1995
RUTGERS
Turfgrass Proceedings

THE NEW JERSEY TURFGRASS ASSOCIATION

In Cooperation With

RUTGERS COOPERATIVE EXTENSION
NEW JERSEY AGRICULTURAL EXPERIMENT STATION
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY
NEW BRUNSWICK

1995 RUTGERS TURFGRASS PROCEEDINGS

of the

New Jersey Turfgrass Expo
December 12-14, 1995
Taj Mahal Casino-Resort
Atlantic City, New Jersey

The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, Cook College, Rutgers University 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. 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 for use by the turfgrass industry.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to those individuals who have provided support to the Rutgers Turf Research Program at Cook College - Rutgers, The State University of New Jersey.

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

PERFORMANCE OF PERENNIAL RYEGRASS CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

James A. Murphy, Margaret E. Secks, Ronald F. Bara, William K. Dickson, Dirk A. Smith, and C. Reed Funk[1]

The use of "turf-type" perennial ryegrass (*Lolium perenne*) in the United States began in the mid-1960s when 'NK-100' was released. The subsequent releases of 'Manhattan' in 1967 and 'Pennfine' in 1970 initiated the tremendous growth in the development and utilization of improved "turf-type" perennial ryegrass cultivars. Perennial ryegrass is popular in many parts of the world because of its ability to rapidly establish a turf with an attractive, leafy appearance and a persistent, wear-tolerant surface. Present cultivars have been developed with increased stress tolerance, improved resistance to many pests, cleaner mowing, a lower growth habit and reduced mowing requirement, darker green color, more uniform texture, and higher shoot density.

Although improvements in summer performance and pest resistance have been made, further improvements are needed to realize the full potential of perennial ryegrass, particularly for regions with hot, humid summers. Improved cold hardiness and the ability to tolerate long periods of cover from ice sheets are other important considerations. Variation in these characteristics is limited in present germplasm, which indicates that new collections from old turfs throughout the world are needed to expand the genetic base of perennial ryegrass.

Perennial ryegrass is evaluated under different site, climatic, and management conditions by the New Jersey Agricultural Experiment Station and many other institutions. Data presented here include entries from the 1994 National Perennial Ryegrass Test coordinated by the National Turfgrass Evaluation Program (NTEP), which is sponsored by the USDA in Beltsville, MD. The Rutgers turfgrass program also conducts a number of independent trials of material generated by its program as well as selections developed by turfgrass breeders at other institutions.

PROCEDURES

Two perennial ryegrass tests were established at the Turfgrass Research Facility in North Brunswick, NJ; one test was seeded May 1994 (Table 1) and the other was seeded September 1994 (Table 2). A third test was seeded September 1994 (Table 3) at the Plant Science Research Station in Adelphia, NJ.

The North Brunswick test seeded in May 1994 and the Adelphia test were sown, by hand, with 0.88 oz of seed into 3 x 5 ft plots (3.7 lb seed/1000 ft^2). The North Brunswick test seeded in September 1994 was sown, by hand, with 2.1 oz of seed into 3.5 x 5.5 ft plots (6.8 lb seed/1000 ft^2). A 6 inch unseeded border was left between plots. All tests were arranged in a randomized complete block design with three replications. Irrigation was applied to all tests to avoid severe drought stress. Broadleaf weeds were controlled with a fall application of the postemergence

[1] Assistant Extension Specialist in Turfgrass Management, Program Associate II, Head Soils and Plants Technician, Turfgrass Research Farm Supervisor, Senior Laboratory Technician, and Research Professor, respectively, New Jersey Agricultural Experiment Station, Cook College, Rutgers, The State University of New Jersey, New Brunswick, NJ 08903.

herbicides 2,4-D and dicamba. Preemergence control for summer annuals was applied in the spring using the preemergence herbicides DCPA or bensulide.

The annual rate of nitrogen (N) fertilization and mowing height for each test is presented in Table 4. A single application of fertilizer did not exceed 1.0 lb N/1000 ft^2. The rate and timing of N fertilization and other management practices were sometimes modified to encourage disease or other stresses. Tests were regularly mowed with reel mowers at 1.5 inches. Rotary mowers were occasionally used to remove stems and prostrate leaf blades. Agricultural limestone was applied, based on soil test results, to maintain pH in the range of 6.0 to 6.5.

The tests were rated frequently throughout the growing season for turf quality (i.e., color, texture, density, uniformity, mowing quality, and freedom from insect and disease damage). Ratings were also taken from the various tests for genetic color, leaf texture, spring green-up, and brown patch disease. Ratings were based on a 1 to 9 scale, with 9 representing the best turf quality, darkest green color, finest leaf blade width, earliest spring green-up, and least disease damage. Evaluations were made by a number of turfgrass specialists to reduce the influence of individual preference for particular traits. All data were subjected to an analysis of variance.

RESULTS AND DISCUSSION

Results for the three tests are presented in Tables 1 through 3. Tables 2 and 3 contain all the entries in the 1994 National Perennial Ryegrass Test. Entries are ranked according to the quality average of 1994 and 1995 data. A high quality rating generally indicates darker green color, greater density, better mowing quality, finer leaf texture, lower growth habit, and less pest damage. Leaf texture and color ratings in Table 2 indicate that many cultivars have finer leaf blades and a darker green color.

Late-autumn and winter turf quality data in Tables 2 and 3 indicate that many of the newer cultivars can rapidly develop and maintain an attractive turf cover into late-autumn and winter. Spring green-up ratings in Tables 1 and 2 demonstrate that, compared to older standard cultivars such as 'Linn' and 'Pennfine,' many of the newer lower-growing, darker-green cultivars emerged from winter dormancy more gradually.

Brown patch disease ratings in Tables 1 and 2 indicate that most of the newer cultivars have better resistance to this disease compared to the older standards 'Linn' and 'Pennfine.' However, improvement in the resistance to Rhizoctonia brown patch disease is still needed in perennial ryegrass.

Many newer cultivars contain an *Acremonium* endophyte that enhances resistance to some insects and may improve summer performance. Further improvements in genetically stable resistance to crown rust, dollar spot, pink patch, and red thread diseases are needed for better performance under low soil fertility. Additionally, this species would benefit from improved root system viability under high temperature stress.

ACKNOWLEDGMENTS

New Jersey Agricultural Experiment Station Publication No. E-12264-1-96. This work was conducted as part of NJAES Project No. 12264, supported by New Jersey Agricultural Experiment Station, *State*, and Hatch Act funds, Rutgers Center for Turfgrass Science, other grants, and gifts. Additional support was received from the United States Golf Association-Golf Course

Superintendents Association of America Research Fund and the New Jersey Turfgrass Association.

Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial seeded May 1994 at North Brunswick, NJ.

	Cultivar or Selection	Turf Quality[1] 1994-1995 Avg.	Turf Quality[1] 1994 Avg.	Turf Quality[1] 1995 Avg.	Spring Green-up[2] March 1995 Avg.	Brown Patch[3] Aug. 1995 Avg.
1	MPRH-93	7.0	7.0	7.0	5.0	4.4
2	Premier II	6.7	7.0	6.4	4.3	2.8
3	Palmer II	6.6	6.7	6.4	3.0	4.4
4	RPBD	6.6	7.0	6.1	4.0	4.8
5	Brightstar	6.5	6.6	6.3	3.0	2.7
6	Advantage	6.0	6.3	5.8	1.3	2.4
7	Elf	5.9	6.2	5.5	5.7	4.3
9	Prizm	5.8	5.6	5.9	3.3	4.1
8	Repel II	5.8	6.0	5.6	4.3	4.5
10	Prelude II	5.7	6.3	5.2	5.3	3.5
11	Yorktown III	5.6	5.6	5.5	5.3	4.0
12	Pick 1800	5.6	6.4	4.8	5.0	3.5
13	Syn P	5.3	5.4	5.2	5.3	4.8
14	APM	4.9	4.9	4.8	5.3	5.3
15	Advent	4.8	4.7	5.0	5.7	4.3
16	Target	4.6	4.7	4.5	3.3	3.3
17	Dandy	4.5	4.6	4.4	5.7	4.0
18	Fiesta II	4.1	4.6	3.7	6.7	3.4
19	Low Grow	3.8	3.7	3.9	5.3	3.5
20	Edge	3.7	3.8	3.5	6.0	3.9
21	Mulligan	3.4	3.3	3.4	7.0	4.4
22	Pennfine	3.0	3.2	2.9	6.7	1.8
23	Linn	1.4	1.6	1.2	7.0	1.3
	LSD at 5% =	0.9	0.9	1.0	1.4	1.3

[1] 9 = best turf quality
[2] 9 = best spring green-up
[3] 9 = least disease

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded September 1994 at North Brunswick, NJ. (Includes the 1994 National Perennial Ryegrass Test - NTEP).

	Cultivar or Selection	Turf Quality[1] 1994-1995 Avg.	Turf Quality[1] Oct.-Dec. 1994 Avg.	Turf Quality[1] 1995 Avg.	Color[2] 1995 Avg.	Leaf Texture[3] 1995 Avg.	Spring Green-up[4] March 1995 Avg.	Brown Patch[5] July 1995 Avg.
1	Brightstar II	7.2	7.3	7.0	8.4	6.7	3.3	6.0
2	LRF-94-MPRH	7.0	7.0	7.0	7.3	8.2	6.0	6.3
3	LRF-94-B6	6.7	7.0	6.5	8.2	6.5	5.7	5.3
4	RPBD	6.7	6.6	6.8	6.8	8.2	6.7	7.3
5	Premier II	6.7	6.9	6.5	7.2	7.3	5.5	6.0
6	LRF-94-C8	6.7	6.9	6.5	8.3	6.7	5.7	5.3
7	LRF-94-C7	6.7	7.0	6.3	8.3	6.2	5.3	5.0
8	MB 42	6.6	6.8	6.4	8.1	6.7	5.5	4.3
9	MB 47	6.6	6.7	6.4	7.6	7.0	4.8	6.7
10	J-1706	6.6	6.4	6.7	6.2	7.3	5.8	6.3
11	PST-GH-94	6.6	6.7	6.4	7.2	7.3	4.7	5.3
12	Calypso II	6.5	6.4	6.7	6.4	7.7	6.3	6.0
13	ZPS-PR1	6.5	6.4	6.5	7.0	7.2	6.3	5.0
14	PST-2R3	6.5	6.6	6.3	6.3	7.7	6.0	5.3
15	PST-2DLM	6.4	6.4	6.3	8.2	6.7	4.7	3.3
16	Pick Lp 102-92	6.3	6.4	6.2	7.1	6.2	6.0	5.3
17	Citation III	6.3	6.4	6.2	7.6	7.0	6.3	4.3
18	Prizm	6.3	6.5	6.1	5.9	6.8	6.3	6.0
19	MB 46	6.2	6.6	5.9	8.3	6.3	4.5	4.7
20	Divine	6.2	6.4	6.1	7.2	6.8	6.0	5.7
21	ISI-MHB	6.2	6.2	6.1	5.9	7.7	4.8	6.0
22	Accent	6.2	6.3	6.0	5.9	6.8	6.2	5.7
23	Imagine	6.2	6.5	5.8	8.4	6.7	3.7	3.3
24	ZPS-2DR-94	6.1	6.3	6.0	6.5	6.8	5.5	5.3
25	Laredo	6.1	6.2	6.0	6.4	7.3	5.5	5.7
26	MB 43	6.1	6.4	5.9	7.7	6.7	5.0	5.3
27	WX3-93	6.1	6.2	6.1	6.9	6.3	3.2	4.7
28	MB 45	6.1	6.4	5.8	7.9	6.2	3.7	5.3
29	MED 5071	6.1	6.0	6.2	6.5	7.0	5.2	7.0
30	PST-2CB	6.1	6.4	5.8	6.0	6.2	7.0	4.3

Table 2 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-1995 Avg.	Turf Quality[1] Oct.-Dec. 1994 Avg.	Turf Quality[1] 1995 Avg.	Color[2] 1995 Avg.	Leaf Texture[3] 1995 Avg.	Spring Green-up[4] March 1995 Avg.	Brown Patch[5] July 1995 Avg.
31	Brightstar	6.1	6.2	6.0	6.8	6.5	5.2	6.0
32	Manhattan III	6.0	5.8	6.2	6.9	6.8	4.3	5.0
33	Night Hawk	6.0	6.4	5.6	6.1	5.3	4.7	4.0
34	LESCO-TWF	6.0	6.4	5.6	6.9	5.3	4.3	4.0
35	PST-2ET	5.9	6.7	5.2	6.2	5.0	4.0	5.3
36	Top Hat	5.9	6.0	5.9	5.5	7.0	5.7	5.0
37	ZPS-2ST	5.9	6.3	5.5	5.6	5.8	4.7	5.7
38	ZPS-2NV	5.9	6.0	5.8	6.3	6.5	5.3	5.3
39	CAS-LP23	5.9	6.4	5.4	7.1	6.0	3.8	4.0
40	Elf	5.9	5.7	6.0	6.5	6.3	6.3	5.3
41	Pick PR 84-91	5.9	5.9	5.8	6.3	6.0	3.5	4.7
42	Palmer II	5.8	5.9	5.8	7.0	6.3	5.5	5.0
43	Omni	5.8	5.8	5.8	6.3	6.3	4.5	4.0
44	MB 44	5.8	5.9	5.7	8.7	5.3	3.7	4.3
45	Advantage	5.8	5.9	5.7	6.9	6.2	4.2	4.3
46	MVF-4-1	5.8	6.2	5.4	5.4	6.0	6.5	4.7
47	Precision	5.8	5.9	5.6	5.3	6.8	7.2	5.0
48	PSI-E-1	5.8	6.1	5.5	5.4	5.7	5.5	4.3
49	Repell II	5.8	6.2	5.3	6.3	6.2	5.2	4.3
50	J-1703	5.7	5.8	5.6	5.5	6.2	5.5	6.0
51	Excel	5.7	6.0	5.4	7.5	6.0	4.3	3.3
52	Wizard	5.7	6.2	5.2	6.3	6.0	4.3	4.7
53	Yorktown III	5.7	5.9	5.5	5.1	6.8	7.0	6.7
54	PST-2FE	5.7	5.8	5.5	6.3	6.7	5.7	4.3
55	Koos 93-6	5.7	5.9	5.4	4.8	6.2	6.3	5.0
56	WVPB-PR-C-2	5.7	6.3	5.0	4.9	5.5	5.7	4.7
57	TMI-EXFLP94	5.6	5.9	5.3	5.6	5.8	6.2	5.0
58	Esquire	5.6	5.5	5.7	6.6	5.8	6.3	6.0
59	Vivid	5.6	5.8	5.4	5.9	5.2	4.7	5.0
60	Navajo	5.6	5.9	5.3	5.8	6.5	3.0	4.0

Table 2 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-1995 Avg.	Turf Quality[1] Oct.-Dec. 1994 Avg.	Turf Quality[1] 1995 Avg.	Color[2] 1995 Avg.	Leaf Texture[3] 1995 Avg.	Spring Green-up[4] March 1995 Avg.	Brown Patch[5] July 1995 Avg.
61	APR 124	5.6	5.6	5.6	5.9	5.7	6.5	5.3
62	Wind Star	5.6	5.3	5.8	5.7	6.7	6.2	5.7
63	WVPB-93-KFK	5.5	5.7	5.4	5.4	5.3	6.2	5.0
64	Passport	5.5	5.7	5.3	6.5	5.3	4.2	4.3
65	Nine-O-One	5.5	5.8	5.2	7.0	5.5	5.8	4.7
66	Quickstart	5.5	5.8	5.2	5.2	6.0	6.7	6.3
67	WX3-91	5.5	5.8	5.2	5.4	6.2	6.5	5.3
68	Pick 928	5.5	5.5	5.5	5.8	5.7	4.5	4.3
69	PC-93-1	5.5	5.8	5.2	4.9	6.2	6.5	5.3
70	Stallion Select	5.5	5.9	5.1	5.7	5.3	7.2	4.3
71	Koos 93-3	5.5	5.9	5.0	5.0	5.8	6.3	5.0
72	Riviera II	5.4	5.4	5.4	5.3	5.8	6.0	4.3
73	Achiever	5.4	5.6	5.2	5.4	6.7	6.7	6.3
74	Edge	5.4	5.5	5.3	5.4	6.2	6.7	5.7
75	BAR Er 5813	5.4	5.5	5.2	5.2	6.7	5.7	5.0
76	Advent	5.3	5.3	5.3	4.6	6.5	7.0	6.0
77	Assure	5.3	5.2	5.4	5.5	5.7	6.7	5.0
78	Cutter	5.3	5.1	5.4	6.1	6.0	4.5	5.0
79	SRX 4010	5.2	5.3	5.2	5.7	5.3	6.0	4.3
80	SR 4200	5.2	5.1	5.3	5.3	5.8	5.3	4.7
81	ISI-R2	5.1	5.4	4.9	5.0	6.2	6.0	5.7
82	Dancer	5.1	5.2	5.0	5.3	6.8	5.2	4.0
83	SRX 4400	5.1	4.9	5.3	5.3	6.3	6.0	5.0
84	APR 131	5.1	5.2	4.9	4.7	5.8	6.3	4.7
85	Express	5.1	5.5	4.6	4.4	5.5	6.3	5.0
86	Prelude II	5.1	4.8	5.3	6.1	6.0	6.3	5.3
87	Saturn	5.0	5.6	4.4	4.7	5.3	7.0	4.0
88	Morning Star	5.0	5.2	4.8	5.5	5.3	7.0	4.3
89	PS-D-9	5.0	5.1	4.9	4.8	5.7	6.8	3.3
90	APR 106	5.0	5.2	4.7	4.7	5.7	6.0	5.3

Table 2 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-1995 Avg.	Turf Quality[1] Oct.-Dec. 1994 Avg.	Turf Quality[1] 1995 Avg.	Color[2] 1995 Avg.	Leaf Texture[3] 1995 Avg.	Spring Green-up[4] March 1995 Avg.	Brown Patch[5] July 1995 Avg.
91	Nobility	5.0	5.1	4.9	4.1	5.5	7.3	5.7
92	Pegasus	4.9	5.4	4.5	5.1	5.3	5.5	3.3
93	WVPB 92-4	4.9	5.3	4.5	4.0	4.8	6.2	4.3
94	Williamsburg	4.8	5.2	4.4	4.4	4.8	5.5	4.0
95	Prelude	4.7	5.0	4.3	4.3	5.0	6.5	4.7
96	Dasher II	4.6	5.0	4.2	4.6	4.8	7.0	2.7
97	Manhattan II	4.5	5.1	3.9	3.8	5.2	6.0	4.3
98	APR 066	4.5	4.6	4.4	3.8	5.3	6.8	4.0
99	Repell	4.5	4.7	4.3	4.2	5.7	6.7	4.0
100	Fiesta II	4.4	4.7	4.1	4.0	5.2	6.8	3.7
101	Blazer II	4.3	4.6	4.1	3.9	4.5	6.8	3.3
102	DLP 1305	4.1	4.1	4.1	4.0	4.5	7.5	3.7
103	Mulligan	4.1	4.5	3.6	3.1	5.2	6.8	4.3
104	Pennfine	3.8	4.5	3.2	2.4	3.7	8.3	3.0
105	Figaro	3.5	3.7	3.4	3.1	4.2	6.5	3.3
106	DSV NA 9401	3.5	3.5	3.4	3.8	4.8	7.8	3.7
107	DSV NA 9402	3.4	3.6	3.2	2.8	4.7	8.0	2.3
108	Linn	2.3	2.8	1.7	1.2	2.0	7.5	1.3
	LSD at 5% =	0.6	0.8	0.7	1.0	1.1	1.3	1.6

[1] 9 = best turf quality
[2] 9 = darkest green color
[3] 9 = finest, uniform leaf texture
[4] 9 = best spring green-up
[5] 9 = least disease

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded September 1994 at Adelphia, NJ. (Includes the 1994 National Perennial Ryegrass Test - NTEP).

	Cultivar or Selection	Turf Quality[1] 1994-95 Avg.	Winter Turf Quality[1] Dec.-Feb. 1994-95 Avg.	Color[2] Nov. 1994 Avg.
1	Brightstar II	7.6	7.8	9.0
2	LRF-94-MPRH	7.1	7.8	8.3
3	MB 46	7.0	6.8	8.3
4	MB 42	7.0	6.3	8.0
5	Premier II	6.9	6.5	8.3
6	MB 43	6.8	6.7	8.7
7	MB 45	6.8	6.9	8.3
8	MB 47	6.8	7.3	8.3
9	Excel	6.6	6.3	8.3
10	LRF-94-C8	6.6	7.3	9.0
11	Elf	6.5	6.9	7.0
12	LRF-94-C7	6.5	6.6	9.0
13	Lesco-TWF	6.5	7.3	8.7
14	LRF-94-B6	6.5	7.1	9.0
15	Calypso II	6.4	6.3	7.3
16	PST-2DLM	6.4	5.2	8.7
17	RPBD	6.3	6.4	7.3
18	Divine	6.3	5.4	8.0
19	Brightstar	6.2	4.7	7.7
20	Palmer II	6.2	5.5	7.7
21	PST-2R3	6.0	5.0	7.3
22	Laredo	5.9	5.6	7.3
23	Wizard	5.9	5.8	8.0
24	Pick Lp 102-92	5.9	4.9	8.3
25	J-1706	5.9	5.5	7.7
26	MED 5071	5.8	5.0	7.7
27	PST-GH-94	5.8	5.4	8.0
28	Imagine	5.8	4.3	8.7
29	Advantage	5.8	5.9	8.0
30	Prizm	5.7	5.1	6.7

Table 3 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-95 Avg.	Winter Turf Quality[1] Dec.-Feb. 1994-95 Avg.	Color[2] Nov. 1994 Avg.
31	Citation III	5.7	4.3	7.7
32	Manhattan III	5.7	5.0	7.3
33	MB 44	5.7	5.9	8.0
34	WX3-93	5.7	5.1	6.7
35	Top Hat	5.6	5.1	6.7
36	ZPS-2ST	5.6	5.4	7.7
37	ZPS-PR1	5.6	5.1	7.0
38	SR 4200	5.6	5.2	5.7
39	Omni	5.6	4.8	6.0
40	ZPS-2NV	5.5	4.5	7.0
41	PST-2ET	5.4	6.3	7.7
42	Passport	5.3	4.2	7.3
43	Night Hawk	5.3	5.5	6.7
44	Pick PR 84-91	5.2	4.6	7.0
45	ZPS-2DR-94	5.2	5.1	7.3
46	Stallion Select	5.2	5.5	6.7
47	Prelude II	5.1	4.8	5.7
48	Accent	5.1	4.8	6.3
49	ISI-MHB	5.1	4.5	6.0
50	PST-2FE	5.0	4.6	7.3
51	Repell II	5.0	4.9	6.3
52	Advent	4.9	5.6	5.7
53	CAS-LP23	4.9	5.5	7.3
54	Riviera II	4.9	4.6	7.0
55	Achiever	4.9	4.8	6.7
56	TMI-EXFLP94	4.9	4.9	6.3
57	Pick 928	4.8	4.1	7.0
58	Pegasus	4.8	5.0	5.7
59	Koos 93-3	4.7	4.5	6.3
60	Cutter	4.7	5.1	6.7

Table 3 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-95 Avg.	Winter Turf Quality[1] Dec.-Feb. 1994-95 Avg.	Color[2] Nov. 1994 Avg.
61	Navajo	4.7	4.9	7.0
62	Esquire	4.7	3.9	6.3
63	APR 106	4.6	3.9	5.0
64	WVPB-93-KFK	4.6	5.1	5.7
65	Koos 93-6	4.6	4.8	5.7
66	Morning Star	4.6	4.5	6.3
67	Quickstart	4.6	5.6	5.3
68	Wind Star	4.6	4.2	6.0
69	Yorktown III	4.5	4.6	5.3
70	PST-2CB	4.5	5.5	6.7
71	PSI-E-1	4.5	5.2	6.7
72	Vivid	4.5	4.3	7.0
73	Nine-O-One	4.4	3.6	7.0
74	J-1703	4.4	4.5	7.0
75	WX3-91	4.4	4.3	6.7
76	Precision	4.4	4.1	4.7
77	Assure	4.4	3.5	6.3
78	MVF-4-1	4.4	4.5	6.3
79	BAR Er 5813	4.3	4.1	5.3
80	APR 124	4.3	3.4	5.3
81	SRX 4400	4.3	4.2	4.7
82	PC-93-1	4.2	4.5	6.0
83	Dancer	4.2	4.6	4.3
84	Edge	4.2	3.9	6.0
85	SRX 4010	4.1	3.5	5.3
86	Saturn	4.1	5.2	5.7
87	Blazer II	4.0	3.9	5.3
88	Fiesta II	4.0	4.2	4.7
89	APR 131	4.0	3.4	5.0
90	Competitor	4.0	3.5	5.3

Table 3 (continued).

	Cultivar or Selection	Turf Quality[1] 1994-95 Avg.	Winter Turf Quality[1] Dec.-Feb. 1994-95 Avg.	Color[2] Nov. 1994 Avg.
91	ISI-R2	3.9	3.2	4.0
92	Williamsburg	3.9	4.2	5.3
93	PS-D-9	3.8	3.8	4.3
94	Nobility	3.8	3.8	3.7
95	WVPB-PR-C-2	3.8	4.1	5.7
96	Repell	3.8	3.8	3.3
97	WVPB 92-4	3.7	4.2	4.3
98	Gator E-	3.7	3.8	4.0
99	Dasher II	3.7	4.8	4.0
100	Prelude	3.7	4.3	3.7
101	Gator E+	3.7	3.8	4.3
102	Express	3.6	3.8	5.7
103	Manhattan II	3.5	4.0	4.0
104	DLP 1305	3.4	1.4	3.7
105	APR 066	3.3	2.7	3.7
106	Pennant	3.2	3.2	3.7
107	Figaro	2.6	2.3	2.3
108	DSV NA 9402	2.6	2.3	2.0
109	Pennfine	2.5	2.4	3.7
110	DSV NA 9401	2.3	2.5	2.0
111	Linn	1.1	1.1	1.0
	LSD at 5% =	0.7	0.9	1.3

[1] 9 = best turf quality
[2] 9 = darkest green color

Table 4. Yearly nitrogen (N) applied and mowing height (Ht) on perennial ryegrass tests established at Adelphia and North Brunswick, NJ.

	1994		1995	
	N[1]	Ht[2]	N	Ht
Table 1 (May 1994, North Brunswick)	7.0	1.5	2.5	1.5
Table 2 (Sept. 1994, North Brunswick)	2.8	1.5	5.9	1.5
Table 3 (Sept. 1994, Adelphia)				
Front Half of Plot	2.7	1.5	7.0	1.5
Rear Half of Plot	2.7	1.5	4.0	1.5

[1] Actual N applied to turf (lbs/1000 ft^2).
[2] Mowing height of perennial ryegrass tests in inches.