



# Leaf Blight and Crown Rot of Toronto Creeping Bentgrass

by Dr. PHILIP O. LARSEN

Photo courtesy DR. BOBBY JOYNER

*Drechslera catenaria* sporulation on leaf tissue.

**I**N THE PAST few years there have been a number of reports from golf courses in the midwest concerning a disease problem on Toronto bentgrass putting greens. The disease has been diagnosed as red leaf spot, which is caused by the fungus *Drechslera erythrospila* (formerly referred to as *Helminthosporium erythrospilum*). Symptoms first appear in early spring as tip dieback and as reddish lesions on leaf blades. As the weather becomes warmer, entire leaves become necrotic, and eventually the whole plant is blighted down to the crown. Usually, several small groups of adjacent plants will be infected, forming reddish-brown, sunken areas approximately

one inch in diameter composed of blighted plants. As disease symptoms progress, these infected areas will coalesce so that areas several yards in diameter may be affected. From a distance, the entire diseased area will take on a reddish-brown color. The disease symptoms continue to develop throughout the summer.

Fungicidal control of the disease has been difficult and expensive. In 1975, Meyer and Turgeon reported effective disease control of red leaf spot on Toronto creeping bentgrass with weekly fungicide applications of 6 oz/1,000 sq ft Daconil 2787 or 6 oz/1,000 sq ft of Daconil and 6 oz/1,000 sq ft of Dyrene applied on alternate weeks. These weekly treatments were applied from May through October. Disease control was improved slightly through the application of one to two pounds of nitrogen every eight weeks during the treatment period.

In summer, 1977, turf samples were taken from Toronto bentgrass greens

in Ohio that were diagnosed as having red leaf spot. A fungus was isolated from the diseased leaf tissue that did not resemble *Drechslera erythrospila*, the red leaf spot fungus. Instead, a fungus identified as *Drechslera catenaria* was observed. When greenhouse grown Toronto bentgrass plants were inoculated with spore suspensions of the fungus, symptoms similar to those described on diseased plants from golf course greens were observed. The fungus was re-isolated from the diseased plant tissue and again identified as *D. catenaria*. From these studies it was concluded that *D. catenaria* is the causal organism associated with the disease described on Toronto bentgrass. This fungus has since been isolated from additional Toronto bentgrass greens that had previously been diagnosed as having red leaf spot. Discussions with plant pathologists and golf course superintendents familiar with the symptoms of this disease on Toronto indicate that symptoms they

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observed are similar to those associated with *D. catenaria* infected turf.

*Drechslera catenaria* has not previously been reported as a disease organism on creeping bentgrass (*Agrostis palustris*), but it has been reported on red top (*A. alba*) and colonial bentgrass (*A. tenuis*), which are related plant species. It is proposed that this disease be called leaf blight and crown rot of creeping bentgrass in view of the symptoms that develop in diseased plants. Preliminary greenhouse incubation experiments indicate *D. catenaria* is also pathogenic on Penncross creeping bentgrass. Research is now in progress to determine the relative susceptibility of other commonly used bentgrasses to this fungus. Also, little is known about how the fungus is spread under natural golf course green conditions and how specific weather conditions affect disease development. Field and greenhouse studies have been initiated in an attempt to obtain this information.

**I**N 1977, FUNGICIDE trials were initiated on diseased Toronto bentgrass greens on a golf course in northern Ohio in an attempt to find an effective control measure. Fungicides that were shown to be effective against red leaf



spot were included, as well as RP26019, an experimental fungicide that had shown great promise against other turf diseases. Daconil 2787, Dyrene, Tersan SP and RP26019 fungicides were applied May 16, May 26 and June 7, 1977. No differences in control among treatments were observed throughout May and June. On September 1, however, RP26019 at 2 oz/

(Top) Control of leaf blight and crown rot of Toronto (C-15) bentgrass using fungicide RP 26019 (treatment labeled 5). Note disease severity on adjacent test plots.

(Above) Close-up view of localized infection centers associated with leaf blight and crown rot of Toronto (C-15) creeping bentgrass.

(Opposite page) Symptoms of leaf blight and crown rot of Toronto creeping bentgrass, May 1977. Note reddish cast.



1,000 sq ft was observed to have provided excellent disease control. Observations by the golf course superintendent a few weeks earlier indicated that the Daconil 2787 treatment had provided a moderate degree of control, but the effect was not observable on the September 1 rating.

During the fall of 1977 and spring of 1978, another fungicide trial was undertaken to evaluate more closely the efficacy of RP26019 in control of leaf blight and crown rot. Daconil 2787 at 8.0 oz/1,000 sq ft and RP26019 at 1.0, 2.0 and 4.0 oz/1,000 sq ft were applied as fall/spring and spring-only applications. Fall/spring applications were made on October 7, 1977, and April 12 and April 24, 1978. The October 7, 1977, application was excluded for the spring-only applications. Daconil 2787 performed poorly under these conditions and was not significantly different from the unsprayed control plots, regardless of when the fungicide was applied. RP26019 proved to be an excellent fungicide for control of leaf blight and crown rot. The 2.0 oz/1,000 sq ft spring-only treatment was not as effective as either of the four ounce rates, however. When RP26019 was applied at the one ounce rate, it offered only mediocre control and was

not acceptable for a putting green. There appeared to be no significant difference between the fall/spring and spring-only application times for either fungicide at each rate tested.

In conclusion, two applications of RP26019 applied at the 4 oz/1,000 sq ft rate in April will provide excellent control of leaf blight and crown rot on Toronto creeping bentgrass throughout an entire growing season. A fall application of RP26019, however, may be advised for a continued preventive control program. RP26019 has recently been registered and should be available now under the trade name of Chipco 26019.

It is my opinion, based on research data, personal observations and discussions with individuals familiar with this disease problem on Toronto creeping bentgrass, that the disease frequently diagnosed as red leaf spot on Toronto is probably not red leaf spot but a disease named leaf blight and crown rot caused by the fungus *Drechslera catenaria*, a new fungal pathogen on creeping bentgrass. The importance and occurrence of red leaf spot on bentgrasses needs to be evaluated further to eliminate any further confusion between that disease and leaf blight and crown rot.

## Conference Proceedings Available

In November 1978, a significant conference took place in Arlington Heights, Illinois. It was the first conference jointly sponsored by four national golfing organizations. It was also the first national conference which addressed itself solely to the topic of wastewater for recreational use, a topic of vital importance to golf course management. Because of the increasing demand on present water supply and possible future restriction in recreational use, it is important to investigate sources of supply other than potable water. Wastewater potentially has great value for irrigating turf. Speakers from throughout the nation assembled to lend their research and experience in the use of wastewater on land treatment. Proceedings covering this two-day conference are now available. It is over 200 pages . . . cost \$10.00 per copy and should prove to be an important part of every golf course turfgrass management library. Place your order with any of the following organizations.

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## Green Section Anniversary Marked for Inverness

Inverness Club, in Toledo, Ohio, was the birthplace of the Green Section of the United States Golf Association in 1920. Coincidentally, it was also the year of the Open Championship played at Inverness. A Green Section exhibit will commemorate the Green Section's 59th anniversary at Inverness Club, June 11-17, during the 79th United States Open Championship.