COOL-SEASON BLENDS AND MIXTURES FOR ATHLETIC FIELDS

BY **JOHN STIER, PH.D.**

The best turfs have good environmental stress tolerance and resist weeds and pests while providing a high quality playing surface. The major species useful in cool-season areas are Kentucky bluegrass, perennial ryegrass, and tall fescue. Supina bluegrass is a lesser-known species that can be particularly useful in areas where summer temperatures are usually less than 85 F and irrigation is available. Kentucky bluegrass is desirable because it has excellent cold tolerance, produces a high quality turf, provides good traction and is capable of recovering from traffic due to its rhizomatous growth habit. Perennial ryegrass is desirable because its rapid seed germination is useful for establishing new cover quickly between games and because it has good traffic tolerance. Tall fescue has excellent traffic tolerance and is relatively low maintenance. Both perennial ryegrass and tall fescue are bunch type grasses, which limits their recovery. Supina bluegrass has moderate traffic tolerance but excellent recovery and regrowth from stolons.

Two or more species used together is termed a **mixture**. An example is a Kentucky bluegrass-perennial ryegrass turf. **Blends** are produced when two or more varieties of the same species are used together. Sod producers typically blend at least 3 to 5 varieties of Kentucky bluegrass to produce a marketable sod. Many seed mixtures are actually a mixture of blends: it is common to have a seed mixture composed of two or more Kentucky bluegrass varieties plus two or more perennial ryegrass varieties. In most cases there will be at least 10 percent of a given variety in a seed blend or mixture to ensure a sufficient population of that variety in the resulting turf stand.

Mixtures and blends are used to produce a turf that will maintain acceptable quality under a variety of conditions. Individual species and varieties withstand certain environmental stresses, pests, or diseases better than others do. Since it is impossible to predict all possible stresses, mixtures and blends are planted with the idea that at any given time at least one variety will be thriving to provide an acceptable turf.

In some cases certain varieties or species may be used as "filler" in a seed mix to control costs. Varieties that produce the most seed in production fields often do not produce the best quality turf, but since seed is abundant it is also less expensive. Many of the highest quality turf varieties have low seed yields. Since seed production costs are similar regardless of seed yield, low-yielding varieties are more expensive. Dealers may combine seed from high-yielding varieties with seed from low yielding (and high cost) but high quality varieties to provide a reasonably priced mixture.

Good mixtures and blends don't happen by accident. The best mixtures and blends are based on information ranging from the site conditions to traits of the individual varieties. The best mixtures and blends are likely to be site-specific because local conditions vary. Soil characteristics, type of athletic traffic, and other factors help determine the best mixture or blend. Kentucky bluegrass/perennial ryegrass mixtures are usually the best mixtures for athletic fields in cool-season climates. Mixtures with 2-10 percent supina bluegrass may be desirable if irrigation is available. The high cost of supina bluegrass seed (about $30/lb.) usually prevents it from being seeded as a monostand (single species). Tall fescue/Kentucky bluegrass blends are occasionally used and may be suitable in low maintenance fields.

Individual variety traits are important to consider in a blend. Green color, leaf texture, and seasonal dormancy are important from a visual standpoint. For example, a light green Kentucky bluegrass variety should not be blended with a dark green variety. Varieties with different leaf textures (leaf widths) produce a non-uniform turf. Few tall fescue/Kentucky bluegrass mixtures provide a high quality turf because most tall fescue varieties have coarser leaf texture (wider leaves) than most Kentucky bluegrass varieties.

The vast number of new variety releases each year, plus the diversity in genetic background, means that most mixtures and blends are developed with a case-by-case approach. Two main categories of Kentucky bluegrass exist. Common types are generally those that have not been through extensive breeding programs and perform best in low maintenance situations with low quality expectations. Improved types are varieties developed by turfgrass breeders to have specific traits such as darker color or disease resistance.

Seed mixtures and blends are developed based on seed weight. For example, a 100-lb. bag of a 50/50 mixture of Kentucky bluegrass/perennial ryegrass has 50 percent Kentucky bluegrass and 50 percent perennial ryegrass seed by weight.

That won't be the composition of the turf stand, though. Even though there will be more than five times as many Kentucky bluegrass seeds per pound (due to their small size), perennial ryegrass will dominate the stand. Perennial ryegrass dominates because its rapid germination and establishment crowds out and prevents much of the Kentucky bluegrass seed from developing into plants. If a turf that has approximately 50 percent each of Kentucky bluegrass and perennial ryegrass is desired, the actual seed mix should contain at least 80-85 percent Kentucky bluegrass by weight. ST

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