

OCCURENCE OF BACTERIAL WILT ON POA
ANNUA AND OTHER TURFGRASSES

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INTRODUCTION

Bacterial wilt is a relatively new disease of turfgrasses in North America. It is the first turfgrass disease known to be caused by a bacterium. First described in 1980 by Dr. Joseph M. Vargas, Jr. and myself, bacterial wilt was the solution to the mystery disease of Toronto creeping bentgrass (C-15) during the 1970's. The disease was commonly known as the "C-15 problem" or "C-15 decline". This was the same disease that destroyed the 'Toronto' greens two weeks prior to the 1980 PGA Western Open at the Butler National Golf Course in Oak Brook, IL.

Because the disease was so devastating, all 18 'Toronto' greens at Butler National were fumigated and renovated with another creeping bentgrass in 1981. Since its discovery, we have now found bacterial wilt at numerous locations in six midwestern states and Canada. Expenses in renovation and lost revenue frequently cost several hundreds of thousands of dollars per golf course.

DIAGNOSIS OF BACTERIAL WILT

Accurate diagnosis of bacterial wilt is essential before disease control can be contemplated. Because the disease advances so rapidly, leaves of infected plants wilt in a few short hours. Wilted leaves initially appear bluegreen, shriveled and twisted, but soon change to brown as the entire plant becomes a rotting mass of "mush". If the bluegreen shriveled leaf tip is not observed during its short period of existence, the disease may be confused with many other turfgrass diseases.

The disease usually reaches epidemic proportions during high radiant sunlight, following periods of rain or high relative humidity. During periods of high relative humidity, the bacteria are undoubtedly spread by mowers, traffic and other cultural practices.

OCCURRENCE OF BACTERIAL WILT ON OTHER TURFGRASSES

Why 'Toronto'? If we destroy 'Toronto', do we also relieve ourselves of any future bacterial wilt epidemics? These are two questions most often asked during the past 2 years. At this point in time we can safely say that

bacterial wilt is not gone. In fact, bacterial wilt is probably just beginning. In 1984 we received diseased Poa annua (annual bluegrass) samples from locations in Michigan and Pennsylvania. Laboratory analysis and subsequent pathogenicity tests confirmed that bacterial wilt was the culprit. Additionally, diseased Nimisilia and Seaside creeping bentgrasses from Ohio were infected with bacterial wilt. Hence, it appears that the bacterial pathogen is quickly adapting itself to new cultivars of grasses. In laboratory tests we have noted that these bacteria are highly specific and do not infect other host grasses i.e. the 'Toronto' bacterium does not infect annual bluegrass or seaside, and the bacterium from annual bluegrass does not attack 'Toronto' or 'Seadise'. But we believe it is just a matter of time before other grasses such as 'Penncross', 'Penneagle' and Kentucky bluegrass are infected with different strains of the bacterium.

CONTROL OF BACTERIAL WILT

Mycoshield (oxytetracycline) at 2.5 lbs. per 50 gal of water per 1000 ft² has provided effective short term control of the disease on putting greens. However, application of Mycoshield at these rates to bluegrass fairways would cost between \$25,000 and \$35,000, just for material for one treatment! Treatments should be reapplied every three to four weeks! Renovation, involving fumigation and overseeding with an alternative turfgrass is also extremely expensive. In the future, turf managers may become ever more tense when it is suggested that golf courses must be renovated every several years as the bacterium rapidly adapts itself to new turfgrasses.

The full potential of this disease on turfgrasses in North America has not been realized. Much more research on disease spread, host range and cultural practices is needed before major epidemics of this disease becomes common place.