

HELMINTHOSPORIUM DISEASES OF CREEPING BENTGRASS

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Helminthosporium sorokinianum and **erythrospilum** are the two species of **Helminthosporium** most commonly found to attack creeping bentgrass cultivars. **H. sorokinianum** causes the disease referred to as **Helminthosporium** leaf spot and was shown to be an important and prevalent pathogen throughout Illinois by Drs. M. Britton and M. Healy. In Illinois this pathogen causes leaf spotting during May, September, and October. Leaf blighting caused by girdling of the leaves by lesions occurs during June, July and August. Large severely infected areas have smoky-blue cast appearance. It has also been reported to be an important pathogen of creeping bentgrass and Kentucky bluegrass in other midwestern states and in California by Dr. R. M. Endo.

Helminthosporium erythrospilum causes the disease referred to as red leaf spot on creeping bentgrass and was first described by Dr. C. Drechsler in 1935. He reported the occurrence of this pathogen throughout the many eastern and midwestern states. This fungus is commonly reported to be a serious pathogen in the eastern part of the United States on most of the creeping bentgrass cultivars. Dr. Herb Cole of Pennsylvania State University reports that Penncross and Cohansey (C-7) are two of the more resistant varieties to red leaf spot and are usually not as seriously affected as the other cultivars. The variety Congressional (C-19) appears to be the most susceptible variety (personal communication).

This particular species has not been previously reported to be an important and prevalent pathogen in Illinois. In Dr. Drechsler's original description of the symptoms caused by **H. erythrospilum** he refers to the deceptive appearance of the injury caused to plants. He observed the symptoms caused by this fungus over a period of 15 seasons and usually found leaves with a drought-stricken appearance, though plenty of moisture was present to support growth. An overall view of diseased stands of bentgrass may have a drought-stricken appearance. Only a few times during his studies did he observe the typical leaf-spotting prior to the spread of the lesions and death of individual tillers. Leaf spots, when present, are circular to elongate, straw colored and surrounded by reddish-brown borders.

Red leaf spot is a warm, wet-weather disease and is usually first seen in early June. With the advent of warmer temperatures disease severity increases.

This fungus was first isolated by the author from diseased greens in the Chicago area in the fall of 1972. During the summer of 1973 this same fungus made up approximately 80% of all isolations from diseased creeping bentgrass greens on 20 Chicago area golf courses. Toronto (C-15) was the only cultivar found to be affected during the past season. The variety Cohansey planted in adjacent plots showed good resistance.

The initial symptoms consisted of small spots approximately 1/2 to 1 inches in diameter with indistinct margins. Plants in these spots had infected leaf tips appearing orange to reddish brown in color or leaves that were completely withered and bleached. The fungus **H. erythrospilum** could be isolated from leaves, crowns and roots.

Heavy populations of plant pathogenic nematodes were found to be associated with some of the diseased greens. There were also some diseased greens which contained no plant-pathogenic nematodes. The importance of nematodes in this disease complex has not yet been fully determined.

In tests conducted in the greenhouse during the winter of 1973-74, plugs of diseased C-15 creeping bentgrass responded to a combination of leaf spot fungicides and nematocides better than when those chemicals were used alone.

Two test areas have been established in the Chicago area on diseased Toronto bentgrass green areas that have both the **H. erythrospilum** and heavy populations of plant-pathogenic nematodes. Until these tests are finished, it would be a good policy to remove soil samples from diseased creeping bentgrass to be analyzed for the presence of plant-pathogenic nematodes.

It has already been shown that nematodes can cause an additional stress to a grass plant by their feeding on root systems. Insects and other environmental and soil factors may also be involved in increasing the severity of this disease by a weakening of the plants which would reduce their ability to resist attack by plant pathogens.

Dr. Cole and the author have also isolated **H. erythrospilum** from a diseased Nimisila creeping bentgrass green in Ohio. Dr. Cole reports that this same fungus has been very prevalent throughout Pennsylvania in the last few years on different creeping bentgrass cultivars and that the most effective control consists of preventative applications of the fungicide Dyrene, Daconil 2787, Tersan LSR and Actidione fungicides. Once the pathogen has infected the crown and root portions of plants, fungicide applications are ineffective. On greens severely affected during the previous season, the best remedy would consist of a 7-10 day rotation of one of the above fungicides during the spring and continuing into the summer. Dr. Cole also reports that applications of high rates of nitrogen may also increase the severity of this disease.



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