Registration of 'Shenandoah' Tall Fescue

'Shenandoah' Tall Fescue (Festuca arundinacea Schreb.) (Reg. no. CV-52, PI 537443) was released in August 1990 by R.J. Peterson Enterprises of Hillsboro, OR. It is produced and distributed by Willamette Seed Company of Albany, OR. Germplasm obtained from the New Jersey Agricultural Experiment Station was used in the development of this cultivar. PE-7 and PE-7E were the experimental designations of Shenandoah. PE-7E referred to lots containing a high percentage of seed infected with an endophytic fungus, Acremonium coenophialum Morgan-Jones and W. Gams. and PE-7 referred to lots which had a low percentage of seeds containing this endophyte. The first certified seed of Shenandoah was produced in western Oregon in 1990.

Shenandoah tall fescue is an advanced generation synthetic cultivar selected from the progenies of 55 clones. Forty-four of the parental clones trace their maternal origin to old turfs in Georgia (27 clones), New Jersey (seven clones), Maryland (three clones), Ohio (two clones), Kansas (two clones), Pennsylvania (one clone), Mississippi (one clone), and Tennessee (one clone). The remaining 11 parental clones trace their maternal origin to T-6A. Breeding composite T-6A originated from intercrossing 12 plants selected from T-6 with 44 unrelated clones selected from old turfs in Alabama, Georgia, Idaho, Maryland, North Carolina, and Pennsylvania. T-6 originated from many of the same germplasm sources used in the development of Rebel (1). Between 1961 and 1976, four cycles of phenotypic recurrent selection for overall turf quality and persistence under a regime of frequent, close (2 cm) mowing were practiced on this germplasm to produce T-6.

Various intercrosses of the above germplasm sources were subjected to varying cycles of phenotypic and genotypic recurrent selection during the period 1977 to 1987. This included evaluation in unmowed spaced-plant nurseries as well as closely mowed clonal nurseries and turf trials. Selection within spaced-plant nurseries was directed toward improved seed yield, a rich, moderately dark-green color, an upright growth profile, relative freedom from disease, and an absence of leaf roll under heat and drought stress. Selection within frequently mowed clonal nurseries and single-plant progeny turf trials was directed toward improvements in overall turf performance, stress tolerance, and disease resistance. The 55 parental clones of Shenandoah were allowed to interpollinate in isolation during the spring of 1986. Progeny of these clones were used to establish a large replicated spaced-plant nursery at Adelphia, NJ. Unattractive plants were removed from this nursery prior to anthesis in 1987. Breeder seed was subsequently harvested from plants showing the best floret fertility. Seed from the 19 progenies containing an Acremonium endophyte was bulked to produce PE-7E. PE-7 consisted of bulked seed of the 36 progenies free of endophyte. Both entries were included in the 1987 National Turfgrass Evaluation Program. PE-7E was used to initiate commercial seed production of Shenandoah. The Acremonium endophytes in PE-7E trace their origin to plants collected in Georgia, Mississippi, Ohio, and Kansas.

Shenandoah (PE-7E) turfs containing high percentages of plants infected with Acremonium endophytes have usually shown very similar performance to turfs seeded to PE-7 or lots of PE-7E which have lost endophyte viability during seed storage. In a four-year test of 65 tall fescues seeded at 42 locations throughout the USA by the National Turfgrass Evaluation Program, PE-7E tied with Hubbard 87 for the highest overall turf quality rating of 6.3. PE-7E had an overall rating of 6.1; however, under certain biological or environmental stress conditions, turfs of Shenandoah containing endophyte have shown dramatic improvements in performance compared with similar turfs free of endophyte. In these tests, endophyte-infected turfs have shown more rapid recovery from summer drought and produced a brighter, more attractive turf with a lighter color, greater density, and less damage from billbugs (Sphenophorus spp.) and many lepidopterous species of sod webworm than endophyte-free turfs.

Many seed lots of Shenandoah contain a high percentage of seed possessing an Acremonium endophyte. This fungus, which is widely distributed in tall fescue plants throughout the USA and many other regions of the world, has been associated with enhanced resistance to many harmful insect pests and improved persistence and stress tolerance under some conditions (2,3). These characteristics should be of value when a cultivar is used for turf and conservation. Animals consuming endophyte-infected tall fescue, however, frequently exhibit poor health and inferior performance (4). Thus, it is advisable to eliminate this endophyte from cultivars or seed lots used for forage production.

Shenandoah is a medium-low-growing, persistent, turf-type tall fescue capable of producing an attractive turf with medium-wide leaves, and a rich, moderately dark-green color. It has good heat and drought tolerance and good winterhardiness. Shenandoah performs well in moderate shade and full sun. It has good seedling vigor and is adapted to a wide range of soils. Shenandoah normally produces little or no objectionable thatch. Shenandoah has shown good resistance to the net blotch disease caused by Drechslera dicytoides (Drechs.) Shoemaker and moderate resistance to the brown patch disease caused by Rhizoctonia solani Kuhn.

Shenandoah is recommended for medium to low maintenance turfs in most regions where tall fescue is well-adapted. It performs well at lower levels of nitrogen fertility than normally needed for good performance of perennial ryegrasses (Lolium perenne L.) or Kentucky bluegrasses (Poa pratensis L.). Breeder seed of Shenandoah is produced and maintained by R.J. Peterson Enterprises. Certified seed production is limited to three generations of increase from breeder seed, one each of foundation, registered, and certified. Application (no. 9,000,037) has been made for United States Plant Variety Protection.

References and Notes

5. Robert J. Peterson, R.J. Peterson Enterprises, Inc., P.O. Box 312, Forest Grove, OR 97116; B.B. Clarke, Plant Pathology Dep., Cook College, New Jersey Agric. Exp. Stat., Rutgers Univ., New Brunswick, NJ 08903; Melodie L. Fraser, Pure-Seed Testing East, P.O. Box 176, Roselle, NJ 07076; J.A. Murphy, Suichang Sun, and C.R. Funk* (5)