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...Yellow Patch and Red Thread...

Continued from page 7

cool for turfgrass growth will not aid in reducing disease severity. This is because nitrogen alleviates red thread injury by stimulating the production of new leaves and tillers to replace blighted tissue. Phosphorus (P) and potassium (K) applied alone have little or no effect on red thread, especially in soils with moderate to high P and K levels. **Nitrogen plus potassium, however, has been shown to alleviate red thread more effectively than nitrogen alone.**

Red thread may develop in well-fertilized turf and additional nitrogen may not be warranted for general agronomic reasons. Furthermore, loss of turfgrass density due to foliar blighting often favors weed encroachment. Spring blighting in particular favors crabgrass (*Digitaria* spp.) and broadleaf weed invasion. **The use of fungicides to control red thread in the spring has been shown to reduce crabgrass levels significantly by preventing deterioration of stand density.** Hence, fungicide use may be necessary in some situations. Fungicides that control red thread include azoxystrobin (Heritage®), chlorothalonil (Daconil Ultrex®, others), iprodione (Chipco 26 GT®), flutolanil (ProStar®), propiconazole (Banner MAXX®), triadimefon (Bayleton®), trifloxystrobin (Compass®), and vinclozolin (Curalan®, Touche®, Vorlan®).

Reference. Tredway, L.P., M.D. Soika, and B.B. Clarke. 2001. Red thread development in perennial ryegrass in response to nitrogen, phosphorus, and potassium fertilizer applications. *International Turfgrass Soc. Res. J.* 9:715–722.

Ask Dr. Beard

Q. *I have seen a condition where an ice layer forms over the turfgrass leaves, yet the leaves are not killed even with species that are relatively susceptible to low-temperature kill. Why is this?*

A. There are two situations when this condition typically occurs.

One is during clear nights with nocturnal long-wave reradiation. As a result the temperatures in and above the turfgrass canopy fall rapidly. If the air temperature falls below the dew point then the moisture in the air condenses on the cold leaf surface. If dew forms on the grass leaves and if the temperatures are below 32°F (0°C) then ice formation occurs on the leaves. **During the freezing process a certain amount of the energy is released from the water, some of which is conducted to the leaf tissue causing a warming effect. This process may avoid lethal subfreezing temperatures during that particular night.** Subsequently, potential injury is minimized if the air temperatures rise above freezing the next day and the ice layer thaws.

There also is the situation when the temperature of the upper atmosphere results in **super-cooled rain that freezes on contact with the turfgrass leaf surfaces, thus forming a coating of ice known as *glazed frost.***

With either of these situations, it should be noted that if temporary ice formation does occur within the leaf, then **either foot or vehicular traffic on the frozen leaves usually causes death. Death is attributed to the ice causing a mechanical fracturing of the brittle protoplasmic membrane within individual cells, which results in death of those leaves within the footprint or wheel track.** The obvious preventive approach under these conditions is to prohibit foot or vehicular traffic on the frozen turf leaves until thawing has occurred. This can occur either naturally as daytime temperatures rise with the irradiance level or by the application of a light water syringing during the morning period.

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