CROP REGISTRATIONS

Registration of ‘TennTurf’ Centipedegrass

‘TennTurf’ centipedegrass [Eremochloa ophiuraides (Munro) Hack.] (Reg. no. CV-194, PI 604793), a uniquely cold-hardy cultivar, was officially approved for release by the University of Tennessee (UT) Agricultural Experiment Station (AES) in May 1997. TennTurf was evaluated for 33 yr at several UT-AES sites throughout Tennessee under the experimental accession number A-84. TennTurf was not released by the UT-AES prior to 1997, but sprigs had gotten into the hands of a few sod growers who were marketing A-84 germplasm uncertified as Tennessee Hardy, a name that was tentatively assigned to A-84 in 1971. The UT-AES decided that a different name, TennTurf, was needed for the exclusive release of A-84 in 1997 to a local marketing association.

TennTurf is the most cold-hardy centipedegrass cultivar presently available. Centipedegrasses are warm-season (C4) grasses and are not generally known for cold hardness (3,5,6). TennTurf was originally found growing in a lawn in Chattanooga, TN. TennTurf traces to a single sprig that survived winter kill and spread over an extensive area after this lawn was seeded in 1955. TennTurf was under formal evaluation as a cold-hardy strain from 1 July 1964 to May 1997 at the UT Knoxville Experiment Station (elevation 290 m), at the UT Plateau Experiment Station (elevation >600 m), at the UT Middle Tennessee Experiment Station (elevation 230 m), and at the UT West Tennessee Experiment Station (elevation 120 m). Winter temperatures at the UT Plateau Experiment Station ranged from −17 to −31°C over 31 yr without significant loss of sod due to winter kill in TennTurf. ‘Oklawh’ centipedegrass (2), thought to be winter hardy (1,2,3), suffered total winterkill following two spring plantings at this 600-m site. TennTurf was evaluated for 8 yr at the 290-m site (UT Knoxville Experiment Station) against Oklawh, ‘AU-Centennial’, ‘Tennessee Tuff’, TC-238 experimental, TC-230 experimental, and Tifton common centipedegrass. TennTurf maintained 100% stand density over the 8 yr, while the highest density among the comparative strains was 55% for Tifton common.

DNA fingerprints clearly show TennTurf to be distinctively different from AU-Centennial, Oklawh, Tennessee Tuff, and Tifton common (8). Phylogenetic analysis using parsimony (PAUP) was conducted with these five strains, confirming the distinctively different DNA profile of TennTurf. The PAUP analysis linked Tennessee Tuff and Oklawh together and nearer in relationship to AU-Centennial and then to Tifton common, with TennTurf at the most distant branching from these. Results of DNA analysis suggest that TennTurf behaves as if it were a different species.

TennTurf is a diploid (2n = 2x = 18) (4,7) lawn-type turfgrass that is light green in color, of average growing height, well suited to poor soils, a low pH (4.5 to 5.5), and low fertility (only 49 kg N ha−1 yr−1). Nitrogen should be kept low and applied in the spring. P and K at a medium to high soil test, and treatments with Fe may be needed. Mow weekly at a 2.5- to 5-cm (1- to 2-inch) cutting height, and irrigate weekly in the absence of rain. TennTurf is adapted throughout the southern USA, but is particularly advantageous for use in the Upper South and at higher elevations. Disease and insect resistance, and sod density, are similar to AU-Centennial (6). TennTurf performs best in full sun, but will tolerate light shade (>20% reduction of light). It produces viable seed, but is being released under restrictions of sale for vegetative plantings only (with stolons, plugs, and/or solid sod), in order to maintain the genetic purity of TennTurf. The recommended planting dates for TennTurf are from mid-April to mid-July. Breeder sod of TennTurf will be maintained and distributed for research purposes by the UT-AES at Knoxville. Foundation stock will be developed by selected sod growers under agreement with Tennessee Advanced Genetics (TAG) marketing association. TAG has exclusive marketing rights to TennTurf under a restricted certification agreement with the UT-AES. Certification of TennTurf is protected by DNA fingerprinting (8).

Selected breeding information was derived from a cross between diploid German ‘Tettanger’ (USDA 61021; 2n = 2x = 20) and the tetraploid male aroma parent, USDA 21618M (2n = 4x = 40). USDA 21618M was selected from a cross between tetraploid ‘Hallertauer-Mittelfrüh’ (USDA 21397) and the male hop, USDA 21381M. USDA 21381M is a selection from the cross of ‘Cascade’/USDA 65090/USDA 64035M (1,2,3). The genetic composition of Santiam, as calculated from its breeding pedigree, is 1/2 ‘Tettanger’, 1/4 ‘Hallertauer-Mittelfrüh’, 1/8 Cascade, 1/32 ‘Brewer’s Gold’, 1/64 ‘English Early Green’, and 5/64 unknown German aroma hop (possibly ‘Saazer’ and/or ‘Tettanger’). The above-mentioned diploid × tetraploid cross produced the triploid (2n = 3x = 30) aroma selection 8802-68, which was conspicuous because of its high yield potential and European-type aroma characteristics similar to German Tettanger, its female parent. The permanent USDA accession number 21664 was assigned in 1997. Initial nursery trials appeared highly promising in both Oregon and Washington.

In commercial trials in Oregon and Washington, starting in 1994, yields of Santiam ranged from 1600 to 2400 kg ha−1 in Oregon and 1040 to 1790 kg ha−1 in Washington. Alpha-acid content over a 3-yr period was 5.5 to 6.2% in Oregon and 6.0 to 7.0% in Washington. Beta-acids content ranged from 7.4 to 7.8% in Oregon and 7.2 to 8.9% in Washington. Cohumulone levels ranged from 22 to 24% over the same time period for both states. Storage stability, as measured by percent alpha-acids remaining after 6 mo storage at ambient (20°C) temperature, ranged from 30 to 41%. The essential oil content from commercial samples ranged from 1.3 to 1.5 mL 100 g−1, about 25% higher than that of the Tettanger control. Santiam’s essential oil composition, however,