



## BREEDER

NJAES/Rutgers University/ Advanta Seeds Pacific

## DESCRIPTION

Panther GLS is an elite, new generation, heat and humidity tolerant perennial ryegrass developed with improved gray leaf spot resistance. Gray leaf spot disease has been a limiting factor to the establishment and persistence of perennial ryegrass in the past decade in the Mid Atlantic, Mid South and Midwestern U.S. Panther GLS is also an endophyte enhanced perennial ryegrass with >90% *Neotyphodium lolii* endophyte which provides resistance to a number of leaf and crown feeding pests and improved tolerance to abiotic (non-living) and biotic (living) stress. It is highly recommended for permanent turf application in the Mid-Atlantic and U.S. transition zone where heat and humidity may limit the adaptation of perennial ryegrass turf.

## APPLICATION

Developed for permanent poly species turfgrass blends and mixtures containing improved perennial ryegrass, Kentucky bluegrass, chewing, slender creeping and strong creeping red fescue, colonial bentgrass and turf type tall fescue. Panther GLS is also used extensively in winter overseeding programs on greens, tees and fairways either alone or in species mixtures.

## PERFORMANCE

Panther GLS tied for 2nd in turf quality in the 2004 NTEP Perennial Ryegrass Report 06-1 (2005 data) across thirty U.S. and Canadian locations. It also tied for 1st in turf quality in the Schedule B (Medium Maintenance Athletic Fields) NTEP test conducted during 2005. Panther GLS is highly resistant to gray leaf spot incited by *Pyricularia grisea*. In cooperative Turfgrass Breeders Tests conducted during 2004 and 2005 in Illinois, Kentucky, Maryland, and North Carolina, Panther GLS exhibited resistance to gray leaf spot. For this and other test results go to [www.ctbt-us.info](http://www.ctbt-us.info).

## SEEDING

**Date:** Spring and fall when soil temperatures are 60°F or higher. Perennial ryegrass is the fastest establishing cool-season turfgrass species available to the lawn care professional and homeowner. Late autumn and winter turf quality ratings of newer varieties like Panther GLS demonstrate that they can rapidly develop and maintain an attractive turf cover into late autumn-early winter.

**Rates:** 6.0-8.0 lbs./1,000 sq.ft. Seed count of Panther GLS is approximately 288,000 seeds per pound and dependent on year of harvest, location of production and seed production practices.

**Depth:** Sow at ¼ to ½ inches.

## TURF CHARACTERISTICS

Growth Habit	Estab. Rate days	LHC Tol. ½"	Mowing Freq.	Traffic Tol.	Thatch prod	Comp Mix	N. Req.	Shade Tol.	Cold Tol.	Gray Leaf Spot Resistant	Et rate mm/day	Endophyte	Salinity Tol. mmhos
Bunch	Fast 7-10	Very good	2x week	Very Good	None	Fair Good	Med High 6-8 lbs*	Fair-Good	Fair-Good	Very High	High 9-10	Yes >90%	11 good

LHC=low height of cut, ET=evapotranspiration, N=nitrogen \*per 1,000 ft<sup>2</sup>; rates may increase or decrease based on location, soil type, irrigation practices, desired turf quality, humidity & other abiotic and biotic factors.



## CULTURAL PRACTICES

**Soil preparation:** Prepare firm seedbed free of clods, sticks and vegetative debris. Seed should be in contact with soil. Improved elite perennial ryegrass such as Panther GLS prefers well-drained loamy soils but perform better in high bulk density soils than Kentucky bluegrass and fine fescue.

**pH:** Should be slightly acidic (5.5 -6.5) for favorable growth. High pH soils (alkaline) often contribute to yellow chlorotic leaf color and are a direct result of iron chlorosis. Foliar applications of iron, chelated iron or soil amelioration to decrease soil pH are used to reduce or eliminate iron chlorosis in perennial ryegrass turf.

**NPK requirement:** Of the cool-season grasses used for turf improved perennial ryegrass requires moderately high to high levels of available soil nitrogen to maintain proper basal tillering and growth. When soil nitrogen levels are low or absent, perennial ryegrass turf will gradually thin and be replaced by low nitrogen adapted grasses, and unsightly weed species. In northern regions 5-7 lbs. N/year; transitional climates 7-9 lbs; N/year; overseeding 2-4 lbs. N/growing month.

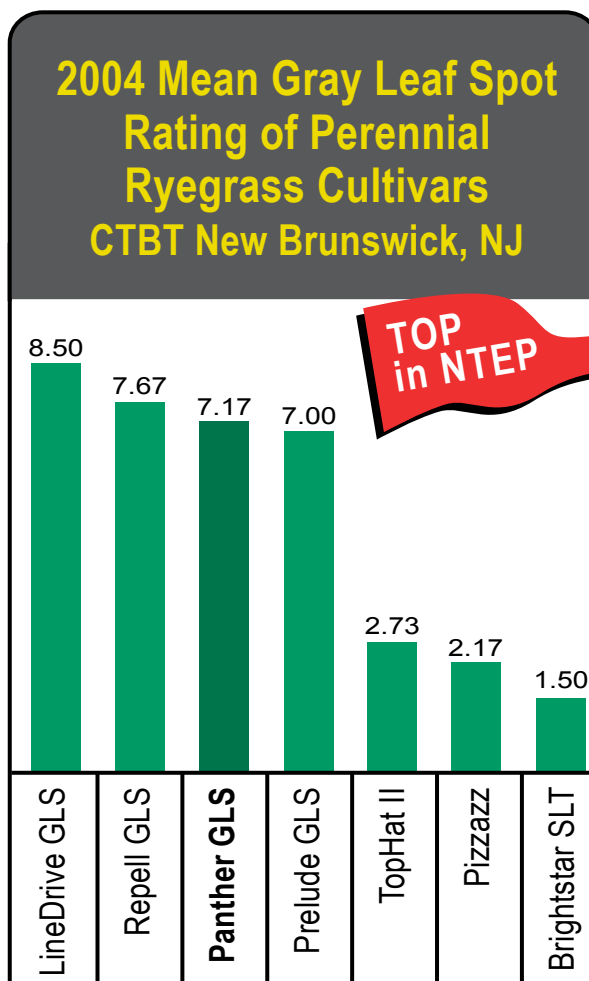
**Water use:** Panther GLS and other improved perennial ryegrasses are recognized as high water users with ET rate of 9-10 mm per day.

Lower mowing heights, regulated soil nitrogen levels and infrequent but deep soil profile irrigation practices will help reduce perennial ryegrass water requirements. Panther GLS will enter summer induced dormancy and premature senescence or die if not properly hydrated (irrigated) during persistent low moisture soil conditions.

**Mowing height:** Panther GLS recommended mowing height for permanent turf in blends and mixtures is 1.0-1.5 inch. On permanent turf or winter overseeded golf course fairways recommended mowing height is ¾- ½ inch. On overseeded greens and tightly mowed tees Panther GLS can be mowed at 125,000ths of an inch to 180,000ths of an inch.

**Growth regulators:** New growth regulators such as Primo® (*Trinexapac-ethyl*) can be used to inhibit growth of warm season grass such as bermudagrass and zoysia during early season overseeding. This provides an excellent option for superintendents, landscapers and turfgrass managers that must overseed early when soil temperatures and day lengths are still beneficial to bermudagrass growth and tillering.

**Weed control:** From NCSU Pest Control Recommendations for Turfgrass Managers 2003. In established turf for general broadleaf control: 2, 4-D+dicamba, 2, 4-D+MCPP, 2, 4-D+MCPP+dicamba, 2, 4-D+2, 4-DP and others. Pre-emergent herbicides to control annual grassy weeds in established turf: *benefin* (Balan), *bensulide* (Pre-Far), *dithiopyr+trifluralin*, *pendimethalin* (Pre-M), *prodiamine* (Barricade). Annual bluegrass *Poa annua* can be controlled pre and post-emergent on golf course fairways, tees and roughs with *ethofumesate* (Prograss).



Grayleaf Spot Ratings 1-9: 9=Resistant  
2004 CTBT USD@.05=.96

