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1995 RUTGERS TURFGRASS PROCEEDINGSx

of thex

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The Rutgers Turfgrass Proceedings, published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, Cook College, Rutgers University, in cooperation with the New Jersey Turfgrass Association, has 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, researchers, extension specialists, and industry personnel with opportunities to communicate with co-workers. It also allows these professionals to reach a more general audience, which includes the public. Articles appearing in these proceedings are divided into two sections.

The first section includes lecture notes of papers presented at the 1995 New Jersey Turfgrass Expo. Publication of the New Jersey Turfgrass Expo Notes provides a readily available source of information covering a wide range of topics. The Expo Notes include technical and popular presentations of importance to the turfgrass industry.

The second section includes technical research papers containing original research findings and reviews covering selected subjects in turfgrass science. The primary objective of these papers is to facilitate the timely dissemination of original turfgrass research or use by the turfgrass industry.

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Dr. Ann B. Gould, Editor,
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PERFORMANCE OF TALL FESCUE CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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Tall fescue (*Festuca arundinacea* Schreb.) is native to Europe and surrounding regions. It was introduced to the United States during the 1800s and is widely used for forage, roadside stabilization, and the control of soil erosion. Interest and use of tall fescue as a forage increased in the United States with the development and release of 'Alta' and 'Kentucky 31' in 1940 and 1943, respectively. By the 1960s, 'Kentucky 31' was becoming more widely recognized as a useful turfgrass in the transition zone of the United States due to its good heat tolerance and adaptation to a wide range of soil type, pH, soil moisture, and light conditions.

Compared to other widely used cool-season species, tall fescue has the capacity to develop a deep root system that provides tolerance or avoidance to drought stress. This species can also survive under reduced fertility, and tolerates insects better than many other cool-season species. Although short rhizomes are often observed on some plants, tall fescue has a bunch-type growth habit. Emergence of tall fescue seed occurs within 6 to 7 days in warm moist soil. Its rate of tillering and establishment is slower than perennial ryegrass and, therefore, may require higher seeding rates.

Breeding for turf-type tall fescues was initiated in 1972. The first turf-type cultivar with a lower growth habit, finer leaves, and reduced vertical growth was 'Rebel,' followed closely by the release of 'Falcon' and 'Olympic.' Compared to 'Kentucky 31,' these cultivars have considerably higher tiller density, darker green color, greater tolerance of close mowing, and better disease resistance.

During the last 10 to 15 years, the use of improved tall fescue for turf has increased dramatically. Turf-type tall fescues have been used to improve the quality and durability of home lawns, school grounds, athletic fields, and parks in many areas of the United States. The lower-growing cultivars of tall fescue offer reduced mowing costs as well as improved turf performance. Lower irrigation and fertility requirements of tall fescue make it possible to maintain high turf quality while reducing energy inputs.

PROCEDURES

Tall fescue trials were conducted at the Adelphia Plant Science Research Station in Adelphia (Tables 1, 2, 4, 5, and 6) and Horticultural Farm II in North Brunswick (Table 3), NJ. Table 1 contains entries from the 1991 Preliminary Tall Fescue National Test and was seeded September 1991. Tests presented in Tables 3 and 4 contain all the entries of the 1992 National Tall Fescue Test. These tests are conducted in cooperation with the National Turfgrass Evaluation Program (NTEP) which is sponsored by the USDA in Beltsville, MD. National tests are

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conducted around the country to evaluate entries over many site and climatic conditions, and NTEP serves to coordinate and compile test results.

All tests were arranged in a randomized complete block design with at least three replications. Plots were sown by hand at a rate of 0.88 oz of seed per 3 x 5 ft plot (3.7 lb seed/1000 ft²), except for the 1992 test at Adelphia (Table 4) which was seeded at 1.8 oz per 3.5 x 5.5 foot plot (5.7 lb seed/1000ft²). An unplanted 6 inch border was left around each plot.

Table 7 summarizes the annual nitrogen (N) fertility and mowing heights for each test. Tests were maintained at different fertility levels and mowing heights based on the objective of each study. Management practices are often designed to encourage the expression of disease or other agronomic characteristics of interest to breeding and extension programs. Generally, newly seeded tests are intensively managed to permit rapid establishment and screening for disease and insect tolerance. Tests are later subjected to higher mowing, lower fertility, and limited irrigation to provide evaluation of entries under lower maintenance conditions.

Weed control consisted of a spring preemergence application of DCPA or bensulide and a fall postemergence application of 2,4-D and dicamba. Reel mowers were used for lower mowing heights (2 inches or less), whereas rotary mowers were used at the higher cutting heights. Mowing frequency was based on the rate of growth, and clippings were returned.

Ratings were made regularly throughout the growing season for turf quality (i.e., density, texture, color, uniformity, and freedom from disease or insect damage). Additional ratings for color, texture, and disease were made on some tests (Tables 3, 4, and 6). All ratings were made using a 1 to 9 scale, where 9 represents the most desirable turf quality, darker green color, finest leaf texture, and least disease damage. Ratings were frequently made by more than one person to reduce individual preferences toward particular traits. All data were subjected to analysis of variance.

RESULTS AND DISCUSSION

For all tests, turf quality ratings were averaged for each year and for the duration of the test (multiple year average). In each table, the entries are ranked by the overall (multi-year) quality average and presented along with the annual means.

A comparison of quality ratings of the newer cultivars to older cultivars such as 'Kentucky 31' and 'Fawn' indicates that breeding has dramatically improved tall fescue for the turf-type characteristics of lower growth habit, finer leaf blades (Table 4), higher tiller density, and darker green color (Tables 4 and 6). Older cultivars such as 'Falcon,' 'Arid,' and 'Bonanza' once ranked high in previous tall fescue tests and still perform well in more recent tests; however, the turf quality of these cultivars is usually surpassed by more recently developed cultivars.

Brown patch, caused by *Rhizoctonia solani* Kühn, and net blotch, caused by *Drechslera dictyoides* f. sp. *dictyoides* Drechs, are two common and serious diseases of tall fescue. Although some improvement in the resistance of these two diseases has been made, more work is needed (Tables 3 and 6). Brown patch on tall fescue is especially severe when moderate drought stress precedes the hot and humid conditions that are favorable for disease development. Less damage from this disease is frequently observed on plots showing greater tolerance to drought stress. Net blotch can be particularly troublesome on new seedings of tall fescue and may contribute to the

slow establishment often observed with this species. This seedling blight is exacerbated when the immature leaf tissue of seedlings is damaged by traffic.

Many of the newer cultivars are developed to contain viable endophytes. The presence of endophytes in tall fescue can enhance resistance to some turfgrass insect pests as well as improve summer performance. The benefits of endophyte infection may not always be obvious, but can be dramatic. It should be noted that endophyte-infected grasses are not recommended for areas intended to be used for grazing of livestock because of potential side effects produced by endophyte-induced compounds. Research is underway to identify or develop endophytes that enhance turfgrass performance without the potentially adverse effects on animal productivity.

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Table 1. Performance of tall fescue cultivars and selections in a turf trial seeded September 1991 at Adelphia, NJ. (Test #1.)

	Cultivar or Selection	-----Turf Quality ¹ -----				
		1992-1995 Avg.	1992 Avg.	1993 Avg.	1994 Avg.	1995 Avg.
1	Lexas	6.8	7.6	6.8	6.2	6.4
2	Genesis	6.4	7.2	6.6	6.0	5.7
3	Jaguar 3	6.1	6.1	6.4	6.3	5.5
4	Safari	6.1	6.5	6.2	5.7	6.0
5	Falcon II	5.9	6.6	5.9	6.0	5.0
6	Renegade	5.9	6.6	5.8	5.7	5.5
7	Tomahawk	5.7	6.5	5.7	5.4	5.0
8	Rebel 3D	5.7	6.5	5.8	4.9	5.6
9	Marksman	5.7	6.5	5.8	5.6	4.8
10	Pixie	5.5	6.8	5.2	5.3	4.7
11	5PM-91	5.5	6.1	5.6	4.7	5.6
12	Hubbard 87	5.3	5.6	5.7	5.3	4.9
13	Duke	5.3	5.2	5.8	5.5	4.9
14	Apache II	5.3	6.6	5.6	4.7	4.5
15	Rebel Jr.	5.3	5.6	5.3	5.3	5.1
16	Crossfire	5.2	5.7	5.4	4.8	5.1
17	Virtue	5.2	6.2	5.5	4.4	4.5
18	Lancer	5.2	6.3	5.0	4.7	4.5
19	Trailblazer II	5.1	5.1	5.2	5.5	4.8
20	Montauk	5.1	5.2	5.2	4.7	5.3
21	Crewcut	5.1	5.6	4.9	4.8	5.0
22	SRX-8400	5.0	5.4	4.9	4.7	5.0
23	Pick TOT	5.0	5.7	4.7	4.5	5.1
24	Bonanza II	5.0	4.9	5.1	5.3	4.6
25	Silverado	4.9	5.8	4.9	5.0	3.9
26	GQ	4.9	5.1	4.5	4.9	5.0
27	Eldorado	4.9	5.6	5.2	4.1	4.6
28	Vegas	4.8	5.7	4.7	4.7	4.3
29	Mini-Mustang	4.8	5.4	4.8	4.5	4.6
30	Aztec	4.8	4.7	5.4	5.0	4.3

Table 1 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				
		1992-1995 Avg.	1992 Avg.	1993 Avg.	1994 Avg.	1995 Avg.
31	MIC 18	4.8	5.4	4.7	4.4	4.7
32	Bonsai	4.7	5.9	4.5	4.0	4.4
33	Mustang II	4.7	5.1	4.9	4.4	4.3
34	Austin	4.5	5.0	4.2	4.4	4.3
35	Monarch	4.5	4.9	4.6	4.1	4.3
36	SR-8300	4.5	4.4	4.8	4.5	4.1
37	SRX-8220	4.4	4.9	4.3	4.1	4.4
38	Tribute	4.4	4.5	4.5	4.2	4.3
39	Windsor II	4.4	4.7	4.4	4.3	4.3
40	Oasis	4.4	4.8	4.1	4.3	4.3
41	SR-8200	4.4	4.7	4.4	4.3	3.9
42	Olympic II	4.3	4.3	4.4	4.1	4.5
43	Phoenix	4.3	4.3	4.4	4.1	4.3
44	Titan II	4.2	4.5	4.2	3.9	4.3
45	Shortstop	4.1	4.7	4.2	3.9	3.5
46	Bonanza	4.1	4.3	4.2	4.1	3.7
47	Wrangler	4.1	3.8	4.3	3.9	4.2
48	Sapphire	3.9	3.6	4.2	3.8	4.0
49	Rebel II	3.8	4.0	4.1	3.3	3.7
50	Olympic	3.7	4.1	4.0	3.4	3.5
51	ERA	3.7	3.7	3.8	3.3	4.1
52	Thunderbird	3.7	3.9	3.7	3.7	3.6
53	Winchester	3.6	3.9	4.0	3.1	3.3
54	Mustang	3.5	3.8	3.8	3.2	3.4
55	Rebel	3.5	3.4	3.8	3.2	3.5
56	Titan	3.4	3.3	3.4	3.7	3.4
57	Apache	3.4	3.4	3.8	3.1	3.3
58	Arid	3.0	2.7	3.0	3.1	3.2
59	Kentucky 31 E+	2.2	2.2	2.2	2.6	2.0
60	Kentucky 31 E-	2.2	2.1	2.2	2.3	2.2

Table 1 (continued).

		-----Turf Quality ¹ -----				
	Cultivar or Selection	1992-1995 Avg.	1992 Avg.	1993 Avg.	1994 Avg.	1995 Avg.
61	Fawn	1.5	1.5	1.5	1.6	1.3
	LSD at 5% =	0.7	0.8	0.7	1.2	1.0

¹ 9 = best turf quality

Table 2. Performance of tall fescue cultivars and selections in a turf trial seeded September 1991 at Adelphia, NJ. (Test #2.)

	Cultivar or Selection	-----Turf Quality ¹ -----				
		1992-1995 Avg.	1992 Avg.	1993 Avg.	1994 Avg.	1995 Avg.
1	Lexas	5.5	6.3	5.7	5.1	5.0
2	Rebel 3D	4.9	5.6	4.7	4.7	4.5
3	Pixie	4.8	5.4	5.2	4.9	3.9
4	Genesis	4.7	5.7	4.6	4.1	4.4
5	Rebel Jr.	4.5	5.2	4.8	4.1	3.9
6	Tomahawk	4.2	4.8	4.3	3.7	4.2
7	Hubbard 87	4.2	4.3	4.4	4.1	4.0
8	Bonsai	4.2	4.9	4.0	3.5	4.4
9	GQ	4.0	4.2	4.1	3.5	4.1
10	Twilight	3.9	4.5	3.9	3.9	3.4
11	Taurus	3.8	4.5	4.0	3.4	3.5
12	Oasis	3.8	3.8	4.0	3.7	3.6
13	Rebel II	3.6	3.7	3.7	3.3	3.6
14	Tribute	3.5	3.5	3.8	3.7	3.2
15	Arid	3.0	2.6	3.2	3.0	3.1
16	KY-31	2.5	2.7	2.3	2.5	2.3
	LSD at 5% =	0.6	0.7	0.7	1.0	1.0

¹ 9 = best turf quality

Table 3. Performance of tall fescue cultivars and selections in a turf trial seeded September 1992 at North Brunswick, NJ. (Includes all entries from 1992 National Tall Fescue Test - NTEP.)

	Cultivar or Selection	-----Turf Quality ¹ -----				Brown Patch ² July 1995 Avg.
		1993-1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.	
1	Crossfire II	6.4	7.1	6.2	5.9	7.0
2	Hounddog V	6.2	6.6	6.0	6.0	3.0
3	ISI-AFA	6.1	6.9	5.8	5.7	4.7
4	Coronado	6.0	6.6	5.7	5.7	3.3
5	Southern Choice	6.0	6.7	5.5	5.7	5.0
6	Falcon II	6.0	6.6	5.5	5.8	5.0
7	Coyote	5.9	6.8	5.5	5.5	1.3
8	Jaguar III	5.9	5.9	5.9	5.8	5.7
9	Genesis	5.8	6.5	5.5	5.4	4.0
10	Pixie	5.7	6.4	5.5	5.3	2.3
11	PST-5DX E+	5.7	6.4	5.3	5.2	4.3
12	Lexas	5.5	6.2	5.2	5.2	2.7
13	Lancer	5.5	5.9	5.1	5.5	3.0
14	Marksman	5.5	6.1	5.2	5.1	3.7
15	Pick 90-6	5.5	6.7	4.8	4.9	3.0
16	PST-5PM	5.4	6.1	5.0	5.2	4.3
17	ZPS-E2	5.4	6.0	5.1	5.1	3.0
18	Virtue	5.4	5.9	5.1	5.0	2.3
19	Micro DD	5.4	6.1	5.0	4.9	5.7
20	Finelawn Petite	5.3	6.6	4.6	4.8	4.7
21	PST-5LX	5.3	6.5	4.7	4.8	6.3
22	Vegas	5.3	5.9	5.1	4.9	4.0
23	Pick 90-10	5.3	6.3	4.8	4.7	1.3
24	Cochise	5.2	5.7	5.0	5.0	3.3
25	Tulsa	5.2	6.2	4.5	4.9	4.3
26	Rebel Jr.	5.2	5.6	4.9	4.9	7.3
27	Debutante	5.2	5.4	5.1	5.0	1.7
28	Gazelle	5.2	6.2	4.7	4.6	1.7
29	Apache II	5.1	6.1	4.7	4.7	3.0
30	Starlet	5.1	6.5	4.4	4.4	5.3

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Brown Patch ² July 1995 Avg.
		1993- 1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.	
31	Safari	5.1	5.7	4.6	4.9	5.3
32	Rebel 3D	5.1	6.4	4.4	4.5	4.3
33	Duster	5.1	6.3	4.5	4.5	2.7
34	Tomahawk	5.1	6.2	4.2	4.7	4.3
35	Leprechaun	5.1	5.8	4.6	4.8	5.3
36	Eldorado	5.1	5.7	4.6	4.9	5.7
37	PST-5STB	5.1	6.4	4.1	4.7	5.0
38	Silverado	5.1	5.9	4.7	4.6	5.3
39	SR 8400	5.0	5.8	4.7	4.6	6.0
40	SFL	5.0	5.1	5.1	4.9	5.3
41	Regiment	5.0	5.9	4.5	4.6	4.0
42	Duke	5.0	5.6	4.8	4.6	1.7
43	SR 8200	5.0	5.6	4.9	4.5	5.3
44	Bonsai	5.0	6.1	4.5	4.3	5.0
45	SR 8210	4.9	6.0	4.4	4.4	3.7
46	BAR Fa 2AB	4.9	6.0	4.4	4.4	1.7
47	Trailblazer II	4.9	5.7	4.6	4.5	3.3
48	PST-5VC	4.9	5.8	4.3	4.7	2.7
49	Chieftain II	4.9	5.3	4.8	4.5	3.7
50	Renegade	4.9	5.7	4.5	4.4	3.0
51	Mirage	4.8	5.6	4.6	4.3	4.0
52	Palisades	4.8	5.5	4.6	4.4	2.7
53	PSTF-200	4.8	5.1	4.7	4.6	4.0
54	Ninja	4.8	5.6	4.4	4.4	4.0
55	Windsor II	4.8	5.1	4.9	4.3	4.0
56	Crossfire	4.7	4.9	4.7	4.5	3.3
57	Guardian	4.7	5.3	4.4	4.4	5.3
58	Montauk	4.7	5.3	4.3	4.4	3.0
59	Shenandoah	4.7	4.8	4.8	4.4	3.3
60	BAR Fa 0855	4.7	5.1	4.6	4.3	5.3

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Brown Patch ² July 1995 Avg.
		1993- 1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.	
61	Avanti	4.7	5.5	4.2	4.2	4.3
62	Aztec	4.6	5.1	4.4	4.4	6.3
63	Alamo	4.6	5.2	4.5	4.2	3.0
64	M-2	4.6	4.9	4.4	4.6	2.7
65	Bonsai Plus	4.6	5.5	4.3	4.1	3.3
66	Austin	4.6	5.0	4.3	4.5	4.0
67	ISI-CRC	4.5	5.1	4.4	4.1	5.7
68	Pyramid	4.5	5.0	4.0	4.5	2.7
69	PSTF-401	4.5	5.1	4.3	4.2	4.3
70	Titan II	4.5	4.9	4.5	4.0	3.3
71	Cafa 101	4.4	4.9	4.3	4.2	5.3
72	CAS-LA20	4.4	4.8	4.2	4.1	5.0
73	FA-22	4.4	5.2	3.8	4.0	5.0
74	Phoenix	4.3	4.6	4.5	3.8	2.7
75	BAR Fa 124	4.3	4.9	3.9	4.0	3.0
76	Monarch	4.2	4.9	3.8	4.0	2.0
77	Astro 2000	4.2	4.4	4.3	4.0	2.7
78	Shortstop	4.2	4.9	4.0	3.7	1.3
79	SR 8300	4.1	4.6	4.0	3.8	3.3
80	Bonanza II	4.1	4.9	3.8	3.7	4.0
81	PSTF-LF	4.1	4.8	3.9	3.6	5.0
82	Oasis	4.1	4.5	3.8	4.0	4.3
83	Kittyhawk	4.1	4.4	3.8	4.1	3.0
84	Finelawn 88	4.1	4.3	4.0	3.9	3.7
85	Rebel II	3.9	4.2	3.6	3.9	3.7
86	CAS-MA21	3.9	4.5	3.6	3.5	1.7
87	Murietta	3.9	4.5	3.4	3.7	3.0
88	Olympic II	3.8	4.2	3.5	3.8	3.3
89	Wrangler	3.8	4.1	3.4	3.9	3.3
90	Bonanza	3.8	4.4	3.5	3.5	2.3

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Brown Patch ² July 1995 Avg.
		1993-1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.	
91	Rebel	3.8	4.0	3.6	3.8	3.7
92	Twilight	3.7	4.7	3.3	3.0	2.7
93	Apache	3.6	4.0	3.2	3.5	2.7
94	Titan	3.5	3.5	3.4	3.5	4.7
95	Arid	3.4	3.6	3.1	3.3	4.0
96	Falcon	3.3	3.5	3.2	3.3	2.7
97	Olympic	3.2	3.7	2.7	3.2	2.3
98	Mustang	3.2	3.6	2.8	3.1	2.7
99	Anthem	3.0	3.2	2.7	3.2	1.0
100	GA-JessupE+	2.7	2.8	2.7	2.7	4.0
101	Kentucky-31E+	2.4	2.5	2.3	2.3	3.7
102	Kentucky-31	2.3	2.5	2.2	2.3	2.0
103	GA-JessupE-	2.3	2.5	2.1	2.3	4.3
104	Georgia 5	2.0	2.1	1.8	2.0	4.3
	LSD at 5% =	0.5	0.7	0.8	0.7	NS

¹ 9 = best turf quality

² 9 = least brown patch

Table 4. Performance of tall fescue cultivars and selections in a turf trial seeded September 1992 at Adelphia, NJ. (Includes all entries from the 1992 National Tall Fescue Test - NTEP.)

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 1995 Avg.	Leaf Texture ³ Sept. 1995 Avg.
		1993- 1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.		
1	Jaguar III	6.8	6.4	7.2	6.7	6.2	7.7
2	Hounddog V	6.4	6.6	6.7	6.0	7.2	7.0
3	ISI-AFA	6.3	6.1	6.8	6.1	6.3	6.0
4	Lexas	6.3	6.4	6.1	6.3	8.2	7.0
5	Tulsa	6.2	5.7	6.6	6.1	7.0	8.0
6	Falcon II	6.1	6.4	5.8	6.1	7.7	7.3
7	Coyote	6.1	6.1	6.0	6.1	8.2	7.0
8	Genesis	6.1	6.2	6.0	6.0	7.5	6.3
9	Coronado	6.0	5.9	5.9	6.2	8.5	7.0
10	Pixie	6.0	6.2	6.0	5.8	6.3	6.7
11	PST-5DX E+	6.0	5.7	5.9	6.3	6.3	7.7
12	PST-5PM	5.9	5.6	6.2	6.0	6.5	7.0
13	Crossfire II	5.9	5.9	5.9	5.9	7.8	5.0
14	Southern Choice	5.9	6.1	5.6	5.9	7.5	6.3
15	Lancer	5.8	5.8	5.7	6.0	6.7	6.3
16	ZPS-E2	5.7	5.5	6.2	5.5	6.8	7.7
17	Duster	5.7	5.9	5.6	5.5	7.0	5.7
18	PST-5VC	5.6	5.4	5.8	5.5	7.3	5.7
19	Safari	5.5	5.3	5.5	5.8	4.8	6.0
20	Guardian	5.5	5.7	5.4	5.6	6.3	5.3
21	PST-5LX	5.5	5.6	5.7	5.3	6.7	6.7
22	Pick 90-10	5.5	5.4	5.3	5.8	8.3	6.7
23	Trailblazer II	5.5	5.5	5.1	5.8	6.2	4.3
24	Duke	5.5	5.6	5.1	5.8	5.2	5.0
25	Eldorado	5.5	5.7	5.3	5.4	5.8	6.0
26	Apache II	5.5	5.4	5.7	5.3	7.2	5.3
27	Finelawn Petite	5.5	5.8	5.4	5.1	7.8	6.0
28	Micro DD	5.5	5.5	5.5	5.3	7.2	6.7
29	Tomahawk	5.4	5.5	5.5	5.3	6.5	4.3
30	Vegas	5.4	5.2	5.7	5.3	6.7	5.3

Table 4 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 1995 Avg.	Leaf Texture ³ Sept. 1995 Avg.
		1993- 1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.		
31	Rebel Jr.	5.4	5.3	5.7	5.2	6.0	4.7
32	Titan II	5.4	5.5	5.7	5.0	4.8	6.7
33	Leprechaun	5.4	5.3	5.2	5.7	7.2	6.3
34	Virtue	5.4	5.1	5.4	5.7	6.7	6.3
35	Gazelle	5.4	5.9	5.1	5.1	8.0	6.0
36	Regiment	5.4	5.5	5.2	5.4	5.7	7.3
37	Rebel 3D	5.4	5.6	5.3	5.2	7.2	4.7
38	Ninja	5.3	5.1	5.2	5.7	6.5	7.3
39	Pick 90-6	5.3	5.3	4.8	5.8	7.8	5.3
40	SFL	5.3	4.9	5.2	5.8	6.5	7.7
41	SR 8210	5.3	5.3	5.3	5.3	6.0	6.3
42	Alamo	5.3	4.9	5.3	5.6	6.2	7.0
43	Marksman	5.3	5.3	5.1	5.4	7.2	7.7
44	SR 8200	5.2	5.3	5.0	5.4	5.5	5.7
45	SR 8400	5.2	5.2	5.4	5.1	5.3	7.0
46	M-2	5.2	5.1	5.2	5.3	6.2	6.0
47	Silverado	5.2	5.7	5.0	4.8	6.7	3.7
48	Montauk	5.2	5.4	4.9	5.3	6.5	5.0
49	Palisades	5.2	5.2	5.1	5.2	6.0	6.3
50	FA-22	5.1	5.0	5.2	5.2	5.2	7.0
51	Renegade	5.1	5.3	4.9	5.1	6.8	5.0
52	Bonsai Plus	5.1	5.2	5.1	5.0	7.3	5.0
53	403	5.1	4.8	5.0	5.5	6.3	7.3
54	Windsor II	5.1	5.0	5.0	5.2	6.3	6.7
55	PRO-9178	5.1	5.4	5.0	4.9	5.7	5.7
56	Chieftain II	5.1	5.3	5.1	4.8	7.0	5.0
57	Debutante	5.1	5.3	4.8	5.1	5.3	7.7
58	BAR Fa 2AB	5.1	5.1	4.7	5.4	6.8	5.0
59	Mirage	5.1	5.1	5.2	4.8	6.8	7.3
60	PSTF-401	5.0	4.6	5.2	5.2	5.2	7.0

Table 4 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Color ² 1995 Avg.	Leaf Texture ³ Sept. 1995 Avg.
		1993- 1995 Avg.	1993 Avg.	1994 Avg.	1995 Avg.		
61	Austin	5.0	5.0	5.1	4.9	5.2	5.0
62	Cochise	4.9	5.1	4.5	5.1	7.0	5.3
63	Cafa 101	4.9	5.1	4.8	4.8	4.8	4.7
64	BAR Fa 124	4.9	4.8	4.9	5.0	5.5	6.3
65	Pyramid	4.9	5.1	5.0	4.6	6.2	4.7
66	PSTF-200	4.9	4.6	4.9	5.1	5.5	6.3
67	Bonanza II	4.9	4.7	5.0	5.0	6.0	5.7
68	Aztec	4.9	4.5	5.0	5.2	5.8	6.0
69	BAR Fa 0855	4.9	5.0	4.7	4.9	5.3	5.3
70	SR 8300	4.8	4.7	4.6	5.2	6.0	6.3
71	Avanti	4.8	4.7	4.7	5.0	6.0	6.0
72	CAS-MA21	4.7	4.8	4.7	4.6	5.5	6.3
73	Finelawn 88	4.7	4.5	4.5	5.0	5.8	5.7
74	PSTF-LF	4.7	4.6	4.7	4.6	5.2	6.3
75	ISI-CRC	4.6	4.7	4.4	4.8	5.3	5.7
76	Monarch	4.6	5.0	4.6	4.3	6.2	3.7
77	Starlet	4.6	4.8	4.4	4.5	6.8	5.7
78	CAS-LA20	4.5	4.2	4.3	4.9	5.5	6.3
79	Bonsai	4.5	4.5	4.2	4.7	7.3	6.7
80	PST-5STB	4.5	4.4	4.4	4.6	6.3	5.3
81	Bonanza	4.5	4.7	4.4	4.3	4.3	4.0
82	Shenandoah	4.4	4.5	4.4	4.4	5.3	4.7
83	Kittyhawk	4.4	4.8	4.4	3.9	5.2	5.7
84	Olympic II	4.3	4.5	4.0	4.4	3.7	5.7
85	Phoenix	4.2	3.9	4.4	4.4	4.2	4.7
86	Astro 2000	4.2	4.1	4.0	4.5	4.5	5.0
87	Twilight	3.8	3.9	3.5	4.0	7.8	5.3
88	Arid	3.7	3.7	3.6	3.8	3.0	4.3
89	Falcon	3.3	3.6	3.0	3.4	3.0	3.0
90	Anthem	2.9	2.9	2.8	3.0	2.8	3.7

Table 4 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----			Color ² 1995 Avg.	Leaf Texture ³ Sept. 1995 Avg.	
		1993- 1995 Avg.	1993 Avg.	1994 Avg.			1995 Avg.
91	Kentucky-31 E+	2.0	2.2	1.9	2.0	1.5	1.0
92	Kentucky-31 E-	2.0	2.0	1.8	2.1	1.7	2.0
	LSD at 5% =	0.5	0.7	0.8	0.7	1.2	1.9

¹ 9 = best turf quality

² 9 = darkest green color

³ 9 = finest, uniform leaf texture

Table 5. Performance of tall fescue cultivars and selections in a turf trial established October 1993 at Adelphia, NJ.

	Cultivar or Selection	-----Turf Quality ¹ -----		
		1994-1995 Avg.	1994 Avg.	1995 Avg.
1	Jaguar 3	6.1	6.7	5.4
2	Gazelle	6.0	6.4	5.5
3	Pixie	5.7	6.3	5.1
4	Rebel Jr	5.2	5.7	4.6
5	GQ	4.5	4.6	4.4
6	Rebel 3D	4.5	4.9	4.1
7	Arriba	4.2	4.6	3.8
8	Wrangler	4.2	4.3	4.0
9	Oasis	4.1	4.5	3.7
10	Rebel II	4.1	4.5	3.7
11	Tribute	4.0	4.2	3.8
12	Rebel III	3.9	3.8	4.0
13	Amigo	3.9	4.3	3.4
14	Mesa	3.3	3.4	3.2
15	Titan	3.1	3.5	2.7
16	Arid	3.1	3.4	2.8
17	Fawn	1.9	2.1	1.7
18	Ky-31	1.9	2.2	1.6
LSD at 5% =		0.7	0.9	0.7

¹ 9 = best turf quality

Table 6. Performance of tall fescue cultivars in a turf trial seeded September 1994 at Adelphia, NJ.

	Cultivar or Selection	Turf Quality ¹ 1995 Avg.	Seedling Vigor ² Sept. 1994 Avg.	Color ³ May 1995 Avg.	Net Blotch ⁴ May 1995 Avg.
1	Southern Choice	5.7	7.0	7.0	7.3
2	Jaguar III	5.5	7.3	5.3	6.3
3	Gazelle	5.5	6.0	8.7	8.7
4	Pixie	5.3	7.0	4.3	7.0
5	Falcon II	5.1	8.0	4.7	4.7
6	Marksman	5.1	8.0	4.7	5.3
7	Tomahawk	5.1	6.3	5.0	6.3
8	Renegade	5.0	8.0	5.7	7.0
9	Starlet	5.0	7.0	6.3	6.0
10	Rebel III	5.0	6.3	4.7	4.3
11	Rebel 3D	4.9	7.0	6.7	7.0
12	Safari	4.9	7.7	4.0	5.3
13	Wrangler II	4.8	6.3	7.0	7.0
14	Alamo	4.8	6.7	6.3	5.7
15	Rebel Jr	4.6	6.3	4.3	4.0
16	Tribute	4.4	8.0	3.3	4.7
17	GQ	4.2	7.7	3.3	4.7
18	Crossfire	4.2	7.3	3.7	3.7
19	Monarch	4.1	6.7	3.7	4.7
20	Winchester	4.1	8.0	3.0	4.0
21	Eldorado	4.1	7.3	3.3	4.3
22	Oasis	4.0	8.0	3.0	4.3
23	Rebel	4.0	8.7	3.7	4.3
24	Thunderbird	3.9	7.7	3.0	3.7
25	Rebel II	3.7	8.0	2.3	2.7

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 1995 Avg.	Seedling Vigor ² Sept. 1994 Avg.	Color ³ May 1995 Avg.	Net Blotch ⁴ May 1995 Avg.
26	Arid	3.5	8.0	2.3	3.3
27	Wrangler	3.4	8.0	2.7	3.3
28	Falcon	3.2	9.0	2.0	3.7
29	Ky 31	2.1	9.0	1.3	2.0
30	Fawn	1.8	9.0	1.0	1.7
	LSD at 5% =	0.7	0.8	1.6	1.4

¹ 9 = best turf quality

² 9 = best seedling vigor

³ 9 = darkest color

⁴ 9 = least net blotch

Table 7. Annual nitrogen (N) applied and mowing height (Ht) on tall fescue tests established at Adelphia and North Brunswick, NJ.

	1992		1993		1994		1995	
	N ¹	Ht ²	N	Ht	N	Ht	N	Ht
Table 1 (1991 Adelphia)	5.2	1.5	3.5	1.5	1.4	1.5	2.5	2.5
Table 2 (1991 Adelphia)	5.2	1.5	3.5	1.5	1.4	1.5	2.5	2.5
Table 3 (1992 North Brunswick)			3.8	1.5	3.4	1.5	1.4	1.5
Table 4 (1992 Adelphia)			5.6	1.5	2.9	2.0	3.9	2.0
Table 5 (1993 Adelphia)					3.5	1.5	4.8	2.0
Table 6 (1994 Adelphia)							4.8	2.0

¹ Annual N applied to turf (lbs/1000 ft²).

² Mowing height in inches.