

## Poa Annua Control<sub>1</sub>

Dr. Roy L. Goss<sub>2</sub>

There are no presently recognized cultivars of *Poa annua* (annual bluegrass), although two distinctly different biotypes invade desirable turfgrasses. *Poa annua* var. *annua* is an upright growth annual type and is more adversely affected by stresses and control problems than *P. annua* var. *reptans*, a prostrate, weakly stoloniferous perennial. A large number of genetic variants with widely differing morphological characteristics can be found in both types. Plants can vary in color, texture and numbers of seedheads. Perhaps the seeding characteristics are the most important aspect of this weed.

Spring flushes of seedheads are unsightly in lawns and other turfgrasses and can severely affect playability of golf putting greens. The Masters a few years ago was a classic example. Prolific seeding types can produce viable seed any time during the growing season. Probably the most disastrous time sequence is the early invasion in bentgrass putting greens with coarse *annua* types, leaving the green blotchy and bumpy. Many years of natural selection and adaptation of annual bluegrass on putting greens may eventually result in domination of the finer textured types with fewer seedheads, although mixtures of many strains will always be present. Until the perfect annual bluegrass is bred or developed, some of us should continue to research means for eliminating the weeds or reducing the populations to manageable levels.

### Cultural Programs for Annual Bluegrass Reduction

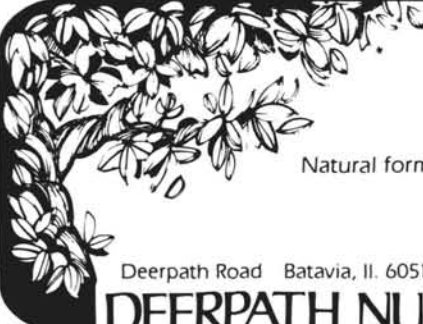
**Aerifying and Verticutting.** These programs should be practiced at times when environmental conditions are not suitable for annual bluegrass germination such as mid-spring, summer and autumn. Try to avoid August and September mechanical programs.

**Control Mowing Heights.** In general, the higher the mowing heights within allowable limits, the greater the vigor of desirable cultivars. Close mowing induces an additional stress factor and can result in thinning and poor vigor which will allow annual bluegrass a better chance to establish. Kentucky bluegrasses, fine fescues and possibly turftype perennial ryegrasses cut shorter than  $\frac{3}{4}$  inch are more prone to annual bluegrass encroachment than when mowing heights are higher. Putting greens mowed closer than  $\frac{3}{16}$  inch may lose vigor and density and can be dominated by annual bluegrass as well as a series of other problems.

**Distribution of Wear and Traffic Control.** This is not usually a severe problem on most parks, golf course fairways and lawns, but can become a serious factor on sportsfields and golf course putting greens. Both of these factors can result in loss of density and competitive vigor and will give annual bluegrass a better chance to establish.

**Controlled Irrigation.** I strongly support the use of automatic irrigation systems on large turfgrass areas, but when mismanaged they can become the best friend of annual bluegrass. Annual bluegrass has low tolerance to moisture stress; therefore, the drier we can maintain turfgrass surfaces through deep and infrequent irrigation, the better our chances of preventing annual bluegrass encroachment.

There are a number of other factors of management that will favor desirable cultivars over annual bluegrass such as regular overseeding with desirable grasses and judicious use of sand topdressing programs. (cont'd. page 20)



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("Poa Annuu" Control cont'd.)

### Nutritional Programs for Annual Bluegrass Control

Proper balance and intensity of fertilization programs can significantly affect annual bluegrass populations. Excessive rates of nitrogen and phosphorus will give the competitive edge to annual bluegrass. This is especially true when the added factor of overwatering is also practiced. Soil potassium levels should be maintained in the high range since it is well-established that turfgrasses are more vigorous and will withstand stresses of heat, cold, disease and wear much better than when levels are low.

Research at Washington State University has demonstrated that sulfur applied at rates higher than that required for nutritional purposes significantly reduced annual bluegrass over a number of years. Sulfur was particularly effective in reducing populations of annual bluegrass when applied at levels of 4 lb. per 1000 ft<sup>2</sup> per year with moderate levels of nitrogen, high levels of potassium, and very low levels of phosphorus. This sulfur level was selected due to prevailing acid soil conditions, and areas with soils with pH values over 7.0 may increase application rates considerably above this value.

### Selective Pre and Postemergence Control

Efficacy of preemergence herbicides for the control of annual bluegrass has been documented for many years. Materials such as bensulide (Betasan, Presan and Prefar), DCPA (Dacthal), and benefin (Balan) are all effective. Bensulide has consistently inhibited germination of annual bluegrass seeds and is well adapted for putting green use on golf courses as well as other turfgrasses. DCPA and benefin, although not used frequently on bentgrass putting greens, have been very effective on bluegrasses and ryegrasses. Tests conducted at Washington State University over a five-year period with bensulide resulted in annual bluegrass reductions from a level of 40% down to less than 1% over this period of time. A single full rate application of any of these preemergence materials will not provide year-long protection. Depending upon the length of growing season, additional but reduced rates of application may be required. In our experience, we applied an additional three applications of 3 lb. active ingredient per acre at three month intervals as well as the annual full rate application in August of each year. When overseeding is required, preemergence herbicides should not be used until new seedlings are well established.

**Endothal Programs.** The 19.2% formulation of the disodium salt of endothal has given excellent selective postemergence control of annual bluegrass in the Pacific Northwest. Rates of application for golf course putting greens should be 1 lb. active ingredient per acre or less (approximately 2 liquid ounces per 1000 ft.<sup>2</sup>), while rates of 2 to 2-1/2 lb. active ingredient per acre can be used on grasses mowed taller such as Kentucky bluegrasses and turftype perennial ryegrasses.

Endothal should be applied after the last spring frost and before the onset of fall frost. Periods of high temperature (over 85 degrees F) should be avoided due to increased activity with increasing temperature. For best results, we have found that nitrogen application of 1/2 to 1 lb. available N per 1000 ft.<sup>2</sup> one week prior to endothal application will significantly reduce phytotoxic effects to desirable turfgrasses. Endothal should not be applied to nitrogen-starved grasses.

Turfgrass areas not requiring reseeding are significantly benefitted by preemergence herbicides applied at the same time

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as the fertilizer to prevent re-establishment of annual bluegrass where old parent plants are killed by endotal. If reseeding is necessary following endotal application, this can be accomplished one week later.

Research is continuing at the present time to determine the effects of materials such as Rubigan and growth regulants on annual bluegrass control and seedhead suppression. No doubt, these and other materials in the future will increase our alternatives for annual bluegrass control.

#### Summary

Lawn maintenance companies, golf course superintendents and other turfgrass managers have a number of effective tools for the control of annual bluegrass today. There is no substitute for good management programs that include judicious use and timing of aerification, dethatching, balance and intensity of fertilizers, traffic control and distribution and proper management of irrigation water. Misuse of these management tools will significantly reduce the effectiveness of preemergence herbicides and selective postemergence applications of endotal. Golf course superintendents embarking on annual bluegrass control programs should test these materials on minor areas to gain confidence and timing in their respective areas and maintain open lines of communications with committees to maintain their support and cooperation.

<sup>1</sup>Presented at the 31st Annual Rocky Mountain Regional Turfgrass Conference, Fort Collins, CO, January 10-11, 1985.

<sup>2</sup>Extension Agronomist - Turfgrass Specialist, Western Washington Research and Extension Center (WSU), Puyallup, WA.

### CDGA News

by Samuel C. Stout, CDGA Director

There's now a doctor that makes house calls - not only because it's impossible to bring the patient to him, but because this doctor wants to see the patient's home environment.

In case you haven't already guessed, the "patient" here is your valuable, well-groomed and normally healthy golf course. The "doctor" will be a newly created Golf Course Turfgrass Advisor, available at a moment's notice to inspect and prescribe treatment for your ailing golf course. This new service, available to all CDGA member clubs starting in 1985, is a joint venture with the University of Illinois, in association with the Midwest Association of Golf Course Superintendents. It is by no means designed to duplicate or substitute for the services currently offered by the USGA Turf Advisory Service.

What prompted this new service has been the incidence of several very serious maladies which have threatened the high quality of Chicago area golf courses during recent years. Most significant of these has been the Toronto (C-15) bentgrass decline on many of our finest greens. This has been quite traumatic for most superintendents but ultimate research has helped find a cause of the disease and a method of treatment. It is in these types of areas that the new Turfgrass Advisor can give aid. He will be an employee of the University of Illinois, fully trained in disease and insect control and an expert in turfgrass management practices. He will be based in the Chicago area and have available complete diagnostic and testing laboratory facilities. If you have a problem, he can come to your course, inspect it, and, if necessary, take samples back to his laboratory for testing and then immediately report his findings. Time, in more cases, is the essence in solving most turfgrass problems. In addition, this Advisor will be in touch with most

of the golf course superintendents in the area throughout the year, attend and participate in turfgrass-related meetings and act as liaison between the superintendents and the U. of I. It is jointly felt such a program is needed to maintain the high standards of our excellent golf courses.

This program has been carefully examined and approved by the CDGA and will be available at no charge to member clubs.

The Chicago District Golf Foundation is providing financial support for this project. A search is currently underway to fill the position of turfgrass specialist.

Credit: "The Score Card"  
Spring 1985/CDGA

### Earthworms - Friend or Foe

Roscoe Randall, Extension Entomologist  
University of Illinois

Turf managers are not unanimous in their opinion of earthworms being a benefit to turf or being a pest or more correctly, a nuisance. Since 1970, it has been reported by researchers in Illinois, Michigan, and Ohio that earthworm activity can be reduced by pesticides. The chlorinated hydrocarbon insecticides, chlordane and dieldrin reduced earthworm activity for 4 months with a single application and longer with repeated applications over a 3 or 4 year period.

Thatch accumulation increased with the continued use of chlordane and dieldrin. This is understandable since the undecomposed debris or thatch layer is one of the favorite foods of earthworms especially in the early spring and late fall months when soil temperatures are cool. Since chlordane and dieldrin are no longer labeled for use on turfgrass areas, other pesticides have been tested as to their effect on earthworm activity. Insecticides such as diazinon, trichlorfon (Proxol, Dylox), and Dursban at labeled rates did not curtail earthworm activity. A report from Ohio in 1972 showed that Dyfonate, a similar product to diazinon but not labeled for turf, reduced earthworm activity for six weeks. There are some unofficial reports of earthworm reduction with some carbamates at high rates but not for any duration.

So where does this leave the situation? First, most insecticides used today for turf insect control have little or no effect on earthworm numbers or their activity of constructing casts in order to feed on dead grass or thatch. Second, what is effective must be residual and poisonous to the earthworms. Since chlordane and dieldrin are no longer labeled, the only alternative is the possibility of using an arsenical, a class of insecticides older than chlordane! Calcium arsenate and lead arsenate are two possibilities with the calcium form being most available.

From a personal standpoint, I am not suggesting or recommending the control of earthworms. But I also realize that their castings on greens and tees have been unusually numerous this spring as well as the past November and December. Reduction or elimination of earthworm activity in the fairways will undoubtedly increase thatch accumulation. If earthworms are your friend, rake down or level their castings and thank them for the thatch removal. If they are creating a serious problem of managing high quality greens and tees, control them with calcium arsenate, an inorganic insecticide. Do not attempt to reduce them with the organic insecticides labeled for turfgrass such as diazinon, Oftanol, Proxol, etc. They are at most temporarily effective.