

PRE AND POST EMERGENCE *POA ANNUA* CONTROL PROGRAM

Work on the *Poa annua* control program has progressed rapidly in 1976. Considerable refinement of rates and procedures has been accomplished on both bluegrass lawn turf and bentgrass putting turf. At this time there appear to be several factors that are very important in determining whether or not control is successful.

Foremost is the need for timely pre-emergence herbicide application to prevent *Poa annua* recovery from germination. All tests conducted so far show that when no pre-emergence control is used, *Poa annua* recovers rapidly from germinating seed. In many cases germinating seedlings have been observed as soon as three weeks after apparently successful post-emergent applications of endothall. Repeated applications of endothall without pre-emergence herbicides have reduced *Poa annua* populations, but not to the extent that pre-post emergent combinations have.

Next is the importance of growth rate of the turf as affected by season and nitrogen fertility. For example, in western Washington best control of *Poa annua* in Kentucky bluegrass is achieved between June and mid-September. This coincides with the peak growth period for Kentucky bluegrass in this area. Early spring applications of endothall are often ineffective and may injure the slow growing Kentucky bluegrass. Late fall applications often give good *Poa annua* kill, but do not allow time for the Kentucky bluegrass to fill in the gaps left by dead *Poa*. Best *Poa annua* control in bentgrass putting turf comes between late April and mid-June and again during the first three weeks in September. This also coincides with peak growth periods for bent grass putting turf in western Washington. Mid-summer applications of endothall often cause unacceptable discoloration of the bentgrass turf. Nitrogen fertility seems to influence the tolerance and rate of fill-in by both bentgrass and bluegrass turf. With both grasses, turf growing slowly due to lack of nitrogen will show more discoloration and be slower to fill in areas where the *Poa annua* is killed. For this reason, optimum fertility aimed at juvenile vigorous turf facilitates best control of *Poa annua* and minimum injury to desirable turfgrasses.

Weather conditions during the treatment period are very important. During peak control periods endothall gives best control when applications are followed by at least one day without rain or irrigation. Significant rainfall during or shortly after application reduces the effectiveness of endothall. On the other hand, it does not appear critical that the sun be shining though activity may be slower under cloudy conditions. Temperatures above 85°F may contribute to a loss of selectivity. Finally, endothall applied to turf under drought stress may cause general injury and a loss of selectivity. Fortunately, with our mild climate these last two factors are not major considerations.

One other factor about which there is some confusion concerns spray volume. My general impression based on work done so far is that spray volumes in excess of 100 gal/ acre maximize *Poa annua* kill by enhancing physical coverage of the plants in the field. However, generally acceptable control has been achieved with volumes as low as 50 gal/ acre. It is possible that lower volumes may give good results on short cut turf, but not on taller turf. More recently it appears that addition of a spreader may enhance control at lower volumes. We hope to get more information on this next season.

Successful Experimental Programs

Kentucky Bluegrass Lawn Turf - 3/4" to 1-1/2"

1. Encourage growth with adequate fertilizer during late spring.
2. Apply pre-emergence herbicide near the end of May or in early June and thoroughly water in, i.e., bensulide 10-12 lb ai/acre.
3. One to two weeks later apply endothall at 6 to 8 qts/acre (equals about 2-3 lb acid equiv.). At lower rates add spreader at rate of 1 pt/100 gal spray solution.
4. One week to 10 days later apply nitrogen fertilizer to stimulate recovery and filling of bare areas.
5. Repeat endothall application 6 to 8 weeks after first application if necessary. Follow all repeat applications with adequate nitrogen fertilizer.

Bentgrass Putting Turf - 3/16" to 1/4"

1. Encourage growth with adequate fertilizer during spring.
2. Around mid-April apply pre-emergence herbicide, i.e., bensulide 10 lb ai/ acre.
3. One to two weeks later apply endothall at 2-2 1/2 qts/acre (equals about 3/4 to 1 lb acid equiv.).
4. One week to 10 days later apply nitrogen fertilizer to stimulate recovery and fill in.

In general, the program for *Poa annua* control in Kentucky bluegrass has worked better and more consistently than the program for putting turf. The major difference seems to be that at the lower rates used on putting turf numerous *Poa annua* variants show resistance. As a result, treatment of putting turf reduces the *Poa annua* population, but does not eliminate it. At the higher rates used on Kentucky bluegrass, resistant types have not proven to be a problem yet. Recent tests indicate hope for solving the current resistance problems on putting turf.

These experimental programs unfortunately are not in accordance with label recommendations which make it impossible to recommend endothall based on our research. However, as our program continues we will be in close contact with the manufacturer in an effort to gain enough information to warrant any necessary label changes. UNTIL THAT TIME WE CANNOT MAKE ANY OFFICIAL RECOMMENDATIONS concerning the use of endothall turf herbicide for *Poa annua* control..

Continued Research

At the present time it appears we will be able to fund this project for one more season. Because of the short time period left our work will concentrate on the following areas:

1. Continued refinement of current procedures. This includes additives and combinations to increase efficacy. All work so far has been done with the 19.2% di-sodium salt solution. In 1977 testing of the di-potassium salt and granular form will be initiated.
2. Accumulation of repetitive data to generate support for possible label changes.
3. Expanded work with bentgrass lawn turf and perennial ryegrass turf.
4. Attempt to gain additional information for basic programs in eastern Washington.

Acknowledgement

The existence of this program is due largely to the members of the Northwest Turfgrass Association who realize the need for continuing research on the many problems in turf management. Believe me when I say, we appreciate your contributions very much.

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