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This publication includes lecture notes of papers presented at the 2000 New Jersey Turfgrass Expo. Publication of these lectures pro-

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

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Perennial ryegrass (*Lolium perenne* L.) is a persistent cool-season grass best known for its ability to rapidly establish an attractive turf stand within a short time of seeding. The development of improved perennial ryegrass cultivars continues at the New Jersey Agricultural Experiment Station as well as at many other research stations. The incorporation of new germplasm collections from around the world permits turf breeders to expand the genetic base of perennial ryegrass used in cultivar development. Perennial ryegrass, as well as other important turf species, has been collected from international locations in Western and Eastern Europe.

International collection trips are also being made in an effort to acquire new sources of germplasm containing the beneficial fungus endophyte, *Neotyphodium lolii*. Ryegrasses that contain this endophyte have enhanced insect resistance and stress tolerance. Turfgrass breeders and university professors are continuing to research the beneficial role of endophytes in plant cultivar development.

PROCEDURES

Ten perennial ryegrass trials were established between 1996 and 2000. Seven of the tests were seeded at Adelphia, NJ (Tables 1 to 4, 6, 9, and 10) and three of the tests were seeded at North Brunswick, NJ (Tables 5, 7, and 8).

The seven Adelphia tests were hand sown with 0.88 oz of seed into 3 X 5 ft plots (3.7 lb

seed/1000 ft²). Two of the North Brunswick tests (Tables 5 and 7) were hand sown with 2.1 oz into 3.5 X 5.5 ft plots (6.8 lb seed/1000 ft²), and the third North Brunswick test (Table 8) was hand sown with 0.28 oz of seed into 2 X 3 ft plots (3.7 lb seed/1000 ft²). A 6-inch unseeded border surrounded each plot. The test in Table 8 was designed to be a disease study in which 8 ft plastic walls were constructed around the entire test to create a microenvironment with limited air movement, higher temperatures, and increased humidity to encourage disease. All tests were arranged in a randomized complete block design with three replications, and plots had 6-inch unseeded borders to limit contamination.

All tests located at Adelphia received a fall application of the postemergence herbicides 2,4-D, MCP, and dicamba for broadleaf weed control. A spring application of Bensulide was used for preemergence control of summer annuals. The 1997, 1998, and 1999 Adelphia tests were also treated with an August application of Dursban for grub control. In the spring of 2000, Betasan was used on the 1998 North Brunswick test (Table 5) for preemergence crabgrass control, and in July 2000, Acclaim Extra was used for additional crabgrass control. The 1999 North Brunswick National Test (Table 7) was treated with an April application of Dimension for preemergence crabgrass control as well as an August application of Heritage for brown patch and gray leaf spot control. The third North Brunswick test (Table 8) received a June treatment of 2,4-D, dicamba, and MCP for broadleaf weed control. Merit was applied to two of the North

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Brunswick tests (Tables 5 and 7) in July for grub control.

The annual rate of nitrogen (N) and mowing height for each test is presented in Table 11. Single applications of fertilizer did not exceed 1.0 lb N/1000 ft². Tests were mowed regularly with reel mowers to maintain a 1.5 inch height of cut. Rotary mowers were used on to maintain a 2.5 inch height of cut on the disease trial (Table 8). Based on soil test results, tests were limed as needed to maintain a pH of 6.0 to 6.5. All tests were irrigated when necessary to avoid drought stress.

All tests were rated throughout the growing season for visual turf quality (i.e., overall appearance, turf color, uniformity, density, mowing quality, reduced rate of vertical growth, leaf texture, and freedom from insect and disease damage). Other ratings such as establishment, spring green-up, and disease damage were rated when appropriate. All ratings were based on a 1 to 9 scale, with 9 representing the best turf characteristic. 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 the least significant difference (LSD) multiple comparisons test.

RESULTS and DISCUSSION

Results for all tests are presented in Tables 1 through 10. Entries in these tables are ranked according to their overall (multi-year) quality average. A high quality average is generally indicative of better disease resistance, a darker green color, greater density, finer leaf texture, lower growth habit, improved mowing quality, and less damage due to insects. Tables 6, 7, and 8 include entries of the 1999 National Perennial Ryegrass test sponsored by the National Turfgrass Evaluation Program (NTEP).

Turf Quality

Turf breeders have been working on improving the overall quality of perennial ryegrass for nearly four decades. Older cultivars such as Linn, Manhattan, and Pennfine rank at the bottom of the trials in turf quality compared to newer cultivars such as Allstar2, Amazing, Applaud, Integra, Jet, Pinnacle II, and promising experimental selections. Newer perennial ryegrasses have darker green color, more uniform appearance, increased density, lower growth habit, cleaner mowing, and better tolerance to disease and insects.

Establishment

Perennial ryegrass has become increasingly more popular with homeowners, golf courses, and landscapers because of its ability to rapidly establish an attractive, hardy turf stand. It is evident in Tables 7 to 10 that most cultivars are well established in a month or two after seeding. Seedling vigor can be affected by factors such as genetics, seed quality, the environment, after ripening dormancy, and management procedures.

Disease

Brown Patch. Outbreaks of brown patch occurred in the 1998 and 1999 North Brunswick tests (Tables 5 and 8). It is evident that fair to moderate resistance to this disease is shown by most of the cultivars presented in these tables. The test presented in Table 8 was surrounded by 8 ft walls to create an environment that would encourage disease. Some cultivars such as Allstar2, Gator III, Pizzazz, and Pinnacle II (Table 8) showed better resistance to the disease as did the cultivars Affirmed, Jet, and Sommerville, presented in Table 5.

Crown rust. Significant differences in resistance to crown rust were evident in cultivars and

experimental selections presented in Table 7. Allstar2, Amazing, Applaud, Pinnacle II, Pizzazz, and experimental selections CIS-PR-84 and Roberts-627 showed good resistance to the disease. Moderate resistance was shown by Brightstar II and Seville II. These same cultivars also showed moderate to good resistance to the dollar spot, a foliar disease.

Gray leaf spot. Table 10 reflects data from a test seeded at Adelphia, NJ in August 2000. An outbreak of gray leaf spot in mid September devastated most of the cultivars and selections in the trial. Two experimental selections, RNS comp and PR-154, exhibited very good resistance to this disease. Four out of the 25 single progenies that made up RNS comp showed excellent resistance. This data is very significant because little or no stable resistance to gray leaf spot had previously been reported for any turf-type perennial ryegrass. The four single progenies were collections from Eastern Europe, which supports the continuation of incorporating new germplasm from around the world for genetically stable resistance to gray leaf spot as well as other diseases.

Red thread. Data in Tables 2 and 3 indicate that increased resistance to red thread is still an important goal for breeding in perennial ryegrass. Charger II, Jet, and Laredo displayed the best resistance. The experimental selections 2LA-97 and 2LC bulk also showed good resistance to the disease.

Color and Spring Green-up

The color ratings in Tables 6 and 7 indicate Amazing, Jet, Nexus, Pinnacle II, and Pizzazz possess a darker green color than the older cultivars Linn or Pennfine. However, a spring green-up rating in March 2000 (Table 7) indicated that many newer perennial ryegrasses were slower to come out of winter dormancy than older cultivars.

SUMMARY

Although significant improvements have been made in perennial ryegrasses, increased genetically stable resistance to gray leaf spot, crown rust, dollar spot, pink patch, red thread, and brown patch is still needed. In addition, increased heat tolerance, cold hardiness, and the ability to survive under ice sheets for extended periods in the winter are also necessary.

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Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1996 at Adelphia, NJ.

	Cultivar or Selection	-----Turf Quality ¹ -----				
		1997-2000 Avg.	1997 Avg.	1998 Avg.	1999 Avg.	2000 Avg.
1	Churchill	5.9	6.3	5.9	5.8	5.6
2	Paragon	5.9	6.5	6.1	5.9	5.0
3	Bar Lp 695-1	5.6	6.3	5.6	5.4	5.1
4	Exacta	5.6	5.9	5.6	5.3	5.5
5	Gator II	5.4	5.5	5.3	5.3	5.5
6	Palmer III	5.4	5.8	5.0	5.6	5.0
7	Bar Lp 94-1	5.3	6.2	5.2	5.3	4.7
8	Bar Lp 695-2	4.9	4.8	4.6	5.2	4.9
9	Secretariat	4.9	5.0	4.4	5.0	5.0
10	Manhattan 3	4.8	4.7	4.8	5.1	4.7
11	Calypso II	4.8	5.4	4.3	4.7	4.6
12	CIS PR-37	4.7	5.1	4.8	4.5	4.5
13	Catalina	4.7	5.1	4.2	4.8	4.6
14	PalmerII	4.6	4.5	4.5	5.0	4.5
15	CIS PR-38	4.5	4.2	4.2	4.7	4.7
16	Advantage	4.4	4.5	4.2	4.6	4.4
17	Brightstar	4.3	4.4	4.7	4.3	4.0
18	Prizm	4.3	4.2	4.4	4.3	4.3
19	Citation III	4.3	4.6	4.0	4.1	4.2
20	Elf	4.1	4.2	3.8	4.3	4.1
21	Saturn II	4.1	4.4	4.2	3.9	3.8
22	APM	4.1	4.2	4.1	4.1	3.9
23	Windstar	4.1	4.1	3.9	4.1	4.1
24	Seville	4.0	3.9	4.1	4.1	3.8
25	SR-4200	3.9	3.9	3.9	4.1	3.9
26	Prelude II	3.9	4.0	3.7	3.9	4.1
27	Advent	3.9	3.8	4.0	4.1	3.6
28	Quickstart	3.9	4.0	3.7	4.0	3.7
29	Equal	3.8	4.2	3.6	3.9	3.6
30	Mark V	3.8	4.2	3.4	4.0	3.7

Table 1 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				
	1997-2000 Avg.	1997 Avg.	1998 Avg.	1999 Avg.	2000 Avg.
31 Dandy	3.6	3.7	3.3	3.8	3.7
32 Manhattan II	3.6	3.5	3.5	3.6	3.5
33 Express	3.5	3.5	3.5	3.7	3.4
34 Blazer II	3.5	3.3	3.4	3.8	3.6
35 Fiesta II	3.0	3.2	2.9	3.1	2.9
36 Pennfine	2.4	2.4	2.3	2.6	2.2
37 Linn	1.2	1.1	1.1	1.2	1.5
LSD at 5% =	0.4	0.6	0.6	0.6	0.7

¹9 = best turf quality

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1997 at Adelphia, NJ.

	Cultivar or Selection	-----Turf Quality ¹ -----				Red Thread ² May 2000
		1998-2000 Avg.	1998 Avg.	1999 Avg.	2000 Avg.	
1	SJSPR	6.2	6.7	5.6	6.1	6.0
2	Jet	6.0	6.5	6.0	5.5	7.3
3	Sev II A	5.9	6.4	5.6	5.5	5.3
4	Sev II C	5.8	6.1	5.9	5.5	5.3
5	Paragon	5.8	6.3	5.6	5.4	5.0
6	2L96 Bulk	5.7	6.1	5.8	5.3	5.3
7	Sev II B	5.7	6.1	5.6	5.4	5.0
8	Brightstar II	5.6	6.1	5.4	5.4	5.7
9	Sommerville	5.6	6.0	5.5	5.3	5.7
10	2LA-97	5.5	6.1	5.3	5.2	7.0
11	A96 E+	5.5	6.0	5.4	5.1	5.3
12	A96 Rusty E+	5.5	5.9	5.4	5.2	5.3
13	A96 E-	5.3	6.1	4.9	4.9	5.3
14	MB-48	5.3	5.4	5.1	5.4	4.7
15	Affirmed	5.3	5.4	5.0	5.4	6.3
16	Syn 2LTS	4.9	4.8	5.1	4.9	6.3
17	Wind Dancer	4.9	5.0	5.2	4.5	5.0
18	Elfkin	4.9	5.2	4.7	4.7	5.3
19	2PS-97	4.7	4.7	4.6	4.8	5.7
20	Catalina	4.6	4.8	4.2	4.6	5.7
21	Syn 2NA-97	4.5	4.7	4.4	4.6	6.0
22	2TN Bulk	4.5	4.3	4.4	4.8	6.0
23	2PS	4.5	4.3	4.4	4.8	5.7
24	2LC Bulk	4.5	4.6	4.7	4.2	6.7
25	Laredo	4.5	4.4	4.4	4.6	7.0
26	Syn 2HCM	4.4	4.2	4.4	4.7	5.3
27	Roadrunner	4.4	4.6	4.2	4.5	4.7
28	Manhattan 3	4.4	4.1	4.5	4.6	6.0
29	Monterey	4.4	4.4	4.4	4.3	4.7
30	Charger II	4.4	4.3	4.0	4.8	7.7

Table 2 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Red Thread ² May 2000
		1998- 2000 Avg.	1998 Avg.	1999 Avg.	2000 Avg.	
31	Penguin	4.4	4.0	4.6	4.5	5.3
32	Esquire	4.4	4.0	4.5	4.6	6.0
33	Brightstar	4.3	4.3	4.1	4.5	6.3
34	2SX Bulk	4.3	4.0	4.5	4.4	6.3
35	Omega 3	4.3	4.3	4.2	4.3	5.3
36	Caddieshack	4.3	4.2	4.2	4.4	7.7
37	Legacy II	4.3	4.1	4.4	4.3	5.0
38	Syn 2HCE	4.2	4.1	4.3	4.3	6.7
39	A+ 96	4.2	4.4	3.9	4.3	5.7
40	Chaparral	4.2	4.0	4.4	4.2	5.0
41	Top Gun	4.2	4.0	4.2	4.4	6.7
42	WX2-92	4.1	3.8	4.2	4.4	5.3
43	APM	4.0	3.7	3.9	4.1	7.0
44	Target	4.0	3.8	4.2	4.0	4.7
45	Saturn II	4.0	4.3	3.8	3.9	5.3
46	Windstar	4.0	4.0	3.9	4.0	4.0
47	Cathedral II	4.0	3.5	4.2	4.2	5.0
48	Assure	3.9	3.6	3.9	4.0	5.0
49	Goal Keeper	3.9	3.9	3.8	3.9	5.7
50	Seville	3.9	3.5	4.1	4.0	6.0
51	Citation III	3.8	3.7	3.8	4.0	5.3
52	Cutter	3.8	3.6	3.7	4.1	4.7
53	Stardance	3.6	3.6	3.5	3.7	5.7
54	Omni	3.6	3.6	3.4	3.8	5.0
55	Affinity	3.6	3.6	3.4	3.8	6.7
56	Advent	3.6	3.6	3.6	3.6	6.0
57	Evening Shade	3.6	3.4	3.6	3.7	5.0
58	Morning Star	3.6	3.5	3.6	3.6	5.3
59	Dandy	3.5	3.4	3.4	3.7	6.0
60	Fiesta II	3.5	3.4	3.5	3.6	5.0

Table 2 (continued).

Cultivar or Selection	-----Turf Quality ¹ -----				Red Thread ² May 2000
	1998-2000 Avg.	1998 Avg.	1999 Avg.	2000 Avg.	
61 Blackhawk	3.5	3.6	3.2	3.6	4.7
62 Shining Star	3.4	3.3	3.4	3.5	4.7
63 Line Drive	3.3	3.3	3.2	3.3	5.3
64 Cathedral	3.3	3.6	2.8	3.4	5.3
65 Express	3.2	3.0	3.2	3.3	5.7
66 Accent	3.2	3.1	2.9	3.6	6.3
67 Mulligan	2.9	2.7	2.8	3.3	5.3
68 Caliente	2.8	2.5	3.0	2.9	5.7
69 Pennfine	2.6	2.3	2.9	2.7	7.3
70 Nui	1.0	1.1	1.0	1.0	9.0
LSD at 5% =	0.6	0.6	0.8	0.6	1.8

¹9 = best turf quality

²9 = least disease

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1997 at Adelphia, NJ.

	Cultivar or Selection	-----Turf Quality ¹ -----				Red Thread ² May 2000
		1998-2000 Avg.	1998 Avg.	1999 Avg.	2000 Avg.	
1	BBC	6.3	6.5	5.9	6.3	4.7
2	Elfkin	6.1	6.1	5.9	6.1	4.7
3	Exacta	6.0	6.0	6.4	5.7	4.3
4	Prelude III	5.6	5.2	5.8	5.8	5.3
5	Affirmed	5.6	5.5	5.6	5.7	4.7
6	Palmer III	5.4	5.3	5.5	5.3	4.3
7	Repel III	5.1	4.8	5.1	5.5	5.0
8	Panther	5.1	4.8	5.4	5.2	5.3
9	MP 41	5.0	5.2	4.5	5.2	5.3
10	Mardi Gras	4.9	4.7	5.0	5.0	6.3
11	Sonata	4.7	4.9	4.8	4.6	4.7
12	MP 42	4.6	4.9	4.1	4.7	5.0
13	Saturn II	4.5	4.4	4.7	4.5	3.7
14	Elf	4.5	4.1	4.7	4.7	4.0
15	EP 40	4.5	4.5	4.6	4.3	5.7
16	LP 22	4.4	4.5	3.9	4.9	5.3
17	LP 9	4.4	4.5	4.0	4.6	5.0
18	LP 1	4.3	4.3	3.9	4.8	4.0
19	Omega 3	4.3	4.0	4.6	4.4	4.3
20	Affinity	4.2	4.1	4.3	4.4	4.7
21	Prizm	4.2	4.0	4.2	4.5	4.3
22	SR 4200	4.2	3.8	4.1	4.5	4.3
23	SRX DMSO	4.2	3.9	4.5	4.2	3.7
24	EP 37	4.1	4.2	4.1	4.1	6.0
25	EP 53	4.1	4.0	3.8	4.3	4.0
26	SR 4000	4.1	3.9	4.0	4.3	4.3
27	SR 4100	4.0	3.8	4.1	4.2	4.3
28	SR 4400	4.0	3.5	4.2	4.3	3.7
29	Bullet	4.0	3.7	4.0	4.2	4.7
30	Magic	4.0	2.5	4.6	4.8	5.7

Table 3 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----				Red Thread ² May 2000
		1998-2000 Avg.	1998 Avg.	1999 Avg.	2000 Avg.	
31	SR 4010	3.9	3.7	3.8	4.1	4.3
32	Dandy	3.8	3.4	4.1	4.0	5.3
33	SR 4330	3.8	3.5	3.7	4.1	4.7
34	SR 4300	3.7	3.5	3.6	3.9	4.0
35	Envy	3.7	3.5	3.6	3.8	4.3
LSD at 5% =		0.5	1.7	0.6	0.7	0.5

¹9 = best turf quality

²9 = least disease

Table 4. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1998 at Adelphia, NJ.

	Cultivar or Selection	-----Turf Quality ¹ -----			Dollar Spot ² Aug. 2000
		1999-2000 Avg.	1999 Avg.	2000 Avg.	
1	Allstar2	6.6	6.3	6.9	6.7
2	Pizzazz	6.4	6.0	6.8	6.0
3	6501 Comp	6.3	6.4	6.2	5.7
4	SRX 4801	6.3	6.1	6.5	5.0
5	8326 Comp	6.1	5.9	6.3	6.0
6	Integra	6.0	6.0	5.9	6.3
7	ME-Comp	6.0	5.9	6.0	6.3
8	LDD Comp	5.8	5.7	6.0	4.7
9	Stellar	5.7	5.4	6.0	6.0
10	CIS PR-80	5.6	5.4	5.7	6.0
11	Exacta	5.6	5.5	5.6	5.3
12	Sommerville	5.6	5.5	5.6	4.7
13	Wilmington	5.5	5.5	5.5	6.0
14	Affirmed	5.5	5.6	5.4	5.7
15	Promise	5.4	5.3	5.4	7.3
16	LRF-98-439-PR	5.3	5.3	5.3	5.3
17	Churchill	5.3	5.0	5.6	3.7
18	6011 Comp	5.3	5.1	5.6	6.3
19	CIS-PR-79	5.2	5.2	5.1	6.0
20	Palmer III	5.2	5.3	5.0	5.3
21	MP88	5.1	5.0	5.2	6.0
22	Brightstar II	5.1	5.1	5.1	6.0
23	Paragon	5.1	5.3	4.9	4.0
24	LP84	5.0	4.9	5.0	3.0
25	LRF-98-437-PR	5.0	4.7	5.4	5.0
26	MP57	4.9	4.7	5.1	3.0
27	Elfkin	4.9	5.1	4.7	4.0
28	EP53	4.8	4.6	5.1	4.7
29	MP58	4.8	4.7	4.9	4.3
30	Pleasure XL	4.8	4.9	4.7	5.0

Table 4 (continued).

	Cultivar or Selection	-----Turf Quality ¹ -----			Dollar Spot ² Aug. 2000
		1999- 2000 Avg.	1999 Avg.	2000 Avg.	
31	EP70	4.7	4.6	4.7	3.3
32	CIS-PR-81	4.7	4.9	4.4	4.7
33	LRF-98-438-PR	4.7	4.9	4.5	5.0
34	LP86	4.6	4.7	4.6	4.7
35	LP56	4.6	4.6	4.7	3.7
36	MP42	4.5	4.0	4.9	4.0
37	Allsport	4.5	4.6	4.4	5.7
38	MP41	4.4	4.3	4.5	3.3
39	CIS-PR-77	4.4	4.6	4.3	4.3
40	AG-P981	4.3	4.1	4.4	3.3
41	Caddieshack	4.2	4.2	4.3	5.3
42	EP39	4.2	4.3	4.2	5.0
43	Top Gun	4.1	4.3	3.9	4.0
44	CIS-PR-70	4.1	4.3	4.0	5.0
45	CIS-PR-76	4.1	4.1	4.0	3.3
46	LP85	4.0	3.9	4.1	2.3
47	EP59	4.0	4.0	4.0	2.3
48	LP62	4.0	3.8	4.3	5.0
49	SC 96-1	4.0	4.3	3.8	6.3
50	Gator II	4.0	4.1	3.9	5.7
51	SC 97-1	3.9	4.2	3.5	6.7
52	APM	3.8	4.1	3.5	6.7
53	Accent	3.7	3.8	3.5	5.0
54	Nobility	3.7	4.1	3.3	5.3
55	Envy	3.6	3.7	3.5	6.3
56	Delaware Dwarf	3.6	3.8	3.3	4.0
57	Advent	3.5	3.8	3.2	6.7
58	Bullet	3.2	3.5	3.0	7.0
59	Pleasure	3.2	3.6	2.8	5.3
60	Nui	1.1	1.0	1.1	3.0
	LSD at 5% =	0.6	0.7	0.7	2.5

¹9 = best turf quality²9 = least disease

Table 5. Performance of perennial ryegrass cultivars and selections in a turf trial established in September 1998 at North Brunswick, NJ.

Cultivar or Selection	-----Turf Quality ¹ -----			Red Thread ² May 2000	Brown Patch ² Aug. 2000
	1999- 2000 Avg.	1999 Avg.	2000 Avg.		
1 Jet	7.0	7.3	6.6	9.0	7.0
2 Sommerville	6.5	7.3	5.6	9.0	6.0
3 Exacta	6.4	6.9	5.9	9.0	5.3
4 Churchill	6.3	7.3	5.4	9.0	4.7
5 Paragon	6.3	6.8	5.8	8.0	5.7
6 Affirmed	5.9	6.1	5.7	8.3	6.3
7 Palmer III	5.6	5.9	5.3	7.3	5.3
LSD at 5% =	0.2	0.6	0.5	1.9	1.5

¹9 = best turf quality

²9 = least disease

Table 6. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1999 at Adelphia, NJ. (Includes all entries of the 1999 National Perennial Ryegrass Test.)

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
1	Roberts 627	7.0	7.3
2	Allstar2	6.7	7.7
3	Integra	6.7	8.0
4	CIS-PR-84	6.6	7.3
5	Amazing	6.6	8.3
6	Pick MDR	6.6	9.0
7	Pizzazz	6.6	8.0
8	Applaud	6.6	7.7
9	Charismatic	6.6	8.3
10	CIS-PR-69	6.5	6.7
11	Gator III	6.4	7.0
12	Pick MDR	6.4	7.0
13	2PC bulk	6.4	8.0
14	Charismatic	6.2	7.0
15	ABT-99-4.834	6.2	7.7
16	R8000	6.1	6.7
17	PST-2BR	6.1	7.0
18	CIS-PR-80	6.0	8.0
19	SYN 2R7	6.0	7.0
20	Fiesta III	6.0	6.7
21	NJ-6401	6.0	5.0
22	SRX 4801	6.0	7.3
23	Stellar	6.0	8.0
24	Paragon	5.9	6.0
25	Seville II	5.9	6.0
26	CIS-PR-83	5.9	6.3
27	SR 4820	5.9	6.3
28	CIS-PR-82	5.9	6.3
29	SRX 4RHT	5.8	7.7
30	Jet	5.8	6.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
31	DLF-LDD	5.8	5.0
32	Nexus	5.7	7.0
33	ABT-99-4.115	5.7	6.7
34	ABT-99-4.724	5.6	7.0
35	Fiesta 3	5.6	5.7
36	PST-2A6B	5.6	6.7
37	Brightstar II	5.6	6.7
38	ABT-99-4.721	5.5	6.3
39	ABT-99-4.960	5.5	8.7
40	PST-2L96	5.5	5.7
41	Churchill	5.5	6.0
42	SYN 2IN	5.5	7.3
43	Pick PR QH-97	5.5	7.7
44	6011	5.5	5.7
45	ABT-99-4.560	5.5	6.0
46	Premier II	5.5	5.0
47	EDT	5.5	7.3
48	Exacta	5.4	5.0
49	Brightstar II	5.4	5.3
50	Promise	5.4	7.0
51	ABT-99-4.461	5.4	7.0
52	PST-2SLX	5.4	5.3
53	Radiant	5.4	8.0
54	Pick RC2	5.4	5.0
55	CIS-PR-81	5.4	6.3
56	2CUL bulk	5.3	6.3
57	SYN 2GT	5.3	6.0
58	PST-2CRL	5.3	7.0
59	ABT-99-4.753	5.3	6.7
60	Pirouette	5.3	6.7
61	SR 4500	5.3	5.3
62	CIS-PR-119	5.3	4.7
63	Racr 7-44	5.3	6.3
64	Archer	5.2	6.3
65	Catalina	5.2	6.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
66	SYN 22L	5.2	7.3
67	PST-2M4	5.2	5.0
68	PR 10-99	5.2	5.7
69	MP109	5.2	8.3
70	2SLW	5.2	5.3
71	CIS-PR-75	5.2	6.7
72	PST-CATS	5.2	5.7
73	Pick EX 2-2	5.2	6.0
74	PRB-97	5.2	7.3
75	PST-2CRR	5.1	5.7
76	MP107	5.1	7.0
77	Pace	5.1	5.0
78	SYN 22M	5.1	5.3
79	Majesty	5.1	5.3
80	Affirmed	5.1	4.3
81	PR-8-94-99	5.1	7.0
82	Catalina	5.1	5.7
83	MP88	5.1	6.3
84	ABT-99-4.633	5.1	6.7
85	LP O-93	5.1	6.0
86	Lowgrow II	5.1	7.0
87	Barlennium	5.0	5.7
88	MEPY	5.0	7.3
89	Racr 7-48	5.0	6.0
90	MP96	5.0	6.7
91	MP110	5.0	6.7
92	CIS-PR-77	5.0	5.3
93	MEKT	5.0	7.7
94	MKT	5.0	7.7
95	Pick RC2	5.0	5.0
96	Premier II	5.0	5.3
97	Pick PR B-97	5.0	7.0
98	ABT-99-4.464	5.0	6.0
99	Wilmington	5.0	7.3
100	ABT-99-4.629	5.0	6.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
101	CIS-PR-76	5.0	5.3
102	2TN-98-bulk	5.0	5.3
103	Pennant II	4.9	6.7
104	Elfkin	4.9	5.0
105	LP86	4.9	7.0
106	PST-2LA	4.9	5.3
107	MP103	4.9	6.3
108	Racr 7-46	4.9	5.3
109	SYN 2HCR	4.9	3.7
110	3 BK	4.9	7.0
111	Palmer III	4.9	4.3
112	Pick PR 1-94	4.8	6.7
113	MDP	4.8	8.3
114	PST-2JH	4.8	4.7
115	Racr 7-45	4.8	4.7
116	ABT-99-4.709	4.8	6.7
117	Lp BB-93	4.8	4.7
118	ABT-99-4.965	4.8	8.3
119	Racr 7-49	4.8	4.7
120	LP22	4.8	5.7
121	JR-187	4.7	3.3
122	Pick PRNGS	4.7	5.0
123	CIS-PR-74	4.7	3.7
124	LP56	4.7	6.7
125	LP85	4.7	8.0
126	MP55	4.7	5.3
127	MP114	4.7	6.7
128	Manhattan 3	4.7	4.7
129	PST-2RT	4.7	3.7
130	EPD	4.7	7.0
131	MP60	4.7	6.7
132	Divine	4.7	4.7
133	Ascend	4.7	5.0
134	EP53	4.7	7.0
135	PR J-97	4.7	5.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
136	SYN 2CT	4.7	4.3
137	ABT-99-4.903	4.6	7.0
138	PR O-97	4.6	5.0
139	PST-2SBE	4.6	4.0
140	ABT-99-4.339	4.6	4.3
141	ABT-99-4.625	4.6	8.0
142	MS2-2	4.6	3.7
143	SYN 2WN	4.6	5.7
144	Calypso II	4.6	4.3
145	JR-151	4.6	3.7
146	Sunshine	4.6	4.3
147	JR-317	4.5	5.3
148	MS2-1	4.5	4.0
149	Racr 7-39	4.5	6.0
150	Racr 7-73	4.5	4.3
151	MP106	4.5	7.3
152	LTP-ME	4.5	7.0
153	Racr 7-54	4.5	4.7
154	MP102	4.5	6.7
155	SYN 22E	4.5	4.7
156	Catalina	4.5	4.7
157	CAS LP84	4.5	6.3
158	EP70	4.5	6.0
159	MP115	4.4	7.3
160	Secretariat	4.4	3.7
161	JR-128	4.4	4.0
162	EP57	4.4	6.0
163	Caddieshack	4.3	3.7
164	Pearl	4.3	4.3
165	Charger II	4.3	4.3
166	APR 1233	4.3	4.7
167	APR 776	4.3	6.0
168	Allsport	4.3	5.0
169	Line Drive	4.3	4.3
170	Passport	4.3	4.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
171	APR 1237	4.2	4.0
172	Phantom	4.2	5.0
173	Panther	4.2	3.7
174	Citation 3	4.2	4.3
175	Manhattan 3	4.2	3.7
176	Skyhawk	4.2	6.7
177	Cutter	4.2	3.3
178	Assure	4.2	3.7
179	LP1	4.2	3.7
180	Paradigm	4.2	5.3
181	APR 1235	4.2	4.7
182	Charger II	4.2	3.3
183	LPR 98-143	4.1	4.7
184	Jiffie	4.1	5.3
185	Edge	4.1	3.3
186	Headstart	4.1	3.0
187	Pleasure XL	4.1	5.0
188	ABT-99-4.815	4.1	4.3
189	Prosport	4.1	6.0
190	MP41	4.1	7.0
191	PR 1-99	4.0	4.3
192	PR 9-99	4.0	3.0
193	Racr 7-69	4.0	3.7
194	EP59	4.0	8.0
195	Passport	4.0	3.7
196	Cathedral II	4.0	4.0
197	BY-100	4.0	2.7
198	Accent	4.0	3.3
199	Koos R-71	3.9	3.3
200	Premier	3.9	3.7
201	APR 777	3.9	4.0
202	Pick EX2	3.9	3.3
203	PR PEI-L-99	3.9	3.7
204	WVPB-R-84	3.9	2.7
205	Racer	3.8	5.0

Table 6 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
206	Pick EX 2-1	3.8	3.3
207	APR 1232	3.8	4.7
208	ABT-99-4.600	3.8	4.3
209	LPR 98-144	3.7	3.3
210	Blazer II	3.7	3.0
211	PR PEI-E-99	3.7	4.0
212	PR-7-99	3.7	3.0
213	Peak	3.7	3.0
214	Affinity	3.6	2.7
215	SRX 4120	3.6	3.3
216	Fiesta	3.6	3.0
217	Pinnacle	3.6	3.0
218	APR 1231	3.6	3.7
219	DP LP-1	3.5	3.0
220	Morning Star	3.5	2.3
221	Edge	3.5	2.7
222	DP 17-9069	3.5	2.3
223	Buccaneer	3.4	2.3
224	WVPB-R-82	3.4	2.7
225	Express	3.4	3.0
226	APR 1234	3.4	3.0
227	PRG-97	3.3	2.3
228	Premier	3.2	2.0
229	DP 17-9391	3.1	1.7
230	Lp H-98 P-	3.1	3.0
231	Yatsugreen	3.0	1.0
232	Lp H-98 P+	3.0	2.3
233	Pennfine	2.9	2.0
234	Manhattan	2.7	1.3
235	Barclay	2.3	1.0
236	DP 17-9496	1.9	1.0
237	Linn	1.4	1.0

Table 6 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Color ² Oct. 1999
LSD at 5% =	0.6	1.5

¹9 = best turf quality

²9 = darkest green color

Table 7. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1999 at North Brunswick, NJ. (Includes entries of the 1999 National Perennial Ryegrass Test.)

	Cultivar or Selection	Turf Quality ¹		Establishment ²	Color ³		Spring Green-up ⁴		Crown Rust ⁵		Dollar Spot ⁶ 2000
		2000 Avg.	Oct. 1999		2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
1	Pinnacle II	7.5	7.3	7.5	7.0	6.3	4.3	4.7	6.7	7.0	7.7
2	Applaud	7.4	7.7	7.2	7.7	6.7	4.0	5.3	7.0	7.5	8.3
3	Roberts-627	7.3	6.7	8.0	7.3	7.3	3.7	4.7	7.3	7.3	7.0
4	Pizzazz	7.2	7.0	7.5	7.7	7.7	4.7	4.7	6.7	7.0	7.0
5	CIS-PR-84	7.2	6.7	7.3	7.0	7.3	4.0	4.0	6.7	7.3	7.7
6	Amazing	7.2	7.3	7.2	7.7	7.3	4.0	4.7	7.3	7.3	8.3
7	ABT-99-4.834	7.0	7.3	6.7	7.3	7.0	4.3	4.7	7.0	7.0	7.3
8	SRX 4801	6.9	7.3	6.3	6.7	6.3	4.0	3.7	6.7	6.8	7.0
9	Pick MDR	6.9	8.0	7.2	7.7	6.7	4.0	4.7	6.7	6.7	7.7
10	Allstar2	6.9	6.7	6.8	7.7	7.0	4.0	4.0	7.7	7.5	7.0
11	Charismatic	6.8	6.7	7.3	7.0	7.0	3.3	4.3	6.0	6.3	7.7
12	Gator III	6.8	7.3	6.8	7.3	6.0	4.0	4.7	5.7	6.0	6.3
13	PST 2L96	6.8	6.3	7.3	6.7	6.3	3.3	3.3	4.7	5.0	6.3
14	SRX 4RHT	6.7	6.3	7.0	6.3	7.3	4.0	4.7	5.3	5.3	5.7
15	Nexus	6.6	7.0	7.7	7.3	7.3	4.0	5.7	3.3	3.2	7.0
16	SR 4820	6.6	7.3	6.5	6.3	6.3	4.7	4.7	5.3	5.8	6.7
17	DLF-LDD	6.5	7.3	7.0	6.3	5.7	4.0	4.0	5.0	5.3	7.3
18	ABT-99-4.461	6.5	7.3	8.0	7.7	7.0	3.7	4.7	3.3	3.2	6.7
19	CIS-PR-69	6.4	7.0	6.8	6.0	6.7	4.7	6.3	7.3	7.3	7.3
20	PST-2BR	6.4	7.0	6.5	6.7	6.7	4.0	4.3	5.7	5.8	6.3

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³ -----		Spring Green-up ⁴		Crown Rust ⁵ -----		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
21 Jet	6.4	7.7	6.5	6.7	6.3	4.7	5.3	6.3	7.0
22 PST-2A6B	6.4	6.0	6.8	6.3	6.7	3.0	3.3	4.7	6.7
23 Pick PR QH-97	6.3	6.7	7.3	8.3	7.0	3.7	4.0	4.7	6.3
24 Seville II	6.3	7.7	6.3	6.7	6.0	4.7	5.3	6.3	5.3
25 ABT-99-4.721	6.3	7.0	6.5	5.7	5.7	4.7	4.7	5.7	7.7
26 PST-2CRL	6.2	6.3	7.2	6.7	7.3	4.0	5.0	5.0	6.7
27 R8000	6.2	6.3	6.5	6.3	6.0	4.7	6.0	4.7	6.7
28 ABT-99-4.115	6.1	6.7	6.0	6.0	6.0	4.7	5.0	5.3	7.0
29 Brightstar II	6.1	7.3	6.8	6.7	6.3	3.7	4.7	5.3	6.3
30 SR 4500	6.1	7.0	5.5	5.7	4.7	4.3	5.0	4.0	6.3
31 NJ-6401	6.1	7.3	6.3	6.3	5.3	4.3	4.7	5.7	7.3
32 PST-2SBE	6.1	5.7	6.7	6.3	6.3	3.7	3.0	3.7	6.7
33 CIS-PR-75	6.0	7.0	7.5	8.0	6.7	3.3	3.3	5.0	6.0
34 Exacta	6.0	7.7	6.5	6.3	6.7	5.0	5.3	4.7	6.3
35 PST-2SLX	6.0	6.7	7.0	6.0	6.0	3.0	3.0	5.0	7.0
36 Promise	6.0	6.7	5.8	6.3	5.3	5.3	6.7	3.7	6.0
37 Churchill	6.0	7.0	6.0	6.3	6.0	4.0	4.0	4.7	6.0
38 MP58	6.0	6.0	6.8	7.0	6.7	3.0	3.3	2.7	6.3
39 Stellar	6.0	6.3	6.2	7.3	6.7	6.0	6.0	7.3	7.3
40 LRPR-A95	5.9	5.7	6.3	6.0	6.7	3.7	4.0	5.0	6.0

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³ -----			Spring Green-up ⁴		Crown Rust ⁵ -----		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	2000 Avg.	
41 CIS-PR-80	5.9	6.7	7.5	8.0	7.0	4.3	4.0	4.3	4.5	5.0
42 LTP-ME	5.9	4.0	6.3	8.0	7.0	3.0	3.3	6.7	6.8	6.3
43 Pick PR B-97	5.9	6.7	7.0	6.7	6.7	3.0	3.3	2.7	2.7	6.0
44 ABT-99-4.464	5.8	7.3	5.5	6.0	6.0	4.7	4.3	3.7	4.0	6.7
45 Radiant	5.8	7.0	8.0	8.3	7.7	3.7	4.3	2.3	2.2	4.7
46 PST-2LA	5.8	7.0	6.3	6.3	5.7	3.3	4.0	5.0	5.0	6.7
47 ABT-99-4.724	5.8	5.0	6.3	6.7	6.3	3.3	4.3	5.0	5.0	6.3
48 ABT-99-4.633	5.8	7.3	7.5	7.7	7.3	4.7	6.0	3.7	3.7	5.7
49 Pennant II	5.8	7.0	6.5	6.7	6.7	4.3	5.3	3.0	3.0	4.3
50 Paragon	5.7	7.0	6.3	5.0	6.0	4.3	4.3	5.0	5.0	4.3
51 Wilmington	5.7	7.3	7.7	8.3	7.3	3.7	4.3	2.7	2.7	5.7
52 Barlennium	5.7	7.0	6.0	5.3	5.7	4.3	4.7	3.3	3.2	6.7
53 Fiesta 3	5.6	7.0	6.2	6.0	6.0	5.0	5.0	4.7	4.8	5.7
54 ABT-99-4.753	5.6	7.0	7.0	6.3	6.0	4.0	4.3	2.7	2.7	6.3
55 MP107	5.5	5.7	6.5	6.7	6.0	3.7	3.3	3.0	3.2	5.7
56 ABT-99-4.960	5.5	6.0	7.3	8.0	7.7	3.3	4.3	5.0	5.0	3.7
57 Pick PR 1-94	5.5	7.0	7.5	7.7	6.7	3.0	3.0	3.0	2.7	5.7
58 ABT-99-4.965	5.5	5.0	7.2	7.7	7.0	3.7	3.3	5.0	5.0	7.0
59 Premier II	5.5	7.3	5.7	5.3	6.0	5.7	5.3	4.3	4.3	5.7
60 6011	5.5	6.3	5.2	5.3	5.0	5.0	5.7	4.0	4.2	7.0

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³ -----		Spring Green-up ⁴		Crown Rust ⁵ -----		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
61 Pick RC2	5.4	7.0	5.3	5.3	4.3	4.0	3.7	4.0	6.0
62 EP57	5.4	6.0	6.2	6.0	6.3	4.0	4.7	3.3	5.3
63 JR-187	5.3	7.0	6.2	5.3	4.3	4.0	4.0	4.3	5.0
64 Eifkin	5.3	7.0	5.5	5.3	5.3	4.3	4.0	3.7	5.0
65 MP103	5.3	6.7	6.7	7.0	6.3	2.7	2.7	3.7	3.3
66 PST-2M4	5.3	6.0	5.5	6.3	5.7	5.0	5.3	4.0	7.0
67 Paradigm	5.3	6.0	6.2	6.0	5.3	4.0	4.0	3.0	6.0
68 Palmer III	5.3	7.0	5.2	5.3	6.0	5.3	5.7	4.3	5.3
69 Skyhawk	5.3	6.0	6.8	6.3	5.7	2.7	2.7	4.7	5.3
70 ABT-99-4.903	5.3	7.0	7.3	7.3	7.0	4.3	4.7	2.0	5.0
71 PST-2CRR	5.2	5.7	6.0	5.7	6.0	4.3	3.7	5.7	5.0
72 MEPY	5.2	6.0	6.8	7.0	6.3	3.3	3.7	3.7	4.7
73 ABT-99-4.625	5.2	5.3	7.0	8.0	7.7	3.0	4.0	3.3	4.7
74 Pick PRNGS	5.2	6.7	5.5	6.0	5.3	4.3	3.7	3.7	6.0
75 EPD	5.2	6.3	6.5	7.0	6.0	3.0	3.3	3.0	4.7
76 PST-2RT	5.1	6.0	4.5	5.3	4.7	5.3	5.0	3.7	6.3
77 Prospect	5.1	6.3	5.2	6.3	6.0	5.0	5.7	3.7	5.0
78 ABT-99-4.709	5.1	5.7	6.7	6.0	6.3	3.3	3.7	3.0	5.7
79 PST 2JH	5.1	6.3	5.5	5.0	5.7	4.7	5.0	3.0	6.7
80 ABT-99-4.629	5.1	6.7	6.5	6.3	6.0	4.3	4.0	2.7	6.0

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³ -----		Spring Green-up ⁴		Crown Rust ⁵ -----		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
81 Phantom	5.0	7.0	6.5	6.0	6.0	4.3	4.0	4.0	5.3
82 Ascend	5.0	7.0	5.7	5.7	5.0	4.0	4.3	2.7	4.7
83 Pleasure XL	5.0	7.0	6.0	5.3	5.3	3.7	3.3	4.0	5.7
84 Affirmed	4.9	7.3	5.3	5.0	4.7	5.0	5.0	3.7	4.0
85 PST-CATS	4.9	5.7	6.2	6.0	6.3	3.7	4.3	2.3	5.3
86 Panther	4.9	6.7	4.7	4.7	5.0	5.3	4.7	3.3	6.3
87 Calypso II	4.9	6.7	4.2	5.0	5.0	6.3	6.0	3.7	6.3
88 JR-317	4.9	7.0	6.2	6.3	5.3	3.3	4.3	3.3	3.3
89 Catalina	4.9	6.0	5.0	4.7	5.0	4.0	3.7	3.7	5.3
90 Allsport	4.9	6.7	5.3	6.3	5.7	4.0	4.0	3.7	4.7
91 APR 1231	4.9	7.0	5.0	4.7	4.0	4.0	4.0	2.3	6.3
92 MDP	4.9	5.0	7.3	7.3	6.3	2.7	2.0	3.0	3.3
93 ABT-99-4.339	4.8	6.7	5.2	5.0	5.0	4.3	4.3	3.3	5.7
94 Secretariat	4.8	7.0	4.5	4.0	5.0	6.3	6.0	4.0	6.3
95 JR-128	4.7	6.7	4.7	5.0	4.7	5.0	5.3	3.3	6.3
96 ABT-99-4.815	4.7	6.0	6.0	5.3	5.0	4.0	4.3	3.3	5.3
97 Divine	4.7	7.3	4.5	5.3	4.3	5.0	5.3	3.0	6.0
98 APR 1233	4.7	7.3	5.2	6.0	4.7	3.7	3.7	3.3	5.3
99 Majesty	4.7	7.3	5.3	5.0	5.3	5.0	5.7	2.0	6.0
100 JR-151	4.6	7.0	4.7	5.0	4.3	5.3	5.0	3.0	6.3

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³		Spring Green-up ⁴		Crown Rust ⁵		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
101 APR 1237	4.6	6.7	5.2	5.3	4.0	3.7	3.3	2.3	5.7
102 Charger II	4.6	6.0	4.0	4.0	4.7	5.7	4.7	3.3	5.0
103 LPR 98-144	4.5	7.3	4.5	4.3	4.7	5.3	4.7	3.7	5.3
104 Manhattan 3	4.5	7.0	5.0	5.0	4.7	4.7	3.3	3.0	5.7
105 CAS-LP84	4.5	6.0	6.0	6.7	4.7	3.0	3.0	3.0	3.3
106 Koos R-71	4.4	7.0	3.8	4.0	4.0	5.7	3.7	4.3	5.0
107 ABT-99-4.600	4.4	6.7	4.0	5.7	4.7	5.7	5.0	2.7	6.3
108 APR 776	4.4	6.3	5.0	5.3	4.7	4.3	4.7	3.3	5.7
109 Passport	4.4	6.7	4.3	5.0	4.7	4.7	4.0	3.3	4.7
110 Line Drive	4.4	6.3	5.5	5.7	5.7	5.0	4.7	2.0	3.3
111 Affinity	4.2	6.3	3.3	4.0	3.7	6.7	4.7	3.3	5.3
112 Headstart	4.2	7.0	4.5	4.7	4.3	4.3	3.7	2.0	4.3
113 Cathedral II	4.2	6.0	5.2	4.0	4.0	4.0	3.7	2.7	4.7
114 EP53	4.1	6.3	5.7	6.0	4.7	4.3	4.3	3.0	4.0
115 Racer	4.1	5.7	5.2	5.7	5.0	4.0	3.3	2.3	4.7
116 LPR 98-143	4.1	7.0	4.8	5.3	4.7	4.7	3.7	3.0	4.7
117 WVPB-R-84	4.1	6.0	3.3	4.0	3.7	5.7	4.0	4.0	5.7
118 APR 1232	4.1	6.7	3.8	4.7	3.3	4.0	4.0	2.0	5.3
119 SRX 4120	3.9	6.3	3.8	3.7	4.3	5.7	5.3	3.0	3.7
120 Pick EX2	3.9	6.7	3.2	4.3	4.0	5.3	5.0	2.7	4.3

Table 7 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Color ³		Spring Green-up ⁴		Crown Rust ⁵		Dollar Spot ⁶ 2000
			2000 Avg.	Oct. 1999	Aug. 2000	March 2000	10 Nov. 1999	22 Nov. 1999	
121 APR 1235	3.9	6.3	4.7	5.7	4.3	4.3	3.7	2.3	5.0
122 DP 17-9391	3.9	6.0	3.0	2.3	8.0	5.7	5.7	5.3	6.0
123 APR 777	3.9	6.3	4.5	5.0	4.0	5.3	4.7	2.7	5.0
124 Buccaneer	3.6	6.0	3.2	3.3	3.0	8.3	5.0	3.0	4.7
125 Premier	3.6	7.0	3.8	4.0	3.0	6.0	5.0	3.3	4.0
126 DP LP-1	3.6	5.7	3.5	3.3	3.3	5.7	5.0	3.3	5.3
127 BY-100	3.6	6.0	3.0	3.0	3.3	7.0	5.0	2.7	5.0
128 Edge	3.5	6.0	3.2	3.3	3.3	7.3	5.7	2.3	5.0
129 WVPB-R-82	3.4	5.7	3.3	3.3	3.0	5.3	3.3	4.3	3.3
130 DP 17-9069	3.4	5.7	3.2	3.0	3.0	5.7	5.0	3.0	4.3
131 APR 1234	3.3	6.0	3.3	3.7	3.3	5.3	3.7	2.0	4.0
132 Yatsugreen	3.2	6.3	2.0	3.0	2.7	9.0	4.0	5.7	6.0
133 Manhattan	2.7	5.0	2.8	2.3	2.7	9.0	5.3	4.3	3.0
134 DP 17-9496	1.7	4.7	2.0	2.0	2.0	9.0	3.7	5.0	3.3
135 Linn	1.3	4.7	2.0	2.0	2.0	9.0	2.3	5.7	3.3
LSD at 5% =									
	0.8	1.1	0.9	1.1	1.0	1.0	1.5	1.2	1.9

¹9 = best turf quality
²9 = best seedling establishment
³9 = darkest green color
⁴9 = earliest spring green-up
⁵9 = least disease

Table 8. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 1999 at North Brunswick, NJ. (Includes all entries of the 1999 National Perennial Ryegrass Test.)

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Brown Patch ³ Aug. 2000
1	Roberts-627	7.9	8.3	6.7
2	Pinnacle II	7.1	8.7	6.7
3	Amazing	7.0	8.0	5.3
4	Pizzazz	6.9	8.3	6.0
5	CIS-PR-80	6.9	7.7	6.0
6	CIS-PR-84	6.9	8.0	6.0
7	Gator III	6.8	8.0	6.7
8	ABT-99-4.461	6.8	8.7	5.0
9	Charismatic	6.8	8.0	6.7
10	Applaud	6.7	8.0	5.7
11	ABT-99-4.834	6.7	8.0	5.3
12	DLF-LDD	6.6	8.7	5.7
13	Allstar2	6.6	7.7	6.7
14	CIS-PR-75	6.5	8.0	5.3
15	ABT-99-4.633	6.5	7.7	6.0
16	Nexus	6.4	8.3	5.3
17	Wilmington	6.4	7.3	5.3
18	PST-2SLX	6.4	8.0	5.7
19	SRX 4801	6.4	8.0	6.3
20	PST-2L96	6.4	8.7	5.0
21	PST-2CRL	6.3	8.0	6.0
22	Radiant	6.3	7.3	6.0
23	ABT-99-4.903	6.3	7.3	5.3
24	CIS-PR-69	6.2	7.7	7.0
25	Pick PR QH-97	6.2	8.0	5.7
26	NJ-6401	6.2	8.7	5.0
27	Pick MDR	6.2	7.7	6.7
28	SRX 4RHT	6.2	7.3	5.0
29	ABT-99-4.753	6.2	8.0	6.0
30	R8000	6.1	8.3	6.7

Table 8 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Brown Patch ³ Aug. 2000
31	SR 4820	6.1	8.0	6.7
32	PST-2BR	6.0	8.3	5.0
33	Brightstar II	6.0	7.7	5.3
34	ABT-99-4.721	6.0	7.7	6.7
35	Seville II	5.9	8.7	5.0
36	EPD	5.9	7.3	5.3
37	PST-2SBE	5.8	7.3	5.3
38	ABT-99-4.960	5.8	8.0	6.0
39	Churchill	5.8	8.3	5.0
40	Exacta	5.8	8.7	6.7
41	Barlennium	5.7	9.0	5.7
42	PST-2LA	5.7	7.3	5.7
43	Stellar	5.7	8.3	5.0
44	Jet	5.7	8.0	6.3
45	Premier II	5.6	8.3	6.0
46	PST-2A6B	5.6	7.7	5.3
47	MDP	5.6	7.0	5.7
48	MP58	5.6	7.7	5.7
49	ABT-99-4.560	5.6	8.3	5.3
50	Pennant II	5.6	7.3	5.3
51	ABT-99-4.709	5.6	7.7	6.0
52	ABT-99-4.965	5.6	6.7	5.7
53	Majesty	5.5	8.7	6.7
54	PST-CATS	5.5	7.7	5.3
55	6011	5.5	8.3	5.7
56	Paragon	5.5	9.0	6.0
57	MP107	5.5	6.3	5.0
58	LTP-ME	5.5	4.0	5.3
59	ABT-99-4.724	5.5	5.7	5.0
60	Pleasure XL	5.4	7.3	5.7
61	MEPY	5.4	7.0	4.3
62	ABT-99-4.115	5.4	8.0	5.3
63	Pick PR 1-94	5.4	8.0	5.0
64	Promise	5.4	7.7	5.7
65	ABT-99-4.464	5.4	8.0	6.7

Table 8 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Brown Patch ³ Aug. 2000
66	Ascend	5.3	8.3	5.3
67	Skyhawk	5.3	8.0	4.3
68	JR-187	5.3	8.7	4.7
69	Fiesta 3	5.2	8.7	5.7
70	APR 1237	5.2	7.3	5.3
71	Affirmed	5.2	8.3	5.3
72	PST-2M4	5.2	7.7	4.7
73	CAS-LP84	5.1	6.7	4.7
74	Pick PR B-97	5.1	7.7	4.3
75	SR 4500	5.1	8.0	6.3
76	EP57	5.1	7.3	5.0
77	Divine	5.1	8.3	4.7
78	Pick RC2	5.0	9.0	5.7
79	ABT-99-4.625	5.0	6.3	6.7
80	Elfkin	5.0	8.3	5.3
81	ABT-99-4.629	5.0	8.3	6.3
82	APR 1236	5.0	6.7	6.0
83	PST-2CRR	5.0	7.7	3.7
84	MP103	4.9	6.7	5.0
85	JR-151	4.9	8.7	4.3
86	Catalina	4.8	7.3	5.7
87	LPR 98-144	4.7	8.3	5.0
88	JR-317	4.7	8.0	4.3
89	Pick PRNGS	4.7	8.0	5.7
90	ABT-99-4.339	4.7	8.7	5.0
91	LPR 98-143	4.7	7.3	4.3
92	APR 1231	4.7	7.7	4.7
93	EP53	4.7	8.0	5.3
94	PST-2JH	4.6	8.0	5.7
95	ABT-99-4.815	4.6	7.3	4.7
96	Line Drive	4.6	8.0	5.7
97	Prosport	4.6	8.3	4.7
98	APR 1233	4.5	9.0	6.7
99	Phantom	4.5	8.0	3.3
100	Cathedral II	4.5	8.3	5.3

Table 8 (continued).

	Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Brown Patch ³ Aug. 2000
101	Manhattan 3	4.4	8.0	5.0
102	JR-128	4.4	8.7	5.0
103	Palmer III	4.4	8.7	5.3
104	Allsport	4.4	8.7	4.0
105	APR 776	4.4	7.7	5.7
106	Headstart	4.3	8.0	4.3
107	Racer	4.3	7.7	5.7
108	Secretariat	4.3	8.7	5.0
109	APR 1232	4.3	7.7	6.0
110	Passport	4.2	8.0	4.3
111	APR 1235	4.2	8.3	5.7
112	PST-2RT	4.2	8.3	5.7
113	Panther	4.2	8.7	5.7
114	Calypso II	4.1	7.7	5.3
115	Charger II	4.0	7.7	5.0
116	ABT-99-4.600	4.0	7.3	5.0
117	Koos R-71	3.9	8.7	4.7
118	APR 777	3.9	8.0	5.7
119	DP LP-1	3.8	8.3	3.3
120	WVPB-R-84	3.8	8.0	4.3
121	SRX 4120	3.7	8.7	4.7
122	WVPB-R-82	3.7	8.7	5.0
123	Pick EX2	3.6	8.3	5.7
124	Affinity	3.5	8.7	6.0
125	APR 1234	3.5	7.7	5.3
126	Premier	3.5	8.0	4.0
127	Edge	3.2	8.3	4.7
128	DP 17-9069	3.2	8.3	4.3
129	BY-100	3.2	8.7	4.7
130	DP 17-9391	3.0	9.0	4.3
131	Buccaneer	2.8	8.3	5.0
132	Yatsugreen	2.8	8.3	3.0
133	Manhattan	2.1	8.0	2.7
134	DP 17-9496	1.5	7.7	7.0
135	Linn	1.3	7.7	5.5

Table 8 (continued).

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999	Brown Patch ³ Aug. 2000
LSD at 5% =	0.7	1.1	1.9

¹9 = best turf quality

²9 = best seedling establishment

³9 = least disease

Table 9. Performance of perennial ryegrass cultivars and selections in a turf trial established in September 1999 at Adelphia, NJ.

Cultivar or Selection	Turf Quality ¹ 2000 Avg.	Establishment ² Oct. 1999
1 Applaud	6.2	4.7
2 Amazing	5.9	5.3
3 Pizazz	5.9	5.0
4 Integra	5.6	4.7
5 DLF-LDD	5.5	6.0
6 Charismatic	5.5	5.0
7 Promise	5.4	4.7
8 NJ-6401	5.4	6.3
9 Exacta	5.4	5.7
10 Palmer III	4.9	6.7
11 Paragon	4.8	5.0
12 Roberts-627	4.2	1.0
13 Manhattan	3.0	4.3
14 Pennfine	2.2	1.0
15 Nui	1.1	5.3
LSD at 5% =	0.8	1.0

¹9 = best turf quality

²9 = best seedling establishment

Table 10. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2000 at Adelphia, NJ.

	Cultivar or Selection	-----Gray Leaf Spot ¹ -----			Establishment ² Sept. 2000	Turf Quality ³ 2000 Avg.
		2000 Avg.	Sept. 2000	Oct. 2000		
1	RNS comp	6.8	6.7	7.0	7.0	5.9
2	PR-154	6.7	6.7	6.7	7.0	6.4
3	DMS comp	5.5	5.3	5.7	7.0	4.8
4	Nui	5.5	6.0	5.0	4.3	1.9
5	Lp P-93	5.5	5.7	5.3	7.0	4.8
6	Roberts 627-00	5.5	5.3	5.7	7.0	5.1
7	SRX 4820	5.3	5.3	5.3	8.0	5.2
8	SRX 4CCG	5.2	5.3	5.0	6.3	3.7
9	Ecologic	5.2	5.3	5.0	7.3	4.4
10	EMR comp	5.2	5.0	5.3	7.3	5.0
11	Jet	5.0	4.7	5.3	6.0	4.3
12	SRX 4510	4.8	4.3	5.3	6.7	4.9
13	DCM comp	4.8	4.7	5.0	6.7	5.0
14	PR-125	4.8	4.7	5.0	7.3	3.9
15	SRX 4801	4.7	5.0	4.3	7.0	4.3
16	Barefoot	4.7	5.0	4.3	7.7	4.0
17	SR 4400	4.5	4.3	4.7	6.7	3.6
18	High Life LF	4.5	4.7	4.3	7.0	3.8
19	OO-A Lp	4.5	4.3	4.7	6.3	4.0
20	SRX 4SPBPEW	4.3	4.7	4.0	6.3	3.1
21	OO-C Lp	4.3	4.3	4.3	7.0	3.8
22	SRX 4AT PREW	4.2	4.3	4.0	7.0	3.3
23	Vibrant	4.2	4.3	4.0	6.3	3.4
24	SRX 4010	4.0	4.0	4.0	5.7	3.5
25	SRX 4DMSO	4.0	4.0	4.0	6.3	3.4
26	BPF1 Bulk-00	4.0	3.3	4.7	6.0	3.9
27	Lowgrow II	4.0	3.7	4.3	7.3	3.7
28	SRX 4500	3.8	4.0	3.7	7.3	3.1
29	SRX 4330	3.8	3.7	4.0	6.3	3.2
30	PRC-97	3.8	3.7	4.0	6.7	3.4

Table 10 (continued).

	Cultivar or Selection	-----Gray Leaf Spot ¹ -----			Establishment ² Sept. 2000	Turf Quality ³ 2000 Avg.
		2000 Avg.	Sept. 2000	Oct. 2000		
31	Dancer	3.8	3.7	4.0	6.0	3.6
32	Bayou	3.8	3.7	4.0	6.0	3.0
33	PR-122	3.8	3.3	4.3	6.0	4.4
34	SRX 4120	3.7	4.0	3.3	6.0	2.8
35	SR 4100	3.7	4.0	3.3	6.0	3.0
36	SRX 4MO971	3.7	3.7	3.7	5.7	3.2
37	Racer	3.7	3.7	3.7	6.7	3.3
38	Fiesta III	3.7	3.7	3.7	7.0	3.2
39	Calypso II	3.7	3.3	4.0	5.7	3.7
40	PR-121	3.7	3.7	3.7	6.3	3.3
41	SRX 4DFDWEW	3.5	3.7	3.3	6.0	2.8
42	Greenland	3.5	3.3	3.7	6.7	3.4
43	Fiesta II	3.5	3.3	3.7	6.0	3.1
44	Affirmed	3.3	3.3	3.3	6.3	3.1
45	Covet	3.0	2.7	3.3	6.0	2.4
46	Jiffie	3.0	3.0	3.0	6.0	2.8
47	SRX 4BPEW	2.8	3.0	2.7	6.7	2.5
48	Easy Livin	2.8	2.7	3.0	6.3	2.9
49	Edge	2.8	2.7	3.0	6.0	2.8
50	Headstart	2.7	2.7	2.7	6.0	2.8
51	PRJ-97-00	2.7	3.0	2.3	7.3	2.7
52	P-2	2.7	2.7	2.7	6.0	2.3
53	SR 4200	2.2	2.0	2.3	5.3	2.3
54	SRX 4MO972	2.2	2.0	2.3	6.0	2.2
55	SRX 4RHT	2.2	2.3	2.0	6.3	1.9
56	PR-84	2.2	2.0	2.3	6.7	2.5
57	Omni	2.0	2.0	2.0	7.0	2.1
58	Exacta	2.0	2.0	2.0	5.7	2.0
59	Platinum	2.0	2.0	2.0	5.7	2.2
60	Pick PR 1-94	2.0	2.0	2.0	5.7	1.9

Table 10 (continued).

Cultivar or Selection	-----Gray Leaf Spot ¹ -----			Establishment ² Sept. 2000	Turf Quality ³ 2000 Avg.
	2000 Avg.	Sept. 2000	Oct. 2000		
61 Churchill	2.0	2.0	2.0	5.7	2.7
62 Penguin	1.8	2.3	1.3	6.3	1.7
63 SRX CALM	1.3	1.3	1.3	6.0	1.5
64 SRX 4DGBPEW	1.3	1.3	1.3	4.7	1.1
65 PR1 99 C2-00	1.3	1.3	1.3	5.3	1.4
LSD at 5% =	1.1	1.4	1.1	1.1	0.8

¹9 = least disease

²9 = best seedling establishment

³9 = best turf quality

Table 11. Yearly Nitrogen (N) applied and mowing height (Ht) on perennial ryegrass tests established at Adelphia and North Brunswick, NJ.

	1997		1998		1999		2000	
	N ¹	Ht ²	N	Ht	N	Ht	N	Ht
Table 1 (1996 Adelphia)	4.3	1.5	4.1	1.5	2.8	1.5	1.0	1.5
Tables 2 and 3 (1997 Adelphia)			4.6	1.5	3.5	1.5	1.7	1.5
Table 4 (1998 Adelphia)					2.8	1.5	2.4	1.5
Table 5 (1998 North Brunswick)					2.4	1.5	2.4	1.5
Table 6 (1999 Adelphia)							2.9	1.5
Table 7 (1999 North Brunswick)							4.5	1.5
Table 8 (1999 North Brunswick)							3.4	1.5
Table 9 (1999 Adelphia)							2.6	2.5
Table 10 (2000 Adelphia)							1.5	1.5

¹Annual N applied (lb/1000 ft²)

²Mowing height in inches