

Bacterial Wilt

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INTRODUCTION

Bacterial wilt is an increasing disease of annual bluegrass (*Poa annua*) throughout New England. The disease is caused by the only known bacterial disease of turfgrasses in the United States.

First identified as a disease of vegetative creeping bentgrass, bacterial wilt now appears to be restricted to annual bluegrass putting greens. The disease may also appear, however, on collars and/or approaches.

Bacterial wilt may appear during the spring, but often will persist throughout the summer. The disease is favored by periods of heavy rainfall or overcast and cloudy weather. The disease may subside during sunny and dry weather, but can rapidly resurge following rain. In situations where the disease is chronically severe, renovation of annual bluegrass putting greens with creeping bentgrass may be necessary.

SYMPTOMS

Bacterial wilt tends to be more severe on shaded and/or poorly drained greens. Due to their inability to directly penetrate cells, bacteria must enter the plant through natural opening such as stomata or through wounds. Once inside the plant, the bacteria inundate the cells and restrict the natural flow of water and nutrients through the vascular tissues.

Initial symptoms appear as wilt and individual infected annual bluegrass plants quickly turn reddish-brown or yellow, and die (Fig 1). Collapsed plants generally appear as whitish-tan, dime-sized spots. During a severe infection, large areas can be killed in a non-uniform pattern within a few days.



Figure 1



Figure 2



Figure 3



Prior to the development of dead spots, individual leaves of infected plants may become elongated (Fig. 2). Additionally, the stem base of infected plants often appear lime-green in color (Fig. 3). These symptoms, however, often go unnoticed until plants collapse and spots begin to appear.

CAUSAL AGENT

Bacterial wilt is caused by the bacteria *Xanthomonas campestris*. Due to their small size, the pathogen cannot be seen without the aid of a microscope. Adding to the difficulty of diagnosis, symptoms of bacterial wilt often are mistaken with those of anthracnose (*Colletotrichum cereale*). It is also possible for annual bluegrass to be affected by both pathogens simultaneously.

With the aid of a high-power microscope, diagnosticians will section individual annual bluegrass leaves and look for oozing or streaming of bacterial cells. Although bacteria are commonly found on dead or senescent tissues, the rapid streaming of bacteria from vascular bundles of lime-green or elongated plants is indicative of bacterial wilt (Fig. 4).

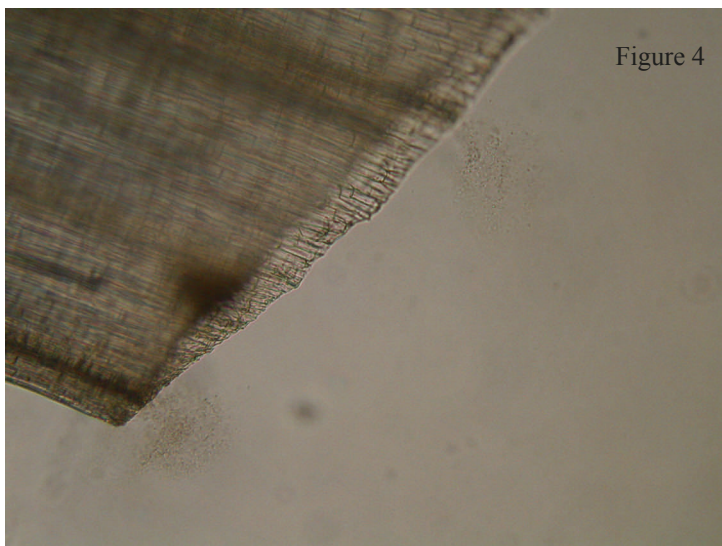


Figure 4

MANAGEMENT

The increase incidence of the disease may be due to the trend for very low mowing heights. The higher frequency of sand topdressing and similar cultural practices that wound the plant also are likely associated with an increased occurrence of bacterial wilt. Increasing mowing height and reducing mowing frequency helps to reduce disease severity, but will result in a reduction in green speed.

Since the disease is favored by period of wet, overcast weather, mowing should be performed when plants are dry. Do not mow putting greens that are excessively wet. Should the disease be restricted to one or a few greens, a “dedicated mower” should be used. It is best to use a light-weight, walk-behind greens mower. The dedicated mower should be washed with a 10% Clorox solution or similar disinfectant after each use, and the mower should not be used on unaffected putting greens.

Avoid all abrasive cultural practices when the disease is active. Wounds created by sand-topdressing, core aeration, vertical mowing, and other common cultural practices helps to create an ideal entry point for the bacteria.

Long-term control of Bacterial wilt is difficult. Products containing copper hydroxide may provide short-term suppression, but results vary. Anecdotal observations suggest that these copper-hydroxide products are most effective when applied on 5 to 7 day intervals. These products should be used with caution as phytotoxicity may occur. Do not tank-mix copper hydroxide with other products unless specifically stated on the label.

Adapted from Dernoeden and Kaminski, University of Maryland

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