digestibility during summer (2, 3). Johnstone has from 50 to 60% less (significantly) perloline content than Kenhy and Kentucky 31 tall fescue which is the superior unique trait of the new variety.

Johnstone is adapted for pasture, hay, and conservation purposes throughout the transition zone of the USA. Since 1975, Johnstone and component strains, G1-316 and G1-307 (318) were compared with commercial varieties of tall fescue for forage quality and some agronomic characteristics on Experiment Station Farms in Kentucky, Arkansas, Iowa, Florida, North and South Carolina, and Prince Edward Island, Canada. Data indicate that Johnstone and component strains, G1-316 and G1-307 (318) were significantly superior to Kentucky 31 in palatability, digestibility, and color and superior to Kenhy for color during drought. Dry matter yields were not different from Kenhy.

Perline, a major alkaloid of tall fescue, reduced in vitro cellulose and in vivo protein and cellulose digestibility (1). Young cattle consuming tall fescue soilage that was free of the endophytic fungus, Epichloe typhina (= Acremonium coenophialum), with high perloline content exhibited summer toxicosis symptoms and had significantly higher rectal temperatures than cattle receiving endophyte-free G1-307 (318) soilage.

A direct positive relation was found between the fungal endophyte in tall fescue and summer toxicosis symptoms of young Holstein steers feeding on infected tall fescue under high ambient temperature stress in environmentally controlled rooms (1). The primary method of transmission of the endophyte is through the seed. The fungus does not survive and, therefore, is not transmitted through seed that is a minimum of two years old (4).

Seed of Johnstone will be produced on a limited generation basis. The classes of seed are: 1) breeder, 2) foundation, and 3) certified. Breeder seed consists of one-third G1-316 and two-thirds G1-307 (318) and is maintained by the Kentucky Agricultural Experiment Station. An application will be made for Plant Variety Protection specifying that all seed sold by variety name must be certified. Breeder's seed of Johnstone will be endophyte-free and all other classes of seed must be laboratory tested and shown to have low level infestation of Epichloe typhina before approval for certification.

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REFERENCES


REGISTRATION OF SHADOW CHEWINGS FESCUE¹

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'SHADOW' Chewings fescue (Festuca rubra L. subsp. commutata Gaud.) was developed by Pure-Seed Testing, Inc. using germplasm developed at the New Jersey Agriculture Experiment Station. It was released by Turf-Seed, Inc., of Hubbard, Ore. in September of 1981. Pure Seed Syn W was the experimental designation of Shadow. First certified seed was harvested in western Oregon in 1981.

The parental germplasm of Shadow was developed initially by screening nearly 50,000 seedlings for greenhouse resistance to powdery mildew incited by Erysiphe graminis D.C. Approximately 60% of the parental germplasm originated from plants collected from old turfs of the mid-Atlantic region of the United States. The remaining 40% of the germplasm was derived from cultivars developed in Europe. Nearly 1600 of the most attractive, powdery-mildew-resistant plants were allowed to interpollinate in an isolated space-planted nursery. Progenies of plants selected from the isolation nursery were reseeded for powdery mildew reaction, and resistant plants were established in a space-planted progeny nursery. Fifty-three clones were selected from the progeny nursery based on attractive appearance, a bright medium dark green color, freedom from disease, uniform early maturity, and promising seed yield potential. The 53 selected clones were transplanted to an isolated nursery immediately prior to anthesis for production of Syn 1 seed. Syn 2 seed was produced by random recombination without selection in an isolated, solid seeded nursery. Syn 2 seed was used to thinly plant a 2.2-ha seed field in western Oregon. Prior to anthesis, 140 plants (which became the parental clones of Shadow) were selected, dug and transplanted to an isolated seed production nursery. Selection was based on uniform early maturity, high seed yield potential, attractive appearance, and field resistance to powdery mildew, rust incited by Puccinia coronata Pam. and Hum, and net blotch caused by Helminthosporium dictyoides Drechsler.

Shadow is a moderately low-growing, turf-type Chewings fescue capable of producing an attractive, dense, fine-textured turf with a bright medium dark green color. Shadow is 5 to 6 days earlier maturing than 'Jamestown' or 'Banner' Chewings fescue. Shadow also performs well in mixtures with the improved turf-type perennial ryegrasses (Lolium perenne L.). Shadow also performs well in mixtures with the improved turf-type ryegrasses for the fall and winter overseeding of dormant warm-season turf, such as putting greens and tees.