

RUST, POWDERY MILDEW AND DOLLAR SPOT IN BLUEGRASS LAWNS: NEW TWISTS



Posted by Peter Dernoeden on 24 Nov 2015 / [0 Comment](#)

Lawn diseases were not nearly as severe in the coastal plain as they were in 2014. Dollar spot was highly damaging from May to November 2014, but only made a widespread appearance in November 2015. There were some frosts in October and November, but weather conditions generally have been mild. There also were several prolonged periods of rainy and overcast weather, which promoted not only dollar spot, but also rust and powdery mildew. The “new twists” have been simultaneous infections by fungi causing rust and powdery mildew, and rust and dollar spot in Kentucky bluegrass. Rust and powdery mildew fungi are “obligate parasites” meaning that they can only grow and reproduce in living tissue and survive in infected tissues (and by other means) throughout the year. These diseases become damaging **only** when spores are produced. They are extremely sophisticated pathogens and their goal is not to kill the plant, but to coexist. While most obligate parasites seldom kill plants (except in very highly susceptible cultivars), they weaken plants and can predispose them to injury from environmental stresses or other diseases. Rust was very severe this autumn, and late season symptoms have been unusual.



1. Brown-gray appearance of bluegrass after the rust epidemic had ended.



2. Reddish-brown lesions on rust infected leaves and black spots on dead leaves in bluegrass.

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3. Dual infection by powdery mildew and rust in bluegrass.



4. Dual rust and dollar spot infections in bluegrass.



5. Collapsed rust-infected bluegrass leaves 7 days after application of a fungicide.

Rust (several *Puccinia* spp.) was a subject in my last contribution. I noted that rust gives turf a yellow or orange appearance from a standing position. On close inspection, yellow, orange or brick-red-colored pustules can be seen on leaves. Huge numbers of spores are produced within each powdery pustule, which spread the pathogen. Recently, I came across some Kentucky bluegrass lawns that had severe, late season rust activity. Some infected plants had the familiar “orange” pustules, but many leaves had odd looking lesions and most pustules were empty. While older infected leaves were becoming necrotic, there also were young healthy leaves emerging from stems showing that plants would survive. These lawns appear unthrifty and density is poor and will remain so until spring. In lawns where the rust epidemic had come to an end, turf appeared in need of nutrients, were brownish-gray from a standing position, and had lost 20% or more of their density. On first inspection, the usual signs and symptoms of rust were not evident. Numerous necrotic and tan leaves bore black spots. Some senescing leaves containing green and yellow tissue bore large irregularly shaped reddish-brown lesions. Areas between empty pustules were beginning to blacken and on more necrotic areas on the same leaves an abundance of anthracnose (*Colletotrichum cereale*) fruiting bodies (acervuli) were observed. The black spots on tan leaves also were loaded with black fruiting bodies. In this case, the anthracnose fungus was behaving as a saprophyte (not a pathogen), causing the unusual leaf lesions, and degrading rust-

infected leaves giving the brownish-gray cast to affected lawns. Recent frosts also may have contributed to the development of these unusual symptoms.

Powdery mildew (*Blumeria* [formerly *Erysiphe*] *graminis*) is a disease mainly confined to shaded sites, including open areas on the north side of homes. Powdery mildew can be found at almost any time of year. Peak activity (marked by a white coating of mycelium and spores) occurs when days are warm and nights are cool in spring and autumn. Spores are produced in abundance on leaf surfaces and are disseminated by air currents and equipment to adjacent, healthy leaves. Spores germinate rapidly, even in the absence of dew or water. The presence of grayish-white mycelium on upper leaf surfaces is a conspicuous, diagnostic sign of powdery mildew. In heavy infestations, leaves appear to have been dusted with ground limestone or flour. The abundant surface mycelium absorbs nutrients from the epidermal cells and leaves turn yellow. Eventually, infected leaves and tillers die and turf loses density.

Another twist was the occurrence of simultaneous infections of bluegrass plants by rust and powdery mildew and by rust and dollar spot. While none of these diseases would be expected to kill plants grown under a proper mowing height for lawns, the dual infection is a concern. I once observed a stand of 'Merion' Kentucky bluegrass severely damaged in the autumn by rust and the following spring the stand was devastated by an outbreak of stripe smut (i.e., *Ustilago striiformis* – another obligate parasite). The coexistence of two pathogens, and especially obligate parasites, should be taken seriously. Affected lawns should be treated with a fungicide, even if the epidemic is slowing down. Young and healthy leaves are, or eventually will be, re-invaded from the ability of these pathogens to survive in infected tissues. Turf pathologists find obligate parasites intriguing, but they are easily controlled. Given their complicated lifecycles it can take a year or longer for fungicide-treated plants to be re-infected from spores, grow throughout tissues, and again reproduce within and on leaves.

Strobilurins (e.g., Dismiss, Heritage, Insignia, others) and DMI/SI (e.g., Banner MAXX, Bayleton, Eagle, Trinity, Triton, Torque, Tourney, others) are highly effective against rust and powdery mildew; DMI's also are effective on dollar spot. Even fungicide-treated lawns will appear brown and marked by a significant loss of density after infected leaves die. The white coating of powdery mildew may be retained on fungicides-treated leaves for a week or longer. Some water soluble nitrogen may help, especially if we experience a few days of "Indian Summer" weather.



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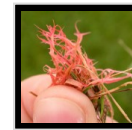
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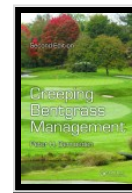


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