

## Xanthomonas Biocontrol of Annual Bluegrass-An Update

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A Xanthomonas campestris pathovar has been proposed as a possible biocontrol agent for annual bluegrass in high maintenance turf sites. Over the past several years numerous experiments have shown that the bacterium can selectively eliminate annual bluegrass from mixed stands containing Kentucky bluegrass and/or creeping bentgrasses. In these mixed stands, the desirable grasses have never shown any effect from the bacterium.

During the 1990 field season, field plots were established to ascertain such important factors as timing of application, concentration of application and frequency of application. To eliminate possible contamination of test plots by naturally occurring annual bluegrass seed, sod was established in the greenhouse during the early Spring of 1990 and moved to the field plot sites in April. Plots were established with either 100% annual bluegrass stands or a mix of 80% annual bluegrass and 20% creeping bentgrass (Penncross). Treatments included weekly, biweekly and monthly treatments at a high and low concentration of bacteria. Plots were overseeded with bentgrass on a regular basis. Plots were mowed after each inoculation because laboratory and greenhouse experimentation showed that mowing after inoculation dramatically improved infection of the annual bluegrass by the bacterium. Similar plots were initiated on a field grown, perennial annual bluegrass sod.

Although the experiments will not be completed until late September or early October, interesting trends have already developed. High concentrations and frequent applications of the bacterium resulted in death of the annual bluegrass within a 2-4 week period. The plots containing 20% bentgrass have completely filled-in with bentgrass within 6-8 weeks. While the plots with 100% annual bluegrass have been overseeded with bentgrass, establishment has been slower with much space still evident in these plots. Infrequent and low concentrations of the bacterium resulted in a much slower transition. The slow transition may well be the optimum consideration for high quality golf course turf.

Mycogen Corporation, San Diego, California, is further developing the biocontrol for potential marketing capabilities.