avg.	2001-2003 Avg.	2003	2003	2003
71	H92-203	4.4	4.4	4.4	4.0	3.3	3.7	5.7
72	A98-1147	4.4	4.5	4.3	4.3	3.0	4.0	5.7
73	Fairfax	4.4	4.5	4.2	4.9	5.7	4.3	6.3
74	Shamrock	4.4	4.8	4.0	5.1	6.3	6.0	5.3
75	Everest	4.3	4.3	4.4	4.6	2.0	7.0	4.7
76	B5-144	4.3	4.7	4.0	4.4	5.0	5.0	6.0
77	A97-1411	4.3	4.8	3.8	4.7	3.0	3.7	5.7
78	Limerick	4.3	4.6	4.0	4.3	3.0	4.0	5.7
79	Voyager II	4.3	4.4	4.2	4.3	3.0	4.0	5.7
80	Bedazzled	4.3	4.7	3.9	5.5	5.3	6.0	6.0
81	A97-1330	4.3	4.6	3.9	4.3	4.3	3.7	5.3
82	IB7-308	4.2	4.2	4.4	4.3	2.7	7.0	4.7
83	Rambo	4.2	4.2	4.1	4.8	3.7	5.3	5.7
84	Allure	4.2	4.6	3.7	4.7	5.7	5.3	5.7
85	Ba 84-140	4.1	4.8	3.4	4.5	2.7	8.7	6.7
86	B5-43	4.1	4.4	3.9	4.1	5.0	4.7	6.0
87	ProSeeds 453	4.1	4.3	3.9	4.9	3.7	4.3	5.0
88	Showcase	4.1	4.1	4.1	4.2	4.3	3.7	5.3
89	A98-881	4.0	4.1	3.9	4.5	4.7	6.3	5.3
90	Bluemax	4.0	4.1	3.9	4.2	3.7	6.7	4.3
91	Lakeshore	4.0	4.4	3.7	4.7	6.3	5.3	5.3
92	A95-1606	4.0	4.1	4.0	4.3	6.3	5.3	5.3
93	BHOO-6002	4.0	4.0	3.9	4.1	5.0	5.3	4.7
94	A96-256	4.0	4.0	3.9	4.9	3.0	6.7	5.7
95	A98-572	3.9	4.3	3.6	4.1	2.7	4.3	5.3
96	A95-751	3.9	3.9	3.9	4.0	4.7	4.3	5.3
97	Unique	3.9	3.7	4.1	4.3	3.3	4.0	5.3
98	Bar Pp 0471	3.8	3.8	3.7	4.2	3.7	3.7	5.7
99	Pp H6370	3.8	4.0	3.7	4.8	4.0	5.7	6.7
100	Freedom II	3.8	3.7	3.9	4.3	2.7	6.3	4.7
101	B3-185	3.8	4.3	3.3	4.1	4.0	3.0	5.0
102	A94MH-94	3.8	3.9	3.8	4.9	3.7	6.0	6.0
103	Chateau	3.8	4.0	3.6	4.3	4.7	4.7	6.0
104	A97-857	3.7	4.0	3.3	3.8	5.3	4.3	5.0
105	PST-H6-150	3.7	3.8	3.7	3.9	2.7	5.7	5.3

(Continued)

Table 2 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ²	Color ³	Density ⁴
		-----Traffic-----		No Traffic				
		2002-2003 Avg.	2002 Avg.	2003 Avg.	2001-2003 Avg.	2003	2003	2003
106	B5-45	3.7	3.9	3.6	4.1	3.7	4.3	6.0
107	Champagne	3.7	4.1	3.3	4.6	7.0	5.0	5.0
108	PST-108-79	3.7	3.7	3.6	4.3	4.3	5.7	6.0
109	Langara	3.6	4.5	2.8	5.7	3.3	6.3	6.0
110	A96-742	3.6	3.5	3.8	3.5	7.3	1.7	5.3
111	A97-1432	3.6	3.9	3.3	4.2	3.7	5.7	5.0
112	Blackstone	3.6	3.8	3.4	6.2	4.3	7.3	6.3
113	A98-1001	3.6	3.8	3.3	4.1	5.3	5.3	5.7
114	Baronie	3.6	3.4	3.8	3.9	5.3	3.7	5.3
115	Washington	3.6	3.2	3.9	3.8	8.0	4.7	5.0
116	PST-B5-125	3.6	3.8	3.3	4.9	2.0	7.3	5.3
117	Goldstar	3.5	3.3	3.7	4.0	4.3	5.3	5.0
118	A98-365	3.5	3.6	3.5	3.6	4.0	5.0	5.0
119	A98-2038	3.5	3.6	3.4	4.4	2.3	6.0	5.0
120	Bar Pp 0573	3.5	3.6	3.4	3.6	4.3	4.7	4.7
121	A98-205	3.5	4.0	3.0	4.4	3.3	6.3	5.7
122	Glenmont	3.4	4.2	2.6	4.2	3.7	3.7	4.7
123	Alpine	3.4	4.1	2.7	5.2	2.7	5.7	6.3
124	A99LM-16	3.4	3.8	3.1	4.6	1.7	5.3	6.0
125	Arrow	3.4	3.6	3.2	4.6	3.7	5.7	5.7
126	A96-1201	3.4	4.1	2.7	4.5	5.0	5.0	5.7
127	Bordeaux	3.4	3.6	3.2	4.8	4.0	5.7	5.0
128	A96-305	3.3	3.3	3.3	3.4	3.3	6.3	4.0
129	Lilly	3.3	3.4	3.2	4.4	3.0	4.3	6.0
130	HV 140	3.3	3.6	3.1	3.8	2.7	5.0	4.3
131	Julius	3.3	4.1	2.4	4.2	3.0	4.0	6.0
132	A96-739	3.3	3.0	3.6	4.2	4.3	6.0	5.7
133	Monte Carlo	3.3	3.4	3.2	4.4	4.0	5.3	4.7
134	Royale	3.3	3.7	2.7	4.6	3.0	6.0	5.0
135	Baronette	3.3	3.3	3.2	4.3	3.3	6.0	5.0
136	B3-170	3.2	3.5	2.9	4.7	2.7	7.3	6.0
137	99AN-53	3.2	3.1	3.4	3.3	3.3	6.0	5.0
138	SRX-2114	3.2	3.5	2.9	4.7	2.0	7.7	5.0
139	Bartitia	3.2	3.4	2.9	4.4	3.0	4.7	5.3
140	SR 2284	3.2	3.6	2.8	4.8	4.3	5.3	6.3

(Continued)

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ² 2003	Color ³ 2003	Density ⁴ 2003	
	-----Traffic-----		No Traffic					
	2002- 2003 Avg.	2002 Avg.	2003 Avg.	2001- 2003 Avg.				
141	Envicta	3.2	3.5	2.8	3.9	2.3	5.3	5.3
142	Mallard	3.2	3.6	2.7	4.4	3.3	5.7	5.7
143	PST-H5-35	3.1	3.3	2.9	4.2	3.3	4.7	4.7
144	Rita	3.1	3.3	2.9	4.7	3.7	5.7	4.3
145	Hallmark	3.1	3.6	2.6	5.0	2.3	7.3	5.3
146	Chelsea	3.1	3.5	2.7	3.8	3.3	4.7	6.3
147	Blue Sapphire	3.0	3.3	2.8	3.5	3.0	6.7	4.0
148	A98-407	3.0	3.0	3.1	3.1	4.0	6.3	4.3
149	BA83-113	3.0	3.0	2.9	3.7	5.0	7.0	4.3
150	Wildwood	3.0	3.5	2.5	4.7	2.3	6.7	4.7
151	PST-B4-246	3.0	3.4	2.5	3.9	1.7	7.0	5.0
152	A98-139	3.0	2.8	3.1	2.9	6.7	5.7	4.3
153	Abbey	2.9	3.3	2.6	4.0	2.3	5.3	5.3
154	DLF-76-9037	2.9	3.3	2.4	3.8	4.0	3.3	5.0
155	Raven	2.8	3.2	2.4	4.1	2.0	5.7	5.7
156	A95-1055	2.8	2.7	3.0	2.7	2.7	5.0	4.7
157	DLF-76-9034	2.8	2.9	2.7	2.6	6.0	2.3	4.3
158	Blue Knight	2.8	3.3	2.2	4.2	1.0	7.3	5.3
159	SI A96-386	2.7	3.1	2.4	4.0	3.0	5.7	5.7
160	A96-427	2.7	3.0	2.4	3.8	5.0	5.0	4.3
161	Misty	2.7	3.4	1.8	4.6	2.7	4.3	5.0
162	Sonoma	2.6	2.9	2.3	4.1	3.7	5.3	4.3
163	A98-890	2.6	2.9	2.3	4.1	4.7	5.3	5.0
164	DLF-76-9036	2.6	3.0	2.2	3.9	2.0	5.0	5.3
165	Bar Pp 0566	2.6	2.7	2.5	3.4	5.3	6.3	4.3
166	Blacksburg II	2.6	2.7	2.5	3.6	3.3	7.0	4.3
167	Boutique	2.6	2.7	2.5	4.4	4.0	5.7	5.7
168	A98-1301	2.6	3.0	2.2	3.7	4.0	6.0	4.7
169	Marquis	2.6	3.2	1.9	3.9	1.7	4.7	5.7
170	A96-451	2.5	2.7	2.3	3.8	3.3	5.7	4.3
171	BAOO-6001	2.5	2.8	2.1	3.7	3.3	5.0	4.7
172	Kenblue	2.5	2.9	2.1	3.2	8.0	3.0	6.3
173	Mercury	2.5	2.7	2.3	3.4	3.3	5.3	3.7
174	Pp H7907	2.5	3.0	2.0	3.3	2.0	6.3	4.7
175	SRX 27921	2.4	2.5	2.4	3.4	1.7	5.3	3.7

(Continued)

Table 2 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Spring Green-up ²	Color ³	Density ⁴
		-----Traffic-----		No Traffic				
		2002-2003 Avg.	2002 Avg.	2003 Avg.	2001-2003 Avg.	2003	2003	2003
176	Pp H7929	2.4	2.5	2.4	3.1	3.0	5.3	4.3
177	PST-604	2.4	2.3	2.6	3.1	4.3	4.3	4.0
178	SR 2394	2.4	3.1	1.8	5.1	2.3	6.0	5.3
179	Ba82-288	2.4	2.7	2.2	4.0	3.3	6.0	5.0
180	Blueridge	2.4	2.6	2.1	3.7	2.7	6.3	5.7
181	Goldrush	2.4	2.9	1.8	3.5	2.0	4.7	4.7
182	Jewel	2.3	2.4	2.2	3.1	5.0	5.0	5.0
183	Ascot	2.3	2.5	2.0	3.5	3.3	6.0	4.3
184	Boomerang	2.2	2.4	2.0	3.1	2.0	6.7	5.3
185	CVB-20631	2.2	2.4	2.0	2.9	2.3	4.3	4.7
186	North Star	2.2	3.0	1.3	4.4	1.0	7.0	6.0
187	Wellington	2.1	2.0	2.3	2.9	7.0	4.7	4.0
188	Bodacious	2.1	2.1	2.1	2.7	2.7	4.3	4.7
189	A98-183	2.0	2.0	2.0	3.1	3.7	5.3	4.3
190	SRX 26351	1.9	2.3	1.6	4.0	2.3	6.3	4.3
191	PST-222	1.9	2.1	1.7	3.6	3.3	6.3	4.7
192	NA-K992	1.9	1.6	2.2	2.4	3.0	6.7	4.3
193	SRX QG-245	1.9	2.3	1.5	3.0	5.0	6.7	4.0
194	GO-9LM9	1.9	2.1	1.6	2.7	7.3	3.3	5.0
195	Baron	1.8	2.1	1.5	3.6	2.7	5.0	5.0
196	BHOO-6003	1.7	1.6	1.7	2.5	2.0	4.7	4.3
197	Barzan	1.6	1.7	1.5	4.2	1.0	4.3	4.3
198	A97-1409	1.5	1.6	1.4	3.8	3.0	5.7	4.0
199	A96-396	1.5	1.6	1.5	3.3	2.7	5.3	4.3
200	York Harbor 4	1.5	1.9	1.0	3.8	2.0	7.0	5.0
	LSD at 5% =	1.1	1.2	1.2	0.7	1.7	1.2	1.2

¹9 = best turf quality²9 = earliest spring green-up³9 = darkest green color⁴9 = greatest density

Table 3. Performance of perennial ryegrass cultivars and selections under traffic in a turf trial seeded in August 1999 at North Brunswick, NJ. (Includes all entries in the 1999 National Turfgrass Evaluation Program (NTEP) Perennial Ryegrass Test.)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ^{2,6} 2003	Texture ^{2,7} 2003	Density ^{2,8} 2003
		-----Traffic-----			No Traffic ²			
		2002- 2003 ³ Avg.	2002 ⁴ Avg.	2003 ⁵ Avg.	2000- 2003 Avg.			
1	Prowler	6.3	7.6	5.0	4.4	3.7	5.3	6.3
2	APR 1232	6.2	6.4	6.0	4.3	4.0	5.0	6.3
3	SR 4350	6.1	6.5	5.7	4.4	2.3	5.7	6.0
4	Courage	6.1	6.9	5.3	5.3	4.3	5.7	5.7
5	Citation Fore	6.1	6.0	6.1	6.1	6.7	7.3	7.0
6	APR 1235	6.0	6.2	5.8	4.4	5.0	6.7	6.0
7	Stellar	6.0	6.8	5.1	5.6	6.7	6.7	6.0
8	SR 4220	5.9	6.2	5.7	6.1	6.7	7.0	6.3
9	ABT-99-4.560	5.9	6.8	5.0	5.6	7.0	7.0	7.3
10	Divine	5.9	6.3	5.4	4.7	3.7	6.3	6.3
11	Sierra	5.9	5.9	5.8	5.6	4.7	5.0	5.3
12	SR 4500	5.9	5.3	6.4	5.7	5.0	6.3	7.0
13	Pacesetter	5.8	6.3	5.3	5.5	5.0	5.7	6.7
14	PST-2JH	5.7	6.6	4.8	5.1	4.3	4.3	5.7
15	PST 2LA	5.7	5.7	5.6	5.5	4.7	6.0	6.3
16	Catalina II	5.7	5.7	5.6	4.7	5.7	4.7	5.3
17	PST 2RT	5.6	5.8	5.4	5.3	3.7	5.7	5.3
18	Ascend	5.6	5.7	5.4	5.0	5.0	5.0	5.7
19	Manhattan 4	5.6	6.2	4.9	5.7	6.0	6.3	6.3
20	Line Drive	5.5	5.2	5.8	4.8	4.3	4.0	5.7
21	ABT-99-4.965	5.5	6.0	5.0	5.2	7.3	5.7	5.0
22	Racer II	5.5	5.6	5.3	5.0	3.7	7.0	7.7
23	Gator 3	5.5	6.4	4.5	6.3	6.3	7.3	7.0
24	IQ	5.4	5.6	5.1	5.2	6.3	6.3	6.7
25	EIFKin	5.4	6.2	4.6	5.4	4.3	6.3	6.3
26	Sol	5.4	5.1	5.7	4.4	5.7	6.0	6.7
27	ProTyme	5.4	6.2	4.6	5.3	6.3	7.5	6.0
28	DP 17-9391	5.4	6.5	4.2	3.7	1.3	4.0	4.3
29	Grand Slam 2L96	5.3	6.5	4.2	6.4	4.7	6.3	5.7
30	Radiant	5.3	5.0	5.7	5.3	7.7	6.7	6.3
31	Pleasure XL	5.3	6.1	4.5	4.8	4.0	4.7	4.0
32	Churchill	5.3	6.1	4.5	5.3	7.0	6.0	5.3
33	Exacta	5.3	5.3	5.3	5.7	6.0	6.3	6.7
34	Brightstar II	5.3	6.0	4.6	5.7	5.7	5.7	5.3
35	Esteem	5.3	5.8	4.8	5.5	6.0	6.3	5.7

(Continued)

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ^{2,6} 2003	Texture ^{2,7} 2003	Density ^{2,8} 2003
		-----Traffic-----		No Traffic ²				
		2002- 2003 ³ Avg.	2002 ⁴ Avg.	2003 ⁵ Avg.	2000- 2003 Avg.			
36	Kokomo	5.3	6.8	3.7	5.8	7.3	6.3	5.3
37	Pentium	5.2	5.9	4.5	6.1	5.0	6.0	5.3
38	Inspire	5.2	5.6	4.7	5.6	5.0	6.7	5.3
39	Pick PR B-97	5.2	5.8	4.5	5.6	5.0	5.3	4.7
40	Galaxy	5.2	4.8	5.5	4.6	4.7	7.0	5.7
41	MDP	5.2	4.9	5.4	4.7	6.0	5.3	4.7
42	Paragon	5.1	4.8	5.4	5.1	6.3	6.3	7.3
43	WVPB-R-84	5.1	5.2	5.1	3.8	2.3	4.0	5.7
44	Mach 1	5.1	5.0	5.2	6.2	7.0	6.0	5.0
45	Premier	5.1	5.5	4.7	3.7	2.7	5.3	6.3
46	LTP-ME	5.1	5.7	4.5	5.5	5.3	6.0	4.7
47	Jet	5.1	6.2	3.9	5.9	5.7	5.3	5.0
48	Secretariat	5.1	5.5	4.6	4.6	3.7	5.0	6.0
49	Gallery	5.1	6.0	4.1	5.9	7.0	5.3	5.0
50	PST-2CRR	5.0	6.0	4.1	4.7	5.7	4.3	5.3
51	Phantom	5.0	4.9	5.1	4.7	6.3	4.3	4.7
52	Prosport	5.0	5.4	4.7	4.8	5.0	6.3	5.3
53	Premier II	5.0	6.1	4.0	5.2	5.0	5.3	5.3
54	Barlennium	5.0	5.3	4.6	5.3	6.0	6.7	6.0
55	Salinas	5.0	5.2	4.7	5.6	5.0	7.0	6.0
56	Fiesta 3	5.0	5.7	4.2	5.2	5.0	6.0	6.0
57	Renaissance	5.0	5.9	4.0	4.6	4.7	5.7	6.3
58	PST-2M4	5.0	5.6	4.3	5.1	4.3	6.7	5.3
59	Manhattan 3	5.0	5.6	4.3	4.6	3.7	6.0	5.7
60	Icon	5.0	5.3	4.6	5.1	5.3	6.0	4.7
61	Affirmed	4.9	4.9	5.0	4.9	3.7	5.3	5.0
62	Brightstar SLT	4.9	5.6	4.3	5.7	6.0	7.0	6.0
63	Pick PR QH-97	4.9	5.1	4.7	5.4	6.7	6.0	5.3
64	Pearl II	4.9	5.1	4.7	4.9	5.0	5.7	6.3
65	Pizzazz	4.9	5.7	4.0	6.7	7.3	7.0	6.3
66	APR 1234	4.9	5.4	4.3	3.4	1.7	4.0	6.3
67	Allstar 2	4.9	5.3	4.4	6.3	7.0	5.3	5.7
68	Majesty	4.9	4.6	5.1	4.9	4.0	4.7	5.3
69	DP LP-1	4.9	5.0	4.7	3.7	1.7	5.3	5.7
70	Racer	4.8	5.4	4.3	4.2	2.0	5.3	4.3

(Continued)

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ^{2,6} 2003	Texture ^{2,7} 2003	Density ^{2,8} 2003
		-----Traffic-----			No Traffic ²			
		2002- 2003 ³ Avg.	2002 ⁴ Avg.	2003 ⁵ Avg.	2000- 2003 Avg.			
71	Summerset	4.8	6.1	3.5	5.5	7.3	5.7	5.3
72	Blazer IV	4.8	5.6	4.0	6.0	6.0	7.0	5.3
73	ABT-99-4.115	4.8	5.6	4.0	5.5	3.7	5.0	4.0
74	SR 4420	4.8	5.4	4.1	6.0	7.0	6.3	6.0
75	Sunkissed	4.8	5.5	4.0	6.2	7.7	5.7	5.7
76	Paradigm	4.7	5.9	3.5	5.1	4.7	6.3	5.0
77	ABT-99-4.464	4.7	5.3	4.2	5.2	4.7	5.3	5.0
78	Seville II	4.7	5.4	4.0	5.9	5.7	6.0	6.3
79	Wilmington	4.7	4.8	4.6	5.6	7.7	6.0	6.3
80	APR 1231	4.7	5.2	4.2	4.7	3.0	5.7	5.0
81	Dazzle	4.7	5.3	4.1	5.4	4.3	5.3	5.3
82	SRX 4120	4.7	5.5	3.8	4.4	2.3	4.3	5.3
83	Amazing	4.6	5.4	3.8	6.2	8.3	6.0	6.0
84	Admire	4.6	5.3	3.9	4.6	3.0	5.3	4.3
85	Skyhawk	4.6	5.8	3.4	5.0	4.7	6.7	5.7
86	Superstar	4.6	4.5	4.7	5.0	6.3	6.7	5.7
87	Yatsugreen	4.6	5.6	3.5	3.2	1.3	2.0	3.3
88	APR 776	4.6	5.7	3.4	4.6	4.0	6.0	6.3
89	Cruiser	4.6	4.9	4.2	5.3	5.0	6.3	6.0
90	Monterey II	4.5	4.2	4.8	4.9	3.7	5.7	4.7
91	ABT-99-4.600	4.5	5.6	3.4	4.3	3.3	5.7	5.3
92	Buccaneer	4.5	3.9	5.1	3.5	2.3	3.3	5.0
93	Passport	4.5	4.7	4.3	4.4	3.7	4.7	5.7
94	Hawkeye	4.5	5.2	3.8	5.9	6.0	6.0	4.3
95	Quest II	4.5	5.4	3.5	5.9	5.3	5.3	5.3
96	PICK EX2	4.5	5.0	3.9	3.8	2.3	4.0	6.0
97	Headstart	4.5	4.3	4.6	3.9	2.7	4.0	4.7
98	Nexus	4.5	5.5	3.4	6.0	7.7	6.7	5.7
99	Pinnacle II	4.5	5.1	3.8	6.3	6.7	6.0	6.7
100	ABT-99-4.339	4.5	5.2	3.7	4.8	3.0	5.7	4.7
101	Pick PR 1-94	4.4	5.0	3.8	5.2	5.7	5.3	5.0
102	MEPY	4.4	4.3	4.5	4.7	5.3	6.7	6.0
103	Cathedral II	4.4	4.8	3.9	4.2	3.0	3.3	5.0
104	MP107	4.4	4.5	4.3	5.1	5.3	6.3	7.0
105	Calypso II	4.3	4.9	3.8	4.7	4.7	6.0	6.7

(Continued)

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ^{2,6} 2003	Texture ^{2,7} 2003	Density ^{2,8} 2003
		-----Traffic-----		No Traffic ²				
		2002- 2003 ³ Avg.	2002 ⁴ Avg.	2003 ⁵ Avg.	2000- 2003 Avg.			
106	Arrival	4.3	5.3	3.3	6.2	5.7	5.3	3.7
107	Pennant II	4.3	4.8	3.9	5.3	5.0	6.0	6.3
108	Splendid	4.3	5.5	3.2	5.2	5.7	6.3	5.7
109	Applaud	4.3	4.7	3.9	6.4	6.0	4.7	5.7
110	LPR 98-143	4.2	4.2	4.2	3.7	2.7	5.3	4.3
111	Keystone	4.2	5.7	2.7	5.8	4.3	5.0	4.0
112	Extreme	4.2	4.5	3.9	4.7	4.0	5.7	4.7
113	Promise	4.2	5.1	3.3	5.4	4.7	6.7	6.3
114	Charger II	4.2	4.8	3.6	4.2	3.3	4.0	4.7
115	Terradyne	4.2	5.0	3.3	5.5	7.3	6.3	5.0
116	Cabo	4.1	4.2	4.1	5.1	6.7	6.7	5.7
117	Charismatic	4.1	4.3	3.9	6.1	6.7	6.0	5.7
118	MP103	4.1	3.9	4.2	4.7	4.7	5.0	5.0
119	Palmer III	4.1	4.1	4.0	5.0	3.7	6.0	5.3
120	Manhattan	4.0	3.8	4.3	2.8	1.3	2.3	4.0
121	DP 17-9069	4.0	4.1	3.9	3.4	2.0	4.7	4.3
122	Allsport	3.9	4.4	3.4	4.5	4.0	5.3	4.0
123	CAS-LP84	3.9	3.4	4.3	4.3	3.7	4.7	5.0
124	BY-100	3.8	4.8	2.8	3.7	2.0	3.7	5.0
125	Koos R-71	3.8	4.5	3.1	4.1	2.3	3.7	4.3
126	Affinity	3.8	4.0	3.5	3.9	2.3	5.0	5.0
127	Pick PRNGS	3.8	4.8	2.7	4.8	3.0	4.3	3.7
128	ABT-99-4.815	3.7	3.5	3.8	4.7	4.3	5.3	4.7
129	Catalina	3.7	4.2	3.1	4.8	4.0	4.7	4.3
130	WVPB-R-82	3.6	4.3	2.9	3.4	1.3	3.0	4.0
131	Edge	3.6	4.7	2.5	3.5	1.7	3.7	3.7
132	DP 17-9496	3.6	3.8	3.3	2.2	1.0	1.7	4.0
133	LPR 98-144	3.3	3.9	2.7	4.2	2.0	5.3	3.7
134	Panther	3.3	4.2	2.5	4.6	2.0	5.0	3.7
135	Linn	1.7	2.3	1.1	1.2	1.0	1.0	2.3
	LSD at 5% =	1.2	1.8	1.6	0.6	1.6	1.9	1.6

¹9 = best turf quality²Rating based on non-trafficked portion of trial that received traffic in 2003³Average of two trials. One trial received traffic in 2002, the other in 2003

(Continued)

Table 3 (continued).

⁴ Average of trial that received traffic in 2002

⁵ Average of trial that received traffic in 2003

⁶ 9 = darkest green color

⁷ 9 = finest leaf texture

⁸ 9 = greatest density

Table 4. Performance of tall fescue cultivars and selections under traffic in a turf trial seeded in August 2001 at North Brunswick, NJ. (Includes all entries in the 2001 National Turfgrass Evaluation Program (NTEP) Tall Fescue Test.)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 2003	Texture ³ 2003	Density ⁴ 2003
		-----Traffic-----		No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2002- 2003 Avg.			
1	Elisa	6.1	6.4	5.8	4.5	3.0	5.7	5.7
2	GO-FL3	6.0	6.4	5.7	3.4	2.3	4.0	4.7
3	Olympic Gold	6.0	5.9	6.1	5.0	4.3	5.3	5.7
4	Dominion	5.9	5.7	6.1	4.3	5.3	5.3	5.7
5	LIF Comp	5.9	6.9	4.8	6.3	6.3	7.3	7.0
6	Titan Ltd	5.9	6.7	5.0	4.1	4.0	5.3	6.0
7	Jaguar 3	5.7	6.2	5.2	4.3	3.3	4.7	5.7
8	Masterpiece	5.7	6.0	5.4	5.2	5.0	5.3	6.3
9	Apache III	5.6	5.5	5.8	5.0	5.7	5.3	5.7
10	Bingo	5.6	6.2	4.9	5.7	8.0	7.0	7.0
11	Tulsa II	5.5	5.4	5.6	4.0	4.0	5.7	5.3
12	Blackwatch	5.4	6.0	4.8	5.7	6.0	6.7	6.7
13	Forte	5.4	6.0	4.8	5.0	7.0	6.7	7.3
14	Millennium	5.4	6.1	4.7	4.2	4.7	5.3	6.0
15	Finelawn Elite	5.4	6.1	4.6	5.7	5.7	6.7	7.3
16	Endeavor	5.4	5.6	5.1	4.4	4.0	4.3	5.3
17	SR 8550	5.4	5.3	5.5	5.1	6.3	6.3	7.0
18	Silverstar	5.3	5.5	5.2	4.9	4.7	6.0	7.0
19	01-RUTOR 2	5.3	6.1	4.5	5.5	6.3	7.3	7.3
20	PST-53T	5.3	5.6	5.1	5.2	7.3	5.7	6.3
21	Tar Heel	5.3	5.4	5.1	4.7	3.3	4.0	5.0
22	01-ORU1	5.2	6.1	4.2	5.6	6.0	7.7	8.3
23	PST-5BAB	5.2	5.2	5.1	4.7	6.3	5.3	6.3
24	ATF-803	5.1	5.2	5.2	4.1	7.0	5.3	5.3
25	JT-13	5.1	5.5	4.8	4.7	7.0	6.3	6.3
26	Roberts SM4	5.1	5.6	4.7	4.8	6.3	6.0	5.7
27	Falcon IV	5.1	6.0	4.3	6.0	5.7	6.7	6.7
28	LIL Comp	5.1	5.4	4.7	5.9	6.3	7.0	7.0
29	Watchdog	5.1	5.7	4.4	4.7	4.0	7.0	6.7
30	GO-RD4	5.0	5.3	4.7	3.2	4.7	4.3	4.3
31	MRF-29	5.0	5.4	4.7	4.2	7.0	5.3	5.7
32	MRF-210	5.0	5.6	4.4	4.4	7.3	4.7	5.7
33	Tar Heel II	4.9	5.0	4.9	5.8	5.0	5.3	6.3
34	Bravo	4.9	5.2	4.7	4.5	5.3	5.0	5.3
35	Coyote	4.9	5.2	4.7	3.8	6.3	4.7	5.3

(Continued)

Table 4 (continued)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 2003	Texture ³ 2003	Density ⁴ 2003
		-----Traffic-----		No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2002- 2003 Avg.			
36	2nd Millennium	4.9	5.8	4.0	5.6	6.0	6.7	6.7
37	Falcon II	4.9	5.3	4.5	3.4	4.3	5.0	5.7
38	PST-5BZ	4.9	5.4	4.4	5.0	5.3	5.7	6.0
39	Barlexas	4.9	5.0	4.7	4.3	4.3	5.0	5.3
40	JT-15	4.9	5.1	4.7	4.9	7.3	6.7	6.7
41	Padre	4.9	5.2	4.6	5.7	5.7	6.7	7.0
42	SR 8600	4.9	4.9	4.8	4.6	6.7	6.3	6.0
43	Fidelity	4.8	5.2	4.5	5.4	5.7	6.0	6.3
44	Quest	4.8	5.0	4.7	5.3	6.7	6.0	5.7
45	Scorpion	4.8	5.3	4.4	4.8	5.3	6.3	6.7
46	Titanium	4.8	5.1	4.5	5.4	5.3	6.3	6.3
47	DP 50-9226	4.8	4.8	4.7	4.1	6.0	5.3	5.7
48	K01-WAF	4.8	4.7	4.9	5.4	5.0	6.7	7.3
49	PST-5KI	4.8	5.2	4.4	5.1	4.7	6.0	7.0
50	ATF-800	4.8	4.7	4.9	4.1	5.7	5.3	5.7
51	Focus	4.8	4.5	5.1	4.4	6.0	5.3	6.3
52	Mustang 3	4.8	5.0	4.5	5.4	5.3	6.7	7.7
53	Tempest	4.8	4.5	5.1	4.1	6.7	4.7	4.7
54	Tomahawk RT	4.8	4.7	4.9	4.2	6.7	4.7	5.3
55	Picasso	4.7	5.1	4.4	4.9	5.0	6.0	6.3
56	Rendition	4.7	4.6	4.9	5.0	6.7	6.3	6.3
57	MRF-25	4.7	4.8	4.6	4.5	7.3	4.7	5.3
58	Wyatt	4.7	4.4	4.9	4.3	4.0	5.3	5.3
59	Barlexas II	4.7	5.3	4.1	4.3	6.0	5.7	6.0
60	Stetson	4.7	4.9	4.5	3.5	3.7	5.3	6.3
61	CAS-ED	4.6	5.0	4.4	4.5	6.0	6.7	6.3
62	Wolfpack	4.6	4.5	4.7	5.0	4.3	5.0	6.0
63	JT-6	4.6	5.1	4.1	4.4	8.3	6.7	6.7
64	K01-8015	4.6	4.5	4.8	6.4	6.7	7.7	8.0
65	Tracer	4.6	5.1	4.2	4.4	6.0	7.3	6.3
66	GO-OD2	4.6	5.0	4.2	4.6	5.7	5.7	6.3
67	K01-E03	4.6	4.9	4.3	5.0	5.7	8.0	7.3
68	LID Comp	4.6	5.0	4.2	5.9	6.3	6.3	7.0
69	Five Point	4.6	4.6	4.6	5.3	6.7	6.0	5.7
70	DP 50-9082	4.5	4.7	4.4	3.2	3.3	5.7	6.3

(Continued)

Table 4 (continued)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 2003	Texture ³ 2003	Density ⁴ 2003
		-----Traffic-----		No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2002- 2003 Avg.			
71	PST-5NAS	4.5	4.6	4.5	5.0	7.0	5.3	6.3
72	Guardian-21	4.5	5.1	4.0	5.7	6.7	7.3	7.3
73	Gremlin	4.5	4.9	4.2	4.5	6.7	6.3	7.0
74	CIS-TF-77	4.5	5.1	3.9	5.0	5.7	6.7	6.3
75	EA-163	4.5	4.6	4.5	4.8	7.3	5.3	6.0
76	Legitimate	4.5	4.8	4.3	4.1	5.0	4.3	5.3
77	Prospect	4.5	4.6	4.5	4.7	5.0	5.7	5.3
78	MRF-27	4.5	4.8	4.0	4.5	6.3	5.0	5.7
79	Raptor	4.5	4.8	4.0	5.2	6.7	6.7	6.3
80	Adam's Valley	4.5	4.7	4.3	4.3	6.3	6.3	7.0
81	BE-1	4.5	5.2	3.8	5.0	5.7	7.0	7.0
82	DLF-J210	4.5	4.5	4.4	3.4	6.3	5.0	5.7
83	Barrera	4.4	4.4	4.5	4.5	6.0	5.3	5.7
84	Turbo	4.4	4.1	4.8	5.3	6.3	6.3	6.0
85	Dynasty	4.4	4.8	4.0	4.9	6.0	7.0	7.0
86	JT-12	4.4	4.4	4.4	4.8	6.7	7.0	6.3
87	Grande II	4.4	4.6	4.3	4.9	6.3	6.0	6.3
88	Rebel Sentry	4.4	4.3	4.5	4.2	6.3	5.7	6.3
89	Rembrandt	4.4	4.5	4.3	5.3	5.7	5.7	6.3
90	PST-5TUO	4.4	4.6	4.1	4.6	6.3	6.0	6.0
91	ATF 586	4.4	4.4	4.3	4.3	4.0	5.7	5.3
92	BAR Fa 1005	4.4	4.4	4.4	5.4	6.0	7.3	6.7
93	Biltmore	4.4	4.1	4.6	5.4	6.7	5.7	6.7
94	Kalahari	4.4	4.4	4.3	5.1	5.0	6.7	6.3
95	PST-5JM	4.4	4.5	4.3	5.4	6.7	6.0	6.0
96	Southern Choice	4.4	4.7	4.0	3.6	6.7	4.3	5.0
97	TF66	4.4	4.6	4.1	4.0	5.0	5.7	5.7
98	MA 158	4.3	4.2	4.4	4.3	7.7	4.0	5.3
99	CIS-TF-67	4.3	5.2	3.4	5.1	5.7	6.7	6.7
100	Matador	4.3	4.5	4.0	5.0	7.0	6.7	6.0
101	01-TFOR3	4.3	4.7	3.9	3.7	4.7	6.0	6.0
102	Barrington	4.3	4.5	4.0	4.7	6.3	5.3	6.0
103	MA-127	4.3	4.2	4.4	4.9	5.7	5.7	6.0
104	Tahoe	4.2	4.9	3.6	4.4	7.0	6.3	6.7
105	MRF-26	4.2	4.2	4.3	4.0	7.3	5.0	5.3

(Continued)

Table 4 (continued)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 2003	Texture ³ 2003	Density ⁴ 2003
		-----Traffic-----		No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2002- 2003 Avg.			
106	Pick ZMG	4.2	4.6	4.0	4.7	6.3	6.3	6.7
107	UT-RB3	4.2	4.1	4.3	5.3	6.0	6.0	6.7
108	Finesse II	4.2	4.4	4.0	4.7	7.0	7.3	7.3
109	LIM Comp	4.2	3.9	4.6	5.6	6.0	6.0	7.0
110	MRF-28	4.2	4.3	4.2	4.2	8.0	5.3	6.0
111	Dynamic	4.2	4.3	4.0	5.4	4.3	5.7	6.3
112	Cayenne	4.2	4.3	4.1	5.6	6.3	7.0	7.3
113	Inferno	4.2	4.6	3.8	6.3	5.7	7.3	7.0
114	Magellan	4.2	4.5	3.8	5.2	5.3	6.7	7.0
115	SR 8250	4.2	4.8	3.6	4.4	5.0	5.7	6.0
116	Rebel IV	4.1	4.6	3.7	6.5	6.3	6.7	7.7
117	Covenant	4.1	4.7	3.6	4.3	6.0	6.0	6.3
118	Lancer E	4.1	4.5	3.8	3.7	5.3	5.3	6.3
119	ATF 707	4.1	4.5	3.8	3.8	6.7	4.3	4.7
120	BAR Fa 1003	4.1	4.1	4.0	4.1	6.3	5.3	4.7
121	Silverado II	4.1	4.1	4.1	5.4	5.3	5.7	6.3
122	UT-155	4.1	4.5	3.7	4.8	6.3	6.3	6.7
123	PST-DDL	4.1	4.6	3.6	5.4	6.7	6.7	6.0
124	Cochise III	4.1	4.1	4.0	5.5	5.3	5.7	6.7
125	South Paw	4.1	4.4	3.8	3.4	6.7	4.0	4.7
126	MRF-211	4.0	3.8	4.3	4.5	7.7	5.3	5.3
127	JT-9	4.0	4.5	3.6	4.2	8.3	6.0	6.0
128	LII Comp	4.0	4.6	3.5	5.7	6.3	6.0	7.0
129	PST-5S12	4.0	3.6	4.5	4.9	3.7	4.7	5.7
130	Signia	4.0	4.0	4.0	4.9	6.7	6.3	6.3
131	Riverside	4.0	3.7	4.3	5.0	6.3	6.0	6.7
132	JT-18	4.0	4.1	3.9	4.0	7.0	6.3	6.0
133	Kentucky-31 E+	4.0	4.3	3.6	1.2	1.0	1.0	2.0
134	K01-E09	4.0	4.2	3.8	5.0	5.7	6.0	7.0
135	K01-8007	3.9	4.0	3.9	5.3	7.0	7.7	7.3
136	Laramie	3.9	4.1	3.8	3.9	6.7	4.7	5.0
137	PST-5FZD	3.9	4.2	3.7	5.6	6.0	6.3	6.7
138	Rebel Exeda	3.9	3.6	4.3	5.0	5.3	6.3	6.0
139	Pick-OD-AFA	3.9	3.8	3.9	4.9	6.0	5.3	6.0
140	SRX 805	3.8	4.3	3.3	3.8	7.3	6.0	6.0

(Continued)

Table 4 (continued)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 2003	Texture ³ 2003	Density ⁴ 2003
		-----Traffic-----		No Traffic				
		2002- 2003 Avg.	2002 Avg.	2003 Avg.	2002- 2003 Avg.			
141	CIS-TF-60	3.8	4.1	3.5	5.2	8.3	6.7	6.7
142	PST-5KU	3.8	3.7	3.9	4.6	6.0	5.7	6.3
143	Constitution	3.7	3.9	3.5	4.6	5.3	5.3	6.0
144	Justice	3.7	4.0	3.4	5.5	7.3	6.7	7.0
145	PST-5LO	3.7	3.7	3.7	4.9	4.3	5.0	6.0
146	Daytona	3.7	3.7	3.7	3.6	7.3	4.0	4.3
147	GO-SIU2	3.7	4.0	3.5	3.1	4.3	5.0	6.0
148	Davinci	3.6	3.6	3.7	5.7	5.3	6.3	7.0
149	Tuxedo	3.6	3.6	3.6	4.4	7.0	6.3	6.7
150	CIS-TF-65	3.6	3.8	3.4	5.2	8.7	6.7	6.3
151	JTTF-2000	3.6	4.0	3.1	3.3	6.7	5.0	5.0
152	ATF 806	3.4	3.5	3.4	4.1	5.7	6.3	5.7
153	Pick TF H-97	3.4	3.6	3.3	5.0	6.0	6.3	6.0
154	Plantation	3.4	3.8	3.1	4.2	6.0	5.7	5.3
155	NA-TDD	3.4	3.4	3.4	4.6	7.0	6.0	5.3
156	MA 138	3.4	3.4	3.3	4.4	6.7	4.7	5.7
157	T991	3.3	3.5	3.1	3.9	7.7	5.3	4.7
158	Kitty Hawk 2000	3.3	3.5	3.1	4.1	6.7	6.3	6.0
159	Bonsai	3.2	2.9	3.6	3.4	4.0	4.3	4.3
160	CIS-TF-64	3.2	3.7	2.9	4.7	6.3	7.3	6.3
161	Avenger	3.2	3.4	3.0	6.1	4.7	6.3	6.7
162	ATF 799	3.1	2.6	3.5	4.4	6.7	6.0	6.0
163	ATF 704	3.0	2.9	3.2	3.4	6.7	5.3	5.3
164	Pure Gold	2.9	2.8	3.0	4.0	6.3	5.7	6.7
165	BAR FA 1CR 7	2.8	3.1	2.6	3.6	7.0	4.7	5.0
	LSD at 5% =	1.2	1.6	1.2	0.8	1.4	1.4	1.4

¹9 = best turf quality²9 = darkest color³9 = finest leaf texture⁴9 = greatest density