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# **2004 RUTGERS TURFGRASS PROCEEDINGS**

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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 2004 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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Dr. Ann Brooks Gould, Editor  
Dr. Bruce B. Clarke, Coordinator

# PERFORMANCE OF BENTGRASS CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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Bentgrass species are known to form very dense, uniform, and fine textured surfaces under extremely low height of cut. As a result, they are often used for specialized, high maintenance areas such as golf course fairways, tees, and putting greens. Some of the more popular species used for turf include creeping bentgrass (*Agrostis palustris* Huds.; synonym = *A. stolonifera* L.), colonial bentgrass (*A. tenuis* L. or *A. capillaris* L.), velvet bentgrass (*A. canina* L.), and less frequently, highland or dryland bentgrass (*A. castellana* Boiss. & Reut.).

Creeping and velvet bentgrasses are best conditioned for the very low cutting heights necessary for golf course greens in the United States and other regions of the world. Creeping bentgrasses spread easily through stolons and have a prostrate growth habit, which permits the grass to persist under very low mowing heights. Bentgrass is the most popular species for use on putting greens because it is highly adapted to both the cool temperate and warm humid regions of the United States and has a highly aggressive, spreading growth habit. In 1954, H. B. Musser released Penncross, the first seeded variety of creeping bentgrass (Musser, 1959). Since that time, breeding efforts have markedly improved creeping bentgrass varieties to withstand the increasing demands of the game of golf. Recent releases exhibit better turf quality, higher shoot density, improved traffic, and better disease and stress tolerance than older varieties.

Colonial bentgrass, also referred to as browntop, has traditionally been used as a lawn grass in areas of northern Europe and New Zealand that have mild (cool and humid) summers. Colonial bentgrass has a fine leaf texture and, compared to creeping

bentgrass, has a more upright and less aggressive spreading growth habit and is generally better adapted for fairway or tee use in the warmer summer climates of the United States. Colonial bentgrass performs best in New Jersey when mowed no lower than 3/8<sup>th</sup> of an inch. Compared to creeping bentgrass, colonial bentgrass typically has a brighter green color and better color retention during cool weather. In addition, this group of grasses generally has better dollar spot resistance (caused by *Sclerotinia homoeocarpa*) and wear tolerance than creeping bentgrass. However, colonial bentgrass varieties are much more susceptible to brown patch (caused by *Rhizoctonia solani*). While not lethal, the playability of golf courses may be affected if brown patch is not controlled on colonial bentgrass. Current breeding efforts include improving brown patch disease tolerance of colonial bentgrasses.

Velvet bentgrass forms the finest-textured and most dense turf of the bentgrasses and can nearly resemble green velvet when managed properly. It spreads mainly through profuse production of erect tillers with short stolons. This grass can tolerate very close mowing, heat, cold, and shade, and is one of the most drought resistant of the bentgrasses used for turf (Skogley, 1973). The spread of velvet bentgrass via stolons is more aggressive than colonial bentgrass, but not as strong as with creeping bentgrass. Velvet bentgrass can form excessive thatch, especially at higher fertility rates and higher cutting heights, and can thus become problematic if not maintained properly. It is also susceptible to red thread (caused by *Laetisaria fuciformis*) and copper spot (caused by *Gloeocercospora sorghi*), but has good resistance to dollar spot and brown patch. Seedlings of velvet bentgrasses are susceptible to Pythium

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seedling rot during establishment. Velvet bentgrass has not been used extensively for high maintenance turf, largely because its range of adaptation has not been well recognized. Selections of velvet bentgrass have persisted for many years in trials under New Jersey growing conditions. It is believed that the species may one day serve as a viable alternative to creeping bentgrass for use on golf course greens, as recent research at Rutgers indicates and cultural management inputs become better known.

The New Jersey Agricultural Experiment Station participates in the National Turfgrass Evaluation Program (NTEP), which evaluates many species of turfgrass including bentgrasses throughout the United States. The Rutgers turfgrass breeding program conducts extensive field evaluations of collections and new material developed in the improvement program, many of which are a result of recent collection trips within the United States and throughout Europe and Asia. Collections from Norway, Spain, Portugal, France, Switzerland, Italy, Greece, Poland, Bulgaria, Romania, Croatia, China, and the Slovak Republic, which are the centers of origin for many turf species used in the United States, serve to enhance the genetic diversity of the germplasm used in this breeding program.

## PROCEDURES

Bentgrass evaluation trials were established at the Rutgers Horticultural Research Farm II in North Brunswick, NJ in the fall of 2001 (Tables 1 through 3), 2002 (Tables 4 and 5), and 2003 (Tables 6 thru 9). Two of the trials planted in the fall of 2003 (Tables 6 and 8) included all entries of the 2003 National Bentgrass Test coordinated by NTEP. Trials were established on a modified Nixon loam, except the 2003 NTEP putting green trial (Table 6), which was seeded on a sand-peat root zone. Plot size was 3 X 5 ft for all trials, except the 2003 NTEP trials (greens and fairway/tee) which were 4 X 6 ft. Plots were hand-seeded at a rate of approximately 0.5 lb/1000 ft<sup>2</sup>. All tests were arranged in a randomized complete block design with three replications.

All sites were well drained and openly exposed to both sunlight and air circulation (with the exception of the 2003 NTEP putting green trial, which had enclosed air circulation). The annual rate of nitrogen applied, mowing height, aerification/topdressing practices, and pesticide applications for each test are presented in Table 10. The putting green tests were mowed five to six times per week during periods of

active growth with a triplex or walk-behind reel mower equipped to collect clippings. The fairway tests were mowed and clippings were removed three times per week with a triplex reel mower during periods of active growth. Soil pH was maintained in the range of 6.0 to 6.5 with agricultural limestone. All tests were irrigated to avoid drought stress.

Plots were evaluated frequently during the growing season for overall turf quality (i.e., turf density, texture, uniformity, color, growth habit, and presence of damage due to diseases and insects). Turf quality, spring green-up, color, density, and disease were rated on a 1 to 9 scale, where 9 represented the most desirable turf characteristic. Disease ratings included brown patch (Tables 1 and 4 to 9), dollar spot (Tables 4 to 6, 8, and 9), copper spot (Tables 6, 8, and 9), and Pythium blight (Table 9). All data were subjected to analysis of variance. Means were separated using Fisher's protected least significant difference (LSD) means separation test.

## RESULTS AND DISCUSSION

### Turf Quality Evaluations

Entries in Tables 1 through 5 are ranked according to their overall multi-year quality average. Entries in Tables 6 to 9 are ranked according to their turf quality average in 2004. The best performing cultivars in the 2001 putting green trial (Table 1) were two experimental bentgrasses C953 and C952. Among velvet bentgrasses maintained under greens conditions (Table 2), the experimental cultivars PST EVU, EFD, CIS-AC1, and IVD comp, as well as the established variety Greenwich, performed the best. SR 7200 did not rank as high as the experimental selections under putting green mowing height (Table 2), but it was the top performer in the 2001 fairway trial, along with the experimental colonial bentgrass selection SRX 781-22 (Table 3). Older cultivars Penncross, Regent, Southshore, Providence, and Putter had the poorest turf quality in both the putting green (Table 1) and fairway (Table 3) trials.

In the 2002 putting green trial (Table 4), top ranking entries included the recently released creeping bentgrass cultivar Declaration, three experimental velvet bentgrasses (EFD, CIS-AC-1, and 00BAG), and the experimental creeping bentgrasses 007, 235050, C952, and C953. Older standard varieties such as Penncross, Pennlinks, and Providence were among the poorest performing entries in this study, along with Kromi and 18th Green. All velvet bentgrass selec-

tions were among the top ranking entries. The 2002 fairway/tee trial (Table 5) had less separation among entries than the previously mentioned tests. SR 7200 and the experimental velvet bentgrass EFD topped the list of thirty entries that comprised the best performing group. Two creeping bentgrasses, 235050 and C953, and the experimental colonial bentgrass HCG comp were also among the best cultivars, while Providence, Viper, Penncross, and 18th Green creeping bentgrasses ranked poorly in turf quality.

The best performing entries in the 2003 NTEP putting green trial included five velvet bentgrasses (Legendary, Greenwich, Vesper, and the experimentals IS-AC 1 and EFD) (Table 6). The top ranking creeping bentgrasses included the experimental selections SRX 1GPD, CY-2, and the cultivars Declaration, Shark, and Penn G-2. In the 2003 putting green trials (Tables 6, 7), Penncross, King Pin, Crenshaw, and Southshore were among those entries that exhibited poor turf quality. Top ranking cultivars in the 2003 NTEP fairway trial (Table 8) included SR 7200 velvet bentgrass and the creeping bentgrass cultivars Declaration, King Pin, and Benchmark DSR. Older creeping bentgrass cultivars Seaside, Crenshaw, and Penncross did not perform well. The three best ranking entries in the 2003 creeping bentgrass fairway/tee trial (Table 9) were Declaration, 235050, and Greenwich velvet bentgrass; creeping bentgrasses Penncross, Trueline, Regent, PennLinks II, and Barbella velvet bentgrass exhibited poor turf quality.

## **Dollar Spot**

While potentially one of the more damaging turf diseases on golf courses in New Jersey, dollar spot can be easily controlled with the use of fungicides; this can be expensive, however, because the disease occurs frequently. In addition, resistance of the causal agent to fungicides is well documented. Breeding for dollar spot resistance in bentgrass is an important objective of the breeding program. Typically, velvet and colonial bentgrasses have better resistance to dollar spot than creeping bentgrass, however the results from recent trials indicate that improvements in creeping bentgrass are being made. For example, in the 2002 putting green trial (Table 4), velvet bentgrasses Greenwich, Vesper, and SR 7200, the experimental selections EFD and CIS-AC-1, and Tiger II colonial bentgrass had just as good resistance as the creeping bentgrass selections HTL comp, Declaration, and King Pin which were selected for improved resistance. Creeping bentgrasses 18th Green, Vi-

per, Penncross, and the experimental SRX 1G56 exhibited poor dollar spot tolerance in 2002.

In the 2003 NTEP putting green trial (Table 6), the entries with the best dollar spot resistance included velvet bentgrasses (Legendary, Greenwich, SR 7200, EFD and IS-AC-1), Penn G-6, L-93, Pennlinks II, and King Pin (creeping bentgrasses), and the experimental creeping bentgrasses IS-AP 9 and A03-EDI. The 2003 NTEP fairway/tee trial (Table 8) consisted mainly of colonial and creeping bentgrass varieties. SR 7200, the only velvet bentgrass in the trial, maintained good tolerance to dollar spot, along with the colonial bentgrass cultivars Tiger II, Revere, SR 7150, Bardot, and the experimental selections IS-AT-7 and PST-9VN. Two creeping bentgrass cultivars, Declaration and Pennlinks, also showed good dollar spot disease tolerance. In both NTEP trials (Tables 6 and 8), the creeping bentgrass cultivars Crenshaw and Independence exhibited weak dollar spot resistance. Many of the entries that performed well in previous studies also performed well in the 2003 fairway/tee trial (Table 9). Creeping bentgrasses cultivars Declaration, King Pin, Benchmark DSR, Sandhill, and experimentals PST-OEX Bulk and PST-ORR Bulk as well as SR 7200 velvet bentgrass and many experimental (PST-9IR, PST-Syn-9NT, PST-Syn-9LSD, PST-9R3, PST-Syn-9PIN, SRX 781-21, and SRX 7EE) and older colonial bentgrasses (Heriot and SR 7100) exhibited high disease tolerance. The creeping bentgrass cultivar Penncross and experimental selections SRX 1NJH and Bar AS2 were among the most dollar spot-susceptible entries.

## **Brown Patch**

Velvet bentgrasses exhibit the greatest tolerance to brown patch of the bentgrass species used for turf. Creeping bentgrass is typically stronger than colonial bentgrass against this disease. Both the 2002 putting green and fairway/tee study (Tables 4 and 5, respectively) exemplify this. In both tests, the top entries were either velvet or creeping bentgrasses. In both tests, SR 7200 velvet bentgrass, the experimental selection EFD velvet bentgrass, and the creeping bentgrasses Benchmark DSR and 235050 were among the top entries. Experimental selections PST-SynA1U and PST-9VL Bulk, and the cultivars Revere and Viter exhibited the greatest disease tolerance of the colonial bentgrass entries evaluated (Table 5).

Results from the 2003 NTEP putting green trial (Table 6) indicated that the velvet bentgrass Legendary, the experimental selections IS-AC 1 and EFD,

and one experimental creeping bentgrass, SRX 1GPD, exhibited the highest levels of resistance to brown patch. Pennncross, Alpha, and Bengal showed low levels of brown patch disease resistance. All entries in the 2003 putting green trial (Table 7) were moderately tolerant of brown patch; Shark and Independence, however, performed the best. In the 2003 NTEP fairway/tee trial (Table 8), no colonial bentgrasses exhibited acceptable levels of tolerance to brown patch. Many of the creeping bentgrasses (Declaration, Shark, 235050, and Penneagle II and the experimental selections T-1, PST-OEB, SRX IPDH, and IS-AP-14), however, and the velvet bentgrass SR 7200 showed extremely high levels of brown patch resistance. Colonial bentgrass cultivars Tiger II (Tables 4, 5, and 8), Bardot, and SR 7150 (Table 8), experimental colonial bentgrass selections SRX 781-21 and SRX 7MOBB (Tables 4 and 9), and creeping bentgrass cultivars Regent (Tables 1 and 9), Pennncross (Tables 1 and 6), and Trueline (Tables 4 and 9) were among those entries with poor resistance to this disease. It is interesting to note that Alpha had exhibited poor brown patch resistance under putting green maintenance, but was one of the most resistance creeping bentgrass cultivars in the fairway trial.

### **Spring Green-Up**

Spring green-up data was collected for all 2001 and 2002 trials (Tables 1 to 5). In general, the colonial bentgrasses exhibit the best green-up quality when compared to both creeping and velvet bentgrasses. There were several creeping bentgrass entries that possessed early green-up qualities; these included cultivars Benchmark DSR (Tables 4, 5), Declaration (Table 4), 007 (Table 4), Penneagle and Pennlinks (Table 1), and experimental creeping bentgrass entries C952 (Tables 1, 3), SRX R1E2, SRX 1G44, SRX 1G32 (Table 1), and SRX 1GPinkD (Table 4). Creeping bentgrass cultivars Trueline, Brighton,

and 18th Green (Tables 4, 5) were consistently poor ranking entries, as were experimental selections MS6, MS7, MS4, 7CMS4, and 7RMS4 (Table 1). In the 2001 fairway trial (Table 3), the experimental colonial bentgrass selections 9BNC-2001, 9ER Blk-5 Bulk, HCDR comp, and IBP comp exhibited the earliest green-up; and experimental colonial bentgrass selections SRX IDIN, SRX 765-11, SRX 767-7, and cultivar SR 7150 were among entries in this test that were poor in ranking. In the 2002 fairway trial (Table 5), the colonial bentgrass cultivar Glory and experimental selections HCG comp, HCF comp, and PST-9BNC were the top ranking entries. The best creeping bentgrasses in this trial were Benchmark DSR and King Pin. In the velvet bentgrass putting green trial (Table 2), SR 7200 and CIS-AC1 exhibited strong spring green-up, while IVM comp and IVD comp ranked lowest.

### **ACKNOWLEDGMENTS**

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Table 1. Performance of creeping bentgrass cultivars and selections in a putting green trial seeded in September 2001 at North Brunswick, NJ.

	Cultivar or Selection	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004
		2002-2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.		
1	C953	6.6	7.6	5.4	6.7	6.0	8.7
2	C952	6.5	7.2	6.0	6.2	7.0	7.3
3	C954	5.8	6.1	5.6	5.7	6.3	5.7
4	PST OEB	5.6	6.3	5.6	4.9	2.3	7.3
5	Syn ORO	5.5	5.5	6.0	5.1	6.7	5.3
6	Penn A-1	5.5	5.7	5.6	5.2	3.0	5.7
7	PST-OPNB	5.3	5.9	5.5	4.5	4.7	5.7
8	Penn A-2	5.3	5.7	5.2	4.9	4.3	5.0
9	Penn G-1	5.2	5.1	5.1	5.4	4.3	6.0
10	Penn A-4	5.2	5.5	5.1	4.8	4.7	6.0
11	CIS-AP9	5.2	5.7	5.2	4.5	3.0	6.0
12	SRX 1R1V1	5.1	5.5	4.9	5.0	6.3	6.3
13	Bengal	5.1	5.8	5.0	4.4	7.0	6.0
14	Nu-Penn Blend	5.0	5.4	5.0	4.7	4.7	5.0
15	SRX R1E2	5.0	5.4	4.5	5.0	7.0	6.0
16	Penn G-6	4.9	4.7	5.1	5.0	5.0	6.0
17	Seaside II	4.9	4.0	5.5	5.2	6.3	5.0
18	ORU-2001	4.9	5.8	4.7	4.2	5.7	5.3
19	Penneagle II	4.9	5.7	4.4	4.5	5.0	5.3
20	SRX 1G32	4.9	5.6	4.5	4.5	7.0	7.0
21	SRX 146-12	4.9	5.2	4.5	4.9	6.0	6.3
22	L-93	4.9	4.7	5.3	4.5	5.0	3.7
23	SRX 1G222	4.8	6.3	4.1	4.1	6.0	8.0
24	SRX 1G68	4.7	5.9	4.2	4.1	5.7	7.7
25	SRX 1G46	4.7	5.8	3.8	4.5	4.7	8.0
26	SRX 1G54	4.7	6.2	3.9	3.9	5.7	7.0
27	SRX W1CR1	4.7	5.1	4.7	4.3	5.7	7.0
28	PST ORM-1	4.6	4.4	5.1	4.2	5.3	2.7
29	SRX 1H Blue	4.5	4.8	4.4	4.3	5.0	7.0
30	Penneagle	4.5	4.2	4.8	4.3	7.0	4.3
31	Pennlinks II	4.4	4.7	5.2	3.4	4.3	2.0
32	Independence	4.4	5.8	3.8	3.7	5.7	7.0
33	SRX 1G57	4.4	4.9	3.8	4.3	6.7	7.0
34	SRX 1W1CR2	4.4	4.9	4.4	3.8	3.0	6.0
35	SRX 1COCR	4.4	4.8	4.3	4.0	6.3	5.7

(Continued)

Table 1 (continued).

	Cultivar or Selection	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004
		2002- 2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.		
36	SRX 1H Pink	4.3	4.4	4.5	4.1	6.3	6.0
37	SRX 1G44	4.3	5.5	3.3	4.1	7.0	6.3
38	Pennway Blend	4.3	4.3	4.7	3.8	5.7	3.3
39	SRX 1W1CR3	4.2	5.2	3.5	3.9	3.0	6.7
40	SRX 1G56	4.2	5.0	3.4	4.2	6.7	7.0
41	SRX 1D1N	4.2	4.9	4.0	3.7	2.3	3.0
42	SR 1119	4.2	4.7	4.5	3.3	3.0	4.7
43	SRX 1NJ H	4.2	4.4	4.7	3.4	5.7	3.7
44	Brighton	4.1	4.6	4.5	3.2	3.7	3.3
45	Pick 01-3CB	4.1	4.1	4.6	3.6	3.7	5.7
46	Pick ECB	4.1	4.8	3.9	3.6	5.7	4.7
47	Pennlinks	4.0	3.7	4.4	4.0	7.0	2.0
48	Pick Syn 96-2	4.0	5.2	3.5	3.2	4.3	6.0
49	Cato	4.0	3.5	4.3	4.0	4.3	4.0
50	Sandhill	3.9	4.7	3.9	3.1	5.7	4.3
51	Pick CB13.94.98	3.9	3.9	4.4	3.4	4.3	5.0
52	Southshore	3.9	4.0	4.1	3.6	4.3	3.7
53	SRX H Silver	3.9	4.2	4.2	3.2	2.7	3.3
54	PST-ORE1	3.8	3.8	4.3	3.3	5.0	4.3
55	Putter	3.8	3.8	4.0	3.4	4.7	2.7
56	C951	3.7	4.0	4.2	2.9	4.3	3.7
57	Providence	3.6	3.3	4.2	3.1	6.3	3.0
58	7RMS4	3.6	4.9	3.2	2.6	1.3	2.3
59	7CMS4	3.6	5.1	3.4	2.1	1.0	2.0
60	01-4CB	3.5	4.2	3.6	2.6	4.7	2.0
61	MS4	3.4	4.8	3.3	2.2	1.0	2.7
62	SRX MOCR1	3.4	4.4	2.9	2.9	3.0	2.0
63	Regent	3.3	3.3	3.8	2.9	3.7	1.7
64	MS7	3.3	4.1	3.8	2.1	1.0	2.3
65	Penn Trio Blend	3.3	3.0	3.7	3.2	4.7	2.0
66	Penncross	3.2	3.0	3.8	2.9	4.0	2.3
67	MS5	3.2	4.4	3.4	1.9	2.0	2.3
68	Pick CB 4.94.01	3.1	2.8	3.6	2.8	2.7	2.7
69	MS6	2.9	4.0	2.8	1.8	1.0	2.0
70	Pick CB 6.94.01	2.8	2.8	3.2	2.4	4.7	1.7

(Continued)

Table 1 (continued).

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004
	2002- 2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.		
LSD at 5% =	0.6	0.7	0.9	0.9	1.9	1.8

<sup>1</sup>9 = best turf quality

<sup>2</sup>9 = earliest spring green-up

<sup>3</sup>9 = least disease

Table 2. Performance of velvet bentgrass cultivars and selections in a turf trial seeded in September 2001 at North Brunswick, NJ and maintained under putting green conditions.

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004
	2002-2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.	
1 PST EVU	6.1	6.1	5.9	6.3	5.0
2 EFD	6.1	6.1	6.4	5.7	5.7
3 Greenwich	5.7	6.2	6.0	4.9	4.3
4 CIS-AC1	5.7	5.8	6.1	5.3	6.3
5 IVD comp	5.5	5.9	5.9	4.8	3.7
6 IVM comp	5.4	5.7	5.8	4.6	2.3
7 ISC comp	5.3	5.8	5.2	4.7	5.0
8 IVC comp	5.0	5.0	5.1	4.7	4.7
9 SR 7200	4.7	5.5	4.9	3.8	7.3
LSD at 5% =	0.7	0.9	0.9	0.8	1.8

<sup>1</sup>9 = best turf quality

<sup>2</sup>9 = earliest spring green-up

Table 3. Performance of bentgrass cultivars and selections in a fairway/tee trial seeded in September 2001 at North Brunswick, NJ.

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004	
		2002-2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.		
1	SR 7200	Velvet	6.2	6.4	6.8	5.3	4.0
2	SRX 781-22	Colonial	5.9	6.2	5.7	5.8	5.7
3	9BNC-2001	Colonial	5.5	5.8	5.2	5.5	6.7
4	9ER Blk-5 Bulk	Colonial	5.3	5.3	5.3	5.2	7.7
5	Revere	Colonial	5.2	5.0	5.5	5.3	5.3
6	HCDR comp	Colonial	5.2	4.8	5.6	5.1	6.0
7	Glory	Colonial	5.0	5.0	4.9	5.0	5.7
8	Alister	Colonial	4.9	5.3	4.9	4.6	4.3
9	Tiger II	Colonial	4.9	6.1	4.7	4.0	3.3
10	SRX 7EE25	Colonial	4.9	5.1	5.1	4.4	5.3
11	SRX IG56	Creeping	4.9	6.0	3.9	4.8	3.0
12	SRX 7MOBB	Colonial	4.8	6.0	4.6	4.0	4.7
13	SRX IG57	Creeping	4.8	5.8	4.6	4.1	3.3
14	SRX IG32	Creeping	4.8	5.6	4.0	4.8	4.3
15	SRX 7CRCO	Colonial	4.8	6.2	4.6	3.5	5.3
16	SR 7150	Colonial	4.7	5.7	4.6	3.9	2.0
17	SRX IG44	Creeping	4.7	6.0	3.9	4.3	4.0
18	SRX IG222	Creeping	4.7	5.7	3.7	4.8	4.7
19	IBP comp	Colonial	4.6	4.0	4.9	4.9	6.3
20	SRX IG46	Creeping	4.6	5.9	4.0	3.9	2.7
21	SRX 1G68	Creeping	4.6	5.6	3.8	4.3	4.0
22	SRX 781-13	Colonial	4.6	5.3	4.2	4.2	2.0
23	Bardot	Colonial	4.5	4.5	4.9	4.2	4.3
24	SRX 7EE	Colonial	4.5	5.1	4.6	3.7	4.0
25	SRX 7EE20	Colonial	4.5	4.6	4.9	3.8	3.7
26	SRX 781-3	Colonial	4.5	5.2	4.9	3.4	2.7
27	SRX 7EE4	Colonial	4.5	5.7	4.5	3.1	2.7
28	SRX ICOCR	Creeping	4.5	5.6	3.9	3.8	3.3
29	Bengal	Creeping	4.5	6.1	3.6	3.7	4.3
30	L-93	Creeping	4.5	4.9	4.8	3.7	3.0
31	Heriot	Colonial	4.4	4.8	4.8	3.7	5.3
32	SRX IH Silver	Creeping	4.4	5.0	4.6	3.7	2.3
33	SRX IG54	Creeping	4.4	5.5	3.8	4.0	3.3
34	Independence	Creeping	4.4	6.2	3.6	3.4	3.0
35	SRX 7EE5	Colonial	4.4	5.7	4.4	3.0	4.7

(Continued)

Table 3 (continued).

	Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004
			2002- 2004 Avg.	2002 Avg.	2003 Avg.	2004 Avg.	
36	SRX 767-7	Colonial	4.4	5.3	4.6	3.2	1.7
37	SRX 780-19	Colonial	4.3	4.5	4.7	3.6	4.3
38	SRX 765-11	Colonial	4.3	4.6	4.7	3.6	2.0
39	SRX IH Blue	Creeping	4.3	5.2	4.2	3.5	2.3
40	SR 7100	Colonial	4.2	5.1	4.0	3.6	3.0
41	SRX 786-6	Colonial	4.2	5.0	3.8	3.9	3.7
42	SRX IBPAA	Creeping	4.2	4.9	4.3	3.4	3.0
43	SRX IH Pink	Creeping	4.2	5.4	4.4	2.9	2.7
44	SRX IWJH	Creeping	4.2	4.8	4.0	3.7	3.0
45	Brighton	Creeping	4.1	4.9	4.2	3.3	2.0
46	SRX 765-5	Colonial	4.1	4.6	4.4	3.3	2.7
47	SRX 780-6	Colonial	4.1	4.6	4.4	3.4	4.0
48	SRX 146-12	Creeping	4.1	5.1	3.2	4.1	2.7
49	SR 1119	Creeping	4.1	5.4	3.8	3.1	3.0
50	Penn G-6	Creeping	4.1	4.6	4.3	3.4	3.7
51	SRX IDIN	Creeping	4.0	5.0	3.2	3.8	1.3
52	Providence	Creeping	4.0	4.7	4.1	3.1	2.3
53	Putter	Creeping	3.9	4.3	3.9	3.5	3.0
54	Regent	Creeping	3.9	4.5	4.1	3.1	3.3
55	SRX 781-21	Colonial	3.8	4.4	4.0	3.1	3.0
56	Southshore	Creeping	3.7	4.6	3.5	2.9	2.0
57	SRX 765-3	Colonial	3.6	4.5	3.8	2.6	2.3
58	PST-9ED	Colonial	3.0	2.5	3.5	3.1	4.0
59	AT-1	Colonial	3.0	2.6	3.4	3.0	2.3
LSD at 5% =			0.6	0.8	0.9	0.9	2.3

<sup>1</sup>9 = best turf quality<sup>2</sup>9 = earliest spring green-up

Table 4. Performance of bentgrass cultivars and selections in a putting green trial seeded in September 2002 at North Brunswick, NJ.

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Oct. 2004	Dormancy <sup>4</sup> Nov. 2004
		2003-2004 Avg.	2003 Avg.	2004 Avg.				
1 007	Creeping	7.0	7.0	7.0	7.3	7.7	5.0	
2 EFD	Velvet	6.6	6.8	6.5	9.0	9.0	3.3	
3 CIS-AC-1	Velvet	6.6	6.2	7.0	9.0	9.0	3.7	
4 235050	Creeping	6.6	6.7	6.4	6.7	8.3	6.7	
5 00BAG	Velvet	6.6	6.7	6.4	9.0	8.3	2.3	
6 C952	Creeping	6.5	6.6	6.4	6.0	8.3	6.3	
7 C953	Creeping	6.5	6.4	6.6	7.3	6.7	7.0	
8 Declaration	Creeping	6.4	6.8	5.9	6.7	8.7	5.7	
9 SRX1GD	Creeping	6.2	5.6	6.7	8.0	5.0	7.7	
10 SRX1GPinkD	Creeping	6.2	6.0	6.4	7.7	5.0	7.0	
11 Greenwich	Velvet	6.2	5.9	6.5	8.7	8.7	3.0	
12 Vesper	Velvet	6.1	6.0	6.3	9.0	8.7	2.3	
13 CIS-AP-9	Creeping	6.1	6.6	5.6	6.3	7.7	3.3	
14 HTL Comp	Creeping	6.1	6.1	6.0	6.0	9.0	7.3	
15 SRXG295D	Creeping	6.0	5.6	6.3	8.0	4.0	7.0	
16 Benchmark DSR	Creeping	5.9	6.3	5.6	7.0	8.3	6.7	
17 SRX19294D	Creeping	5.9	5.8	5.9	8.0	4.3	7.3	
18 SR 7200	Velvet	5.9	6.3	5.3	7.7	8.7	3.0	
19 SRX1TR3E	Creeping	5.7	5.6	5.8	6.7	4.3	5.0	
20 SRX1SQZG	Creeping	5.6	5.6	5.5	5.7	4.7	2.3	
21 CIS-AP-12	Creeping	5.6	5.6	5.5	5.3	6.0	7.0	
22 SRXG299D	Creeping	5.5	5.2	5.8	6.7	4.0	7.3	
23 SRX1BL2G	Creeping	5.5	5.6	5.4	5.3	5.3	4.3	
24 King Pin	Creeping	5.5	5.6	5.4	5.7	9.0	6.7	
25 13M	Creeping	5.5	5.5	5.4	5.0	7.7	6.0	

(Continued)

Table 4 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Oct. 2004	Dormancy <sup>4</sup> Nov. 2004
		2003-2004 Avg.	2003 Avg.	2004 Avg.				
26	PST OEB	Creeping	5.4	5.7	5.2	5.0	6.7	4.0
27	SRX1G68	Creeping	5.4	6.0	4.9	5.7	7.3	2.0
28	Penn G-2	Creeping	5.4	5.6	5.2	6.0	5.0	7.7
29	Penn A-1	Creeping	5.3	5.7	4.9	5.0	4.3	3.0
30	SRX1PDH	Creeping	5.2	5.4	5.2	4.3	7.0	3.7
31	NuPenn	Creeping	5.2	5.5	5.0	4.3	4.3	3.0
32	HTM Comp	Creeping	5.2	5.4	5.1	4.7	6.0	4.3
33	SRX1TRUG	Creeping	5.2	5.3	5.1	5.7	5.0	4.3
34	Penn G-6	Creeping	5.2	5.6	4.7	5.0	5.3	2.3
35	SRX1G32	Creeping	5.1	5.5	4.8	5.0	6.7	4.7
36	SRX1G57	Creeping	5.1	5.3	4.9	5.7	6.0	5.0
37	Penn G-1	Creeping	5.1	5.2	5.1	4.3	4.7	4.0
38	SRX1W1G	Creeping	5.1	5.4	4.8	4.0	6.0	3.3
39	SRX1G49	Creeping	5.1	5.0	5.1	6.0	6.7	6.3
40	SRXG222	Creeping	5.0	4.9	5.1	5.0	6.7	5.3
41	SRX1G56	Creeping	5.0	5.2	4.8	5.7	7.0	5.3
42	Penn A-2	Creeping	5.0	5.4	4.6	4.3	4.7	3.0
43	CIS-AP-13	Creeping	5.0	4.8	5.1	6.7	6.7	4.7
44	SRX1W1CR1G	Creeping	4.9	5.4	4.4	5.3	4.7	4.7
45	Penn A-4	Creeping	4.9	4.9	4.8	4.3	3.7	4.7
46	SRX1HPink	Creeping	4.9	5.4	4.3	4.3	4.7	3.0
47	SRX1HBlue	Creeping	4.9	5.1	4.6	4.3	5.3	4.0
48	SRX1BPAA	Creeping	4.8	5.4	4.2	3.7	4.7	4.3
49	Pennlinks II	Creeping	4.8	5.6	4.1	4.3	3.3	5.0
50	Bar As2	Creeping	4.8	5.2	4.5	4.7	4.3	7.0

(Continued)

Table 4 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Oct. 2004	Dormancy <sup>4</sup> Nov. 2004
		2003-2004 Avg.	2003 Avg.	2004 Avg.				
51	SRX146-12	Creeping	4.8	4.9	4.7	6.0	3.3	4.7
52	Independence	Creeping	4.8	5.3	4.3	6.3	3.3	5.0
53	CBA-98	Creeping	4.8	5.4	4.1	5.0	3.7	2.7
54	CIS-AP-10	Creeping	4.8	5.1	4.4	5.0	5.0	3.0
55	SRX1BL3G	Creeping	4.7	5.1	4.3	5.3	3.0	3.3
56	Pick Syn96-2	Creeping	4.7	5.4	3.9	4.0	3.3	2.0
57	PST SynORO	Creeping	4.6	4.8	4.4	4.0	7.0	6.0
58	SRX1HSilver	Creeping	4.6	5.1	4.0	5.0	6.3	1.3
59	Penneagle	Creeping	4.5	4.8	4.2	4.3	5.3	4.7
60	Bengal	Creeping	4.5	4.7	4.3	4.3	5.0	6.0
61	Pick ECB	Creeping	4.5	4.9	4.0	4.3	3.7	5.7
62	SR 1119	Creeping	4.4	5.0	3.8	3.0	4.3	3.0
63	SRX1R1G1	Creeping	4.4	4.9	3.9	3.7	4.3	3.7
64	PST Syn ORM6	Creeping	4.4	4.8	4.0	3.3	8.7	3.7
65	Southshore	Creeping	4.4	4.6	4.2	4.7	6.3	3.3
66	Penn A-4	Creeping	4.3	4.7	4.0	2.3	4.3	4.7
67	SRX1LA1G	Creeping	4.3	4.6	3.9	4.7	5.7	2.0
68	Seaside II	Creeping	4.3	4.4	4.1	3.7	7.7	3.7
69	SRX1KOP1E	Creeping	4.2	4.3	4.1	5.0	2.7	4.7
70	SRX117-23	Creeping	4.2	4.6	3.7	2.7	4.7	4.0
71	CATO	Creeping	4.1	4.8	3.4	3.0	7.0	3.3
72	CBNGS02	Creeping	4.1	4.6	3.6	4.3	5.0	2.3
73	AZBC	Creeping	4.1	4.5	3.8	5.0	4.0	3.3
74	PST OX5Bulk	Creeping	4.0	4.2	3.8	3.3	5.7	6.0
75	L-93	Creeping	3.9	4.5	3.5	4.0	5.0	3.0

(Continued)

Table 4 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----				Spring Green-up <sup>2</sup> April 2004	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Oct. 2004	Dormancy <sup>4</sup> Nov. 2004
		2003-2004 Avg.	2003 Avg.	2004 Avg.	2004 Avg.				
76 Backspin	Creeping	3.8	4.3	3.4	1.7	5.0	4.3	2.7	
77 BGS94-96-02	Creeping	3.7	4.5	3.0	3.3	3.0	3.7	1.7	
78 Pennway	Creeping	3.7	3.7	3.8	2.7	2.7	8.3	4.3	
79 MBGC-02	Creeping	3.7	4.5	2.9	3.7	2.7	7.0	3.3	
80 Brighton	Creeping	3.7	4.1	3.2	1.7	3.0	6.0	1.7	
81 Tiger II	Colonial	3.6	4.6	2.6	3.0	1.0	9.0	2.0	
82 Pennlinks	Creeping	3.6	4.0	3.2	3.0	3.3	8.3	5.0	
83 Penn Trio	Creeping	3.6	3.8	3.3	3.7	3.0	7.0	2.7	
84 Penncross	Creeping	3.5	4.1	2.9	2.7	2.7	7.0	3.7	
85 Providence	Creeping	3.3	3.7	2.9	3.0	2.3	6.3	3.3	
86 CBC-02	Creeping	3.2	3.4	3.0	3.7	4.7	7.7	4.0	
87 Viper	Creeping	3.2	3.8	2.7	1.3	2.0	5.7	1.7	
88 Trueline	Creeping	3.2	4.1	2.3	1.7	1.7	8.7	1.0	
89 18th Green	Creeping	2.7	3.6	1.8	1.0	2.7	3.3	1.0	
90 Kromi	Creeping	1.7	2.2	1.2	1.0	1.3	8.0	1.0	
LSD at 5% =		0.6	0.7	0.8	1.6	1.8	1.6	1.7	

<sup>1</sup>9 = best turf quality

<sup>2</sup>9 = earliest spring green-up

<sup>3</sup>9 = least disease

<sup>4</sup>9 = less dormancy

Table 5. Performance of bentgrass cultivars and selections in a fairway/tee trial seeded in September 2002 at North Brunswick, NJ.

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup> April 2004	Dollar Spot <sup>3</sup> May 2004	Brown Patch <sup>3</sup> Avg.	
		2003-2004 Avg.	2003 Avg.	2004 Avg.				
1	SR 7200	Velvet	6.4	7.0	5.8	4.0	7.7	8.3
2	EFD	Velvet	6.2	7.2	5.2	3.3	5.7	8.8
3	235050	Creeping	5.9	6.2	5.5	3.0	6.0	8.5
4	C953	Creeping	5.8	6.2	5.3	3.3	5.7	8.8
5	HCG Comp	Colonial	5.8	5.8	5.7	7.0	5.7	5.7
6	C952	Creeping	5.6	6.1	5.0	3.7	7.0	7.8
7	Benchmark DSR	Creeping	5.4	6.6	4.1	5.0	8.3	8.2
8	HCF Comp	Colonial	5.3	5.0	5.6	6.0	5.0	5.3
9	Viter	Colonial	5.3	4.9	5.8	3.0	4.7	6.3
10	SRX 7CRCO	Colonial	5.2	5.6	4.8	4.7	9.0	5.0
11	PST-9BNC	Colonial	5.2	5.1	5.3	6.3	5.0	5.0
12	CIS AT-7	Colonial	5.2	5.6	4.7	2.7	5.3	6.0
13	PST-Syn-9LN	Colonial	5.1	5.3	5.1	5.3	7.7	4.8
14	SRX 7E	Colonial	5.1	5.2	5.0	3.7	8.3	6.0
15	Revere	Colonial	5.1	5.1	5.1	3.0	7.3	6.3
16	King Pin	Creeping	5.0	5.7	4.3	5.3	7.7	8.0
17	Sandhill	Creeping	5.0	5.4	4.6	2.3	7.3	7.5
18	PST-9VL Bulk	Colonial	5.0	5.5	4.4	2.5	8.0	6.5
19	SRX 7EE	Colonial	4.9	4.9	4.8	5.3	8.3	4.5
20	Glory	Colonial	4.8	4.6	5.1	6.0	4.7	5.3
21	Alister	Colonial	4.7	4.6	4.9	5.0	3.0	5.2
22	SRX 7EE4	Colonial	4.7	5.2	4.2	3.3	6.0	4.2
23	SRX 781-3	Colonial	4.7	4.9	4.4	3.0	6.7	4.0
24	PST-SynA1U	Colonial	4.7	5.3	4.0	1.7	6.0	7.2
25	CIS AP-10	Creeping	4.6	5.2	4.1	4.3	3.3	8.0
26	Tiger II	Colonial	4.6	5.0	4.3	2.3	4.0	4.2
27	CIS AT-6	Colonial	4.6	5.0	4.2	3.7	3.3	4.2
28	SRX 7MODD	Colonial	4.6	5.0	4.2	3.0	6.7	5.0
29	CIS AP-12	Creeping	4.6	5.1	4.1	4.0	4.7	8.0
30	SRX 7EE5	Colonial	4.6	5.0	4.2	4.7	7.0	5.2
31	PST-9VN Bulk	Colonial	4.5	4.6	4.3	2.0	7.7	6.8
32	SRX 1H Silver	Creeping	4.4	5.3	3.7	2.3	6.7	6.2
33	SRX 1G 57	Creeping	4.4	4.9	3.9	4.7	4.7	7.7
34	PST-Syn-9PY	Colonial	4.4	4.5	4.2	4.7	8.7	4.8
35	SRX 1G 32	Creeping	4.3	4.6	4.1	4.0	4.7	7.7

(Continued)

Table 5 (continued).

	Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Spring Green-up <sup>2</sup> April 2004	Dollar Spot <sup>3</sup> May 2004	Brown Patch <sup>3</sup> Avg.
			2003- 2004 Avg.	2003 Avg.	2004 Avg.			
36	Penn A-4	Creeping	4.3	4.9	3.7	4.3	5.0	7.7
37	Trueline	Creeping	4.3	5.0	3.6	1.3	7.0	4.2
38	SRX 7MOBB	Colonial	4.3	4.7	3.9	3.7	6.0	3.3
39	SRX 1 Pink	Creeping	4.2	5.0	3.4	4.0	4.7	7.5
40	SRX 1G 56	Creeping	4.2	4.8	3.6	5.0	2.7	7.7
41	SRX 780-19	Colonial	4.1	4.1	4.1	4.3	7.0	4.0
42	SRX 1W1CR1G	Creeping	4.1	4.5	3.7	3.7	6.0	7.0
43	SRX 1G 49	Creeping	4.1	4.7	3.5	4.7	4.3	7.2
44	SRX 1G 68	Creeping	4.0	5.2	2.9	3.7	2.7	6.7
45	Brighton	Creeping	3.9	4.5	3.4	2.0	3.0	5.8
46	SR 1119	Creeping	3.9	4.7	3.1	4.0	4.7	7.0
47	SRX 117-23	Creeping	3.9	4.3	3.6	3.3	5.3	6.7
48	SRX 146-12	Creeping	3.8	4.5	3.2	2.7	2.7	7.3
49	Independence	Creeping	3.8	4.9	2.7	5.3	4.0	7.5
50	Providence	Creeping	3.8	4.2	3.4	3.0	4.3	6.7
51	Viper	Creeping	3.8	4.5	3.0	2.7	3.7	5.2
52	Backspin	Creeping	3.7	4.3	3.2	5.3	2.7	7.0
53	SRX 1H Blue	Creeping	3.7	4.7	2.8	4.0	3.7	7.7
54	SRX 781-21	Colonial	3.7	4.1	3.3	5.0	7.3	2.3
55	Penncross	Creeping	3.5	3.7	3.3	3.3	4.7	5.8
56	18th Green	Creeping	2.7	3.6	1.9	2.0	1.0	6.8
57	PST-Syn-9NE	Colonial	2.6	2.6	2.7	3.3	5.7	5.2
LSD at 5% =			1.9	1.7	1.9	1.8	1.4	0.6

<sup>1</sup>9 = best turf quality<sup>2</sup>9 = earliest spring green-up<sup>3</sup>9 = least disease

Table 6. Performance of bentgrass cultivars and selections in a putting green trial seeded in September 2003 at North Brunswick, NJ. (Includes all entries of the National Bentgrass Putting Green Test - NTEP.)

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2004 Avg.	Turf Cover (%) Oct. 2003	Copper Spot <sup>2</sup> Aug. 2004	Brown Patch <sup>2</sup> Aug. 2004	Dollar Spot <sup>2</sup> Oct. 2004	Genetic Color <sup>3</sup> Nov. 2004	Density <sup>4</sup> Nov. 2004	Leaf Texture <sup>5</sup> Nov. 2004
1	IS-AC 1	Velvet	7.9	70.0	5.3	7.3	9.0	6.7	9.0
2	Legendary	Velvet	7.7	71.7	5.3	7.7	8.3	4.3	8.0
3	Greenwich	Velvet	7.4	68.3	3.7	6.0	8.3	4.7	7.3
4	Vesper	Velvet	7.3	61.7	3.3	5.3	7.3	5.3	8.7
5	EFD	Velvet	7.2	58.3	4.3	7.7	9.0	4.0	7.7
6	SRX 1GPD	Creeping	7.2	55.0	7.3	8.7	5.0	8.0	7.3
7	CY-2	Creeping	6.7	63.3	5.0	7.0	5.3	6.7	5.0
8	Declaration	Creeping	6.7	66.7	5.7	6.3	7.3	6.0	6.0
9	Shark	Creeping	6.7	63.3	4.7	6.7	4.0	6.0	4.7
10	Penn G-2	Creeping	6.7	58.3	7.0	6.0	7.0	6.3	6.3
11	235050	Creeping	6.5	60.0	6.7	6.3	6.0	3.7	5.7
12	Penn G-6	Creeping	6.4	70.0	6.3	7.0	7.7	5.0	5.0
13	Independence	Creeping	6.4	63.3	6.7	6.3	4.7	4.3	4.0
14	SRX 1GPD	Creeping	6.3	55.0	5.7	6.7	6.0	6.3	7.0
15	LS-44	Creeping	6.2	60.0	6.0	5.7	5.3	4.7	5.0
16	Penn A-1	Creeping	6.1	66.7	6.3	5.7	5.7	5.7	5.3
17	Penn A-2	Creeping	6.1	68.3	6.3	5.7	6.0	5.3	6.7
18	T-1	Creeping	6.1	63.3	4.7	6.0	5.0	4.7	5.3
19	SR 7200	Velvet	6.0	38.3	3.0	6.0	9.0	5.3	7.3
20	DSB	Creeping	5.9	60.0	6.0	6.3	5.7	5.0	6.3
21	Penn A-4	Creeping	5.8	71.7	6.3	5.7	6.3	5.7	5.0
22	IS-AP 9	Creeping	5.6	56.7	6.0	6.0	8.0	3.3	4.3
23	A03-EDI	Creeping	5.5	61.7	5.0	4.7	8.3	4.3	3.7
24	Bengal	Creeping	5.5	65.0	4.0	3.7	5.3	5.3	4.3
25	Century	Creeping	5.4	71.7	5.0	5.0	4.7	4.3	6.0

(Continued)

Table 6 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>	Turf Cover	Copper	Brown	Dollar	Genetic	Density <sup>4</sup>	Leaf
		2004 Avg.	(%) Oct. 2003	Spot <sup>2</sup> Aug. 2004	Patch <sup>2</sup> Aug. 2004	Spot <sup>2</sup> Oct. 2004	Color <sup>3</sup> Nov. 2004	Nov. 2004	Texture <sup>5</sup> Nov. 2004
26 SR 1119	Creeping	5.4	70.0	5.7	4.7	5.7	3.3	2.7	3.7
27 Alpha	Creeping	5.3	65.0	3.3	2.7	4.3	1.3	2.0	3.7
28 Southshore	Creeping	5.2	58.3	5.0	4.3	5.7	5.0	3.7	4.7
29 13-M	Creeping	5.2	61.7	4.7	5.3	7.7	4.3	4.0	3.3
30 HTM comp	Creeping	5.2	55.0	6.3	5.3	7.7	4.3	4.7	6.0
31 L-93	Creeping	5.0	70.0	5.7	5.0	8.3	5.3	6.7	4.7
32 Pennlinks II	Creeping	4.9	63.3	5.7	5.3	8.3	2.3	2.0	2.3
33 Imperial	Creeping	4.9	71.7	5.0	5.3	5.3	3.0	3.0	3.3
34 Penneagle	Creeping	4.8	68.3	6.0	4.7	5.3	3.3	2.7	4.0
35 Crenshaw	Creeping	4.6	58.3	5.7	5.7	3.0	5.0	4.0	3.3
36 King Pin	Creeping	4.6	48.3	5.3	6.0	8.0	1.7	2.7	4.0
37 Benchmark DSR	Creeping	4.2	48.3	3.7	4.0	7.0	2.3	1.7	3.3
38 Pennncross	Creeping	3.4	66.7	3.7	3.0	7.3	1.7	1.0	1.7
LSD at 5% =									
		0.7	6.8	1.5	1.6	1.6	2.0	2.2	2.1

<sup>1</sup>9 = best turf quality  
<sup>2</sup>9 = least disease  
<sup>3</sup>9 = darkest green color  
<sup>4</sup>9 = highest shoot density  
<sup>5</sup>9 = finest leaf texture

Table 7. Performance of creeping bentgrass cultivars and selections in a putting green trial seeded in October 2003 at North Brunswick, NJ.

Cultivar or Selection		Turf Quality <sup>1</sup> 2004 Avg.	Establishment <sup>2</sup> Oct. 2004	Brown Patch <sup>3</sup> 2004 Avg.
1	Declaration	6.4	7.0	6.0
2	Shark	6.1	6.3	6.7
3	235050	5.6	5.7	5.8
4	Independence	5.3	6.7	6.2
5	Penn A-4	5.3	6.7	4.2
6	L-93	5.1	7.0	4.5
7	Southshore	4.1	5.7	3.5
8	Crenshaw	3.8	6.0	4.7
9	SR 1119	3.8	6.7	4.0
10	King Pin	3.4	5.3	4.2
LSD at 5% =		0.7	0.9	1.4

<sup>1</sup>9 = best turf quality

<sup>2</sup>9 = quickest establishment

<sup>3</sup>9 = least disease

Table 8. Performance of bentgrass cultivars and selections in a fairway/tee trial seeded in September 2003 at North Brunswick, NJ. (Includes all entries of the 2003 National Bentgrass Fairway Test - NTEP.)

Cultivar or Selection	Species	Turf Quality <sup>1</sup>	Turf Cover	Brown Patch <sup>2</sup>	Dollar Spot <sup>2</sup>	Copper Spot <sup>2</sup>	Genetic Color <sup>3</sup>	Density <sup>4</sup>	Leaf Texture <sup>5</sup>
		2004 Avg.	(%) Oct. 2003	June 2004	2004 Avg.	Aug. 2004	Nov. 2004	Nov. 2004	Nov. 2004
1 SR 7200	Velvet	7.7	98.0	8.0	8.0	5.0	8.0	8.0	9.0
2 Declaration	Creeping	7.5	91.0	9.0	9.0	5.0	8.0	8.0	7.3
3 King Pin	Creeping	6.9	61.7	8.7	7.9	6.7	7.7	7.7	7.3
4 Benchmark DSR	Creeping	6.9	76.7	8.7	8.0	5.0	7.7	8.0	8.0
5 13-M	Creeping	6.5	88.3	7.3	8.1	5.0	7.0	7.7	7.3
6 235050	Creeping	6.5	85.0	9.0	6.3	2.7	7.0	5.3	6.7
7 IS-AT-7	Colonial	6.5	95.3	3.7	8.8	9.0	6.7	6.3	6.0
8 T-1	Creeping	6.4	76.7	9.0	5.3	8.0	7.0	6.3	6.3
9 PST-OEB	Creeping	6.2	95.0	9.0	7.1	4.7	7.0	7.0	6.7
10 SRX IGPD	Creeping	6.2	71.7	8.7	6.0	6.3	7.0	6.0	7.0
11 LS-44	Creeping	6.2	85.0	7.7	6.2	5.3	6.3	5.7	6.3
12 Pennlinks	Creeping	6.2	95.3	8.0	8.6	5.0	7.0	6.7	6.3
13 Alpha	Creeping	6.2	78.3	9.0	4.4	5.0	7.0	6.0	6.3
14 PST-9VN	Colonial	6.1	93.3	4.3	8.6	9.0	6.3	6.0	6.3
15 Shark	Creeping	6.1	88.3	9.0	6.0	4.0	6.3	5.0	6.3
16 Tiger II	Colonial	6.1	81.7	2.7	8.8	9.0	6.3	7.0	6.0
17 PST-9BNC	Colonial	6.1	90.0	3.7	8.1	9.0	6.3	6.0	6.0
18 Penneagle II	Creeping	6.1	91.7	9.0	6.0	6.3	6.3	6.0	6.7
19 Revere	Colonial	6.1	71.7	3.3	8.8	9.0	6.3	7.0	6.3
20 SR 1119	Creeping	6.0	51.7	7.7	4.4	6.7	6.3	4.7	6.0
21 SRX IPDH	Creeping	6.0	81.7	9.0	6.1	5.0	6.3	5.3	6.7
22 Alpha	Creeping	6.0	70.0	9.0	5.0	5.7	6.3	6.0	5.7
23 SR 7150	Colonial	5.9	94.3	1.3	8.8	9.0	6.7	6.0	5.7
24 IS-AP-14	Creeping	5.9	83.3	9.0	4.9	3.7	6.7	5.3	6.3
25 L-93	Creeping	5.8	81.7	5.7	7.1	6.7	7.0	7.0	6.3

(Continued)

Table 8 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2004 Avg.	Turf Cover (%) Oct. 2003	Brown Patch <sup>2</sup> June 2004	Dollar Spot <sup>2</sup> 2004 Avg.	Copper Spot <sup>2</sup> Aug. 2004	Genetic Color <sup>3</sup> Nov. 2004	Density <sup>4</sup> Nov. 2004	Leaf Texture <sup>5</sup> Nov. 2004
26 Bardot	Colonial	5.8	55.0	3.3	8.8	9.0	6.3	6.3	6.7
27 Bengal	Creeping	5.7	60.0	7.7	5.1	5.0	5.7	5.3	6.3
28 Independence	Creeping	5.6	86.0	8.3	3.6	2.7	6.0	5.3	6.7
29 Southshore	Creeping	5.3	46.7	7.7	4.1	5.3	6.0	5.7	6.3
30 Imperial	Creeping	4.6	96.0	4.7	3.8	6.3	5.7	4.7	5.7
31 Princeville	Creeping	4.4	98.0	5.7	5.7	4.7	6.0	5.3	5.7
32 Crenshaw	Creeping	4.4	53.3	6.0	3.3	5.3	5.3	4.7	5.7
33 Penncross	Creeping	4.0	94.3	6.0	6.2	8.7	5.0	5.0	5.7
34 Seaside	Creeping	2.4	94.3	3.0	7.6	9.0	4.7	4.0	4.0
LSD at 5% =		0.6	14.3	1.4	1.3	2.6	0.9	1.2	0.9

<sup>1</sup>9 = best turf quality

<sup>2</sup>9 = least disease

<sup>3</sup>9 = optimal turf color

<sup>4</sup>9 = highest shoot density

<sup>5</sup>9 = finest leaf texture

Table 9. Performance of bentgrass cultivars and selections in a fairway/tee trial seeded in October 2003 at North Brunswick, NJ.

	Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2004 Avg.	Establish- ment <sup>2</sup> Oct. 2003	Pythium <sup>3</sup> 2003 Avg.	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Avg. 2004	Copper Spot <sup>3</sup> Aug. 2004
1	Declaration	Creeping	7.3	7.3	4.5	8.7	8.7	5.0
2	235050	Creeping	6.6	7.0	4.5	8.3	7.1	4.0
3	Greenwich	Velvet	6.5	8.7	4.5	8.0	7.1	4.3
4	IS-AP	Creeping	6.4	7.7	4.5	7.3	6.8	4.0
5	SR 7200	Velvet	6.1	8.0	4.5	7.3	7.6	4.7
6	Shark	Creeping	6.1	5.7	4.5	8.3	6.2	5.0
7	King Pin	Creeping	6.1	5.7	4.5	8.0	7.8	6.3
8	PST-Syn-9BC3	Colonial	5.8	4.7	4.3	6.3	5.7	9.0
9	VE 3 Comp	Velvet	5.8	5.3	4.2	8.3	8.0	4.3
10	Penneagle II	Creeping	5.7	7.3	4.8	7.7	5.3	5.3
11	Benchmark DSR	Creeping	5.6	6.0	4.5	6.7	7.5	5.7
12	Penn A-1	Creeping	5.6	7.0	4.5	5.7	5.4	6.3
13	Penn G-6	Creeping	5.6	7.7	4.3	6.7	6.8	5.0
14	PST-OEB	Creeping	5.5	8.3	5.0	8.7	6.0	6.0
15	PST-Syn-9NCG	Colonial	5.5	4.0	4.2	7.7	6.8	8.7
16	SRX IGD	Creeping	5.5	5.0	4.0	8.3	5.6	5.7
17	SRX 7CRCO	Colonial	5.5	6.3	4.3	5.0	8.2	8.3
18	SRX IG68	Creeping	5.5	8.0	4.5	8.7	5.2	5.3
19	ORU	Creeping	5.4	7.7	4.5	7.3	5.5	3.7
20	IS-AP-14	Creeping	5.4	7.7	4.5	7.3	4.6	5.3
21	Sandhill	Creeping	5.4	7.0	4.5	5.7	7.7	5.7
22	PST-9NG-Bulk	Colonial	5.3	3.0	4.2	7.0	5.7	8.7
23	PST-VGG Bulk	Velvet	5.2	3.3	4.3	7.3	7.2	5.3
24	Penn A-2	Creeping	5.2	7.3	4.3	6.7	5.4	5.3
25	Penn G-1	Creeping	5.1	7.3	4.5	7.3	5.1	5.3
26	L-93	Creeping	5.1	7.3	4.7	4.7	6.1	6.3
27	SRX IPDH	Creeping	5.1	5.3	4.5	8.0	6.0	6.7
28	Alister	Colonial	5.1	8.3	4.8	4.0	7.0	7.3
29	SRX IG57	Creeping	5.1	7.3	4.8	8.0	4.8	5.3
30	SRX WICRIG	Creeping	5.0	7.7	5.5	6.3	5.0	6.7
31	Glory	Colonial	5.0	8.0	5.0	5.0	7.4	9.0
32	SRX ITR3E	Creeping	5.0	6.7	4.3	4.0	6.0	5.7
33	PST-020 Bulk	Creeping	5.0	5.3	4.3	6.3	7.3	6.0
34	SRX 7EE5	Colonial	5.0	6.0	4.5	4.7	7.8	8.7
35	SRX 1H Blue	Creeping	5.0	6.7	4.0	7.3	5.2	6.3

(Continued)

Table 9 (continued).

	Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2004 Avg.	Establish- ment <sup>2</sup> Oct. 2003	Pythium <sup>3</sup> 2003 Avg.	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Avg. 2004	Copper Spot <sup>3</sup> Aug. 2004
36	SRX 7MOBB	Colonial	4.9	5.3	3.8	1.7	7.2	8.3
37	Penn A-4	Creeping	4.9	7.0	4.5	5.7	5.1	6.0
38	PST-9VN	Colonial	4.9	4.7	4.5	5.7	7.7	9.0
39	PST-OSF Bulk	Creeping	4.9	3.7	4.2	7.7	6.9	6.3
40	IS-AP-10	Creeping	4.8	7.7	4.5	5.7	5.9	6.0
41	PST-9R3	Colonial	4.8	4.7	4.8	2.7	8.2	8.7
42	Penneagle	Creeping	4.8	7.0	4.5	6.7	5.5	6.3
43	Independence	Creeping	4.8	7.0	4.7	7.3	3.7	5.3
44	SRX ISQ2G	Creeping	4.7	6.3	5.0	7.7	4.7	4.7
45	PST-OEX Bulk	Creeping	4.7	3.3	4.3	5.7	7.8	4.7
46	PST-Syn-9PIN	Colonial	4.6	3.0	4.2	6.7	8.0	8.7
47	SRX 7EE4	Colonial	4.6	5.7	4.5	3.0	7.4	8.7
48	SR 1119	Creeping	4.6	7.7	4.5	6.0	5.9	5.7
49	SRX 1NJH	Creeping	4.6	5.0	4.8	7.0	4.0	6.3
50	Bengal	Creeping	4.5	8.0	5.2	5.0	4.8	5.0
51	SRX 7EE	Colonial	4.5	5.7	4.3	2.0	8.1	8.3
52	PST-9x3 Bulk	Colonial	4.4	2.3	4.3	4.3	7.8	8.7
53	SR 7100	Colonial	4.4	6.3	4.0	3.0	7.8	8.3
54	Bar AS 2	Creeping	4.4	5.7	4.0	5.0	4.6	4.3
55	Southshore	Creeping	4.3	4.3	4.3	5.7	7.2	6.0
56	SRX 1HSilver	Creeping	4.3	3.3	3.7	6.0	6.2	7.7
57	Brighton	Creeping	4.2	3.3	4.3	6.3	5.8	4.0
58	Providence	Creeping	4.2	7.7	4.7	4.0	6.0	6.0
59	Seaside II	Creeping	4.1	7.3	4.5	3.3	6.8	5.7
60	PST-Syn-9NT	Colonial	4.0	2.7	4.0	4.0	7.9	8.3
61	Imperial	Creeping	4.0	7.7	4.8	5.3	5.8	5.7
62	SRX 1H Pink	Creeping	4.0	3.3	4.2	6.7	5.7	6.7
63	ORF-03	Creeping	4.0	6.7	4.7	2.0	5.9	5.0
64	PST-Syn-9LSD	Colonial	3.9	2.0	4.3	7.0	8.7	8.7
65	Crenshaw	Creeping	3.8	4.3	4.3	5.3	5.0	6.3
66	Century	Creeping	3.8	8.0	4.7	4.7	5.4	5.3
67	PennLinks II	Creeping	3.8	8.3	5.3	4.0	5.8	6.3
68	Regent	Creeping	3.8	8.3	5.0	2.3	7.2	6.3
69	Bardot	Colonial	3.7	5.7	3.7	3.0	8.0	8.7
70	PST-ORF	Creeping	3.7	7.0	4.0	2.3	6.7	4.0

(Continued)

Table 9 (continued).

	Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2004 Avg.	Establish- ment <sup>2</sup> Oct. 2003	Pythium <sup>3</sup> 2003 Avg.	Brown Patch <sup>3</sup> June 2004	Dollar Spot <sup>3</sup> Avg. 2004	Copper Spot <sup>3</sup> Aug. 2004
71	PST-VE52 Bulk	Velvet	3.5	3.0	4.5	2.7	8.0	4.3
72	PST-9IR	Colonial	3.5	5.3	3.0	2.0	8.6	9.0
73	PST-ORR Bulk	Creeping	3.5	2.0	4.5	3.7	7.8	6.7
74	Heriot	Colonial	3.5	1.7	3.8	3.0	8.2	9.0
75	PST-OGE Bulk	Creeping	3.5	2.3	4.5	5.7	5.4	5.3
76	PST-9GBS-Bulk	Colonial	3.3	2.0	4.2	3.7	7.8	8.3
77	Barifera	Creeping	3.2	3.7	3.7	2.7	4.9	6.0
78	SRX 781-21	Colonial	3.1	6.7	3.8	1.0	8.3	8.0
79	Trueline	Creeping	3.0	7.3	4.3	1.0	7.0	4.7
80	Penncross	Creeping	3.0	8.3	4.7	3.0	4.0	5.7
81	Barbella	Velvet	2.6	1.0	4.5	3.3	7.8	3.7
	LSD at 5% =		0.8	1.5	0.7	1.7	1.4	1.9

<sup>1</sup>9 = best turf quality<sup>2</sup>9 = quickest establishment<sup>3</sup>9 = least disease

Table 10. Maintenance practices performed in 2004 on bentgrass trials at North Brunswick, NJ.

Table/Test	Fertility <sup>1</sup>	Mowing Height (inches)	Aerification/Top Dress	Fungicides	Insecticides	Herbicides
1 2001 Greens .....	2.54	1/8	March/June/Oct.: 5/16-inch solid tine March to Aug./Oct.: topdressed sand	May: Banner Maxx June: Chipco 26GT July: Banner + Heritage Aug.: Daconil Ultrex Sept.: Daconil + Banner	July: Dursban Pro (for ants/earthworms) July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emergence weeds)
2 2001 Velvet Greens ....	2.54	1/8	March/June/Oct.: 5/16-inch solid tine March to Aug./Oct.: topdressed sand	May: Banner Maxx June: Chipco 26GT July: Banner + Heritage Aug.: Daconil Ultrex Sept.: Daconil + Banner	July: Dursban Pro (for ants/earthworms) July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emergence weeds)
3 2001 Fairway .....	2.04	3/8	None	May: Daconil Ultrex Sept.: Daconil + Banner	July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emergence weeds) Nov.: Trimec Bent (broadleaf weeds)
4 2002 Greens .....	1.62	1/8	June: microtine aerified March to Aug./Oct.: topdressed sand	May to Aug: Curalan EG June to Aug: ProStar 70WP	July: Dursban Pro (for ants/earthworms) July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emergence weeds)
5 2002 Fairway/Tee .....	1.51	3/8	June: microtined aerified	June: Daconil (Echo 990)	July: Merit 75WP (for grubs)	April: Lontrel (clover) May: Dimension 1E (pre-emergence weeds)
6 2003 NTEP Greens ....	2.47	1/8	March to Aug./Oct.: topdressed sand	May/Sept./Oct.: Banner Maxx June: Chipco 26GT July/Sept./Oct.: Daconil Sept.: ProStar 70WP Nov.: Junction	May: Dursban Pro (for ants/earthworms) July: Merit 75WP (for grubs)	None

(Continued)

Table 10 (continued).

Table/Test	Fertility <sup>1</sup>	Mowing Height (inches)	Aerification/Top Dress	Fungicides	Insecticides	Herbicides
7 2003 Greens .....	2.47	1/8	March to Aug./Oct: topdressed sand	Sept.: ProStar 70WP Sept./Oct.: Daconil Ultrex/ Banner Maxx Nov.: Junction	May: Dursban Pro (for ants/earthworms) July: Merit 75WP (for grubs)	None
8 2003 NTEP Fairway ....	1.60	3/8	None	June: Chipco 26GT July: ProStar 70WP Aug./Sept.: Daconil Ultrex	July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emergence weeds) Nov.: Trimec Bent (broadleaf weeds)
9 2003 Fairway/Tee .....	2.06	3/8	None	Sept.: Daconil Ultrex	July: Merit 75WP (for grubs)	May: Dimension 1E (pre-emerg. weeds) Nov.: Trimec Bent (broadleaf weeds)

<sup>1</sup>Annual nitrogen applied (lb/1000 ft<sup>2</sup>)