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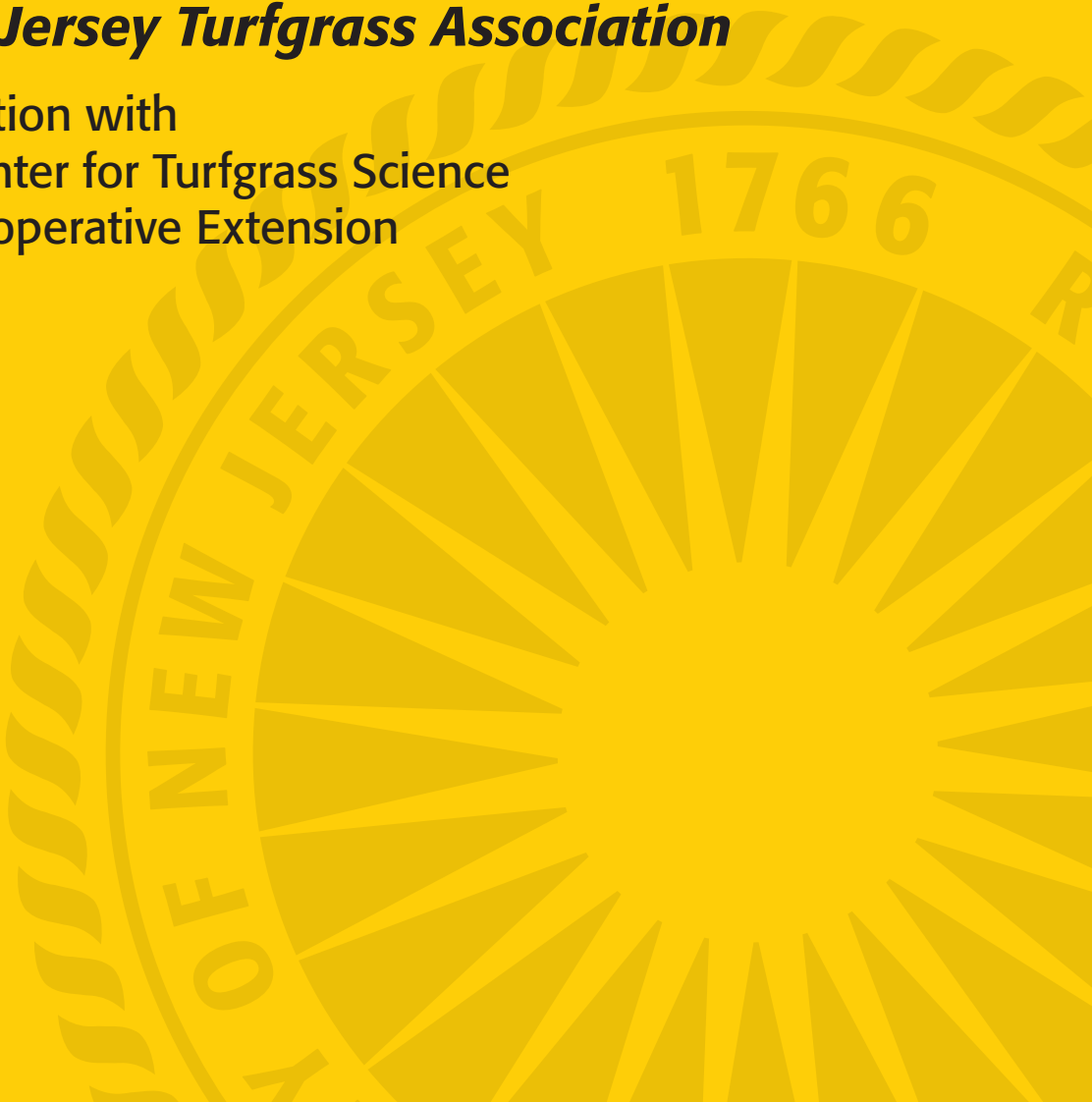

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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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 2011 GREEN EXPO Turf and Landscape Conference. 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 PERENNIAL RYEGRASS CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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Perennial ryegrass (*Lolium perenne* L.) is a cool-season, bunch type grass that performs well in a wide variety of soil conditions but thrives in dark, rich soils with a pH between 5 and 8 in regions with mild climates (Paterson, 2002; USDA, 2002). Perennial ryegrass is an important turfgrass because of its ability to germinate quickly, creating an attractive leafy appearance in a short period. It is often used in the southern United States for overseeding dormant lawns and athletic fields. Perennial ryegrass is economically important because it allows for athletic play year-round in areas where warm season turfgrasses undergo dormancy. This species is attractive for this purpose because it germinates quickly, provides a playing surface during cold weather, and dies out in the summer, making way for warm-season grasses to take over. Perennial ryegrass can also be used as permanent grass in temperate climates. This species prefers to be planted in full sun but will tolerate low levels of shading. It is often found in mixtures with slower germinating grasses such as Kentucky bluegrass (*Poa pratensis* L.) and the fine fescues (*Festuca* spp.) to help prevent soil erosion during lawn establishment and increase traffic tolerance of the turf stand. In mixtures, perennial ryegrass is extremely competitive and if a high percentage is used, the turf stand will eventually be dominated by this species (Murphy and Mohr, 2002).

In 1967, the first turf-type perennial ryegrass, 'Manhattan,' became commercially available followed with the release of 'Pennfine' in 1970. Today, many more cultivars are readily available to turf managers for use in sports fields as well as home lawns. New cultivars have been improved upon to have increased general stress tolerance, insect and disease resistance, improved mowing quality, dark green color, more uniform leaf texture, and higher shoot density (Murphy and Park, 2004). The development of improved perennial ryegrass cultivars continues at the New Jersey Agricultural Experiment Station as well as other research facilities.

The center of origin for perennial ryegrass includes Europe, North Africa, and parts of Asia. International collection trips are always underway in an effort to acquire new sources of germplasm. Perennial ryegrass collections can contain new desirable traits that can then be used to breed the next generation of improved perennial ryegrass cultivars.

Perennial ryegrass is susceptible to an array of diseases such as crown rust (caused by *Puccinia coronata*), stem rust (*Puccinia graminis*), red thread (*Laetisaria fuciformis*), grey leaf spot (*Magnaporthe oryzae*), and dollar spot (*Sclerotinia homoeocarpa*). Crown rust has a very complex life cycle that includes two very different hosts. This rust first appears as a yellow flecking on infected leaf blades followed by raised pustules that break through the epidermis of the blade to release spores. Stem rust is also an important disease of perennial ryegrass that can cause serious problems during seed production. Red thread forms pinkish to red hyphae that grow out of infected leaf tips in humid environments. Dollar spot can also be found in perennial ryegrass populations if the weather is hot and humid. Dollar spot hyphae are easily identified as a cobweb-like mycelium. Grey leaf spot is an important disease of new perennial ryegrass turf stands. This disease can be identified by the twisting and distortion of leaves at the point of infection (Smiley et al., 2005). Breeding efforts are currently underway to improve resistance to all of these detrimental pathogens.

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One extremely important aspect of improved perennial ryegrass cultivars can be the presence of symbiotic fungi, known as endophytes, that live intercellularly within the leaf, sheath, and stem tissues. The presence of this endophyte (*Neotyphodium* spp.) can convey biotic and abiotic stress tolerance in many perennial ryegrasses (van Zijll de Jong et al., 2008). Foliar feeding insects, such as billbugs, sod webworm, and chinch bugs, can be significantly reduced by using a ryegrass cultivars containing endophytes due to the release of toxins (Ahmad et al., 1986; Funk et al., 1994). Endophytes are an important tool for turfgrass breeders as a biological control agent in an environment where pesticide regulations are eminent and sustainable turfgrass management is becoming more popular. The endophyte is transferred via seed to offspring; seed must thus be stored under cool dry conditions post-harvest. Turfgrass breeders and researchers are continuing to research the beneficial role of endophytes in turfgrasses.

PROCEDURES

One perennial ryegrass trial was established in 2009 and four trials were established in 2010. All trials were seeded at Adelphia, NJ (Tables 1 to 5). Both Adelphia trials were hand sown with 0.88 oz of seed into 3 x 5 ft plots (3.7 lb seed per 1000 ft^2).

All trials were arranged in a randomized complete block design with three replications, and plots had a 6-inch unseeded border to limit contamination. A spring application of Dimension was used to control crabgrass on all trials in the month of April. An application of Merit was made to all trials in June to control grub populations. Banvel was applied in October to all trials except the 2009 trial (Table 1) for control of broadleaf weeds. Supertrimec was applied in May to the 2009 trial (Table 1) to control broadleaf weeds.

The annual rate of nitrogen (N) and mowing height for each trial is presented in Table 6. Single applications of fertilizer did not exceed 1.0 lb N per 1000 ft^2. The amount and timing of nitrogen applied to the turf varied to encourage diseases and other stresses. Trials were mowed regularly with reel mowers to maintain a 1.5-inch height of cut. All trials were irrigated when necessary to avoid drought stress.

All trials 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 amount of residual reproductive stems, red thread, dollar spot, and gray leaf spot prevalence were rated when significant differences were evident. Most ratings were based on a 1 to 9 scale, with 9 representing the best turf characteristic. Percent cover ratings were based on a 0 to 100 scale, where 100 represents a completely dense plot. 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 Fisher's protected least significant difference (LSD) mean separation test.

RESULTS AND DISCUSSION

Results for all trials are presented in Tables 1 to 5. All trials (except Table 4) are ranked based on turf quality average. A high quality average is generally indicative of better disease resistance, a darker bright green color, higher shoot density and uniformity, finer leaf texture, lower growth habit, improved mowing quality, and less damage due to insects. Table 4 includes entries from the National Grey Leaf Spot Trial, and entries are ranked based on highest resistance to grey leaf spot.

Turf Quality

Perennial ryegrass has become a very popular species for home lawns, athletic fields, golf courses, and for overseeding purposes. Substantial improvements have been made to the overall turf quality of perennial ryegrass since the release of the first turf-type cultivars in the 1960s (Huff, 1997). Newer varieties and promising experimental selections such as RAD-PR65, RKS, Palmer V, ESP comp, PPG-PR 123, and PPG-PR 109 possess a darker green color, a more uniform appearance, increased density, lower growth habit, cleaner mowing, and a better tolerance to disease and insects. Headstart2, Shining Star, Goal Keeper II, and Laquinta had lower ratings due to traits that do not fulfill the rating requirements.

Color

Contrary to other areas of the world, dark green turfgrasses are typically more appealing to the American populace when compared to lighter green varieties. Breeding for darker green verdure in perennial ryegrass varieties is one focus of the Rutgers turfgrass breeding program. Although genetic color

of the cultivar is taken into account when assessing the overall quality rating, individual measures of the depth of green color for each cultivar was also performed (Table 5). Entries with the darkest green color were A-35, CS-20, ISG-30, and Pangea GLR, while cultivars and selections Linn, Premier, and Bar Lp 7608 had the lightest green color.

Residual Reproductive Stems

"Stemminess," or the amount of residual reproductive stems remaining in a plot after mowing, was evaluated in two trials established in 2010 (Tables 3 and 5). Ratings were taken on a 1 to 9 scale, where 9 represented a plot with little residual reproductive stems. The lack of stemminess is an attractive trait as it allows for a more consistent and visibly appealing turfgrass stand. IS-PR 469, APR 2320, and GL 74 all performed well for this trait, while Full Throttle, PST-Syn-2BRS, and Linn contained the most residual reproductive stems.

Red Thread

Red thread is an important disease of many cool-season turfgrass species. The visible signs of the pathogen are red aggregating hyphae (sclerotia) that grow out of the infected leaf tips. Extended periods of leaf wetness or high humidity can cause an abundance of infection (Tredway et al., 2001). Red thread was evaluated in June on the 2009 trial (Table 1). Disease incidence in PPG-PR 123, PSG 4SLUP2, and Repell GLS was low, while SCPR1, PPG-PR 120, and Headstart 2 was high.

Grey Leaf Spot

Grey leaf spot is another important disease where symptoms range from leaf blight to death of juvenile perennial ryegrass seedlings. Leaf blades are usually distorted and twisted at the point of infection. Grey leaf spot is prevalent during extended periods of high relative humidity and warm temperatures. In the National Grey Leaf Spot Trial (Table 4), PSRX-3701, Pick 10401, and CL 307 were all top performers, while APR 2320, Linn, and RAD-PR62 were the lowest performers.

Wear Quality

Wear tolerance is an important feature for turfgrasses because of the high demand of traffic needed for a variety of different activities. Traffic tolerant turfgrasses will allow for increased usage in any turfgrass setting. A series of wear treatments were applied to the 2010 trial (Table 2) using the wear simulator developed at Rutgers University (Bonos et al., 2001). Perennial ryegrass entries GRD5 COMP, GRD7+10 Comp, and Z 3401 had the best wear tolerance, while Goalkeeper II, La Quinta, and Caddishack II had the lowest wear tolerance.

SUMMARY

Turf type perennial ryegrass cultivars are some of the most versatile grasses available on the market today. High traffic tolerance, rapid establishment, and deep green color are extremely important traits that are in high demand in the turf grass seed industry. Although considerable improvements have been made to perennial ryegrasses, increased genetically stable resistance to diseases such as crown rust are still needed. Additionally, increased heat and drought tolerance, cold hardiness, salinity tolerance, and the ability to survive under ice sheets for extended periods are also necessary.

ACKNOWLEDGMENTS

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Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2009 at Adelphia, NJ.

	Cultivar or Selection	Turf Quality[1] 2010-2011 Avg.	Turf Quality[1] 2010 Avg.	Turf Quality[1] 2011 Avg.	Red Thread[2] June 2011	Dollar Spot[2] Aug. 2011
1	PPG-PR 123	6.4	6.6	6.3	7.3	6.7
2	PPG-PR 109	6.3	6.5	6.1	6.7	6.0
3	ESP comp	6.0	5.6	6.4	7.0	8.3
4	PPG-PR 112	5.9	6.3	5.6	5.0	6.3
5	PPG-PR 114	5.9	6.2	5.6	6.0	6.0
6	RAD-PR65	5.9	5.9	5.8	6.0	6.3
7	PPG-PR 111	5.9	6.1	5.6	5.7	6.0
8	Palmer V	5.9	5.9	5.8	6.0	5.7
9	Amazing GS	5.8	6.1	5.6	6.3	5.0
10	PR 909	5.8	5.9	5.7	6.0	6.0
11	PPG-PR 121	5.8	5.8	5.8	6.3	5.7
12	PPG-PR 105	5.8	5.6	5.9	5.3	5.7
13	RAD-PR58	5.8	5.7	5.8	6.0	5.0
14	PPG-PR 115	5.7	5.9	5.5	6.7	6.0
15	SAM comp	5.7	5.5	5.9	6.7	7.3
16	PSG 4GM1	5.7	5.5	5.9	7.0	7.3
17	RAD-PR66	5.7	5.7	5.7	5.3	6.0
18	APR 2037	5.6	5.5	5.7	6.3	6.3
19	HU1	5.6	5.5	5.7	6.0	7.0
20	Top Gun II	5.6	5.3	5.8	6.0	6.3
21	RAD-PR55R	5.6	5.6	5.5	4.7	5.3
22	PPG-PR 107	5.6	5.7	5.4	6.0	6.0
23	Soprano	5.6	5.4	5.7	5.7	6.7
24	Fiesta 4	5.6	5.6	5.5	5.3	5.7
25	Zoom	5.5	5.5	5.6	6.3	5.7
26	PSG 4MSH	5.5	5.8	5.2	6.0	5.0
27	HP1	5.5	5.4	5.5	6.3	7.7
28	Homerun	5.5	5.5	5.4	6.0	5.7
29	Exacta II	5.4	5.5	5.3	5.3	6.0
30	PST-2H20	5.4	5.4	5.4	7.0	6.7
31	PPG-PR 106	5.4	5.6	5.3	6.3	5.7
32	Pennant II	5.4	5.7	5.1	5.0	5.3
33	PST-2MAGS	5.4	5.8	4.9	6.0	4.3
34	RAD-PR60	5.4	5.4	5.4	6.3	5.3
35	PPG-PR 110	5.4	5.3	5.4	6.3	7.0

(Continued)

Table 1. Perennial ryegrass turf trial, 2009 (continued).

	Cultivar or Selection	Turf Quality[1] 2010-2011 Avg.	Turf Quality[1] 2010 Avg.	Turf Quality[1] 2011 Avg.	Red Thread[2] June 2011	Dollar Spot[2] Aug. 2011
36	PST-2AG4	5.3	5.7	5.0	5.7	5.3
37	PST-2USD-07	5.3	5.7	5.0	6.0	6.0
38	PPG-PR 113	5.3	5.4	5.3	6.0	6.0
39	PPG-PR 122	5.3	5.2	5.4	6.0	6.3
40	SCPR1	5.3	5.5	5.1	4.3	5.7
41	RAE comp	5.3	5.1	5.4	5.3	6.7
42	RAD-PR53R	5.2	5.2	5.2	6.0	6.0
43	PSG 4SLUP2	5.2	4.9	5.6	7.3	6.3
44	IG Squared	5.2	5.2	5.3	6.3	6.0
45	Buena Vista	5.2	5.5	4.9	5.7	6.0
46	Pleasure Supreme	5.2	5.4	5.0	6.0	5.7
47	PST-2DR9	5.2	5.3	5.1	6.3	6.3
48	PST-Syn-2BRT	5.2	5.5	4.9	6.7	5.7
49	PST-2NJK	5.2	5.3	5.1	5.3	6.3
50	PST-Syn-2CIT	5.2	5.5	4.9	6.3	6.3
51	SR 4600	5.2	5.1	5.2	6.7	5.3
52	RKS	5.1	5.1	5.2	6.7	6.7
53	Repell GLS	5.1	5.2	5.0	7.0	6.3
54	Hawkeye 2	5.1	5.4	4.9	5.3	6.7
55	SCPR2	5.1	5.2	5.0	6.0	6.0
56	PST-2TQL-07	5.1	5.1	5.1	6.7	6.3
57	RAD-PR46R	5.1	5.1	5.1	6.0	5.3
58	Gray Goose	5.1	5.0	5.2	6.7	6.0
59	PST-Syn-2MAG8	5.1	5.4	4.8	5.7	5.0
60	Gray Fox	5.1	5.2	5.0	6.7	6.3
61	PSG CKPN1	5.1	5.1	5.0	5.7	4.7
62	PPG-PR 108	5.1	5.3	4.8	7.7	5.7
63	PST-2R57S	5.1	5.3	4.8	6.3	6.0
64	Silver Dollar	5.1	5.2	4.9	6.3	4.7
65	MJK comp	5.1	4.6	5.5	6.7	5.3
66	Harrier	5.1	5.2	4.9	6.3	5.7
67	PST-Syn-2RLB	5.0	5.2	4.9	5.3	7.0
68	Accent II	5.0	5.3	4.7	6.0	7.0
69	PPG-PR 103	5.0	5.2	4.8	5.0	6.0
70	PST-2NKM-07	5.0	5.4	4.6	6.3	6.3

(Continued)

Table 1. Perennial ryegrass turf trial, 2009 (continued).

	Cultivar or Selection	Turf Quality[1] 2010-2011 Avg.	Turf Quality[1] 2010 Avg.	Turf Quality[1] 2011 Avg.	Red Thread[2] June 2011	Dollar Spot[2] Aug. 2011
71	PPG-PR 102	5.0	5.0	4.9	6.3	4.7
72	Protégé	5.0	4.9	5.1	5.7	5.0
73	Charismatic II	5.0	5.1	4.8	6.0	5.0
74	PST-2LGS	5.0	5.1	4.8	5.3	5.3
75	PST-204D	4.9	4.9	5.0	7.3	5.7
76	PST-2TPR	4.9	5.0	4.9	7.0	5.7
77	Panther GLS	4.9	5.1	4.8	5.0	5.7
78	Overdrive	4.9	4.7	5.1	6.0	6.3
79	Line Drive GLS	4.9	4.9	4.9	5.7	6.3
80	Applaud II	4.9	4.9	4.9	5.0	5.7
81	SR 4420	4.9	4.9	4.9	6.7	5.7
82	Revenge GLX	4.9	4.8	4.9	6.3	5.7
83	Secretariat II	4.8	5.0	4.6	4.7	5.0
84	Calypso III	4.8	4.6	5.0	6.0	4.7
85	SR 4550	4.8	4.8	4.8	7.0	5.0
86	PPG-PR 104	4.8	4.9	4.7	5.7	4.7
87	Brightstar SLT	4.8	4.8	4.7	7.0	5.0
88	Hawkeye	4.7	4.9	4.5	5.7	3.7
89	Monterey 3	4.7	4.6	4.8	5.0	6.0
90	Penguin 2	4.7	4.7	4.6	5.3	7.0
91	PSG 4SLTC	4.7	4.7	4.6	6.3	4.0
92	PPG-PR 118	4.6	4.8	4.5	6.0	5.3
93	Wind Dance 2	4.6	4.6	4.6	6.7	5.3
94	PSG PNCK1	4.6	4.7	4.5	6.7	3.3
95	Integra II	4.6	4.5	4.7	6.0	5.7
96	PST-Syn-2MIN	4.6	4.8	4.4	6.7	4.7
97	SR 4220	4.6	4.7	4.4	6.0	5.0
98	Quicksilver	4.6	4.7	4.4	5.7	3.7
99	Phenom	4.6	4.6	4.5	6.7	6.3
100	Prelude GLS	4.6	4.5	4.6	5.7	6.0
101	RAD-PR47R	4.6	4.5	4.6	5.7	4.7
102	RAD-PR49R	4.6	4.6	4.5	6.0	4.3
103	PPG-PR 117	4.5	4.6	4.5	4.3	5.3
104	KSA comp	4.5	4.4	4.6	5.3	5.7
105	PSG 4TPSP1	4.5	4.4	4.6	7.0	5.7

(Continued)

Table 1. Perennial ryegrass turf trial, 2009 (continued).

	Cultivar or Selection	Turf Quality[1] 2010-2011 Avg.	Turf Quality[1] 2010 Avg.	Turf Quality[1] 2011 Avg.	Red Thread[2] June 2011	Dollar Spot[2] Aug. 2011
106	Citation Fore	4.4	4.4	4.4	6.0	5.7
107	PSG 4SLUP3	4.4	3.9	4.9	6.7	7.0
108	Apple GL	4.4	4.5	4.3	5.7	6.3
109	PST-Syn-2BSTAR	4.4	4.4	4.4	6.7	5.3
110	PSG TPUP24	4.4	4.2	4.5	7.7	5.0
111	PPG-PR 119	4.3	4.4	4.3	6.3	5.3
112	SR 4682	4.3	4.3	4.3	6.7	6.7
113	Charismatic	4.3	4.2	4.4	6.7	6.3
114	Exacta	4.3	4.2	4.3	5.7	6.0
115	PPG-PR 101	4.2	4.0	4.4	5.0	6.7
116	APR 1915	4.2	4.1	4.3	5.3	6.0
117	SCPR3	4.2	4.4	4.0	6.3	5.3
118	STR 4TPCS	4.2	4.1	4.2	6.7	5.3
119	PSG 4TPSP2	4.2	4.2	4.1	5.3	4.7
120	Affirmed	4.2	4.1	4.2	5.7	5.7
121	Racer 2	4.1	4.0	4.2	5.3	5.3
122	Calypso II	4.0	3.8	4.2	6.0	5.7
123	Churchill	4.0	3.9	4.1	6.3	5.7
124	Shining Star II	3.9	3.9	3.9	5.0	6.7
125	Caddieshack II	3.7	3.6	3.8	5.0	6.7
126	Goal Keeper II	3.6	3.6	3.7	6.3	6.3
127	Shining Star	3.6	3.7	3.6	5.3	5.0
128	PPG-PR 120	3.5	3.7	3.2	4.0	6.0
129	Laquinta	3.4	3.3	3.6	6.0	6.0
130	Headstart 2	4.9	5.1	4.8	4.7	5.0
	LSD at 5% =	0.6	0.8	0.7	1.9	1.8

[1]9 = best turf quality
[2]9 = least disease

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2010 at Adelphia, NJ.

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Grey Leaf Spot[2] Oct. 2010	Wear Quality[3] Aug. 2011	Wear Quality[3] Sept. 2011	Wear Quality[3] 2011 Avg.
1	GRD5 COMP	6.6	8.3	4.7	5.7	5.2
2	Rinova	6.5	8.0	4.3	5.3	4.8
3	GRD6 COMP	6.5	8.3	4.7	5.3	5.0
4	CL 10401	6.5	9.0	5.0	5.0	5.0
5	Z 3401	6.4	9.0	4.7	5.3	5.0
6	GRD7+10 COMP	6.4	8.3	4.7	5.7	5.2
7	PSRX 3701	6.3	9.0	4.3	4.7	4.5
8	Pizzazz 2 GLR	6.3	7.7	4.3	4.7	4.5
9	Pangea GLR	6.1	8.7	3.3	4.3	3.8
10	Derby Xtreme	6.1	7.7	3.7	4.3	4.0
11	GRD2 COMP	6.0	8.3	4.0	4.3	4.2
12	CL 11601	6.0	8.7	4.7	4.7	4.7
13	CL 301	6.0	8.3	4.0	4.7	4.3
14	4 CAGL	5.9	7.3	4.3	5.0	4.7
15	ROP COMP	5.9	7.7	4.7	5.0	4.8
16	DUM COMP	5.9	6.3	4.0	5.0	4.5
17	CL 307	5.7	8.7	3.3	4.3	3.8
18	GRD3 COMP	5.7	7.3	4.3	4.7	4.5
19	GRD4 COMP	5.6	8.3	4.0	4.7	4.3
20	Fiesta 4	5.6	7.0	4.0	4.7	4.3
21	Prelude GLS	5.5	7.7	3.0	3.3	3.2
22	Dasher 3	5.5	7.3	4.3	4.7	4.5
23	Protégé	5.4	7.3	3.7	4.0	3.8
24	Revenge GLX	5.4	6.7	4.0	5.0	4.5
25	Sox Fan	5.4	7.3	3.3	4.0	3.7
26	PST-2MAGS	5.3	7.7	4.0	3.3	3.7
27	Harrier	5.3	7.3	3.7	4.3	4.0
28	Line Drive GLS	5.3	7.3	4.7	4.3	4.5
29	IG Squared	5.3	6.3	4.3	4.3	4.3
30	Panther GLS	5.2	7.0	3.7	4.0	3.8
31	Zoom	5.2	6.3	3.3	3.7	3.5
32	SR 4600	5.2	7.7	3.0	3.7	3.3
33	Repell GLS	5.2	7.3	3.7	4.0	3.8
34	4 MSH	5.1	7.0	3.7	4.0	3.8
35	Applaud II	5.1	6.3	4.0	4.0	4.0

(Continued)

Table 2. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Grey Leaf Spot[2] Oct. 2010	Wear Quality[3] Aug. 2011	Wear Quality[3] Sept. 2011	Wear Quality[3] 2011 Avg.
36	PST-2DR9	5.0	6.7	3.7	3.7	3.7
37	Paragon GLR	4.9	7.0	4.0	3.7	3.8
38	PST-2NKM	4.9	6.7	4.0	3.7	3.8
39	Manhattan 5 GLR	4.8	7.0	4.3	3.7	4.0
40	PST-2NJK	4.8	6.7	4.0	3.7	3.8
41	PST-2GSB	4.8	6.0	4.3	4.0	4.2
42	PST-2K9	4.8	5.3	3.3	3.3	3.3
43	Over Drive	4.6	.	3.7	3.7	3.7
44	08-14 Lp	4.6	4.7	3.3	3.7	3.5
45	GRD1 COMP	4.6	8.3	2.7	3.3	3.0
46	PST-2R57S	4.5	7.0	3.7	3.3	3.5
47	Dasher 3	4.5	.	2.7	2.7	2.7
48	Integra II	4.4	7.0	3.3	3.3	3.3
49	Silver Dollar	4.3	4.3	3.3	3.7	3.5
50	Monterey 3	4.3	3.7	3.7	3.3	3.5
51	Top Gun II	4.2	3.3	3.3	3.7	3.5
52	Palmer V	4.2	5.0	3.7	3.3	3.5
53	Accent II	4.0	3.0	3.7	3.3	3.5
54	08-16 Lp	3.8	3.0	3.3	3.7	3.5
55	07-12 PR	3.8	3.3	3.0	3.0	3.0
56	4 STDSP	3.8	1.7	3.3	3.7	3.5
57	07-4 PR	3.6	3.7	3.3	3.0	3.2
58	08-12 Lp	3.3	3.0	3.0	3.3	3.2
59	La Quinta	2.9	3.3	3.0	2.7	2.8
60	Caddieshack II	2.9	3.0	3.0	3.0	3.0
61	Goalkeeper II	2.6	2.7	3.0	2.3	2.7
	LSD at 5% =	0.7	1.2	1.1	1.1	1.0

[1]9 = best turf quality
[2]9 = least disease
[3]9 = best wear tolerance

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2010 at Adelphia, NJ.

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Turf Quality[1] Sept. 2010	Stemminess[2] May 2011	Summer Leaf Spot[3] Aug. 2011
1	GRD 5 Comp	7.2	5.0	4.7	7.3
2	Rinova	7.0	6.0	8.0	6.7
3	GRD 6 Comp	7.0	4.7	6.0	6.7
4	DUM Comp	6.9	3.3	5.0	7.3
5	PSD 4J6-1	6.8	3.3	6.0	6.7
6	ROB HT-R12	6.7	4.0	5.3	7.7
7	ROP Comp	6.7	5.7	4.3	7.0
8	Exacta II GLSR	6.6	6.7	6.3	6.0
9	GRD 3 Comp	6.6	5.0	4.3	7.7
10	ROB 2010	6.6	4.3	5.7	8.0
11	Zoom	6.6	6.3	5.7	6.3
12	ROB HT-R6	6.6	3.7	4.7	6.7
13	ROB HT-R14	6.5	4.3	5.0	7.7
14	PSG 4J5-16	6.5	4.0	5.0	6.7
15	20-10 Lp Bulk	6.5	3.3	4.0	6.3
16	Pennant II	6.5	5.7	5.3	6.7
17	ROB HT-R3	6.5	3.7	4.3	6.0
18	PPG-PR-130	6.4	3.7	5.0	6.7
19	PPG-PR-132	6.4	4.3	4.7	7.0
20	ROB HT-R5	6.4	3.3	5.7	7.0
21	Pershing	6.4	6.0	5.3	6.7
22	PSG 4J2-14	6.3	3.7	5.0	6.0
23	Prelude GLS	6.3	5.7	5.0	5.0
24	Uno	6.2	5.7	5.7	7.0
25	C-72	6.2	3.7	5.3	3.7
26	Revenge GLR	6.2	5.3	4.3	5.0
27	PSG 4SLD334	6.2	4.7	5.7	6.3
28	34-10 FC 1	6.2	4.0	4.3	5.7
29	ROB HT-R13	6.2	4.3	5.7	6.0
30	MSP 3935	6.2	4.0	5.7	6.3
31	ROB HT-R1	6.2	4.0	5.0	6.3
32	ROB HT-R15	6.2	3.7	6.3	6.0
33	PST-2CITM	6.1	4.0	5.0	6.7
34	HP1	6.1	6.7	4.3	6.3
35	PSG 4J7-15	6.1	4.0	4.0	6.3

(Continued)

Table 3. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Turf Quality[1] Sept. 2010	Stemminess[2] May 2011	Summer Leaf Spot[3] Aug. 2011
36	Radiance	6.1	6.7	5.0	6.0
37	GRD 2 Comp	6.0	5.0	3.7	6.7
38	2-10 Lp Bulk	6.0	3.0	5.0	6.7
39	34-10 FC 4	6.0	3.7	4.0	5.7
40	PPG-PR-125	6.0	4.0	5.3	5.7
41	PPG-PR-141	6.0	3.3	4.3	6.3
42	PPG-PR-131	6.0	2.7	4.7	6.7
43	GRD 4 Comp	6.0	5.0	3.3	5.7
44	ROB HT-R7	6.0	3.7	6.0	5.0
45	34-10 FC 2	6.0	3.7	4.0	5.0
46	Radiant 2	6.0	7.0	5.3	6.3
47	GL2	5.9	7.7	5.3	4.3
48	SCPR 1	5.9	6.7	5.7	6.7
49	34-10 FC 3	5.9	3.3	3.3	5.0
50	Charismatic II GLSR	5.8	7.3	4.3	5.7
51	C-35	5.8	6.3	5.3	4.7
52	PST-Syn-2BRS	5.8	3.3	2.3	2.7
53	PSG 4J8-51	5.8	4.0	5.7	6.0
54	Sox Fan	5.8	6.0	4.7	7.0
55	Express II	5.7	6.0	6.7	4.3
56	IG Squared	5.7	7.0	6.0	5.7
57	Protégé GLR	5.7	6.7	5.0	5.0
58	PSG 4SLD1257	5.6	3.3	4.3	5.3
59	Blazer 4	5.6	6.0	5.0	4.3
60	Accent II	5.6	6.3	5.7	6.0
61	SR 4600	5.6	7.7	5.0	4.0
62	34-10 FC Bulk	5.6	3.7	3.3	5.0
63	Secretariat II GLSR	5.6	6.7	4.3	5.7
64	21-10 Lp Bulk	5.5	3.7	4.7	5.0
65	HU1	5.5	6.3	5.3	5.0
66	Transformer	5.5	7.3	6.0	5.0
67	Panther GLS	5.5	5.7	5.0	4.7
68	Repell GLS	5.5	6.3	5.0	2.7
69	PST-Syn-2ACE	5.4	3.3	3.0	5.0
70	Paragon GLR	5.4	6.3	5.0	4.7

(Continued)

Table 3. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Turf Quality[1] Sept. 2010	Stemminess[2] May 2011	Summer Leaf Spot[3] Aug. 2011
71	Applaud II	5.4	5.7	5.7	5.3
72	Sun Kissed	5.4	6.3	5.7	2.7
73	Prelude GLS	5.4	5.0	4.3	5.7
74	PST-2GSB	5.4	6.0	5.3	4.7
75	Montery 3	5.3	5.7	6.3	5.0
76	Top Gun II	5.3	7.0	6.7	4.3
77	Silver Dollar	5.2	5.7	5.3	3.0
78	Wind Dancer	5.2	8.0	6.3	2.0
79	Manhattan 5 GLR	5.2	6.0	5.0	5.7
80	Harrier	5.2	6.7	5.0	6.3
81	73-10 Lp	5.2	4.7	3.3	4.7
82	08-16 Lp	5.2	3.3	4.7	5.7
83	PST-2PET	5.2	3.0	5.0	5.7
84	Hawkeye 2	5.1	6.3	5.3	4.3
85	Pennant III	5.1	7.0	5.7	3.3
86	Stanton	5.1	5.7	5.7	4.3
87	07-4 PR	5.1	5.7	6.0	4.3
88	Prelude IV	5.0	5.7	4.3	5.7
89	Calypso III	4.9	7.3	5.7	1.7
90	SR 4420	4.9	7.3	5.3	4.0
91	Line Drive GLS	4.9	6.3	4.7	4.7
92	PST-Syn-2RLP	4.9	4.3	4.3	6.7
93	08-14 Lp	4.9	3.0	4.7	2.7
94	Artic Green	4.9	6.3	5.3	4.0
95	PST-2SSP	4.8	3.7	4.0	4.7
96	PST-2RDY	4.8	4.7	4.7	5.0
97	Headstart 2	4.8	5.3	5.0	4.3
98	Citation Fore	4.8	6.7	4.3	4.0
99	Palmer V	4.7	5.7	4.7	3.3
100	Hawkeye	4.7	4.3	4.7	2.3
101	Integra II	4.7	6.7	4.0	3.7
102	Palmer III	4.7	6.7	5.7	4.0
103	PST-Syn-2ACL	4.7	2.7	5.0	5.0
104	53-10 Lp	4.6	3.7	5.3	4.3
105	Charismatic	4.6	7.3	5.0	3.0

(Continued)

Table 3. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Turf Quality[1] Sept. 2010	Stemminess[2] May 2011	Summer Leaf Spot[3] Aug. 2011
106	SR 4220	4.6	6.0	5.3	3.0
107	HO Lp Bulk	4.6	3.3	4.3	4.0
108	APR 2105	4.6	6.3	5.3	1.3
109	PSG 4SLD729	4.6	3.0	3.3	4.0
110	54-10LP	4.5	4.7	5.7	3.3
111	68-10 Lp	4.5	3.7	5.7	4.0
112	PSG 4DSPOP2	4.4	3.3	4.0	3.3
113	PSG 4DSB9-4	4.4	4.0	4.0	6.0
114	SR 4682	4.3	6.7	5.7	5.0
115	Penguin 2	4.3	6.3	5.7	2.7
116	57-10 Lp	4.3	3.7	5.0	4.3
117	PST-3IP	4.3	3.7	3.7	1.7
118	Double Time	4.3	6.3	3.7	4.0
119	Shining Star II	4.2	7.7	2.7	3.7
120	APR 1915	4.2	5.3	4.3	3.0
121	Eliminator GT	4.2	3.0	5.7	1.7
122	31-10 Lp	4.1	3.0	5.0	4.0
123	STR 4TPC	4.0	6.0	3.0	4.0
124	Affirmed	4.0	6.7	4.0	2.7
125	44-10 FC Bulk	3.9	3.0	4.3	3.3
126	Churchill	3.8	7.0	5.0	2.0
127	LaQuinta	3.8	7.0	4.7	4.3
128	Caddieshack II	3.8	6.3	4.3	4.0
129	Quebec	3.7	5.3	4.7	2.3
130	44-10 FC 1	3.7	3.0	4.3	3.0
131	Shining Star	3.7	6.7	3.3	3.7
132	44-10 FC 2	3.5	3.0	3.0	2.3
133	44-10 FC 4	3.5	3.0	4.7	2.7
134	Goalkeeper II	3.4	6.0	5.3	5.3
135	PST-2STOL	3.4	4.3	6.0	3.3
136	44-10 FC 3	3.4	3.7	2.7	2.7
137	Dasher 3	3.2	.	4.7	2.0
138	Full Throttle	1.5	7.7	1.0	3.3

(Continued)

Table 3. Perennial ryegrass turf trial, 2010 (continued).

Cultivar or Selection	Turf Quality[1] 2011 Avg.	Turf Quality[1] Sept. 2010	Stemminess[2] May 2011	Summer Leaf Spot[3] Aug. 2011
LSD at 5% =	0.7	1.4	1.4	1.9

[1]9 = best turf quality
[2]9 = least stemminess
[3]9 = least disease

Table 4. Performance of perennial ryegrass cultivars and selections in a national turf trial established in August 2010 at Adelphia, NJ.

	Cultivar or Selection	Grey Leaf Spot[1] 2011 Avg.	Grey Leaf Spot[1] 2 Sept. 2011	Grey Leaf Spot[1] 13 Sept. 2011	Turf Quality[2] 22 Sept. 2011	Green Cover[3] (%) 25 Aug. 2011
1	SR 4650	8.3	8.7	8.0	7.7	91.7
2	CL 307	8.2	8.7	7.7	7.0	85.0
3	Pick 10401	8.2	8.0	8.3	7.7	84.0
4	Sideways	8.0	8.3	7.7	6.7	92.3
5	PPG-PR 134	7.8	8.3	7.3	6.7	83.3
6	PPG-PR 164	7.8	8.3	7.3	6.7	90.0
7	JR-178	7.7	8.0	7.3	7.3	83.3
8	CL 11601	7.5	8.0	7.0	6.7	77.3
9	Pangea GLR	7.5	8.0	7.0	6.3	85.7
10	PPG-PR 165	7.5	7.7	7.3	6.3	86.7
11	IS-PR 489	7.5	7.7	7.3	6.7	86.7
12	Pizzazz 2 GLR	7.3	8.0	6.7	6.0	84.7
13	PPG-PR 121	7.3	7.7	7.0	6.3	90.7
14	PPG-PR 137	7.3	7.3	7.3	5.7	86.7
15	Bonneville	7.3	7.7	7.0	6.3	79.0
16	S85	7.2	7.3	7.0	7.3	78.3
17	IS-PR 488	7.2	7.3	7.0	6.7	85.0
18	Octane	7.2	7.7	6.7	6.7	90.0
19	PPG-PR 135	7.0	7.7	6.3	6.3	73.3
20	LTP-RAE	6.8	7.3	6.3	6.7	83.3
21	PPG-PR 143	6.8	7.3	6.3	6.0	90.0
22	PPG-PR 138	6.7	7.3	6.0	6.0	92.3
23	PPG-PR 142	6.7	7.3	6.0	6.0	86.7
24	PRX-4GM1	6.7	7.3	6.0	4.7	83.3
25	PPG-PR 133	6.5	6.7	6.3	6.3	81.7
26	IS-PR 492	6.5	7.0	6.0	6.0	76.7
27	Rio Vista	6.5	7.0	6.0	5.3	75.0
28	PPG-PR 140	6.3	6.3	6.3	5.7	85.0
29	PPG-PR 128	6.2	6.3	6.0	5.0	85.0
30	PST-2MAGS	6.2	6.7	5.7	5.3	75.0
31	PSRX 4CAGL	6.2	7.0	5.3	4.7	85.0
32	CST	6.0	6.7	5.3	5.0	76.7
33	Sox Fan	6.0	7.0	5.0	5.0	86.7
34	IS-PR 469	5.8	6.7	5.0	5.7	82.3
35	IS-PR 487	5.8	5.7	6.0	5.3	86.7

(Continued)

Table 4. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Grey Leaf Spot[1] 2011 Avg.	Grey Leaf Spot[1] 2 Sept. 2011	Grey Leaf Spot[1] 13 Sept. 2011	Turf Quality[2] 22 Sept. 2011	Green Cover[3] (%) 25 Aug. 2011
36	IS-PR 491	5.8	7.0	4.7	4.7	80.0
37	PPG-PR 136	5.7	6.0	5.3	5.7	75.0
38	Fiesta 4	5.5	6.3	4.7	4.7	76.7
39	IS-PR 463	5.5	6.0	5.0	4.3	73.3
40	Rinovo	5.3	6.0	4.7	4.0	86.7
41	SRX-4RHD	5.2	5.7	4.7	5.0	86.7
42	PST-2BNS	5.2	6.0	4.3	4.7	76.7
43	APR 2445	5.0	5.7	4.3	4.3	75.0
44	IS-PR 409	5.0	5.7	4.3	5.7	78.3
45	PST-2NKM	5.0	6.0	4.0	4.0	83.3
46	APR 2036	4.8	5.7	4.0	3.3	78.3
47	DLF LGD-3026	4.8	5.3	4.3	4.0	85.0
48	Palmer V	4.8	5.3	4.3	3.7	86.7
49	DLF LGD-3022	4.7	5.0	4.3	4.0	85.0
50	Haven	4.7	5.0	4.3	3.7	86.7
51	2NJK	4.5	5.3	3.7	4.0	83.3
52	PST-2MG7	4.3	5.0	3.7	4.0	68.3
53	PST-2K9	4.3	5.0	3.7	3.0	73.3
54	SRX-4MSH	4.2	4.3	4.0	3.3	80.0
55	PST-2ACR	3.8	4.7	3.0	2.7	75.0
56	Pick 4DFHM	3.7	4.0	3.3	2.7	83.3
57	Uno	3.5	4.0	3.0	3.0	76.7
58	Dominator	3.5	4.0	3.0	3.0	68.3
59	P02	3.3	4.0	2.7	2.3	80.0
60	PST-2DR9	3.3	4.0	2.7	3.3	71.7
61	ISG-36	3.2	4.0	2.3	2.3	75.0
62	CS-PR66	3.0	3.7	2.3	2.0	71.7
63	RAD-PR55R	3.0	3.7	2.3	2.3	75.0
64	IS-PR 479	3.0	3.7	2.3	2.0	78.3
65	PST-204D	2.8	4.0	1.7	2.0	85.0
66	Sienna	2.7	3.0	2.3	2.0	76.7
67	CS-20	2.7	3.7	1.7	1.7	65.0
68	ISG-31	2.7	3.3	2.0	2.0	76.7
69	A-35	2.7	3.7	1.7	1.7	66.7
70	PST-2TQL	2.7	3.7	1.7	2.0	75.0

(Continued)

Table 4. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Grey Leaf Spot[1] 2011 Avg.	Grey Leaf Spot[1] 2 Sept. 2011	Grey Leaf Spot[1] 13 Sept. 2011	Turf Quality[2] 22 Sept. 2011	Green Cover[3] (%) 25 Aug. 2011
71	GO-PR60	2.7	3.3	2.0	1.7	83.3
72	BAR Lp 10970	2.5	3.0	2.0	2.0	81.7
73	Insight	2.3	2.7	2.0	1.3	85.0
74	Brightstar SLT	2.3	3.0	1.7	1.3	73.3
75	BAR Lp 10969	2.3	3.0	1.7	1.7	81.7
76	GO-G37	2.3	3.3	1.3	1.7	66.7
77	Allante	2.2	2.7	1.7	1.7	85.0
78	Mach I	2.2	3.0	1.3	1.3	85.7
79	BAR Lp 10972	2.0	2.7	1.3	1.7	66.7
80	DLF LGT 4182	2.0	2.7	1.3	1.3	65.0
81	ISG-30	2.0	3.0	1.0	1.3	71.7
82	GO-DHS	1.8	2.7	1.0	1.0	73.3
83	BAR Lp 7608	1.7	2.0	1.3	1.3	71.7
84	Pinnacle	1.7	2.3	1.0	1.0	70.0
85	JR-192	1.5	2.0	1.0	1.0	68.3
86	RAD-PR62	1.3	1.7	1.0	1.0	63.3
87	Linn	1.2	1.3	1.0	1.0	65.0
88	APR 2320	1.2	1.3	1.0	1.0	71.7
	LSD at 5% =	1.1	1.4	1.2	1.3	36.2 ns

[1]9 = least disease
[2]9 = best turf quality
[3]100% = full turf cover

Table 5. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2010 at Adelphia, NJ.

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Cover[2] (%) 29 Sept. 2011	Stemminess[3] 1 June 2011	Brown Patch[4] 29 July 2011	Color[5] 27 Sept. 2011
1	IS-PR 469	7.6	70.0	9.0	5.7	7.7
2	Pick 10401	7.4	86.7	7.0	7.3	6.3
3	PPG-PR 164	7.4	86.7	7.0	6.3	7.0
4	Pangea GLR	7.2	86.7	6.0	6.3	8.7
5	IS-PR 491	7.2	71.7	7.0	6.0	7.7
6	Rinovo	7.1	88.3	7.3	7.0	7.0
7	GO-PR60	7.0	73.3	7.3	4.3	8.3
8	IS-PR 409	7.0	70.0	7.0	5.0	7.7
9	SR 4650	7.0	91.7	6.3	5.7	7.0
10	IS-PR 463	6.9	80.0	6.3	6.7	7.7
11	PPG-PR 136	6.9	71.7	5.3	6.0	7.3
12	PPG-PR 121	6.9	86.7	6.0	5.7	6.7
13	S85	6.7	80.0	5.0	5.0	7.0
14	PPG-PR 165	6.7	81.7	6.7	7.0	6.7
15	APR 2445	6.7	71.7	6.3	4.7	7.3
16	JR-178	6.7	85.0	6.0	3.7	6.3
17	Rio Vista	6.7	80.0	5.7	4.7	7.3
18	SRX-4RHD	6.7	80.0	5.7	5.3	6.7
19	IS-PR 492	6.6	75.0	5.7	5.7	7.0
20	Sienna	6.6	86.7	8.3	5.7	6.0
21	RAD-PR55R	6.6	75.0	6.3	3.7	8.7
22	CL 307	6.5	85.0	4.3	4.3	6.7
23	LTP-RAE	6.5	75.0	7.0	4.7	7.0
24	CS-PR66	6.4	68.3	7.0	4.0	7.7
25	Fiesta 4	6.4	83.3	5.7	4.0	8.0
26	IS-PR 487	6.4	71.7	6.7	6.3	5.7
27	PPG-PR 134	6.4	78.3	5.7	5.7	6.3
28	PST-2BNS	6.4	81.7	7.0	5.7	4.7
29	Mach I	6.3	78.3	6.7	3.7	7.7
30	PPG-PR 133	6.3	76.7	5.3	4.7	6.3
31	APR 2036	6.3	73.3	7.3	5.0	7.0
32	APR 2320	6.3	78.3	9.0	3.0	6.7
33	Pizzazz 2 GLR	6.3	85.0	5.7	5.0	7.3
34	Insight	6.2	85.0	8.7	6.3	5.7
35	IS-PR 489	6.2	75.0	4.3	4.3	7.7

(Continued)

Table 5. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Cover[2] (%) 29 Sept. 2011	Stemminess[3] 1 June 2011	Brown Patch[4] 29 July 2011	Color[5] 27 Sept. 2011
36	PPG-PR 138	6.2	81.7	6.3	3.7	7.0
37	PSRX 4CAGL	6.2	78.3	5.3	3.7	8.0
38	Sideways	6.2	80.0	4.7	4.7	6.3
39	BAR Lp 10970	6.1	76.7	8.3	4.7	6.3
40	IS-PR 479	6.1	71.7	7.3	4.0	8.0
41	Octane	6.1	91.7	5.3	4.3	6.3
42	Dominator	6.1	80.0	4.7	3.7	7.3
43	Allante	6.1	88.3	7.7	6.0	5.0
44	PPG-PR 137	6.1	81.7	5.0	5.0	6.3
45	PRX-4GM1	6.1	83.3	5.0	5.3	6.3
46	PST-2MAGS	6.0	76.7	4.3	3.3	7.7
47	IS-PR 488	6.0	66.7	5.3	5.0	6.3
48	PST-2K9	5.9	81.7	5.3	4.3	6.3
49	Uno	5.9	86.7	6.0	5.3	6.3
50	DLF LGD-3026	5.9	81.7	4.3	2.3	8.0
51	PPG-PR 135	5.8	75.0	4.3	4.7	5.7
52	PPG-PR 142	5.8	78.3	4.7	4.0	5.3
53	PPG-PR 143	5.8	78.3	5.0	4.3	6.0
54	Sox Fan	5.7	85.0	4.7	4.7	6.3
55	RAD-PR62	5.7	73.3	6.0	3.7	7.0
56	SRX-4MSH	5.7	78.3	6.0	5.3	5.3
57	CST	5.7	68.3	5.3	3.7	5.0
58	DLF LGD-3022	5.7	88.3	4.0	4.7	5.3
59	2NJK	5.6	80.0	3.7	4.0	5.7
60	CL 11601	5.6	90.0	4.0	5.0	6.0
61	JR-192	5.6	71.7	8.0	5.0	5.3
62	Palmer V	5.6	88.3	6.0	3.7	6.7
63	A-35	5.5	70.0	8.3	3.3	9.0
64	BAR Lp 10969	5.4	75.0	5.3	5.0	5.0
65	GO-G37	5.4	76.7	5.3	3.7	8.7
66	Bonneville	5.4	75.0	3.3	4.7	6.0
67	PPG-PR 128	5.4	78.3	4.7	4.3	5.0
68	PST-2MG7	5.4	78.3	4.0	2.7	7.7
69	ISG-30	5.3	75.0	5.3	2.7	8.7
70	PST-204D	5.3	83.3	4.3	2.7	7.0

(Continued)

Table 5. Perennial ryegrass turf trial, 2010 (continued).

	Cultivar or Selection	Turf Quality[1] 2011 Avg.	Cover[2] (%) 29 Sept. 2011	Stemminess[3] 1 June 2011	Brown Patch[4] 29 July 2011	Color[5] 27 Sept. 2011
71	ISG-36	5.3	75.0	6.3	2.3	8.3
72	Haven	5.3	85.0	4.7	4.7	5.0
73	PPG-PR 140	5.2	75.0	5.7	4.3	4.7
74	PST-2NKM	5.2	80.0	4.0	5.7	5.7
75	BAR Lp 10972	5.1	70.0	6.0	3.0	7.0
76	PST-2DR9	5.1	85.0	3.7	3.3	6.0
77	PST-2TQL	5.1	85.0	5.7	4.0	6.7
78	CS-20	4.9	73.3	5.3	3.0	9.0
79	DLF LGT 4182	4.8	66.7	4.7	3.7	8.0
80	PST-2ACR	4.8	76.7	3.0	3.7	7.3
81	Pick 4DFHM	4.7	78.3	4.0	3.7	5.0
82	ISG-31	4.7	80.0	4.7	2.7	8.3
83	P02	4.6	70.0	4.0	3.7	6.0
84	Brightstar SLT	4.5	85.0	4.3	4.0	4.7
85	GO-DHS	4.4	78.3	5.7	2.7	8.7
86	BAR Lp 7608	4.0	76.7	5.7	3.0	4.0
87	Pinnacle	2.9	90.0	4.3	3.3	1.0
88	Linn	1.0	86.7	1.0	1.3	1.0
	LSD at 5% =	0.8	7.8	1.5	1.7	1.3

[1]9 = best turf quality
[2]100% = full turf cover
[3]9 = least amount of stemminess
[4]9 = least disease
[5]9 = best turf color

Table 6. Yearly nitrogen (N) applied and mowing height (Ht) on perennial ryegrass tests established at Adelphia, NJ.

	2010		2011	
	N[1]	Ht[2]	N	Ht
Table 1 (2009)	2.75	1.5	1.75	1.5
Table 2 (2010)			2.00	1.5
Table 3 (2010)			2.25	1.5
Table 4 (2010)			3.00	1.5
Table 5 (2010)			3.25	1.5

[1] Annual N applied (lb/1000 ft^2)
[2] Mowing height in inches