Research *You Can Use*

Managing *Poa annua* Seedheads on Putting Greens

Successful seedhead inhibition can improve spring playability of *Poa annua* putting greens.

BY JEFFREY A. BORGER

This overview of the *Poa annua* seedhead plots at the Penn State University Blue Course clearly shows the impact of effective seedhead inhibition. The "brown" grass is actually just large numbers of emerged *Poa annua* seedheads.

Poa annua, commonly referred to as annual bluegrass, is widely adapted to putting greens in areas where cool-season grasses are maintained. Under optimum conditions, *Poa annua* provides a level of putting green quality that is second to none. Unfortunately, several maintenance challenges are prevalent with *Poa annua*. Winter injury, susceptibility to diseases such as anthracnose, and poor performance under hot, humid conditions increase the challenge of maintaining putting green performance throughout the year. Spring seedhead production reduces putting quality at a time when weather conditions allow for more aggressive *Poa annua* maintenance.

Fortunately, chemical options are available to reduce the impact of seedhead production on playing quality. This article provides a summary of many years of seedhead inhibition research and is applicable in areas where a distinct winter/spring transition occurs with a true flush of seedhead production in April and May. In areas such as California, where mild temperatures persist throughout the year, seedhead inhibition will be achieved with different programs.

Over the years, different formulations of Embark (mefluidide, now Embark Turf and Ornamental) have been the standard for inhibiting *Poa annua* seedhead production during the spring with late March or April applications. In recent years, the combination of Primo MAXX (trinexapac-ethyl) and Proxy (ethephon) also has been used to inhibit seedhead production with good results. Both Embark T/O and the Primo MAXX/Proxy combination can provide effective *Poa annua* seedhead inhibition leading to better spring putting quality. Both options provide advantages and disadvantages in terms of turf discoloration, especially when frost occurs after application.

Proper application timing is extremely critical. The goal is to control as many seedheads as possible with Plant Growth Regulators (PGRs). Research suggests that with proper timing, seedhead inhibition of *Poa annua* can routinely approach 90 percent, greatly enhancing

spring putting quality. Common sense suggests that *Poa annua* could have a higher quality throughout the growing season if less energy is spent by the plant to produce seedheads, but research results have been variable.

Several different methods have been used to determine proper application timing. Proper timing is often stated to be when the seedhead is "in the boot" of the plant. However, this often is difficult for superintendents to determine in the field. Growing degree models also have been used with varying levels of success, depending upon spring weather. Another rule of thumb is that, generally, higher cut turf can be monitored for seedhead emergence to predict the ensuing emergence of seedheads on greens. When seedhead emergence is noted in fairway turf, emergence on putting greens will not be far behind. This is a general guideline, and daily monitoring of greens is necessary to determine "boot stage" of development. Start searching on southern exposures.

Ultimately, determining the proper application timing for seedhead inhibition is more art than science on a golf course. On a research plot, you are dealing with a single location, with consistent conditions, allowing for a very exact application timing to be employed. On a golf course, several different microclimates exist that confound application timing. Again, visual observation of *Poa annua* on a daily basis is critical.

Superintendents must determine when the greatest percentage of *Poa annua* is in the "boot stage" on greens, realizing that other growing stages also will be present. Once the seedhead has emerged, these PGRs will not suppress the seedheads of that particular plant. Conversely, very early applications of these PGRs will suppress seedheads, but cold weather conditions and the residual effects of the materials used must be considered. Many times there can be a warming of temperatures and plant growth followed by cold temperatures and even frost in the Northeast. If conditions are cold enough, *Poa annua* can become off-color, and if a PGR has been applied reducing growth, this off-color can be extended. Normally, this is only an aesthetic effect and not detrimental to the turfgrass community. Many areas of the Northeast can apply one application of Embark T/O and suppress seedheads during the peak spring season. If an early application of Embark is employed, a second application may be needed to achieve the same level of suppression.

Embark T/O has a long history of *Poa annua* seedhead suppression on putting greens. It is an effective material to suppress seedheads and overall plant growth. Embark T/O is generally applied to greens at 40 oz. of actual product per acre. When a second application is made, it is generally at a reduced rate. *Remember to always read and follow label directions before applying any pesticide!* When Embark is used alone, there can be some turfgrass discoloration that is transient in nature.

Superintendents who want less discoloration can choose to tank mix Embark T/O and Ferromec, which is a nitrogen and iron source that reduces this slight discoloration. There may also be a reduction in the amount of seedhead suppression with this tank mix. For example, one could see 90% seedhead suppression with Embark T/O alone. On the same research site, when Embark T/O is tank mixed with Ferromec, one might see suppression at 75% or 80%. In this example, both applications provide suppression, but one must balance whether appearance or playability is more important in a given situation.

In recent years, the combination of Primo MAXX and Proxy has proven to suppress *Poa annua* seedheads on putting greens. Research has found that the overall level of seedhead suppression is lower than that of Embark T/O, but there is no phytotoxicity following applications. Application rates have varied, but a good standard is 5 oz. of Proxy *per 1,000 square feet* and 5 oz. of Primo MAXX *per acre.* The Primo MAXX and Proxy combination can suppress seedheads at the 60% level. In some cases, research has revealed suppression at 75%, but this is not repeatable from year to year. This combination makes a smooth transition to the commonplace applications of Primo MAXX employed during the remainder of the growing season. If the superintendent chooses to use this mixture, note that a second application should be incorporated to maximize seedhead suppression two or three weeks following the original application. Again, these products should be applied at or before the "boot stage" of development.

Today, the use of PGRs is commonplace on many areas of the golf course. The superintendent often is asked to provide higher-quality playing conditions. As a result, the suppression of *Poa annua* seedheads also has become a more routine practice.

Following are a few questions to stimulate ideas for the seedhead control planning process. How much and where is the *Poa annua* on the putting greens? Which products should be considered to achieve the desired outcome? What, if any, level of turfgrass phytotoxicity can be accepted? If the greens historically have few seedheads, can Primo MAXX and Proxy be a viable option for suppression? Once these questions are answered, a viable seedhead control program can be developed to improve spring playability on *Poa annua* or mixed *Poa annua*/creeping bentgrass putting greens. Just remember that spring weather patterns can have a dramatic impact on application timing and the ultimate results achieved.

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