



Microdochium Patch

By Steve Abler and Dr. Geunhwa Jung, Turfgrass Diagnostic Lab, Department of Plant Pathology, University of Wisconsin-Madison

As the days become shorter and the temperatures begin to drop, the main disease that occupies the minds of golf course superintendents is Microdochium patch. Microdochium patch incited by the fungus *Microdochium nivale* (other names for this disease that you might be more familiar with include Fusarium patch, Gerlachia patch, and pink snow mold) is the most common of the low temperature diseases in Wisconsin. The fungus is most virulent during humid conditions in which the temperatures are between 32 and 45°F. However, during prolonged periods of humid weather such as those common near the great lakes, the pathogen may be active at temperatures as high as 65°F. *M. nivale* is able to infect and colonize all of the major cool-season grasses, but annual bluegrass and bentgrasses are highly susceptible to the fungus. Symptoms of the disease vary according to the type of grass, management, and time of year.

Symptoms During the Spring and Fall

On closely mowed turf found on greens, tees, and fairways, Microdochium patch is first seen as circular patches of water soaked grass 2-3 inches in diameter. The affected area will quickly turn brown and then tan or white, often resembling large dollar spots. Blades of the colonized grass mat together and white to pink mycelium is often visible on the edges of the patches. The border of active patches on bentgrass may appear pink in color, while the edge of patches on greens and fairways containing high populations of annual blue-

grass are usually reddish to brown in color (Figure 1). The pink sporodochia (fruiting structures) containing thousands of spores are what give the patches their distinct pink color. Patches can rapidly enlarge to over a foot in diameter and often coalesce during extended periods of favorable conditions. Close examination of affected leaves will occasionally reveal the round, salmon-colored sporodochia. Additionally, many banana or canoe-shaped spores are visible upon microscopic examination of colonized leaves (Figure 2).

On grasses with an increased height of cut such as those found in roughs and home lawns, Microdochium patch is first noticed as an irregular blighting of the grass. The blades of the grass will turn yellow at the tip and often times have chlorotic lesions. The grass will eventually turn straw to white in color and may mat together. During favorable conditions individual patches may have a pink tinge to them and will often coalesce to form irregularly shaped patches.

Symptoms After A Snow Melt

The environment under a heavy layer of snow is ideal for the growth of *M. nivale*. This environment is especially conducive for the development of Microdochium patch when there are heavy snowfalls on unfrozen ground. In this case, not only are the cool, wet conditions ideal for the fungus, but the plants under snow cover are also more stressed. The plants still respire and use up carbohydrates, but the layer of snow prevents adequate light from reaching the plant to replace the lost carbohy-



Figure 1: Typical symptoms of Microdochium patch on bent/poa greens. Note the salmon-colored border of the patches.

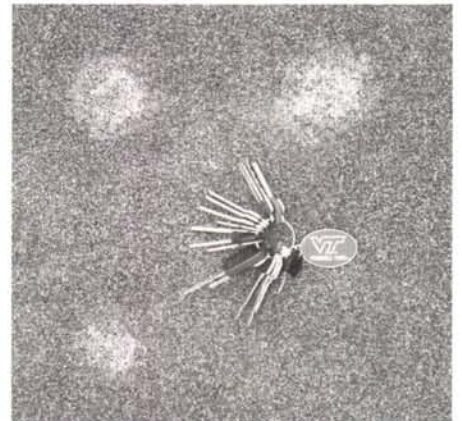


Figure 2: Canoe-shaped conidia of *M. nivale*.

drates via photosynthesis. This deficiency of carbohydrates in the leaves makes the plant more susceptible to attack by the pathogen (Couch, 1995). When snow melts in the spring, white to pink circular patches up to foot or more in

diameter are revealed. The grass in these patches is usually matted together, and the most recently uncovered patches are often covered with fluffy, white to pink mycelium.

Control of Microdochium Patch

There are several cultural techniques that can minimize your risk of a severe outbreak of Microdochium patch. Since succulent tissues are more susceptible to infection and colonization, heavy applications of readily available nitrogen during conditions conducive for disease (especially late in the fall) should be avoided. Conversely, applications of potassium have been shown to suppress disease development. As with several other turfgrass diseases, the pH of the thatch and upper inch of the rooting mix should be maintained below 7.0 because the disease is more severe in under alkaline conditions. If you have very acidic soils, make sure to apply the lime in the spring rather than the fall. Avoiding heavy thatch layers should remain a priority because thatch is a hospitable location for the fungus to grow and survive harsh conditions. Spores and mycelium of the fungus are easily spread by mowers and other golf course equipment, so washing equipment that has been used on a diseased area is a must (Figure 3). Additionally, excessively long grass should be avoided because the leaves lying on top of each other create a humid environment that promotes disease (McBeath, 2003).

Cultural techniques may help superintendents avoid turfgrass damage in the spring and fall, but in Wisconsin, superintendents must rely on fungicides to survive the long months when snow blankets their courses. Fungicides that are labeled for the curative control of Microdochium patch include azoxystrobin (Heritage®), fenarimol (Rubigan®), iprodione



Figure 3 :Microdochium patch spread by a greens mower from an area of annual Bluegrass on the collar.

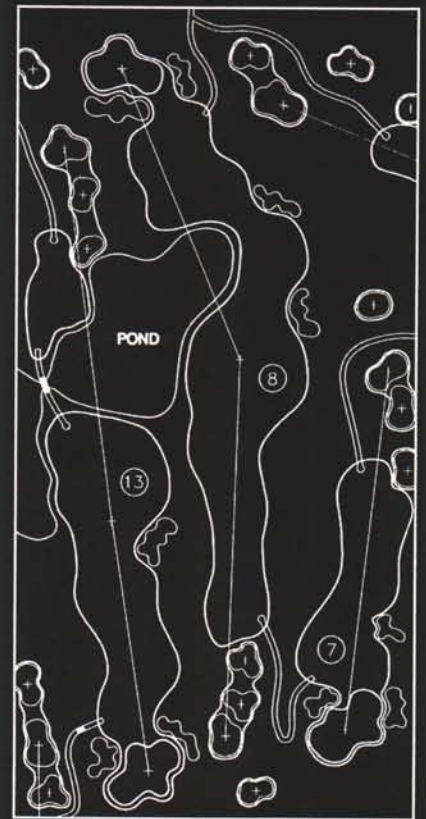
(Chipco 26GT®), myclobutanil (Eagle®), PCNB (Turfcide®), thiophanate-methyl (Cleary's 3336®), thiram (Spotrete®), and trifloxystrobin (Compass®). The most consistent and commonly used combination to prevent Microdochium patch and other diseases including Typhula blight that occurs under snowfall is an application of PCNB, iprodione, and chlorothalonil just before the first heavy snowfall of the year.

The turfgrass pathology lab and the Turfgrass Diagnostic Lab are looking into several aspects of this important Wisconsin disease. Research efforts are aimed at testing the efficacy of application of single fungicides and combinations of fungicides to improve disease control options for superintendents. Studies are also being conducted to investigate the subspecies of *M. nivale* present in the state as well as breed bentgrasses that are more resistant to the pathogen. As always, if you have a question regarding Microdochium patch or any other disease, please contact myself or Dr. Jung at the Turfgrass Diagnostic Lab.

Works Cited

- Couch, H.B. 1995. Diseases of Turfgrasses, 3rd ed. Krieger, Melbourne, FL.
 McBeath, J.H., 2003. Snow mold: winter turfgrass nemesis. Golf Course Management 71(2): 121-124.✂

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