

A new turfgrass species

Poa supina

This "parent" of annual bluegrass thrives on punishment, remaining thick and dense under heavy traffic.

By David Lundell, Fine Lawn Research Inc.

Poa supina is a grass species new to the turfgrass market. Taxonomists discovered it in the 1930s. But only during the last 30 years have breeders explored its potential for use as a turfgrass. During that period, a German plant breeder developed the cultivar Supranova from plant material he collected in the Alps.

P. supina shares morphological traits with other species in the bluegrass family (Poaceae). It is similar to annual and rough bluegrasses with its light-green to medium-green leaves. Like all bluegrasses, it has a prominent midrib that extends along a smooth leaf blade, which ends in a boat-shaped tip. Unlike most bluegrasses, *P. supina*'s growth habit is stoloniferous with aboveground runners and short, 0.5- to 2-inch internodes. Because it produces new lateral shoots and roots at every node, *P. supina* forms a dense turf relatively soon after establishment.

The vertical growth rate is slow, so you don't need to mow *P. supina* as often as other turfgrasses. Unmown, it tops out at 6 inches. Seedheads can extend another 4 to 6 inches above the leaf canopy. As a *P. supina* stand matures and thickens, seedhead production declines. By the third year after seeding, you should see few, if any, seedheads.

Breeders believe that *P. supina* and *P. infirma* are the "parents" of annual

bluegrass, which explains these species' similarities. Although you could possibly mistake *P. supina* for *P. annua*, several morphological features set them apart. For example, in



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the vegetative stage, *P. supina* has shorter ligules than *P. annua*. However, during seedhead formation, *P. supina* ligules become the same length as *P. annua*. In addition, *P. supina* flowers early in spring—earlier than other cool-season turfgrasses—and its seedheads are more upright than those of *P. annua*. Because they're upright, mowing cleanly cuts off seedheads.

P. supina and *P. annua* also vary in a number of "invisible" ways, which breeders use to separate the two species. For example, chromosome number for *P. supina* is $2N=14$ and for *P. annua* it is $2N=28$. However, *P. annua* sometimes also has $2N=14$ chromosomes.

Ohio State University researchers have used another technique—random amplified polymorphic DNA (RAPD)—to separate the two species. This test is similar to nucleic acid hybridization techniques for identifying disease pathogens. (See "The future of disease diagnosis" in the April 1993 *Grounds Maintenance*.) Lab personnel prepare plants for RAPD analysis by grinding plant samples to make a solution. Then they mix the solution with primers that copy certain DNA segments. After the segments have gone through the entire process, they line up as bands on a gel, exposing their DNA fingerprint. Every

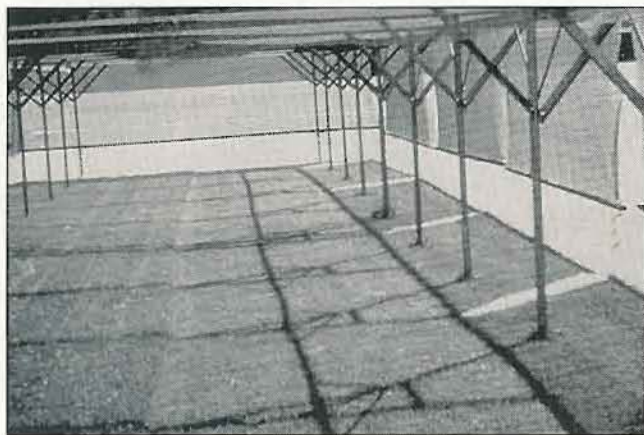
plant species has a unique DNA fingerprint.

Culture

There is still a lot to be learned about proper culture for *P. supina*. Researchers at Ohio State University and the University of Rhode Island as well as other universities are beginning to identify some of the cultural requirements of this species.

Currently, we recommend a mowing height of 1 to 1.25 inches in sunny areas and 2 inches in shaded areas. However, the grass seems to tolerate mowing heights from 0.5 to 2 inches.

We also recommend fertilizing on the same schedule as for Kentucky



In shade trials at Wolf-Greäte Test Gardens, Germany, *P. supina* forms a dense turf under varying levels of shade.

bluegrass. This grass responds well to frequent nitrogen applications. A late-season application improves color going into winter. Early-spring nitrogen applications help get it going the next season.

Used as a monostand, *P. supina* forms a dense turf. It also blends well with other cool-season species, such as Kentucky bluegrass, perennial ryegrass or the fine fescues. Because of its color, it works best with light green cultivars.

Tolerances

Drought tolerance is similar to that of Kentucky bluegrasses, meaning some selections go dormant during drought while others stay green.

P. supina is wear tolerant, providing a high-quality turf under heavy traffic, even on athletic fields. It recovers quickly from wear injury as well as resists heavy traffic and abuse. In fact, if a site doesn't get much traffic, *P. supina* will accumulate thatch, which you'll need to remove.

This species will dominate an athletic field blend. While the heavy traffic takes its toll on other species, *P. supina* remains thick and dense. The heavy punishment keeps thatch at bay. As the percentage of *P. supina* increases in athletic turf, you'll notice a difference in turf quality and feel. Athletes who have played on *P. supina* fields report better footing and traction and less leg fatigue.

P. supina survives other adverse conditions, including dense shade, compaction and excessive moisture. In shade trials in the United States and Canada and at the Wolf-Greäte Test Station in Betzdorf, Germany,

it is definitely adapted to the cool-season turfgrass zone. But the jury is still out on how well it does in the transition zone. Trials in Evanston, Ill., Beltsville, Md., and Washington, D.C., will help define the species' heat-tolerance range.

Establishment

Like other bluegrasses, *P. supina* is slow to establish from seed. But once it gets started, it quickly fills in an area. Seeded at the rate of 7 to 11 ounces per 1,000 square feet, it can cover the area within 8 to 10 weeks. Mixing *P. supina* with other species, especially perennial ryegrass, slows its establishment. It will establish faster in a new planting than when overseeded into existing turf. Be patient and make sure the area receives wear after initial establishment to ensure dominance in the stand.

Once it is established and as long as growing conditions are favorable, *P. supina* competes well with other grasses and weeds. In fact, this is one of the few species that can inhibit annual bluegrass germination and spread. Yet because of their color similarity, you won't notice a significant color difference as the *P. supina* overtakes the annual bluegrass.

Because of limited seed availability, use fairly low amounts of *P. supina* in seed mixtures. The percentage of *P. supina* in the seeding mix can vary depending on the site's use. For home lawns, the *P. supina* should make up 5 percent of the mix by weight, with Kentucky bluegrass, perennial ryegrass or fine fescue comprising the rest of the mix. For athletic fields or areas with heavy traffic and wear, use 10 percent or more *P. supina* in the mix. Mixes containing up to 20 percent *P. supina*

formed a better turf than other turfgrasses, even other shade-tolerant species. In harsh climates with prolonged below-freezing temperatures and ice cover, *P. supina* maintains a high-quality turf.

At this time, we're unsure how *P. supina* performs in hot climates. It is defi-

nitely adapted to the cool-season turfgrass zone. But the jury is still out on how well it does in the transition zone. Trials in Evanston, Ill., Beltsville, Md., and Washington, D.C., will help define the species' heat-tolerance range.

Pest resistance

Observations from several locations indicate *P. supina* resists snow mold. University of Minnesota researchers noted dollar spot resistance in their field studies. The researchers say the disease advanced across turf plots until it reached the *P. supina* turf. Then it stopped.

In summary, as with all new cultivars, there are still some questions concerning *P. supina*. In particular, we need to learn more about proper management practices, drought tolerance,

FOR MORE INFORMATION

"Characteristics, breeding methods and seed production of *P. supina* (Schröd.)"

By P. Berner.

Proceedings of the Third International Turfgrass Research Conference (1977).

"*P. supina* (Schröd.) and its value for sports and amenity turf"

By R. Pietsch.

Razen Turf Gazon (an international turf magazine for garden landscaping and sports fields) (1989).

"Origin of *P. annua*"

By T.G. Tutin.

Nature, 169:160 (1952).

extent of adaptability, disease and insect resistance, and its best uses. Even with these questions, this recent introduction to the United States provides another alternative for sites where conditions are not favorable for growth of most turf species. Problem athletic fields and other heavily trafficked areas will especially benefit from the addition of *P. supina*. **GM**

Photo credit: Author; T. Karl Danneberger, Ohio State University—Columbus.

David Lundell handles sales and technical service with Fine Lawn Research, Lake Oswego, Ore.