PURDUE UNIVERSITY

PURDUE EXTENSION

BP-119-W

# Turfgrass Disease Profiles






## Smut Diseases

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Smut diseases of turfgrass are caused by several closely related and highly specialized pathogenic fungi. Stripe smut (caused by *Ustilago striiformis*) is most common in the Midwest, but flag smut (caused by *Urocystis agropyri*) also occurs within the region.

Smut diseases tend to occur on higher cut turf, including residential turf, athletic fields, and golf course roughs. Outbreaks occur most often and most severely on older varieties of Kentucky bluegrass. Smut pathogens may infect creeping bentgrass, perennial ryegrass, and tall fescue, but disease incidence in these species is very rare.

Fungal infection and colonization weaken plants, making them more prone to death during extended periods of hot, dry weather. Infected plants produce vast amounts of sooty spores that discolor maintenance equipment (Figure 1).

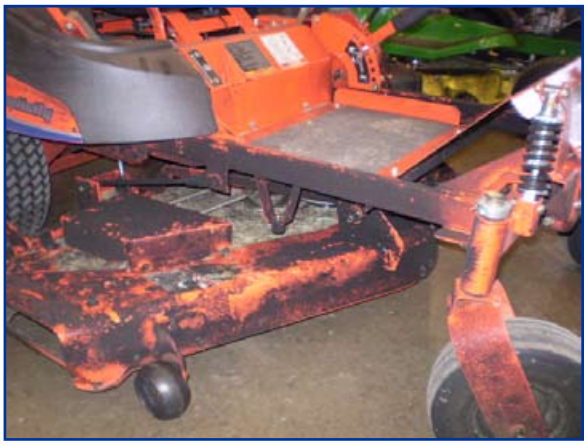

*Figure 1*

Smut-infected turf usually becomes apparent three or four years after initial infections occur. Field patterns are initially subtle. The affected areas are not well defined, appearing chlorotic during spring, but taking on a brown color in summer. This dark coloration is the result of millions of brown-black spores produced in infected tissues and exposed as fungal progress shreds leaves (Figure 2).

*Figure 2*

Wind and splashing water disperse smut spores, but they do not infect turf directly. Instead, the spores represent the survival stage of the pathogen. The survival spores (called teliospores) germinate when turf is wet and temperatures range between 50° and 60°F, often in spring, but sometimes in fall. Germinating teliospores give rise to fragile basidiospores, which infect turf only when two different mating types are present. The highly specialized circumstances under which infection occurs explains why smut diseases are not very common.

### Smut Disease Management

Smut pathogens infect the meristematic tissues (growing points) in turf plants, so infections will remain with plants as long as they are alive. Infected plants are relatively weak and are among the first to succumb to summer heat and drought, resulting in thin

and sooty stands of turf. Because the disease infects meristematic tissue, over-seeding with less susceptible Kentucky bluegrass cultivars (or with other resistant turf species) is a reasonable first option for smut disease control. Spring and summer nitrogen fertilizer applications enhance smut disease outbreaks, so fertilize turf only in the fall when outbreaks are severe.

In some cases, fungicides may be warranted to limit the effects of smut infection. Demethylase inhibitor (DMI) fungicides such as Bayleton® are very effective if applied at proper rates and during spring when conditions favor infection by basidiospores. Since the black spores that appear in summer do not infect turf, applying fungicides when sooty spores are apparent will have little effect on the extent of smut infection. However, fungicides may help improve turf vigor.

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