



Smut of Turfgrass

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STRIPED SMUT is a major disease of Kentucky bluegrass and creeping bentgrass in Michigan. In most instances, the effects are very subtle and hard to detect (Fig. 1). The disease is often not recognized until the damage to the turf area has become fairly extensive. The fungus which causes smut is easily transmitted by man or machinery moving across the grass, hence the disease can be fairly widely distributed in an area before symptoms become severe enough to be recognized.

Symptoms

This disease becomes active as soon as the grass begins growing in spring and temperatures reach 50° to 60°F. Infected areas of turf are stunted and do not recover from the winter as quickly as healthy grass, hence the lawn may



Figure 1—Smut is a “hands and knees” disease. It is difficult to detect unless the observer examines the affected area closely. Note the few twisted and frayed leaf blades near the pen point.

show tufting in initial phases of growth in the spring. As new blades of grass are formed, infected blades are pale green with black longitudinal streaks between the veins (Fig. 2). These black streaks are masses of fungus spores. When they mature, the pustules burst open to liberate the black spores. During the spore liberation process, the infected blade becomes frayed. The tip of the blade usually becomes segmented and twisted (Fig. 3). It also turns white. The disease is usually recognized at this time due to the uneven growth and frayed grass blade tips, or because persons using the turf area find their shoes or lower pantlegs to have black or dark smudge marks.

Causal agent and disease cycle

Stripe smut is caused by *Ustilago striiformis*. This fungus overwinters in infected clumps of grass as a systemic perennial infection in the



Figure 2—Smut infected tillers of bluegrass showing longitudinal black streaks on the leaf blade.

tissues. In the springtime, infected blades of grass develop as described above, and spores are disseminated by wind, water, equipment, and human or animal traffic. The disease goes dormant during hot summer weather; however, must turf loss occurs during this time due to heat and drought stress on the weakened, strip smut-infected plants. Quackgrass and other weeds often invade areas where the turf has been thinned by smut. The stripe smut fungus resumes growth in the autumn when average temperatures are again in the 50° to 60°F range.

Only meristematic (early, formative) tissues of the grass are susceptible to infection by the spores of the smut fungus. Hence, most rapid and severe disease development occurs when the host is actively growing.

Control

Cultivars of Kentucky bluegrass and creeping bentgrass differ greatly in their susceptibility to stripe smut. *Windsor*, *Merion*, *Fylking*, *Pennstar*, *Galaxy* and *Rugby* are the most susceptible of the Kentucky bluegrasses. *Toronto* and *Pennlu* are the most susceptible creeping bentgrasses. These varieties should be avoided wherever possible.

Most other Kentucky bluegrasses and creeping bentgrasses show moderate to high resistance to stripe smut. However, it should be remembered that the stripe smut fungus is quite variable and new strains can develop which could attack some of the current resistant varieties after they have been in the field for a time. The current resistant varieties should be used in blends to help insure the longevity of the turf, should a new strain of stripe smut develop and attack a resistant variety.

Once established turf becomes infected with stripe smut, control is difficult and at best temporary. Several fungicides can be used to **suppress** stripe smut. Benomyl (*Tersan 1991* or *Benlate 50W*), thiophanate-methyl (*Topsin M* or *Fungo*), and thiophanate-ethyl (*Cleary's 3336*)



Figure 3—Late stages of smut infection showing deformed, twisted and frayed leaf blades of bluegrass.

will help suppress stripe smut for up to six weeks. If chemicals are used they should be drenched into the turf, so the fungicide is washed into the root zone where it can be absorbed by the plant and act systemically on the fungus infection.

As mentioned, chemical control can only be used to suppress stripe smut for a short time. Therefore, several cultural practices should also be kept in mind in controlling this disease. Reduce the amount of spring and summer nitrogen fertilization. There is a direct correlation between the amount of nitrogen, the amount of stripe smut infection, and turf losses due to this disease. Also, light frequent watering during hot weather will help prevent turf losses where stripe smut has weakened the plants. **Do not** allow a stripe smut infected lawn to wilt or go into summer dormancy from lack of water, as stripe smut infected plants will die.

Notice: Always use pesticides carefully. Follow label directions and avoid misuse. Any use of a pesticide inconsistent with the label is illegal.