New Chemical Weapons for Fighting Poa Annua in Bentgrass Polystands

by Dr. R. T. Kane, Turfgrass Advisor
Univ. of Illinois & CDGA

Use of new growth retardants and herbicides to reduce **Poa annua** competitiveness in bentgrass polystands is rapidly gaining momentum on Chicago-area fairways. Many superintendents are now including applications of the growth retardant paclobutrazole (Scott's TGR) in fairway **Poa** control programs. Many have also experimented with flurprimidol (Elanco's Cutless), and with the herbicide ethofumesate (Nor Am's Prograss).

Results so far have been highly variable, since unusual weather (heat, heavy rains) and poor growing conditions have injured treated **Poa annua** and other fairway grasses. Everyone should realize that these chemical products are still in early developmental stages, and many factors for their successful use have yet to be determined. For example, different application rates and timings will be used at area courses because of variations in growth response due to climatic differences, soil type and drainage differences, biotypes of grasses involved, shading, etc.

Gradual conversion of **Poa**/bent fairways and maintenance of high percentage bentgrass populations are the goals of fairway management programs which incorporate the use of retardants and/or herbicides. Generally, this means a 3 to 5 year program that must also include the use of other management strategies such as triplex mowing and clipping removal, regular intensive aerification, balanced fertility, reduced irrigation, and overseeding. Also, there should be a minimum of 50-60% bentgrass already present before beginning a gradual conversion program, otherwise extensive losses of **Poa annua** may make playing conditions unfavorable (=intolerable).

Growth Retardants

Although they differ in chemical structure, both TGR and Cutless have the same mode of action in plants. TGR is a triazole derivative similar in structure to the fungicides Bayleton and Banner, while Cutless is classed as a pyrimidinemethanol, along with the fungicide Rubigan. These products reduce leaf growth rates and affect other metabolic processes in plants by interfering with gibberellin synthesis. Gibberellins are plant growth hormones that influence cell elongation and shoot growth. Root growth appears to be less affected by these gibberellin inhibitors.

Cutless and TGR may prove useful in bentgrass conversions, since **Poa annua** is much more sensitive to their growth reducing effects. However, timing of application is important to maximize these effects and to promote bentgrass dominance. Generally, early spring and early autumn treatments are recommended, when soil temperatures are in the 55 - 75°F range and plants are under low environmental stress. Late spring applications should be avoided, since early hot spells (as in '87) may result in excessive injury to treated turf. Also, late fall applications should be avoided since little bentgrass encroachment will occur under cool temperatures and shorter day lengths.

Yellowing and stunting are the responses most often observed on **Poa annua**, with treatment effects lasting up to 6 weeks. The length of the inhibition period may vary depending on application rate, weather, and other factors. Also, **Poa** seed heads can be suppressed (but not eliminated) by TGR and Cutless,

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with appropriate application timing. Yellowing of **Poa** can be offset in some cases by iron applications, but after all, yellowing and stunting are expressions of the desired plant growth retardation. Lower application rates should be tested when yellowing or stunting of **Poa** is too severe.

For the most part, mature bentgrasses are unaffected by TGR and Cutless, although some stunting or yellowing has been reported. However, bentgrass seed germination and seedling establishment are greatly reduced by these products. If overseeding with bentgrass is included as part of the program, timing of growth retardant applications and overseeding becomes critical. For TGR, 6 weeks before or 2 weeks following the fall application is the recommended timing for overseeding with bentgrass. TGR has a short half-life in soil, so seeding 2 weeks after treatment may be the best route, since little or no possibility of phytotoxicity to the bent seedlings exist. I have no information on a seeding interval for Cutless, but this product does have a long residual in soil and is toxic to bent seedlings. Therefore, bentgrass overseeding may not be a viable alternative.

Use of growth retardants also influences the timing of other management practices, especially aerification and verticutting. These activities should be scheduled so that recovery is achieved before growth retardants take effect; for example, aerifier holes should be allowed to close somewhat before treatment with a growth retardant.

As mentioned previously, variability in response to applied growth retardants has raised concerns about usage rates, timing, and expectations as to turf quality post-treatment. Soil type, organic matter, thatch accumulation, and biotype of **Poa annua** can all contribute to variable responses, aside from inclement weather and incorrect application rates. Soil parameters are a special concern with TGR, since it is primarily root absorbed. Lower application rates of TGR are required on sandy, porous soils, while higher rates are in order on high organic matter soils or on thatchy turfs.

Also, the health and stress tolerance of the turf to be treated has to be considered. Treated turf has a reduced recuperative potential, so excessive wear can lead to thinning and loss of cover. Also, high temperature stresses that occur during the period of greatest growth regulation can cause outright death of **Poa annua**, as was observed in spring of '87. Finally, weak or shallow rooted bentgrass is also more sensitive to plant growth retardants and should not be treated.

Herbicides

At present, only two or three herbicides are recommended for **Poa annua** control on bentgrass fairways — primarily Betasan (bensulide) and Prograss. Betasan has only pre-emergence activity on **Poa annua**, and is therefore of limited utility in converting fairways to bentgrass. On the other hand, Prograss has both pre- and postemergence activity against **Poa**, and has good selectivity toward bent, rye and Kentucky bluegrasses. Prograss is currently registered for use on fairways, and is being tested on putting greens.

Prograss applications are recommended for late summer and into fall, with multiple applications at low rates (3/4 lb. per acre) suggested. Prograss is absorbed by both foliage and roots of **Poa annua** and is active in soil for up to 6 weeks. Symptoms of Prograss toxicity on **Poa** include yellowing, thinning, and

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eventual death of plants. Sometimes death of plants is not noted until spring greenup following applications the previous fall.

Mature Kentucky bluegrass and bentgrass turfs are tolerant of Prograss treatments, but only the ryegrasses are tolerant in all stages of plant development, including seedlings. Therefore, only rye overseeding can be used just prior to, or following Prograss applications. Fairways overseeded with bentgrass should not receive Prograss applications until 40 to 45 days after seedling emergence.

Be advised that under certain conditions, Prograss can totally eradicate **Poa annua** in a short period of time. If treated areas have relatively high **Poa** populations — especially in distinct patches — bare soil areas can develop. Perennial ryegrasses may prove useful as a cover or transitional turf for such areas until bentgrass becomes established. If use of perennial rye as a transitional grass is frowned upon (as it often is by Chicago superintendents), fairways with high percentage **Poa annua** should not be treated.

Anticipate Unsightly Leaf Diseases This Spring

by James A. Fizzell
Sr. Extension Adviser, Horticulture

We expect many plants to be looking poorly this spring because of foliage problems. The cool wet weather is favorable for development of fungus diseases that will damage or even kill the leaves. While nearly all plants are susceptible to an assortment of leaf spot diseases most of these fungi seldom do much damage and are usually ignored.

However, there are three diseases which can be expected to be widespread again this year doing serious damage to trees. These are apple scab, cedar apple rust, and sycamore anthracnose.

APPLE SCAB is a fungus disease infecting leaves as they open. It develops as olive colored spots which turn black as the leaf drops. You may recall that many crabapples had no leaves most of last spring and again last fall when the weather was cold and wet. Fruits are also affected making them unsightly. Once infected, a leaf cannot be cured, so prevention is important. One of the better spray materials for scab is benomyl. It should be applied to all the new leaves every seven to ten days as long as wet weather continues.

Closely related fungi cause pear sooty blotch and several other leaf spots.

CEDAR APPLE RUST is a very interesting disease. At this time of the year it appears as bright orange or yellow jelly-like masses on junipers. Many times people think their juniper is in bloom. These masses are in reality one stage of a fungus disease that alternately affects junipers and either apple, crabapple or hawthorns. Hawthorns have been severely affected by this disease in the last few years.

The gelatinous masses on the juniper dry up and the spores they contain are blown to developing leaves on the alternate host, i.e. the apples, hawthorns, etc. In mid-summer, spores

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From the desk of a Greenchairman

by Jim Anderson
Sunset Ridge C.C.

Thirty years ago, the course I played on was absolutely state-of-the-art in terms of maintenance and was held up as a shining example of what was great about Chicagoland golf courses. I still play that same golf course and if you transplanted those conditions of thirty years ago to our course today, you would have a membership revolt. The curious thing about this fact is that most of the members don't know it. To them, the golf course has always been the same. Fairways have always been lush, lined by mature trees providing wonderful lines of sight, to lightning fast greens, which hold even that two iron that never got more than three feet off the ground. "By the way, when was it that all the Elms died and we planted these mature Maples, Lindens, Locusts, Pin-Oaks, etc.?"

How does it happen that a golf course can be transformed literally before the eyes of the people that play it, with no upheaval and no major watershed event to demand such change? Therein lies the golf course superintendent's art, because these things don't just happen; they are planned, committed to, sold to the membership, and executed. It involves risk taking and strength of conviction, but most of all it takes expertise. To me, it's what makes any job challenging and, given the vagaries of golf course membership, it's what makes the golf course superintendent's job particularly difficult.

Having been Chairman of my club's Grounds and Green Committee for three years, I have become vitally interested in both the process of change on a golf course and also what appears to be the role the green superintendent must play in that process to insure good results. It's perhaps easy to sit back and take the attitude that it's the members' course and that your role is simply to implement at the highest level, their wishes. I think that philosophy fails on several levels, not the least of which has to do with job fulfillment. Given a few years in observation of the process, it seems to me that there are a few things a green superintendent has to come to grips with to do his job effectively.

1. There has to be recognition of the fact that you are the expert and that it is through your management that what is best for the golf course takes place. It is untenable to allow a succession of green chairmen's pet projects make a shambles of the golf course.

2. As a corollary to the above, you must have a willingness to step into the fray and make the necessary decision, regardless of the apparent tone of the membership.

3. The job takes an endless amount of management ability. Given that fact, any time you find yourself with a shovel or a rake in hand, you are probably not being your most productive.

4. Finally, change is inevitable, If a golf course is not moving forward, it is moving backward. Change always means more work and more planning, but it is a constant part of a good golf course and it has to be embraced as a big part of the job.

Nothing too startling in that group of thoughts, but they are a result of my observation of how the process best works. At Sunset Ridge Country Club, we are blessed with having had a long-range Grounds and Green Committee for about forty years. It is an experienced group and a competent group. It's

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