

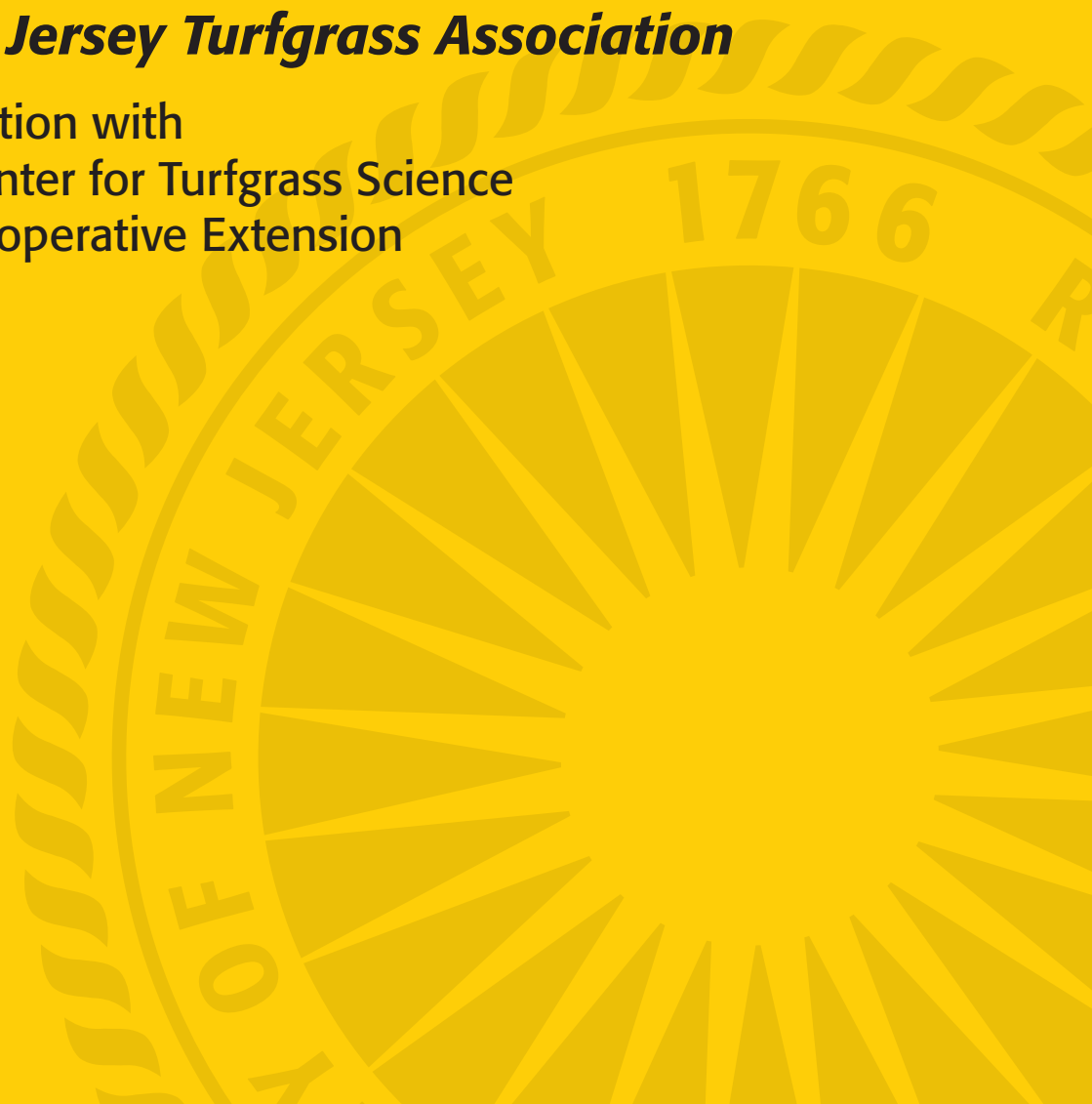
# RUTGERS

New Jersey Agricultural  
Experiment Station

## **2013 Turfgrass Proceedings**

***The New Jersey Turfgrass Association***

In Cooperation with  
Rutgers Center for Turfgrass Science  
Rutgers Cooperative Extension



# **2013 RUTGERS TURFGRASS PROCEEDINGS**

of the

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

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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 2013 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 BENTGRASS CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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Bentgrass species possess a distinct ability to form very dense, uniform, and fine textured surfaces under an extremely low height of cut. As a result, bentgrasses are often used in specialized, high maintenance areas such as golf course fairways, tees, and putting greens. There are three bentgrass species predominantly used for turf including creeping bentgrass (*Agrostis palustris* Huds.; synonym = *A. stolonifera* L.), colonial bentgrass (*A. tenuis* L. or *A. capillaris* L.), and velvet bentgrass (*A. canina* L.). Additionally, highland or dryland bentgrass (*A. castellana* Boiss. & Reut.) can be options for turf in stressful areas but tend to be less attractive than the more common species when a high quality turf is needed, so these are less commonly utilized. Due to their aggressive growth habits and adaptability to a variety of climates, creeping and velvet bentgrasses are most suitable for the very low cutting heights required for golf course greens in the United States. Colonial bentgrass responds best to a slightly higher height of cut, so it is usually better suited for fairways in temperate areas of the United States.

Creeping bentgrasses are highly stoloniferous and have a prostrate growth habit, which allows for persistence under very low mowing heights. Cutting heights of 1/10 of an inch are not uncommon on many top tier golf courses. This species is highly adapted to both cool, temperate as well as warm, humid regions of the United States, making it the most popular species used on golf course putting greens in temperate areas. Its vigorous spreading growth habit also contributes to its ability to repair damaged areas quickly. In 1954, H. B. Musser released 'Penncross,' the first seeded synthetic variety of creeping bentgrass (Musser, 1959). Since that time, breeding efforts have markedly improved creeping bentgrasses to withstand the increasing demands of the game of golf including the need, when compared to older

varieties, for better turf quality, darker green color, improved shoot density, improved traffic tolerance and recuperative ability, and increased disease and stress tolerances.

Creeping bentgrasses are susceptible to a number of pathogens and pests. Dollar spot (caused by the fungus *Sclerotinia homoeocarpa*) is one of the main disease problems of close-cut creeping bentgrass. However, these grasses can also be susceptible to brown patch (*Rhizoctonia solani*), copper spot (*Gloeocercospora sorghi*), anthracnose (*Colletotrichum cereale*), and diseases caused by *Pythium* spp.

Colonial bentgrass, also referred to as brown-top, has traditionally been used as a lawn and golf course grass in areas of Northern Europe and New Zealand that have mild (cool and humid) summers. Compared to creeping bentgrasses, colonial bentgrasses have a finer leaf texture and a more upright and less aggressive spreading growth habit and are generally better adapted for fairway or tee use in the warmer summer climates of the United States. Colonial bentgrasses perform best in New Jersey when mowed no lower than 3/8 of an inch. They typically have a brighter green color and better color retention during cool weather compared to creeping bentgrasses. Although colonial bentgrasses generally have better dollar spot resistance and better wear tolerance, they are much more susceptible than creeping bentgrasses to brown patch. While not lethal, the playability of golf courses may be affected if brown patch is not controlled on colonial bentgrass turfs. Current breeding efforts include improving the tolerance of colonial bentgrasses to this disease.

Velvet bentgrass forms the finest-textured and most dense turf of the bentgrasses and can nearly

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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 tolerant of the bentgrasses used for turf (Skogley, 1973). Due to the density and vigor of this turf, even under very low mowing conditions, it has been shown to be extremely effective at preventing the encroachment of the most prolific weed on a golf course, *Poa annua*. The spread of velvet bentgrass via stolons is more aggressive than colonial bentgrass, but not as strong as creeping bentgrass.

Velvet bentgrass can form excessive thatch, especially at high fertility rates, increased irrigation, and higher cutting heights, and can thus become problematic if not maintained properly. Years of mismanagement with subsequent poor turf quality has given velvet bentgrass a poor reputation, but recent research showed that when managed properly, velvet bentgrass can create a superior turf (Brilman and Meyer, 2000).

Velvet bentgrass can be susceptible to red thread (caused by *Laetisaria fuciformis*) and copper spot, but generally has good resistance to dollar spot and brown patch. Seedlings of velvet bentgrasses are susceptible to *Pythium* seedling root rot during establishment.

During colder weather, velvet bentgrass will turn a dark purple color and will take longer than the other bentgrass species to “green-up” in the spring. Velvet bentgrass has not been used extensively for high maintenance turf, largely because its range of adaptation has not been well characterized. Selections of velvet bentgrass have persisted for many years in trials under New Jersey growing conditions. Recent research at Rutgers indicates that the species may one day serve as a viable alternative to creeping bentgrass for use on golf course greens in the northeastern United States as long as proper cultural management inputs are implemented. Some of the major breeding objectives for velvet bentgrass include resistance to copper spot and *Pythium* diseases, and better wear tolerance.

The New Jersey Agricultural Experiment Station participates in the National Turfgrass Evaluation Program (NTEP), which evaluates many species of turfgrass including bentgrasses at various locations 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 the British Isles, Norway, Sweden, Spain, Portugal, France, Finland, Switzerland, Scotland, Italy, Greece, Poland, Holland, Hungary, Bulgaria, Romania, Croatia, China, and the Slovak Republic serve to enhance the genetic diversity of the germplasm used in this breeding program. The Rutgers turfgrass breeding program focuses on improving turfgrasses for overall quality, color, density, uniformity, texture, disease resistance, salt tolerance, traffic tolerance, and many other aspects of a turf to be grown for a variety of purposes.

## PROCEDURES

Bentgrass evaluation trials were established at the Rutgers Horticultural Research Farm II in North Brunswick, NJ in the fall of 2008 (Tables 1 and 2), 2009 (Table 3), 2010 (Tables 4 to 6), 2011 (Tables 7 to 9), and 2012 (Tables 10 to 12). Trials were established on a modified Nixon loam. Plot size was 3 x 5 ft for all trials except for the two 2008 NTEP trials (putting greens and fairway/tee, Tables 1 and 2, respectively) which were 4 x 6 ft. Plots were hand-seeded at a rate of approximately 1.0 lb per 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, except the 2008 NTEP putting green trial (Table 1), which had somewhat enclosed air circulation. The annual rate of nitrogen applied, mowing height, cultivation/topdressing practices, and pesticide applications for each test are presented in Table 13. 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 three times per week with a triplex reel mower and clippings were removed during periods of active growth. Soil pH was maintained in the range of 5.4 to 6.8 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 disease and insect damage). Turf quality (Tables 1 to 12), establishment (Tables 10 to 12), drought stress (Table 2), sod web worm damage (Table 1), wear quality (Table 3), and disease were rated on a 1 to 9

scale, where 9 represented the most desirable turf characteristic. Disease ratings included dollar spot (Tables 1, 2, 5 to 9, and 12), brown patch (Tables 1, 9, and 12), copper spot (Tables 1, 2, 4, and 11), root pythium (Tables 7 and 8), leaf spot (Tables 7 and 11), and yellow tuft (Table 11). 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 9 are ranked according to their overall multi-year quality average. Tables 10 through 12 are ranked by the average turf quality for 2013 only. Throughout all of the years that turf quality was assessed, a few varieties in each bentgrass species stood out as better performing entries. For creeping bentgrasses maintained at a putting green height of cut, Luminary, Barracuda, Pure Distinction, Shark, Proclamation, and the experimental selections IS-AP 18, PPG-AP 102, H05TP-300-1, PGC Comp, CAS2 Comp, LQC Comp, EBC Comp, and R10 and R11 all performed very well, while Penncross, Brighton, Providence, Putter, and Sandhill were consistently among the poorest performers. At fairway height, SRP 1WM, Proclamation, Focus, Pin-Up, and the experimental selections PPG-AP 102, R10, GDE Comp, EBC Comp, and PGF Comp creeping bentgrasses had excellent turf quality, while the lowest scoring cultivars consisted of Penncross, Providence, Sandhill, and Brighton. In the NTEP putting green/tee trial (Table 1), Luminary, Pure Distinction, Barracuda, Shark, V8, and Focus were the top creeping bentgrass cultivars and selections. In the NTEP fairway trial (Table 2) Pure Select, Luminary, Proclamation, SRP 1WM, Pin-Up, and Authority were among the top performing creeping bentgrasses.

Overall turf quality for velvet bentgrasses was evaluated in the 2008, 2009, 2010, 2011, and 2012 trials (Tables 1, 3, 4, 7, and 11) under greens height of cut. Legendary, the experimental entries PSG 7PC2, IS-AC 4, IS-AC 5, PPG-AC 101, and many Rutgers composite entries were among the top performing velvet bentgrasses within all of these trials, although IS-AC 4 and PSG 7PC2 were not entered in the NTEP greens trial (Table 1). The cultivar SR 7200 and Villa displayed poor quality under these greens-type management conditions.

As mentioned previously, colonial bentgrasses perform better at a fairway cutting height and typically have poorer performance under putting green conditions (as shown in Tables 3, 5, and 8). Nevertheless, there were several colonials in each trial that exhibited acceptable turf quality at greens height; these included BCQ Comp and WBM Comp (Table 3), Capri, DML Comp, and DDL Comp (Table 5), and CED Comp, FDC Comp, CMD Comp, and CED Comp (Table 8). Under fairway conditions, however, (Tables 2, 6, 9, and 12), the experimental selections PSG NBC, PPG-AT 103, EDM Comp, DDL Comp, CMD Comp, CDD Comp, FDC Comp CED Comp, PRE Comp, PRE2 Comp, and the cultivar Capri were the best performing colonial bentgrasses, while SR 7150, SR 7100, and Tiger II generally exhibited the poorest performance when included in trials. In the NTEP fairway trial (Table 2), A08-FT12, and A08-EBM had the highest turf quality, while PST-R9D7 did not perform as well as other colonial bentgrass entries.

### Dollar Spot

The causal agent of dollar spot, *S. homeocarpa*, causes silver-dollar shaped spots of dead turf which can converge to form larger damaged areas (Belanger et al., 2005). While potentially one of the more damaging turf diseases on golf courses in the northeast, dollar spot can be easily controlled with the use of fungicides; however this can be expensive due to the prevalence of the fungus. Also becoming more prevalent is the pathogen's resistance to fungicides, particularly the DMI fungicides (Smiley et al., 2005). Additionally, increased fungicide use is not beneficial to the environment.

Breeding for dollar spot resistance in bentgrass is an important objective of the Rutgers breeding program. Typically, velvet and colonial bentgrasses have better resistance to dollar spot than creeping bentgrass, however the results from recent trials (Tables 1, 2, 5 to 9, and 12) indicate that significant improvements in creeping bentgrass have been made. Memorial, 13M, Declaration, SRP 1WM, Luminary, Barracuda, EBC Comp, and CMC Comp all show a high resistance to this disease, while Ninety-Six Two, Crenshaw, Putter, Shark, Pure Distinction, and PSG 1RHTAV3 were more susceptible.

### Brown Patch

Velvet bentgrass typically exhibits the greatest tolerance to brown patch among the bentgrass

species used for turf, while colonial bentgrass is the most susceptible. Dramatic improvements have been made in breeding colonial and creeping bentgrasses for enhanced resistance to this disease. Brown patch data is reported in Tables 1, 9, and 12. The NTEP greens trial (Table 1) is the only trial in 2013 in which both creeping and velvet bentgrasses were assessed for brown patch disease; of note, there are several resistant creeping bentgrasses rated higher than certain velvet bentgrass entries, which could be indicative of improvement in cultivars for resistance to this disease. Overall, creeping bentgrasses displayed acceptable tolerance to brown patch, although selections such as Luminary, Barracuda, CMC Comp, Pure Distinction, Proclamation, and IS-AP 18 are all creeping bentgrasses that were top-rated for resistance to this fungus.

Significant research has focused on improving brown patch resistance in colonial bentgrass. In the most recent fairway trials (Tables 9 and 12), gradual improvements in brown patch resistance is evident. In trials evaluated in 2013, the experimental selections CMD Comp, CEM Comp, PST-0HME Bulk, FDC Comp, PSG NBC, and the cultivar Capri exhibited significantly improved brown patch resistance over entries such as SR 7150, Tiger 2, Alister, Glory, and SR 7100.

### **Copper Spot**

This disease has become an increasing concern in the Northeast during the summer due to the warm wet conditions when limited DMI fungicides are used. The causal agent of this disease, *G. sorghi*, is a fungus that produces 3 to 4 inch, red-brown patches on the turf. Currently, one of the major drawbacks in the use of velvet bentgrass continues to be the high susceptibility to this disease. Therefore, selection of velvet bentgrass for resistance to copper spot is a major goal of the Rutgers Turfgrass Breeding Program.

During the 2013 growing season, copper spot was assessed on velvet bentgrass in the 2008, 2010, and 2012 trials (Tables 1, 4, and 11, respectively). The experimental lines PSG 7PC2, IS-AC 5, SPV Comp, CDE Comp, SME Comp, CS1 Comp, and SMM Comp were consistently more tolerant than cultivars Villa and Greenwich.

While not typically considered a large problem on creeping bentgrass surfaces, it can be stated that some creeping bentgrass cultivars and selections were significantly affected by copper spot (Tables 1 and 2). At greens height of cut (Table 1), T-1, Focus, 13M, and Memorial performed better than Penn A-4, Declaration, Pure Distinction, and Proclamation. At a fairway height of cut (Table 2), T-1, CY-2, L-93, and Princeville outperformed Declaration, Penn A-4, Luminary, Pure Select, and Barracuda.

### **ACKNOWLEDGMENTS**

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Table 1. Performance of bentgrass cultivars in a putting green trial established in September 2008 at North Brunswick, NJ. (Includes all entries of the 2008 National Bentgrass Greens Test - NTEP.)

Cultivar or Selection	Species	Turf Quality <sup>1</sup>										Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013	Sod Webworm <sup>3</sup> July 2013	Copper Spot <sup>2</sup> Aug. 2013	Turf Density <sup>4</sup> Oct. 2013	Leaf Texture <sup>5</sup> Nov. 2013	Genetic Color <sup>6</sup> Dec. 2013
		2009-2013 Avg.	2009 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.											
1 Luminary	Creeping	7.5	7.5	8.0	7.9	7.5	6.7	7.3	7.3	7.3	5.3	7.3	5.3	6.3	7.0	6.3		
2 Pure Distinction	Creeping	7.1	7.5	7.7	8.0	7.1	5.3	4.2	4.2	4.2	3.0	7.7	3.0	6.7	7.0	4.7		
3 Barracuda	Creeping	6.7	7.1	6.3	6.9	6.9	6.7	7.5	6.8	6.8	6.0	7.7	6.0	7.3	8.0	6.7		
4 Legendary	Velvet	6.6	7.4	6.8	6.6	6.5	5.8	8.0	7.0	7.0	5.3	8.3	5.3	7.7	9.0	4.7		
5 V8	Creeping	6.4	6.8	6.2	6.0	6.8	6.3	7.8	4.7	4.7	6.3	7.7	6.3	5.7	7.7	6.3		
6 Shark	Creeping	6.4	7.0	6.5	6.9	6.3	5.3	4.0	5.3	5.3	4.3	7.3	4.3	7.0	7.3	6.7		
7 Focus	Creeping	6.3	6.8	6.0	6.0	6.4	6.4	7.3	5.7	6.0	8.0	8.0	8.0	6.3	6.0	6.7		
8 Proclamation	Creeping	6.1	6.4	6.2	6.7	6.0	5.4	6.0	6.2	6.2	3.0	7.3	3.0	5.7	7.0	5.3		
9 Villa	Velvet	6.1	7.2	6.3	5.9	6.3	4.9	7.5	8.0	8.0	3.7	6.0	3.7	7.3	8.7	4.3		
10 Pin-Up	Creeping	5.9	5.8	5.5	6.0	6.6	5.3	5.7	5.2	5.2	6.3	7.3	6.3	5.0	6.3	5.7		
11 Greenwich	Velvet	5.6	6.9	5.2	5.5	5.5	5.1	7.5	7.8	7.8	3.3	6.3	3.3	6.0	8.3	4.0		
12 Declaration	Creeping	5.6	6.4	5.5	5.5	5.4	5.3	8.0	6.0	6.0	2.3	6.7	2.3	5.7	6.7	5.3		
13 OO7	Creeping	5.6	5.9	5.5	5.8	5.4	5.3	6.0	6.7	6.7	6.0	7.7	6.0	7.3	7.3	6.0		
14 Authority	Creeping	5.3	6.5	4.9	4.9	5.4	5.2	6.7	4.8	4.8	4.3	7.0	4.3	6.7	7.0	6.3		
15 Penneagle II	Creeping	5.1	6.2	4.7	5.3	4.9	4.7	6.3	5.2	5.2	6.7	7.0	6.7	6.7	6.7	6.0		
16 Penn A-4	Creeping	5.0	6.1	4.2	5.1	5.4	4.1	4.7	3.8	3.8	1.7	7.3	1.7	5.3	6.0	5.3		
17 SRP-1BLTR3	Creeping	4.8	5.6	5.2	4.9	4.9	3.2	3.8	5.2	5.2	4.0	7.0	4.0	4.0	6.3	4.0		
18 AFM	Creeping	4.8	5.2	4.7	4.5	4.9	4.7	5.8	4.7	4.7	5.7	7.3	5.7	5.7	5.3	6.0		
19 T-1	Creeping	4.7	6.1	4.6	4.6	4.9	3.3	5.2	5.2	5.2	7.3	7.0	7.3	4.0	5.0	4.3		
20 Penn A-1	Creeping	4.5	5.3	4.3	4.4	4.5	4.1	5.5	5.3	5.3	4.0	6.0	4.0	5.3	6.3	5.0		
21 Kingpin	Creeping	4.4	5.7	4.9	4.0	3.8	3.6	8.8	4.5	4.5	6.7	8.0	6.7	5.7	5.3	5.0		
22 Tyeer	Creeping	4.3	4.5	4.0	4.5	4.6	3.7	5.5	5.0	5.0	6.3	7.7	6.3	4.3	6.0	5.0		
23 Alpha	Creeping	4.2	5.8	4.0	4.3	4.0	3.1	6.2	4.8	4.8	7.0	7.7	7.0	4.7	5.0	4.3		
24 Penn A-2	Creeping	4.1	4.3	3.8	4.3	4.3	3.8	6.2	5.3	5.3	5.0	7.7	5.0	5.0	5.7	5.0		
25 SR 7200	Velvet	4.1	5.8	3.3	2.9	3.7	4.5	7.2	6.7	6.7	6.0	5.7	6.0	5.7	8.0	3.7		
26 13M	Creeping	3.9	5.1	3.7	3.5	3.3	4.0	8.3	5.7	5.7	7.7	8.3	7.7	4.0	4.7	3.7		
27 Memorial	Creeping	3.7	4.7	3.8	3.8	3.3	2.9	8.3	3.5	3.5	7.0	8.0	7.0	5.3	4.7	4.7		
28 Crenshaw	Creeping	3.6	4.8	3.2	3.7	3.8	2.4	2.8	5.2	5.2	2.7	7.0	2.7	4.7	5.3	4.7		
29 L-93	Creeping	3.5	4.0	3.0	3.7	3.1	4.0	7.0	5.0	5.0	6.7	7.3	6.7	4.3	4.7	5.0		
30 Penn G-2	Creeping	3.5	3.8	3.7	3.3	3.6	3.1	5.8	4.7	4.7	3.0	6.3	3.0	5.0	6.0	4.3		

(Continued)

Table 1. Bentgrass putting green trial, 2008, NTEP (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013	Sod Webworm <sup>3</sup> July 2013	Copper Spot <sup>2</sup> Aug. 2013	Turf Density <sup>4</sup> Oct. 2013	Leaf Texture <sup>5</sup> Nov. 2013	Genetic Color <sup>6</sup> Dec. 2013
		2009-2013 Avg.	2009 Avg.	2010 Avg.	2011 Avg.	2012 Avg.							
31 Southshore	Creeping	3.0	4.0	3.1	3.1	2.7	5.2	4.8	7.3	7.0	2.7	3.7	3.7
32 Pennncross	Creeping	2.4	3.8	2.3	2.0	1.8	7.7	5.2	7.7	6.0	3.7	3.3	4.0
LSD at 5% =		0.6	0.8	0.9	0.9	0.8	1.7	2.0	2.0	2.9	1.9	1.3	2.0

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

<sup>2</sup>9 = best disease resistance (assessment for dollar spot and brown patch is an average of two rating dates)

<sup>3</sup>9 = best tolerance to sod webworm

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

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

<sup>6</sup>9 = darkest green color



Table 2. Performance of bentgrass cultivars in a fairway trial established in September 2008 at North Brunswick, NJ. (Includes all entries of the 2008 National Bentgrass Fairway Test - NTEP.)

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Dollar Spot <sup>2</sup> Aug. 2013	Drought Tolerance <sup>3</sup> Aug. 2013	Copper Spot <sup>4</sup> Aug. 2013	Turf Texture <sup>4</sup> Oct. 2013	Turf Density <sup>5</sup> Oct. 2013	Genetic Color <sup>6</sup> Oct. 2013
		2009-2013 Avg.	2009 Avg.	2010 Avg.	2011 Avg.	2012 Avg.						
1 Pure Select	Creeping	7.0	7.3	6.7	7.0	8.0	6.0	5.3	4.3	7.3	7.7	6.0
2 Luminary	Creeping	6.8	7.3	6.5	6.9	7.5	6.1	7.0	3.7	7.0	6.7	7.7
3 Proclamation	Creeping	6.7	6.7	6.6	7.1	7.1	6.2	6.3	5.7	7.3	7.0	6.3
4 SRP 1WM	Creeping	6.5	6.6	6.3	6.7	7.0	6.0	8.7	5.7	7.7	7.3	6.0
5 Pin-Up	Creeping	6.5	6.4	6.3	7.0	7.6	5.5	6.7	5.0	6.7	7.0	6.7
6 Authority	Creeping	6.5	6.9	6.7	6.4	6.8	5.5	5.3	6.3	7.3	7.0	5.0
7 Declaration	Creeping	6.3	6.6	6.8	6.3	6.0	5.5	8.0	4.7	6.3	6.3	5.7
8 Barracuda	Creeping	6.3	7.3	6.7	6.3	5.6	5.5	7.7	4.3	8.0	6.7	6.7
9 O07	Creeping	6.2	6.3	6.2	6.8	6.4	5.5	7.7	5.7	7.3	7.3	7.3
10 CY-2	Creeping	5.9	6.2	5.8	6.4	6.0	5.4	7.0	8.3	6.3	6.0	5.0
11 Penn A-4	Creeping	5.8	6.2	5.8	6.2	6.2	4.5	2.7	4.7	5.3	6.3	6.0
12 A08-FT12	Colonial	5.6	6.1	5.7	5.9	4.7	5.6	9.0	9.0	6.7	7.3	5.0
13 T-1	Creeping	5.6	6.3	4.9	5.6	5.9	5.1	5.0	8.3	6.7	5.7	7.3
14 Crystal BlueLinks	Creeping	5.3	6.5	4.4	4.9	5.5	5.0	6.7	5.7	5.7	5.3	6.0
15 BCD	Colonial	5.1	5.8	5.4	5.9	4.5	4.2	8.7	9.0	7.3	6.3	4.3
16 A08-EBM	Colonial	5.0	5.4	4.6	5.3	4.0	5.8	9.0	9.0	7.3	6.3	3.3
17 Benchmark DSR	Creeping	5.0	6.4	4.5	4.9	5.3	4.0	8.3	6.0	7.0	6.3	7.3
18 13M	Creeping	4.8	5.7	4.5	5.3	4.6	4.0	8.3	6.0	5.3	6.0	6.3
19 Green Time	Colonial	4.8	5.6	4.8	5.0	4.5	3.8	8.7	9.0	7.0	6.7	5.7
20 L-93	Creeping	4.7	4.9	4.3	5.3	4.3	4.9	6.3	7.7	5.3	5.7	6.3
21 Tiger II	Colonial	4.6	5.5	4.4	5.2	4.2	3.5	9.0	9.0	7.0	6.3	3.7
22 Memorial	Creeping	4.4	5.2	4.3	4.4	4.6	3.6	8.0	6.0	4.7	4.0	5.7
23 Princeville	Creeping	3.3	3.9	3.3	3.3	3.4	2.3	6.3	7.7	3.3	3.0	4.3
24 Penncross	Creeping	3.3	4.5	2.3	3.2	3.1	3.1	6.3	6.3	3.3	3.7	4.3
25 PST-R9D7	Colonial	3.1	3.7	3.3	3.3	3.0	2.4	8.0	9.0	6.0	5.0	2.7
LSD at 5% =		0.6	0.7	0.8	0.9	0.9	0.9	1.4	1.9	1.5	1.4	1.6

(Continued)

Table 2. Bentgrass fairway trial, 2008, NTEP (continued).

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- <sup>1</sup>9 = best turf quality
- <sup>2</sup>9 = best disease resistance
- <sup>3</sup>9 = best drought tolerance
- <sup>4</sup>9 = finest leaf texture
- <sup>5</sup>9 = highest shoot density
- <sup>6</sup>9 = darkest green color

Table 3. Performance of creeping, velvet, and colonial bentgrass cultivars and selections in a putting green trial seeded in September 2009 at North Brunswick, NJ.

	Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Turf Wear Quality <sup>2</sup> 2013
			2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
1	H05TP-300-1	Creeping	6.9	7.2	6.4	7.1	6.9	7.0
2	PGC Comp	Creeping	6.9	7.0	7.1	6.4	7.0	6.5
3	Luminary	Creeping	6.7	7.2	6.5	6.2	7.0	6.2
4	CAS2 Comp	Creeping	6.7	7.0	6.8	6.2	6.9	8.0
5	H05TP-295-12	Creeping	6.7	7.0	6.2	6.3	7.2	8.5
6	LQC Comp	Creeping	6.6	6.9	6.2	6.7	6.8	7.3
7	PSG 7PC2	Velvet	6.4	7.1	6.1	6.6	5.8	5.8
8	Barracuda	Creeping	6.3	6.9	5.7	6.1	6.7	7.2
9	H05TP-295-1	Creeping	6.3	6.8	6.2	5.7	6.7	7.8
10	IS-AP 18	Creeping	6.3	6.4	6.2	5.8	6.7	7.5
11	DQC Comp	Creeping	6.2	6.1	6.4	6.2	6.2	6.2
12	RJM 26	Creeping	6.2	6.9	5.4	4.9	7.7	9.0
13	CAS1 Comp	Creeping	6.2	5.8	6.1	6.2	6.5	7.3
14	IS-AC 5	Velvet	6.1	6.7	5.5	6.1	6.4	6.0
15	IS-AC 4	Velvet	6.1	6.5	5.5	6.6	6.1	7.0
16	IS-AP 15	Creeping	6.1	6.6	6.0	5.6	6.1	6.0
17	RJM 513	Creeping	6.1	7.0	5.6	4.7	7.1	8.0
18	Authority	Creeping	6.0	6.6	5.5	5.6	6.3	6.7
19	RH 931	Creeping	6.0	6.3	5.9	5.7	6.1	6.7
20	RJM 412	Creeping	5.9	6.7	4.5	5.0	7.4	8.5
21	Pin-Up	Creeping	5.8	6.4	5.2	5.8	6.1	5.3
22	Focus	Creeping	5.8	5.9	5.4	6.0	5.8	4.7
23	Shark	Creeping	5.8	6.3	5.2	5.2	6.4	6.8
24	RH 0839	Creeping	5.7	6.5	4.6	4.7	7.0	7.3
25	Greenwich	Velvet	5.6	6.4	5.2	5.6	5.2	5.2

(Continued)

Table 3. Creeping, velvet, and colonial bentgrass putting green trial, 2009 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Turf Wear Quality <sup>2</sup> 2013
		2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
26 MDS Comp	Velvet	5.6	5.6	5.4	6.1	5.4	5.8
27 MDV Comp	Velvet	5.6	5.8	5.0	5.5	6.0	4.8
28 RJM 56	Creeping	5.6	6.4	4.3	4.6	7.0	8.8
29 Villa	Velvet	5.5	6.1	5.0	5.8	5.4	5.8
30 Legendary	Velvet	5.4	6.4	4.6	5.8	4.9	5.7
31 Luminary/A-1	Creeping	5.4	5.9	5.0	5.2	5.4	5.2
32 VDE Comp	Velvet	5.4	5.7	4.7	5.7	5.4	4.7
33 OO7	Creeping	5.4	6.2	4.8	5.1	5.3	5.2
34 Runner	Creeping	5.3	5.5	4.9	4.9	6.0	6.5
35 SR 1150	Creeping	5.3	5.9	4.6	5.1	5.8	6.8
36 Tye/007	Creeping	5.3	6.1	4.0	4.9	6.1	6.0
37 Luminary/A-1/Memorial	Creeping	5.3	5.4	4.7	5.4	5.5	5.2
38 RH 081	Creeping	5.3	5.9	4.6	4.5	6.2	6.3
39 BCQ Comp	Colonial	5.3	6.0	5.6	5.0	4.4	4.2
40 Tye	Creeping	5.2	4.6	4.9	5.5	6.0	6.0
41 H05TP-276-2	Creeping	5.2	5.2	4.8	4.9	5.9	7.0
42 SSS Comp	Velvet	5.2	5.5	4.9	5.6	4.9	4.0
43 H04TP-211-7-9	Creeping	5.2	5.9	5.4	5.0	4.6	5.5
44 OO7/SR 1150	Creeping	5.2	5.8	4.7	4.8	5.4	5.3
45 Cobra 2	Creeping	5.1	5.9	4.3	5.4	5.0	4.0
46 H05TP-269-8	Creeping	5.1	5.4	4.5	4.8	5.6	5.0
47 WBM Comp	Colonial	5.1	5.6	5.5	4.9	4.5	3.7
48 A-1	Creeping	5.0	5.8	4.2	5.0	5.0	4.3
49 PSG RHG12	Creeping	5.0	5.5	4.4	4.5	5.4	3.7
50 SRP 1BLTR3	Creeping	5.0	6.0	4.2	4.4	5.3	4.8

(Continued)

Table 3. Creeping, velvet, and colonial bentgrass putting green trial, 2009 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Turf Wear Quality <sup>2</sup> 2013
		2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
51 Declaration	Creeping	5.0	6.1	4.4	5.0	4.5	3.0
52 H05TP-290-2	Creeping	5.0	5.2	4.9	4.7	5.0	5.8
53 SRP 1WM	Creeping	5.0	6.7	4.5	5.1	3.7	3.3
54 CY-2	Creeping	4.9	5.1	4.7	4.9	5.1	5.2
55 RH TAV317	Creeping	4.9	5.4	4.0	4.3	6.1	6.5
56 DPAZ7	Creeping	4.9	5.1	3.5	4.5	6.5	7.0
57 OO7/Mackenzie/Tyee	Creeping	4.9	5.5	4.2	4.6	5.2	6.2
58 RH TAV318	Creeping	4.9	5.4	3.5	4.4	6.0	7.3
59 SL TAZ3	Creeping	4.9	5.0	3.5	4.4	6.6	7.2
60 RH TAV34	Creeping	4.8	5.3	4.3	4.0	5.6	7.8
61 RH TAV327	Creeping	4.8	5.3	4.0	4.1	5.7	5.7
62 WBE Comp	Colonial	4.8	5.3	5.0	4.7	4.1	4.2
63 SL TAZ1	Creeping	4.8	4.4	4.2	4.4	6.1	5.5
64 PST-Syn-VR05	Velvet	4.7	5.8	4.1	5.2	4.0	3.8
65 Independence	Creeping	4.7	5.1	4.2	4.7	4.9	5.3
66 PST-Syn-VH5	Velvet	4.7	5.5	3.9	4.9	4.4	5.2
67 SL TAZ2	Creeping	4.7	5.1	3.8	3.9	5.9	5.7
68 FWC Comp	Colonial	4.6	5.4	4.8	4.7	3.6	3.5
69 RH TAV36	Creeping	4.6	4.6	3.5	4.6	5.8	5.5
70 DPAZ1	Creeping	4.6	5.2	3.7	4.1	5.5	6.7
71 OO7/Mackenzie	Creeping	4.5	5.3	4.0	4.3	4.6	4.7
72 Penn G-1	Creeping	4.5	4.7	4.5	4.5	4.4	3.0
73 SRP 2163	Velvet	4.5	5.0	4.9	4.3	3.9	3.0
74 Penn G-1	Creeping	4.5	5.1	3.7	4.5	4.7	3.7
75 RH TAV524	Creeping	4.5	5.0	3.2	3.9	5.7	7.0

(Continued)

Table 3. Creeping, velvet, and colonial bentgrass putting green trial, 2009 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Turf Wear Quality <sup>2</sup> 2013
		2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
76 Mackenzie	Creeping	4.5	5.1	4.3	4.4	4.0	4.3
77 SRP 72P2	Velvet	4.4	5.0	4.2	4.0	4.5	4.0
78 Penn A-2	Creeping	4.3	4.7	4.1	4.2	4.3	3.2
79 OO7/SR1119	Creeping	4.3	5.3	3.7	4.1	4.3	4.7
80 SR 1150/SR 1119	Creeping	4.3	4.7	4.1	4.0	4.5	4.0
81 SR 7200	Velvet	4.3	5.7	3.8	4.3	3.4	2.3
82 Penneagle II	Creeping	4.3	4.9	4.1	4.5	3.6	3.3
83 WLC Comp	Colonial	4.3	4.8	4.8	4.0	3.4	3.0
84 Pennlinks II/Penneagle II	Creeping	4.2	4.9	3.8	4.2	3.8	3.8
85 Mackenzie/Penn G-1	Creeping	4.2	4.6	3.6	4.1	4.5	4.3
86 WQD Comp	Colonial	4.2	4.1	4.7	4.2	3.8	4.0
87 Penn G-6	Creeping	4.2	5.0	4.0	4.1	3.7	2.5
88 SRP 2169	Velvet	4.2	4.8	3.8	3.5	4.6	3.0
89 13M	Creeping	4.1	5.0	3.7	4.0	3.7	3.5
90 Penn A-1/Penn A-4	Creeping	4.1	5.3	3.4	3.6	3.8	3.5
91 SRP 2161	Velvet	4.0	4.8	3.9	3.7	3.6	3.3
92 PST-Syn-0R56	Creeping	4.0	4.3	4.0	4.2	3.5	3.8
93 96-2	Creeping	4.0	4.8	3.6	3.5	4.0	3.3
94 SRP 2127	Velvet	4.0	4.6	4.0	3.7	3.7	3.0
95 SRP 2117	Velvet	4.0	5.3	3.4	3.4	3.8	3.2
96 RH TAV37	Creeping	3.9	4.4	2.4	3.8	5.2	4.8
97 LS-44	Creeping	3.9	4.9	3.7	3.9	3.2	2.5
98 T-1	Creeping	3.9	5.0	3.3	3.7	3.7	3.7
99 SRP 72P4	Velvet	3.9	4.8	3.6	3.5	3.9	2.5
100 Crystal Bluelinks	Creeping	3.9	5.2	3.5	3.5	3.3	2.7

(Continued)

Table 3. Creeping, velvet, and colonial bentgrass putting green trial, 2009 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>					Turf Wear Quality <sup>2</sup> 2013
		2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
101 SRP 2145	Velvet	3.9	4.4	3.9	3.8	3.8	3.0
102 Pure Select	Creeping	3.9	5.2	3.4	3.4	3.5	3.3
103 H05TP-207-4	Creeping	3.9	4.8	3.5	3.8	3.4	4.0
104 SRP 2186	Velvet	3.9	4.5	3.9	3.6	3.5	1.5
105 Penn A-4	Creeping	3.8	4.9	3.1	3.6	3.7	2.8
106 SRP 2145	Velvet	3.8	4.3	3.8	3.4	3.8	3.0
107 SRP 72P1	Velvet	3.7	4.2	3.4	3.4	3.8	2.5
108 BCD	Colonial	3.7	4.7	4.3	3.3	2.4	1.8
109 SRP 72P3	Velvet	3.6	4.5	3.7	3.2	3.2	2.3
110 Kingpin	Creeping	3.6	4.8	3.0	3.2	3.4	3.3
111 SRP 2168	Velvet	3.6	4.3	3.0	3.4	3.6	3.2
112 Memorial	Creeping	3.5	4.6	3.4	3.2	2.9	2.0
113 Penn G-2	Creeping	3.4	4.5	3.2	3.4	2.7	2.3
114 PST-OPUF Bulk	Creeping	3.4	3.2	3.1	3.0	4.4	5.3
115 L-93	Creeping	3.4	3.9	3.2	3.6	2.9	2.2
116 Century	Creeping	3.3	4.2	2.6	3.0	3.3	4.0
117 Alpha	Creeping	3.2	4.4	2.8	2.8	2.9	2.7
118 SRP 2148	Velvet	3.2	4.1	2.7	2.9	3.2	2.0
119 Southshore	Creeping	3.2	4.2	2.7	3.3	2.5	2.7
120 Sandhill	Creeping	3.1	4.4	2.6	2.8	2.8	1.5
121 Providence	Creeping	3.1	4.1	2.6	3.1	2.6	1.3
122 SR 1119	Creeping	3.0	4.3	2.7	2.6	2.4	1.3
123 Seaside II	Creeping	3.0	3.8	2.6	2.9	2.6	2.2
124 Pennlinks II	Creeping	3.0	4.5	2.9	2.9	1.7	1.3
125 SRP 2164	Velvet	3.0	3.4	2.9	2.6	3.1	2.3

(Continued)

Table 3. Creeping, velvet, and colonial bentgrass putting green trial, 2009 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----					Turf Wear Quality <sup>2</sup> 2013
		2010-2013 Avg.	2010 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
126 Crenshaw	Creeping	2.9	3.9	2.3	2.7	2.8	2.7
127 Putter	Creeping	2.8	4.2	2.5	2.4	2.2	1.5
128 Brighton	Creeping	2.6	3.4	2.5	2.4	2.1	1.2
129 Pennncross	Creeping	2.1	2.9	2.1	2.0	1.5	1.2
LSD at 5% =		0.6	0.9	1.0	0.9	0.9	1.6

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

<sup>2</sup>9 = best turf quality under simulated wear machine stress



Table 4. Performance of velvet bentgrass cultivars and selections in a putting green trial seeded in September 2010 at North Brunswick, NJ.

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Copper Spot <sup>2</sup> Aug. 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
1 CDE Comp	Velvet	5.8	6.1	6.2	5.3	6.0
2 SME Comp	Velvet	5.5	5.2	6.1	5.2	5.7
3 PSG 7PC2	Velvet	5.4	5.9	5.7	4.5	7.0
4 SMM Comp	Velvet	5.2	5.2	5.4	5.0	6.3
5 IS-AC 5	Velvet	5.0	4.4	5.7	4.8	5.7
6 IS-AC 4	Velvet	4.9	4.6	5.7	4.6	5.0
7 Villa	Velvet	4.9	5.2	4.8	4.5	3.3
8 Legendary	Velvet	4.4	5.2	4.5	3.7	4.0
9 VTP Comp	Velvet	4.3	4.3	4.4	4.1	5.0
10 Greenwich 2003	Velvet	3.9	4.6	3.6	3.5	2.7
11 VGER Bulk	Velvet	3.8	4.0	3.9	3.6	3.0
12 Greenwich 2009	Velvet	3.4	4.6	3.2	2.6	2.0
13 SR 7200	Velvet	2.8	4.2	2.3	1.9	1.3
LSD at 5% =		0.6	0.8	0.9	0.8	2.3

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

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

Table 5. Performance of creeping and colonial bentgrass cultivars and selections in a putting green trial seeded in September 2010 at North Brunswick, NJ.

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
1 R11	Creeping	6.2	6.6	5.7	6.4	5.8
2 R10	Creeping	6.2	6.3	6.4	5.9	5.5
3 FLE Comp	Creeping	5.9	5.7	6.4	5.7	4.7
4 R12	Creeping	5.8	5.8	6.2	5.6	6.3
5 IS-AP 18	Creeping	5.8	6.1	6.0	5.4	4.3
6 Pure Distinction	Creeping	5.6	5.8	4.6	6.2	3.0
7 HDG Comp	Creeping	5.5	5.7	5.5	5.3	4.0
8 Focus	Creeping	5.5	5.6	5.6	5.2	5.2
9 Mackenzie	Creeping	5.4	5.6	5.0	5.6	5.0
10 PSG RH08E1	Creeping	5.4	6.2	5.4	4.5	4.0
11 Pure Select	Creeping	5.4	6.1	4.9	5.3	4.5
12 R6	Creeping	5.4	6.2	5.3	4.5	6.2
13 Proclamation	Creeping	5.3	5.9	5.8	4.2	2.7
14 SRP 1WM	Creeping	5.3	5.7	5.4	4.9	5.3
15 PSG RH08-38	Creeping	5.3	6.3	5.2	4.6	3.7
16 RH 931	Creeping	5.3	5.5	5.5	4.9	4.5
17 IS-AP 16	Creeping	5.3	5.7	5.2	4.8	4.3
18 Declaration	Creeping	5.3	6.1	5.2	4.4	4.7
19 GDE Comp	Creeping	5.2	5.1	5.6	5.0	4.2
20 FMM Comp	Creeping	5.1	5.6	4.7	5.1	3.2
21 DML Comp	Colonial	5.1	5.5	5.1	4.8	7.7
22 Capri	Colonial	5.1	5.3	5.3	4.6	8.3
23 DDL Comp	Colonial	5.1	5.2	5.0	5.0	8.0
24 IS-AP 15	Creeping	5.0	5.4	5.0	4.7	3.2
25 OO7	Creeping	5.0	5.6	5.1	4.3	3.8

(Continued)

Table 5. Creeping and colonial bentgrass putting green trial, 2010 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
26 OO7/Mackenzie	Creeping	5.0	5.3	5.0	4.6	4.5
27 EDM Comp	Colonial	5.0	5.6	5.0	4.3	8.5
28 Pin-Up	Creeping	4.9	5.6	5.0	4.2	4.5
29 CDD Comp	Colonial	4.9	5.4	5.0	4.3	8.0
30 Shark	Creeping	4.8	5.6	4.5	4.3	5.8
31 OO7/SR 1150	Creeping	4.8	5.3	4.8	4.3	4.2
32 PSG RH08E2	Creeping	4.8	5.9	4.1	4.4	3.8
33 SRP 1BLTR3	Creeping	4.8	5.3	4.6	4.5	3.7
34 Authority	Creeping	4.7	5.1	4.8	4.3	4.5
35 CMD Comp	Colonial	4.7	4.9	4.8	4.3	8.2
36 Cobra 2	Creeping	4.6	5.4	4.8	3.7	3.7
37 OO7/SR 1119	Creeping	4.6	5.1	4.4	4.3	4.5
38 RH 081	Creeping	4.6	5.6	4.5	3.7	3.8
39 AFM	Creeping	4.6	4.9	4.2	4.6	5.2
40 Benchmark DSR	Creeping	4.5	5.0	4.5	4.2	3.8
41 Syn-0KPC	Creeping	4.5	4.4	5.2	3.9	2.5
42 Runner	Creeping	4.5	5.3	4.3	3.9	2.8
43 PSG RH08-935	Creeping	4.4	5.3	4.0	3.9	2.8
44 CY-2	Creeping	4.2	4.7	4.3	3.6	4.2
45 Independence	Creeping	4.1	5.2	3.6	3.7	3.8
46 13M	Creeping	4.1	4.8	3.9	3.6	5.5
47 PSG RH08-910	Creeping	3.9	4.9	3.5	3.4	3.3
48 Crystal BlueLinks	Creeping	3.7	4.6	3.5	3.1	3.5
49 SR 1150	Creeping	3.7	4.5	3.6	2.9	4.3
50 L-93	Creeping	3.6	4.4	3.8	2.7	3.7

(Continued)

Table 5. Creeping and colonial bentgrass putting green trial, 2010 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
51 Memorial	Creeping	3.6	4.0	3.6	3.1	6.3
52 Mackenzie/Tyee	Creeping	3.6	3.5	3.3	3.9	4.0
53 A4	Creeping	3.6	4.6	3.3	3.0	3.8
54 Tyee/OO7	Creeping	3.6	3.8	3.6	3.3	3.7
55 Penn A-1/A4	Creeping	3.6	4.3	3.4	3.0	4.3
56 T-1	Creeping	3.5	4.4	3.3	2.7	3.5
57 Kingpin	Creeping	3.4	4.1	3.6	2.6	5.7
58 Ninety-Six Two	Creeping	3.3	4.1	3.2	2.8	2.8
59 CTP Comp	Colonial	3.3	4.1	3.4	2.3	7.7
60 BCD	Colonial	3.2	4.1	3.4	2.2	6.8
61 SR 1150/SR 1119	Creeping	3.1	3.6	3.0	2.8	4.0
62 Alpha	Creeping	3.0	3.9	2.5	2.5	3.3
63 Syn-R0PX	Creeping	3.0	3.3	3.0	2.6	4.7
64 PLS	Creeping	2.9	3.7	2.7	2.2	3.3
65 Penncross	Creeping	2.9	4.0	2.4	2.1	4.3
66 Sandhill	Creeping	2.9	4.0	2.5	2.0	4.0
67 Southshore	Creeping	2.7	3.5	2.5	2.2	3.8
68 Putter	Creeping	2.7	3.8	2.3	2.1	3.3
69 SR 1119	Creeping	2.5	3.5	2.3	2.0	3.8
70 Brighton	Creeping	2.4	3.2	2.1	1.8	5.0
71 Tyee	Creeping	2.2	3.1	1.7	1.7	4.0
72 Penncross	Creeping	2.1	3.3	1.7	1.6	5.3
73 Providence	Creeping	1.6	1.8	1.8	1.3	4.8

(Continued)

Table 5. Creeping and colonial bentgrass putting green trial, 2010 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----				Dollar Spot <sup>2</sup> 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
LSD at 5% =		0.6	0.8	0.9	0.8	1.5

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

<sup>2</sup>9 = least disease (assessment is an average of two ratings)

Table 6. Performance of creeping, velvet, and colonial bentgrass cultivars and selections in a fairway trial seeded in September 2010 at North Brunswick, NJ.

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> Oct. 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
1 CMD Comp	Colonial	6.4	6.4	6.4	6.5	5.3
2 DDL Comp	Colonial	6.2	6.1	6.0	6.7	6.3
3 SRP 1WM	Creeping	6.2	6.4	6.6	5.7	5.7
4 Capri	Colonial	6.2	6.3	5.9	6.4	6.0
5 EDM Comp	Colonial	6.2	6.3	6.2	6.2	6.7
6 R10	Creeping	6.1	6.1	6.6	5.5	4.7
7 GDE Comp	Creeping	6.0	5.8	6.5	5.8	4.3
8 DML Comp	Colonial	6.0	6.3	5.4	6.3	6.0
9 Focus	Creeping	5.8	5.8	6.6	5.2	4.0
10 Declaration	Creeping	5.8	6.7	6.2	4.6	6.0
11 CDD Comp	Colonial	5.8	5.6	5.7	6.1	5.7
12 R12	Creeping	5.8	5.7	6.0	5.8	4.0
13 Pin-Up	Creeping	5.7	6.1	6.0	5.0	4.3
14 FLE Comp	Creeping	5.7	5.6	6.4	5.2	4.3
15 Proclamation	Creeping	5.7	5.9	5.9	5.3	5.0
16 IS-AC 4	Velvet	5.7	4.8	6.4	5.8	6.7
17 R11	Creeping	5.7	5.6	5.4	6.0	3.3
18 PSG 7NBC	Colonial	5.6	6.3	4.8	5.9	4.7
19 HDG Comp	Creeping	5.6	5.6	5.9	5.4	5.0
20 A08-FT12	Colonial	5.5	5.2	6.0	5.3	6.3
21 R6	Creeping	5.5	5.9	6.5	4.2	3.0
22 Shark	Creeping	5.5	5.6	5.3	5.6	3.3
23 FMM Comp	Creeping	5.5	5.3	6.1	4.9	3.3
24 IS-AC 5	Velvet	5.5	5.0	5.9	5.6	5.3
25 OO7	Creeping	5.4	6.0	5.7	4.7	3.7

(Continued)

Table 6. Creeping, velvet, and colonial bentgrass fairway trial, 2010 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> Oct. 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
26 Villa	Velvet	5.4	4.9	6.1	5.3	6.0
27 AFM	Creeping	5.4	5.4	5.7	5.1	3.7
28 Authority	Creeping	5.2	5.3	5.8	4.7	3.7
29 OO7/Mackenzie	Creeping	5.1	5.8	5.2	4.5	3.0
30 Mackenzie	Creeping	5.1	5.0	5.0	5.2	3.7
31 OO7/SR 1119	Creeping	5.0	5.1	5.4	4.5	4.7
32 RH 931	Creeping	5.0	5.3	5.7	4.0	3.7
33 CTP Comp	Colonial	5.0	5.3	4.8	4.8	6.7
34 SRP 1BLTR3	Creeping	5.0	5.2	5.4	4.2	4.0
35 Pure Select	Creeping	5.0	5.1	5.5	4.3	3.7
36 13M	Creeping	4.9	5.5	4.5	4.6	4.7
37 Crystal BlueLinks	Creeping	4.8	5.2	5.1	4.0	3.7
38 Revere	Colonial	4.7	5.1	4.6	4.4	7.3
39 Pure Distinction	Creeping	4.7	5.0	4.5	4.7	4.0
40 Glory	Colonial	4.7	4.6	4.8	4.6	5.0
41 Memorial	Creeping	4.6	4.7	4.8	4.4	4.7
42 IS-AT 10	Colonial	4.6	4.9	4.3	4.6	5.7
43 SR 1150	Creeping	4.5	4.9	4.8	3.9	4.0
44 Benchmark DSR	Creeping	4.5	4.9	4.9	3.8	3.0
45 Alister	Colonial	4.4	4.9	4.1	4.3	5.0
46 Greentime	Colonial	4.4	5.0	3.9	4.3	6.7
47 OO7/SR 1150	Creeping	4.4	4.9	4.5	3.9	3.7
48 RH 081	Creeping	4.4	5.5	4.2	3.5	3.0
49 SR 1150/SR 1119	Creeping	4.4	5.0	4.3	3.8	4.0
50 Tye/OO7	Creeping	4.3	4.7	4.6	3.7	3.3

(Continued)

Table 6. Creeping, velvet, and colonial bentgrass fairway trial, 2010 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> Oct. 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
51 BCD	Colonial	4.3	5.2	3.6	4.1	5.3
52 Kingpin	Creeping	4.3	4.4	4.4	4.1	5.0
53 SCBF 1	Colonial	4.2	4.2	4.4	3.9	6.0
54 T-1	Creeping	4.2	4.8	4.4	3.4	4.3
55 L-93	Creeping	4.1	4.1	4.2	4.0	4.0
56 Tiger 2	Colonial	4.0	4.6	3.8	3.7	6.0
57 Mackenzie/Tyee	Creeping	4.0	4.2	3.8	4.0	4.3
58 Independence	Creeping	3.9	4.4	4.0	3.5	4.3
59 Sandhill	Creeping	3.9	4.2	4.3	3.2	4.7
60 SCBF 2	Colonial	3.8	3.9	4.1	3.5	5.7
61 Southshore	Creeping	3.8	4.0	3.8	3.7	6.3
62 Alpha	Creeping	3.8	4.3	3.9	3.2	3.7
63 Ninety-Six Two	Creeping	3.8	4.3	3.7	3.3	5.0
64 PLS	Creeping	3.8	4.1	3.7	3.5	3.7
65 Syn-9EFR	Colonial	3.7	4.2	3.5	3.3	6.0
66 Putter	Creeping	3.6	4.4	3.8	2.8	4.3
67 SR 1119	Creeping	3.5	3.7	3.8	3.0	4.7
68 SCBF 3	Colonial	3.3	3.3	3.4	3.3	5.5
69 Brighton	Creeping	3.1	3.5	3.1	2.6	4.3
70 SR 7150	Colonial	3.1	4.0	2.9	2.4	5.5
71 SR 7100	Colonial	2.9	3.1	3.1	2.5	5.0
72 Tyee	Creeping	2.8	3.0	2.6	2.8	6.3
73 Penncross	Creeping	2.6	3.3	2.3	2.3	2.7
74 Providence	Creeping	2.5	2.3	2.7	2.4	4.0

(Continued)



Table 6. Creeping, velvet, and colonial bentgrass fairway trial, 2010 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>				Dollar Spot <sup>2</sup> Oct. 2013
		2011-2013 Avg.	2011 Avg.	2012 Avg.	2013 Avg.	
LSD at 5% =		0.6	0.8	0.8	1.0	1.6

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

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

Table 7. Performance of creeping, velvet, and colonial bentgrass cultivars and selections in a putting green trial seeded in September 2011 at North Brunswick, NJ.

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Dollar Spot <sup>2</sup> 2013	Bipolaris Leaf Spot June <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.			
1 ESV Comp	Velvet	6.3	6.3	6.2	7.3	9.0	7.3
2 PSG 7PC2	Velvet	6.2	6.6	5.9	7.7	9.0	6.7
3 PST-Syn-VH9	Velvet	5.9	5.9	5.9	8.2	9.0	8.7
4 Legendary	Velvet	5.8	6.3	5.4	5.2	9.0	8.0
5 CDS Comp	Velvet	5.8	5.6	5.9	7.3	6.0	9.0
6 Villa	Velvet	5.5	5.9	5.3	7.3	7.0	8.3
7 Greenwich	Velvet	4.9	4.9	5.0	5.5	9.0	7.7
8 SR 7200	Velvet	4.6	5.2	4.0	7.7	8.7	6.7
LSD at 5% =		0.7	0.8	0.9	1.8	1.3	2.2

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

<sup>2</sup>9 = least disease (assessment for dollar spot is an average of three rating dates)

Table 8. Performance of creeping and colonial bentgrass cultivars and selections in a putting green trial seeded in September 2011 at North Brunswick, NJ.

Cultivar or Selection	Species	Turf Quality <sup>1</sup>			Dollar Spot <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
1 EBC Comp	Creeping	6.1	6.3	5.9	6.5	4.7
2 CMC Comp	Creeping	6.1	6.5	5.7	5.7	6.3
3 PPG-AP 102	Creeping	6.1	6.5	5.8	6.0	6.0
4 LUC Comp	Creeping	6.1	6.3	5.9	4.8	8.0
5 PCM Comp	Creeping	6.0	6.2	5.8	5.9	5.3
6 PST-ORPA Bulk	Creeping	5.8	6.6	5.0	5.7	4.0
7 HDG-10 Comp	Creeping	5.8	5.9	5.6	6.0	5.0
8 CED Comp	Colonial	5.8	5.6	6.0	8.2	5.3
9 Shark	Creeping	5.7	6.4	5.0	4.8	5.7
10 FDC Comp	Colonial	5.7	5.9	5.5	7.3	6.0
11 AP-18	Creeping	5.7	6.3	5.1	4.4	6.3
12 SRP 1WM	Creeping	5.6	5.4	5.6	6.8	4.0
13 CMD Comp	Colonial	5.6	5.4	5.7	7.5	6.0
14 CEM Comp	Colonial	5.6	5.7	5.5	7.8	7.0
15 Barracuda	Creeping	5.5	5.6	5.4	5.8	6.0
16 Luminary	Creeping	5.5	6.1	4.9	4.4	5.0
17 Pure Select	Creeping	5.5	6.4	4.5	5.1	5.0
18 Proclamation	Creeping	5.4	5.4	5.4	5.6	4.7
19 V-8	Creeping	5.3	5.6	5.1	5.2	5.7
20 SRP 1RH93	Creeping	5.3	5.6	5.0	5.4	3.3
21 PSG 10SLT	Creeping	5.3	5.3	5.4	5.5	5.3
22 RH931SLT	Creeping	5.2	5.9	4.5	5.2	3.3
23 SRP 1WM+OO7	Creeping	5.1	5.1	5.2	6.6	4.7
24 Pure Distinction	Creeping	5.1	5.9	4.3	3.1	5.7
25 OO7	Creeping	5.0	5.8	4.2	5.4	3.3

(Continued)

Table 8. Creeping and colonial bentgrass putting green trial, 2011 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Dollar Spot <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
26 GMCSLT	Creeping	5.0	4.8	5.2	6.4	4.0
27 PSG RH128M	Creeping	5.0	5.7	4.2	4.7	4.0
28 PSG RHN42	Creeping	4.9	6.0	3.8	4.1	3.7
29 FMM Comp	Creeping	4.9	5.2	4.6	4.8	5.3
30 Declaration	Creeping	4.9	4.9	4.7	6.8	3.3
31 PSG 1VAH10	Creeping	4.9	6.1	3.7	3.5	4.0
32 Authority	Creeping	4.8	5.5	4.2	6.0	3.7
33 PSG 1RJM	Creeping	4.8	5.9	3.6	3.2	3.7
34 Cobra 2	Creeping	4.7	5.1	4.4	6.2	3.3
35 PSG RHN37	Creeping	4.7	6.0	3.3	2.7	5.0
36 PSG 1RIL	Creeping	4.7	5.5	3.9	4.1	5.7
37 PinUp	Creeping	4.6	5.1	4.2	4.4	5.3
38 SR 1150+O07	Creeping	4.6	4.9	4.3	4.2	5.3
39 PSG RHN48	Creeping	4.5	6.0	3.1	2.8	4.0
40 SRP 1WM+Mackenzie	Creeping	4.5	4.6	4.3	6.3	3.7
41 Mackenzie+Tyee+O07	Creeping	4.5	4.9	4.1	5.0	4.0
42 PSG RHN411	Creeping	4.4	5.5	3.3	3.1	4.3
43 PSG RHN316	Creeping	4.4	5.5	3.4	3.3	4.3
44 Penn A-1	Creeping	4.4	4.8	4.0	5.5	3.3
45 PSG RHN12	Creeping	4.4	5.4	3.3	6.1	1.7
46 PSG 1B158	Creeping	4.4	4.7	4.0	5.8	1.3
47 SR 1119+Tyee	Creeping	4.4	5.1	3.6	4.4	4.0
48 Mackenzie+SR 1150+O07	Creeping	4.3	4.7	3.9	5.7	4.7
49 Benchmark DSR	Creeping	4.3	4.9	3.7	4.2	3.3
50 Penn A-4	Creeping	4.2	4.9	3.6	3.9	4.0

(Continued)

Table 8. Creeping and colonial bentgrass putting green trial, 2011 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>			Dollar Spot <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
51 A1/A4	Creeping	4.2	5.0	3.5	5.7	4.0
52 SRP 1WM+Tye	Creeping	4.2	4.5	3.9	6.0	4.0
53 Penneagle II	Creeping	4.2	4.8	3.6	4.4	4.3
54 Independence	Creeping	4.1	5.2	3.1	3.2	4.3
55 PSG 1RHTAV3	Creeping	4.1	5.8	2.5	2.7	3.0
56 A08-FT12	Colonial	4.1	4.3	3.9	7.7	6.7
57 13M	Creeping	4.1	4.8	3.5	7.0	2.0
58 Tye	Creeping	4.1	4.7	3.5	4.3	4.7
59 PSG 1RHTV	Creeping	4.1	5.5	2.6	2.3	2.7
60 SR 1150	Creeping	4.1	4.4	3.8	4.4	5.3
61 T-1	Creeping	4.0	4.6	3.4	4.9	3.7
62 PSG 1VAH1	Creeping	4.0	5.3	2.7	2.8	3.3
63 PSG SLT3M3	Creeping	4.0	4.7	3.3	5.4	2.3
64 Mackenzie+SR 1150	Creeping	3.9	4.0	3.9	4.2	4.3
65 PSG SLT2M2	Creeping	3.9	5.1	2.8	5.4	2.0
66 PSG 1RHT33	Creeping	3.9	5.2	2.6	3.7	3.3
67 Mackenzie	Creeping	3.8	4.1	3.6	4.6	3.7
68 Crystal BlueLinks	Creeping	3.8	4.2	3.5	6.4	2.7
69 Capri	Colonial	3.8	3.5	4.1	7.8	6.0
70 Ninety-Six Two	Creeping	3.7	4.5	2.9	4.1	4.7
71 PSG 1RIE	Creeping	3.7	4.3	3.0	4.1	3.3
72 Kingpin	Creeping	3.6	4.0	3.3	6.7	2.7
73 PSG SLT2M1	Creeping	3.6	4.8	2.4	3.7	2.3
74 L-93	Creeping	3.5	3.7	3.4	5.9	4.0
75 PSG 7CL33	Creeping	3.5	3.9	3.1	4.7	7.0

(Continued)

Table 8. Creeping and colonial bentgrass putting green trial, 2011 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>			Dollar Spot <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
76 Penn G-2	Creeping	3.5	3.5	3.5	4.2	5.3
77 EBM	Colonial	3.5	3.6	3.4	7.5	4.7
78 PSG 7CL6	Creeping	3.5	3.8	3.1	4.8	7.0
79 PSG 7CL3	Creeping	3.4	3.9	3.0	3.8	7.3
80 MacSLT	Creeping	3.4	4.0	2.9	5.7	2.3
81 Alpha	Creeping	3.3	3.9	2.6	4.8	2.3
82 Memorial	Creeping	3.2	3.7	2.8	6.9	2.0
83 Putter	Creeping	3.2	3.9	2.5	4.5	3.0
84 Pennlinks II	Creeping	3.2	3.5	2.8	6.0	3.3
85 SR 1119	Creeping	3.1	3.6	2.6	5.1	4.7
86 Sandhill	Creeping	3.0	2.9	3.1	5.0	3.3
87 Southshore	Creeping	3.0	3.5	2.5	5.3	3.3
88 Crenshaw	Creeping	2.9	3.8	2.1	3.1	5.7
89 Providence	Creeping	2.9	2.4	3.5	5.8	4.3
90 SandSLT	Creeping	2.9	3.4	2.4	5.1	2.7
91 Imperial	Creeping	2.9	3.6	2.2	4.7	3.0
92 Century	Creeping	2.9	2.9	2.9	4.2	3.7
93 Penncross	Creeping	2.9	3.4	2.4	4.7	4.7
94 ProvSLT	Creeping	2.8	3.2	2.5	5.5	2.3
95 BCD	Colonial	2.8	3.0	2.7	6.4	5.3
96 Brighton	Creeping	2.7	3.1	2.5	5.7	2.0
97 Alister	Colonial	2.2	2.6	1.8	6.1	5.0
98 Tiger 2	Colonial	2.2	2.8	1.6	6.8	4.3

Table 8. Creeping and colonial bentgrass putting green trial, 2011 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Dollar Spot <sup>2</sup> 2013	Pythium <sup>2</sup> July 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
LSD at 5% =		0.7	0.8	0.9	1.8	2.2

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

<sup>2</sup>9 = least disease (assessment for dollar spot is an average of three rating dates)

Table 9. Performance of creeping and colonial bentgrass cultivars and selections in a fairway trial seeded in September 2011 at North Brunswick, NJ.

	Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----				Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013
			2012-2013 Avg.	2012 Avg.	2013 Avg.			
1	CMC Comp	Creeping	7.1	7.6	6.6	6.9	8.0	
2	EBC Comp	Creeping	6.9	7.6	6.3	6.9	7.8	
3	FDC Comp	Colonial	6.5	6.9	6.1	7.5	7.0	
4	LUC Comp	Creeping	6.4	7.6	5.3	4.9	7.5	
5	PPG-AP 102	Creeping	6.3	7.1	5.5	6.4	7.2	
6	Proclamation	Creeping	6.3	6.8	5.9	5.8	7.5	
7	Barracuda	Creeping	6.2	6.5	6.0	6.2	8.0	
8	PCM Comp	Creeping	6.2	7.5	4.9	4.2	7.2	
9	CED Comp	Colonial	6.0	6.4	5.8	7.0	5.8	
10	SRP 1WM	Creeping	5.9	6.0	5.8	6.5	7.7	
11	AP-18	Creeping	5.8	6.9	4.8	5.5	7.7	
12	Luminary	Creeping	5.8	6.9	4.7	5.4	7.7	
13	GMCSLT	Creeping	5.7	6.3	5.2	5.8	7.5	
14	CEM Comp	Colonial	5.6	5.2	6.0	7.0	7.2	
15	CMD Comp	Colonial	5.6	5.7	5.6	7.3	7.5	
16	Declaration	Creeping	5.6	5.6	5.5	7.3	6.7	
17	A08-FT12	Colonial	5.5	5.3	5.8	7.4	6.7	
18	Cobra 2	Creeping	5.5	5.2	5.9	5.3	7.3	
19	HDG-10 Comp	Creeping	5.5	6.1	5.0	5.7	7.8	
20	Authority	Creeping	5.4	6.2	4.7	4.9	7.7	
21	PinUp	Creeping	5.2	6.5	3.9	4.4	6.7	
22	Shark	Creeping	5.0	6.3	3.7	4.5	7.3	
23	SRP 1WM+007	Creeping	5.0	4.8	5.2	6.2	6.5	
24	007	Creeping	5.0	5.5	4.5	4.9	6.5	
25	PSG 107SLT	Creeping	4.8	5.1	4.6	5.0	7.2	

(Continued)



Table 9. Creeping and colonial bentgrass fairway trial, 2011 (continued).

Cultivar or Selection	Species	-----Turf Quality <sup>1</sup> -----			Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
26 FMM Comp	Creeping	4.8	5.2	4.5	4.9	7.2
27 Mackenzie+SR 1150+OO7	Creeping	4.8	5.0	4.6	5.8	6.2
28 SRP 1WM+Mackenzie	Creeping	4.8	5.1	4.4	4.7	7.0
29 V-8	Creeping	4.7	5.3	4.2	5.0	6.8
30 Benchmark DSR	Creeping	4.7	5.2	4.0	4.9	7.3
31 SRP 1RH93	Creeping	4.6	5.4	3.7	4.7	7.0
32 13M	Creeping	4.5	4.4	4.7	7.1	6.8
33 EBM	Colonial	4.5	4.3	4.8	7.1	5.5
34 SRP 1WM+Tyee	Creeping	4.4	4.6	4.3	5.1	7.5
35 PSG NBC	Colonial	4.4	3.8	5.0	6.1	6.7
36 SR 1150+OO7	Creeping	4.4	4.8	4.0	5.3	5.7
37 Capri	Colonial	4.4	3.4	5.4	6.8	6.0
38 L-93	Creeping	4.3	4.3	4.3	6.1	6.8
39 RH93SLT	Creeping	4.3	5.3	3.3	4.4	5.5
40 SR 1119+Tyee+OO7	Creeping	4.1	4.3	3.9	4.5	6.7
41 Mackenzie+Tyee+OO7	Creeping	4.0	4.2	3.9	5.2	6.7
42 Tyee	Creeping	4.0	4.1	3.8	4.6	7.7
43 SR 1150	Creeping	4.0	3.8	4.2	5.9	6.2
44 PSG RH128M	Creeping	4.0	5.3	2.6	3.0	5.8
45 PSG 1RJM1	Creeping	4.0	5.7	2.2	3.2	6.0
46 PPG-AT 101	Colonial	3.9	3.2	4.6	6.7	5.7
47 PSG 1RHTV	Creeping	3.9	5.6	2.2	3.1	6.7
48 Independence	Creeping	3.9	5.4	2.3	3.8	7.0
49 Memorial	Creeping	3.8	3.3	4.4	7.1	6.3
50 Kingpin	Creeping	3.8	3.8	3.8	5.8	5.5

(Continued)

Table 9. Creeping and colonial bentgrass fairway trial, 2011 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>			Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
51 T-1	Creeping	3.8	4.3	3.3	5.4	6.7
52 PSG SLT3M3	Creeping	3.7	5.2	2.3	2.8	5.2
53 PSG 1RHTAV3	Creeping	3.7	5.9	1.5	2.6	6.0
54 Mackenzie+SR 1150	Creeping	3.7	4.0	3.5	4.8	6.3
55 Imperial	Creeping	3.7	4.3	3.0	3.3	6.8
56 PST-OHME Bulk	Colonial	3.6	4.1	3.2	4.9	7.2
57 PST-OHFN Bulk	Colonial	3.6	4.2	3.1	4.8	6.3
58 PSG 1RILE	Creeping	3.6	5.2	2.1	2.8	5.5
59 PSG 1B158	Creeping	3.6	4.1	3.1	3.5	5.8
60 PSG SLT3M1	Creeping	3.6	5.4	1.8	2.5	5.5
61 PSG 1RHT33	Creeping	3.5	5.5	1.7	2.7	6.5
62 PSG 1RIL	Creeping	3.5	5.1	2.0	2.8	7.7
63 Putter	Creeping	3.5	3.9	3.1	3.9	7.7
64 MacSLT	Creeping	3.5	3.9	3.1	3.7	6.0
65 PSG SLT3M2	Creeping	3.5	4.3	2.6	3.5	5.8
66 BCD	Colonial	3.4	2.9	4.0	6.0	6.2
67 Ninety-Six Two	Creeping	3.3	3.9	2.9	4.1	6.8
68 SR 1119	Creeping	3.3	3.5	3.1	4.0	7.0
69 ProvSLT	Creeping	3.2	2.7	3.8	4.7	6.7
70 Southshore	Creeping	3.2	3.8	2.7	4.0	6.7
71 Alpha	Creeping	3.2	3.4	3.0	4.3	6.0
72 Penn G-2	Creeping	3.1	2.9	3.3	4.8	7.0
73 Mackenzie	Creeping	3.1	3.6	2.6	3.3	6.2
74 Crenshaw	Creeping	3.1	3.6	2.5	3.1	7.5
75 Brighton	Creeping	2.9	3.0	2.9	4.8	6.3

(Continued)

Table 9. Creeping and colonial bentgrass fairway trial, 2011 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup>			Dollar Spot <sup>2</sup> 2013	Brown Patch <sup>2</sup> 2013
		2012-2013 Avg.	2012 Avg.	2013 Avg.		
76 SandSLT	Creeping	2.9	2.7	3.1	6.4	7.2
77 Alister	Colonial	2.8	2.5	3.1	5.9	5.2
78 SR 7100	Colonial	2.8	2.7	3.0	5.5	5.2
79 Century	Creeping	2.7	2.7	2.8	3.8	7.0
80 Tiger 2	Colonial	2.5	2.4	2.7	6.0	4.8
81 SR 7150	Colonial	2.5	2.5	2.6	5.8	4.7
82 Providence	Creeping	2.2	2.1	2.4	5.2	6.3
83 Sandhill	Creeping	2.0	1.8	2.2	4.7	5.8
84 PSG 7DB	Dryland	1.8	2.0	1.7	4.3	5.0
LSD at 5% =		0.6	0.8	0.8	1.2	1.3

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

<sup>2</sup>9 = least disease (assessment is an average of two or three rating dates for brown patch and dollar spot, respectively)

Table 10. Performance of creeping bentgrass cultivars and selections in a putting green trial seeded in September 2012 at North Brunswick, NJ.

Cultivar or Selection	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012
1 PPG-AP 102C	6.4	6.3
2 PPG-AP 102B	6.3	7.0
3 AP-18	6.3	7.3
4 FPG Comp	6.2	5.0
5 Barracuda	6.2	8.0
6 PDD Comp	6.2	5.7
7 Pure Distinction	6.1	6.0
8 Proclamation	6.0	6.3
9 FSC Comp	6.0	5.7
10 PGF Comp	6.0	4.7
11 PSD Comp	6.0	5.7
12 PinUp	5.9	6.7
13 Authority	5.7	7.7
14 Declaration	5.7	7.3
15 Luminary	5.6	8.0
16 Shark	5.6	7.3
17 OO7	5.6	7.7
18 Hurley Comp	5.6	6.3
19 Pure Select	5.5	6.7
20 DKH8-35	5.5	6.5
21 P21-4	5.5	5.3
22 11-CMC Comp	5.5	4.7
23 Independence	5.5	7.7
24 DKH8-11	5.5	6.3
25 GMC-12K	5.4	6.7
26 DKH8-25	5.4	7.0
27 PST-SYN-R0PS	5.4	5.3
28 P21-3	5.4	6.3
29 P21-5	5.3	6.7
30 Center Cut II	5.3	8.0
31 11-EBC Comp	5.3	4.7
32 RH 931	5.2	6.0
33 DKH8-33	5.2	6.0
34 SRP 1WM	5.2	5.0
35 Tye	5.2	7.7

(Continued)

Table 10. Creeping bentgrass putting green trial, 2012 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012
36 Center Cut III Blend	5.1	7.3
37 DKH8-31	5.0	7.0
38 DKH8-22	5.0	8.0
39 RH93-12	4.9	5.3
40 P21L2-31	4.9	6.3
41 Penneagle II	4.9	6.0
42 AZH9-4257	4.9	6.7
43 P21-6	4.9	6.0
44 Memorial	4.8	7.3
45 PSG-1TAVH08-2	4.8	7.0
46 7 PC2/Tyee	4.7	5.0
47 P21-1	4.7	6.3
48 PSG-1TAVH08-1	4.7	5.3
49 PSG-1TAVH08-3	4.7	6.0
50 A-4	4.7	7.3
51 Benchmark DSR	4.7	6.0
52 CANH9-73	4.6	6.0
53 SR 1150/OO7	4.6	7.3
54 DKH8-13	4.5	6.7
55 CANH9-7	4.5	6.7
56 CANH9-720	4.5	6.0
57 CANH9-722	4.5	6.0
58 P21-2	4.5	5.3
59 P21-8	4.5	6.0
60 13M	4.4	7.0
61 Mackenzie/Focus	4.4	7.3
62 V-8	4.4	7.3
63 Mackenzie/Tyee	4.4	8.0
64 P21L2-315	4.4	6.3
65 P21L2-627	4.4	5.3
66 P21-7	4.4	5.7
67 Ninety-Six Two	4.3	5.7
68 Tyee/OO7	4.2	6.7
69 Imperial	4.2	7.0
70 SR 1150	4.2	7.7

(Continued)

Table 10. Creeping bentgrass putting green trial, 2012 (continued).

Cultivar or Selection	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012
71 P21L2-619	4.1	5.3
72 L-93	4.1	6.3
73 P21L2-167	4.1	5.7
74 Alpha	3.9	7.3
75 T-1	3.9	7.0
76 SR 1119	3.8	6.3
77 P21L2-1311	3.8	5.3
78 PST-0KPS Bulk	3.8	4.3
79 Penncross	3.8	7.0
80 Mackenzie	3.8	8.0
81 Kingpin	3.7	7.3
82 P21L2-22	3.7	5.7
83 Putter	3.6	6.3
84 Southshore	3.5	7.3
85 Providence	3.5	5.3
86 Sandhill	1.9	1.0
87 Penn G-2	1.7	1.0
LSD at 5% =	0.8	1.4

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

<sup>2</sup>9 = best establishment of turf canopy

Table 11. Performance of velvet bentgrass cultivars and selections in a putting green trial seeded in September 2012 at North Brunswick, NJ.

Cultivar or Selection	Turf Quality <sup>1</sup> 2013	Turf Establishment <sup>2</sup> Oct. 2012	Turf Cover <sup>3</sup> May 2013	Leaf Spot <sup>4</sup> June 2013	Yellow Tuft <sup>4</sup> July 2013	Copper Spot <sup>4</sup> Aug. 2013
1 PPG-AC 101	6.1	5.7	7.7	9.0	5.7	2.7
2 PSG 7PC2	4.9	5.3	5.0	6.7	4.7	5.0
3 Legendary	4.9	6.3	8.7	5.7	6.3	2.3
4 SPV Comp	4.8	3.3	4.3	4.0	6.0	6.0
5 DCS Comp	4.7	4.0	4.0	8.3	4.7	5.7
6 CANH9-1412	4.7	9.0	8.5	9.0	7.0	4.0
7 CS1 Comp	4.6	4.0	5.7	6.0	5.3	5.7
8 Greenwich	4.3	7.3	9.0	7.3	7.0	3.3
9 SR 7200	4.0	6.3	6.0	4.7	4.7	3.7
10 DS2 Comp	3.8	3.0	4.3	4.7	6.3	3.3
11 Villa 3.7	7.0	8.7	2.3	4.3	2.0	
12 CS2 Comp	3.6	2.7	3.0	6.7	5.0	4.3
13 DS1 Comp	3.3	3.3	5.3	2.3	4.0	3.0
LSD at 5% =	0.9	1.2	2.0	2.0	2.0	2.8

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

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

<sup>3</sup>9 = completely full and dense turf canopy

<sup>4</sup>9 = least disease

Table 12. Performance of creeping and colonial bentgrass cultivars and selections in a fairway trial seeded in September 2012 at North Brunswick, NJ.

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012	Brown Patch <sup>3</sup> 2013	Dollar Spot <sup>3</sup> Oct. 2013
1 PPG-AP 102C	Creeping	7.9	8.3	7.3	6.7
2 PGF Comp	Creeping	7.7	6.3	7.8	7.3
3 11-CMC Comp	Creeping	7.7	6.7	8.0	8.7
4 PPG-AP 102B	Creeping	7.6	8.3	6.5	6.7
5 SRP 1WM	Creeping	7.5	8.3	6.2	8.0
6 FPG Comp	Creeping	7.4	7.0	7.3	6.0
7 PSD Comp	Creeping	7.3	7.7	7.3	6.7
8 PDD Comp	Creeping	7.3	7.3	6.7	7.0
9 11-EBC Comp	Creeping	7.3	6.7	6.7	7.7
10 Hurley Comp	Creeping	7.1	7.7	7.0	6.3
11 Declaration	Creeping	7.0	8.0	6.2	7.0
12 PSG NBC	Colonial	6.9	9.0	6.2	5.0
13 Center Cut II	Creeping	6.8	8.7	6.3	6.7
14 PPG-AT-103	Colonial	6.7	7.3	4.7	8.0
15 PRE2 Comp	Colonial	6.7	5.0	3.5	7.3
16 FSC Comp	Creeping	6.6	6.3	5.8	6.0
17 GMC-12K	Creeping	6.6	8.3	7.8	5.0
18 AP-18	Creeping	6.5	8.3	6.2	5.0
19 Authority	Creeping	6.4	8.7	6.7	6.0
20 Center Cut III Blend	Creeping	6.4	9.0	7.3	4.7
21 Proclamation	Creeping	6.4	8.7	5.8	5.0
22 Syn-ROPS	Creeping	6.3	6.0	7.3	5.3
23 11-FDC Comp	Colonial	6.3	5.3	6.0	6.7
24 Shark	Creeping	6.2	8.7	7.2	5.0
25 Pure Select	Creeping	6.2	8.3	6.3	4.7



Table 12. Creeping and colonial bentgrass fairway trial, 2012 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012	Brown Patch <sup>3</sup> 2013	Dollar Spot <sup>3</sup> Oct. 2013
26 PRE Comp	Colonial	6.1	5.0	5.0	6.7
27 PinUp	Creeping	6.1	8.7	6.2	4.7
28 13M	Creeping	6.0	8.7	6.5	7.3
29 Capri	Colonial	5.9	9.0	5.0	6.0
30 OO7	Creeping	5.8	8.7	5.0	4.3
31 Crystal BlueLinks	Creeping	5.6	8.7	4.3	5.3
32 V-8	Creeping	5.6	8.3	7.5	4.7
33 Benchmark DSR	Creeping	5.5	8.3	6.0	4.7
34 Independence	Creeping	5.5	8.3	7.3	3.3
35 Tyeer/OO7	Creeping	5.5	8.7	5.3	4.3
36 T-1	Creeping	5.5	8.0	6.8	4.3
37 RH 931	Creeping	5.4	7.3	6.2	5.3
38 EBM	Colonial	5.4	8.0	4.0	6.7
39 SR 1150/OO7	Creeping	5.4	8.3	6.3	5.3
40 Tyeer	Creeping	5.3	9.0	5.3	5.3
41 Mackenzie/Focus	Creeping	5.2	9.0	5.7	4.0
42 PureFormance Blend	Creeping	5.2	8.7	5.2	5.0
43 Memorial	Creeping	5.2	8.7	5.5	7.7
44 7 PC2/Tyeer	Creeping	5.2	8.7	6.2	4.3
45 Barracuda	Creeping	5.2	8.7	6.5	4.3
46 Kingpin	Creeping	5.1	9.0	5.7	5.0
47 Mackenzie/Tyeer	Creeping	4.9	9.0	5.2	4.0
48 SR 1150	Creeping	4.8	8.3	5.8	5.7
49 Tiger II	Colonial	4.8	8.0	3.5	5.7
50 Penn A-4	Creeping	4.8	7.7	4.7	4.7

(Continued)

Table 12. Creeping and colonial bentgrass fairway trial, 2012 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012	Brown Patch <sup>3</sup> 2013	Dollar Spot <sup>3</sup> Oct. 2013
51 AZH9-4257	Creeping	4.7	7.0	5.5	4.0
52 P21L2-315	Creeping	4.7	8.0	5.2	6.0
53 Glory	Colonial	4.6	9.0	4.2	5.0
54 OKPS bulk	Creeping	4.6	5.7	7.0	5.0
55 Ninety-Six Two	Creeping	4.4	8.3	6.5	3.3
56 Col 1	Colonial	4.4	7.0	3.5	6.3
57 Mackenzie	Creeping	4.4	9.0	5.7	3.7
58 L-93	Creeping	4.3	8.0	5.5	4.7
59 Putter	Creeping	4.1	8.3	4.7	3.0
60 Alpha	Creeping	4.1	8.3	5.7	2.7
61 Imperial	Creeping	4.1	8.3	6.2	2.7
62 Southshore	Creeping	4.1	8.0	5.3	4.0
63 Providence	Creeping	4.0	8.7	4.8	4.7
64 Col 2	Colonial	3.9	8.7	3.7	4.7
65 SR 1119	Creeping	3.8	8.7	4.8	3.3
66 SR 7150	Colonial	3.7	7.0	3.8	5.0
67 Penncross	Creeping	3.2	8.3	4.3	5.7
68 SR 7100	Colonial	2.8	1.7	4.5	4.7
69 Penn G-2	Creeping	2.6	1.0	5.7	6.0
70 Sandhill	Creeping	2.3	1.3	4.7	5.7
71 PSG 7DB	Dryland	2.0	8.3	4.3	6.7

(Continued)

Table 12. Creeping and colonial bentgrass fairway trial, 2012 (continued).

Cultivar or Selection	Species	Turf Quality <sup>1</sup> 2013	Establishment <sup>2</sup> Oct. 2012	Brown Patch <sup>3</sup> 2013	Dollar Spot <sup>3</sup> Oct. 2013
LSD at 5% =		1.0	1.2	1.9	1.7

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

<sup>2</sup>9 = best establishment of turf canopy

<sup>3</sup>9 = least disease (assessment for brown patch is an average of two ratings)

Table 13. Maintenance practices performed in 2013 on bentgrass trials at North Brunswick, NJ.

Table	Test	Fertility <sup>1</sup>	Mowing Height (inches)	Cultivation/Top Dress	Fungicides	Insecticides	Herbicides
1	2008 Greens, NTEP	1.75 (N); 24 fl oz Sugar Cal 10%; 8 fl oz Microgreen; 0.675 lb P <sub>2</sub> O <sub>5</sub> ; 0.925 lb K <sub>2</sub> O	0.110	April to Sept.–topdressed  March to Sept.–Tricure AD (wetting agent)	April and May–Daconil Ultrex	July–Acelepryn (sod webworm)	July–Acclaim Extra (crabgrass)
2	2008 Fairway, NTEP	1.125 (N)	0.375	March, Aug.–Tricure AD (wetting agent)	none	Sept.–Acelepryn (sod webworm)	none
3	2009 Greens	2.25 (N); 32 fl oz Sugar Cal 10%; 8 fl oz Microgreen; 0.775 lb P <sub>2</sub> O <sub>5</sub> ; 1.125 lb K <sub>2</sub> O	0.110	April, May, July to Sept, Nov.–topdressed  May to Oct.–Tricure AD (wetting agent)	May–Bayleton Flo; Curalan; Daconil Ultrex  June and July–Signature + Daconil Ultrex  Aug.–Signature + Daconil Ultrex; Heritage TL; Emerald; ProStar 70WG  Sept.–Curalan  Oct.–Daconil Ultrex	July–Acelepryn (sod webworm)	none

Table 13. Bentgrass maintenance practices, 2013 (continued).

Table	Test	Fertility <sup>1</sup>	Mowing Height (inches)	Cultivation/Top Dress	Fungicides	Insecticides	Herbicides
4	Velvet 2010 Greens	1.45 (N); 28 fl oz Sugar Cal 10%; 8 fl oz Microgreen; 0.513 lb P <sub>2</sub> O <sub>5</sub> ; 0.725 lb K <sub>2</sub> O	0.110	April to Sept.–topdressed March to Sept.–Tricure AD (wetting agent)	none	none	none
5	Creeping, Colonial 2010 Greens	1.45 (N); 28 fl oz Sugar Cal 10%; 8 fl oz Microgreen; 0.513 lb P <sub>2</sub> O <sub>5</sub> ; 0.725 lb K <sub>2</sub> O	0.110	April to Sept.–topdressed March to Sept.–Tricure AD (wetting agent)	none	none	none
6	2010 Fairway	2.0 (N)	0.375	March to May, July, Aug, Oct.–Tricure AD (wetting agent)	none	none	May–Lontrel + 2,4D LV4; 2,4D LV4 + Banvel (broadleaf weeds) July–Acclaim Extra (crabgrass)
7	2011 Greens	2.25 (N); 32 fl oz Sugar Cal 10%; 4 fl oz Microgreen; 0.488 lb P <sub>2</sub> O <sub>5</sub> ; 0.950 lb K <sub>2</sub> O	0.110	April to Sept., Nov.–top dressed March to Oct.–Tricure AD (wetting agent)	April, May, Oct.–Daconil Ultrex July–Heritage TL	July–Acelepyrn (sod webworm)	none

(Continued)

Table 13. Bentgrass maintenance practices, 2013 (continued).

Table	Test	Fertility <sup>1</sup>	Mowing Height (inches)	Cultivation/Top Dress	Fungicides	Insecticides	Herbicides
8	Creeping, Colonial 2011 Greens	2.25 (N); 32 fl oz Sugar Cal 10%; 4 fl oz Microgreen; 0.488 lb P <sub>2</sub> O <sub>5</sub> ; 0.950 lb K <sub>2</sub> O	0.110	April to Sept., Nov.–top dressed March to Oct.–Tricure AD (wetting agent) Oct.–aerated (solid)	April, May, Oct.–Daconil Ultrex July–Heritage TL	July–Acelepryn (sod webworm)	none
9	Creeping, Colonial 2011 Fairway	3.10 (N)	0.375	March to May, July, Aug., Oct.–Tricure AD (wetting agent)	May, July, Oct.–Daconil Ultrex	none	May–Lontrel + 2,4D LV4 (broadleaf weeds, 2 applications) July–Acclaim Extra (crabgrass)
10	Creeping, 2012 Greens	4.67 (N); 24 fl oz Sugar Cal 10%; 1.16 lb P <sub>2</sub> O <sub>5</sub> ; 1.48 lb K <sub>2</sub> O	0.110	April, May, July to Sept.–top dressed April, May, July, Aug, Sept.–Tricure AD (wetting agent)	none	July–Acelepryn (sod webworm)	none

(Continued)

Table 13. Bentgrass maintenance practices, 2013 (continued).

Table	Test	Fertility <sup>1</sup>	Mowing Height (inches)	Cultivation/Top Dress	Fungicides	Insecticides	Herbicides
11	Velvet, 2012 Greens	5.825 (N); 24 fl oz Sugar CaI 10%; 1.03 lb P <sub>2</sub> O <sub>5</sub> ; 1.38 lb K <sub>2</sub> O	0.110	April, May, July to Sept.–top dressed April to Sept.–Tricure AD (wetting agent)	June–Daconil Ultrex + Signature	July–Acelepryn (sod webworm)	none
12	Creeping, Colonial, 2012 Fairway	2.6 (N); 0.557 lb P <sub>2</sub> O <sub>5</sub> ; 0.607 lb K <sub>2</sub> O	0.375	June, July, Oct.–Tricure AD (wetting agent)	July–Segway	July–Acelepryn (sod webworm)	May–Lontrel + 2,4D LV4 (broadleaf weeds) July–Acclaim Extra (crabgrass)

<sup>1</sup>Annual nitrogen applied (lb/1000 ft<sup>2</sup>). Additional fertilizers as noted (per 1000 ft<sup>2</sup>)