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# Turfgrass Proceedings

## *The New Jersey Turfgrass Association*

In Cooperation with
Rutgers Center for Turfgrass Science
Rutgers Cooperative Extension

# 2020 RUTGERS TURFGRASS PROCEEDINGS

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 proceedings includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

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Deborah Spinella, Proceedings Layout Editor
Dr. James A. Murphy, Coordinator

# PERFORMANCE OF PERENNIAL RYEGRASS CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS, 2020

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## INTRODUCTION

Perennial ryegrass (*Lolium perenne L.*) is a bunch-type, cool-season perennial grass native to mild climates in Asia, North Africa, and Europe (Beard, 1973; Terrell, 1968). It rapidly germinates, establishes quickly and grows best in moist, well-drained soils with a pH near 6.5 (Beard, 1973; Funk and Clarke, 1989; Thorogood, 2003). Perennial ryegrass performs well as a permanent turfgrass in parks, golf fairways and roughs, athletic fields, racetracks, and home lawns in mild climates (Beard, 1973; Beard and Beard, 2005; Thorogood, 2003). In warmer climates, it is used to overseed warm-season grasses during winter dormancy (Beard and Beard, 2005; Thorogood, 2003; Turgeon, 2008). It can also be used for roadsides for quick soil stabilization (Beard and Beard, 2005). Perennial ryegrass is susceptible to several fungal and oomycete diseases, but the Rutgers University Turfgrass breeding program selects for improvements in turf quality, disease resistance, seed yields, and increased tolerance against environmental stress factors (Bonos and Huff, 2013; Thorogood, 2003).

The Rutgers turfgrass breeding program began in 1961, released its landmark perennial ryegrass cultivar, 'Manhattan', in 1967, and became the largest cool-season turfgrass breeding program releasing more than 400 cultivars by 2010 (Funk et al., 1969; Funk and Meyer, 2001; Honig, 2011). Rutgers turfgrass breeding program started out small, having only limited worldwide resources of perennial ryegrass germplasm, but began diversifying and improving the germplasm in 1996 by collecting from countries throughout Europe and Asia (Thorogood, 2003; Bonos et al., 2004; Honig, 2011). These collections focus on isolating and identifying new sources of disease resistance that can be introduced to elite NJAES perennial ryegrass to test and improve resistance creating better cultivars.

Turfgrass breeding efforts at NJAES are focused on resistance against a number of fungal and oomycete diseases such as gray leaf spot (*Pyricularia oryzae*), stem rust (*Puccinia graminis* subsp. *graminicola*), crown rust (*Puccinia coronate*), and dollar spot (*Clarireedia jacksonii*) (Bonos and Huff, 2013; Bonos et al., 2006; Salgado-Salazar et al., 2018). Additional diseases include anthracnose (*Colletotrichum cereale*), brown patch (*Rhizoctonia solani*), pythium (*Pythium spp.*), and red thread (*Laetisaria fuciformis*) (Bonos et al., 2006; Smiley et al., 2005).

## PROCEDURES

One perennial ryegrasses trial was established in 2016 (Table 1), two perennial ryegrass trials were established in 2018 (Tables 2,3), and one perennial ryegrass trial was established in 2019 (Table 4). All trials were hand sown with 0.88 oz of seed into 3ft 5 ft plots (3.7 lb seed/1000 $ft^2$) and arranged in a randomized complete block design with three replications. A 6-inch unseeded border was made to limit contamination. The annual rate of nitrogen and mowing height for each trial are represented in Table 7. Single fertilizer applications did not exceed 1.0 lbs N/1000 $ft^2$. The trials were maintained to encourage biotic and abiotic stresses but were irrigated to avoid drought stress. Turf plots were mowed regularly to 1.5-inch height.

Dimension (dithiopyr) was used on all perennial ryegrass trials for preemergent control of annual grass and broadleaf weeds in April, June, August, and October. Topeka (dicamba, dimethylamine salt), Weedar 64 (2,4-D), and Lontrel (clopyralid) were used to control broadleaf weeds. Merit (imidacloprid) was used to control grubs in June. Segway (cyazofamid) and Tenacity (mesotrione) were used in August to control pythium disease and grassy weeds, respectively.

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Perennial ryegrass trials were evaluated monthly during the growing season for turf quality, gray leaf spot, color, and stemminess. All turf plots were rated by multiple evaluators to limit personal biases toward particular traits. Ratings were based on a 1 to 9 scale, with 9 representing the most desirable turf characteristics. Data was summarized and subjected to an analysis of variance (ANOVA), and means were separated using Fisher's protected least significant difference (LSD) mean separation test.

## RESULTS AND DISCUSSION

Results for the perennial ryegrass trials established in 2016-2019 were ranked by overall turf quality. High turf quality averages indicate good disease resistance, dark-green color, high shoot density and uniformity, fine leaf texture, good mowing quality, and minimal damage from insects. Trials were further ranked using additional parameters (ie., establishment, color, disease rating, etc.) to distinguish cultivars or selections that were equally ranked based on turf quality ratings.

### Turf Quality

Perennial ryegrass is popular for overseeding home lawns, athletic fields, golf courses and other general turf areas. Since the release of the first turf-type cultivars in the 1960s, improvements have been made to overall turf quality (Huff, 1997). In the 2016 NTEP perennial ryegrass test (Table 1), Furlong, DLFPS-236/3547, PPG-PR 421, AllStar Fore, and Alloy ranked best for turf quality, while Fireball, DLFPS-238/3014, BAR LP 6162, Brightstar SLT and Linn ranked the lowest in turf quality. In the 2018 perennial ryegrass test (Table 2), GR4, PDS3, Principal II, PEM and GR5 ranked highest, while Evening Shade, Laredo II, ORPRG 16-6, PST-2TETS, and Tetra Grain ranked lowest. In the 2018 CTBT perennial ryegrass test (Table 3), PPG-PR-478, DLFPS-236-3546, PPG-PR-438, PPG-PR-436 and DLFPS-236-3582 ranked highest, while APR2839, SEPR-N6, SEPR-1, SEPR-3, and Brightstar SLT ranked the lowest. In the 2019 perennial ryegrass test (Table 4), PPG-PR 536, SGP1, SGP4, PPG-PR-531 and PST-214 ranked highest, while Barbados, Cutter II, PRG-19MH, Prominent and Replay ranked lowest for turf quality.

### Gray Leaf Spot

Gray leaf spot is a prominent disease in the Northeast. Typical in late summer and early fall with warm temperatures and high humidity, the first symptoms appear as small, water-soaked lesions from gray to light brown with a dark border. Eventually, these lesions will mature and cause blighting of the leaf blades, which forms a 'fishhook' appearance of the leaf tip. Conidia are readily produced under warm, humid conditions and are spread by wind. In the 2019 perennial ryegrass test (Table 4), 2CL3, 2CL4, PPG-PR 524, 2CL1, and PPG-PR 515 performed well against gray leaf spot, while Prelude IV, Panther GLS, PRG-19DG, Replay and PHX-NZ were most susceptible to gray leaf spot.

### Stemminess

Stemminess is an assessment for the amount of residual reproductive stems that remain in a turf plot after mowing. Stemminess was evaluated in the 2018 perennial ryegrass test (Table 2) and the 2018 CTBT perennial ryegrass test (Table 3). Ratings were taken on a 1 to 9 scale, where 9 represented a plot with little residual reproductive stems and 1 represented a plot with a lot of residual reproductive stems. In the 2018 perennial ryegrass test (Table 2), Ruckus, PPG-PR 435, PPG-PR 476, PPG-PR 478 and PDS3 had the least amount of stems, while ORPRG 16-4, Evening Shade, Laredo II, PST-2TETS and Tetra Grain had the most amount of stems. In the 2018 CTBT perennial ryegrass test (Table 3), DLFPS-236-3541, PPG-PR-436, PPG-PR-437, PPG-PR-477 and APR2848 had the least amount of stems, while DLPFS-236-3585, New Zealand, Silverdollar, SEPR-3, and Brightstar SLT had the most stems.

### Genetic Color

In the United States, a dark green turf color is typically considered more desirable when compared to a light green turf. A focus of the Rutgers turfgrass breeding program has been to breed for darker green varieties of perennial ryegrass. Genetic color was evaluated in the 2016 NTEP perennial ryegrass test (Table 1). ASP0116EXT, Tee-Me-Up, Hatrick, Alloy and PPG_PR 423 had the best genetic color, while Brightstar SLT, DLFPS-238/3014, BAR LP 6162, BAR LP 6165 and Linn had the least favorable genetic color.

## SUMMARY

Turf type perennial ryegrass is very versatile with its high traffic tolerance, rapid establishment, improved disease resistance, and dark green color. These traits continue to make perennial ryegrass a dominant perennial grass in the turfgrass seed industry. Plant breeding has improved perennial ryegrass cultivars, but more research is needed to increase heat, drought and salt tolerance, cold hardiness, resistance to crown rust, and its ability to survive under ice sheets for long periods.

## ACKNOWLEDGEMENTS

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Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2016 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 1 | Furlong | 7.1 | 7.3 | 6.6 | 7.2 | 7.2 | 7.7 | 8.3 | 9.0 | 7.0 | 7.7 | 6.7 |
| 2 | DLFPS-236/3547 | 6.6 | 6.5 | 5.9 | 6.7 | 7.0 | 7.7 | 8.0 | 9.0 | 6.7 | 8.3 | 7.3 |
| 3 | PPG-PR 421 | 6.5 | 6.4 | 5.9 | 6.6 | 7.0 | 8.3 | 4.7 | 7.0 | 6.0 | 7.0 | 6.7 |
| 4 | AllStar Fore | 6.5 | 6.6 | 6.4 | 6.3 | 6.6 | 7.3 | 5.0 | 7.0 | 7.0 | 8.0 | 6.3 |
| 5 | Alloy | 6.5 | 6.4 | 6.2 | 6.4 | 6.8 | 7.3 | 4.3 | 8.0 | 7.0 | 8.3 | 7.7 |
| 6 | SR 4700 | 6.4 | 6.3 | 5.9 | 6.6 | 6.9 | 7.0 | 3.7 | 7.0 | 6.3 | 6.3 | 6.0 |
| 7 | NP-2 | 6.4 | 7.0 | 5.9 | 6.1 | 6.8 | 8.3 | 6.7 | 7.0 | 6.0 | 7.7 | 7.0 |
| 8 | Slugger 3GL | 6.4 | 6.4 | 6.0 | 6.8 | 6.5 | 8.7 | 6.3 | 9.0 | 5.7 | 8.3 | 7.3 |
| 9 | Portfolio | 6.4 | 6.5 | 6.1 | 6.4 | 6.5 | 8.7 | 6.0 | 9.0 | 6.7 | 8.3 | 7.7 |
| 10 | DLFPS-236/3546 | 6.3 | 6.5 | 6.0 | 6.1 | 6.5 | 8.0 | 7.0 | 9.0 | 6.7 | 8.0 | 6.7 |
| 11 | Stellar 4GL | 6.3 | 6.8 | 5.4 | 5.9 | 7.0 | 7.7 | 7.7 | 8.0 | 5.0 | 7.7 | 6.3 |
| 12 | JR-197 | 6.2 | 6.2 | 5.6 | 6.8 | 6.4 | 8.7 | 6.3 | 8.0 | 6.3 | 7.7 | 7.0 |
| 13 | PPG-PR 372 | 6.2 | 6.2 | 5.9 | 6.2 | 6.4 | 7.7 | 4.7 | 8.0 | 6.3 | 8.0 | 7.3 |
| 14 | Fiesta Cinco | 6.1 | 5.9 | 5.8 | 6.2 | 6.5 | 5.7 | 3.7 | 8.0 | 6.3 | 6.7 | 6.3 |
| 15 | Peridot | 6.1 | 6.1 | 6.0 | 6.2 | 6.1 | 7.7 | 7.0 | 7.7 | 5.7 | 7.3 | 7.0 |
| 16 | Catalyst | 6.1 | 6.6 | 5.8 | 5.5 | 6.4 | 7.7 | 7.0 | 9.0 | 5.0 | 7.0 | 6.3 |
| 17 | Elektra | 6.1 | 6.5 | 5.8 | 5.7 | 6.3 | 7.3 | 6.0 | 8.0 | 5.7 | 8.3 | 6.3 |
| 18 | Coda | 6.1 | 6.4 | 5.8 | 6.0 | 6.1 | 7.7 | 5.3 | 8.0 | 6.3 | 8.0 | 7.7 |
| 19 | Sunburst | 6.1 | 5.9 | 5.8 | 6.1 | 6.4 | 8.0 | 6.0 | 8.0 | 5.0 | 7.3 | 7.0 |
| 20 | DLFPS-236/3542 | 6.1 | 6.4 | 5.7 | 6.0 | 6.2 | 8.3 | 4.3 | 8.0 | 6.0 | 7.7 | 7.3 |



(Continued)

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| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 21 | DLFPS-236/3545 | 6.0 | 6.1 | 5.6 | 6.0 | 6.5 | 8.3 | 7.3 | 9.0 | 7.0 | 8.0 | 7.3 |
| 22 | NP-3 | 6.0 | 6.5 | 4.8 | 5.9 | 6.8 | 8.7 | 6.0 | 9.0 | 6.0 | 7.7 | 7.0 |
| 23 | Silver Sport | 6.0 | 6.5 | 5.7 | 5.9 | 6.0 | 8.0 | 7.7 | 9.0 | 6.7 | 7.7 | 6.3 |
| 24 | DLFPS-236/3553 | 6.0 | 5.8 | 5.4 | 6.4 | 6.3 | 8.7 | 7.0 | 9.0 | 5.7 | 6.7 | 6.7 |
| 25 | Xcelerator | 6.0 | 6.2 | 5.2 | 6.0 | 6.5 | 7.7 | 6.7 | 7.0 | 6.3 | 8.3 | 6.7 |
| 26 | Intense | 6.0 | 6.2 | 5.9 | 5.8 | 5.9 | 7.0 | 4.7 | 7.0 | 7.0 | 8.0 | 7.0 |
| 27 | Palace II | 5.9 | 6.1 | 5.8 | 6.1 | 5.8 | 8.3 | 5.7 | 8.0 | 7.0 | 8.7 | 6.7 |
| 28 | Fastball 3GL | 5.9 | 6.2 | 5.6 | 5.8 | 6.2 | 8.0 | 7.3 | 9.0 | 6.7 | 7.3 | 7.3 |
| 29 | Signet | 5.9 | 6.3 | 5.9 | 5.8 | 5.6 | 8.3 | 5.0 | 8.0 | 5.7 | 7.0 | 6.7 |
| 30 | 02BS1 | 5.9 | 6.1 | 5.9 | 5.7 | 5.9 | 8.7 | 5.3 | 7.0 | 7.0 | 8.0 | 6.7 |
| 31 | DLFPS-236/3556 | 5.9 | 6.4 | 5.2 | 5.6 | 6.3 | 8.0 | 5.7 | 7.0 | 5.0 | 7.3 | 6.7 |
| 32 | Superstar GL | 5.9 | 6.4 | 5.4 | 5.8 | 6.0 | 7.7 | 4.7 | 7.0 | 5.3 | 7.3 | 6.3 |
| 33 | Overdrive 5G | 5.9 | 6.2 | 5.3 | 6.1 | 5.9 | 7.7 | 5.7 | 6.0 | 7.0 | 8.3 | 7.0 |
| 34 | Paragon 2 GLR | 5.9 | 6.2 | 5.6 | 5.5 | 6.1 | 8.3 | 6.3 | 9.0 | 7.0 | 8.7 | 7.3 |
| 35 | 021 | 5.9 | 6.1 | 5.6 | 5.4 | 6.3 | 8.0 | 6.3 | 7.0 | 5.0 | 6.7 | 6.0 |
| 36 | Spike GLS | 5.9 | 5.9 | 5.6 | 5.9 | 6.0 | 7.3 | 7.0 | 9.0 | 5.7 | 7.7 | 7.0 |
| 37 | DLFPS-236/3552 | 5.8 | 5.6 | 5.7 | 6.0 | 6.1 | 6.7 | 2.7 | 8.0 | 7.0 | 6.3 | 6.0 |
| 38 | DLFPS-236/3548 | 5.8 | 6.2 | 5.5 | 5.4 | 6.1 | 6.0 | 4.3 | 8.0 | 5.3 | 6.7 | 6.7 |
| 39 | APR2616 | 5.8 | 6.1 | 5.8 | 5.0 | 6.3 | 7.0 | 4.0 | 7.0 | 5.0 | 7.7 | 7.3 |
| 40 | Gray Wolf | 5.8 | 6.1 | 5.6 | 5.8 | 5.8 | 8.3 | 5.3 | 8.0 | 6.3 | 7.7 | 7.0 |



(Continued)

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| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 41 | CPN | 5.8 | 6.0 | 5.7 | 5.5 | 5.9 | 7.3 | 7.7 | 9.0 | 6.3 | 7.3 | 6.3 |
| 42 | PST-2A2 | 5.8 | 6.0 | 5.5 | 5.7 | 6.0 | 7.7 | 5.7 | 8.0 | 6.7 | 8.0 | 6.7 |
| 43 | PPG-PR 370 | 5.8 | 6.0 | 5.4 | 5.7 | 5.9 | 7.7 | 4.7 | 9.0 | 6.3 | 7.3 | 7.0 |
| 44 | Shield | 5.8 | 5.7 | 5.5 | 5.7 | 6.1 | 5.7 | 7.0 | 8.0 | 5.3 | 7.7 | 6.3 |
| 45 | UMPQUA | 5.8 | 5.6 | 5.2 | 5.9 | 6.3 | 6.3 | 7.7 | 9.0 | 5.3 | 5.7 | 6.7 |
| 46 | Apple 3GL | 5.7 | 5.8 | 5.9 | 5.5 | 5.6 | 8.0 | 4.3 | 8.0 | 6.0 | 7.7 | 7.0 |
| 47 | DLFPS-236/3540 | 5.7 | 6.1 | 5.6 | 5.4 | 5.6 | 5.7 | 4.3 | 8.0 | 6.3 | 7.3 | 6.7 |
| 48 | Homerun LS | 5.6 | 6.1 | 5.1 | 5.2 | 6.1 | 6.7 | 7.7 | 9.0 | 5.3 | 6.7 | 7.0 |
| 49 | DLFPS-236/3544 | 5.6 | 5.7 | 5.5 | 5.4 | 5.8 | 8.0 | 6.7 | 8.7 | 6.3 | 8.3 | 7.7 |
| 50 | Process | 5.6 | 6.0 | 4.7 | 5.7 | 5.9 | 8.3 | 5.7 | 9.0 | 6.3 | 8.0 | 6.7 |
| 51 | Grand Slam GLD | 5.6 | 5.3 | 5.5 | 5.4 | 6.0 | 4.7 | 4.0 | 9.0 | 7.0 | 7.0 | 6.0 |
| 52 | PPG-PR 385 | 5.6 | 5.7 | 5.4 | 5.3 | 5.8 | 6.3 | 6.0 | 7.0 | 4.7 | 7.0 | 6.3 |
| 53 | Slider LS | 5.5 | 6.1 | 5.3 | 5.0 | 5.5 | 7.0 | 4.7 | 8.0 | 6.0 | 7.0 | 6.3 |
| 54 | Primary II | 5.5 | 5.6 | 5.0 | 5.6 | 5.7 | 7.3 | 3.7 | 5.7 | 6.0 | 6.3 | 6.0 |
| 55 | Seabiscuit | 5.5 | 5.5 | 5.6 | 5.2 | 5.5 | 6.7 | 5.7 | 7.0 | 6.3 | 7.0 | 6.3 |
| 56 | PPG-PR 367 | 5.5 | 5.6 | 5.4 | 5.5 | 5.4 | 8.3 | 7.0 | 9.0 | 6.3 | 7.7 | 7.3 |
| 57 | Ivy | 5.4 | 5.5 | 5.4 | 5.2 | 5.7 | 7.3 | 3.7 | 8.0 | 6.3 | 7.0 | 6.0 |
| 58 | Man O'War | 5.4 | 5.7 | 5.0 | 5.1 | 5.8 | 6.7 | 6.7 | 7.0 | 6.7 | 7.7 | 7.3 |
| 59 | Pharaoh | 5.4 | 6.0 | 4.9 | 5.2 | 5.5 | 7.7 | 5.7 | 8.0 | 6.3 | 8.3 | 7.7 |
| 60 | DLFPS-236/3550 | 5.3 | 5.8 | 5.1 | 5.2 | 5.2 | 6.3 | 3.7 | 8.0 | 6.0 | 6.3 | 6.7 |



(Continued)

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| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 61 | Paradox GLR | 5.3 | 6.2 | 4.9 | 4.7 | 5.6 | 7.3 | 4.3 | 7.0 | 5.0 | 6.7 | 7.0 |
| 62 | DLFPS-236/3538 | 5.3 | 5.6 | 4.6 | 5.5 | 5.5 | 7.7 | 3.3 | 7.0 | 4.0 | 5.7 | 6.3 |
| 63 | Starbright GLX | 5.3 | 5.4 | 5.4 | 5.1 | 5.3 | 6.0 | 3.7 | 8.0 | 5.7 | 8.3 | 6.7 |
| 64 | SR 4650 | 5.3 | 5.7 | 5.1 | 5.2 | 5.1 | 7.0 | 6.3 | 8.0 | 5.0 | 7.0 | 6.3 |
| 65 | Gray Hawk | 5.3 | 5.2 | 5.6 | 4.9 | 5.4 | 5.3 | 3.7 | 7.0 | 5.7 | 7.3 | 6.3 |
| 66 | PST-2MAY | 5.3 | 5.7 | 5.6 | 5.0 | 4.7 | 6.0 | 4.3 | 8.0 | 6.0 | 6.0 | 6.3 |
| 67 | PST-2FOXY | 5.2 | 5.4 | 5.3 | 4.8 | 5.3 | 6.3 | 4.7 | 8.0 | 7.3 | 7.7 | 6.7 |
| 68 | PST-2PDA | 5.2 | 5.4 | 5.1 | 5.1 | 5.1 | 7.7 | 2.7 | 7.0 | 6.0 | 6.3 | 5.0 |
| 69 | Karma | 5.1 | 5.9 | 4.4 | 5.0 | 5.3 | 9.0 | 5.0 | 8.0 | 4.7 | 5.0 | 6.3 |
| 70 | JR-123 | 5.1 | 5.9 | 5.2 | 4.8 | 4.7 | 8.0 | 5.0 | 7.3 | 6.3 | 7.3 | 6.0 |
| 71 | ASP0118GL | 5.1 | 5.1 | 5.2 | 4.9 | 5.1 | 5.0 | 2.7 | 8.0 | 6.7 | 7.3 | 7.7 |
| 72 | ASP0117 | 5.0 | 4.9 | 5.1 | 5.0 | 5.1 | 4.7 | 3.7 | 8.0 | 6.0 | 8.0 | 7.3 |
| 73 | APR3060 | 5.0 | 4.7 | 5.3 | 4.7 | 5.3 | 4.0 | 4.0 | 7.3 | 4.0 | 6.3 | 5.0 |
| 74 | APR2612 | 4.9 | 4.9 | 4.6 | 5.1 | 5.2 | 7.3 | 4.7 | 7.0 | 6.3 | 7.0 | 7.0 |
| 75 | PST-2EGAD | 4.9 | 4.9 | 5.0 | 4.6 | 5.1 | 7.0 | 2.7 | 7.0 | 5.3 | 6.3 | 6.3 |
| 76 | BAR LP 6233 | 4.9 | 4.5 | 4.7 | 4.8 | 5.5 | 4.0 | 6.3 | 7.0 | 3.7 | 3.7 | 4.3 |
| 77 | Derby Xtreme | 4.9 | 5.2 | 5.0 | 4.5 | 4.8 | 6.0 | 2.3 | 7.0 | 6.0 | 7.3 | 6.7 |
| 78 | MRSL-PR16 | 4.7 | 4.6 | 5.0 | 4.5 | 4.6 | 4.0 | 3.0 | 7.0 | 7.7 | 8.7 | 7.0 |
| 79 | BAR LP 6164 | 4.6 | 4.7 | 4.4 | 4.6 | 4.8 | 4.7 | 3.7 | 7.0 | 3.3 | 5.3 | 5.0 |
| 80 | Allstar III | 4.6 | 4.8 | 4.4 | 4.2 | 4.9 | 4.3 | 2.3 | 7.0 | 6.3 | 8.0 | 7.0 |



(Continued)

Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2016 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 81 | RAD-PR 112 | 4.6 | 5.0 | 4.5 | 4.1 | 4.8 | 5.7 | 2.7 | 6.0 | 8.0 | 8.7 | 7.0 |
| 82 | Tee-Me-Up | 4.6 | 4.3 | 4.5 | 4.2 | 5.2 | 3.3 | 2.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| 83 | MRSL-PR15 | 4.5 | 4.3 | 4.7 | 4.4 | 4.7 | 4.7 | 2.3 | 7.0 | 6.3 | 8.3 | 7.0 |
| 84 | BAR LP 6158 | 4.5 | 4.4 | 4.5 | 4.4 | 4.6 | 5.0 | 3.0 | 6.0 | 3.3 | 4.7 | 4.7 |
| 85 | CS-6 | 4.5 | 4.5 | 4.7 | 4.1 | 4.5 | 4.7 | 2.3 | 8.0 | 8.0 | 8.3 | 7.0 |
| 86 | BAR LP 6117 | 4.4 | 4.2 | 4.4 | 4.2 | 4.9 | 3.7 | 1.3 | 6.0 | 3.7 | 6.3 | 6.3 |
| 87 | BAR LP 6159 | 4.4 | 4.3 | 4.6 | 3.9 | 4.7 | 3.7 | 2.7 | 6.0 | 4.0 | 5.3 | 5.0 |
| 88 | LPB-SD-104 | 4.4 | 4.3 | 3.6 | 4.7 | 5.0 | 3.3 | 3.7 | 8.0 | 4.7 | 7.0 | 4.7 |
| 89 | Pepper II | 4.4 | 5.1 | 4.5 | 3.7 | 4.3 | 4.7 | 2.3 | 6.0 | 7.7 | 7.0 | 6.7 |
| 90 | Mensa | 4.4 | 4.5 | 3.5 | 4.8 | 4.7 | 2.7 | 5.0 | 8.0 | 5.0 | 8.3 | 6.3 |
| 91 | Evolve | 4.4 | 4.4 | 4.2 | 4.5 | 4.3 | 4.7 | 2.3 | 4.7 | 4.7 | 7.3 | 5.7 |
| 92 | Saguaro | 4.3 | 4.3 | 3.9 | 4.2 | 4.9 | 2.3 | 3.0 | 8.0 | 4.7 | 7.0 | 5.7 |
| 93 | LPB-SD-102 | 4.3 | 4.1 | 3.8 | 4.6 | 4.8 | 2.7 | 3.0 | 7.0 | 6.0 | 6.7 | 6.3 |
| 94 | ASP0218 | 4.3 | 4.7 | 4.6 | 3.7 | 4.3 | 4.7 | 2.7 | 8.0 | 6.3 | 8.3 | 7.0 |
| 95 | Belize 2 | 4.3 | 4.5 | 4.6 | 4.0 | 4.0 | 5.3 | 2.3 | 7.0 | 4.7 | 6.7 | 5.7 |
| 96 | ASP0116EXT | 4.2 | 4.2 | 4.7 | 3.9 | 4.1 | 2.7 | 2.0 | 9.0 | 9.0 | 9.0 | 8.7 |
| 97 | LPB-SD-103 | 4.2 | 4.3 | 3.7 | 4.4 | 4.3 | 3.7 | 3.0 | 8.0 | 5.0 | 7.3 | 6.3 |
| 98 | Nexus GT | 4.2 | 4.4 | 4.7 | 3.5 | 4.0 | 4.3 | 2.0 | 8.0 | 7.7 | 7.3 | 6.7 |
| 99 | Hatrick | 4.1 | 4.0 | 4.3 | 3.9 | 4.3 | 2.7 | 3.0 | 9.0 | 8.3 | 7.3 | 8.0 |
| 100 | Green Supreme + | 4.1 | 4.5 | 4.3 | 3.6 | 4.1 | 4.0 | 3.0 | 8.0 | 6.7 | 7.3 | 7.0 |



(Continued)

Table 1. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2016 at Adelphia, NJ. Includes all entries from the 2016 National Turfgrass Evaluation Program (NTEP) test.

| | | Turf Quality[1] | | | | | Gray Leaf Spot[2] | Crown Rust[3] | Color[4] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2017-20 Avg. | 2017 Avg. | 2018 Avg. | 2019 Avg. | 2020 Avg. | 10 Oct. 2016 | 29 Sep. 2017 | 26 Sep. 2017 | 8 Nov. 2018 | 16 Oct. 2019 | 15 Oct. 2020 |
| 101 | BAR LP 6165 | 4.0 | 3.7 | 3.5 | 4.7 | 4.2 | 2.3 | 6.3 | 2.3 | 1.0 | 2.3 | 3.0 |
| 102 | JR-888 | 4.0 | 4.0 | 3.4 | 4.1 | 4.4 | 2.0 | 4.0 | 6.0 | 2.7 | 4.3 | 4.3 |
| 103 | GO-141 | 3.9 | 3.9 | 4.0 | 3.8 | 4.0 | 3.3 | 1.7 | 7.0 | 6.7 | 7.3 | 6.7 |
| 104 | JR-747 | 3.9 | 3.9 | 3.3 | 4.4 | 4.0 | 2.7 | 2.0 | 6.0 | 4.7 | 7.0 | 6.7 |
| 105 | Savant | 3.9 | 3.6 | 3.2 | 4.3 | 4.3 | 1.3 | 3.7 | 6.0 | 3.3 | 4.7 | 4.3 |
| 106 | Cayman | 3.8 | 4.1 | 4.5 | 3.2 | 3.5 | 3.7 | 2.0 | 7.0 | 7.0 | 7.0 | 5.3 |
| 107 | BAR LP 6131 | 3.6 | 2.9 | 3.7 | 3.4 | 4.2 | 1.7 | 3.3 | 7.0 | 4.7 | 4.3 | 4.7 |
| 108 | LPB-SD-101 | 3.5 | 3.5 | 2.9 | 3.9 | 3.7 | 1.7 | 2.7 | 7.0 | 3.3 | 3.3 | 4.7 |
| 109 | LPB-SD-105 | 3.5 | 3.4 | 2.7 | 3.8 | 4.1 | 1.3 | 3.7 | 8.0 | 4.0 | 6.3 | 4.7 |
| 110 | Fireball | 3.4 | 3.5 | 3.7 | 3.2 | 3.2 | 1.7 | 2.3 | 9.0 | 8.0 | 8.0 | 7.3 |
| 111 | DLFPS-238/3014 | 3.3 | 3.0 | 3.5 | 3.2 | 3.5 | 2.3 | 5.0 | 7.0 | 4.0 | 6.7 | 3.7 |
| 112 | BAR LP 6162 | 3.2 | 2.7 | 3.6 | 3.1 | 3.4 | 2.3 | 4.0 | 9.0 | 6.7 | 7.7 | 3.7 |
| 113 | Brightstar SLT | 3.1 | 3.0 | 3.2 | 3.2 | 2.9 | 1.7 | 2.7 | 7.0 | 4.0 | 5.0 | 4.3 |
| 114 | Linn | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 3.7 | 1.0 | 1.0 | 1.0 | 2.7 |
| | LSD at 5%= | 0.6 | 0.7 | 0.9 | 0.9 | 0.8 | 1.5 | 1.9 | 0.2 | 1.3 | 1.4 | 1.4 |
| | CV= | 7.4 | 7.9 | 11.2 | 10.8 | 9.5 | 15.8 | 25.5 | 1.9 | 13.5 | 12.2 | 13.9 |

[1]9 = Best turf quality

[2]9 = Least gray leaf spot

[3]9 = Least crown rust

[4]9 = Darkest color

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 1 | GR4 | 6.6 | 6.8 | 6.5 | 7.3 | 5.0 | 4.3 | 5.0 | 7.3 | 4.3 |
| 2 | PDS3 | 6.6 | 6.3 | 6.8 | 7.7 | 5.3 | 4.7 | 6.0 | 7.7 | 5.0 |
| 3 | Principal II | 6.4 | 6.6 | 6.3 | 7.7 | 8.0 | 6.3 | 6.0 | 7.3 | 5.7 |
| 4 | PEM | 6.4 | 6.2 | 6.7 | 7.0 | 5.7 | 4.3 | 3.7 | 7.7 | 3.7 |
| 5 | GR5 | 6.4 | 6.3 | 6.4 | 6.7 | 4.0 | 4.3 | 4.0 | 7.7 | 4.7 |
| 6 | GR1 | 6.3 | 6.4 | 6.2 | 6.7 | 4.3 | 3.7 | 4.0 | 7.3 | 4.3 |
| 7 | GR3 | 6.3 | 6.4 | 6.2 | 7.0 | 5.0 | 5.7 | 4.3 | 8.0 | 5.0 |
| 8 | PPG-PR 436 | 6.3 | 5.9 | 6.7 | 6.3 | 5.7 | 6.3 | 5.7 | 7.3 | 4.3 |
| 9 | GR8 | 6.3 | 6.1 | 6.4 | 6.0 | 4.3 | 4.3 | 4.3 | 7.0 | 3.7 |
| 10 | PPG-PR 476 | 6.2 | 5.7 | 6.7 | 5.7 | 4.7 | 6.0 | 6.3 | 7.7 | 5.0 |
| 11 | Homerun LS | 6.2 | 6.5 | 5.9 | 7.3 | 7.7 | 4.3 | 5.0 | 6.3 | 5.0 |
| 12 | GR6 | 6.2 | 6.1 | 6.2 | 7.3 | 5.0 | 3.0 | 4.7 | 7.0 | 4.0 |
| 13 | PST-Syn-2MEG | 6.1 | 6.1 | 6.2 | 6.0 | 4.7 | 4.7 | 5.7 | 7.3 | 4.3 |
| 14 | PPG-PRG-331 | 6.1 | 6.1 | 6.2 | 7.3 | 7.3 | 5.3 | 5.0 | 7.0 | 6.0 |
| 15 | PPG-PR 473 | 6.1 | 6.0 | 6.3 | 6.0 | 5.3 | 4.3 | 5.0 | 6.7 | 6.0 |
| 16 | PPG-PR 435 | 6.1 | 5.8 | 6.3 | 7.7 | 7.3 | 6.3 | 7.0 | 7.3 | 5.0 |
| 17 | UEV | 6.1 | 5.9 | 6.2 | 7.0 | 6.7 | 4.3 | 4.0 | 7.7 | 3.7 |
| 18 | PPG-PR 434 | 6.0 | 6.1 | 5.9 | 7.3 | 7.0 | 4.0 | 4.7 | 7.0 | 4.3 |
| 19 | Fastball 3GL | 6.0 | 5.9 | 6.1 | 7.3 | 6.3 | 3.7 | 4.3 | 6.7 | 5.7 |
| 20 | 021 | 6.0 | 6.3 | 5.7 | 8.0 | 7.0 | 3.7 | 4.7 | 6.0 | 4.7 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 21 | PPG-PR 422 | 6.0 | 5.9 | 6.1 | 8.0 | 6.3 | 5.3 | 5.0 | 7.0 | 3.3 |
| 22 | Apple 3GL | 6.0 | 5.7 | 6.2 | 6.7 | 6.7 | 4.7 | 5.0 | 7.3 | 4.7 |
| 23 | PDS1 | 6.0 | 5.9 | 6.1 | 7.0 | 5.3 | 4.0 | 4.0 | 6.7 | 4.3 |
| 24 | PPG-PR 479 | 6.0 | 5.5 | 6.4 | 6.0 | 4.7 | 4.3 | 5.0 | 6.7 | 4.7 |
| 25 | Peridot | 5.9 | 6.3 | 5.5 | 6.7 | 6.3 | 4.3 | 3.7 | 7.0 | 6.0 |
| 26 | PDS2 | 5.9 | 5.8 | 6.1 | 7.0 | 4.7 | 3.0 | 3.3 | 6.7 | 5.7 |
| 27 | PPG-PR 437 | 5.9 | 5.6 | 6.2 | 6.0 | 7.0 | 6.7 | 6.0 | 7.3 | 4.0 |
| 28 | PPG-PR 438 | 5.9 | 5.7 | 6.0 | 6.3 | 7.0 | 6.3 | 5.3 | 6.3 | 4.3 |
| 29 | PST-2EGY | 5.9 | 5.7 | 6.0 | 6.0 | 4.0 | 5.0 | 4.7 | 6.7 | 3.0 |
| 30 | Silver Sport | 5.8 | 5.7 | 6.0 | 7.3 | 5.7 | 4.0 | 5.0 | 6.3 | 5.0 |
| 31 | GR2 | 5.8 | 5.7 | 5.9 | 6.7 | 4.7 | 4.0 | 4.0 | 7.0 | 2.7 |
| 32 | Xcelerator | 5.8 | 6.0 | 5.6 | 6.7 | 7.0 | 4.0 | 5.0 | 6.3 | 5.0 |
| 33 | GR7 | 5.8 | 5.6 | 6.0 | 6.7 | 4.3 | 3.7 | 3.7 | 6.3 | 4.0 |
| 34 | Gray Hawk | 5.7 | 6.2 | 5.3 | 7.0 | 8.0 | 4.7 | 5.3 | 6.7 | 4.3 |
| 35 | Bandalore | 5.7 | 6.2 | 5.3 | 6.3 | 6.7 | 5.3 | 5.3 | 6.3 | 5.7 |
| 36 | PPG-PR 478 | 5.7 | 5.5 | 5.9 | 6.0 | 4.7 | 5.7 | 6.3 | 6.7 | 4.3 |
| 37 | Slugger 3GL | 5.7 | 5.8 | 5.6 | 6.3 | 5.0 | 5.7 | 5.3 | 6.7 | 4.7 |
| 38 | PR-5-16 | 5.7 | 5.7 | 5.7 | 5.7 | 7.3 | 5.7 | 6.0 | 5.0 | 3.7 |
| 39 | PPG-PR 477 | 5.7 | 5.4 | 5.9 | 5.0 | 4.3 | 5.3 | 6.0 | 7.0 | 4.7 |
| 40 | Karma | 5.7 | 5.9 | 5.4 | 7.3 | 7.3 | 5.0 | 6.0 | 6.0 | 6.0 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 41 | Grandslam GLD | 5.6 | 5.6 | 5.6 | 5.0 | 6.3 | 5.0 | 5.0 | 5.7 | 4.0 |
| 42 | Pharoah | 5.6 | 5.6 | 5.5 | 6.3 | 7.0 | 3.7 | 4.7 | 7.0 | 4.3 |
| 43 | PR-6-15 | 5.6 | 5.7 | 5.5 | 7.3 | 7.0 | 6.0 | 5.3 | 7.7 | 4.0 |
| 44 | PSL | 5.6 | 5.1 | 6.0 | 6.3 | 4.7 | 3.3 | 4.7 | 6.0 | 2.3 |
| 45 | PPG-PR 338 | 5.5 | 5.1 | 5.8 | 6.7 | 6.0 | 4.0 | 4.7 | 7.3 | 3.7 |
| 46 | PDS4 | 5.5 | 4.8 | 6.1 | 6.0 | 4.3 | 3.0 | 4.7 | 5.3 | 3.0 |
| 47 | Pillar II | 5.5 | 5.7 | 5.2 | 7.3 | 8.0 | 3.7 | 3.7 | 5.3 | 4.0 |
| 48 | PPG-PR 475 | 5.4 | 4.8 | 6.0 | 5.3 | 4.3 | 3.7 | 5.0 | 6.0 | 4.0 |
| 49 | Paragon 2 GLR | 5.4 | 5.1 | 5.8 | 7.0 | 5.3 | 3.0 | 4.3 | 4.7 | 4.0 |
| 50 | PPG-PR 433 | 5.4 | 5.4 | 5.4 | 6.0 | 6.7 | 4.7 | 4.3 | 7.3 | 5.3 |
| 51 | Stamina | 5.4 | 5.4 | 5.4 | 6.0 | 6.3 | 5.0 | 5.0 | 6.3 | 4.0 |
| 52 | Alloy | 5.4 | 5.0 | 5.7 | 5.7 | 6.0 | 3.7 | 4.7 | 7.0 | 4.0 |
| 53 | TEM | 5.4 | 4.9 | 5.9 | 4.7 | 5.3 | 3.0 | 4.7 | 6.7 | 2.0 |
| 54 | PPG-PR 376 | 5.4 | 5.6 | 5.1 | 7.3 | 7.3 | 5.0 | 4.3 | 6.7 | 5.3 |
| 55 | PPG-PR 474 | 5.4 | 5.2 | 5.5 | 6.0 | 5.3 | 4.7 | 4.7 | 6.7 | 3.0 |
| 56 | SR 4650 | 5.4 | 5.4 | 5.3 | 7.3 | 6.7 | 3.3 | 3.0 | 6.3 | 5.7 |
| 57 | Thrive | 5.4 | 5.4 | 5.3 | 5.0 | 6.3 | 5.3 | 5.3 | 6.7 | 3.7 |
| 58 | PPG-PR 432 | 5.3 | 5.2 | 5.4 | 6.0 | 7.0 | 4.3 | 4.3 | 6.3 | 4.0 |
| 59 | Greenland | 5.3 | 5.4 | 5.2 | 6.0 | 5.7 | 6.3 | 5.0 | 7.7 | 3.7 |
| 60 | Stellar 3GL | 5.3 | 5.7 | 4.9 | 7.7 | 7.0 | 4.0 | 5.0 | 7.0 | 4.0 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 61 | Premium | 5.3 | 5.2 | 5.3 | 6.7 | 7.0 | 3.7 | 4.3 | 6.3 | 4.3 |
| 62 | Intense | 5.3 | 5.4 | 5.1 | 6.0 | 7.3 | 3.7 | 5.3 | 6.0 | 4.7 |
| 63 | Banfield | 5.3 | 5.4 | 5.1 | 5.7 | 6.0 | 5.7 | 5.7 | 7.3 | 4.3 |
| 64 | Fastball RGL | 5.2 | 5.2 | 5.2 | 5.3 | 6.7 | 4.3 | 5.7 | 6.7 | 4.0 |
| 65 | PST-Syn-2LOME | 5.2 | 5.0 | 5.3 | 4.7 | 4.3 | 3.0 | 3.3 | 6.0 | 4.7 |
| 66 | Sideways | 5.1 | 4.9 | 5.2 | 6.0 | 5.7 | 2.7 | 3.7 | 5.7 | 4.3 |
| 67 | Apple SGL | 5.1 | 5.2 | 5.0 | 5.3 | 6.7 | 3.7 | 4.7 | 7.0 | 4.3 |
| 68 | Slider LS | 5.1 | 5.0 | 5.1 | 6.0 | 5.3 | 4.7 | 5.3 | 5.7 | 3.0 |
| 69 | Vision | 5.0 | 5.0 | 5.0 | 6.7 | 6.3 | 2.7 | 3.3 | 5.7 | 3.3 |
| 70 | EUS | 5.0 | 4.5 | 5.4 | 5.3 | 6.3 | 3.7 | 5.0 | 6.7 | 2.3 |
| 71 | ULS | 4.9 | 4.4 | 5.5 | 5.7 | 4.0 | 3.7 | 4.7 | 6.0 | 2.7 |
| 72 | Aspire | 4.9 | 5.0 | 4.8 | 6.3 | 7.3 | 3.3 | 3.3 | 4.7 | 3.0 |
| 73 | Diligent | 4.9 | 4.7 | 5.0 | 7.0 | 6.3 | 4.0 | 4.3 | 4.3 | 4.3 |
| 74 | Benchmark | 4.8 | 5.1 | 4.6 | 4.7 | 7.0 | 4.0 | 5.3 | 6.3 | 4.7 |
| 75 | Spark | 4.8 | 4.8 | 4.8 | 6.0 | 7.7 | 2.7 | 4.0 | 5.7 | 3.3 |
| 76 | PPG-PR 471 | 4.8 | 4.4 | 5.2 | 4.3 | 4.7 | 5.0 | 5.0 | 6.3 | 3.7 |
| 77 | Provost | 4.8 | 4.4 | 5.2 | 5.7 | 5.0 | 4.0 | 4.3 | 6.7 | 3.3 |
| 78 | Ruckus | 4.8 | 4.7 | 4.8 | 6.3 | 7.0 | 4.7 | 7.3 | 6.0 | 5.3 |
| 79 | Sox Fan | 4.7 | 4.7 | 4.8 | 5.0 | 7.3 | 3.0 | 4.7 | 6.7 | 4.0 |
| 80 | PPG-PR 480 | 4.7 | 4.4 | 5.0 | 4.7 | 3.3 | 3.3 | 5.0 | 7.0 | 3.3 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 81 | Pennant H2O | 4.6 | 4.9 | 4.3 | 5.0 | 7.3 | 3.7 | 3.3 | 5.0 | 4.3 |
| 82 | Big League | 4.6 | 4.8 | 4.3 | 4.0 | 6.7 | 3.3 | 3.0 | 5.7 | 4.3 |
| 83 | Linedrive II | 4.5 | 4.6 | 4.4 | 4.7 | 7.3 | 3.7 | 3.7 | 5.0 | 3.3 |
| 84 | PPG-PR 472 | 4.5 | 4.5 | 4.5 | 5.0 | 5.0 | 3.7 | 4.3 | 5.3 | 3.7 |
| 85 | PPG-PR 483 | 4.5 | 4.3 | 4.6 | 5.0 | 4.7 | 3.0 | 5.0 | 4.7 | 3.0 |
| 86 | Defender | 4.5 | 4.4 | 4.6 | 4.3 | 6.7 | 2.7 | 3.3 | 5.3 | 5.3 |
| 87 | Expedite | 4.5 | 4.8 | 4.1 | 4.7 | 6.3 | 3.3 | 4.0 | 4.0 | 4.7 |
| 88 | Wicked | 4.4 | 4.3 | 4.6 | 4.0 | 5.7 | 3.3 | 4.3 | 6.0 | 3.3 |
| 89 | Dasher 3 | 4.4 | 4.1 | 4.6 | 4.7 | 6.0 | 3.7 | 4.0 | 5.0 | 2.7 |
| 90 | Pistol | 4.3 | 4.6 | 3.9 | 4.7 | 7.3 | 2.7 | 2.0 | 4.7 | 4.0 |
| 91 | Fiesta 4 | 4.2 | 4.0 | 4.3 | 4.7 | 5.0 | 2.7 | 3.3 | 4.0 | 3.0 |
| 92 | Virte | 4.2 | 4.1 | 4.2 | 4.0 | 6.3 | 3.3 | 2.3 | 4.3 | 5.0 |
| 93 | Presidio II | 4.1 | 3.9 | 4.3 | 3.0 | 7.3 | 2.7 | 3.0 | 4.7 | 3.3 |
| 94 | PST-2CARD Bulk | 4.1 | 4.2 | 4.0 | 4.3 | 4.7 | 3.0 | 4.0 | 4.7 | 4.0 |
| 95 | Homerun | 4.1 | 4.1 | 4.0 | 3.7 | 6.7 | 4.0 | 3.7 | 6.3 | 3.7 |
| 96 | Ringles | 4.1 | 3.8 | 4.3 | 4.0 | 5.3 | 2.7 | 4.7 | 4.3 | 3.3 |
| 97 | Primary | 4.0 | 4.2 | 3.8 | 4.0 | 6.7 | 3.3 | 3.7 | 5.0 | 4.7 |
| 98 | Revenge-GLX | 3.9 | 3.5 | 4.4 | 4.0 | 6.0 | 3.0 | 3.7 | 4.3 | 3.3 |
| 99 | Rinovo | 3.8 | 3.5 | 4.1 | 4.7 | 5.0 | 3.0 | 4.3 | 4.3 | 3.0 |
| 100 | SR 4660ST | 3.8 | 3.2 | 4.4 | 4.0 | 6.3 | 2.3 | 4.0 | 4.0 | 2.3 |

(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 101 | Double Time GLS | 3.7 | 4.2 | 3.3 | 5.7 | 6.3 | 3.7 | 3.3 | 4.0 | 6.3 |
| 102 | Silver Dollar | 3.7 | 3.8 | 3.6 | 2.7 | 6.7 | 2.3 | 2.3 | 3.3 | 4.3 |
| 103 | Black Pearl | 3.6 | 3.6 | 3.5 | 3.0 | 6.0 | 2.7 | 2.3 | 4.3 | 4.0 |
| 104 | Sun | 3.5 | 3.1 | 3.8 | 3.7 | 6.3 | 3.3 | 3.7 | 4.3 | 1.7 |
| 105 | Zoom | 3.5 | 3.1 | 3.8 | 4.0 | 7.7 | 3.0 | 3.7 | 4.7 | 2.3 |
| 106 | Torison | 3.5 | 2.8 | 4.1 | 2.0 | 6.7 | 4.7 | 4.7 | 5.7 | 2.0 |
| 107 | Brightstar SLT | 3.4 | 3.3 | 3.5 | 2.3 | 7.3 | 2.0 | 3.0 | 2.0 | 2.7 |
| 108 | Tailgater | 3.4 | 3.1 | 3.6 | 3.3 | 6.7 | 2.7 | 3.0 | 6.0 | 3.3 |
| 109 | Hancock | 3.3 | 2.7 | 4.0 | 2.7 | 5.3 | 3.3 | 3.7 | 6.0 | 2.7 |
| 110 | Cascadia | 3.3 | 3.2 | 3.5 | 2.7 | 6.0 | 2.7 | 1.7 | 4.0 | 3.3 |
| 111 | Lover | 3.3 | 3.0 | 3.6 | 3.3 | 5.0 | 3.3 | 3.3 | 4.7 | 2.7 |
| 112 | Charger II | 3.2 | 3.1 | 3.3 | 3.0 | 7.3 | 2.0 | 2.0 | 3.0 | 1.7 |
| 113 | MN-EPR18 | 3.2 | 2.7 | 3.6 | 2.7 | 3.3 | 6.3 | 5.3 | 5.0 | 2.0 |
| 114 | Fiji 2 | 3.0 | 2.8 | 3.3 | 2.3 | 7.0 | 2.3 | 2.7 | 4.0 | 2.7 |
| 115 | Continental II | 3.0 | 2.7 | 3.4 | 2.7 | 7.7 | 2.7 | 1.3 | 5.0 | 2.7 |
| 116 | Prominent | 2.9 | 2.7 | 3.1 | 2.7 | 6.3 | 2.7 | 1.3 | 2.3 | 3.3 |
| 117 | LNSPRG1 | 2.9 | 2.4 | 3.3 | 2.0 | 6.3 | 2.0 | 2.7 | 3.7 | 3.0 |
| 118 | Brea | 2.8 | 2.2 | 3.4 | 2.3 | 6.0 | 3.0 | 2.7 | 4.0 | 2.3 |
| 119 | ORPRG16-2 | 2.8 | 2.1 | 3.5 | 2.7 | 5.0 | 2.3 | 2.7 | 4.3 | 1.7 |
| 120 | Tetradark | 2.8 | 2.7 | 2.9 | 4.0 | 5.7 | 3.3 | 2.7 | 4.7 | 3.0 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | | Turf Quality[1] | | | Gray Leaf Spot[2] | Establish-ment[3] | Stemminess[4] | | Bipolaris Leaf Spot[5] | Dollar Spot[6] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2019-20 Avg. | 2019 Avg. | 2020 Avg. | Sep. 2018 | Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 14 Jun. 2019 | 8 Aug. 2019 |
| 121 | Palmer III | 2.7 | 1.9 | 3.4 | 1.3 | 6.7 | 3.3 | 3.0 | 3.7 | 3.0 |
| 122 | Express II | 2.7 | 2.1 | 3.2 | 2.7 | 4.7 | 2.3 | 2.0 | 2.7 | 2.0 |
| 123 | Blazer 4 | 2.6 | 2.3 | 3.0 | 1.0 | 6.0 | 3.0 | 4.0 | 3.7 | 3.0 |
| 124 | Salinas II | 2.5 | 2.2 | 2.9 | 3.0 | 5.3 | 3.3 | 5.3 | 5.3 | 1.7 |
| 125 | Ringer II | 2.5 | 2.0 | 3.0 | 2.3 | 5.7 | 3.0 | 3.0 | 3.7 | 1.7 |
| 126 | ORPRG16-3 | 2.5 | 1.9 | 3.1 | 1.3 | 4.3 | 2.7 | 3.0 | 3.7 | 2.0 |
| 127 | Mighty | 2.5 | 1.7 | 3.2 | 2.0 | 5.3 | 2.7 | 3.0 | 4.3 | 2.0 |
| 128 | Majesty II | 2.4 | 2.0 | 2.8 | 1.7 | 5.7 | 4.3 | 3.3 | 4.3 | 2.7 |
| 129 | Panther GLS | 2.4 | 1.8 | 3.0 | 1.0 | 6.7 | 3.3 | 2.3 | 4.3 | 2.7 |
| 130 | Barbados | 2.4 | 2.2 | 2.5 | 1.7 | 6.0 | 2.0 | 1.7 | 3.7 | 2.3 |
| 131 | LNSPRG2 | 2.3 | 1.9 | 2.7 | 1.3 | 4.0 | 2.3 | 3.0 | 3.7 | 2.0 |
| 132 | Pinstripe II | 2.3 | 1.7 | 2.8 | 1.7 | 6.7 | 2.3 | 3.3 | 4.3 | 1.0 |
| 133 | Prelude IV | 2.2 | 2.0 | 2.5 | 1.7 | 7.3 | 2.3 | 3.0 | 4.0 | 2.3 |
| 134 | ORPRG16-7 | 2.2 | 1.5 | 2.9 | 1.3 | 4.3 | 3.0 | 3.0 | 3.7 | 1.3 |
| 135 | ORPRG16-4 | 2.1 | 1.7 | 2.5 | 1.3 | 4.0 | 3.0 | 1.3 | 3.3 | 1.7 |
| 136 | ORPRG16-1 | 2.1 | 1.7 | 2.5 | 1.7 | 4.3 | 2.7 | 3.0 | 4.0 | 1.7 |
| 137 | Cutter II | 2.0 | 1.6 | 2.4 | 2.0 | 6.0 | 2.0 | 2.0 | 2.7 | 2.7 |
| 138 | ORPRG16-5 | 2.0 | 1.5 | 2.5 | 2.3 | 4.3 | 2.7 | 2.3 | 4.7 | 1.7 |
| 139 | Replicator | 2.0 | 1.6 | 2.4 | 1.3 | 3.0 | 5.3 | 2.7 | 5.3 | 1.0 |
| 140 | Evening Shade | 1.9 | 1.7 | 2.0 | 1.7 | 7.0 | 2.7 | 1.3 | 2.7 | 1.7 |



(Continued)

Table 2. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ.

| | Entry | Turf Quality[1] 2019-20 Avg. | Turf Quality[1] 2019 Avg. | Turf Quality[1] 2020 Avg. | Gray Leaf Spot[2] Sep. 2018 | Establish-ment[3] Sep. 2018 | Stemminess[4] 12 Jun. 2019 | Stemminess[4] 18 Jun. 2020 | Bipolaris Leaf Spot[5] 14 Jun. 2019 | Dollar Spot[6] 8 Aug. 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| 141 | Laredo II | 1.6 | 1.3 | 1.8 | 1.3 | 5.7 | 2.7 | 1.3 | 3.3 | 2.0 |
| 142 | ORPRG16-6 | 1.5 | 1.1 | 2.0 | 1.3 | 4.3 | 2.5 | 2.0 | 4.7 | 1.3 |
| 143 | PST-2TETS | 1.4 | 1.6 | 1.2 | 3.0 | 5.7 | 5.0 | 1.0 | 4.3 | 2.7 |
| 144 | Tetra Grain | 1.2 | 1.2 | 1.2 | 1.0 | 6.0 | 4.5 | 1.0 | 4.3 | 2.7 |
| | LSD @ 5%= | 0.7 | 0.9 | 0.7 | 1.4 | 1.6 | 1.5 | 1.4 | 1.7 | 1.5 |
| | CV | 9.0 | 12.2 | 9.1 | 18.0 | 17 | 16.4 | 21.7 | 29.6 | 24.0 |

[1]9 = Best turf quality
[2]9 = Least gray leaf spot
[3]9 = Best establishment
[4]9 = Least stemminess
[5]9 = Least bipolaris leaf spot
[6]9 = Least dollar spot

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 1 | PPG-PR-478 | 6.5 | 6.4 | 6.6 | 5.0 | 6.3 | 5.7 | 6.3 | 5.0 |
| 2 | DLFPS-236-3546 | 6.3 | 6.2 | 6.4 | 7.3 | 6.7 | 6.3 | 6.3 | 4.3 |
| 3 | PPG-PR-438 | 6.3 | 6.4 | 6.2 | 7.7 | 7.7 | 5.0 | 6.0 | 6.3 |
| 4 | PPG-PR-436 | 6.3 | 6.4 | 6.2 | 6.7 | 6.3 | 6.3 | 7.7 | 6.7 |
| 5 | DLFPS-236-3582 | 6.1 | 6.5 | 5.8 | 6.7 | 7.0 | 4.7 | 4.7 | 5.7 |
| 6 | DLFPS-236-3547 | 6.1 | 6.6 | 5.5 | 7.0 | 7.0 | 7.0 | 6.3 | 5.0 |
| 7 | PST-214 | 6.1 | 6.4 | 5.7 | 5.7 | 7.3 | 5.7 | 5.7 | 6.0 |
| 8 | PPG-PR-344 | 6.0 | 6.3 | 5.6 | 7.7 | 8.3 | 4.0 | 6.3 | 4.7 |
| 9 | PPG-PR-437 | 6.0 | 6.2 | 5.7 | 7.7 | 7.0 | 5.7 | 7.0 | 5.0 |
| 10 | PPG-PR-342 | 5.9 | 6.3 | 5.5 | 7.3 | 7.0 | 5.7 | 6.0 | 5.0 |
| 11 | PPG-PR-477 | 5.9 | 5.8 | 5.9 | 6.3 | 6.0 | 5.3 | 7.0 | 4.3 |
| 12 | PPG-PR-229 | 5.9 | 6.2 | 5.5 | 6.0 | 5.3 | 6.0 | 6.7 | 5.0 |
| 13 | DLFPS-236-3581 | 5.8 | 6.0 | 5.5 | 6.0 | 6.3 | 5.3 | 5.7 | 5.0 |
| 14 | PPG-PR-435 | 5.7 | 6.0 | 5.4 | 7.7 | 7.7 | 6.0 | 6.3 | 4.7 |
| 15 | PPG-PR-338 | 5.7 | 5.9 | 5.4 | 6.3 | 7.0 | 5.0 | 4.7 | 6.0 |
| 16 | DLFPS-236-3543 | 5.6 | 5.8 | 5.4 | 7.7 | 6.7 | 5.7 | 6.0 | 5.0 |
| 17 | DLFPS-236-3541 | 5.5 | 5.6 | 5.4 | 6.7 | 5.3 | 7.3 | 8.0 | 5.0 |
| 18 | DLFPS-236-3542 | 5.5 | 6.0 | 5.1 | 5.3 | 6.3 | 6.7 | 6.0 | 4.3 |
| 19 | DLFPS-236-3575 | 5.5 | 5.7 | 5.3 | 7.0 | 6.3 | 5.0 | 6.7 | 5.0 |
| 20 | Signet | 5.5 | 5.9 | 5.0 | 7.3 | 7.7 | 6.7 | 5.0 | 5.3 |



(Continued)

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 21 | PPG-PR-310 | 5.5 | 6.0 | 4.9 | 7.7 | 7.0 | 5.0 | 6.0 | 4.7 |
| 22 | Silver Sport | 5.4 | 5.8 | 5.0 | 5.3 | 6.7 | 4.0 | 3.0 | 5.7 |
| 23 | DLFPS-236-3578 | 5.4 | 5.7 | 5.1 | 5.3 | 6.0 | 4.0 | 5.0 | 5.0 |
| 24 | DLFPS-236-3579 | 5.3 | 5.1 | 5.5 | 4.0 | 4.3 | 4.3 | 5.7 | 5.3 |
| 25 | PST-2BD1 | 5.3 | 5.3 | 5.3 | 8.0 | 4.7 | 5.7 | 5.7 | 5.3 |
| 26 | PPG-PR-376 | 5.3 | 5.7 | 4.9 | 6.7 | 6.3 | 4.7 | 4.0 | 4.0 |
| 27 | DLFPS-236-3577 | 5.3 | 5.7 | 4.8 | 5.7 | 6.3 | 5.7 | 6.3 | 5.0 |
| 28 | PPG-PR-432 | 5.3 | 5.5 | 5.0 | 6.7 | 5.3 | 4.3 | 3.3 | 4.3 |
| 29 | DLFPS-236-3584 | 5.2 | 5.6 | 4.8 | 7.7 | 6.3 | 6.3 | 6.0 | 4.7 |
| 30 | PST-2GDS | 5.2 | 5.4 | 5.0 | 5.7 | 6.0 | 4.3 | 4.7 | 3.7 |
| 31 | PPG-PR-434 | 5.1 | 6.0 | 4.2 | 7.0 | 8.0 | 3.3 | 4.3 | 4.3 |
| 32 | DLFPS-236-3583 | 5.1 | 5.2 | 5.0 | 6.0 | 5.3 | 5.0 | 6.3 | 4.3 |
| 33 | DLFPS-236-3538 | 5.1 | 5.4 | 4.8 | 6.7 | 6.0 | 5.0 | 5.7 | 4.7 |
| 34 | Shield | 5.1 | 5.5 | 4.7 | 6.3 | 6.7 | 3.0 | 3.3 | 4.7 |
| 35 | PST-2E6 | 5.1 | 5.4 | 4.8 | 5.0 | 6.3 | 3.0 | 2.7 | 4.0 |
| 36 | PST-2BAD | 5.1 | 5.1 | 5.0 | 5.7 | 4.7 | 5.0 | 4.7 | 5.0 |
| 37 | DLFPS-236-3576 | 5.1 | 5.2 | 4.9 | 6.3 | 4.3 | 6.0 | 6.3 | 4.7 |
| 38 | APR2685 | 4.9 | 5.0 | 4.9 | 5.7 | 5.0 | 4.7 | 6.3 | 3.7 |
| 39 | PST-2FLAT | 4.9 | 5.2 | 4.7 | 5.3 | 5.7 | 5.7 | 6.3 | 4.3 |
| 40 | Allstar 3 | 4.9 | 5.3 | 4.5 | 6.0 | 6.3 | 5.7 | 4.7 | 4.0 |



(Continued)

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 41 | PPG-PR-433 | 4.9 | 5.5 | 4.3 | 7.3 | 6.3 | 5.3 | 2.7 | 3.0 |
| 42 | Evolution | 4.9 | 5.3 | 4.4 | 6.0 | 6.0 | 2.7 | 3.0 | 4.3 |
| 43 | NAI-LM2 | 4.9 | 5.1 | 4.6 | 5.0 | 5.0 | 3.0 | 3.0 | 5.3 |
| 44 | PPG-PR-368 | 4.8 | 5.6 | 3.9 | 7.7 | 7.3 | 3.7 | 3.0 | 4.7 |
| 45 | PPG-PR-471 | 4.8 | 5.0 | 4.6 | 5.3 | 4.0 | 5.0 | 5.3 | 4.7 |
| 46 | APR2848 | 4.8 | 4.3 | 5.2 | 6.0 | 3.3 | 6.0 | 7.0 | 5.3 |
| 47 | APR2973 | 4.7 | 4.8 | 4.7 | 6.0 | 3.3 | 5.7 | 7.0 | 3.0 |
| 48 | DLFPS-236-3540 | 4.7 | 4.8 | 4.6 | 6.0 | 5.0 | 5.7 | 4.3 | 4.0 |
| 49 | APR2946 | 4.7 | 4.6 | 4.8 | 5.7 | 3.7 | 4.7 | 4.7 | 4.0 |
| 50 | APR2609 | 4.7 | 5.5 | 3.8 | 5.7 | 6.7 | 4.3 | 3.0 | 3.7 |
| 51 | APR2790 | 4.7 | 4.3 | 5.0 | 4.7 | 3.0 | 3.0 | 4.7 | 6.0 |
| 52 | DLFPS-236-3586 | 4.6 | 5.0 | 4.3 | 6.7 | 6.7 | 5.0 | 5.0 | 3.7 |
| 53 | SEPR-107 | 4.6 | 4.8 | 4.5 | 5.0 | 4.3 | 4.0 | 3.3 | 3.0 |
| 54 | APR2753 | 4.6 | 5.0 | 4.3 | 5.0 | 5.0 | 5.0 | 3.7 | 4.7 |
| 55 | PST-2MAY | 4.6 | 5.2 | 4.0 | 6.3 | 6.7 | 5.0 | 3.0 | 2.7 |
| 56 | SYN 2HAF | 4.6 | 4.7 | 4.5 | 4.3 | 4.0 | 4.7 | 3.7 | 4.3 |
| 57 | NAI-17397 | 4.5 | 4.7 | 4.3 | 5.3 | 4.0 | 3.0 | 1.3 | 4.7 |
| 58 | Grandslam GLD | 4.5 | 4.6 | 4.4 | 7.7 | 5.3 | 5.3 | 5.7 | 2.7 |
| 59 | APR2856 | 4.5 | 4.6 | 4.4 | 4.7 | 4.0 | 4.0 | 4.0 | 5.3 |
| 60 | Karma | 4.5 | 4.8 | 4.2 | 3.7 | 4.7 | 3.0 | 3.7 | 3.7 |

(Continued)

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 61 | PST-2BET | 4.4 | 5.0 | 3.8 | 5.0 | 5.7 | 3.0 | 2.3 | 2.7 |
| 62 | SEPR-106 | 4.4 | 4.8 | 4.0 | 5.7 | 4.3 | 4.3 | 2.7 | 3.3 |
| 63 | APR2616 | 4.4 | 4.7 | 4.1 | 5.7 | 4.3 | 5.0 | 4.3 | 4.0 |
| 64 | PST-2BGL | 4.4 | 4.4 | 4.3 | 5.0 | 3.7 | 4.0 | 3.3 | 4.0 |
| 65 | PST-2DRG | 4.4 | 4.8 | 3.9 | 6.0 | 5.7 | 3.0 | 2.7 | 3.3 |
| 66 | APR2154 | 4.3 | 4.3 | 4.3 | 6.0 | 3.3 | 4.3 | 3.0 | 2.7 |
| 67 | APR2612 | 4.3 | 4.3 | 4.3 | 2.7 | 2.0 | 4.3 | 4.0 | 3.3 |
| 68 | DLFPS-236-3580 | 4.3 | 4.2 | 4.3 | 5.3 | 4.3 | 4.3 | 4.0 | 3.0 |
| 69 | APR2703 | 4.3 | 4.4 | 4.1 | 4.7 | 4.0 | 3.3 | 2.3 | 2.7 |
| 70 | NAI-17409 | 4.3 | 4.4 | 4.1 | 5.7 | 3.3 | 2.7 | 4.3 | 4.3 |
| 71 | PPG-PR-472 | 4.3 | 4.8 | 3.7 | 6.0 | 5.7 | 3.0 | 2.3 | 2.7 |
| 72 | Haven | 4.2 | 4.4 | 4.0 | 8.0 | 6.0 | 3.0 | 2.0 | 3.7 |
| 73 | NAI-LM3 | 4.2 | 4.2 | 4.2 | 5.3 | 3.3 | 3.0 | 4.3 | 3.7 |
| 74 | NAI-LD52 | 4.2 | 3.9 | 4.4 | 5.0 | 3.3 | 2.7 | 2.3 | 1.7 |
| 75 | APR2944 | 4.1 | 4.2 | 4.1 | 4.7 | 3.0 | 4.0 | 3.7 | 3.7 |
| 76 | Carly | 4.1 | 4.6 | 3.7 | 8.0 | 4.3 | 3.3 | 1.7 | 2.3 |
| 77 | APR2719 | 4.1 | 4.0 | 4.1 | 5.0 | 3.3 | 5.0 | 3.0 | 3.3 |
| 78 | APR2617 | 4.0 | 4.3 | 3.8 | 4.7 | 4.3 | 3.7 | 3.3 | 2.3 |
| 79 | PST-2WHB | 4.0 | 4.1 | 4.0 | 4.7 | 3.3 | 4.7 | 4.0 | 2.7 |
| 80 | NAI-17106 | 4.0 | 4.3 | 3.7 | 4.7 | 4.7 | 3.3 | 2.3 | 3.3 |



(Continued)

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 81 | Soprano | 3.9 | 4.1 | 3.8 | 4.7 | 5.0 | 3.0 | 2.7 | 2.7 |
| 82 | Allsport 5 | 3.9 | 4.5 | 3.3 | 6.3 | 4.0 | 3.7 | 2.3 | 3.3 |
| 83 | APR2977 | 3.9 | 4.0 | 3.9 | 5.7 | 2.3 | 5.7 | 4.7 | 3.7 |
| 84 | Silver Sun | 3.9 | 4.2 | 3.6 | 7.3 | 3.3 | 2.3 | 2.0 | 3.7 |
| 85 | PST-2MKD | 3.8 | 3.9 | 3.7 | 5.3 | 3.0 | 5.3 | 5.7 | 2.3 |
| 86 | DLFPS-236-3585 | 3.8 | 4.0 | 3.6 | 6.7 | 4.3 | 2.7 | 1.0 | 2.7 |
| 87 | New Zealand | 3.7 | 4.1 | 3.3 | 6.0 | 3.7 | 2.3 | 1.0 | 2.3 |
| 88 | APRT2835 | 3.7 | 3.6 | 3.7 | 4.3 | 3.7 | 2.7 | 1.7 | 5.7 |
| 89 | Silverdollar | 3.6 | 4.1 | 3.1 | 6.7 | 3.0 | 2.7 | 1.0 | 4.3 |
| 90 | APR2237 | 3.6 | 3.8 | 3.4 | 4.7 | 3.7 | 3.3 | 2.3 | 3.0 |
| 91 | APR2440 | 3.6 | 3.8 | 3.4 | 4.0 | 4.0 | 4.0 | 2.7 | 2.7 |
| 92 | DLFPS-236-3024 | 3.6 | 2.8 | 4.3 | 3.3 | 1.3 | 5.7 | 7.0 | 1.7 |
| 93 | Homerun | 3.6 | 3.5 | 3.6 | 7.0 | 3.0 | 3.3 | 2.3 | 3.0 |
| 94 | Notable | 3.5 | 4.0 | 3.1 | 6.3 | 3.7 | 3.0 | 1.7 | 3.3 |
| 95 | APR2846 | 3.5 | 2.6 | 4.4 | 5.3 | 1.0 | 5.3 | 6.7 | 2.3 |
| 96 | APR2853 | 3.5 | 3.8 | 3.2 | 4.3 | 3.3 | 4.7 | 2.3 | 2.3 |
| 97 | Prosport 4 | 3.5 | 3.7 | 3.2 | 7.7 | 2.7 | 2.0 | 1.3 | 2.7 |
| 98 | PST-2SHRP | 3.5 | 3.4 | 3.5 | 5.0 | 2.7 | 4.3 | 3.7 | 2.0 |
| 99 | NAI-1422 | 3.5 | 3.7 | 3.2 | 5.0 | 4.0 | 2.3 | 2.0 | 3.0 |
| 100 | APR3060 | 3.4 | 2.9 | 3.9 | 5.3 | 1.3 | 3.0 | 3.7 | 3.0 |



(Continued)

Table 3. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2018 at Adelphia, NJ. Includes all entries from the 2018 Cooperative Turfgrass Breeders Test (CTBT).

| | | Turf Quality[1] | | | Establishment[2] | Gray Leaf Spot[3] | Stemminess[4] | | Dollar Spot[5] |
|---|---|---|---|---|---|---|---|---|---|
| | Entry | 2018-20 Avg. | 2018-19 Avg. | 2020 Avg. | 17 Sep. 2018 | 27 Sep. 2018 | 12 Jun. 2019 | 18 Jun. 2020 | 9 Aug. 2019 |
| 101 | APR2462 | 3.4 | 2.9 | 3.8 | 6.0 | 1.0 | 3.3 | 4.7 | 3.3 |
| 102 | Nexus GT | 3.3 | 3.5 | 3.1 | 5.7 | 2.7 | 2.3 | 1.3 | 3.0 |
| 103 | APR2637 | 3.3 | 3.4 | 3.1 | 4.7 | 3.3 | 3.0 | 3.0 | 2.3 |
| 104 | Nexus XR | 3.2 | 3.0 | 3.4 | 6.3 | 2.0 | 3.3 | 2.0 | 2.3 |
| 105 | Nexus XD | 3.2 | 2.7 | 3.6 | 7.0 | 1.3 | 2.3 | 2.3 | 3.0 |
| 106 | SEPR-2 | 3.0 | 3.2 | 2.8 | 5.3 | 2.3 | 1.7 | 1.3 | 1.7 |
| 107 | Commander ST | 3.0 | 3.1 | 2.8 | 6.7 | 3.0 | 3.3 | 1.3 | 2.0 |
| 108 | APR2463 | 2.9 | 2.6 | 3.3 | 3.7 | 2.3 | 3.7 | 4.0 | 2.0 |
| 109 | APR2846 | 2.9 | 2.2 | 3.6 | 6.7 | 1.3 | 5.0 | 6.0 | 2.3 |
| 110 | APR2839 | 2.8 | 2.4 | 3.2 | 5.0 | 2.3 | 3.0 | 2.0 | 1.7 |
| 111 | SEPR-N6 | 2.6 | 2.6 | 2.7 | 7.0 | 1.7 | 2.3 | 1.3 | 2.0 |
| 112 | SEPR-1 | 2.6 | 2.2 | 2.9 | 7.3 | 1.7 | 3.3 | 1.3 | 2.3 |
| 113 | SEPR-3 | 2.6 | 2.3 | 2.8 | 4.7 | 1.7 | 1.7 | 1.0 | 2.0 |
| 114 | Brightstar SLT | 2.2 | 1.8 | 2.6 | 6.7 | 1.0 | 2.3 | 1.0 | 2.7 |
| | LSD @ 5%= | 0.8 | 0.7 | 1.1 | 1.5 | 1.3 | 1.3 | 1.8 | 1.8 |
| | CV= | 10.7 | 9.0 | 15.1 | 15.9 | 18.0 | 28.0 | 19.1 | 29.3 |

[1]9 = Best turf quality
[2]9 = Best establishment
[3]9 = Lease gray leaf spot
[4]9 = Least stemminess
[5]9 = Least dollar spot

Table 4. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

| | Cultivar or Selection | Turf Quality[1] 2019-2020 Avg. | Gray Leaf Spot[2] 2019 Avg. | Gray Leaf Spot[2] 8 Oct. 2019 | Gray Leaf Spot[2] 21 Oct. 2019 |
|---|---|---|---|---|---|
| 1 | PPG-PR 536 | 7.0 | 8.2 | 8.3 | 8.0 |
| 2 | SGP1 | 7.0 | 8.2 | 8.3 | 8.0 |
| 3 | SGP4 | 6.9 | 8.5 | 8.7 | 8.3 |
| 4 | PPG-PR 531 | 6.9 | 8.0 | 8.3 | 7.7 |
| 5 | PST-214 | 6.8 | 8.7 | 9.0 | 8.3 |
| 6 | MLS | 6.8 | 8.5 | 8.3 | 8.7 |
| 7 | 2CL3 | 6.8 | 9.0 | 9.0 | 9.0 |
| 8 | CJP2 | 6.8 | 8.7 | 9.0 | 8.3 |
| 9 | PPG-PR 530 | 6.7 | 8.2 | 9.0 | 7.3 |
| 10 | 2CL4 | 6.6 | 9.0 | 9.0 | 9.0 |
| 11 | PPG-PR 524 | 6.6 | 8.8 | 9.0 | 8.7 |
| 12 | Gray Wolf | 6.6 | 8.3 | 8.7 | 8.0 |
| 13 | PPG-PR 526 | 6.6 | 8.5 | 8.7 | 8.3 |
| 14 | PPG-PR 528 | 6.6 | 8.2 | 8.3 | 8.0 |
| 15 | PPG-PR 535 | 6.5 | 8.0 | 8.3 | 7.7 |
| 16 | PST-2E6 | 6.5 | 8.5 | 8.7 | 8.3 |
| 17 | PPG-PR 527 | 6.5 | 8.3 | 8.0 | 8.7 |
| 18 | 2CL1 | 6.5 | 8.8 | 9.0 | 8.7 |
| 19 | PST-Syn-2AVS | 6.5 | 8.3 | 8.7 | 8.0 |
| 20 | PPG-PR 515 | 6.4 | 8.8 | 8.7 | 9.0 |
| 21 | SGP3 | 6.4 | 8.3 | 8.3 | 8.3 |
| 22 | SGP2 | 6.4 | 8.2 | 9.0 | 7.3 |
| 23 | SGS4 | 6.4 | 8.7 | 9.0 | 8.3 |
| 24 | PPG-PR 519 | 6.4 | 8.3 | 8.7 | 8.0 |
| 25 | CJP1 | 6.4 | 8.0 | 8.3 | 7.7 |
| 26 | Paradox GLR | 6.4 | 7.7 | 8.0 | 7.3 |
| 27 | Stamina | 6.4 | 7.2 | 7.7 | 6.7 |
| 28 | PRC3 | 6.3 | 8.7 | 9.0 | 8.3 |
| 29 | SGU2 | 6.3 | 8.3 | 8.7 | 8.0 |
| 30 | PST-2MAY | 6.3 | 8.3 | 8.7 | 8.0 |
| 31 | SGS1 | 6.3 | 8.3 | 8.3 | 8.3 |
| 32 | PPG-PR 499 | 6.3 | 8.2 | 8.3 | 8.0 |
| 33 | PPG-PR 529 | 6.3 | 8.0 | 8.0 | 8.0 |
| 34 | Furlong | 6.3 | 7.8 | 8.3 | 7.3 |
| 35 | SGS5 | 6.2 | 8.3 | 8.7 | 8.0 |

(Continued)

Table 4. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

| | Cultivar or Selection | Turf Quality[1] 2019-2020 Avg. | Gray Leaf Spot[2] 2019 Avg. | Gray Leaf Spot[2] 8 Oct. 2019 | Gray Leaf Spot[2] 21 Oct. 2019 |
|---|---|---|---|---|---|
| 36 | Intense | 6.2 | 7.7 | 8.0 | 7.3 |
| 37 | SGU3 | 6.2 | 8.5 | 9.0 | 8.0 |
| 38 | PPG-PR 525 | 6.2 | 8.7 | 8.7 | 8.7 |
| 39 | UEV | 6.2 | 8.5 | 8.7 | 8.3 |
| 40 | Silver Sport | 6.1 | 8.2 | 8.3 | 8.0 |
| 41 | CJS | 6.1 | 8.2 | 8.7 | 7.7 |
| 42 | CJU | 6.1 | 8.3 | 8.7 | 8.0 |
| 43 | Principal II | 6.1 | 8.2 | 8.0 | 8.3 |
| 44 | Process | 6.1 | 8.0 | 8.0 | 8.0 |
| 45 | PPG-PR 489 | 6.0 | 8.7 | 9.0 | 8.3 |
| 46 | SGU1 | 6.0 | 8.7 | 9.0 | 8.3 |
| 47 | Fastball RGL | 6.0 | 8.0 | 8.7 | 7.3 |
| 48 | PST-2BDT | 6.0 | 7.7 | 8.0 | 7.3 |
| 49 | MFPR | 5.9 | 8.2 | 8.7 | 7.7 |
| 50 | Thrive | 5.9 | 8.0 | 8.0 | 8.0 |
| 51 | PST-2GTD | 5.9 | 8.0 | 8.7 | 7.3 |
| 52 | Xcelerator | 5.9 | 7.8 | 8.0 | 7.7 |
| 53 | SGS2 | 5.9 | 7.8 | 8.0 | 7.7 |
| 54 | PST-2BD1 | 5.9 | 6.8 | 6.7 | 7.0 |
| 55 | SGS3 | 5.8 | 8.5 | 8.7 | 8.3 |
| 56 | PST-2MEG | 5.8 | 8.2 | 9.0 | 7.3 |
| 57 | Homerun LS | 5.8 | 7.3 | 7.7 | 7.0 |
| 58 | PST-2FOXY-16 | 5.8 | 8.8 | 9.0 | 8.7 |
| 59 | Paragon 2 GLR | 5.8 | 8.5 | 8.7 | 8.3 |
| 60 | PST-Syn-2MEGE | 5.8 | 8.3 | 8.7 | 8.0 |
| 61 | Slugger 3GL | 5.8 | 8.2 | 8.3 | 8.0 |
| 62 | PST-2DRG | 5.8 | 7.5 | 8.0 | 7.0 |
| 63 | PST-Syn-2TTT | 5.8 | 8.5 | 9.0 | 8.0 |
| 64 | Lateral spread PR | 5.8 | 6.7 | 6.7 | 6.7 |
| 65 | Banfield | 5.7 | 7.8 | 8.0 | 7.7 |
| 66 | GLS plus | 5.7 | 7.7 | 8.0 | 7.3 |
| 67 | Pangea GLR | 5.7 | 8.0 | 8.3 | 7.7 |
| 68 | Rio Vista | 5.7 | 7.7 | 8.0 | 7.3 |
| 69 | Slider LS | 5.7 | 7.3 | 8.3 | 6.3 |
| 70 | PST-2BAD | 5.7 | 7.2 | 7.7 | 6.7 |

(Continued)

Table 4. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

| | Cultivar or Selection | Turf Quality[1] 2019-2020 Avg. | Gray Leaf Spot[2] 2019 Avg. | Gray Leaf Spot[2] 8 Oct. 2019 | Gray Leaf Spot[2] 21 Oct. 2019 |
|---|---|---|---|---|---|
| 71 | Spike GLS | 5.6 | 7.8 | 8.3 | 7.3 |
| 72 | Apple 3GL | 5.6 | 7.3 | 8.0 | 6.7 |
| 73 | PPG-PR 514 | 5.6 | 7.8 | 8.0 | 7.7 |
| 74 | PST-2BGL | 5.6 | 7.8 | 8.0 | 7.7 |
| 75 | Wicked | 5.5 | 6.3 | 6.7 | 6.0 |
| 76 | SSE | 5.5 | 5.3 | 5.3 | 5.3 |
| 77 | SR 4650 | 5.4 | 7.0 | 8.0 | 6.0 |
| 78 | Evolution | 5.4 | 8.5 | 8.7 | 8.3 |
| 79 | Aspire | 5.4 | 7.5 | 8.0 | 7.0 |
| 80 | Karma | 5.3 | 7.2 | 7.3 | 7.0 |
| 81 | Spark | 5.3 | 7.0 | 7.7 | 6.3 |
| 82 | Dilligent | 5.3 | 8.0 | 8.0 | 8.0 |
| 83 | Stellar 3GL | 5.3 | 7.7 | 8.3 | 7.0 |
| 84 | Bandlore | 5.2 | 8.0 | 8.3 | 7.7 |
| 85 | Blackstone | 5.2 | 7.5 | 8.0 | 7.0 |
| 86 | SR 4660ST | 5.2 | 6.7 | 6.7 | 6.7 |
| 87 | Apple SGL | 5.2 | 7.2 | 7.3 | 7.0 |
| 88 | LNTS1 | 5.2 | 6.8 | 7.3 | 6.3 |
| 89 | Sox Fan | 5.2 | 7.0 | 7.3 | 6.7 |
| 90 | PPG-PR 513 | 5.1 | 7.0 | 7.0 | 7.0 |
| 91 | Sideways | 5.1 | 8.2 | 8.3 | 8.0 |
| 92 | PST-2WHB | 5.1 | 6.8 | 7.3 | 6.3 |
| 93 | Premium | 5.1 | 7.5 | 8.0 | 7.0 |
| 94 | Allsport 5 | 5.1 | 7.0 | 6.7 | 7.3 |
| 95 | Linedrive II | 5.1 | 5.5 | 5.3 | 5.7 |
| 96 | Infusion | 5.0 | 8.5 | 9.0 | 8.0 |
| 97 | Ringles | 5.0 | 6.8 | 6.7 | 7.0 |
| 98 | Virte | 5.0 | 6.3 | 7.0 | 5.7 |
| 99 | Allstar 3 | 5.0 | 8.0 | 8.3 | 7.7 |
| 100 | Greenland | 5.0 | 7.5 | 8.3 | 6.7 |
| 101 | Proline ST | 5.0 | 5.5 | 5.0 | 6.0 |
| 102 | Belize 2 | 4.9 | 6.5 | 6.7 | 6.3 |
| 103 | Pillar II | 4.9 | 7.7 | 8.0 | 7.3 |
| 104 | Evolve | 4.9 | 6.0 | 6.0 | 6.0 |
| 105 | Silver Sun | 4.9 | 6.0 | 6.0 | 6.0 |

(Continued)

Table 4. Performance of perennial ryegrass cultivars and selections in a turf trial seeded in August 2019 at Adelphia, NJ.

| | Cultivar or Selection | Turf Quality[1] 2019-2020 Avg. | Gray Leaf Spot[2] 2019 Avg. | Gray Leaf Spot[2] 8 Oct. 2019 | Gray Leaf Spot[2] 21 Oct. 2019 |
|---|---|---|---|---|---|
| 106 | Rinovo | 4.8 | 7.8 | 7.7 | 8.0 |
| 107 | Big League | 4.8 | 6.0 | 5.7 | 6.3 |
| 108 | Grandslam GLD | 4.6 | 7.3 | 7.3 | 7.3 |
| 109 | Harrier | 4.6 | 7.2 | 7.7 | 6.7 |
| 110 | GO-141 | 4.6 | 5.2 | 5.3 | 5.0 |
| 111 | Fastball 3GL | 4.6 | 7.2 | 7.7 | 6.7 |
| 112 | Hawkeye 2 | 4.6 | 5.0 | 5.7 | 4.3 |
| 113 | Expedite | 4.5 | 6.7 | 7.7 | 5.7 |
| 114 | Provost | 4.5 | 7.5 | 8.0 | 7.0 |
| 115 | Belize | 4.5 | 6.2 | 6.3 | 6.0 |
| 116 | Prosport 4 | 4.5 | 5.7 | 6.0 | 5.3 |
| 117 | Benchmark | 4.4 | 5.7 | 5.7 | 5.7 |
| 118 | Zoom | 4.4 | 6.3 | 6.7 | 6.0 |
| 119 | Palmer III | 4.4 | 5.0 | 6.0 | 4.0 |
| 120 | Dasher 3 | 4.4 | 7.3 | 7.7 | 7.0 |
| 121 | Align II | 4.4 | 6.7 | 7.0 | 6.3 |
| 122 | Top Gun II | 4.4 | 5.3 | 5.0 | 5.7 |
| 123 | GO-143 | 4.3 | 6.7 | 6.7 | 6.7 |
| 124 | Fiesta 4 | 4.3 | 6.5 | 7.0 | 6.0 |
| 125 | Caddieshack II | 4.3 | 5.0 | 5.3 | 4.7 |
| 126 | Peridot | 4.3 | 6.0 | 6.7 | 5.3 |
| 127 | Spyglass | 4.3 | 4.7 | 4.7 | 4.7 |
| 128 | Torsion | 4.1 | 3.0 | 3.0 | 3.0 |
| 129 | PST-2CARD Bulk | 4.1 | 6.5 | 7.3 | 5.7 |
| 130 | Sun | 4.0 | 5.5 | 5.3 | 5.7 |
| 131 | Hancock | 4.0 | 5.8 | 6.3 | 5.3 |
| 132 | Panther H2O | 4.0 | 3.8 | 3.7 | 4.0 |
| 133 | Presidio II | 3.9 | 6.5 | 6.7 | 6.3 |
| 134 | Double Time GLS | 3.8 | 6.7 | 6.3 | 7.0 |
| 135 | Lover | 3.8 | 4.5 | 4.7 | 4.3 |
| 136 | Blazer 4 | 3.7 | 3.2 | 3.3 | 3.0 |
| 137 | LNTS3 | 3.6 | 4.3 | 5.0 | 3.7 |
| 138 | Greenville 4 | 3.5 | 3.7 | 3.3 | 4.0 |
| 139 | Black Pearl | 3.5 | 5.3 | 5.0 | 5.7 |
| 140 | Prelude IV | 3.5 | 2.5 | 2.7 | 2.3 |

(Continued)

Table 4. Performance of perennial ryegrass cultivars and selectons in a turf trial seeded in August 2019 at Adelphia, NJ.

| | Cultivar or Selection | Turf Quality[1] 2019-2020 Avg. | Gray Leaf Spot[2] 2019 Avg. | Gray Leaf Spot[2] 8 Oct. 2019 | Gray Leaf Spot[2] 21 Oct. 2019 |
|---|---|---|---|---|---|
| 141 | Accent II | 3.4 | 2.8 | 2.7 | 3.0 |
| 142 | Mighty | 3.3 | 3.8 | 4.3 | 3.3 |
| 143 | Gator 3 | 3.3 | 2.8 | 3.7 | 2.0 |
| 144 | JS501 | 3.3 | 2.7 | 2.3 | 3.0 |
| 145 | Sunrise | 3.2 | 4.7 | 5.0 | 4.3 |
| 146 | Edge II | 3.2 | 4.0 | 5.0 | 3.0 |
| 147 | Panther GLS | 3.1 | 2.2 | 2.3 | 2.0 |
| 148 | LNTS2 | 2.9 | 4.0 | 4.3 | 3.7 |
| 149 | PHX-NZ | 2.9 | 1.8 | 1.7 | 2.0 |
| 150 | Express II | 2.7 | 4.7 | 5.0 | 4.3 |
| 151 | PRG-19DH | 2.7 | 2.2 | 2.3 | 2.0 |
| 152 | Barbados | 2.7 | 3.0 | 3.0 | 3.0 |
| 153 | Cutter II | 2.6 | 2.7 | 2.0 | 3.3 |
| 154 | PRG-19MH | 2.6 | 3.0 | 3.0 | 3.0 |
| 155 | Prominent | 2.5 | 4.3 | 4.7 | 4.0 |
| 156 | Replay | 2.4 | 2.2 | 1.7 | 2.7 |
| | LSD @ 5%= | 0.9 | 1.1 | 1.1 | 1.7 |
| | CV= | 10.2 | 10.0 | 9.7 | 15.6 |

[1]9 = Best turf quality
[2]9 = Least gray leaf spot

Table 5. Yearly nitrogen (N) applied and mowing height (Ht) on perennial ryegrass trials established in Adelphia, NJ.

| | --------2016-------- | | --------2017-------- | | --------2018-------- | | --------2019------ | | --------2020------ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N[1] | Ht[2] | N[1] | Ht[2] | N | Ht | N | Ht | N | Ht |
| Table 1 (2016 NTEP) | 0.5 | 2.5 | 2.75 | 2.5 | 1 | 2.5 | 2.5 | 1.5 | 2.25 | 1.5 |
| Table 2 (2018) | – | – | – | – | 3.15 | 1.5 | 4.25 | 1.5 | 2.75 | 1.5 |
| Table 3 (2018 CTBT) | – | – | – | – | 3.05 | 1.5 | 3.5 | 1.5 | 1.25 | 1.5 |
| Table 4 (2019) | – | – | – | – | – | – | 1.4 | 1.5 | 4.25 | 1.5 |

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