Poa supina Research

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Introduction

Poa supina is a relatively new turfgrass to the United States although it is commonly used in Germany on athletic fields, golf courses, and lawns. Unfortunately the proper management techniques and the effect of cultural practices for this turfgrass have not been researched. Empirical knowledge from German turf managers and breeders suggest the turf should be fertilized similarly to Kentucky bluegrass and kept well-irrigated for best results. *P. supina* also appears adaptable to a range of cutting heights, with a probable optimum range between 0.5" - 1.5". Observations by German breeders indicate *P. supina* is extremely tolerant to wear, shade, and disease. These characteristics are attributed to its vigorously stoloniferous growth habit and cold weather adaptation and make the species an ideal candidate for athletic fields and other high traffic areas in the northern U.S. and Canada. In 1995, the Canadian government adopted a law requiring the use of *P. supina* for new construction of federally-funded parks and public turf areas. The first area sodded under this decree was the 1.5 acre Festival Pavilion in Ottawa during August 1995. Due to the need for a wear-tolerant turfgrass with high recuperative potential and an ability to withstand cold weather for use on athletic fields in the northern U.S., we have committed a large part of our athletic field research to determining the proper management techniques, limitations, and uses of *P. supina.*

P. supina Sod Establishment on Sand Based Athletic Fields

In 1994 *P. supina* sod was tested against several sod types (washed sod, mineral grown sod, and sod grown over plastic sheeting) and two grass species (Kentucky bluegrass and perennial ryegrass) for rapid establishment on sand based athletic fields. First-year results indicated *P. supina* had potential to outperform both Kentucky bluegrass (KBG) and perennial ryegrass (PRG) under simulated sports traffic, particularly during late autumn when KBG and PRG are dormant but *P. supina* may still grow. Turf density counts, collected in late 1994 and not presented in the 1995 MTF report, show the potential for *P. supina* to maintain a dense turf late into a football season (Table 1). This study will be repeated in 1996 using new sod, providing two seasons worth of data to allow publication of the results in scientific publications.

The initial results were presented at the American Society of Agronomy meetings in St. Louis, MO, in November 1995 and were included in the 1995 MTF report.

Table 1. The Effect of Sod Type on Turf Density on a Sand-based Athletic Field System Subjected to Simulated Football Traffic (20 November, 1994)

Sod treatment	Plant density (plants per 12.5 in^2) †
KBG/PRG mix on plastic	18.8
PRG blend on plastic	18.2
KBG blend on plastic	17.4
Washed KBG blend	11.1
KBG blend on mineral soil	10.2
Poa supina on plastic	20.2
LSD at p = 0.05	4.1

† Two cores, 4" diam, were collected from each plot and the number of plants in each core averaged to provide plant density data.

Poa supina **for Indoor Athletic Fields and Other High Traffic, Reduced Light Situations**

Based on Germany breeders observations that *P. supina* possesses better shade tolerance than fine fescue, combined with the need to develop a turfgrass system for athletic fields in domed stadia, studies began in autumn 1994 to compare *P. supina* against Kentucky bluegrass inside the Indoor Turfgrass Research Facility (ITRF) at Michigan State University. Plots were established outdoors and moved into the ITRF in early December 1994. Plots were maintained in the ambient light of the ITRF (about 5% of full summer sunlight) for five months. Trinexapac-ethyl was applied to half the plots to evaluate the effect of this PGR on *P. supina* under reduced light. Simulated soccer traffic was applied by a person jogging on the turf a total of 50 passes one day each week while wearing soccer cleats. Plots were maintained at 1.25" height. Plots were irrigated as needed to prevent moisture stress, and 0.5 lb N/1000 ft^2 was applied biweekly using 18-3-18 fertilizer. Color and quality ratings were collected biweekly, shear values were collected monthly, and chlorophyll levels were analyzed at the end of the experiment. Results showed that while KBG had greater shear values (due to its rhizomatous growth habit) and darker color ratings plus higher chlorophyll levels, these differences were minimized when *P. supina* was treated with trinexapac-ethyl (Fig. 1). In addition, turf density of *P. supina* increased when treated with trinexapac-ethyl while density of KBG was not affected (Table 2). This study is being repeated in 1995-96 to provide sufficient data for publication in a scientific journal.

While *P.* supina marginally outperformed KBG in the 1994-95 study, neither grass species provided acceptable turf under simulated athletic traffic for more than about 40 days under the light level studied. Consequently, the study is also being conducted in 1995-1996 at about 13% full summer sunlight in an attempt to establish a minimum light energy requirement for *P. supina* subjected to simulated sports traffic.

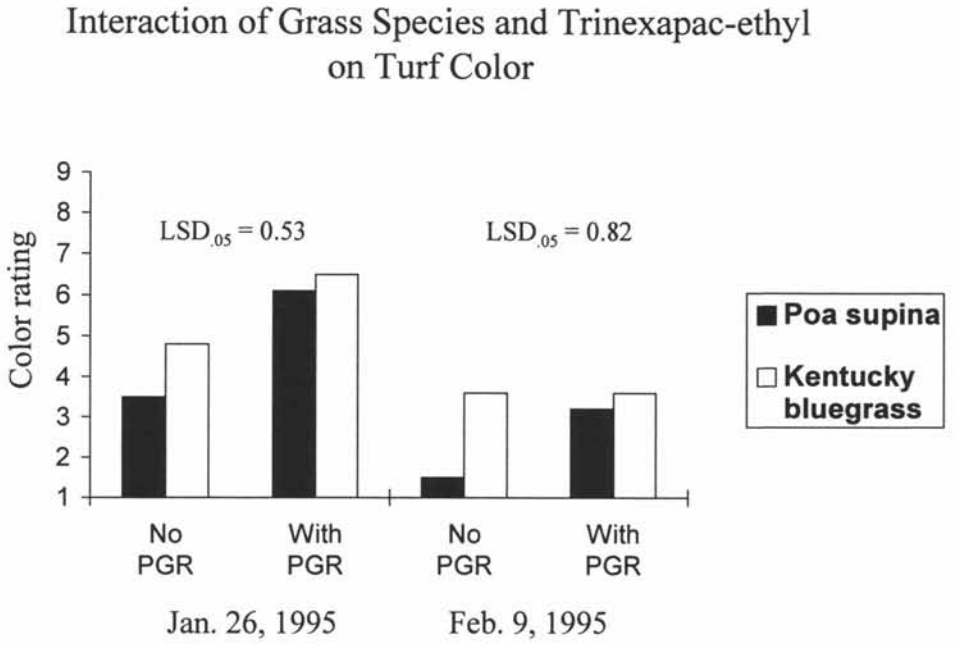

Figure 1. Interaction of grass species and trinexapac-ethyl on turf color under reduced light conditions in the ITRF.

Table 2. Interaction of grass species and trinexapac-ethyl (TE) on turf density under reduced light conditions.

	Date (1995)		
Treatment	1/6	1/26	4/6
Poa supina, no TE	7.0[†]	3.4	1.6
Poa supina, with TE	8.5	6.8	2.8
Kentucky bluegrass, no TE	7.7	5.5	1.5
Kentucky bluegrass, with TE	7.5	5.4	1.5
LSD	1.4**	2.1**	1.1*

[†] Density is turf cover, based on 1-9 scale: 1 = bare ground, 9 = dense turf
*,** denote p = 0.05, p = 0.01 levels of significance, respectively.

P. supina Mowing and Fertility Practices

In June 1995 a 4000 ft^2 area was seeded with 'Supra' *P. supina*. The site has a sandy loam soil and automatic irrigation. Beginning in spring 1996, this site will be used for the next several years to evaluate *P. supina* response to various mowing heights, fertilizers, and traffic.

Competition Study with *P. supina* and Kentucky bluegrass

Due to the high seed cost of *P. supina* ($25 per lb), a 3600 ft^2 area was seeded with mixtures containing varying percentages of 'Supra' *P. supina* (0,5,10,25,50, and 100%) and 'Touchdown' Kentucky bluegrass (100, 95,90,75,50, and 0%). The objective of the study is to determine the appropriate percentage of *P. supina* to mix with Kentucky bluegrass for athletic fields to maintain a dense turf stand. The site is composed of a synthetic sand:peat (80:20) mixture and has automatic irrigation. The area will be ready for traffic treatments and evaluations beginning spring 1996.

Diseases of *P. supina*

The various turf stands of *P. supina* at the Hancock Turfgrass Research Center are being monitored throughout the year to identify the diseases to which *P. supina* is susceptible. During the winter and early spring of 1994, pink snow mold disease affected about 80% of the *P. supina* on the sand based research field plot area. Between mid-April and late April, however, prior to when the other cool-season grasses began growing, the *P. supina* had grown out of the disease without any fungicide being applied. Koch's postulates were performed on the *Microdochium* fungus isolated from the affected areas, satisfying the requirements for publishment of a paper on the susceptibility of *P. supina* to pink snow mold in the scientific journal Plant Disease (breeders and turf managers who have worked with *P. supina* have claimed it is resistant to snow mold). Prior to submitting the report for publication, however, the plots will be observed for pink snow mold development for a second year, and Koch's postulates will be reconfirmed. Pink snow mold was also observed on the *P. supina* in the ITRF during 1994-95.

During the mid-summer of 1994, small levels of dollar spot (*Lanzia/Moellerodiscus* spp.) symptoms were observed on the *P. supina* on the same plots. The damage was confined to the upper halves of the leaves and the turf soon outgrew the disease.