

Turf Disease Control

continued from page 15

foliage should not remain wet for extended periods of time. This is especially true for summer diseases such as anthracnose, dollar spot, summer patch, Fusarium blight and rust. The severity of summer patch can be moderated by daytime syringing to cool the turf, but air circulation and sun should be available to dry the turf rapidly. Night watering is not recommended in cases where dollar spot, leaf spot and blights are a problem.

Pathologists frequently recommend that dew be removed from turf by irrigation, hosing or poling. Turfgrasses release substances through their leaves at night which contribute to the growth of fungi. Mowing turf covered with dew or wet from irrigation has contributed to the spread of Pythium.

Where possible, mowing frequency should be reduced and the height of cut raised during hot spells. Increased mowing frequency enhances the potential for disease development, since fungal pathogens can invade the open tissue at leaf tips. Very low mowing can encourage the development of summer patch, Helminthosporium diseases, rust, brown patch and dollar spot. Mower blades should be kept sharp to keep foliage tearing to a minimum. Topdressing may help since it effectively raises the height of cut and encourages the breakdown of thatch.

Clipping removal can play a part if fighting Helminthosporium, Pythium and brown patch. Dispose of clippings so that fungi contained in them can't spread to other turf.

Always plant resistant varieties of turfgrasses. They can greatly reduce the incidence of leaf spots and blights, summer patch, powdery mildew, and red thread.

Aeration, verticutting and topdressing can take away a great resting site for diseases... thatch. Pathogens can survive in dead organic matter until conditions are favorable for disease outbreak. This has been shown for Fusarium, Pythium, Rhizoctonia, Helminthosporium, red thread and dollar spot. Aeration can also improve infiltration and relieve compaction to improve drainage and promote deep rooting.

The use of wetting agents and soil amendments to improve soil drainage and texture are also helpful. A product called Turf Restore is said to reduce the severity of Fusarium, necrotic ring spot and brown patch by adding beneficial microorganisms to soil. These organisms break down thatch and correct conditions that favor disease development.

Sports turf managers in the South with sandy soils should test soil periodically for nematodes. These are tiny, worm-like parasites which attach themselves to turfgrass roots and feed on plant juices. They cause severe stunting and malformation of roots which weakens the plant's defense of fungal pathogens.

Disease control is complex to say the least. Symptoms alone are not sufficient evidence to select fungicides and control methods. The pathogen(s) should be identified by diagnostic tests first. Contact your

local extension service for the labs that perform these type of tests.

The sports turf manager can do some testing himself, says Vonnie Estes of Agri-Diagnostics in Cinnaminson, NJ. The company makes three simple kits that reveal the level of brown patch, Pythium or dollar spot from ground-up samples of diseased turf. "The turf manager can track disease levels by periodically testing with the kits," she states. "Fungicides can be applied before fungi start to reach damaging levels. They can also be withheld if the tests show the disease level is not serious."

Another approach to predicting disease outbreaks is by using computer models. The PestCaster from Neogen Corp. in Lansing, MI, utilizes information from a mini-weather station to predict outbreaks of Pythium and anthracnose. By recording humidity, soil temperatures, rainfall and wind speed every 15 minutes, the computer can predict when conditions are right for an outbreak.

Sports turf managers should keep records of disease outbreaks and compare them to weather conditions and maintenance practices. Where diseases are likely, one or more

fungicides should be selected to provide both preventative and curative control. Some formulators offer combination products while others provide recommendations for tank mixing their products with other fungicides. Since timing can be crucial, combining fungicide applications with fertilizers or herbicides may not provide the best control. Consult local extension agents and chemical distributors for the best timing of fungicide applications in your area.

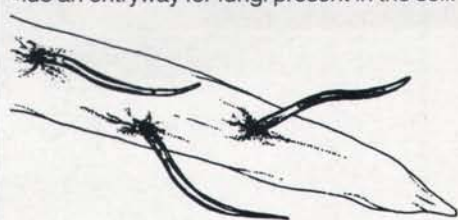
As the value of sports turf increases, the cost of disease control becomes a small price to pay to keep it in play. When there is little room for mistakes, and a sports turf manager's job is on the line, predicting turf diseases and controlling them is essential. Until turfgrasses are developed with complete disease resistance, a disease control program is a necessity. ☺

Editor's Note: Special thanks go to Dr. Houston Couch, professor of plant pathology at Virginia Polytechnic Institute and State University, Blacksburg, VA, and Dr. Phil Colbaugh, extension pathology at the Texas A&M University extension center in Dallas, TX, for their assistance.

Nematodes Invite Diseases

If you are following all recommendations to control summer diseases and you still can't seem to beat them, there is one more test to make, especially if your turf is growing in sandy soil. Have the soil checked for nematodes.

Nematodes are microscopic worms that live in soil or water. They pierce the walls of turfgrass roots with a stylet located on the tip of their bodies and extract plant juices. They also inject digestive fluids into the roots. As a result, they weaken the roots and provide an entryway for fungi present in the soil.



Turfgrass nematode.

While all soils have some types of nematodes in them, the most severe, including the sting, rot knot and lesion nematodes, can greatly weaken turf during warm weather. A close look at roots infested with nematodes reveals disfigured coarse roots, a noticeable lack of fine roots, and darkening caused by fungi.

"From above, turf appears chlorotic and drought stressed," explains Dr. Rod Kabana, a nematologist at Auburn University in Auburn, AL. "All symptoms indicate an impairment of the root system. The fine roots with which the plants take in nutrients and water are destroyed. Even if adequate levels

of moisture and nutrients are in the soil, the turf can't utilize them."

The activity and reproduction of nematodes is dependent upon temperature. "Basically, the activity of the nematode matches that of the turfgrass," Kabana states. "When the turf is dormant, so are the nematodes. Usually there are several species involved. In tropical and subtropical climates, they are active much of the year. They can also be as deep as three feet and create new generations in ten to 35 days."

Nematodes can spread from one site to another in contaminated sod, imported soil, on equipment, in irrigation water or runoff, or even as wind-blown eggs. Once they become a problem, chemical control involves soil fumigation or application of one of the organophosphates, including Nematicur, Mocap or Dasanit/Disyston. Check labels for restrictions before applying these products.

Kabana said turf managers can also build up organisms in the soil which destroy nematodes. A new product called ClandoSan stimulates the growth of normal soil microorganisms that destroy nematodes and their eggs in seven to ten days. The soil must be biologically active (not sterile) for the product to work. That means it can't be frozen or dry and must contain normal microbes.

Sports turf managers should insist upon sod grown on fumigated fields to avoid nematode problems. "You never eradicate them," says Kabana, "you can only reduce their population. Soil should be tested three times each season for nematode counts."