

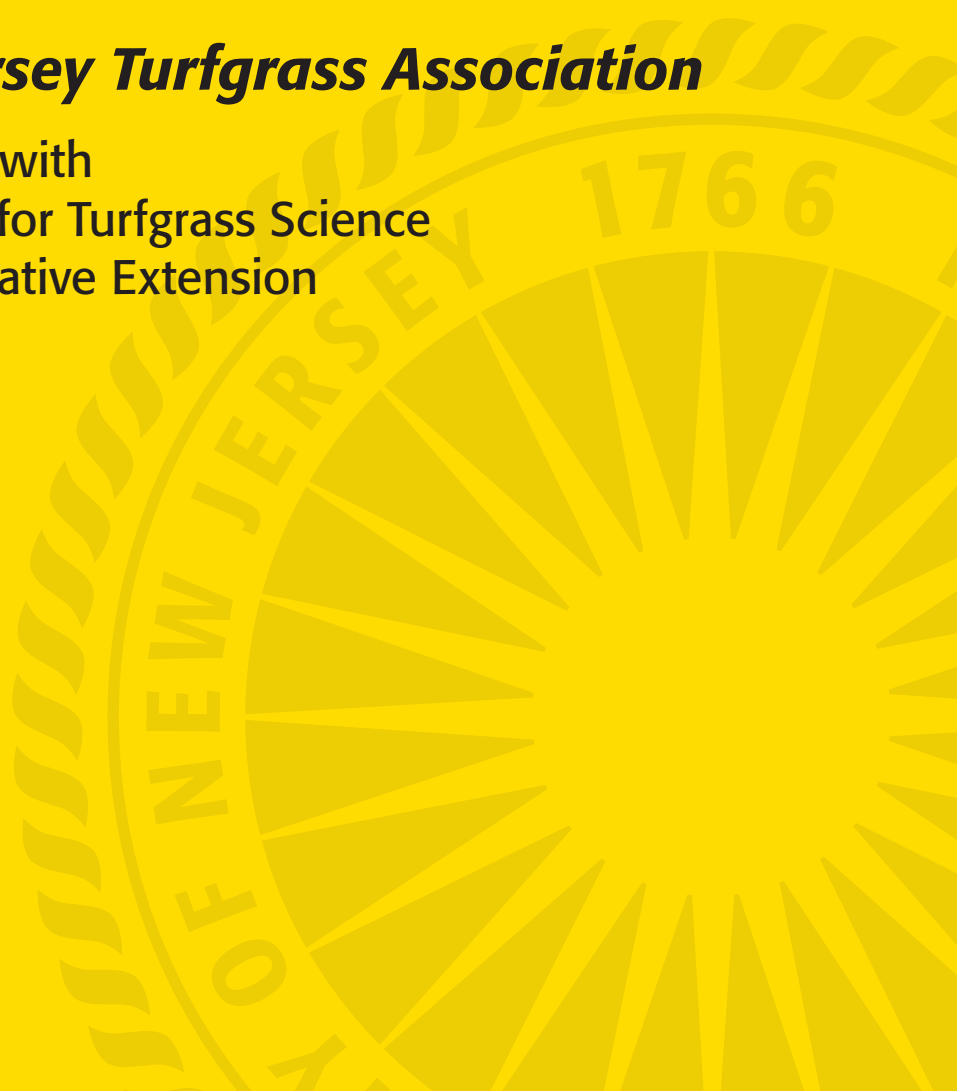
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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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 2008 New Jersey Turfgrass Expo. Publication of these lectures provides a readily avail-

able source of information covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

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

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Dr. Ann Brooks Gould, Editor
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PERFORMANCE OF FINE FESCUE CULTIVARS AND SELECTIONS IN NEW JERSEY TURF TRIALS

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The fine fescues include several species from the genus *Festuca*. They are commonly identified by their very fine leaf texture. The species used for turf include both bunch types [Chewings fescue (*Festuca rubra* L. subsp. *fallax* (Thuill.) Nyman), hard fescue (*F. brevipila* R. Tracey), sheep fescue (*F. ovina* L.), and blue fescue (*F. glauca* Vill.)] as well as rhizomatous types [slender creeping red fescue (*F. rubra* L. var. *littoralis* Vasey ex Beal) and strong creeping red fescue (*F. rubra* L. subsp. *rubra*)].

Fine fescues are well suited for many low maintenance sites because they tolerate drought and shade and have a low requirement for nitrogen fertility. Strong creeping and slender creeping red fescues spread by producing rhizomes and tend to form an open turf canopy. Of the two, the strong creeping red fescues are more rhizomatous and have a more open growth habit. Strong creeping red fescues are often used as a companion grass in mixtures with cultivars of Kentucky bluegrass that have complementary color, growth habit, and density. Compared to most Kentucky bluegrasses, these fescues have better seedling vigor and establishment, and will dominate in heavily shaded areas where Kentucky bluegrass is not well adapted.

Hard fescues are bunch type grasses that are fairly resistant to disease under low maintenance. These fescues grow slowly, which helps to reduce maintenance costs, and they are commonly used for control of soil erosion in low maintenance areas.

Chewings fescues are also bunch type grasses, and compared to slender and strong creeping red fescues, most of the recently released Chewings cultivars have improved turf-type characteristics such as higher density and finer leaf texture. Chewings

fescues can tolerate a lower mowing height than the red fescues, thus they may be more persistent when blended with Kentucky bluegrasses.

Sheep and blue fescues have stiff, bluish-green leaves and perform better under very low maintenance. Both species are used in wildflower mixes for soil stabilization, and sheep fescues are also used to stabilize sandy soils and banks along irrigation canals. The brilliant bluish foliage of these species is also useful in ornamental landscape plantings. Currently, the Rutgers breeding program is developing blue fescue x hard fescue hybrids to combine the valuable traits of blue fescue with the higher turf quality of hard fescue.

Fine fescues grow best under reduced nitrogen fertilization. Ideally, fine fescue should be fertilized with no more than 1 to 2 lb nitrogen/1000 ft² per year (Turgeon, 2005). Hard, blue, and sheep fescues require less nitrogen fertilizer than the other fine fescue species. With the exception of Chewings fescue, which can be mown closely (0.5-inch height of cut), the other fine fescue species do not tolerate a low height of cut. Mowing heights of 2.5 inches or higher are typically recommended for fine fescues.

Fine fescues that contain the *Neotyphodium* endophyte can exhibit enhanced tolerance to insects, diseases, and environmental stress (Smiley et al., 2005). This endophyte is a fungus that grows internally in the crown and leaf sheath tissues of the turfgrass plant. The impact of endophytes on plant growth are generally not apparent during periods of low environmental stress; under stressful conditions, however, the endophyte-plant relationship produces compounds that improve resistance to many insects that feed above ground, some diseases such as red

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thread (caused by the fungus *Laetisaria fuciformis*) (Bonos et al., 2005; Popay and Bonos, 2005), and some abiotic stresses including drought.

Although tufted hairgrass (*Deschampsia cespitosa* L.) and *Koeleria* sp. are two emerging turfgrass species that are well adapted to low maintenance, they lack the heat and traffic tolerance needed to persist as a turfgrass in the longer, warm summer climates of the United States. Current projects are designed to identify selections from these species that have improved turf-type characteristics. These niche species are an example of the increasing effort to domesticate more native species for use as turfgrasses. Progress is often slow, but steady improvements may transform these plant species into the lower maintenance turfs of tomorrow.

Breeding efforts continue to enhance turf characteristics of the fine fescues and improve resistance to diseases, insects, and environmental stresses. Incorporation of endophytes into improved plant material provides an efficient way to increase stress tolerance. The Rutgers turfgrass breeding program, in cooperation with the National Turfgrass Evaluation Program (NTEP), is involved in an extensive program to evaluate many cultivars and experimental selections for turf performance.

PROCEDURES

Fine fescues were evaluated in four, moderately-low maintenance trials at the Rutgers Plant Biology and Pathology Research and Extension Farm at Adelphia, NJ (Tables 1, 2, 4, and 5). An additional low maintenance test consisting of fine fescue, tall fescue (*Festuca arundinacea* Schreb.), Texas x Kentucky bluegrass hybrids (*Poa arachnifera* Torr. x *P. pratensis* L. hybrids), Kentucky bluegrass (*P. pratensis* L.), colonial bentgrass (*Agrostis capillaris* L.), and selections of tufted hairgrass was conducted at the same research farm (Table 3).

All tests were established in open areas with good air circulation. All fine fescue entries were seeded in 3 x 5 ft plots at a rate of 3.7 lb/1000ft². In the low maintenance trial, tall fescue, Texas x Kentucky bluegrass hybrids, Kentucky bluegrass, tufted hairgrass, and colonial bentgrass were seeded in 3 x 5 ft plots at a rate of 3.7, 2.2, 2.2, 2.2, and 0.5 lb/1000ft², respectively. Plots were replicated three times in a randomized complete block design.

Tests were fertilized at different rates of nitrogen and were maintained at different mowing heights (Table 6). After establishment, the moderately-low maintenance trials were irrigated only to avoid severe drought stress and dormancy. Plots were mowed frequently to avoid excessive accumulation of clippings. Broadleaf weeds were controlled with spring or fall applications of 2,4-D, dicamba, and MCPP; Dimension (dithiopyr) was used in spring and fall to control annual grassy weeds; and Merit (imidacloprid) was applied in July for grub control.

The low maintenance test (Table 3) received a total of 2, 1, and 0 lb nitrogen/1000 ft² in 2006, 2007, and 2008, respectively. No supplemental irrigation was applied. The trial was mowed with a Toro Groundsmaster rotary mower once per week at 2.5 inches (Table 6). These conditions were applied to simulate a typical low maintenance lawn in NJ.

The five tests were evaluated throughout the year by visually rating for turf quality. Turf quality is a subjective rating that is based on density, texture, brightness, uniformity, color, growth habit, and damage due to diseases or insects. Other attributes evaluated included establishment (Table 5), resistance to red thread (Tables 3 and 4) and leaf spot (caused by *Dreschlera* spp.) (Table 5), and spring green-up (Table 3). All ratings were taken using a 1 to 9 scale, where 9 represented the best turf quality, fastest stand establishment, or least disease. 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

To facilitate the comparison of cultivars and selections within a species, data presented in Tables 1, 2, 4, and 5 are grouped by species and ranked by their multiple year quality average. Entries in Table 3 are ranked according to the turf quality average for 2008. Additional characteristics observed in various tests are discussed below.

Turf Quality

In general, the Chewings, hard, and strong creeping red fescues performed better than the other species; many selections formed a dense, attractive turf (Tables 1, 2, 4, and 5). Turf quality was good for the Chewings fescues SR 5130, Longfellow II, and

Treasure II; the hard fescues SR 3150, Predator, and Viking; and the strong creeping red fescues Audubon, SR 5250, and Cindy Lou. Although improvement in the turf quality of tufted hairgrass, *Koeleria*, and blue, sheep, and slender creeping red fescues continues, these species still rank lower than the others in overall turf quality (Tables 1, 2, 4, and 5). It is interesting to note that hard x blue fescue hybrids have dramatically improved compared to the blue fescue entries (Tables 1, 2, 4, and 5). The overall average quality of experimental selection SRX3BHO, a hard x blue fescue hybrid, also outperformed strong creeping red (Table 1) and slender creeping red (Tables 1, 4, and 5) fescues, which are often thought of as higher quality species. This is an example of the progress possible when using interspecific hybridization.

Establishment

Rapid establishment is important to consumers, sod-growers, and other turf managers who establish turf areas from seed. This trait is valuable in any environment, but is particularly important under the reduced inputs often associated with fine fescue management. Establishment can be influenced by factors such as genetics, seed quality, environment, management practices, and after-ripening dormancy. In general, 75% of the cultivars and selections within all species evaluated for establishment scored 6.0 or better (Table 5) based on the ability to tiller; these entries would be capable of forming a dense sward with the proper management. Specific cultivars that exhibited rapid establishment in New Jersey in 2007 include SR 5210, Audubon, and Aruba strong creeping red fescue, Aberdeen hard fescue, and Ambrosa and Shadow Chewings fescue (Table 5). Caution should be exercised when interpreting seedling vigor and establishment of a given cultivar. After-ripening dormancy in newly harvested seed can significantly affect the time to establishment. Other characteristics that affect establishment and seedling vigor include age of the seed, storage conditions, and environmental conditions at the time of seeding.

Disease Resistance

Disease resistance within the fescue species can be quite variable. Leaf spot is a foliar disease that affects all cool-season turfgrasses. Differences in tolerance to leaf spot were evident among many of the cultivars and selections tested (Table 5). As a group, tolerance is best for Chewings fescue followed by hard and strong creeping red fescues; the disease resistance of Rushmore, SR 5130, and Treasure II

Chewings fescue was exceptional. Other cultivars and selections, including Bar FR4001, Aruba, and SR 5210 strong creeping red fescue, were extremely susceptible to this disease (Table 5). Interestingly, tufted hairgrass selection BBP + EDD was highly tolerant of leaf spot; however, this was the only entry of this species evaluated in this study (Table 5).

Red thread is a problem for cool-season turfgrasses grown under low nitrogen conditions. In general, the Chewings and hard fescues were more tolerant of red thread compared to strong creeping red fescues (Table 4). Whereas the hard fescues SR 3150 and Heron hard fescues were tolerant of this disease, Culumbra II Chewings fescue and Lustrous and RAD-FRES strong creeping red fescue were badly damaged (Table 4).

Low Maintenance Cultivar Evaluation

Performance under low maintenance is an important characteristic since many home lawns are maintained under these conditions. In addition, there is growing interest to reduce fertilization and irrigation in turfgrass areas for both environmental and economic reasons.

In general, the fine fescues exhibited the best turf quality under low maintenance. The hard fescues were best in overall quality (Table 3); among these, OH1 Comp and Lucy were top performers. Of the strong creeping red fescues, turf quality was greatest in OR3 Comp, OR2 Comp, and OR1 Comp, and the quality of OC3 Comp and OC2 Comp was best among the Chewings fescues in the trial. A03TB-417, a Texas x Kentucky bluegrass hybrid experimental selection was the highest rated among this group, and A96-1201 and Aura were among the best performing Kentucky bluegrass cultivars.

Spring green-up

Spring green-up was highly variable, ranging from 8.7 for RSP Kentucky bluegrass to 1.0 for Bewitched Kentucky bluegrass and A03TB-568 Texas x Kentucky bluegrass hybrid (Table 3). This trait is especially obvious during late winter or early spring.

SUMMARY

Breeding efforts continue to improve turf-type characteristics in the fine fescues. In an effort to increase the overall sustainability of the turfgrass

system, special attention is paid in the Rutgers turfgrass breeding program to drought, insect, and disease resistance. The goal of the program is to develop turfgrasses adapted to stressful conditions with improved turf quality and requiring fewer inputs. We continue to use endophytes as compliments to breeding efforts in an effort to improve the natural ability of a cultivar to persist under stress as well as to evaluate turfgrass species and cultivars for performance under reduced management regimes. The Rutgers breeding program continues to develop experimental selections with better quality; further improvements, however, are always needed.

ACKNOWLEDGMENTS

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Table 1. Performance of fine fescue cultivars and selections in a turf trial seeded in September 2004 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | |
|------------------------|--------------------------------------|-----------|-----------|-----------|-----------|
| | 2005-2008 Avg. | 2005 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| HARD FESCUE | | | | | |
| 1 IS-FL 35-04 | 6.8 | 6.9 | 6.4 | 7.1 | 6.6 |
| 2 RH comp | 6.7 | 6.7 | 6.3 | 7.0 | 6.9 |
| 3 IS-FL 36-04 | 6.6 | 7.2 | 6.1 | 6.9 | 6.3 |
| 4 IS-FL 28-03 | 6.5 | 6.8 | 6.2 | 6.5 | 6.6 |
| 5 MH comp | 6.3 | 6.3 | 5.9 | 6.6 | 6.3 |
| 6 SRX3961 | 6.2 | 6.7 | 6.1 | 6.4 | 5.5 |
| 7 IS-FL 36-03 | 6.1 | 6.2 | 5.9 | 6.5 | 6.1 |
| 8 SRX3NJU | 6.1 | 6.9 | 5.7 | 6.3 | 5.7 |
| 9 IS-FL 35-03 | 5.8 | 6.2 | 5.6 | 5.8 | 5.7 |
| 10 SRXCA396 | 5.8 | 6.0 | 6.0 | 6.2 | 5.1 |
| 11 Viking | 5.8 | 5.9 | 5.6 | 6.1 | 5.8 |
| 12 Nordic | 5.8 | 5.7 | 5.6 | 6.2 | 5.5 |
| 13 Eureka II | 5.8 | 5.4 | 5.7 | 6.1 | 5.8 |
| 14 Oxford | 5.7 | 5.9 | 5.8 | 6.1 | 5.0 |
| 15 Reliant | 5.6 | 5.4 | 5.7 | 6.2 | 5.3 |
| 16 BR-HF | 5.6 | 5.5 | 5.7 | 6.0 | 5.4 |
| 17 PST-4BIL | 5.6 | 5.2 | 5.5 | 6.1 | 5.5 |
| 18 Ecostar | 5.5 | 5.4 | 5.3 | 6.1 | 5.3 |
| 19 IS-FL 28-04 | 5.5 | 5.5 | 5.2 | 5.6 | 5.7 |
| 20 Soil Guard | 5.3 | 5.1 | 5.1 | 5.9 | 5.1 |
| 21 Stonehenge | 5.3 | 5.0 | 5.6 | 5.6 | 4.9 |
| 22 Rescue 911 | 5.3 | 5.3 | 5.2 | 5.8 | 4.7 |
| 23 04-EXPHF | 5.2 | 4.8 | 5.3 | 5.7 | 5.1 |
| 24 Aurora II | 5.2 | 5.2 | 5.2 | 5.5 | 4.9 |
| 25 SR 3100 | 4.9 | 5.0 | 4.9 | 5.2 | 4.4 |
| 26 SRX 3K | 4.9 | 4.6 | 4.9 | 5.2 | 4.8 |
| 27 Little Bighorn | 4.8 | 4.8 | 4.6 | 5.4 | 4.2 |
| 28 SRXCA3DE | 4.4 | 4.5 | 4.5 | 4.3 | 4.0 |
| CHEWINGS FESCUE | | | | | |
| 1 Treasure II | 5.9 | 6.6 | 5.7 | 5.6 | 5.7 |
| 2 PST-SYN-4CHY | 5.6 | 6.0 | 5.5 | 5.9 | 4.9 |
| 3 SR 5130 | 5.4 | 5.7 | 5.2 | 5.8 | 5.0 |
| 4 Compass | 5.4 | 6.0 | 4.8 | 5.2 | 5.6 |
| 5 Longfellow | 5.3 | 5.3 | 5.3 | 5.4 | 5.3 |

(Continued)

Table 1 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | |
|-----------------------------------|--------------------------------------|-----------|-----------|-----------|-----------|
| | 2005-2008 Avg. | 2005 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| CHEWINGS FESCUE (cont.) | | | | | |
| 6 Intrigue II | 5.3 | 5.8 | 5.1 | 5.2 | 5.0 |
| 7 IS-FRR 23 | 5.3 | 5.8 | 4.6 | 5.0 | 5.6 |
| 8 SRXOH51H | 5.2 | 5.0 | 5.1 | 5.5 | 5.3 |
| 9 Ambassador | 5.2 | 5.5 | 4.9 | 5.4 | 5.0 |
| 10 FR6-JD 03 | 5.1 | 5.4 | 5.2 | 5.1 | 4.7 |
| 11 PST-SYN-4CHM | 5.1 | 5.8 | 5.3 | 4.8 | 4.3 |
| 12 Shadow II | 5.0 | 5.1 | 5.2 | 5.0 | 4.6 |
| 13 Longfellow II | 5.0 | 5.3 | 4.7 | 5.2 | 4.7 |
| 14 PST-SYN-4CH3 | 5.0 | 5.5 | 5.2 | 4.8 | 4.4 |
| 15 Ambrose | 4.5 | 4.3 | 4.3 | 4.8 | 4.8 |
| 16 SR 5100 | 4.5 | 4.4 | 4.4 | 4.8 | 4.5 |
| 17 PST-SYN-FRCE | 4.4 | 5.0 | 4.5 | 4.3 | 3.8 |
| 18 Culumbra | 4.4 | 4.5 | 4.2 | 4.5 | 4.3 |
| 19 Jamestown II | 4.0 | 3.8 | 4.1 | 3.7 | 4.2 |
| HARD x BLUE FESCUE | | | | | |
| 1 SRX3BHO | 5.4 | 5.0 | 5.1 | 6.0 | 5.2 |
| 2 Bighorn GT | 5.0 | 4.8 | 4.8 | 5.7 | 4.8 |
| STRONG CREEPING RED FESCUE | | | | | |
| 1 IS-FRR 43 | 5.0 | 5.5 | 4.8 | 5.2 | 4.6 |
| 2 LR comp | 4.8 | 5.2 | 4.5 | 5.0 | 4.5 |
| 3 Pathfinder | 4.4 | 4.5 | 4.4 | 4.8 | 4.1 |
| 4 Shademaster III | 4.4 | 5.2 | 4.4 | 4.1 | 4.0 |
| 5 Cindy Lou | 4.2 | 4.4 | 4.4 | 3.9 | 3.9 |
| 6 SR 5250 | 4.1 | 4.7 | 3.9 | 3.6 | 4.1 |
| 7 Audubon | 4.0 | 4.1 | 3.9 | 4.3 | 3.8 |
| 8 PST-4VS-BS | 4.0 | 4.5 | 3.9 | 3.7 | 3.9 |
| 9 Epic | 3.9 | 4.5 | 4.3 | 2.9 | 3.9 |
| 10 Inverness | 3.9 | 4.0 | 3.9 | 4.0 | 3.6 |
| 11 SRXCA529 | 3.9 | 4.2 | 3.9 | 3.7 | 3.7 |
| 12 Foxy II | 3.9 | 4.5 | 4.0 | 3.3 | 3.5 |
| 13 Foxy | 3.8 | 4.2 | 3.9 | 3.5 | 3.7 |
| 14 Gibraltar | 3.8 | 4.1 | 4.1 | 3.5 | 3.6 |
| 15 Aberdeen | 3.8 | 4.3 | 4.1 | 3.2 | 3.5 |

(Continued)

Table 1 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | |
|---|--------------------------------------|-----------|-----------|-----------|-----------|
| | 2005-2008 Avg. | 2005 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| STRONG CREEPING RED FESCUE (cont.) | | | | | |
| 16 SW RSL6032 | 3.7 | 4.4 | 4.1 | 3.2 | 3.2 |
| 17 SRXCA521 | 3.7 | 4.0 | 4.1 | 3.2 | 3.5 |
| 18 Bar-Fr-4001 | 3.7 | 4.2 | 4.0 | 3.0 | 3.5 |
| 19 Fenway | 3.6 | 3.8 | 4.2 | 3.5 | 3.0 |
| 20 SW RSR6064 | 3.6 | 3.5 | 3.6 | 3.7 | 3.5 |
| 21 SW RSR6046 | 3.6 | 4.2 | 3.5 | 2.8 | 3.7 |
| 22 SR 5210 | 3.6 | 3.4 | 3.7 | 3.5 | 3.5 |
| 23 Celestial | 3.5 | 4.6 | 3.9 | 2.6 | 3.0 |
| 24 Tiara | 3.4 | 4.5 | 3.9 | 2.2 | 3.1 |
| 25 Vista | 3.4 | 3.9 | 4.0 | 2.4 | 3.4 |
| 26 Aruba | 3.3 | 3.9 | 3.2 | 3.2 | 3.1 |
| 27 Navigator | 3.3 | 3.9 | 3.6 | 2.5 | 3.3 |
| 28 SW CYGNUS | 3.3 | 2.9 | 2.9 | 3.6 | 3.6 |
| 29 Florentine | 3.2 | 3.5 | 3.5 | 2.8 | 3.1 |
| SLENDER CREEPING RED FESCUE | | | | | |
| 1 Shoreline | 4.6 | 5.0 | 4.5 | 4.7 | 4.1 |
| 2 ASR 050 | 4.2 | 4.1 | 4.3 | 4.7 | 3.9 |
| 3 Seabreeze GT | 3.9 | 5.0 | 4.5 | 2.8 | 3.4 |
| 4 Dawson | 3.6 | 4.5 | 3.8 | 2.8 | 3.3 |
| BLUE FESCUE | | | | | |
| 1 SR 3210 | 4.0 | 4.0 | 4.0 | 4.4 | 3.8 |
| 2 SR 3200 | 3.9 | 4.0 | 4.0 | 4.1 | 3.4 |
| SHEEP FESCUE | | | | | |
| 1 04-SHF | 4.0 | 4.3 | 4.1 | 4.1 | 3.6 |
| KOELERIA | | | | | |
| 1 SRX6KOEL | 3.6 | 4.7 | 3.5 | 2.8 | 3.4 |
| 2 SRX6AA | 3.5 | 4.6 | 3.7 | 2.7 | 2.8 |

(Continued)

Table 1 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | | |
|-------------------------|--------------------------------------|-----------|-----------|-----------|-----------|
| | 2005-2008 Avg. | 2005 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| TUFTED HAIRGRASS | | | | | |
| 1 SR 6000 | 2.9 | 3.2 | 2.5 | 2.5 | 3.3 |
| 2 SRX673-21 | 2.8 | 1.5 | 3.0 | 2.7 | 3.9 |
| 3 BPP comp | 2.8 | 3.1 | 3.1 | 2.0 | 2.7 |
| 4 SRX673-20 | 2.6 | 1.5 | 2.5 | 2.7 | 3.5 |
| 5 EDD comp | 2.5 | 3.4 | 2.1 | 1.7 | 2.5 |
| 6 DC-JD 03 | 2.4 | 1.9 | 2.4 | 2.1 | 3.2 |
| 7 Eugene BLM | 2.2 | 1.5 | 1.9 | 2.1 | 3.3 |
| LSD at 5% = | 0.7 | 0.7 | 0.9 | 1.2 | 1.0 |

¹9 = best turf quality

Table 2. Performance of fine fescue cultivars and selections in a turf trial seeded in September 2005 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | |
|-----------------------------------|--------------------------------------|-----------|-----------|-----------|
| | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| STRONG CREEPING RED FESCUE | | | | |
| 1 OR2 comp | 6.3 | 6.3 | 6.1 | 6.4 |
| 2 OR3 comp | 6.2 | 6.4 | 6.0 | 6.2 |
| 3 OR4 comp | 6.0 | 6.2 | 5.4 | 6.3 |
| 4 OR1 comp | 5.7 | 6.1 | 5.5 | 5.6 |
| 5 IS-FRR 43 | 5.2 | 5.5 | 4.7 | 5.3 |
| 6 PST-Syn-48ED | 5.1 | 5.3 | 4.8 | 5.3 |
| 7 IS-FRR 44 | 5.0 | 5.2 | 4.7 | 5.1 |
| 8 RAD-FR 7 | 5.0 | 5.0 | 4.7 | 5.2 |
| 9 RAD-FR 8 | 4.7 | 5.0 | 4.5 | 4.5 |
| 10 SR 5250 | 4.6 | 5.2 | 4.4 | 4.2 |
| 11 PST-Syn-48Y | 4.6 | 4.6 | 4.4 | 4.7 |
| 12 Cindy Lou | 4.5 | 4.8 | 4.1 | 4.5 |
| 13 Gibraltar | 4.4 | 5.1 | 4.5 | 3.6 |
| 14 Aberdeen | 4.3 | 4.8 | 4.6 | 3.7 |
| 15 PST-Syn-48ET | 4.3 | 4.3 | 4.1 | 4.5 |
| 16 PST-Syn-4SLT | 4.2 | 4.3 | 4.2 | 4.1 |
| 17 SRX CA 529 | 4.2 | 4.3 | 4.1 | 4.1 |
| 18 SRX CA 521 | 3.8 | 4.4 | 4.0 | 3.1 |
| 19 Audubon | 3.8 | 3.4 | 3.9 | 4.0 |
| 20 Swing | 3.7 | 4.4 | 3.8 | 2.9 |
| 21 Tiara | 3.7 | 4.3 | 3.9 | 2.9 |
| 22 SR 5210 | 3.5 | 3.7 | 3.3 | 3.4 |
| 23 Pathfinder | 3.4 | 3.7 | 3.7 | 2.9 |
| 24 PST-Syn-4EQG | 3.3 | 3.8 | 3.2 | 2.9 |
| 25 Polka | 3.1 | 3.5 | 3.2 | 2.6 |
| CHEWINGS FESCUE | | | | |
| 1 RAD-FC 9 | 6.0 | 6.4 | 5.7 | 5.9 |
| 2 OC2 comp | 5.9 | 6.3 | 5.9 | 5.5 |
| 3 PST-Syn-4S111 | 5.7 | 5.7 | 5.8 | 5.5 |
| 4 SR 5130 | 5.6 | 6.0 | 5.8 | 5.0 |
| 5 OC3 comp | 5.6 | 5.5 | 5.4 | 5.8 |

(Continued)

Table 2 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | |
|--------------------------------|--------------------------------------|-----------|-----------|-----------|
| | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| CHEWINGS FESCUE (cont.) | | | | |
| 6 PST-Syn-4EGC | 5.3 | 5.9 | 5.1 | 5.1 |
| 7 Longfellow II | 5.3 | 5.4 | 5.3 | 5.3 |
| 8 Ambassador | 5.1 | 5.4 | 5.0 | 4.9 |
| 9 IS-FRC 23 | 5.1 | 5.3 | 5.0 | 4.9 |
| 10 Ambrose | 5.1 | 5.0 | 5.2 | 5.0 |
| 11 IS-FRC 12 | 5.0 | 5.0 | 5.0 | 5.0 |
| 12 OC1 comp | 5.0 | 5.3 | 4.8 | 4.8 |
| 13 Shadow II | 4.8 | 5.0 | 4.9 | 4.6 |
| 14 Culumbra II | 4.8 | 5.0 | 4.7 | 4.9 |
| 15 JF-3 | 4.7 | 4.5 | 4.8 | 4.8 |
| 16 Compass | 4.5 | 4.7 | 4.7 | 4.2 |
| 17 SR 5100 | 4.5 | 4.7 | 4.6 | 4.1 |
| HARD FESCUE | | | | |
| 1 Viking | 5.9 | 5.8 | 6.0 | 5.9 |
| 2 PST-4HES | 5.9 | 5.9 | 5.9 | 5.8 |
| 3 SRX CA 396 | 5.8 | 5.7 | 5.9 | 5.9 |
| 4 OH1 comp | 5.8 | 5.2 | 6.2 | 5.9 |
| 5 IS-FL 38 | 5.7 | 5.5 | 5.9 | 5.7 |
| 6 SR 3150 | 5.6 | 5.6 | 5.9 | 5.2 |
| 7 PST-Syn-4HQG | 5.3 | 5.0 | 5.1 | 5.6 |
| 8 PST-4NY | 5.2 | 5.1 | 5.4 | 5.2 |
| 9 PST-Syn-4HEY | 5.1 | 4.4 | 5.3 | 5.5 |
| 10 Aurora II | 5.0 | 4.8 | 5.1 | 5.1 |
| 11 SRX NJU | 5.0 | 5.0 | 5.2 | 4.9 |
| 12 SRX 3K | 5.0 | 4.6 | 4.9 | 5.3 |
| 13 Stonehenge | 4.9 | 4.6 | 5.2 | 5.0 |
| 14 Aurora Gold | 4.8 | 4.5 | 4.8 | 5.1 |
| 15 SR 3100 | 4.4 | 3.7 | 4.6 | 4.9 |
| 16 SRX CA 3DE | 4.3 | 4.7 | 4.2 | 4.0 |

(Continued)

Table 2 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | |
|------------------------------------|--------------------------------------|-----------|-----------|-----------|
| | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. |
| SLENDER CREEPING RED FESCUE | | | | |
| 1 Shoreline | 4.8 | 5.5 | 4.3 | 4.7 |
| 2 Seabreeze GT | 4.3 | 5.1 | 4.3 | 3.6 |
| 3 Foxy II | 4.3 | 4.6 | 4.1 | 4.2 |
| 4 ASR 050 | 4.2 | 5.0 | 3.7 | 3.9 |
| 5 Dawson | 3.6 | 4.2 | 3.8 | 3.0 |
| HARD x BLUE FESCUE | | | | |
| 1 SRX 3BHO | 4.8 | 4.5 | 4.7 | 5.3 |
| 2 Bighorn GT | 4.8 | 4.4 | 5.1 | 5.0 |
| 3 Little Bighorn | 3.9 | 3.8 | 3.9 | 4.1 |
| BLUE FESCUE | | | | |
| 1 SR 3210 | 3.8 | 4.0 | 3.5 | 3.8 |
| 2 SR 3200 | 3.4 | 3.5 | 3.1 | 3.6 |
| LSD at 5% = | 0.8 | 0.9 | 0.7 | 1.1 |

¹9 = best turf quality

Table 3. Performance of turfgrass selections in a low maintenance trial seeded in September 2005 at Adelphia, NJ.

| Cultivar or Selection | Species | -----Turf Quality ¹ ----- | | | | Spring Green-up ² April 2008 | Red Thread ³ June 2008 |
|-----------------------|-----------------------------------|--------------------------------------|-----------|-----------|-----------|--|--------------------------------------|
| | | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. | | |
| 1 OH1 Comp | Hard fescue | 8.0 | 7.0 | 8.5 | 8.4 | 4.0 | 8.0 |
| 2 Lucy | Hard fescue | 7.8 | 7.5 | 8.3 | 7.7 | 3.7 | 7.7 |
| 3 Nordic | Hard fescue | 7.7 | 7.4 | 7.5 | 8.3 | 5.0 | 8.3 |
| 4 Oxford | Hard fescue | 7.7 | 7.0 | 8.2 | 7.7 | 5.0 | 7.7 |
| 5 Stonehenge | Hard fescue | 7.1 | 7.0 | 7.3 | 7.2 | 5.0 | 7.0 |
| 6 OR3 Comp | Strong creeping red fescue | 6.9 | 7.3 | 7.1 | 6.3 | 6.0 | 5.0 |
| 7 OR2 Comp | Strong creeping red fescue | 6.8 | 7.2 | 6.9 | 6.3 | 5.0 | 4.3 |
| 8 OR1 Comp | Strong creeping red fescue | 6.7 | 7.3 | 6.5 | 6.3 | 6.0 | 5.0 |
| 9 OC3 Comp | Chewings fescue | 6.4 | 6.6 | 6.7 | 6.1 | 4.7 | 3.0 |
| 10 OC2 Comp | Chewings fescue | 6.4 | 6.6 | 6.3 | 6.3 | 5.7 | 3.3 |
| 11 Culumbra II | Chewings fescue | 6.1 | 6.1 | 6.3 | 6.0 | 7.0 | 4.3 |
| 12 OC1 Comp | Chewings fescue | 6.1 | 5.9 | 6.3 | 6.1 | 6.3 | 3.0 |
| 13 A03TB-417 | Texas x Kentucky bluegrass hybrid | 6.0 | 6.4 | 5.7 | 5.9 | 4.3 | 9.0 |
| 14 OR4 Comp | Strong creeping red fescue | 6.0 | 6.8 | 6.1 | 5.1 | 5.3 | 4.3 |
| 15 Ambrose | Chewings fescue | 5.9 | 5.9 | 5.8 | 6.2 | 5.7 | 4.0 |
| 16 Ambassador | Chewings fescue | 5.9 | 6.7 | 5.9 | 5.3 | 7.3 | 3.0 |
| 17 Falcon IV | Tall fescue | 5.8 | 5.9 | 5.5 | 6.1 | 6.3 | 9.0 |
| 18 Jasper II | Strong creeping red fescue | 5.8 | 6.9 | 6.0 | 4.6 | 6.3 | 3.0 |
| 19 2nd Millenium | Tall fescue | 5.8 | 5.6 | 6.0 | 5.8 | 6.0 | 9.0 |
| 20 A96-1201 | Kentucky bluegrass | 5.8 | 5.8 | 6.1 | 5.4 | 1.7 | 9.0 |
| 21 Aura | Kentucky bluegrass | 5.7 | 5.6 | 6.5 | 5.1 | 7.3 | 9.0 |
| 22 Celestial | Strong creeping red fescue | 5.6 | 6.6 | 5.4 | 4.9 | 5.7 | 4.3 |
| 23 Cindy Lou | Strong creeping red fescue | 5.6 | 6.3 | 5.6 | 4.9 | 6.3 | 4.0 |
| 24 Rembrandt | Tall fescue | 5.5 | 6.0 | 5.3 | 5.3 | 5.7 | 9.0 |
| 25 Constitution | Tall fescue | 5.4 | 5.7 | 5.2 | 5.3 | 4.3 | 8.3 |

(Continued)

Table 3 (continued).

| | Cultivar or Selection | Species | -----Turf Quality ¹ ----- | | | | Spring Green-up ² April 2008 | Red Thread ³ June 2008 |
|----|-----------------------|-----------------------------------|--------------------------------------|-----------|-----------|-----------|--|--------------------------------------|
| | | | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. | | |
| 26 | Five Point | Tall fescue | 5.3 | 5.7 | 4.9 | 5.3 | 4.7 | 9.0 |
| 27 | Eagleton | Kentucky bluegrass | 5.3 | 4.9 | 6.3 | 4.7 | 3.0 | 9.0 |
| 28 | Princeton P-105 | Kentucky bluegrass | 5.3 | 6.2 | 5.8 | 3.7 | 2.3 | 9.0 |
| 29 | Mustang 3 | Tall fescue | 5.3 | 5.1 | 5.3 | 5.3 | 5.7 | 9.0 |
| 30 | Titanium | Tall fescue | 5.3 | 5.7 | 4.9 | 5.3 | 5.7 | 8.3 |
| 31 | H94-305 | Kentucky bluegrass | 5.2 | 4.3 | 5.6 | 5.7 | 8.3 | 9.0 |
| 32 | Chochise III | Tall fescue | 5.2 | 5.4 | 5.0 | 5.3 | 4.7 | 8.7 |
| 33 | Inferno | Tall fescue | 5.2 | 5.5 | 5.2 | 4.9 | 4.7 | 9.0 |
| 34 | Zinfandel | Kentucky bluegrass | 5.2 | 6.3 | 5.7 | 3.5 | 3.0 | 9.0 |
| 35 | Sonic | Kentucky bluegrass | 5.1 | 4.9 | 5.7 | 4.9 | 5.0 | 9.0 |
| 36 | Tar Heel II | Tall fescue | 5.1 | 5.1 | 4.9 | 5.3 | 6.0 | 9.0 |
| 37 | Champagne | Kentucky bluegrass | 5.1 | 4.7 | 5.4 | 5.2 | 4.0 | 9.0 |
| 38 | Cabernet | Kentucky bluegrass | 5.1 | 4.6 | 5.7 | 4.9 | 5.0 | 9.0 |
| 39 | A03TB-676 | Texas x Kentucky bluegrass hybrid | 5.0 | 5.5 | 5.6 | 4.0 | 6.3 | 9.0 |
| 40 | A01-881 | Texas x Kentucky bluegrass hybrid | 5.0 | 4.7 | 5.1 | 5.2 | 4.3 | 9.0 |
| 41 | Preakness | Kentucky bluegrass | 5.0 | 4.5 | 5.9 | 4.6 | 2.3 | 9.0 |
| 42 | Diva | Kentucky bluegrass | 4.9 | 5.2 | 5.5 | 4.0 | 3.3 | 9.0 |
| 43 | A03TB-559 | Texas x Kentucky bluegrass hybrid | 4.9 | 5.6 | 4.8 | 4.3 | 3.7 | 9.0 |
| 44 | A03TB-668 | Texas x Kentucky bluegrass hybrid | 4.8 | 5.1 | 4.9 | 4.4 | 5.3 | 9.0 |
| 45 | A03TB-708 | Texas x Kentucky bluegrass hybrid | 4.7 | 5.7 | 4.9 | 3.7 | 8.3 | 9.0 |
| 46 | A99LM-15 | Texas x Kentucky bluegrass hybrid | 4.7 | 5.4 | 4.5 | 4.1 | 5.7 | 9.0 |
| 47 | A03TB-718 | Texas x Kentucky bluegrass hybrid | 4.7 | 5.7 | 4.6 | 3.9 | 4.3 | 9.0 |
| 48 | Bewitched | Kentucky bluegrass | 4.7 | 4.8 | 5.6 | 3.6 | 1.0 | 9.0 |
| 49 | Rhapsody | Kentucky bluegrass | 4.6 | 5.2 | 5.2 | 3.5 | 3.3 | 9.0 |
| 50 | Brunswick | Kentucky bluegrass | 4.6 | 4.4 | 5.8 | 3.8 | 4.0 | 9.0 |

(Continued)

Table 3 (continued).

| Cultivar or Selection | Species | -----Turf Quality ¹ ----- | | | | Spring Green-up ² April 2008 | Red Thread ³ June 2008 |
|-----------------------|-----------------------------------|--------------------------------------|-----------|-----------|-----------|--|--------------------------------------|
| | | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. | | |
| 51 Starburst | Kentucky bluegrass | 4.6 | 4.0 | 5.0 | 4.7 | 6.3 | 9.0 |
| 52 A03TB-431 | Texas x Kentucky bluegrass hybrid | 4.5 | 5.6 | 4.5 | 3.6 | 3.7 | 9.0 |
| 53 LT2 Comp | Colonial bentgrass | 4.5 | 5.3 | 4.6 | 3.5 | 3.7 | 3.3 |
| 54 Midnight | Kentucky bluegrass | 4.5 | 5.2 | 5.2 | 2.9 | 2.0 | 9.0 |
| 55 RSP | Kentucky bluegrass | 4.4 | 4.8 | 4.5 | 4.1 | 8.7 | 9.0 |
| 56 Dragon | Kentucky bluegrass | 4.2 | 4.1 | 4.6 | 4.0 | 3.7 | 9.0 |
| 57 A02-975 | Texas x Kentucky bluegrass hybrid | 4.2 | 6.0 | 3.9 | 2.9 | 4.7 | 9.0 |
| 58 Brooklawn | Kentucky bluegrass | 4.2 | 4.6 | 4.4 | 3.6 | 5.3 | 9.0 |
| 59 LT1 Comp | Colonial bentgrass | 4.2 | 5.6 | 4.3 | 2.7 | 3.3 | 2.3 |
| 60 Bedazzled | Kentucky bluegrass | 4.2 | 4.4 | 4.8 | 3.3 | 2.3 | 9.0 |
| 61 Tiger II | Colonial bentgrass | 4.1 | 5.7 | 4.4 | 2.4 | 1.7 | 2.0 |
| 62 LT3 Comp | Colonial bentgrass | 4.1 | 5.0 | 4.5 | 2.7 | 3.0 | 2.3 |
| 63 LSD Comp | Tufted hairgrass | 4.1 | 4.4 | 3.6 | 4.3 | 4.7 | 9.0 |
| 64 A03TB-246 | Texas x Kentucky bluegrass hybrid | 4.0 | 5.1 | 3.9 | 3.2 | 5.0 | 9.0 |
| 65 Southeast | Tall fescue | 4.0 | 3.4 | 4.1 | 4.5 | 8.3 | 9.0 |
| 66 A03TB-795 | Texas x Kentucky bluegrass hybrid | 4.0 | 4.4 | 4.6 | 2.9 | 2.3 | 9.0 |
| 67 A04TB-192 | Texas x Kentucky bluegrass hybrid | 4.0 | 5.3 | 3.5 | 3.1 | 4.0 | 9.0 |
| 68 Throughblue | Kentucky bluegrass | 3.9 | 4.0 | 4.4 | 3.3 | 3.7 | 9.0 |
| 69 A03TB-568 | Texas x Kentucky bluegrass hybrid | 3.9 | 4.8 | 4.7 | 2.3 | 1.0 | 9.0 |
| 70 A03TB-256 | Texas x Kentucky bluegrass hybrid | 3.9 | 5.0 | 3.6 | 3.1 | 6.0 | 9.0 |
| 71 Reveille | Texas x Kentucky bluegrass hybrid | 3.8 | 2.8 | 4.6 | 4.1 | 3.7 | 9.0 |
| 72 ESD Comp | Tufted hairgrass | 3.8 | 4.4 | 3.2 | 3.8 | 4.7 | 9.0 |
| 73 A03TB-490 | Texas x Kentucky bluegrass hybrid | 3.6 | 4.4 | 3.9 | 2.6 | 1.7 | 9.0 |
| 74 Unique | Kentucky bluegrass | 3.6 | 4.4 | 4.1 | 2.4 | 1.3 | 9.0 |
| 75 A03TB-412 | Texas x Kentucky bluegrass hybrid | 3.6 | 3.6 | 3.4 | 3.9 | 2.7 | 9.0 |

(Continued)

Table 3 (continued).

| Cultivar or Selection | Species | -----Turf Quality ¹ ----- | | | | Spring Green-up ² April 2008 | Red Thread ³ June 2008 |
|-----------------------|-----------------------------------|--------------------------------------|-----------|-----------|-----------|--|--------------------------------------|
| | | 2006-2008 Avg. | 2006 Avg. | 2007 Avg. | 2008 Avg. | | |
| 76 A03TB-788 | Texas x Kentucky bluegrass hybrid | 3.5 | 4.3 | 3.3 | 3.1 | 4.0 | 9.0 |
| 77 A03TB-286 | Texas x Kentucky bluegrass hybrid | 3.5 | 3.2 | 4.1 | 3.3 | 4.0 | 9.0 |
| 78 A04TB-5 | Texas x Kentucky bluegrass hybrid | 3.5 | 5.1 | 2.9 | 2.5 | 4.3 | 9.0 |
| 79 A02-943 | Texas x Kentucky bluegrass hybrid | 3.5 | 5.0 | 2.6 | 2.9 | 4.7 | 9.0 |
| 80 Moonlight | Kentucky bluegrass | 3.1 | 3.1 | 4.0 | 2.0 | 1.3 | 9.0 |
| 81 A03TB-361 | Texas x Kentucky bluegrass hybrid | 3.0 | 3.5 | 2.7 | 3.0 | 5.0 | 8.7 |
| 82 PST-DRM Bulk | Tufted hairgrass | 2.8 | 3.2 | 2.4 | 2.7 | 3.3 | 9.0 |
| 83 Shade Champ | Tufted hairgrass | 2.6 | 3.3 | 2.3 | 2.3 | 3.0 | 9.0 |
| 84 Eugene BLM | Tufted hairgrass | 2.6 | 2.2 | 2.1 | 3.4 | 4.3 | 9.0 |
| LSD at 5% = | | 0.9 | 1.0 | 1.2 | 1.2 | 1.5 | 1.0 |

¹9 = best turf quality

²9 = earliest spring green-up

³9 = least disease

Table 4. Performance of fine fescue cultivars and selections in a turf trial seeded in September 2006 at Adelphia, NJ.

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | Red Thread ² May 2008 |
|------------------------|--------------------------------------|-----------|-----------|-------------------------------------|
| | 2007-2008 Avg. | 2007 Avg. | 2008 Avg. | |
| CHEWINGS FESCUE | | | | |
| 1 RAD-FC10 | 6.5 | 6.8 | 6.1 | 6.0 |
| 2 RAD-FC11 | 6.4 | 6.3 | 6.6 | 5.7 |
| 3 RAD-FC3 | 6.1 | 6.6 | 5.6 | 5.7 |
| 4 RAD-FCQS | 5.9 | 6.2 | 5.7 | 5.7 |
| 5 Intrigue II | 5.8 | 6.1 | 5.6 | 5.7 |
| 6 OC1 | 5.8 | 5.7 | 5.8 | 6.3 |
| 7 Rushmore | 5.7 | 5.8 | 5.7 | 5.0 |
| 8 IS-FRC 27 | 5.7 | 5.9 | 5.5 | 4.3 |
| 9 Compass | 5.6 | 5.7 | 5.6 | 5.3 |
| 10 RAD-FCFCYS | 5.6 | 6.2 | 5.1 | 4.7 |
| 11 SR 5130 | 5.6 | 6.1 | 5.0 | 4.7 |
| 12 Longfellow II | 5.3 | 5.3 | 5.2 | 4.0 |
| 13 Culumbra II | 5.2 | 5.8 | 4.6 | 2.7 |
| 14 Shadow II | 5.1 | 5.3 | 4.9 | 3.7 |
| 15 7 Seas | 4.9 | 4.9 | 4.8 | 4.3 |
| 16 PST-Syn-4CT | 4.8 | 5.2 | 4.4 | 4.7 |
| 17 CHFSHHY | 4.7 | 4.7 | 4.8 | 4.7 |
| 18 PST-4C29 Bulk | 4.5 | 4.9 | 4.0 | 3.3 |
| 19 SR 5100 | 3.9 | 4.0 | 3.8 | 5.3 |
| HARD FESCUE | | | | |
| 1 IS-FL 40 | 5.7 | 5.1 | 6.2 | 6.7 |
| 2 Viking | 5.7 | 5.4 | 5.9 | 6.0 |
| 3 Stonehenge | 5.5 | 5.6 | 5.3 | 5.3 |
| 4 Predator | 5.3 | 5.2 | 5.4 | 6.0 |
| 5 SR 3100 | 5.3 | 5.4 | 5.2 | 6.0 |
| 6 SRX CA396 | 5.2 | 5.1 | 5.4 | 6.0 |
| 7 Heron | 5.0 | 5.0 | 5.0 | 7.0 |
| 8 Matterhorn | 5.0 | 4.5 | 5.4 | 6.3 |
| 9 SRX NJU | 5.0 | 4.7 | 5.2 | 6.7 |
| 10 SR 3150 | 5.0 | 4.7 | 5.3 | 7.3 |
| 11 EXPHF | 4.9 | 4.8 | 5.0 | 5.3 |
| 12 Chariot | 4.9 | 4.9 | 4.9 | 6.7 |
| 13 Aurora II | 4.6 | 4.4 | 4.8 | 6.3 |
| 14 SRX 3K | 4.4 | 4.5 | 4.3 | 6.3 |

(Continued)

Table 4 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | Red Thread ² May 2008 |
|-----------------------------------|--------------------------------------|--------------|--------------|-------------------------------------|
| | 2007- 2008 Avg. | 2007 Avg. | 2008 Avg. | |
| STRONG CREEPING RED FESCUE | | | | |
| 1 OR1 | 5.7 | 5.7 | 5.7 | 5.3 |
| 2 ZT comp | 5.6 | 5.8 | 5.4 | 4.7 |
| 3 RAD-FR13 | 5.2 | 5.3 | 5.1 | 4.7 |
| 4 IS-FRR 52 | 5.1 | 5.2 | 5.0 | 5.0 |
| 5 RCM | 5.1 | 5.0 | 5.1 | 4.7 |
| 6 MYSFRR-30 | 5.0 | 5.2 | 4.9 | 3.7 |
| 7 RAD-FRQS | 5.0 | 5.4 | 4.5 | 3.7 |
| 8 RAD-FR4 | 4.9 | 5.1 | 4.8 | 4.7 |
| 9 RAD-FR12 | 4.7 | 5.4 | 4.1 | 3.3 |
| 10 Epic | 4.7 | 5.4 | 3.9 | 3.7 |
| 11 RAD-FRES | 4.6 | 4.8 | 4.3 | 3.0 |
| 12 Aberdeen | 4.5 | 4.7 | 4.3 | 5.0 |
| 13 SRX CA529 | 4.5 | 4.6 | 4.5 | 5.0 |
| 14 SR 5250 | 4.5 | 4.9 | 4.0 | 4.3 |
| 15 Scaldis II | 4.4 | 4.5 | 4.4 | 5.0 |
| 16 Tiara | 4.4 | 4.6 | 4.2 | 3.3 |
| 17 Lustrous | 4.4 | 4.9 | 3.9 | 3.0 |
| 18 Navigator | 4.4 | 4.6 | 4.2 | 5.0 |
| 19 RAD-FR15 | 4.4 | 4.8 | 4.0 | 3.0 |
| 20 RAD-FR14 | 4.3 | 4.7 | 3.9 | 4.3 |
| 21 Camilla | 4.2 | 4.4 | 4.0 | 4.0 |
| 22 Gibraltar | 4.2 | 4.4 | 4.1 | 3.7 |
| 23 SRX CA521 | 4.2 | 4.4 | 4.0 | 4.0 |
| 24 Inverness | 4.2 | 4.3 | 4.1 | 5.0 |
| 25 Razor | 4.2 | 4.4 | 4.0 | 4.3 |
| 26 Swing | 3.9 | 4.2 | 3.5 | 4.3 |
| 27 Polka | 3.8 | 4.2 | 3.4 | 5.0 |
| 28 SR 5210 | 3.4 | 3.6 | 3.2 | 5.0 |
| HARD x BLUE FESCUE | | | | |
| 1 SRX 3BHO | 4.9 | 4.4 | 5.3 | 7.0 |
| 2 Little Bighorn | 4.0 | 4.4 | 3.6 | 5.7 |
| 3 SR 3210 | 2.9 | 2.6 | 3.2 | 6.7 |
| 4 SR 3200 | 2.5 | 2.3 | 2.7 | 5.3 |

(Continued)

Table 4 (continued).

| Cultivar or Selection | -----Turf Quality ¹ ----- | | | Red Thread ² May 2008 |
|------------------------------------|--------------------------------------|-----------|-----------|-------------------------------------|
| | 2007-2008 Avg. | 2007 Avg. | 2008 Avg. | |
| SLENDER CREEPING RED FESCUE | | | | |
| 1 Shoreline | 4.7 | 4.8 | 4.5 | 3.7 |
| 2 PSG 55QRS | 4.6 | 4.5 | 4.7 | 3.7 |
| 3 Seabreeze GT | 4.5 | 4.9 | 4.1 | 4.3 |
| 4 Raggae | 3.8 | 4.3 | 3.2 | 4.3 |
| 5 Dawson | 3.7 | 3.8 | 3.7 | 5.0 |
| SHEEP FESCUE | | | | |
| 1 04-SHF | 3.9 | 4.2 | 3.6 | 6.0 |
| 2 Azure | 3.2 | 3.3 | 3.1 | 3.7 |
| 3 10126 | 2.8 | 2.8 | 2.8 | 5.3 |
| TUFTED HAIRGRASS | | | | |
| 1 SED comp | 3.0 | 3.8 | 2.2 | 9.0 |
| 2 SLD comp | 2.7 | 3.3 | 2.0 | 9.0 |
| LSD at 5% = | 0.7 | 0.7 | 0.9 | 2.0 |

¹9 = best turf quality

²9 = least disease

Table 5. Performance of fine fescue cultivars and selections in a turf trial seeded in September 2007 at Adelphia, NJ.

| Cultivar or Selection | Turf Quality ¹ 2008 | Establishment ² Oct. 2007 | Leaf Spot ³ May 2008 |
|-----------------------------------|-----------------------------------|---|------------------------------------|
| CHEWINGS FESCUE | | | |
| 1 RAD-FC23 | 6.1 | 6.3 | 7.3 |
| 2 Rushmore | 5.7 | 6.7 | 8.3 |
| 3 CW2 Comp | 5.6 | 7.0 | 8.0 |
| 4 SR 5130 | 5.6 | 7.0 | 7.3 |
| 5 CW1 Comp | 5.5 | 7.0 | 8.0 |
| 6 RAD-FC9 | 5.5 | 6.7 | 7.3 |
| 7 RAD-FC24 | 5.5 | 6.7 | 8.7 |
| 8 PST-Syn-4CTE | 5.3 | 6.3 | 5.7 |
| 9 RAD-FC22 | 5.2 | 6.3 | 7.7 |
| 10 OC1 | 5.2 | 6.3 | 8.0 |
| 11 Longfellow II | 5.2 | 7.0 | 6.3 |
| 12 IS-FRC 30 | 5.2 | 6.3 | 7.0 |
| 13 Ambrosa | 5.1 | 7.3 | 5.7 |
| 14 Treazure II | 5.0 | 6.7 | 7.0 |
| 15 Shadow II | 4.9 | 7.3 | 6.0 |
| 16 PST-4RC | 4.9 | 6.0 | 7.0 |
| 17 Silhouette | 4.8 | 7.0 | 5.3 |
| 18 PST-Syn-4CIB | 4.6 | 5.3 | 7.0 |
| 19 J-5 | 4.5 | 6.7 | 5.0 |
| 20 Culumbra II | 4.3 | 6.7 | 5.7 |
| 21 Jamestown II | 3.7 | 6.3 | 4.0 |
| 22 SR 5100 | 2.0 | 1.0 | 6.0 |
| STRONG CREEPING RED FESCUE | | | |
| 1 RM Comp | 5.8 | 6.3 | 6.3 |
| 2 OS4 Comp | 5.6 | 6.7 | 7.3 |
| 3 OS2 Comp | 5.5 | 6.3 | 5.7 |
| 4 IS-FRR 51 | 5.4 | 6.7 | 7.0 |
| 5 CAR Comp | 5.4 | 6.3 | 6.0 |
| 6 PST-4CREE | 5.4 | 5.3 | 5.7 |
| 7 IS-FRR 52 | 5.4 | 7.0 | 6.3 |
| 8 RAD-FR25 | 5.3 | 6.7 | 4.3 |
| 9 RAD-FR21 | 5.3 | 6.7 | 5.3 |
| 10 RAD-FR7 | 5.3 | 6.7 | 6.0 |

(Continued)

Table 5 (continued).

| Cultivar or Selection | Turf Quality ¹ 2008 | Establishment ² Oct. 2007 | Leaf Spot ³ May 2008 |
|---|-----------------------------------|---|------------------------------------|
| STRONG CREEPING RED FESCUE (cont.) | | | |
| 11 RCR Comp | 5.2 | 6.3 | 6.0 |
| 12 OS1 Comp | 5.2 | 7.0 | 5.3 |
| 13 IS-FRR 55 | 5.1 | 6.3 | 5.0 |
| 14 Shademaster III | 5.1 | 5.7 | 6.0 |
| 15 Crossbow | 5.0 | 7.0 | 5.3 |
| 16 RAD-FR26 | 4.9 | 6.0 | 5.0 |
| 17 PST-48Y7 | 4.9 | 6.3 | 5.3 |
| 18 Garnet | 4.8 | 7.0 | 5.0 |
| 19 Jasper II | 4.8 | 6.0 | 3.7 |
| 20 OS3 Comp | 4.7 | 7.0 | 5.7 |
| 21 SJC Comp | 4.6 | 6.7 | 6.0 |
| 22 BAR FR 4001 | 4.5 | 7.3 | 2.7 |
| 23 SR 5250 | 4.5 | 7.0 | 3.3 |
| 24 Wendy Jean | 4.4 | 6.7 | 3.7 |
| 25 Audubon | 4.4 | 8.3 | 4.3 |
| 26 Cindy Lou | 4.2 | 6.7 | 3.0 |
| 27 Gibraltar | 4.1 | 7.0 | 5.0 |
| 28 Tiara | 4.0 | 5.7 | 3.7 |
| 29 SR 5210 | 3.6 | 8.7 | 1.3 |
| 30 Scaldis II | 3.0 | 2.3 | 6.3 |
| 31 Aruba | 3.0 | 8.3 | 1.7 |
| HARD FESCUE | | | |
| 1 EG1 Comp | 5.7 | 6.0 | 7.0 |
| 2 IS-FL 40 | 5.7 | 6.7 | 6.7 |
| 3 Soil Guard | 5.6 | 6.0 | 6.0 |
| 4 MG4 Comp | 5.5 | 5.7 | 7.3 |
| 5 MG2 Comp | 5.4 | 5.7 | 6.7 |
| 6 Predator | 5.4 | 5.3 | 6.3 |
| 7 7 Seas | 5.4 | 7.0 | 6.7 |
| 8 MG3 Comp | 5.3 | 6.0 | 6.7 |
| 9 SR 3150 | 5.3 | 6.0 | 6.3 |
| 10 Rescue 911 | 5.2 | 6.0 | 6.0 |
| 11 Ecostar | 5.2 | 5.7 | 6.0 |
| 12 MG1 Comp | 5.1 | 6.0 | 5.7 |
| 13 PST-4HES | 5.1 | 6.0 | 6.3 |
| 14 EG2 Comp | 5.1 | 5.0 | 6.3 |
| 15 WB | 5.1 | 5.3 | 6.7 |

(Continued)

Table 5 (continued).

| Cultivar or Selection | Turf Quality ¹ 2008 | Establishment ² Oct. 2007 | Leaf Spot ³ May 2008 |
|------------------------------------|-----------------------------------|---|------------------------------------|
| HARD FESCUE (cont.) | | | |
| 16 SR 3100 | 5.1 | 6.0 | 6.3 |
| 17 SRX NJU | 5.1 | 6.0 | 6.3 |
| 18 PST-4NY | 5.0 | 6.3 | 6.7 |
| 19 Reliant IV | 4.9 | 6.7 | 6.0 |
| 20 AM-FL39 | 4.9 | 6.0 | 5.0 |
| 21 Z 6300 | 4.8 | 6.3 | 6.7 |
| 22 Viking | 4.7 | 6.0 | 5.3 |
| 23 Razor | 4.7 | 6.7 | 4.0 |
| 24 Aberdeen | 4.6 | 7.7 | 3.7 |
| 25 Aurora II | 4.6 | 5.7 | 6.3 |
| 26 IS-FL 42 | 4.6 | 4.7 | 6.0 |
| 27 Epic | 4.0 | 6.0 | 4.7 |
| HARD x BLUE FESCUE | | | |
| 1 SRX 3BHO | 5.2 | 5.0 | 6.3 |
| 2 SRX 3K | 5.1 | 5.7 | 6.7 |
| 3 Bighorn GT | 5.1 | 6.7 | 6.3 |
| 4 Little Bighorn | 4.4 | 5.7 | 4.3 |
| SLENDER CREEPING RED FESCUE | | | |
| 1 Shoreline | 4.9 | 7.3 | 5.7 |
| 2 Shoreline | 4.4 | 6.3 | 4.7 |
| 3 Seabreeze GT | 4.0 | 7.0 | 3.7 |
| 4 Dawson | 3.9 | 2.7 | 4.3 |
| SHEEP FESCUE | | | |
| 1 Azure | 4.1 | 5.3 | 6.0 |
| 2 RAD-FO7 | 3.7 | 4.3 | 5.3 |
| BLUE FESCUE | | | |
| 1 SR 3210 | 3.2 | 4.3 | 5.7 |
| 2 SR 3200 | 3.1 | 4.0 | 4.0 |
| TUFTED HAIRGRASS | | | |
| 1 BBP+EDD | 2.6 | 5.7 | 8.0 |

(Continued)

Table 5 (continued).

| Cultivar or Selection | Turf Quality ¹ 2008 | Establishment ² Oct. 2007 | Leaf Spot ³ May 2008 |
|-----------------------|-----------------------------------|---|------------------------------------|
| LSD at 5% = | 0.9 | 1.4 | 1.4 |

¹9 = best turf quality

²9 = most rapid establishment

³9 = least disease

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

| | 2005 | | 2006 | | 2007 | | 2008 | |
|--------------------------------------|----------------|-----------------|------|-----|------|-----|------|-----|
| | N ¹ | Ht ² | N | Ht | N | Ht | N | Ht |
| Table 1 (2004)..... | 1.5 | 1.5 | 1.7 | 1.5 | 1.0 | 1.5 | 1.0 | 1.5 |
| Table 2 (2005)..... | | | 1.8 | 1.5 | 1.0 | 1.5 | 1.3 | 1.5 |
| Table 3 (2005 Low Maintenance) | | | 2.0 | 2.5 | 1.0 | 2.5 | 0.0 | 2.5 |
| Table 4 (2006)..... | | | | | 1.0 | 1.5 | 1.0 | 1.5 |
| Table 5 (2007)..... | | | | | | | 1.3 | 1.5 |

¹Annual N applied (lb/1000 ft²)

²Mowing height in inches



Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.