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G93-1149 Stripe Smut Disease of Turfgrass

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Stripe Smut Disease of Turfgrass

Ways to identify and treat smut fungi are given here.

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Smut fungi infect various grasses, either cultivated or found naturally in the wild. In turfgrass, one of the most common smut diseases is stripe smut caused by *Ustilago striiformis*.

Stripe smut occurs most commonly on Kentucky bluegrass, occasionally on bentgrass and rarely on fine fescues and perennial ryegrass; it has not been reported to occur on zoysia. The widespread use of susceptible Kentucky bluegrass cultivars has contributed to the common occurrence of stripe smut.

Stripe smut should not be taken lightly by turfgrass managers. Infection causes a general decline, and often an early death of grass stands. Plants infected by *U. striiformis* remain infected for life.

Stripe smut is a systematic disease, so an infected plant serves as a constant source of inoculum and may produce millions of smut spores before it dies. Weakened smut-infected plants often are susceptible to other diseases, such as melting out and leaf spot, or become victims of environmental stress.

Symptoms

Symptoms are most noticeable in spring, when infected plants appear pale green to yellow to brown, stunted, and more upright than healthy plants. Single plants may be infected, or irregular clusters 6 to 12 inches in diameter may show yellowing. These yellow patches easily contrast with the green in infected turf (*Figure 1*). In some turfs where the disease has spread throughout much of the turf, the yellowing is, at first glance, confused with iron chlorosis or nitrogen deficiency.



At first, leaves on infected plants show yellow stripes that turn gray, then black

(Figure 2). These stripes extend almost the length of the blade. In time, infected leaves fray, turn brown, curl from the tip downward and die. When infected leaves shred, the dark brown spores are released and spread to other plants.

As spring fades into summer, stripe smut combines with high temperature and drought to take a toll on affected turf. From a distance these turfs appear ragged, clumpy, patchy and off-color due to death of individual plants and to the more upright growth of infected plants.

On closely mown leaves of bentgrass, the disease may be difficult to recognize because of the sparseness and small size of the smut stripes. Often the only evidence of infection is the poor vigor and color of infected plants.

Figure 1. Yellowing of stripe smut-infected grass plants.



Figure 2. Black stripes on infected grass blades.

Factors Favoring Stripe Smut

Stripe smut predominates in mid-spring when temperatures are in the 50 to 65°F range. Locations with excess thatch, frequent irrigations or spring rains, a soil pH below 6.0, and turf that is 3 years old or older are prime smut sites.

The stripe smut fungus survives the winter and summer months as dormant mycelium in the crowns and nodes of infected plants and as spores in thatch. Spores can remain dormant in the thatch for three to four years, which insures long-term survival of the fungus. During spring rains these spores germinate and infect through the coleoptile of seedlings or through the lateral or axillary buds on crowns and rhizomes of older plants.

Environmental conditions that favor grass seed germination also favor teliospore germination and infection. Once inside the plant, smut hyphae (mycelium) develop systemically in the direction of plant growth resulting in new leaves, rhizomes, and tillers becoming infected as they form. Systemic infection of tillers and rhizomes from infected plants, together with additional primary infection of lateral and axillary buds of healthy plants, serve to perpetuate and disperse the disease in mature stands of Kentucky bluegrass.

The large number of diseased grass plants in turf more than 3 years old probably is caused by the infection of the lateral and axillary buds, and the growth of mycelium from perennially infected crowns. Additional local spread is by the movement of teliospores through wind, rain, irrigation, shoes, equipment and routine maintenance practices.

Once plants are infected, irrigation and fertilization that stimulate plant growth also create conditions that favor stripe smut. Prolonged temperatures above 90°F normally bring about a remission of symptoms, but many of the infected plants die under these conditions. Good cultural practices may keep some of the infected plants alive during this period, but ironically, they often aid in the perpetuation and spread of the disease. A good example is the shipment of infected sod into new turf areas that then develop stripe smut.

Integrated Pest Management Practices for Stripe Smut

- Blend at least three stripe smut resistant cultivars when establishing a turf.
- Remove clippings from smut-infected turf when mowing.
- Maintain a balanced N-P-K fertilizer.

- Maintain a thatch layer of less than 1/2 inch.
- Do not let smut-infected sod go into drought stress during hot dry weather.
- Do not cut smut-infected sod until after it has been treated with a systemic fungicide.
- Treat smut-infected turf with a systematic fungicide once in the fall and twice in early spring. A combination of a systematic fungicide for smut control, with a contact fungicide for leaf spot control, is recommended. The fungicides benomyl, Fungo 50, Fungo Flo, Cleary's 3336, Rubigan, Banner and Bayleton are registered for stripe smut.

The fungicides mentioned for control of stripe smut represent the best information available. No criticism is intended of fungicides not mentioned, nor is endorsement given by the University of Nebraska to those mentioned.

Benomyl-containing products are probably more available to homeowners than are the others. Always read and follow label directions before applying pesticides.

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