



Supina Bluegrass (*Poa supina* Shrad.): *A not so new turf species*

By Dr. John C. Stier,
Department of Horticulture
University of Wisconsin-Madison

Each year the phone calls have increased from people wanting to know more about a new grass of which they have heard, *Poa supina*. Although not really a new turfgrass, its use in the U.S. is new compared to bentgrass, Kentucky bluegrass, and perennial ryegrass. This paper will describe some of the history, research, and uses of *P. supina*.

Where did *Poa supina* come from and how did it get here?

P. supina (Schrad) is native to the sub-alpine region of the European Alps. It was first described in the 1930's and has been bred as a turfgrass in Germany since the 1960's (Bernier, 1980). In Germany, its common name is Lägerrispe, which, roughly translated, means "where the cows lay". It acquired this name because it was frequently found on cattle paths, often times in the woods, where no other grass would grow due to the combination of shade

and traffic. In Germany and Austria the grass is used in many turf areas: golf courses, athletic fields, and occasionally lawns (Fig. A). In 1974 it was sprigged into Munich Stadium (home of the 1972 Olympics for you sports buffs). In England it is starting to be used on golf courses, primarily for tees and greens. I am uncertain of its use in the rest of Europe, though I have been told it is popular in Scandinavia.

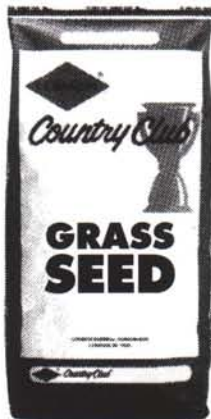
The common name in the U.S. is Supina bluegrass. Supina bluegrass has been here since at least the late 1980's. Worldwide production and distribution is controlled by one large German company, Saatzucht Steinach, which globally distributes to a relative few companies. Purportedly, O.M. Scotts once had the rights to the grass, although the current licensee in North America is FineLawn Research Inc. FineLawn, in turn, distributes to Oseco Corporation in Canada. Both companies distribute to seed dealers within their respective countries.

Unlike most turfgrasses, *P. supina* requires several mowings prior to winter to increase the number of reproductive tillers. During the early to mid 1990's seed production was attempted in the U.S. but with poor results: many seed lots became contaminated with *Poa annua* due to poor quality control and improper growing procedures. Consequently, seed obtained from about 1993 to 1995 could not be relied upon, and so now all seed is imported from Germany. Seed importation into North America has increased tremendously the past several years. In 1996 about one metric ton was imported, in 1997, two metric tons, and so far in 1998 three metric tons have been imported. Several seed distributors in Wisconsin can obtain seed from FineLawn.

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Figure A.



Figure B.

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Description and Environmental requirements

Supina bluegrass is a vigorously stoloniferous, perennial grass species most closely related to Kentucky bluegrass and other *Poa* species. The leaves are medium textured and have a light green color, sometimes called "candy-apple green". Although dark green Supina plants exist in nature, European grass breeders prefer light green turfgrasses as opposed to dark green turfgrasses. Sometimes mistaken for annual bluegrass because of the light green color, several features set Supina apart: 1) it's highly stoloniferous, 2) has short internodes on the stolons, 3) the seedheads are purple and compact, 4) seedheads are produced once each year for two to three weeks, about two weeks earlier in the spring than annual bluegrass, and 5) the short, truncate, membranous ligules are similar to Kentucky bluegrass, not annual bluegrass. Only on the flowering culm (seed stalk) are the ligules long, reminiscent of annual bluegrass.

Supina bluegrass grows best in moist, often shaded conditions. It can persist and grow quite well in full sun as long as sufficient moisture is available. Heavy clay soils are suitable for Supina bluegrass; sand based root zones require more frequent irrigation and fertilization for best results. Supina bluegrass is not very drought tolerant. Rooting depth is significantly deeper than annual bluegrass but not as deep as creeping bentgrass. Temperatures in the upper midwest appear to be quite suitable, if not ideal, for Supina bluegrass: its southern limit of adaptation is most likely north of the transition zone due to the consistently high temperatures in the transition zone and south.

Research

Although used extensively in Europe for many years, relatively little research has been published on Supina bluegrass, probably largely due to lack of industry support in the form of research funds and facilities. Some notable exceptions include a paper by Steiner and Goeritz (1991) which described a process using electrophoresis to examine the proteins of seed, allowing the quantification of annual bluegrass seed contamination in Supina bluegrass seed lots. Other papers from Europe describe Supina bluegrass in a more general sense and are concerned with the breeding (Berner, 1980) and use of Supina bluegrass on golf courses and athletic fields (Nonn, 1994; Pietsch, 1989).

In the U.S., Supina bluegrass has been researched for its potential to improve the germplasm base for perennial

types of annual bluegrass at the University of Minnesota. A significant amount of research on shade and traffic tolerance has been conducted at Michigan State University. Results from shade tests showed Supina bluegrass could withstand shade levels of about 95% while Kentucky bluegrass died at this level of shade (Fig. B). Further investigations revealed the Supina bluegrass had higher rates of photosynthesis in the shade than Kentucky bluegrass which probably contributed to its survival (Stier et al., 1997). Other tests showed low rates of plant growth regulators can significantly enhance the density of Supina bluegrass and deepen the color (Stier and Rogers, 1995).

Use and Management of Supina

Supina bluegrass performs well across a range of mowing heights though it tends to become puffy and non-uniform at heights greater than two inches. The optimal height of cut appears to be between 0.5 and 1.5 inches. These heights make Supina bluegrass quite suitable for tees, fairways, and upper level athletic fields. One caution about Supina bluegrass: due to its stoloniferous spreading ability, it does have a chance to "move" in a turf area, particularly if stolons are spread across areas by aerators or runoff. In athletic fields this is generally unimportant if not desirable. In a golf course situation, the spreading ability could create problems of non-uniformity on golf courses if left unchecked, as can any stoloniferous grass, including creeping bentgrass. The stoloniferous growth habit, of

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course, is partly what confers the traffic tolerance to Supina bluegrass. In reality, its more recuperative ability than straight traffic tolerance. Some of the best uses for Supina bluegrass may be in high wear areas such as the ends of paved cart paths and foot paths. I have also seen it successfully used on collars of putting greens when bentgrass could not stand the wear from the mowers being turned. Generally Supina bluegrass won't invade a bentgrass green unless the area is in the shade.

Good fertility and consistent soil moisture are recommended for Supina bluegrass. Best results are obtained when at least 4 lb N per thousand square feet are applied annually. Low fertility and periods of drought inhibit its aggressiveness. High fertility, adequate soil moisture, and traffic have been shown to enhance the competitiveness of Supina bluegrass compared with Kentucky bluegrass. Casual observations by the author indicate Supina bluegrass can outcompete annual bluegrass even on a sand based root zone by decreasing fertility and irrigation regimes; similar observations have been published from England (Shildrick and Peel, 1985) and Germany (Pietsch, 1989).

An especially important attribute of Supina bluegrass is its apparent resistance and tolerance to many turfgrass diseases, allowing a possible reduction of fungicides. The species appears to be resistant to powdery mildew, rust, anthracnose, and leaf spot diseases. It can be susceptible to pink snow molds (i.e., *Microdochium* patch), though

there seems to be specific strains of pink snow molds to which it is resistant. We have yet to find gray snow mold affecting Supina. It is also susceptible to dollar spot disease, though this is largely correlated with low fertility. Regular traffic actually appears to reduce the incidence of dollar spot on Supina bluegrass, perhaps because traffic reduces the thatch.

Establishing Supina bluegrass can be performed by seeding, sodding, or sprigging. Although seeding rates have not been thoroughly researched, initial results indicate a rate of 1.25 pounds per thousand square feet is sufficient if seeding a monostand of the grass. Due to the high cost of seed, about \$25 per pound, many people elect to seed mixtures of Supina bluegrass. The percentage of Supina in a mix depends on how soon, if ever, a stand dominated by Supina bluegrass is desired, and by costs. Experience on soccer fields in Germany indicate as little as 5% Supina in a mix of 45% perennial ryegrass and 50% Kentucky bluegrass can result in a nearly 100% Supina stand in as little as three years under moderate traffic (5 plus games per week).

Sod growers are beginning to add Supina bluegrass to Kentucky bluegrass sod mixtures grown for shaded sites. A few, usually large, sod growers produce pure stands of Supina bluegrass sod. Although the sod is not cheap, it is being used primarily for athletic fields. In Ottawa, Canada, the government mandated that all government-funded sodding projects use Supina bluegrass after an installation of Supina bluegrass sod held up to heavy pedestrian traffic

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at the Festival Pavilion in downtown Ottawa after other sod mixes had failed. Every few weeks I hear of golf courses, some in Wisconsin, using Supina bluegrass on troublesome shaded sites. While this may often be a workable solution, the limit of shade which Supina bluegrass can successfully tolerate is about 95% (compare that to Kentucky bluegrass which can't tolerate more than about 80% shade for more than one or two years, due in part to diseases).

Where do we go from here?

Because most recommendations for the use and management of Supina bluegrass are based on best guesses and research on related species, research is focusing on the specific requirements and reactions of Supina bluegrass for a multitude of environments. In British Columbia, researchers are using tissue culture techniques to improve potential new varieties of Supina bluegrass. Conventional breeding efforts continue in Germany. At Michigan State University, the focus is on use of Supina bluegrass for athletic fields. At the University of Wisconsin-Madison, the research is aimed for both golf courses and athletic fields. Specific projects will provide more definitive answers for seeding rates, both alone and in mixtures, a comparison of Supina bluegrass, creeping bentgrass, and Kentucky bluegrass for tees, documentation of the competitiveness of Supina bluegrass against annual bluegrass, and fertility requirements. This information will be useful in the near future for providing recommendations to superintendents interested in using Supina bluegrass for high traffic areas, shaded sites, or both.

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