Annual bluegrass and rough bluegrass in sportsturf

BY **ZAC REICHER**

Annual bluegrass (Poa annua) and rough bluegrass (Poa trivialis) are common on golf courses, but they are now becoming a problem on cool-season athletic turf. Both of these grasses are considered weeds because they are lighter colored than Kentucky bluegrass or perennial ryegrass. Plus the weeds are highly susceptible to diseases, and thin and die out during the heat of summer. More importantly, both of these grasses are very shallow rooted and quickly tear up with athletic play. Control of Poa annua and Poa trivialis in sports turf is difficult, and relies on both cultural and chemical control. However, control might not be economically feasible or practical, and it might be better to attempt to manage these weeds to keep them alive during the summer.

Poa annua is often an apple green and forms seedheads almost throughout the year.

Which one do I have?

Poa annua is especially noticeable in May and June because of its prolific seedhead production. Poa trivialis, on the other hand, rarely produces a seedhead when mowed. Poa annua tends to be a lighter, more of an apple green. Poa trivialis is a darker, shiny green (like the gloss when you spill gasoline on turf). It's difficult to tell these grasses apart under a magnifying glass as they both have boat-shaped leaf tips and folded vernation, but Poa annua's ligule is much taller than that on Poa trivialis. Also Poa trivialis produces many stolons whereas Poa annua has few if any stolons.

Poa annua is a winter annual that germinates in the late summer/early fall once soil temperatures fall below 70 degrees. Seedlings mature in the fall, overwinter in a vegetative state, and produce seed in late spring and early summer. Annual bluegrass is a prolific seed producer with each plant capable of producing more than 360 viable seeds. Annual bluegrass produces seed over several months and at any mowing height. Poa annua will out-compete all other turf species during late fall and early spring. Poa often dies in late summer in the warmer climates, but can also succumb to winterkill in the north. There are also perennial types of Poa annua that will live throughout the year, primarily in northern parts of the country.

Cultural control of Poa annua in a cool-season turf is almost impossible because some practices required to keep the desired turf healthy will also favor Poa annua. Constant aerification and mowing as high as allowable are two ways to minimize Poa annua infestation. Aerifying during the summer months when Poa annua is not germinating will be most beneficial. Allowing the field to dry out and undergo the first stages of drought stress (bluish green color or footprints that don't spring back immediately) will help minimize Poa annua. However, almost year-round reseeding essential to maintain quality athletic fields requires light frequent irrigation, which also favors Poa annua. A fertilization program where most of the nitrogen is applied in the fall is a must on cool-season athletic fields, but this also favors Poa annua.

Chemical control of annual bluegrass can be attempted with either preemergence herbicides and/or with a postemergence herbicide called ethofumesate (Prograss). Three applications of ethofumesate applied four weeks apart between September and December are recommended per year. Or two applications in the fall followed by an April application can also work. Ethofumesate reduces cuticle formation on Poa annua, so it is most effective during open, windy winters that will desiccate the Poa. Because of this, ethofumesate may not have maximum effect in protected stadiums.

Most preemergence herbicides on the market can be used in Poa annua control programs, but this is restricted to spring-use only fields. The most effective method is to allow the field to go dormant from drought, followed by application of a preemergence herbicide. The drought will kill the annual bluegrass and the

Poa trivialis (left side of picture) is a darker green than Poa annua, and has a glossy texture compared to most other grasses.

preemergence herbicide will prevent it from germinating, but it will not prevent the desired turf from greening-up again. Application timing is important and herbicides must be applied before Poa annua germination (usually in August depending on your location). A second application may be needed in the late fall or early spring to control spring-germinating Poa annua. This technique may take many years to reduce the Poa annua populations and it will not be effective on the perennial type of Poa annua.

There are a number of other postemergence herbicides currently under investigation for controlling Poa annua, but unfortunately none are currently available. Bispyribac-sodium (Valent's Velocity) appears to have the most potential for Poa annua control, but we do not currently understand how this herbicide may affect overseeding and other cultural practices required on sports turf. Growth regulators are sometimes considered for Poa annua control on golf courses, but these have not proven effective in athletic fields.

Poa trivialis biology

Poa trivialis is a perennial that spreads by stolons forming light green patches in the turf. It is best adapted to shady, moist, or overwatered sites. In the heat of late summer, Poa trivialis thins and goes dormant resulting in brown patches of turf. When cool temperatures return in September, Poa trivialis regrows from crowns and stolons. Two theories persist about how Poa trivialis is introduced to a turf stand. Some believe that Poa trivialis grows naturally over most of the world and Poa trivialis seeds or stolons can germinate after lying dormant for many years, thus contaminating a turf stand. Most experts now believe that it is introduced as a contaminant in turf seed, with its occurrence increasing with the popularity of Poa trivialis for overseeding Bermudagrass greens and fairways. Seed producers have since self-imposed Poa trivialis growing and handling restrictions to help prevent this.

There are no good cultural methods to minimize Poa trivialis, other than by limiting its introduction when overseeding. Independent testing of 50 to 100 grams per seed lot is necessary to identify contamination of Poa trivialis in a lot. Since most states require testing only one gram of seed per lot, you will have to locate an independent testing lab to test your seed and be prepared to pay $200 or more to have the lot tested (a small cost compared to Poa trivialis contamination).

Currently, nonselective control with glyphosate followed by reseeding may offer the best chance for control of Poa trivialis. Since Poa trivialis spreads by stolons, multiple applications are required for maximum control. This should be done immediately after the season ends, on fields used only during part of the year, but this is impractical on most athletic fields. Sulfosufuron is a herbicide currently being developed by Monsanto with the hopes of controlling Poa trivialis selectively. We have worked with this product at Purdue and multiple applications during the summer holds tremendous potential for Poa trivialis control, while being safe on Kentucky bluegrass and perennial ryegrass. We have also found that reseeding can occur within three or four weeks after application. However, there is still more work to be done to fully understand how this product will work in athletic fields and it will likely be commercially available in 2005 or 2006. The previously mentioned bispyribac-sodium may also selectively control Poa trivialis, but data are still preliminary.

In many cases, control of these weeds is not practical outside of completely renovating a field. Thus, understanding how to maintain these grasses is important to maximize their performance. Light, frequent irrigation will benefit these relatively shallow rooted grasses. Reduce all unnecessary traffic on these grasses whenever possible. Preventative fungicide applications for dollar spot, pythium, anthracnose, brown patch, and summer patch will also help extend the life of these grasses. Heavy fall fertilization will benefit these grasses much like it benefits our desirable cool-season grasses. Finally, regular overseeding with Kentucky bluegrass and perennial ryegrass prior to and during the playing season will help maintain turf cover and footing in case the Poa annua or Poa trivialis thins or divots. **ST**

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Poa trivialis can dominate a football field over time, spreading naturally by stolons and mechanically through aerification spreading stolons.