

Plant Pathology Fact Sheet

Pythium Root Rot of Turfgrasses

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Pythium fungi are well known among golf course superintendents as the cause of a potentially explosive foliar disease called Pythium Blight or Cottony Blight. However, a number of *Pythium* species can cause a root rot disease of several turfgrass species.

Turfgrasses Affected

All species of turfgrasses are potential hosts of *Pythium* fungi in the soil. However, in Kentucky we rarely see a problem with the disease except occasionally in creeping bentgrass and *Poa annua*.

Symptoms

Aboveground, symptoms of Pythium root rot are not very distinctive. The turf exhibits a nondescript chlorosis and thinning out, symptoms which may be due to a great number of possible causes. Affected areas exhibit other symptoms typical of inadequate water supply to the leaves in spite of good soil moisture. Such symptoms include wilt during the midday sun, and/or no guttation water on leaf tips in the early morning. Below ground, roots appeared decayed, often exhibiting a watersoaked decay of the cortex (outermost layers) of the root.



Causal Fungi

A number of *Pythium* species have been reported to cause root rot of grasses. The species involved in Kentucky have not been determined, although several species may be involved.

It is important to note that the mere presence of *Pythium* fungi in rotted roots does not necessarily implicate them as the cause of the problem being observed. *Pythium* fungi are normal soil inhabitants, and often harmlessly colonize roots of turfgrasses. Many cases have been documented of *Pythium* fungi colonizing roots of plants that are stressed from other causes.

Conditions Favoring Disease

Pythium root rot diseases are more severe when soils are saturated, for several reasons. When the soil becomes saturated, most *Pythium* fungi produce large numbers of zoospores. Zoospores are motile microscopic spores that have the capability to actually swim short distances in the soil in search of a root. Zoospores can also be moved on wet machinery or in surface water. Saturation of the soil also probably increases the susceptibility of roots to infection, as has been shown for other, similar diseases. Therefore, overwatering and conditions that impede drainage, such as compaction or layering of soil horizons, can aggravate the disease.

Regarding the effect of temperature, in Kentucky the disease has been associated with cool to moderate temperatures (mid-50s to mid-70s °F), although some *Pythium* species are known to be active at low temperatures and others at high temperatures.

Putting greens are most likely to be affected by Pythium root rot because normal management practices of greens often leads to limited root development. Turfgrass with a limited root system will suffer more when root rot occurs.

Disease Management

Controlling soil moisture and drainage is the most important practice for reducing the impact of Pythium root rot. Suggested practices include managing irrigation to

minimize periods of soil saturation. Another helpful practice is to aerifying as needed to promote vigorous root development and good drainage. When topdressing, fill aerification holes completely with sand to provide good drainage. Deep-tine aerification during spring and/or fall may be necessary to reduce layering or compacted horizons. Aerification by water injection may provide a nondestructive way to improve drainage during summer months, when cool-season grasses have less ability to recover from aerification.

Of course, other management practices that promote overall turf health will help the grass sustain occasional attacks from *Pythium*.

Fungicides used for control of Pythium blight may also have some activity against root rot diseases cause by *Pythium* fungi. Greens should be irrigated lightly immediately following application, carry the fungicide into the root zone. Be sure to follow label specifications for application rate, timing, and other precautions. More information is available in PPA-1, "Chemical Control of Turfgrass Diseases", available in county Extension offices.

(Revised 7-94)