

FIGHTING SNOW MOLD:

Prevention is the best shield

Snow mold damage to turf has long been a threat in northern climates and in high altitude conditions. Whether on athletic fields, golf course greens, or fairways, cool temperatures and moisture signal trouble to lush turf. And reseeding or sod replacement is costly, especially on susceptible bentgrass greens.

Dr. Lee Burpee, who spent many years studying snow mold fungi at the University of Guelph in Ontario, Canada, offers insight into these problem diseases:

Fusarium patch or pink snow mold, caused by *Microdochium nivalis*, first takes hold in fall under cool, wet conditions even before the snow falls. Optimum conditions for disease development are periods of relatively high humidity with air temperatures of 32 to 60 degrees F. Severity increases during periods when snow covers unfrozen soil, before turf reaches the dormant stage. In areas where turf doesn't go truly dormant, such as the coastal region of the Pacific Northwest, the disease can remain active during the fall, most of the winter, and early spring.

Before snowfall, turf managers should examine turf, especially in shaded areas or on golf greens, for circular copper-colored spots one to three inches in diameter. These patches may then turn tan or white with a reddish-brown border as the leaves die. Under snow, infected spots can become a few inches to several feet in diameter, and can coalesce into large infected areas.

Gray snow mold or *Typhula* blight, caused by *Typhula incarnata*, requires snow cover for development. Optimum infection occurs during snow cover over unfrozen ground containing high soil moisture, with greatest fungus development occurring at temperatures of 32 to 40 degrees F. As infected areas are

exposed by melting snow, two-inch to two-foot circles of mold appear, exhibiting a light-gray mycelial growth on infected grass blades.

A careful examination of infected plants shows presence of small sclerotia embedded in the leaves and possibly the crowns. These sclerotia are ovoid to spherical in shape and are small as a pinhead to 3/16-inch in size. They range in color from pink to light-brown in moist leaves, turn amber to reddish-brown at maturity and become dark-brown to black in dry leaves.

Both *Fusarium* patch and gray snow mold can infect most northern cool-season grasses, especially bentgrass on greens. Other grasses that can be infected include annual, Kentucky and rough bluegrass, Colonial, velvet, and creeping bentgrass, Italian and perennial rye-

grass, red and tall fescue, and others. Damage caused by *Fusarium* patch (pink snow mold) is often more serious than gray snow mold because the fungus does not need snow cover to infect turf plants.

"Extreme damage can also occur, however, with gray snow mold if snow accumulates for 100 days or more on turf, allowing the disease to injure or kill the crown," Burpee says. "If snow cover lasts 90 days or less, the fungus usually infects the blade only," adds the plant pathologist, who currently is the turfgrass specialist at the University of Georgia.

Another problem caused by snow mold, besides the potential need for reseeding, is weed growth. "We see the invasion of broadleaf and grassy weeds as a major problem in turf areas weakened or killed by *Fusarium* patch," says Ralph Byther, extension plant pathologist, Washington State University.

Prevention Is Key

Turf managers and golf course superintendents understand the need for preventative measures in the fall against snow mold fungus to maintain turf health going into and coming out of dormancy. "There aren't many good cultural controls against either snow mold fungus, and curative control is virtually impossible, so preventative chemical control is necessary," Burpee says.

To further compound the problem, the common practice of fall fertilization with nitrogen to stimulate root growth

‘Extrême damage can also occur, however, with gray snow mold if snow accumulates for 100 days or more on turf, allowing the disease to injure or kill the crown,” Burpee says.



Gray and pink snow on the edge of a tee where treatment missed.

also stimulates an increased risk of snow mold. The best advice, according to a number of extension plant pathologists is to make sure this application is made early, not late, fall, including an equal rate of potash with the nitrogen. "You don't want lush turf growth going into winter," says Burpee. "It's best if the grass goes dormant naturally."

A chemical fungicide application, timed just before first snowfall provides the best protection. Unfortunately, if rain occurs after application and before snow cover—or if winter thaw periods occur—some fungicides must be reapplied to ensure continued effectiveness.

"For consistent, acceptable control during the entire season, it's my opinion that you can't beat inorganic mercury, or Turfcide or Terraclor fungicides (PCNB)," Burpee says. "These products, although

mercury use may not be allowed much longer, are more persistent fungicides that control disease under snow cover for 120 days and prevent the need for a second application if rains or thawing occur."

Byther agrees. "Most turf managers here in western Washington where we

don't usually have snow cover apply a longer lasting fungicide in the fall, such as Terraclor (which gives three to four weeks protection), and then make additional applications of another fungicide if needed," he says. "Spring applications are also often necessary, but fortunately, with changing spring conditions, the warmer periods help turf grow out of damage problems."

For golf course managers using Turfcide, a granular fungicide, on creeping bentgrass, Burpee advises an annual calibration of applicators. "Don't simply adjust your type of spreader to the appropriate number opening, because over-application of some fungicides can cause initial stunting and yellowing in the spring. However, it won't kill the grass," he adds. □

*Technical Credit:
Uniroyal Chemical
Company.*



**Pink snow mold surrounded by gray snow mold.
Photos by J. Connell.**