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## G86-824 Snow Mold Diseases of Turfgrasses (Revised February 1991)

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## Snow Mold Diseases of Turfgrass

How to identify, prevent, and control the principal snow molds of turfgrass in Nebraska.

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*John E. Watkins, Extension Plant Pathologist*

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- [Fusarium Patch \(Pink Snow Mold\)](#)
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Principal snow molds of Nebraska turfgrass are Fusarium patch (pink snow mold) and Typhula blight (gray snow mold). Of these two, Fusarium patch is usually the most prevalent and, due to the general lack of continuous snow cover during winter, probably the most damaging. Although snow molds occur on most types of turf grown in Nebraska, fine-leaved turf types are more often seriously injured than coarser lawn grasses.

### Fusarium Patch (Pink Snow Mold)

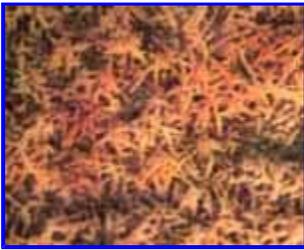
Fusarium patch, caused by *Fusarium nivale*, can injure turf any time during prolonged, cool, wet weather, which in Nebraska can occur from mid-October to mid-April. *F. nivale* survives during dormant periods in diseased grass plants or in dead leaves in the thatch. When temperature and moisture conditions favor infection, the fungus produces thousands of spores on previously infected plant tissue. These spores and diseased leaf fragments are spread by traffic through the affected area.



**Figure 1. Ring-like symptoms of Fusarium patch on bentgrass. (92K JPG)**

Infection most often occurs with temperatures between 32 and 50°F. When moisture remains on the grass for extended periods, such as during cold fogs or light drizzle, *F. nivale* infects grass blades, and turf injury begins. The longer these cool, moist conditions persist, the greater the injury. Conditions that bring on severe damage are heavy, wet snows occurring before the turf has "hardened off" and the ground has frozen. Severe disease often follows repeated frosts that injure grass plants. Frequent light snowfalls followed by brief thaws maintain a cool, wet environment that favors snow mold. High

nitrogen fertilization, especially an early fall application, heavy thatch accumulation, use of mulches, or heavy top dressing will also enhance *Fusarium* patch development.



**Figure 2. Salmon-pink border of *Fusarium* patch on Kentucky bluegrass. (58K JPG)**

Symptoms on bentgrass turf begin as small, circular spots which develop into rusty-brown patches, six to eight inches in diameter. Under ideal weather conditions, the disease progresses so rapidly that the grass in the center of these circular patches begins to grow again, producing a ring-like effect (*Figure 1*). These spots are usually less than a foot in diameter, but may expand up to two to three feet in diameter. Grass at the outer edges of the ring is thinner and, when wet, a white to salmon-pink moldy growth is visible on infected grass blades.



**Figure 3. Severe turf damage due to *Fusarium* patch. (46K JPG)**

On Kentucky bluegrass, *Poa annua*, fescues, and ryegrasses, symptoms are more or less circular spots, mostly in the 4- to 12-inch diameter range (*Figure 2*). Within these spots, the grass is bleached and matted. Some spots may be a uniform bleached color and others may have a bleached center with a rusty-brown or salmon-pink border (*Figure 3*). The scattered spots are easily detected, even in mid-winter, because of the contrast in color between the diseased spots and dormant turf.

### **Typhula Blight (Gray Snow Mold)**

Unlike *Fusarium* patch, which can develop from mid-fall to mid-spring, *Typhula* blight is strictly a cold-weather disease. *Typhula* blight is called gray snow mold because of the characteristic dirty-white to gray mycelium formed by the *Typhula* fungi on infected turf. The two principal species in the United States are *Typhula ishkariensis* and *T. incarnata*. *T. incarnata* is probably the principal species in Nebraska.

The gray snow mold fungi spend the warmer months as sclerotia embedded in infected grass blades and in the turf canopy. Sclerotia are very small black to orange structures that can survive hot, dry conditions. Heavy moisture and near-freezing temperatures trigger germination of sclerotia and infection of grass plants. A situation that often produces these key conditions is a deep snow or heavy mulch covering wet turfgrass before the ground has frozen. Early winter snows in Nebraska are often heavy and wet and may cover the turf for several weeks. This early snow cover initiates the disease. Gray snow mold activity will be slowed when the snow cover is gone due to winter thaws, but the activity will resume every time it snows, regardless of whether it is a light flurry or heavier snow. Injury to the turf is aggravated when the snow is compacted by walking, skiing, snowmobiling, or sledding. Succulent growth produced by early fall fertilization is a prime target for attack by snow mold fungi.



**Figure 4. *Typhula* blight injury at the edge of melting snow. (64K JPG)**

In Nebraska, symptoms of gray snow mold are most likely to develop where snow has drifted or been piled and is slow to melt. Patches of rough, dead, bleached-brown areas up to a foot in diameter become visible as melting snow recedes from infected areas (*Figure 4*). These patches appear scalded, with leaves being matted together. They are often, but not always, covered by

a whitish-gray moldy growth. As the grass dries, the leaves become silvery white, brittle, and encrusted over the patch. Extensive areas of turf may be damaged when the patches overlap due to enlargement of existing patches and development of new ones.



**Figure 5. Orange sclerotia of *Typhula* embedded in infected leaves. (84K JPG)**

When Fusarium patch and Typhula blight occur in the same turf at the same time, visual symptoms of the two snow molds might be confused. The two diseases can be separated when samples of infected turf are stored in a plastic bag in a refrigerator for two weeks. The *Typhula* fungi develop tiny orange to black sclerotia (Figure 5) embedded in infected leaves. Also, *Typhula*-infected leaves are usually white and brittle, while those infected by *F. nivale* may be pink and tough.

### Prevention of Snow Molds

Use of the following procedures can prevent damage from snow molds.

- Fertilize cool season grasses in late fall (after the last mowing) with a slow-release N carrier.
- Continue mowing in the fall until all leaf growth stops.
- Reduce thatch with aeration, vertical mowing, power raking, or a combination of these practices.
- Prevent large drifts of snow on important turf areas by proper placement of snow fences or landscape plantings.
- Prevent snow compaction by restricting walking, snowmobiling, skiing, or sledding on important turfs.
- Repair snow mold damage by raking the affected patches in early spring to disrupt the encrusted mat and by lightly fertilizing to encourage new growth.
- Use a preventative fungicide program on high-value turf and on areas where snow molds cause injury year after year. Make the initial fungicide application in early- to mid-November and repeat applications during mid-winter thaws, as needed.

**Table I. Fungicides for control of Fusarium patch and Typhula blight on turfgrass. <sup>a</sup>**

| Fusarium Patch (Pink Snow Mold) <i>Fusarium nivale</i> |  |   |
|--|--|---|
| Fungicide common name                                  | Trade names  | Remarks   |
| Benomyl  | Benomyl, Lebanon Fungicide Type B, Tersan 1991   |   |
| Chlorothalonil   | Daconil 2787, Lawn Fungicide 2787, Lebanon Fungicide Type D, Ornathal, Liquid Lawn Disease Control | Most effective when combined with Benomyl or iprodione. |
| Cycloheximide + thiram                                 | Acti-dione Thiram  |   |
| Fenarimol  | Rubigan  |   |
|  |  |   |

|   |   |  |
|---|---|--|
| Mancozeb  | Dithane M-45, Fore, Formec 80, Lesco 4  |  |
| Mercury chlorides   | Calo-Clor, Calo-Gran  | For use only on golf courses.  |
| Quintozene (PCNB)   | PCNB, Terraclor, Turfcide, Lawn Disease Preventer   |  |
| Phenylmercuric acetate (PMA)                                  | PMAS  | For use only on golf courses.  |
| Propiconazole   | Banner  |  |
| Thiophanate-ethyl + thiram                                    | Bromosan  |  |
| Thiophanate-methyl  | Fungo 50, ProTurf Systemic Fungicide  |  |
| Thiophanate-methyl + mancozeb                                 | Duosan  |  |
| Thiram + cadmium compounds                                    | Cad-Trete, Cleary's Granular Turf Fungicide, Kromas, Lebanon Fungicide Type T, Lesco Snow Mold Turf Fungicide |  |
| Thiram + PMA  | ProTurf Broad Spectrum Fungicide  | For use only on golf courses.  |
| Triadimefon   | Bayleton, ProTurf Fungicide 7   |  |
| Vinclozolin   | Vorlan  |  |
| <b>Typhula Blight (Gray Snow Mold) <i>Typhula</i> spp.</b>    |   |  |
| <b>Fungicide common name</b>                                  | <b>Trade names</b>  | <b>Remarks</b>   |
| Anilazine   | Dyrene, Lesco Professional Lawn Disease Control, Lescorene  |  |
| Cadmium compounds   | Caddy, Cadminate  |  |
| Chloroneb   | Chloroneb, ProTurf Fungicide II, Teremec SP, Terraneb SP  | Controls Typhula blight caused by <i>T. incarnata</i> , but is not effective against <i>T. ishikariensis</i> . |
| <b>Fusarium Patch (Pink Snow Mold) <i>Fusarium nivale</i></b> |   |  |
| <b>Fungicide common name</b>                                  | <b>Trade names</b>  | <b>Remarks</b>   |
| Chlorothalonil  | Daconil 2787, Lawn Fungicide 2787, Lebanon Fungicide Type D, Ornathal, Liquid Lawn Disease Control            |  |
| Cycloheximide + thiram  | Acti-dione Thiram   |  |
| Fenarimol   | Rubigan   |  |
| Iprodione   | Chipco 26019, ProTurf Fungicide VI  | Delay mowing for 24 hours after  |

|                              |   |   |
|------------------------------|---|---|
|                              |   | application.  |
| Mercury chlorides            | Calo-Clor, Calo-Gran  | For use only on golf courses.   |
| Quintozene (PCNB)            | PCNB, Terraclor, Turfcide, Lawn Disease Preventor   |   |
| Phenylmercuric acetate (PMA) | PMAS  | For use only on golf courses.   |
| Propiconazole                | Banner  |   |
| Thiophanate-ethyl + thiram   | Bromosan  |   |
| Thiram                       | Thiram, Spotrete, Lesco Thiram 75W  |   |
| Thiram + cadmium compounds   | Cad-Trete, Cleary's Granular Turf Fungicide, Kromad, Lebanon Fungicide Type T, Lesco Snow Mold Turf Fungicide |   |
| Thiram + PMA                 | ProTurf Broad Spectrum Fungicide  | For use only on golf courses.   |
| Triadimefon                  | Bayleton, ProTurf Fungicide 7   | Effective against <i>T. incarnata</i> , but not against <i>T. ishikariensis</i> . |

<sup>a</sup>Fungicides listed represent the best information available. No criticism is intended of products not listed, nor is endorsement by the University of Nebraska given to those listed. Read and follow all product label directions for mixing and application.

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***File G824 under: PLANT DISEASES***

***F-9, Turf***

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