CAES
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RED THREAD OF TURFGRASS

Red thread is a common foliar disease on cool-season turfgrass including fine fescue, tall fescue, perennial ryegrass, and Kentucky bluegrass. Although the disease may be noticed during the whole growing season, it is more prevalent in the cool and humid spring and fall. The disease can reduce the density of turfgrass and result in an undesirable appearance. Because crowns and roots are not infected, the disease is usually considered cosmetic and the affected turfgrass will recover eventually. However, poorly managed turfgrass are vulnerable to the disease.

SYMPTOMS AND DIAGNOSTICS

Infected leaves initially show water-soaked lesions, and then become a straw or tan color, which results in small discolored patches from 2 to 3 inches in diameter in the lawn. When patches coalesce, they can expand to larger circular or irregular shapes (Figure 1). In humid conditions, thick, red thread-like fungal structures (sclerotia) and pink fuzzy mycelia may be seen on infected grass blade and sheaths, particularly at leaf tips (Figure 2). From a distance, the patches usually have a pink to reddish appearance, which is a characteristic to distinguish red thread from brown patch, another common fungal disease of turfgrass. Unlike brown patch, red thread does not damage crowns and roots and infected turfgrass will recover during the warmer

Figure 1. Straw brown patches damaged from red thread

Figure 2. Pink and coral-red fungal hyphae and sclerotia on straw-brown leaves

season when the conditions are not favorable to the disease development. Patches caused by red thread exhibit a ragged appearance because of a large amount of unaffected leaves in the patches.

DISEASE DEVELOPMENT

Red thread is caused by a fungal pathogen *Laetisaria fuciformis.* Sclerotia, the resting structure of the fungus, survive unfavorable conditions on infected leaves or in the thatch layer and can remain viable up to 2 years when they are dry. Sclerotia and spores (arthroconidia) of the pathogen can be dispersed by water splash, wind, feet, and mowing equipment. The pathogen penetrates leaves through cut tips and stomata. Both spores and sclerotia require free water or high humidity from prolonged dew, rains, or frequent irrigation to germinate. The fungal mycelium can grow from leaf to leaf, which causes enlargement of individual patches. The fungus can grow at a wide range of temperatures between 32 and 86 °F, but the optimum temperature is 60 to 75 °F. Tall fescue and Kentucky bluegrass are less susceptible to the disease than fine fescue and perennial ryegrass.

MANAGEMENT

Cultural practices: Slow-growing and nitrogen-deficient turfgrass is more susceptible to red thread. Maintaining soil fertility by adapting best nutrient management practices can reduce the severity of the disease and facilitate faster plant recovery. Applying water-soluble (quick-release) sources of nitrogen in the spring can reduce disease severity more effectively. However, excessive use of nitrogen fertilizers in the spring can make turfgrass vulnerable to other diseases and environmental stressors during the summer. Soil samples should be taken and submitted for nutrient analyses regularly and fertilizers should be applied according to recommended rates. Maintain a soil pH 6.5 to 7.0. A two- to three-year fertility program is required to reduce further red thread problems. Collecting the clippings during mowing can reduce the amount of inoculum and prevent the spread of the disease to unaffected area of the lawn. Removing excessive thatch in late summer or early fall can also reduce inoculum and promote lawn health. When needed, thoroughly water lawns in the early morning. Avoid watering lawns in the late afternoon or evening as this practice will favor high humidity during the night.

Resistant grasses: Differences in susceptibility to red thread among turfgrass cultivars have been reported. Whenever possible, use resistant or tolerant cultivars of turfgrass.

Fungicide application: Fungicide applications are usually not necessary because the disease normally is cosmetic and can be effectively prevented by good cultural practices. If fungicide treatments are warranted in the area with a history of severe red thread outbreaks, licensed lawn care professionals should be hired to apply fungicides. The fungicides azoxystrobin, iprodione, propiconazole, or pyraclostrobin are labeled for the control of red thread. Strict adherence to the label instruction must be practiced.

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