

ATLANTIS

Kentucky Bluegrass

BREEDER

ProSeeds Marketing, Inc.

DESCRIPTION

Atlantis is custom Kentucky bluegrass blend containing three or more improved Kentucky bluegrass varieties. Approximately 50% of this blend contains "Shamrock type" Kentucky bluegrass with the remainder of the blend containing two or more "BVMG type" Kentucky bluegrasses. Atlantis is a cold hardy, persistent, attractive grass that through the development of an extensive rhizome system forms a well-knit, durable sod. It is adapted to a wide range of soils and climatic conditions.

APPLICATION

Atlantis provides broad genetic variability for wide area of adaptation and improved horizontal disease resistance. It is an excellent choice for use in elite or utility Kentucky bluegrass blends for sod producers, sports turf, landscaping golf course fairways, tees and roughs. It is also highly recommended for seed mixtures that contain improved perennial ryegrass, chewing fescue, hard fescue, sheep fescue, strong creeping red fescue and tall fescue.

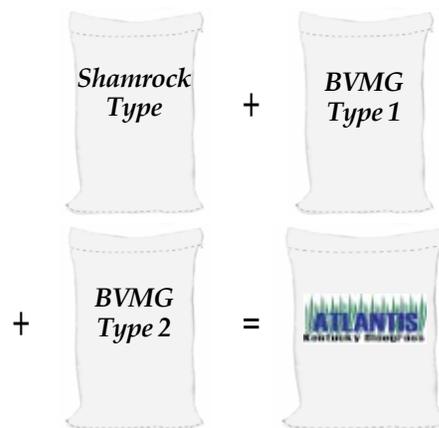
PERFORMANCE

Atlantis will provide good turf quality, medium to low growth, medium wide leaves and good winter performance. It also exhibits good sod tensile strength, dense turf with dark green turf color and exhibits good resistance to leaf spot, dollar spot and stripe smut. The Shamrock type Kentucky bluegrass provides early seedling vigor and aggressive rhizomatous growth for quick establishment and sodding purposes. It will also provide fine, leafy growth, excellent winter color and performance. The BVMG types will exhibit good performance under low maintenance situations and will provide better late spring and summer turf and color.

KENTUCKY BLUEGRASS TYPES

Kentucky bluegrass is an apomictic species that exhibits a great range of genetic diversity. Kentucky bluegrasses reproduce asexually; in scientific terms by a method called *apomixis*. Seed from a mother plant (children) is essentially identical to the parent plant. Therefore, enhanced genetic diversity in Kentucky bluegrass seed for the end user is critical. Blends and mixtures containing genetically different Kentucky bluegrass varieties reduce the opportunity for an individual strength or weakness of a Kentucky bluegrass cultivar to express itself over time. Therefore, single varieties of Kentucky bluegrass may not provide enough genetic elasticity against abiotic and biotic stresses during the growing season. Many distinct types of Kentucky bluegrass have been released which have been conveniently classified into 14 groups based on growth and performance characteristics (Murphy, et al 1998). Atlantis is a custom blend of a "Shamrock type" and two different "BVMG type" Kentucky bluegrasses that have been used extensively by sod producers, sports field managers, landscape professionals and discriminating homeowners. For a list of Kentucky bluegrass types and descriptions, see insert on the bottom of the next page.

Atlantis is blend of complimentary and compatible but different Kentucky bluegrass varieties for optimal long term turf performance. For example a blend of Shamrock type, BVMG type and BVMG type will provide moderately broad genetic elasticity for improved disease resistance and agronomic performance.



SEEDING

Dates: Spring and fall when soil temperatures are above 60°F. Kentucky bluegrass is generally slow to tiller once germinated so higher soil temperatures with increasing photoperiod in spring or warm soils with decreasing photoperiod

TURF CHARACTERISTICS

Growth Habit	Estab. Rate days	LHC Tol. 1/2"	Mowing Freq.	Traffic Tol.	Thatch prod	Comp Mix	N. Req.	Shade Tol.	Cold Tol.	Drought Tol.	ET rate mm/day	Endophyte	Salinity Tol. mmhos
Rhizome	Slow 21-28	Poor	1x week	Good	Med-High	Fair Good	Med High 5-6 lbs*	Poor	Very Good	Good	Med 7-8	No	<3 Poor

*LHC=low height of cut, ET=evapotranspiration, N=nitrogen *per 1,000 ft²; rates may increase or decrease based on location, soil type, irrigation practices, desired turf quality, humidity & other abiotic and biotic factors.*



in the fall provide an optimal soil seed interface for optimal seedling establishment.

Rates: 2-3 lb./1,000 ft.sq. on new seedlings. 1-2 lb./1,000 ft.sq. on established turf. Atlantis has an intermediate seed count of 1,900,000 seeds per pound. Seed count is dependent on the year of harvest, location of production and seed production practices.

Depth: Sow at ¼ to ½ inch. Kentucky bluegrass is slower in germination than other cool-season grasses and full germination of turf may not be seen in 21-28 days under optimal conditions.

CULTURAL PRACTICES

Soil preparation: Prepare a firm seed bed free of clods sticks and vegetative debris. Seed should be in contact with soil. Kentucky bluegrass is intolerant of heavy soil conditions (high bulk density) and saline soil conditions and is best established in well drained sandy or silt loam soils.

pH: Soil is best maintained at a neutral pH of 7.0. Of the cool-season turfgrass Kentucky bluegrass is the most susceptible to variation in soil pH conditions. Kentucky bluegrass does not do well under low or acidic soil conditions.

NPK requirement: Atlantis is described as a medium user of fertilizer. In northern regions 5-6 lb. N/year; in southern and transitional climates 6-7 lb. N/year with minimal utilization in summer months to discourage foliar diseases such as brown patch and pythium. NPK ratios are generally recognized as 5-1-3 with clippings retained on the turf.

Water use: Kentucky bluegrass has a moderately short fibrous root mass for water uptake and will go into stress induced dormancy or may die under severe

drought conditions. An ET rate of 7-8 mm per day places Kentucky bluegrass into medium water use category for cool-season turfgrass. ET rates can be reduced by frequent mowing to encourage a denser turf and infrequent but heavy irrigation to stimulate deep subsoil root growth.

Thatch management: Kentucky bluegrass is recognized as a medium to high thatch producing cool-season turfgrass. High N levels to encourage fast grow-in coupled with minimal traffic pressures encourage thatch accumulation. Verticutting, lower mowing heights and dethatching are recommended for dormant sod or grass breaking dormancy in the spring. At any given dethatching never remove more than ½ inch of thatch layer. If the thatch layer is greater than 1 inch. It is recommended that removal be done over a period of years.

Mowing height: Should be mowed at ¾ - 2 inch and may tolerate ½ inch mowing height under optimal growing conditions.

Weed Control: From North Carolina State University (NCSU) Pest Control Recommendations for Turfgrass Managers 2003, In established turf for post-emergent broadleaf control 2, 4-D, MCPA, clopyralid + triclopyr (Confront) and *dicamba* (Banvel). Spring pre-emergent control DCPA or *bensulide* (Dacthal). Pre-emergent crabgrass and goosegrass control on established Kentucky bluegrass with *pendimethalin* (Pre-M) *proflam* (Barricade), *oxadiazon+benefin*, *oryzalin* (Surflan), *benefin* (Balan), *siduron* (Tupersan), *dithiopyr* (Dimension).



KENTUCKY BLUEGRASS TYPES

- **BVMG Types** exhibit good seeding vigor, they have moderate winter color, leaf spot resistance, but are moderately susceptible to billbug.
- **Aggressive Types** have high shoot density.
- **Compact Types** with low, compact growth habit, good leaf spot resistance but poor spring green-up.
- **Midnight Types** are compact type KBG characterized by long winter dormancy, late spring green-up, very dark high quality turf, good heat tolerance but are susceptible to powdery mildew.
- **Bellevue Types** have medium to low growth and early spring green-up.
- **CELA Types** exhibit early spring green-up, but tend to have less seed head formation under mowed turf conditions than the Bellevue types.

- **Cheri Types** have medium to wide leaves.
- **Common Types** have early spring green-up, narrow leaf blade, but are susceptible to leaf spot.
- **America Types** are compact types but have finer leaf blades than Midnight type KB's and exhibit good resistance to dollar spot, leaf spot and stripe smut.
- **Julia Types** exhibit early spring green-up, good leaf spot resistance and strong wear tolerance.
- **Mid-Atlantic Types** have a vigorous and extensive rhizome system and improved heat tolerance.
- **Shamrock Types** are similar to BVMG types, their only difference being Shamrock types exhibit good tolerance to stripe smut.
- **Wabash Types** are medium dark green, exhibit excellent heat tolerance and good recovery from disease.
- **Other types** are varieties that have not yet been defined to the previous 13 classifications.

