

Take-all Root Rot (referred to as Bermudagrass Decline on bermudagrass)

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Pathogen

Gaeumannomyces graminis var. *graminis*

Turfgrasses Affected

All warm-season turfgrasses.

Occurrence

The pathogen is naturally present on turfgrass roots. This disease is primarily observed during the summer and early fall months when Florida receives the majority of its rainfall. Prolonged periods of rainfall are most conducive to this disease. Any stress placed on the turfgrass will encourage or worsen the disease.

Symptoms/Signs

This is a root rot disease (Figure 1). Because the roots are affected, they will not be able to efficiently obtain water or nutrients from the soil, nor will they be able to store the products from photosynthesis. Symptoms observed on the leaves are the result of pathogen activity on the root system. The fungus does not attack leaves.

Initial activity of the fungus on the roots will only be observed by looking at the roots. If the turfgrass is not stressed or under low lev-

els of stress, leaf symptoms may never be observed. However, under high stress conditions, symptoms will begin to appear on the leaves. By the time the leaf symptoms appear, the pathogen has been active on the roots for at least 2-3 weeks, probably longer.

Initial symptoms above-ground are irregular, yellow (chlorotic) or light green patches ranging in diameter from a few inches to a few feet. Roots will initially be thin and off-white in color with isolated black lesions. Eventually, roots will become very short, black and rotted. Stolons and rhizomes may have black lesions and, under severe disease conditions, begin to rot. Entire plants may die resulting in irregular patches of thinning grass, and if not controlled, bare patches may develop (Figures 2 and 3). Using a microscope, black strands of fungi (runner hyphae) will be present on outside of roots, stolons and rhizomes, as will special structures called hyphopodia.

Cultural Controls

This disease is very difficult to control once the aboveground symptoms are observed. Therefore, measures that prevent or alleviate stress are the best methods for completely controlling the disease or at least decreasing the potential damage. Stress on turfgrass can result from many factors and are addressed below.

The turfgrass must be mowed at the correct height during the summer (Figure 4). It may even be necessary to raise the mowing height during periods of conducive weather. The turfgrass must be mowed as frequently as necessary so that only one third (1/3) of the leaf tissue is removed during any one mowing event. Scalping the grass damages the growing point, especially of St. Augustinegrass.

Balance nitrogen applications with equal amounts of potassium. For every pound of nitrogen applied, an equal amount of elemental potassium (K) should be applied. Slow-release nitrogen and slow-release potassium sources should be used. Avoid nitrate-nitrogen products and quick-release urea products (e.g., uncoated urea). If slow-release potassium is not readily available, then apply quick-release potassium to the turfgrass between nitrogen applications. Extra potassium may be useful in late summer and early fall. Apply micronutrients, especially manganese. Micronutrients should be applied in the sulfate form as foliar applications.

When the disease is active, frequent foliar (leaf) feeding of all nutrients (N, P, K and micronutrients) in small amounts will be necessary if the root system is severely damaged. The roots are not functioning properly, and so will not be able to efficiently obtain nutrients from the soil.

Do not apply lime to the turfgrass. If you are growing centipedegrass, it is acceptable to apply elemental sulfur or iron sulfate to lower the soil pH below 5.5. Do not do this with other turfgrasses!

Apply herbicides only as needed and according to the label. St. Augustinegrass is especially sensitive to herbicides. Even when herbicides are applied correctly, there will be some stress placed on St. Augustinegrass.

Avoid herbicides by learning how to manage the turfgrass to limit weeds!

Chemical Controls

azoxystrobin, myclobutanil,
propiconazole, thiophanate methyl,
triadimefon

These systemic fungicides are not as effective as the use of cultural controls once the disease symptoms are observed. These fungicides may be useful when used preventively. This means they must be applied prior to symptom development. Start applying the fungicides at least one month prior to when you normally observe aboveground symptoms. Continue applying once a month until the weather is no longer conducive for disease development. It is beneficial to lightly water-in these fungicides, but it must be done immediately after application.

Refer to “Turfgrass Disease Management” PPP-64 for explanations of chemical and cultural controls.

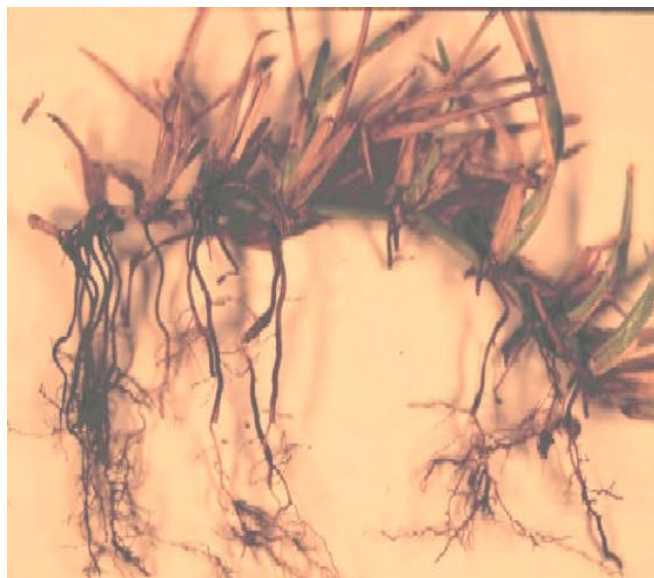


Figure 1. St. Augustinegrass roots rotted due to Take-all Root Rot.



Figure 2. Early above-ground symptoms of Take-all Root Rot.



Figure 3. Severe symptoms (death) of Take-all Root Rot.



Figure 4. Healthy bermudagrass (green strip at top) cut at the correct height compared to severely diseased bermudagrass (bottom) cut too low.