

## BIOLOGICAL CONTROL POA ANNUA

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Annual bluegrass, Poa annua, is considered by many individuals to be the most important weed problem on golf courses. Numerous attempts at controlling annual bluegrass with herbicides and growth regulators have failed. The failure of chemical control can largely be attributed to several factors. Certain chemicals, such as the arsenical compounds, can build up to toxic levels after continuous application. As a result this build up often affects the desirable creeping bentgrasses and Kentucky bluegrasses as well as the annual bluegrass. In addition, many chemicals are only slightly more toxic to annual bluegrass than to other turf. On a hot day or under other conducive environmental conditions this slight differential toxicity may result in stressed or declining creeping bentgrass. Because of the problems associated with chemical eradication of annual bluegrass, turfgrass superintendents have often resorted to learning how to propagate rather than eliminate annual bluegrass.

Biological control is a fairly new concept in the control of diseases and weeds. With biological control, a beneficial microorganism is used to inhibit the growth of weeds. Biological control has a distinct advantage in that the microorganism is usually quite selective for a specific weed.

A biological control bacterium has been found that specifically inhibits annual bluegrass. In laboratory studies, the bacterium was sprayed on pots of annual bluegrass with death or severe stunting occurring one to two weeks later. Further laboratory and greenhouse studies demonstrated that when the biological control bacterium was sprayed on flats containing mixed stands of annual bluegrass, creeping bentgrass, and Kentucky bluegrass; the annual bluegrass was killed while no ill-effects were noted on the bentgrasses or Kentucky bluegrasses. Grasses other than annual bluegrass were not affected regardless of concentration or amount of the biological control agent applied. In most range studies, Penncross, Penneagle, Emerald, Toronto, Seaside and numerous cultivars of Kentucky bluegrasses were unaffected by the biological control bacterium. These studies demonstrated the high degree of selectivity of the bacterium for annual bluegrass.

Field tests at the Hancock Turf Facility have shown promising results this summer. Various concentrations of the bacterial bio-control have stressed and/or eliminated annual bluegrass in field sites. Furthermore, the selectivity of the bacterial bio-control as observed in the laboratory was confirmed in the field. None of the desirable turfgrasses have been affected by the bacterial bio-control, regardless of spray concentration. Further studies on timing, spray concentration and weather stress factors that may influence the biological activity are under way.