



Turf-Type Tall Fescue

Shenandoah II follows in the footsteps of Shenandoah and is recognized as one of the top new generation of elite varieties in the NTEP. **Shenandoah II** is a moderately fine textured variety with deep dark green turf and broad area of adaptation, it is an endophyte enhanced tall fescue with >93% *Neotyphodium coenophialum* endophyte which provides resistance to a number of leaf and crown feeding insects and nematodes. The presence of endophyte also contribute to improved biotic and abiotic stress tolerance, faster seeding establishment, enhanced fall recovery and reduced summer weed invasion.

- Tied for 3rd in mean turf quality in the 1997-2000 Final Report NTEP No. 01-14 Tall Fescue test
- Tied for 1st in turf quality in transitional zone locations across the US.
- Exhibits high quality turf performance
- Improved resistance to brown patch disease
- Exhibits improved resistance to leaf spot, pythium blight, and winter net blotch
- Recommended for permanent turf in full sun or partial shade
- Intended for home lawns, commercial sites, parks and golf course roughs
- Developed for the discriminating superintendent, landscaper and sports turf manager
- Utilized from the dry temperate climates of southern California to the hot and humid regions of the southeastern US
- Dark green color
- Excellent wear tolerance

SEEDING RATE:
(new) 6-8 lbs./1000 sq. ft.
(established) 2-3 lbs./1000 sq. ft.



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







SHENANDOAH II

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DESCRIPTION

Shenandoah II follows in the footsteps of Shenandoah and recognized as one of the top of the new generation of elite varieties in the NTEP. Shenandoah II is a moderately fine textured variety with deep dark green turf and broad area of adaptation, it is an endophyte enhanced tall fescue with >93% *Neotyphodium coenophialum* endophyte which provides resistance to a number of leaf and crown feeding insects and nematodes. The presence of endophyte also contribute to improved biotic and abiotic stress tolerance, faster seeding establishment, enhanced fall recovery and reduced summer weed invasion.

Turf Maintenance Characteristics

+Growth Habit	Estab. Rate days	LHC Tol. ^{1/2"}	Mowing Freq.	Traffic Tol.	Thatch Prod.	Comp. Mi+x	N. Reg.	Shade Tol.	Cold Tol.	Drought Tol.	ET rate mm/day	Endo-phyte	Salinity Tol. mmhos
 Bunch	 Med. 14-21	Poor	 2x Week	 Very Good	Low-Med	Fair-Good	 Med 6 lbs*	 Very Good	 Good	 Excellent	 Very High >10	Yes 93%	 11 Good

*LHC=low height of cut, ET=evapotranspiration, N=nitrogen *per 1,000 sq. ft; rates may increase or decrease based on location, soil type, irrigation practices, desired turf quality, humidity & other abiotic and biotic factors.*

APPLICATION

Shenandoah II is recommended for permanent turf in full sun or partial shade, on home lawns, commercial sites, parks and golf course roughs. It was developed for the discriminating superintendent, landscaper and sports turf manager in a range of environments. Shenandoah II is best utilized in grass seed mixtures maintained at a high height of cut with Kentucky bluegrass, perennial ryegrass, hard fescue, sheep fescue or strong creeping red fescue.

PERFORMANCE

Shenandoah II tied for 3rd in mean turf quality in the 1997-2000 Final Report NTEP No. 01-14 Tall Fescue test conducted across 28 US and Canadian locations respectively and tied for 1st in turf quality in transitional zone locations across the U.S. (DE, AR, GA, IL, KS, KY, MO, OK, SC, and VA). Shenandoah II exhibits improved resistance to brown patch disease one of the most limiting factors in tall fescue propagation in warm summer-humid continental and transitional-humid climates of the southern USA. Shenandoah II tied for 1st in brown patch resistance across 15 test locations in the coastal plains of Virginia, mid Atlantic region of Maryland and New Jersey; the Piedmont region of Georgia and Arkansas. It also tied for 1st in turf quality under the 0-2 lbs nitrogen regime (lowest nitrogen rate in NTEP tests). Shenandoah II exhibits improved resistance to leaf spot, pythium blight and winter net blotch.

SEEDING

Date: Spring and fall when soil temperatures are 60°F or higher. Turf type tall fescue is generally slow to tiller once germinated so higher soil temperatures and increasing photoperiod in spring or warm soils with decreasing photoperiod in the fall provide an optimal environment for seedling establishment.

Rates: 6-8 lbs/1000 sq. ft. on new seedings. 2-3 lbs/1000 sq. ft. on established turf. Seed count of Shenandoah II is 229,000 seeds per pound and is dependent on the year of harvest, location of production and seed production practices.

Depth: Sow at 1/4 to 1/2 inches. Slice seeding of existing turf may require lowered mowing height or growth regulator to reduce canopy height of existing turf. This management practice enhances establishment of newly emerging tall fescues seedlings.

National Tall Fescue Test 1999-2000

Turfgrass Quality Ratings 1-9, 9=best quality (SLD @ 0.05=0.2)

Transitional Zone Locations

Variety	AR	DE 1	GA 1	IL 2	KS 2	KY 1	MD 1	MO 1	MO 3	OK 1	SC 2	VA 1	VA 4	Mean
SHENANDOAH II	6.4	4.9	6.2	7.2	6.4	7.8	5.8	5.4	6.7	6.6	5.3	5.9	5.9	6.1
Rembrandt	6.6	4.4	6.6	7.5	6.7	8.3	6.0	5.5	6.6	6.7	6.2	5.5	5.8	6.3
Plantation	6.4	4.0	6.8	6.6	6.6	8.1	5.9	5.6	6.7	6.6	5.7	5.5	5.7	6.2
Millennium	6.2	4.4	6.4	7.3	6.7	8.1	5.8	5.3	6.2	6.6	5.6	5.2	5.8	6.1
Dynasty	6.4	4.6	6.6	7.5	6.3	8.0	5.4	5.3	6.7	6.6	5.2	5.3	6.0	6.1
Masterpiece	6.2	3.8	6.9	6.9	6.7	8.1	5.8	5.1	6.5	6.4	5.4	5.2	5.9	6.1

CULTURAL PRACTICES

Soil Preparation: Prepare a firm seed bed free of clods, sticks, and vegetative debris. Seed should be in contact with soil. Tall fescues are best established in well drained soils, but will tolerate heavy soil conditions better than many other cool season grasses.

pH: Soil is best maintained at a neutral pH of 7.0. However, Shenandoah II is adapted to a range of soil pH conditions and will perform relatively well in moderately acidic or alkaline soils.

NPK requirement: Shenandoah II would be described as a medium to high user of fertilizer. In Northern regions 4-5 lbs. N/year; in transitional climates 5-7 lbs. N/year; southern regions 5-7 lbs. N/year with minimal utilization in summer months to discourage foliar turfgrass diseases such as brown patch. NPK ratios are generally recognized 5-1-3 with clippings retained on the turf.

Water Use: Tall fescue is recognized as a dehydration avoidant species (Beard, 1986) with improved drought tolerance. Tall fescue has an abundant deep and fibrous root mass which mines available subsoil moisture during stress periods. ET rate of >10 mm per day is highest among cool season turfgrass. Infrequent but heavy irrigation to stimulate deep subsoil root growth is recommended.

Thatch Management: Requires little thatch management. Only high N levels with minimal traffic pressure encourages thatch accumulation. Verticutting, lower mowing heights and dethatching are recommended for dormant sod or grass breaking dormancy in the spring. At any give dethatching, never remove more than 1/2 inch of thatch. If the thatch layer is greater than 1 inch, removal must be done over a period of years.

Mowing height: Shenandoah II should be mowed at 1 1/2—3 inch.

Weed Control: From No. Carolina State University (NCSU) Pest Control Recommendations for Turfgrass Managers 2003. In established turf for post emergent broadleaf control 2,4-D and *dicamba* (Banvel). Spring pre-emergent control DCPA or *bensulide* (dacthal). Pre-emergent crabgrass and goosegrass control on established tall fescue with *pendimethalin* (Pre-M), *proflaminate* (Barricade), *oxadiazon+benefin*, or *oryzalin* (Surflan), *benefin* (Balan), siduron (Tupersan), *dithiopyr* (Dimension).

*All reference to pesticides, herbicides and fungicides whether a generic or named product is for general informational purposes only. Text reference is not intended as an endorsement nor does omission imply criticism. Always read and follow labeled instructions.



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