

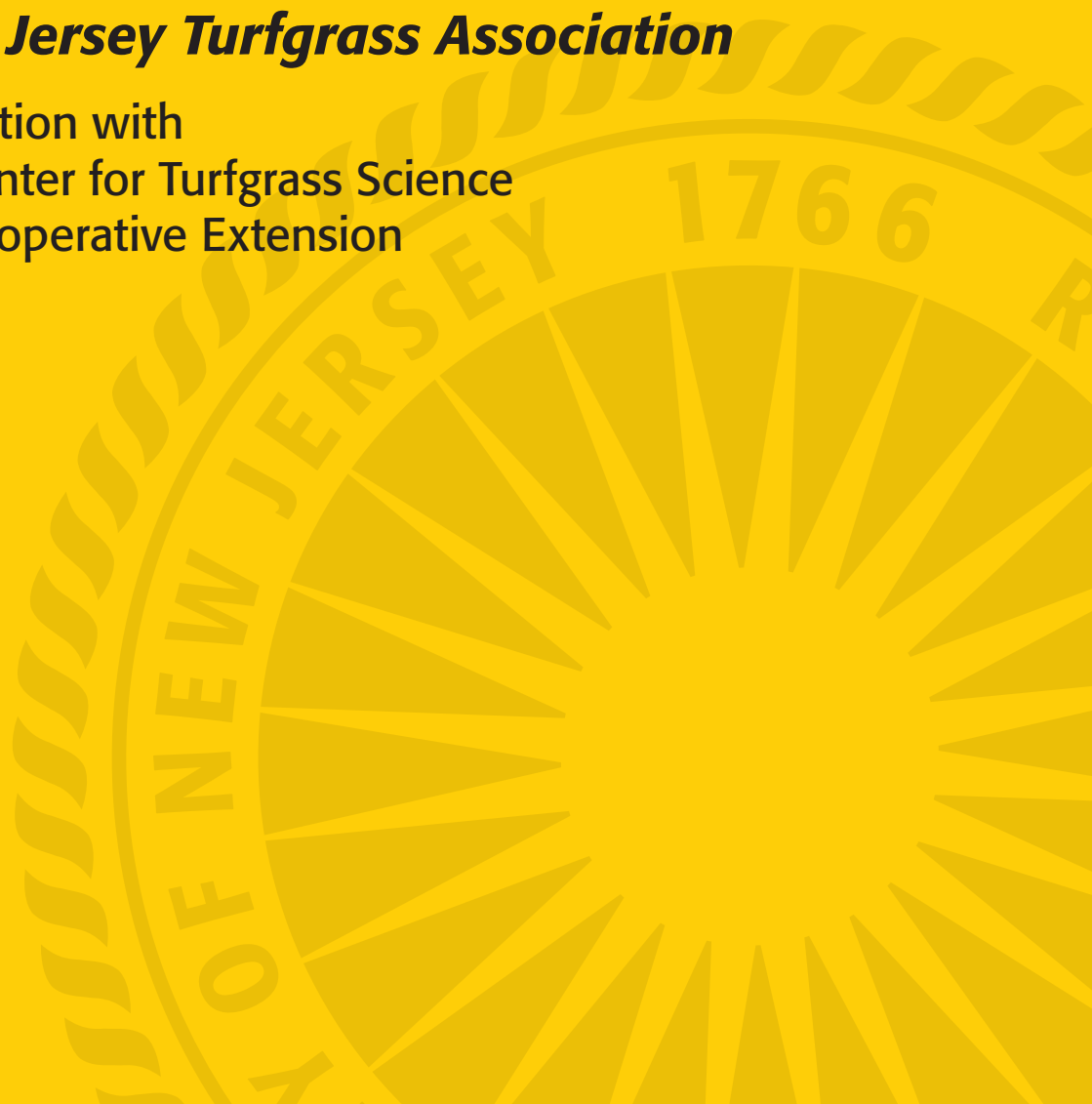
# RUTGERS

New Jersey Agricultural  
Experiment Station

## **2012 Turfgrass Proceedings**

***The New Jersey Turfgrass Association***

In Cooperation with  
Rutgers Center for Turfgrass Science  
Rutgers Cooperative Extension



# **2012 RUTGERS TURFGRASS PROCEEDINGS**

of the

## **GREEN EXPO Turf and Landscape Conference**

**December 4-6, 2012**

**Trump Taj Mahal**

**Atlantic City, New Jersey**

The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, 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 2012 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.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to Barbara Fitzgerald, Anne Diglio, and Ann Jenkins for administrative and secretarial support.

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 of time. 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 must 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 grasses 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 to 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 by the release of 'Pennfine' in 1970. Today, many more cultivars have been developed. These 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, darker green color, more uniform leaf texture, as well as 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 at 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 (*Puccinia coronata*), stem rust (*Puccinia graminis*), red thread (*Laetisaria fuciformis*), grey leaf spot (*Magnaporthe grisea*), and dollar spot (*Sclerotinia homoeocarpa*). Crown rust has a very complex life cycle that uses two very different hosts to complete. 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 (Smiley et al., 2005). Stem rust is also an important disease of perennial ryegrass and 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 identifiable as a cobweb-like mycelium. Grey leaf spot is an important disease of new perennial ryegrass turf stands and old stands with poor air circulation. This disease can be identified by the twisting and distortion of leaves at the point of infection (Smiley et al., 2005). Breeding

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efforts are currently underway to improve resistance to all of these detrimental pathogens.

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 the *Neotyphodium* endophyte can convey biotic and abiotic stress tolerance in many perennial ryegrasses (van Zijll de Jong et al., 2008). The utilization of ryegrass cultivars containing endophytes will most likely reduce damage from above ground feeding insects, such as billbugs, sod webworm, and chinch bugs, due to the production of toxins by the fungus (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 imminent and sustainable turfgrass management is becoming more popular. The endophyte is transferred via seed to offspring, thus seed must be stored under cool dry conditions post-harvest. Turfgrass breeders and researchers are continuing to research the beneficial role of endophytes in turfgrasses.

## PROCEDURES

Four perennial ryegrass trials were established in 2010 (Tables 1 to 4), one trial was established in 2011 (Table 5), and one trial was established in 2012 (Table 6). All trials were seeded at Adelphia, NJ and hand sown with 0.88 oz of seed into 3 x 5 ft plots (3.7 lb seed per 1000 ft<sup>2</sup>). Two of the trials (Tables 3 and 4) were seeded at a rate of 1.42 oz of seed into 4 x 6 ft plots (3.7 lb seed per 1000 ft<sup>2</sup>); Tables 3 and 4 include entries in the National Perennial Ryegrass Test, sponsored by the National Turfgrass Evaluation Program (NTEP).

All trials were arranged in a randomized complete block design with three replications, and plots had a six-inch unseeded border to limit contamination. A spring application of Dimension (dithiopyr) was used to control crabgrass on all trials in the month of April. An application of Merit (imidacloprid) was made to all trials in June to control grub populations. Banvel (dicamba) was applied in October to all trials except the 2010 trial (Table 2) and the 2011 trial (Table 5) for control of broadleaf weeds. Three-way ester (MCPA, triclopyr, and dicamba) was used on all trials except the 2010 trial (Table 2) to control broad leaf weeds. Two late summer applications of Tenacity (mesotri-

one) were used on the 2010 NTEP trial (Table 4) and 2012 trial (Table 6) to control weeds.

The annual rate of nitrogen (N) and mowing height for each trial is presented in Table 7. Single applications of fertilizer did not exceed 1.0 lb N per 1000 ft<sup>2</sup>. The amount and timing of N 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 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 complete ground cover. 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 6. All trials (except Table 6) are ranked based on their overall turf quality average. A high quality average is generally indicative of better disease resistance, a darker bright green color, higher shoot density, uniformity, finer leaf texture, lower growth habit, improved mowing quality, and less damage due to insects. Table 6 is ranked based on highest gray leaf spot resistance.

### 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 on 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 Pangea GLR, Banfield, Bandalore, and Rinovo

possess a darker green color, a more uniform appearance, increased density, lower growth habit, cleaner mowing, and a better tolerance to disease and insects. Goalkeeper II, Full Throttle, Pinnacle, and Linn had lower quality ratings.

## 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 genetic green color for each cultivar was also performed (Table 3). Entries with the darkest green color were Pangea GLR, Palmer V, and Pizzazz 2 GLR; those with the lightest green color were Linn, Pinnacle, and Brightstar SLT.

## Red Thread

Red thread is an important disease of many cool-season turfgrass species; extended periods of leaf wetness or high humidity can cause an abundance of infection (Tredway et al., 2001). A rating of red thread was performed in May on one 2010 Trial (Table 1) and in May and June on the other 2010 trial (Table 2). Karma, La Quinta, Revenge GLR, and Silver Dollar had the least incidence of the pathogen, while SR 4600, Rinova, Goalkeeper II, and Top Gun II had a high prevalence of red thread.

## Grey Leaf Spot

Gray leaf spot, another important disease that causes a leaf blight that can kill juvenile seedlings of perennial ryegrass, is prevalent during extended periods of high relative humidity and warm temperatures. In the gray leaf spot trials (Tables 3 and 6), Stellar 3GL, GrandSlam GLD, Karma, and CT6 Comp were all top performers, while APR 2320, Linn, RAD-PR62, and Brightstar SLT were the lowest performers.

## Dollar Spot

Symptoms of dollar spot on perennial ryegrass include large (4 to 6 inch), straw-colored patches in the turf which coalesce into much larger areas as disease severity increases. The disease is generally most severe under low levels of fertilization during periods of warm days and cool nights coupled with

high humidity (Smiley et al., 2005). Cultivars and selections such as Karma, SR 4650, Octane, 08-12 Lp, PST 2457S, BAR Lp 10970, DLF LGT 4182, and A-35 showed good resistance to dollar spot while Manhattan 6 GLR, Palmer V, Sox Fan, Insight, and Sienna appeared to be quite susceptible (Tables 1 and 4). 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

New Jersey Agricultural Experiment Station Publication No. E12180-01-10. This work was conducted as a part of NJAES Project No. 12180, supported by New Agricultural Experiment Station, State and Hatch Act funds, the Rutgers Center for Turfgrass Science, and other grants and gifts from the United States Golf Association. Additional support was received by the New Jersey Turfgrass Association, the New Jersey Turfgrass Foundation, and the National Turfgrass Evaluation Program

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Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial established in September 2010 at Adelphia, NJ.

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup> May 2012	Dollar Spot <sup>2</sup> July 2012
	2011-2012 Avg.	2011 Avg.	2012 Avg.		
1 GRD5 COMP	6.3	6.6	5.9	6.0	5.0
2 SR 4650	6.2	6.3	6.0	8.3	6.0
3 Karma	6.1	6.5	5.7	8.3	6.0
4 GRD6 COMP	6.0	6.5	5.4	5.7	3.0
5 Z 3401	5.9	6.4	5.4	5.7	3.3
6 Pangea GLR	5.9	6.1	5.7	7.0	5.3
7 CL 11601	5.8	6.0	5.6	7.3	4.7
8 GRD7+10 COMP	5.8	6.4	5.2	6.0	5.0
9 Octane	5.7	6.0	5.4	5.7	5.7
10 GRD4 COMP	5.7	5.6	5.7	7.7	5.0
11 ROP COMP	5.6	5.9	5.4	5.7	3.3
12 Pizzazz 2 GLR	5.6	6.3	5.0	4.3	3.0
13 4 CAGL	5.6	5.9	5.3	6.0	3.3
14 Rinova	5.6	6.5	4.7	4.0	2.7
15 Derby Xtreme	5.6	6.1	5.1	5.7	3.3
16 GRD3 COMP	5.4	5.7	5.1	7.0	4.0
17 Revenge GLX	5.4	5.4	5.4	7.0	4.0
18 Fiesta 4	5.4	5.6	5.1	5.0	4.0
19 Prelude GLS	5.3	5.5	5.1	6.3	4.0
20 GRD2 COMP	5.3	6.0	4.5	5.7	3.0
21 CL 307	5.2	5.7	4.7	6.3	3.0
22 DUM COMP	5.2	5.9	4.5	3.0	3.3
23 Dasher 3	5.2	5.5	4.9	6.3	3.3
24 Repell GLS	5.2	5.2	5.2	7.7	4.3
25 Panther GLS	5.1	5.2	5.0	6.7	4.3
26 Sox Fan	5.1	5.4	4.9	6.3	4.0
27 IG Squared	5.1	5.3	4.8	7.3	3.3
28 Zoom	5.0	5.2	4.8	5.7	3.3
29 Protégé	5.0	5.4	4.5	5.0	4.7
30 Line Drive GLS	5.0	5.3	4.6	6.7	4.7
31 4 MSH	4.9	5.1	4.8	5.3	4.7
32 PST-2DR9	4.9	5.0	4.9	7.3	5.3
33 Harrier	4.9	5.3	4.5	4.7	3.3
34 Applaud II	4.9	5.1	4.8	6.7	4.3
35 Manhattan 6 GLR	4.9	5.3	4.5	5.3	2.3

(Continued)

Table 1. Perennial ryegrass turf trial, 2010 (continued).

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup> May 2012	Dollar Spot <sup>2</sup> July 2012
	2011-2012 Avg.	2011 Avg.	2012 Avg.		
36 GRD1 COMP	4.8	4.6	5.0	5.0	6.0
37 PST-2NJK	4.8	4.8	4.8	6.3	4.3
38 PST-2K9	4.8	4.8	4.8	7.3	5.7
39 PST-2NKM	4.8	4.9	4.7	6.3	5.0
40 Paragon GLR	4.7	4.9	4.5	5.3	2.7
41 SR 4600	4.7	5.2	4.2	3.7	2.7
42 Manhattan 5 GLR	4.6	4.8	4.4	6.7	3.7
43 PST-2GSB	4.6	4.8	4.4	5.0	4.3
44 Silver Dollar	4.6	4.3	4.8	7.7	5.0
45 PST-2R57S	4.6	4.5	4.6	5.7	6.3
46 Integra II	4.4	4.4	4.5	5.0	4.7
47 Over Drive	4.4	4.6	4.2	6.7	4.0
48 08-14 Lp	4.3	4.6	4.1	6.3	4.3
49 Monterey 3	4.2	4.3	4.1	7.3	4.0
50 Top Gun II	4.2	4.2	4.1	7.3	3.3
51 4 STDSP	4.1	3.8	4.4	6.0	4.3
52 Accent II	4.1	4.0	4.1	7.7	4.0
53 Palmer V	4.0	4.2	3.7	5.7	2.7
54 07-12 PR	3.8	3.8	3.7	5.3	3.3
55 08-16 Lp	3.8	3.8	3.7	6.0	4.0
56 07-4 PR	3.7	3.6	3.8	7.0	3.7
57 08-12 Lp	3.6	3.3	3.9	7.3	6.3
58 Caddieshack II	3.0	2.9	3.2	6.7	4.3
59 La Quinta	3.0	2.9	3.1	8.3	4.3
60 Goalkeeper II	2.6	2.6	2.6	6.3	5.0
LSD at 5% =	0.6	0.7	0.6	2.5	1.6

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

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



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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup> May 2012	Red Thread/ Pink Patch <sup>2</sup> June 2012
	2011- 2012 Avg.	2011 Avg.	2012 Avg.		
1 Zoom	6.2	6.6	5.9	7.3	6.0
2 GRD 5 Comp	6.1	7.2	5.1	6.7	5.3
3 GRD 3 Comp	6.1	6.6	5.5	6.7	5.7
4 Rinovo	6.0	7.0	5.0	7.0	6.3
5 PSG 4J5-16	6.0	6.5	5.5	6.3	6.0
6 PSD 4J6-1	6.0	6.8	5.1	6.0	5.3
7 Exacta II GLSR	6.0	6.6	5.3	8.0	7.0
8 Pershing	5.9	6.4	5.4	8.0	8.0
9 ROP Comp	5.9	6.7	5.1	7.0	6.0
10 ROB 2010	5.9	6.6	5.1	6.3	6.7
11 GRD 6 Comp	5.9	7.0	4.7	6.0	5.3
12 ROB HT-R3	5.8	6.5	5.1	8.0	7.7
13 ROB HT-R12	5.8	6.7	4.9	6.0	6.0
14 34-10 FC 1	5.8	6.2	5.3	7.3	6.7
15 PSG 4J2-14	5.7	6.3	5.2	6.3	5.3
16 PPG-PR-132	5.7	6.4	5.1	6.3	5.7
17 ROB HT-R14	5.7	6.5	4.9	7.7	6.7
18 ROB HT-R1	5.7	6.2	5.2	8.0	8.0
19 20-10 Lp Bulk	5.7	6.5	4.8	6.3	5.7
20 Revenge GLR	5.7	6.2	5.1	8.3	7.0
21 PSG 4J7-15	5.7	6.1	5.2	7.3	6.0
22 ROB HT-R5	5.7	6.4	4.9	8.0	7.3
23 PST-2CITM	5.7	6.1	5.2	7.7	7.0
24 PSG 4SLD334	5.6	6.2	5.0	7.7	7.0
25 C-72	5.6	6.2	5.0	6.7	6.7
26 34-10 FC 3	5.6	5.9	5.3	8.3	7.0
27 DUM Comp	5.6	6.9	4.3	4.7	3.3
28 34-10 FC 4	5.6	6.0	5.1	7.3	6.7
29 HP1	5.5	6.1	5.0	5.3	5.3
30 ROB HT-R6	5.5	6.6	4.5	7.3	6.7
31 Radiance	5.5	6.1	5.0	7.3	6.7
32 SCPR 1	5.5	5.9	5.1	7.3	6.0
33 Uno	5.5	6.2	4.7	6.0	5.0
34 Pennant II	5.5	6.5	4.5	5.0	4.7
35 GL2	5.5	5.9	5.0	7.7	7.7

(Continued)

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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup>	Red Thread/ Pink Patch <sup>2</sup>
	2011- 2012 Avg.	2011 Avg.	2012 Avg.	May 2012	June 2012
36 34-10 FC 2	5.5	6.0	4.9	7.3	6.0
37 Prelude GLS	5.4	6.3	4.6	7.7	7.3
38 MSP 3935	5.4	6.2	4.7	6.0	6.0
39 GRD 2 Comp	5.4	6.0	4.8	6.3	5.3
40 C-35	5.4	5.8	5.0	7.7	7.3
41 GRD 4 Comp	5.4	6.0	4.8	5.7	5.0
42 Accent II	5.4	5.6	5.2	7.7	7.3
43 PST-Syn-2BRS	5.4	5.8	5.0	7.0	6.3
44 2-10 Lp Bulk	5.4	6.0	4.7	4.3	4.7
45 ROB HT-R13	5.4	6.2	4.5	7.3	6.7
46 Radiant 2	5.3	6.0	4.7	5.3	4.3
47 Charismatic II GLSR	5.3	5.8	4.8	6.7	6.3
48 PPG-PR-130	5.3	6.4	4.2	6.7	4.7
49 PPG-PR-141	5.3	6.0	4.6	6.3	5.0
50 Silver Dollar	5.3	5.2	5.3	8.3	7.3
51 Transformer	5.3	5.5	5.0	6.7	6.3
52 IG Squared	5.2	5.7	4.8	7.0	6.3
53 PST-Syn-2ACE	5.2	5.4	5.0	7.7	8.3
54 Monterey 3	5.2	5.3	5.0	7.3	7.0
55 Express II	5.2	5.7	4.6	7.3	6.3
56 PPG-PR-131	5.2	6.0	4.3	5.7	3.7
57 Sox Fan	5.2	5.8	4.5	6.7	6.0
58 34-10 FC Bulk	5.1	5.6	4.7	7.0	6.3
59 Paragon GLR	5.1	5.4	4.8	7.7	6.7
60 SR 4600	5.1	5.6	4.6	7.0	7.0
61 PSG 4SLD1257	5.1	5.6	4.6	6.7	5.3
62 21-10 Lp Bulk	5.1	5.5	4.7	7.0	6.7
63 Blazer 4	5.1	5.6	4.6	7.0	5.3
64 PPG-PR-125	5.1	6.0	4.2	7.3	7.0
65 PSG 4J8-51	5.1	5.8	4.4	6.7	6.7
66 Panther GLS	5.1	5.5	4.7	7.0	7.3
67 Wind Dancer	5.1	5.2	4.9	7.7	7.0
68 Protégé GLR	5.1	5.7	4.4	7.3	6.7
69 ROB HT-R15	5.0	6.2	3.9	6.0	5.3
70 PST-2PET	5.0	5.2	4.9	7.7	6.7

(Continued)

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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup> May 2012	Red Thread/ Pink Patch <sup>2</sup> June 2012
	2011- 2012 Avg.	2011 Avg.	2012 Avg.		
71 Applaud II	5.0	5.4	4.6	7.3	6.0
72 Prelude GLS	5.0	5.4	4.7	7.0	6.0
73 Top Gun II	5.0	5.3	4.8	5.0	5.7
74 PST-2GSB	5.0	5.4	4.7	7.0	6.7
75 Sun Kissed	5.0	5.4	4.6	6.7	5.7
76 Pennant III	5.0	5.1	4.9	7.7	7.7
77 Manhattan 5 GLR	5.0	5.2	4.7	7.7	7.7
78 Hawkeye 2	5.0	5.1	4.8	7.0	6.7
79 Repell GLS	5.0	5.5	4.4	7.3	6.7
80 Citation Fore	5.0	4.8	5.2	7.7	7.0
81 HU1	4.9	5.5	4.3	5.0	4.7
82 ROB HT-R7	4.9	6.0	3.9	8.0	7.3
83 Stanton	4.9	5.1	4.7	7.3	6.0
84 Secretariat II GLSR	4.8	5.6	4.1	7.3	6.3
85 Harrier	4.8	5.2	4.3	6.3	5.0
86 73-10 Lp	4.8	5.2	4.3	7.3	7.0
87 08-16 Lp	4.8	5.2	4.3	5.3	5.0
88 Prelude IV	4.7	5.0	4.5	8.0	6.3
89 PST-Syn-2RLP	4.7	4.9	4.5	7.0	6.3
90 PST-2SSP	4.7	4.8	4.6	7.7	6.0
91 Calypso III	4.7	4.9	4.4	8.0	8.0
92 Line Drive GLS	4.7	4.9	4.4	8.0	8.0
93 PST-Syn-2ACL	4.7	4.7	4.6	8.0	7.7
94 HO Lp Bulk	4.6	4.6	4.7	6.7	6.3
95 Palmer III	4.6	4.7	4.6	6.3	8.7
96 SR 4420	4.6	4.9	4.2	7.7	7.0
97 07-4 PR	4.6	5.1	4.1	5.7	3.7
98 Charismatic	4.6	4.6	4.5	7.3	7.7
99 SR 4220	4.5	4.6	4.5	7.0	5.7
100 53-10 Lp	4.5	4.6	4.4	6.7	5.3
101 PST-2RDY	4.5	4.8	4.2	8.0	6.7
102 Penguin 2	4.5	4.3	4.7	7.7	7.0
103 Artic Green	4.5	4.9	4.1	7.7	7.0
104 Integra 2	4.5	4.7	4.3	7.7	7.7
105 APR 2105	4.5	4.6	4.3	6.3	6.0

(Continued)

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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			Red Thread <sup>2</sup> May 2012	Red Thread/ Pink Patch <sup>2</sup> June 2012
	2011- 2012 Avg.	2011 Avg.	2012 Avg.		
106 54-10LP	4.4	4.5	4.3	7.7	7.0
107 Palmer V	4.4	4.7	4.0	6.0	6.7
108 68-10 Lp	4.4	4.5	4.2	6.7	6.3
109 Hawkeye	4.3	4.7	4.0	6.3	5.0
110 SR 4682	4.3	4.3	4.2	8.0	9.0
111 Headstart 2	4.3	4.8	3.8	6.3	5.7
112 PSG 4SLD729	4.2	4.6	3.9	4.3	5.3
113 08-14 Lp	4.2	4.9	3.5	6.7	5.7
114 PSG 4DSPOP2	4.1	4.4	3.8	7.0	5.7
115 PST-2M20	4.1	4.2	4.0	8.0	8.7
116 PST-3IP	4.1	4.3	3.9	8.0	7.0
117 57-10 Lp	4.0	4.3	3.7	7.0	6.0
118 STR 4TPC	3.9	4.0	3.8	7.7	6.3
119 APR 1915	3.9	4.2	3.6	7.0	5.0
120 Churchill	3.9	3.8	3.9	7.7	7.7
121 LaQuinta	3.9	3.8	3.9	7.7	7.0
122 Affirmed	3.9	4.0	3.8	7.7	6.3
123 PSG 4DSB9-4	3.8	4.4	3.3	6.0	6.3
124 Shining Star II	3.8	4.2	3.3	7.0	5.3
125 Double Time	3.7	4.3	3.2	7.0	6.0
126 31-10 Lp	3.7	4.1	3.4	6.0	6.0
127 Caddieshack II	3.7	3.8	3.6	6.7	6.3
128 Shining Star	3.7	3.7	3.6	8.0	8.3
129 Quebec	3.6	3.7	3.5	5.7	5.7
130 44-10 FC 1	3.5	3.7	3.3	6.3	5.7
131 44-10 FC Bulk	3.4	3.9	3.0	4.3	5.3
132 Dasher 3	3.4	3.2	3.6	5.3	6.0
133 Goalkeeper II	3.3	3.4	3.2	4.7	4.0
134 44-10 FC 2	3.3	3.5	3.0	7.0	7.0
135 44-10 FC 4	3.1	3.5	2.7	5.7	5.3
136 PST-2STOL	3.1	3.4	2.7	7.7	6.3
137 44-10 FC 3	3.0	3.4	2.6	5.7	5.0
138 Full Throttle	1.3	1.5	1.0	7.3	7.3
LSD at 5% =	0.7	0.7	0.9	2.3	2.5

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

Table 3. Performance of perennial ryegrass cultivars and selections in a national turf trial established in July 2010 at Adelphia, NJ. (Includes all entries in the National Perennial Ryegrass Test sponsored by NTEP).

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	-----Grey Leaf Spot <sup>2</sup> -----			Green Cover <sup>3</sup> (%) Aug. 2011	Genetic Color <sup>4</sup> Oct. 2012
		Sept. 2011	Sept. 2011	2011 Avg.		
1 SR 4650 (PSRX-3701)	6.8	8.7	8.0	8.3	91.7	6.3
2 Pangea GLR (CL 11701)	6.7	8.0	7.0	7.5	85.7	7.0
3 Octane	6.7	7.7	6.7	7.2	90.0	6.3
4 Karma (Pick 10401)	6.5	8.0	8.3	8.2	84.0	5.0
5 CL 11601	6.4	8.0	7.0	7.5	77.3	7.0
6 JR-178	6.4	8.0	7.3	7.7	83.3	5.3
7 S85	6.3	7.3	7.0	7.2	78.3	7.0
8 Green Supreme	6.2	7.7	7.0	7.3	90.7	5.7
9 Stellar 3GL	6.2	8.3	7.3	7.8	83.3	6.0
10 Thrive	6.2	6.7	5.0	5.8	82.3	6.0
11 CL 307	6.2	8.7	7.7	8.2	85.0	7.3
12 Pizzazz 2 GLR (PR 909)	6.1	8.0	6.7	7.3	84.7	6.7
13 PPG-PR 136	6.1	6.0	5.3	5.7	75.0	7.0
14 Monsieur	6.1	7.3	7.0	7.2	85.0	5.7
15 PPG-PR 165	6.1	7.7	7.3	7.5	86.7	5.3
16 Amazing A+	6.1	7.3	6.0	6.7	92.3	6.7
17 Bonneville	6.1	7.7	7.0	7.3	79.0	6.0
18 PPG-PR 143	6.0	7.3	6.3	6.8	90.0	6.3
19 Rio Vista	6.0	7.0	6.0	6.5	75.0	6.0
20 PPG-PR 137	6.0	7.3	7.3	7.3	86.7	6.3
21 Bandalore	5.9	6.0	5.0	5.5	73.3	6.7
22 PPG-PR 142	5.9	7.3	6.0	6.7	86.7	5.3
23 GrandSlam GLD	5.9	8.3	7.3	7.8	90.0	5.7
24 IS-PR 409	5.9	5.7	4.3	5.0	78.3	6.0
25 PPG-PR 133	5.9	6.7	6.3	6.5	81.7	5.7
26 Sideways (PSRX-S84)	5.8	8.3	7.7	8.0	92.3	6.0
27 APR 2445	5.8	5.7	4.3	5.0	75.0	6.3
28 Rinovo	5.7	6.0	4.7	5.3	86.7	6.7
29 Aspire	5.7	7.7	7.3	7.5	86.7	6.3
30 PPG-PR 128	5.6	6.3	6.0	6.2	85.0	5.3
31 PPG-PR 135	5.6	7.7	6.3	7.0	73.3	6.0
32 Banfield	5.6	7.0	4.7	5.8	80.0	6.7
33 Wicked (SRX-4RHD)	5.6	5.7	4.7	5.2	86.7	5.3
34 Stamina	5.6	5.7	6.0	5.8	86.7	4.7
35 Palmer V	5.6	5.3	4.3	4.8	86.7	7.0

(Continued)

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

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	-----Grey Leaf Spot <sup>2</sup> -----			Green Cover <sup>3</sup> (%) Aug. 2011	Genetic Color <sup>4</sup> Oct. 2012
		Sept. 2011	Sept. 2011	2011 Avg.		
36 Diligent	5.5	7.0	6.0	6.5	76.7	6.0
37 PST-2BNS	5.5	6.0	4.3	5.2	76.7	4.3
38 CST	5.5	6.7	5.3	6.0	76.7	5.3
39 DLF LGD-3022	5.4	5.0	4.3	4.7	85.0	5.7
40 PPG-PR 140	5.4	6.3	6.3	6.3	85.0	5.0
41 Fiesta 4	5.3	6.3	4.7	5.5	76.7	5.3
42 Manhattan 6 GLR	5.3	6.7	5.7	6.2	75.0	5.0
43 Sox Fan (GM3)	5.3	7.0	5.0	6.0	86.7	5.7
44 PSRX 4CAGL	5.2	7.0	5.3	6.2	85.0	6.0
45 DLF LGD-3026	5.2	5.3	4.3	4.8	85.0	6.3
46 LTP-RAE	5.1	7.3	6.3	6.8	83.3	5.0
47 PRX-4GM1	5.1	7.3	6.0	6.7	83.3	5.3
48 PST-2MG7	4.9	5.0	3.7	4.3	68.3	4.7
49 GO-PR60	4.7	3.3	2.0	2.7	83.3	7.0
50 APR 2036	4.7	5.7	4.0	4.8	78.3	5.0
51 PST-2NKM	4.7	6.0	4.0	5.0	83.3	4.3
52 2NJK	4.6	5.3	3.7	4.5	83.3	4.3
53 Haven (APR 2038)	4.6	5.0	4.3	4.7	86.7	4.3
54 Uno	4.5	4.0	3.0	3.5	76.7	4.3
55 SRX-4MSH	4.4	4.3	4.0	4.2	80.0	4.3
56 CS-PR66	4.3	3.7	2.3	3.0	71.7	5.3
57 Dominator	4.2	4.0	3.0	3.5	68.3	4.7
58 PST-2K9	4.2	5.0	3.7	4.3	73.3	4.3
59 Hancock	4.1	3.7	2.3	3.0	78.3	6.3
60 RAD-PR55R	4.1	3.7	2.3	3.0	75.0	6.3
61 PST-2DR9	4.1	4.0	2.7	3.3	71.7	4.0
62 PST-2ACR	4.1	4.7	3.0	3.8	75.0	5.0
63 Pick 4DFHM	3.9	4.0	3.3	3.7	83.3	4.3
64 BAR Lp 10969	3.9	3.0	1.7	2.3	81.7	4.3
65 PST-204D	3.9	4.0	1.7	2.8	85.0	4.0
66 ISG-36	3.9	4.0	2.3	3.2	75.0	4.7
67 BAR Lp 10970	3.8	3.0	2.0	2.5	81.7	3.7
68 P02	3.6	4.0	2.7	3.3	80.0	4.0
69 Sienna	3.6	3.0	2.3	2.7	76.7	4.3
70 Mach I	3.6	3.0	1.3	2.2	85.7	6.0

(Continued)

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

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	-----Grey Leaf Spot <sup>2</sup> -----			Green Cover <sup>3</sup> (%) Aug. 2011	Genetic Color <sup>4</sup> Oct. 2012
		Sept. 2011	Sept. 2011	2011 Avg.		
71 A-35	3.6	3.7	1.7	2.7	66.7	5.7
72 Allante	3.4	2.7	1.7	2.2	85.0	4.0
73 Insight	3.4	2.7	2.0	2.3	85.0	3.7
74 PST-2TQL	3.4	3.7	1.7	2.7	75.0	4.0
75 ISG-30	3.3	3.0	1.0	2.0	71.7	5.3
76 CS-20	3.3	3.7	1.7	2.7	65.0	5.3
77 BAR Lp 10972	3.2	2.7	1.3	2.0	66.7	4.7
78 GO-G37	3.1	3.3	1.3	2.3	66.7	5.7
79 ISG-31	3.1	3.3	2.0	2.7	76.7	4.7
80 RAD-PR62	3.1	1.7	1.0	1.3	63.3	4.0
81 APR 2320	2.9	1.3	1.0	1.2	71.7	4.7
82 Brightstar SLT	2.8	3.0	1.7	2.3	73.3	3.3
83 DLF LGT 4182	2.8	2.7	1.3	2.0	65.0	5.7
84 JR-192	2.7	2.0	1.0	1.5	68.3	3.7
85 GO-DHS	2.6	2.7	1.0	1.8	73.3	4.3
86 BAR Lp 7608	2.4	2.0	1.3	1.7	71.7	3.7
87 Pinnacle	1.7	2.3	1.0	1.7	70.0	2.3
88 Linn	1.0	1.3	1.0	1.2	65.0	1.0
LSD at 5% =	0.8	1.4	1.2	1.1	17.0	1.5

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

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

<sup>3</sup>100 = full turf cover

<sup>4</sup>9 = darkest green color

Table 4. Performance of perennial ryegrass cultivars and selections in a national turf trial established in September 2010 at Adelphia, NJ. (Includes all entries in the National Perennial Ryegrass Test sponsored by NTEP.)

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			-----Dollar Spot <sup>2</sup> -----		
	2011-2012 Avg.	2011 Avg.	2012 Avg.	June 2012	July 2012	2012 Avg.
1 Pangea GLR (CL 11701)	6.7	7.2	6.2	5.0	3.7	4.3
2 Banfield	6.6	7.2	5.9	6.3	4.3	5.3
3 Bandalore	6.5	6.9	6.0	6.3	4.3	5.3
4 Thrive	6.4	7.6	5.2	5.0	3.7	4.3
5 Karma (Pick 10401)	6.4	7.4	5.4	7.3	5.0	6.2
6 GO-PR60	6.3	7.0	5.7	4.3	3.7	4.0
7 Wicked (SRX-4RHD)	6.3	6.7	5.9	7.3	6.0	6.7
8 Grand Slam GLD	6.2	7.4	5.1	5.3	3.3	4.3
9 APR 2445	6.2	6.7	5.8	7.0	4.7	5.8
10 S85	6.2	6.7	5.7	6.7	4.0	5.3
11 Rio Vista	6.1	6.7	5.6	5.0	3.3	4.2
12 PPG-PR 136	6.1	6.9	5.3	6.7	4.7	5.7
13 IS-PR 409	6.1	7.0	5.2	5.7	4.0	4.8
14 Green Supreme	6.0	6.9	5.2	4.0	2.3	3.2
15 Rinovo	6.0	7.1	4.9	3.7	2.7	3.2
16 RAD-PR55R	5.9	6.6	5.3	7.0	3.7	5.3
17 PPG-PR 165	5.9	6.7	5.1	5.3	4.3	4.8
18 Diligent	5.9	6.6	5.2	6.0	4.0	5.0
19 Fiesta 4	5.9	6.4	5.3	4.0	3.7	3.8
20 SR 4650 (PSRX-3701)	5.9	7.0	4.7	6.7	4.7	5.7
21 Dominator	5.8	6.1	5.5	5.7	4.0	4.8
22 BAR Lp 10970	5.8	6.1	5.5	8.3	6.7	7.5
23 JR-178	5.8	6.7	4.8	4.7	3.0	3.8
24 LTP-RAE	5.7	6.5	5.0	3.7	3.0	3.3
25 APR 2320	5.7	6.3	5.2	6.0	4.0	5.0
26 Mach I	5.7	6.3	5.1	5.0	4.0	4.5
27 CS-PR66	5.7	6.4	4.9	5.3	4.0	4.7
28 PST-2BNS	5.7	6.4	5.0	7.0	5.3	6.2
29 CL 307	5.7	6.5	4.9	3.7	3.3	3.5
30 PPG-PR 133	5.7	6.3	5.0	4.7	3.3	4.0
31 PST-2K9	5.7	5.9	5.4	7.7	4.7	6.2
32 Sideways (PSRX-S84)	5.6	6.2	5.1	5.3	3.7	4.5
33 Hancock	5.6	6.1	5.1	6.7	3.7	5.2
34 Stamina	5.6	6.4	4.8	4.0	3.3	3.7
35 Aspire	5.6	6.2	5.0	5.0	3.7	4.3

(Continued)



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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			-----Dollar Spot <sup>2</sup> -----		
	2011-2012 Avg.	2011 Avg.	2012 Avg.	June 2012	July 2012	2012 Avg.
36 A-35	5.6	5.5	5.6	8.7	7.3	8.0
37 PSRX 4CAGL	5.5	6.2	4.9	3.7	2.7	3.2
38 Stellar 3GL	5.5	6.4	4.6	5.7	5.0	5.3
39 Octane	5.5	6.1	4.9	4.7	2.7	3.7
40 Pizzazz 2 GLR (PR 909)	5.5	6.3	4.7	4.0	2.3	3.2
41 PRX-4GM1	5.4	6.1	4.8	4.7	3.3	4.0
42 PPG-PR 137	5.4	6.1	4.7	5.0	3.7	4.3
43 BAR Lp 10969	5.4	5.4	5.3	5.0	4.3	4.7
44 BAR Lp 10972	5.4	5.1	5.6	7.3	5.7	6.5
45 APR 2036	5.3	6.3	4.4	5.0	1.7	3.3
46 PST-204D	5.3	5.3	5.3	8.0	5.0	6.5
47 DLF LGD-3022	5.3	5.7	5.0	5.3	3.3	4.3
48 Uno	5.3	5.9	4.7	5.0	3.3	4.2
49 Amazing A+	5.3	6.2	4.4	6.0	4.3	5.2
50 GO-G37	5.3	5.4	5.2	6.3	4.3	5.3
51 PST-2TQL	5.3	5.1	5.4	6.3	6.0	6.2
52 ISG-36	5.3	5.3	5.2	7.7	5.7	6.7
53 SRX-4MSH	5.3	5.7	4.8	4.3	3.7	4.0
54 DLF LGD-3026	5.2	5.9	4.6	5.7	4.3	5.0
55 Manhattan 6 GLR	5.2	6.0	4.4	4.3	2.3	3.3
56 2NJK	5.2	5.6	4.7	5.7	4.3	5.0
57 RAD-PR62	5.2	5.7	4.6	5.7	3.7	4.7
58 Sox Fan (GM3)	5.2	5.7	4.6	3.3	2.3	2.8
59 Palmer V	5.2	5.6	4.8	4.3	2.3	3.3
60 PST-2NKM	5.2	5.2	5.1	6.3	4.3	5.3
61 Sienna	5.1	6.6	3.7	2.7	2.7	2.7
62 Monsieur	5.1	6.0	4.3	4.0	2.7	3.3
63 ISG-30	5.1	5.3	4.9	6.7	5.0	5.8
64 PST-2DR9	5.1	5.1	5.1	7.0	5.7	6.3
65 PPG-PR 142	5.1	5.8	4.3	4.7	3.7	4.2
66 PPG-PR 143	5.1	5.8	4.3	5.3	3.7	4.5
67 PST-2ACR	5.0	4.8	5.3	7.7	5.3	6.5
68 CL 11601	5.0	5.6	4.4	4.7	3.3	4.0
69 PST-2MG7	5.0	5.4	4.7	6.0	4.0	5.0
70 Haven (APR 2038)	5.0	5.3	4.7	6.3	5.0	5.7

(Continued)

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

Cultivar or Selection	-----Turf Quality <sup>1</sup> -----			-----Dollar Spot <sup>2</sup> -----		
	2011-2012 Avg.	2011 Avg.	2012 Avg.	June 2012	July 2012	2012 Avg.
71 PPG-PR 135	5.0	5.8	4.1	4.3	3.0	3.7
72 PPG-PR 128	4.9	5.4	4.5	4.7	3.7	4.2
73 DLF LGT 4182	4.9	4.8	5.0	8.0	6.0	7.0
74 Bonneville	4.9	5.4	4.5	4.7	3.0	3.8
75 CST	4.9	5.7	4.1	4.3	3.3	3.8
76 CS-20	4.9	4.9	4.8	7.7	4.7	6.2
77 JR-192	4.8	5.6	4.1	5.0	3.3	4.2
78 ISG-31	4.8	4.7	5.0	7.7	5.0	6.3
79 Insight	4.7	6.2	3.2	2.7	2.3	2.5
80 Allante	4.7	6.1	3.4	3.3	3.3	3.3
81 GO-DHS	4.7	4.4	5.0	7.0	5.3	6.2
82 P02	4.5	4.6	4.5	7.0	4.3	5.7
83 PPG-PR 140	4.5	5.2	3.7	3.7	3.0	3.3
84 Pick 4DFHM	4.4	4.7	4.0	4.7	3.0	3.8
85 Brightstar SLT	4.2	4.5	4.0	5.3	4.3	4.8
86 BAR Lp 7608	4.1	4.0	4.1	6.7	5.7	6.2
87 Pinnacle	3.0	2.9	3.1	4.7	4.3	4.5
88 Linn	1.0	1.0	1.1	6.0	4.0	5.0
LSD at 5% =	0.7	0.8	0.8	1.8	1.5	1.4

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

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

Table 5. Performance of perennial ryegrass cultivars and selections in a turf trial established in September 2011 at Adelphia, NJ.

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	Establishment <sup>2</sup> Oct. 2011
1 PPG-PR 171	7.4	6.7
2 PPG-PR 167	6.8	6.7
3 Radiance	6.5	6.0
4 APR2524	6.3	6.0
5 APR2510	6.2	6.0
6 Apple GL	6.2	6.3
7 APR2516	6.2	6.0
8 PPG-PR 169	6.2	6.7
9 APR2508	6.2	6.7
10 PS9	6.1	7.0
11 PPG-PR 172	6.1	7.0
12 APR2520	6.1	6.0
13 Zoom	6.1	7.0
14 Rinovo	6.1	6.3
15 Pershing	6.1	6.3
16 APR2521	6.0	6.7
17 APR2523	6.0	6.3
18 RAD-PR 69	5.9	6.3
19 APR2522	5.9	6.7
20 PPG-PR 170	5.9	6.0
21 APR2515	5.9	6.0
22 Exacta II	5.8	6.0
23 CL307	5.8	6.3
24 RAD-PR 53	5.8	6.7
25 APR2518	5.8	6.3
26 PPG-PR 166	5.8	5.7
27 FSR Comp	5.7	6.3
28 GrandSlam GLD	5.7	7.0
29 PST-2MG7	5.7	6.3
30 Prelude GLS	5.7	6.0
31 APR-2291	5.7	6.3
32 Seville 3	5.7	6.7
33 1G Squared	5.6	6.3
34 APR2519	5.6	6.7
35 21-11 PR PC	5.6	6.3

(Continued)

Table 5. Perennial ryegrass turf trial, 2011 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	Establishment <sup>2</sup> Oct. 2011
36 Palmer V	5.6	6.3
37 Radiant II	5.6	5.7
38 APR2514	5.6	6.0
39 PST-Syn-2TFC	5.6	5.3
40 APR2517	5.6	6.3
41 Uno	5.5	7.0
42 APR2512	5.5	6.0
43 Silver Dollar	5.5	6.3
44 Pennant III	5.5	6.3
45 MSP 3935	5.5	6.0
46 Secretariat II	5.4	7.0
47 PST-Syn-2YLD	5.4	5.7
48 SUM Comp	5.4	5.0
49 Palmer IV	5.4	5.3
50 PST-2NJK	5.3	6.0
51 Harrier	5.3	6.7
52 SR 4220	5.3	5.3
53 PST-NKM	5.3	5.7
54 Notable	5.2	6.7
55 RAD-PR 76	5.2	5.3
56 Defender	5.2	6.3
57 PSG 4SLGS	5.2	6.0
58 PSG 4SLD34	5.2	5.7
59 Homerun	5.2	6.7
60 08 FTM SESL	5.2	6.0
61 Charismatic II	5.1	7.0
62 S85	5.1	5.7
63 APR2507	5.1	6.3
64 Revenge GLX	5.1	6.0
65 Manhattan 6 GLR	5.1	5.3
66 Citation Fore	5.1	5.7
67 Fiesta 4	5.1	6.7
68 69-11-2	5.1	6.0
69 SR 4550	5.1	4.0
70 PPG-PR 117	5.1	6.0

(Continued)

Table 5. Perennial ryegrass turf trial, 2011 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	Establishment <sup>2</sup> Oct. 2011
71 PPG-PR 163	5.1	5.3
72 PPG-PR 119	5.0	5.7
73 APR2509	5.0	6.0
74 Line Drive GLS	5.0	6.0
75 Soprano	5.0	6.0
76 PST-204D	5.0	5.3
77 21-10 Lp	5.0	5.7
78 Palmer III	5.0	5.7
79 SR 4420	5.0	6.7
80 PSG STD3	5.0	5.3
81 Manhattan 5 GLR	4.9	6.0
82 MMW	4.9	7.3
83 Frontier	4.9	6.7
84 APR2511	4.9	6.0
85 Mighty	4.8	6.3
86 69-11-3	4.8	6.3
87 Repell GLS	4.8	6.0
88 PST-224	4.8	6.3
89 FTM White C1-07	4.8	5.3
90 Headstart 2	4.8	5.3
91 Accent II	4.8	6.0
92 69-11 Bulk	4.8	4.3
93 SR 4600	4.8	7.0
94 Hawkeye 2	4.8	6.0
95 69-1-11	4.7	5.7
96 PSG 4PNCKH	4.7	5.3
97 PST-2BNS	4.7	4.3
98 69-11-4	4.7	5.0
99 69-11-5	4.7	4.3
100 APR2513	4.7	5.7
101 APR-2116	4.6	6.3
102 Stanton	4.6	6.7
103 20-11 Lp	4.6	5.7
104 PSG 4SLD29	4.6	6.0
105 PST-2RDY	4.6	6.3

(Continued)

Table 5. Perennial ryegrass turf trial, 2011 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	Establishment <sup>2</sup> Oct. 2011
106 APR-2105	4.6	6.3
107 FTM Blue C2-09	4.6	5.3
108 20-10 Lp	4.6	5.3
109 PSG 4JPR	4.6	6.0
110 FTM White C2-09	4.5	5.7
111 PSG 4STLCZ	4.5	5.0
112 Inspire	4.5	6.0
113 Calypso II	4.4	5.7
114 Charismatic	4.4	6.3
115 PST-21N4	4.4	4.7
116 Racer 2	4.4	3.7
117 Affirmed	4.4	5.0
118 Pentium	4.3	6.3
119 Panther GLS	4.3	6.7
120 Applaud II	4.3	6.0
121 PSG 4DS894	4.3	6.0
122 STR 4TPCS	4.3	5.7
123 69-11-6	4.2	4.7
124 PST-2CITM	4.2	4.7
125 FTM White C4-10	4.2	5.7
126 Calypso III	4.2	6.0
127 Penguin 2	4.2	7.0
128 Churchill	4.1	6.7
129 Pennant II	4.1	6.0
130 Replay	4.0	6.3
131 Artic Green	4.0	7.0
132 08-14 Lp	4.0	4.0
133 PSG 4SRUP	4.0	6.0
134 Top Gun II	3.9	6.0
135 Quebec	3.9	4.3
136 PSG 4DSPP2	3.9	5.7
137 Accent	3.8	7.0
138 Estelle	3.8	4.0
139 08-16 Lp	3.8	3.7
140 Caddieshack II	3.8	7.0

(Continued)

Table 5. Perennial ryegrass turf trial, 2011 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2012 Avg.	Establishment <sup>2</sup> Oct. 2011
141 Goal Keeper II	3.8	6.3
142 PST-2GSB	3.8	4.0
143 PST-3IP	3.8	4.7
144 La Quinta	3.8	6.7
145 PST-2DR9	3.7	4.7
146 PSG 4DSLFB	3.7	5.7
147 PST-2K9	3.7	4.3
148 PSG 4SLD57	3.7	5.3
149 PST-2MPX	3.6	5.0
150 Integra II	3.5	5.7
151 Hawkeye	3.4	2.0
152 Top Gun	3.4	7.7
153 Night Sky	3.4	4.7
154 MSP 3934	3.3	5.3
155 PSG 4SLB	3.3	5.7
LSD at 5% =	1.3	2.1

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

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

Table 6. Performance of perennial ryegrass cultivars and selections in a turf trial established in August 2012 at Adelphia, NJ.

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
1 Karma	7.8	8.7	7.7	7.0	7.7	91.7
2 CT6 comp	7.3	8.3	7.3	6.3	7.3	86.7
3 APR2486	6.9	7.3	7.3	6.0	5.7	83.3
4 JR-178	6.8	7.7	7.0	5.7	6.3	81.7
5 PSG 4 JPF8-4	6.4	7.7	7.0	4.7	5.0	73.3
6 PSG 4 JPF8-5	6.3	7.7	7.0	4.3	5.7	78.3
7 PPG-PR-134	6.2	7.0	6.7	5.0	5.7	75.0
8 CT2 comp	6.2	7.0	6.7	5.0	6.0	81.7
9 PSG 4 JPF8-2	6.1	7.3	6.0	5.0	5.0	75.0
10 CT7 comp	6.1	7.3	6.0	5.0	7.0	85.0
11 PPG-PR-164	6.0	6.7	6.3	5.0	6.0	80.0
12 PPG-PR-172	6.0	7.3	6.3	4.3	4.7	71.7
13 APR2560	5.9	6.0	6.3	5.3	4.0	71.7
14 Dasher 3	5.9	7.0	6.3	4.3	4.7	63.3
15 CL 11601	5.9	6.7	6.0	5.0	7.0	88.3
16 APR2514	5.8	6.0	6.3	5.0	5.3	75.0
17 CT1 comp	5.8	7.3	6.0	4.0	5.0	76.7
18 APR2472	5.7	6.3	6.0	4.7	5.0	70.0
19 PR 523	5.7	6.3	6.0	4.7	5.7	73.3
20 PPG-PR-140	5.6	6.7	6.0	4.0	5.0	73.3
21 CT4 BS	5.6	6.3	5.7	4.7	6.3	76.7
22 APR2484	5.4	6.3	5.7	4.3	4.0	68.3
23 APR2475	5.4	7.0	5.3	4.0	3.0	60.0
24 APR2563	5.4	6.7	6.0	3.7	4.3	63.3
25 PSG 4 JPF8-1	5.3	6.7	6.0	3.3	4.3	70.0
26 PPG-PR-142	5.3	6.7	5.7	3.7	4.3	55.0
27 Z-3401	5.3	6.3	5.3	4.3	6.7	83.3
28 APR2465	5.2	5.7	5.3	4.7	3.7	71.7
29 PR 535	5.2	6.3	5.3	4.0	3.7	70.0
30 Manhattan 5GLR	5.1	6.0	5.3	4.0	3.7	68.3
31 PR 489 M2	5.1	6.3	5.3	3.7	3.3	66.7
32 PR 533	5.1	6.3	5.0	4.0	4.7	70.0
33 FE2 BS	5.1	6.3	5.3	3.7	5.0	66.7
34 PSG 4JPR	5.0	6.7	5.0	3.3	3.7	65.0
35 PPG-PR-167	5.0	6.7	5.7	2.7	3.7	60.0

(Continued)



Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
36 Pangea GLR	5.0	6.0	5.3	3.7	4.0	65.0
37 APR2244	4.9	5.7	5.3	3.7	6.3	83.0
38 APR2474	4.9	5.7	5.3	3.7	4.7	70.0
39 APR2552	4.9	6.0	5.3	3.3	3.3	65.0
40 APR2524	4.9	5.3	5.3	4.0	4.3	65.0
41 PST-2NKMS	4.9	6.0	5.0	3.7	4.0	63.3
42 PR 491 M2	4.9	6.0	5.3	3.3	3.3	60.0
43 CL 307	4.9	6.0	5.0	3.7	5.0	73.3
44 APR2456	4.8	5.3	4.7	4.3	3.0	60.0
45 APR2471	4.8	5.3	5.7	3.3	3.3	55.0
46 APR2523	4.8	6.0	5.0	3.3	3.3	55.0
47 APR2540	4.8	6.0	5.3	3.0	3.3	56.7
48 APR2165	4.8	5.7	5.0	3.7	3.0	65.0
49 Manhattan 6 GLR	4.8	5.7	5.3	3.3	4.3	68.3
50 PPG-PR-132	4.8	6.0	5.0	3.3	3.3	66.7
51 PPG-PR-133	4.8	5.7	5.3	3.3	5.0	68.3
52 PR 487 M2	4.8	6.0	5.0	3.3	3.3	65.0
53 PR 519	4.8	5.7	5.0	3.7	4.0	66.7
54 CT3 comp	4.8	6.7	5.0	2.7	4.3	68.3
55 APR2170	4.7	5.7	5.0	3.3	4.0	68.3
56 PR 541	4.7	6.3	4.7	3.0	3.7	68.3
57 CT5 comp	4.7	5.7	5.0	3.3	5.3	68.3
58 APR2221	4.6	6.3	5.0	2.3	1.3	40.0
59 APR2519	4.6	5.3	4.7	3.7	4.3	66.7
60 PR 531	4.6	6.3	4.7	2.7	3.7	65.0
61 APR2479	4.4	5.7	4.3	3.3	3.3	55.0
62 APR2242	4.4	5.3	4.3	3.7	3.7	56.7
63 Exacta II GLSR	4.4	5.0	4.7	3.7	3.7	66.7
64 PR 492 M2	4.4	5.3	4.3	3.7	4.7	68.3
65 New Arrival GLR	4.4	5.3	4.7	3.3	3.7	68.3
66 Haven	4.4	6.0	4.0	3.3	3.3	68.3
67 APR2510	4.3	5.3	4.7	3.0	2.3	45.0
68 APR2168	4.3	6.0	4.7	2.3	2.3	46.7
69 PSG 4 JPF8-3	4.3	5.7	4.7	2.7	2.7	53.3
70 PR 488	4.3	5.3	4.7	3.0	4.7	68.3

(Continued)

Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
71 APR2520	4.2	4.7	4.7	3.3	4.0	68.3
72 APR2522	4.2	5.7	5.0	2.0	2.7	48.3
73 Hawkeye 2	4.2	5.3	4.7	2.7	2.7	51.7
74 Fiesta 4	4.2	5.3	4.7	2.7	2.3	48.3
75 APR2521	4.1	5.3	4.7	2.3	2.0	53.3
76 APR2545	4.1	5.0	5.0	2.3	1.7	31.7
77 PPG-PR-170	4.1	6.3	4.0	2.0	2.3	45.0
78 PR 463 M3	4.1	5.3	4.3	2.7	3.3	65.0
79 Allstar 3	4.1	5.0	4.3	3.0	3.3	58.3
80 PR 469 M3	4.1	5.7	4.3	2.3	2.3	53.3
81 PST-2CITM	4.0	5.7	4.0	2.3	2.3	48.3
82 Derby Xtreme	4.0	5.7	4.0	2.3	2.7	55.0
83 MMW	4.0	5.3	4.0	2.7	2.7	58.3
84 APR2509	3.9	5.0	4.0	2.7	2.0	33.3
85 PST-2NKM	3.9	5.0	4.0	2.7	3.3	51.7
86 PSG 20-10 Lp	3.9	5.3	4.0	2.3	2.7	58.3
87 SR 4600	3.9	5.3	4.0	2.3	3.3	46.7
88 PR 547	3.9	5.3	4.3	2.0	2.3	50.0
89 Apple GL	3.9	5.0	4.0	2.7	3.0	55.0
90 Revenge GLX	3.8	4.7	4.3	2.3	2.7	50.0
91 APR2234	3.8	4.7	4.0	2.7	3.0	46.7
92 APR2166	3.8	4.7	3.7	3.0	2.7	50.0
93 APR2559	3.8	4.7	4.0	2.7	2.0	45.0
94 PST-2FIND	3.8	4.7	3.7	3.0	4.3	66.7
95 PSG 4 DSL5F	3.8	5.0	4.3	2.0	1.7	46.7
96 APR2455	3.7	4.7	4.0	2.3	3.3	63.3
97 APR2153	3.7	4.7	4.0	2.3	1.0	26.7
98 Harrier	3.7	5.0	3.7	2.3	1.7	48.3
99 APR2461	3.6	5.3	3.3	2.0	1.7	30.0
100 APR2477	3.6	5.0	3.7	2.0	2.7	38.3
101 APR2478	3.6	4.7	4.0	2.0	1.7	41.7
102 APR2508	3.6	5.0	4.0	1.7	2.0	35.0
103 APR2261	3.4	5.7	3.7	1.0	1.3	35.0
104 APR2445	3.4	4.0	3.7	2.7	2.7	45.0
105 APR2541	3.4	4.3	3.3	2.7	2.3	46.7

(Continued)

Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
106 PST-2NJK	3.4	5.0	3.7	1.7	2.7	55.0
107 Rinovo	3.4	4.3	3.7	2.3	3.3	60.0
108 PR 554	3.4	5.0	3.7	1.7	2.3	51.7
109 APR2467	3.3	5.0	3.7	1.3	1.7	35.0
110 APR2227	3.3	4.7	3.3	2.0	2.0	45.0
111 APR2217	3.3	4.3	3.7	2.0	2.3	46.7
112 APR2554	3.3	4.3	3.7	2.0	1.7	46.7
113 PSG 4 DSL5B	3.3	4.3	3.7	2.0	1.3	35.0
114 PPG-PR-171	3.3	4.3	3.3	2.3	2.7	45.0
115 Amazing GS	3.3	5.3	3.3	1.3	1.3	30.0
116 PR 551	3.3	5.0	3.7	1.3	2.0	46.7
117 APR2453	3.2	4.0	3.7	2.0	2.0	40.0
118 APR2483	3.2	5.0	3.3	1.3	1.3	35.0
119 APR2518	3.2	4.3	3.3	2.0	2.3	51.7
120 Charismatic II GLSR	3.2	4.0	3.3	2.3	2.3	46.7
121 PSG 4 SLGS	3.2	4.3	3.3	2.0	2.7	53.3
122 PPG-PR-131	3.2	4.7	3.3	1.7	2.7	58.3
123 APR2512	3.1	5.0	3.3	1.0	1.0	35.0
124 PST-2BNS	3.1	4.3	3.3	1.7	2.0	50.0
125 PPG-PR-169	3.1	4.7	3.3	1.3	1.0	25.0
126 PR 537	3.1	4.7	3.0	1.7	2.0	48.3
127 APR2458	3.0	4.0	3.3	1.7	1.7	28.3
128 APR2224	3.0	4.3	2.7	2.0	2.3	53.3
129 APR2558	3.0	3.7	3.3	2.0	2.0	41.7
130 PSG SLD257-3	3.0	4.0	3.3	1.7	1.3	21.0
131 PSG PNCKD2	3.0	4.5	3.0	1.5	1.0	17.5
132 Secretariat II GLSR	2.9	4.0	3.0	1.7	1.3	31.7
133 PSG SLD334-3	2.9	4.3	3.0	1.3	1.0	11.7
134 APR2161	2.8	3.7	2.7	2.0	2.0	50.0
135 APR2555	2.8	4.0	2.7	1.7	1.3	35.0
136 APR2450	2.8	3.7	3.0	1.7	1.7	30.0
137 APR2548	2.8	4.0	3.3	1.0	1.0	25.0
138 APR2127	2.8	4.0	3.0	1.3	1.7	31.7
139 PSG SLD334-6	2.8	4.3	2.7	1.3	1.0	15.0
140 PSG 4 SLD334	2.8	4.3	3.0	1.0	1.0	26.7

(Continued)

Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
141 PR 527	2.8	4.3	2.7	1.3	1.3	33.3
142 PR 529	2.8	3.7	2.7	2.0	2.3	50.0
143 PR 549	2.8	4.3	2.7	1.3	2.3	45.0
144 APR2145	2.7	3.7	2.7	1.7	2.3	55.0
145 PST-2ED1 Bulk	2.7	4.3	2.3	1.3	1.0	18.3
146 PST-2MG7	2.7	3.7	2.7	1.7	1.7	36.7
147 Zoom	2.6	4.0	2.7	1.0	1.0	20.0
148 PPG-PR-168	2.6	4.3	2.3	1.0	1.0	20.0
149 Integra II	2.6	3.7	2.7	1.3	2.0	48.3
150 APR2184	2.4	3.7	2.7	1.0	1.0	20.0
151 PST-2USD-07	2.4	3.3	2.7	1.3	1.3	21.0
152 PSG SLD334-5	2.4	3.3	2.7	1.3	1.3	13.7
153 PSG SLD334-4	2.4	3.0	3.0	1.3	1.3	18.7
154 PSG SLD257-5	2.4	3.7	2.7	1.0	1.0	9.3
155 Keystone 2	2.4	3.3	2.7	1.3	1.3	30.0
156 APR2466	2.3	3.3	2.7	1.0	1.0	13.7
157 PST-2RDY	2.3	3.3	2.3	1.3	1.3	23.7
158 PSG SLD334-2	2.3	3.3	2.3	1.3	1.0	16.7
159 Calypso 3	2.3	3.3	2.3	1.3	1.3	28.3
160 PSG 21-10 Lp	2.3	3.0	2.3	1.7	1.3	33.3
161 PSG 4 PNCKH	2.3	3.5	2.5	1.0	1.0	12.5
162 PSG SLD334-7	2.2	3.7	2.0	1.0	1.0	23.3
163 Buena Vista	2.2	3.7	2.0	1.0	1.0	20.0
164 Goalkeeper II	2.1	3.7	1.7	1.0	1.0	9.3
165 APR2459	2.1	3.3	2.0	1.0	1.3	26.7
166 APR2259	2.1	3.0	2.0	1.3	1.3	36.7
167 PSG PNCKD4	2.1	3.0	2.3	1.0	1.0	17.0
168 PSG 4SLD729	2.1	3.0	2.3	1.0	1.0	10.3
169 Regal 5	2.1	3.7	1.7	1.0	1.0	15.0
170 PR 544	2.1	3.7	1.7	1.0	1.0	3.0
171 Monterey 4	2.0	3.0	1.7	1.3	1.3	16.7
172 Replay	2.0	3.0	1.7	1.3	1.0	2.3
173 Gray Fox	2.0	2.7	2.0	1.3	1.3	31.7
174 PSG SLD729-4	2.0	2.7	2.0	1.3	1.3	20.3
175 PSG 4 DS894-2	2.0	3.0	2.0	1.0	1.0	2.3

(Continued)

Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
176 PSG 4 SLD257	2.0	3.3	1.7	1.0	1.0	10.3
177 PR 479 M2	2.0	3.7	1.3	1.0	1.0	6.7
178 Nexus XD	2.0	3.3	1.7	1.0	1.0	5.0
179 PSG PNCKD6	2.0	3.5	1.5	1.0	1.0	7.5
180 APR2517	1.9	3.0	1.7	1.0	1.0	2.0
181 Silver Dollar	1.9	3.0	1.7	1.0	1.0	23.3
182 Palmer IV	1.9	3.0	1.7	1.0	1.0	9.3
183 Accent II	1.8	2.0	2.0	1.3	1.0	4.0
184 APR2544	1.8	2.7	1.7	1.0	1.0	19.3
185 Estelle	1.8	2.7	1.7	1.0	1.0	16.7
186 PST-Syn-224L	1.8	3.0	1.3	1.0	1.0	11.7
187 PSG DS894	1.8	2.3	2.0	1.0	1.0	2.3
188 PPG-PR-166	1.8	3.0	1.3	1.0	1.0	23.3
189 Citation Fore	1.7	2.3	1.7	1.0	1.0	6.0
190 PSG SLD334-1	1.7	2.7	1.3	1.0	1.0	15.0
191 PSG SLD257-2	1.7	2.7	1.3	1.0	1.0	3.0
192 CS1	1.6	2.7	1.0	1.0	1.0	1.3
193 APR2320	1.6	2.7	1.0	1.0	1.0	1.3
194 PSG SLD729-3	1.6	2.0	1.7	1.0	1.0	1.3
195 PSG SLD257-4	1.6	2.3	1.3	1.0	1.0	5.3
196 La Quinta	1.4	2.0	1.3	1.0	1.0	2.3
197 PST-2ETS Bulk	1.4	2.3	1.0	1.0	1.0	11.0
198 PSG 4 DSPP2-2	1.4	2.0	1.3	1.0	1.0	1.3
199 PSG SLD729-6	1.4	2.0	1.3	1.0	1.0	1.0
200 PSG SLD257-1	1.4	2.3	1.0	1.0	1.0	1.7
201 PSG 4 DS894-3	1.4	2.3	1.0	1.0	1.0	2.0
202 Gator 3	1.4	2.3	1.0	1.0	1.0	2.7
203 JS 501	1.3	2.0	1.0	1.0	1.0	2.3
204 Caddieshake II	1.3	2.0	1.0	1.0	1.0	1.3
205 Top Gun II	1.3	2.0	1.0	1.0	1.0	5.7
206 Eliminator	1.3	2.0	1.0	1.0	1.0	2.0
207 PST-2H20	1.3	2.0	1.0	1.0	1.0	2.7
208 PSG 4 DSPP2-5	1.3	2.0	1.0	1.0	1.0	1.0
209 PSG SLD729-5	1.3	2.0	1.0	1.0	1.0	2.0
210 PSG 4 DS894-6	1.3	2.0	1.0	1.0	1.0	1.3

(Continued)

Table 6. Perennial ryegrass turf trial, 2012 (continued).

Cultivar or Selection	-----Grey Leaf Spot <sup>1</sup> -----				Turf Quality <sup>2</sup> Oct. 2012	Cover <sup>3</sup> (%) Oct. 2012
	2012 Avg.	Aug. 2012	Aug. 2012	Sept. 2012		
211 Marbella	1.3	1.7	1.3	1.0	1.0	4.7
212 PR 525	1.3	2.0	1.0	1.0	1.0	3.7
213 PSG 4 DSPP2-3	1.2	1.7	1.0	1.0	1.0	1.0
214 PSG 4 STD3	1.2	1.3	1.3	1.0	1.0	1.0
215 PSG 4 DSPP2-1	1.2	1.7	1.0	1.0	1.0	1.0
216 PSG SLD729-2	1.2	1.7	1.0	1.0	1.0	2.0
217 PSG 08-16-Lp	1.2	1.7	1.0	1.0	1.0	4.3
218 PSG DS894-4	1.2	1.7	1.0	1.0	1.0	6.0
219 PSG 4 DS894-1	1.2	1.7	1.0	1.0	1.0	1.0
220 Top Hat 2	1.2	1.7	1.0	1.0	1.0	1.7
221 Nexus XR	1.2	1.7	1.0	1.0	1.0	2.7
222 Panther GLS	1.2	1.7	1.0	1.0	1.0	1.0
223 PST-2ESP Bulk	1.1	1.3	1.0	1.0	1.0	11.7
224 PSG 4 SRUP	1.1	1.3	1.0	1.0	1.0	1.7
225 PSG 4 DSPP2-6	1.1	1.3	1.0	1.0	1.0	1.0
226 PSG SLD729-1	1.1	1.3	1.0	1.0	1.0	1.0
227 PSG 08-14 Lp	1.1	1.3	1.0	1.0	1.0	1.0
228 PSG 4 DS894-5	1.1	1.3	1.0	1.0	1.0	1.0
229 Brightstar SLT	1.1	1.3	1.0	1.0	1.0	1.7
230 PSG 4 DSPP2-4	1.0	1.0	1.0	1.0	1.0	1.7
231 PSG 4 DSPP2	1.0	1.0	1.0	1.0	1.0	1.0
232 PSG 08-12 Lp	1.0	1.0	1.0	1.0	1.0	1.7
LSD at 5% =	1.4	1.8	1.8	1.4	1.4	15.8

<sup>1</sup>9 = least disease

<sup>2</sup>9 = best turf quality

<sup>3</sup>100 = full turf cover

Table 7. Yearly nitrogen (N) applied and mowing height (Ht) on perennial ryegrass tests established at Adelphia, NJ.

	2010		2011	
	N <sup>1</sup>	Ht <sup>2</sup>	N	Ht
Table 1 (2010).....	2.00	1.5	1.75	1.5
Table 2 (2010).....	2.25	1.5	2.50	1.5
Table 3 (2010 NTEP).....	3.00	1.5	3.00	1.5
Table 4 (2010 NTEP).....	3.25	1.5	3.00	1.5
Table 5 (2011).....			3.00	1.5
Table 6 (2012).....			1.50	1.5

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

<sup>2</sup> Mowing height in inches