W159-D

Turfgrass Selection Creeping Bentgrass

Tom Samples, Professor and John Sorochan, Associate Professor
Plant Sciences

Agrostis stolonifera L.
Agrostis stolonifera L. var. *compacta* Hartman.
Agrostis palustris Huds.
Agrostis stolonifera L. var. *palustris* (Huds.) Farw.
Creeping bentgrass, a major turfgrass species maintained on golf greens throughout the state, was introduced from Europe primarily from the 1890s to the 1930s. The species is valued for its density, fine leaves, strong stolons, uniformity, wear- and low-temperature tolerance and recuperative ability at a mowing height of 3/16 inch or less. Cultivation, fertilization, mowing, soil drainage, rolling, irrigation, thatch management, topdressing and pest control are extremely important when managing creeping bentgrass greens. Due to its high management requirement and susceptibility to disease, creeping bentgrass is not recommended for Tennessee lawns.

Older, Vegetatively Established Cultivars

The earliest (early 1900s) creeping bentgrasses were established from stolons. The cooperative efforts of the United States Golf Association (USGA) Green Section and the United States Department of Agriculture (USDA) helped support the development of many improved cultivars by turfgrass breeders in the U. S. Older, vegetatively established cultivars were selected from greens of mixed South German bentgrasses most likely containing colonial (*Agrostis capillaris* L. or *Agrostis tenuis* Sibth.), creeping and velvet (*Agrostis canina* L.) bentgrasses. Although a few of these cultivars are still being maintained, improved seeded cultivars have been established on the majority of bentgrass greens in Tennessee.

Characteristics and release date of several vegetatively established creeping bentgrasses.

Variety	Release	Comments/Observations
Arlington (C-1)	Selected in 1928; USGA. Green Section and Crops Research Division (CRD)-Agricultural Research Service (ARS), USDA	Tolerant of high temperature and wear stresses; relatively slow and upright aerial shoot growth; somewhat resistant to dollar spot; susceptible to brown patch; and good rooting depth

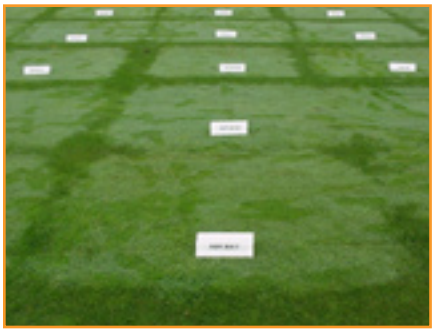
Variety	Release	Comments/Observations
Cohansey (C-7)	Selected in 1935 and released in 1946	Good high- and low- temperature hardiness; tolerant of winter drought; moderately resistant to brown patch; and very susceptible to copper spot and dollar spot
Columbia	Selected in 1916	Very fine leaves; slow to establish; susceptible to brown patch and dollar spot; and does not recover quickly from injury
Toronto (C-15)	Selected in 1936	Dense, shallow-rooted variety with fine leaves; very tolerant of low temperatures; good color during winter; prone to injury from winter drought; and susceptible to brown patch and dollar spot
Congressional (C-19)	Selected in 1936	Very dense, dark-green variety with very fine leaves; tolerant of high- and low-temperature stresses; very susceptible to brown patch; and commonly blended with Arlington bentgrass
Collins (C-27)	Selected in 1937; USGA. Green Section and CRD-ARS, USDA	Upright, with very fine leaves and dark-green color; slow to establish and recover from injury; moderately resistant to brown patch; and susceptible to dollar spot
Evansville	Released in 1963; Indiana Agricultural Experiment Station (AES)	Dense, dark-green with very fine leaves; moderate growth rate and recuperative potential; moderate resistance to Pythium blight; and very susceptible to brown patch, copper spot and stripe smut
Metropolitan (C-51)	Selected in 1917; USGA Green Section and CRD-ARS, USDA	Dark-blue-green, medium-coarse-textured variety; good drought tolerance; limited rate of establishment and recuperative ability; very susceptible to brown patch; and resistant to dollar spot
Northland	Released in 1955; J. R. Watson, Toro Company, MN	Blue-green variety with medium-fine leaves and excellent low-temperature tolerance; grows rapidly at cool temperatures; poor heat tolerance; and moderately resistant to brown patch and dollar spot

Variety	Release	Comments/Observations
Pennlu	Released in 1954; Pennsylvania AES	Dense, fast-growing, dark-blue-green variety with narrow leaves; recovers well from injury; some brown patch and dollar spot resistance; and very susceptible to stripe smut
Pennpar	Released in 1967; Pennsylvania AES	Dense, medium-fine-textured variety; good recuperative potential; and resistant to brown patch and dollar spot
Springfield	Released in 1968; Kansas AES	Dense, blue-green variety with narrow leaves; establishes quickly and recovers well from injury; and very susceptible to brown patch and dollar spot
Vermont	Selected in 1917	Medium-green, coarse-textured variety with limited aerial shoot density; slow to establish and recover from injury; and susceptible to dollar spot and pink snow mold
Virginia	Selected in 1919	Rapidly growing, medium-green and medium-coarse-textured variety; and susceptible to dollar spot and very susceptible to brown patch
Washington	Selected in 1919; USGA. Green Section and CRD-ARS, USDA	Light-green, slow-growing variety with a limited ability to recover from injury; tolerant of high-temperature stress; limited drought tolerance in winter; and, although resistant to brown patch, is susceptible to dollar spot, pink snow mold and stripe smut
Dahlgreen (C-115)	Selected in 1946; USGA. Green Section and CRD-ARS, USDA	Open, upright, rapidly growing, lime-green variety with wide leaves; moderate dollar spot resistance; and primarily used on fairways

Seeded Cultivars

Several creeping bentgrass cultivars are established from seed. 'Seaside' and 'Penncross,' often referred to as traditional cultivars, are generally less dense and grow horizontally compared to standard, improved cultivars. Seaside, the only seeded creeping bentgrass available from the 1920s to the 1950s, was discovered growing in moist, tidal flatland soils in Coos Bay, Oregon. 'Backspin,' 'Bengal,' 'Cato,' 'Century,' 'Cobra,' 'Crenshaw,' 'L-93,' 'Ninety-six Two,' 'SR1019' ('Providence'), 'SR 1020' ('Tapiz'), 'SR 1119,' 'SR1120' ('Brighton'), 'Penneagle,' 'Pennlinks,' 'Princeville,' 'Putter,' 'Grand Prix,' 'Sandhill,' 'Seaside II,' 'Trueline' and 'Viper' are examples of standard, improved types. The standard, improved types generally grow more

upright than the traditional cultivars. Several very dense cultivars, including 'Penn A-1,' 'Penn A-4', 'Penn G-1,' 'Penn G-2' and 'Penn G-6,' have been developed for use on greens. The Penn A- and G-series bentgrasses originate from collections from Augusta, Georgia. These high-density, upright and wear-resistant cultivars provide a superior putting surface at very low mowing heights. They require very intense management, are often slow to recover from core aeration and ball marks and produce more thatch than many other bentgrasses. 'Authority,' 'Benchmark DSR, 'Declaration,' 'T-1' and 'Tyee' are newer, high-density cultivars. 'Alpha,' 'Independence,' 'Kingpin,' 'LS-44,' 'Memorial,' 'Penneagle II,' 'Pennlinks II' and 'SR1150' are new and improved, moderately dense cultivars. To monitor and compare the performance of cultivars entered in the 2003 Bentgrass Test - Putting Green, please visit the National Turfgrass Evaluation Program at http://www.NTEP.org



Several cultivars of creeping bentgrass managed on greens in Tennessee are described below.

'Penncross' Seed Production Field

First-generation seeds of Penncross, selected by H. B. Musser and released by the Pennsylvania State University Agricultural Experiment Station (AES), result from crosses of three vegetatively propagated strains. When it was released in 1954, Penncross had better aerial shoot density, disease resistance, vigor and recuperative ability than other, commercially available seeded types.

In Tennessee, Penncross has served as the standard to which most new cultivars are compared.

Unlike Penncross with only three parental clones, 'Pennlinks,' developed by J. M. Duich and released in 1986 by the Pennsylvania State University AES, contains about 100 parental clones. This fine-textured, upright variety is tolerant of high temperatures, and has good dollar spot and leaf spot resistance. Pennlinks also has fair brown patch and pink snow mold resistance.

The variety Crenshaw, developed and evaluated as Syn3-88, was released by the Texas AES, Texas A&M University System in 1993. This dark-green, heat-tolerant variety was developed from six clones selected from plants maintained under golf course conditions and exposed to a number of environmental stresses. Five of the six parental clones originated from germplasm provided by the University of Arizona. The sixth clone was collected in Texas. Crenshaw and the variety SR 1020 share three of the same parental clones. Criteria used to select the six parental clones included medium to high turf-quality performance (e.g., color, density, texture and persistence) in Dallas, Texas, as well as seed head number, plant spread, plant morphology and seed yield in Tangent, Oregon. Crenshaw is denser and more persistent in summer than Penncross. Plants have fine leaves, grow upright, resist brown patch and pythium, and are susceptible to dollar spot.

'Southshore,' released by Loft's Seed, Inc. in 1992, was developed from selected plants from a collection of bentgrasses found on old golf courses in CA, NJ, NY, OR and PA. Between 1981 and 1985, R. Hurley and R. Funk selected more than 1,000 creeping bentgrass plants. After evaluating these plants in Oregon and New Jersey, 203 plants were selected to produce Southshore. The selection criteria included aggressiveness, attractiveness, color, fine texture, freedom from disease, persistence, tolerance of environmental stresses and upright growth. As a result, plants grow upright, have medium-fine leaves and form a dense turf with very little grain.

Loft's L-93 was also developed from the base collection of bentgrass clones from which Southshore originated. L-93 is an aggressive, dark-green, upright variety with fine-textured leaves that forms a dense, uniform turf at mowing heights from 1/8 to 3/16 inch. Presently, this variety is marketed alone or as a component of the PLS™ bentgrass blend by Jacklin Seed.

Providence, or SR 1019, was developed by R. Skogley, the University of Rhode Island, and M. F. Robinson, Seed Research of Oregon, from five clones selected in 1968 at the University of Rhode Island from bentgrasses collected throughout the Northeast U. S. The selection of clones was based on superior performance and persistence in long-term (established in the early 1920s and 1930s)

'Providence' Seed Production Field

turfgrass trials. Providence is valued for its improved drought tolerance and usually requires less nitrogen than Penncross or Pennlinks. The variety is marketed alone and as a component of Seed Research of Oregon seed blends (e.g., Dominant and Dominant Plus).

SR 1020, or Tapiz, was selected by W. R. Kneebone, the University of Arizona, and jointly developed by the University of Arizona (Kneebone) and Seed Research of Oregon (M. R. Robinson). The variety, a polycross of five clones selected from plants collected from old greens in Arizona and plants from Clemson University, was released in 1987. SR1020 is valued for its narrow, dark-green leaves, high temperature and drought tolerance, stand density, uniformity, vigor and rooting depth. SR 1020 resists Pythium, has improved pink snow mold and leaf spot resistance, and is susceptible to dollar spot. The variety is marketed alone or in the Seed Research of Oregon seed blends Dominant and Dominant Plus.

The genetic diversity of the variety SR 1119 contributes to its versatility. SR 1119 is used alone or as a component of Seed Research of Oregon seed blends (e.g., Dominant Plus, Dominant X-treme and Dominant X-treme 7) on greens, tees and fairways in areas where cool-season turfgrasses are well-adapted. Plants are dark-green and grow rapidly from seed. SR 1119 has improved dollar spot resistance and much better heat tolerance than Providence.

Brighton, or SR 1120, is referred to as the next generation SR 1020. The original SR 1020 germplasm was crossed with clones from the University of Rhode Island that were selected for resistance to dollar spot and were then screened for improved winter color. Plants have fine leaves and usually require less nitrogen than Pennlinks or Penncross. Brighton usually has greater dollar spot and leaf spot resistance than Crenshaw or SR 1020. The color of Brighton is equivalent to that of the Penn A- and G-series bentgrasses. Brighton is marketed alone or as a component of the Seed Research of Oregon seed blend Royal Links.

References

Alderson, J. and W. C. Sharp.1995. Grass Varieties in the United States, CRC Publishers, New York, NY, previously published as Agriculture Handbook No. 170, SCS, USDA, Washington, D. C.

Beard, J. B. 1973. Turfgrass Science and Culture, Prentice-Hall, Inc. Englewood Cliffs, NJ.

Brilman, L. A. 2007. Choosing a Bentgrass – Old and New Choices in Cultivars and Species. Microsoft Powerpoint™ Presentation. Seed Research of Oregon, Corvallis, OR. http://www.sroseed.com

Hanson, A. A., E. V. Juska and G. W. Burton.1969. Species and varieties, Chapter13, *In* Hanson, A. A. and E. V. Juska, Turfgrass Science, American Society of Agronomy, Inc., Madison, WI.

Engelke, M. C., V. G. Lehman, W. R. Kneebone, P. F. Colbaugh, J. A. Reinert and W. E. Knoop. 1995. Registration of 'Crenshaw' Creeping Bentgrass, Crop Sci. 35:589.

Visit the UT Extension Web site at
http://www.utextension.utk.edu/

W159D-9/07