

Winter Disease of '97

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The fall and winter of '96 and spring of '97 was possibly the worst season I can remember. The dry fall left the turf in a weakened position, the snow cover did allow the soil surface to thaw under the snow and the rain in November was potentially very damaging. The extended snow cover, a slow melt in the spring and the spring that did not want to develop, including the cold snap in April has made growing turf very difficult. Springs just don't seem to change into summer as fast as I remembered.

Fungicide treatment for winter disease this past year was exposed to the most rigorous environment I can remember. Any weakness in your delivery system should have been exposed this year. I believe, I could see patterns of both liquid and granular products failing to provide the uniform level of disease management we've come to expect. Application rates at low dilution levels, 3/4 to 1 gallon liquid per thousand square feet and spreaders that may have been just a little too wide in the application pattern show streaks and gaps. The fact that some PCNB fungicide treatments were watered in could have contributed to the less than desired level of disease control. The performance of PCNB, mostly the 75% WP formulation over the past several years in my trials, has had some variability. The lack of consistent performance may have been due to the product not always mixing well in the spray tank and I believed that it was more prone to being susceptible to washing off the grass foliage. I also had observed that the flowable PCNB formulations had variability in performance. This tendency may be part of the reason some people saw failure this year.

Fungicide products perform best when applied to dry turf and are allowed to dry in place before being re-wet. Application to a wet target is not desired, as it results in a longer drying time. The application of all fungicides for winter disease management should be applied to dry turf in a minimum of two gallons of water per one thousand square feet.

In past years the need for a spring application to control winter disease was a minor concern, but over the last several years in north central Minnesota I've seen the need for applications following snow melt. This may be due to a longer spring season, slow growing turf or the use of products that do not have the staying power of products like Mercury. In years like this past season removal of fungicide products by water or weather may have increased the need for spring application.

In addition to disease this year direct damage from exposure was a problem and standing water increased crown hydration killing. Spring disease that I've seen this year

was due to Pink Patch or Pink Snow Molds. The damage first appeared as water-soaked spots, changing into bleached tan or white dead circles and with continuing favorable conditions — cool and wet — pink to salmon colored rings around the tan spots. A spring application of fungicides appeared to not stop this disease; however, one must remember that recovery is dependent on growth. Something that most did not have and any mowing of greens removed the few green leaves that did grow. The disease appeared to be worse. Greens that were Poa and now are more bent are expected to grow even less as the bents are more temperature sensitive. We clearly are ready for warm weather, but our expectations for growth this spring were very unrealistic. Soil temperatures were too low and sunlight was limited as was water. Growth levels expected were way beyond what could be achieved by bents and it therefore appeared that the disease was still active. Turf reserves were at a low level this spring and any growth from carbohydrates was very limited; the plant needed to be able to convert sunlight to energy and this spring season did not allow this to happen. I am collecting isolates of *Microdochium* or *Fusarium* to test for tolerance. At the

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Winter Woes—

(Continued from Front Cover)

Removing the ice from greens during December or January did not seem to prevent winterkill. Several superintendents broke up or removed ice from greens during December and January and severe injury still occurred on the putting surface. The injury to turf on greens was not always limited to poorly drained or high traffic areas dominated by *Poa annua*. The injury seen on greens at some visits in May was so extensive that a fair amount of bentgrass must have been killed as well.

According to many superintendents, clearing the snow from greens just before or during the first significant period of warmer weather in March did help prevent melting water from backing up on the turf and re-freezing at night. Clearing the snow from around the greens to give the water, from melting ice and snow, a clear path off the putting surfaces also seemed to produce positive results.

Without a doubt, covers helped prevent winterkill in 1997. The excelsior mats appeared to provide a bit more protection than the fabric types of covers. There were no reports of significant injury to turf on greens at courses that covered greens. On some courses that covered only a few of the greens, the covered greens entered the

spring in good to excellent condition while the uncovered greens usually sustained serious winterkill. There was at least one notable exception where a course that usually covers greens did not cover last winter and did not experience injury.

Unfortunately, cool weather this spring and many hard frosts during May have slowed down the rate of turfgrass recovery. Plastic sheeting and geotextile fabric covers have been used to raise soil temperatures on overseeded greens to encourage faster seed germination. Overseeding tools such as the Verti-Seed and Job Saver resulted in faster germination due to better seed-to-soil contact than verticutting and broadcast seeding operations. Pre-germinating bentgrass seed by repeatedly soaking then drying the seed while changing the water between soakings has produced good results in the past and should be considered whenever the soil temperatures are low. Pre-germinating seed, though, is a time-consuming task best suited for repairing relatively small areas of damage because the seed must be sown by hand or with a drop spreader.

If there is a positive side to the widespread winterkill, it perhaps emphasizes the importance of several basic turfgrass management principles to the golfers. It reminds us all that standard maintenance practices

that give the competitive edge to bentgrass over *Poa annua* such as aeration, keeping the playing surfaces on the dry side, overseeding and improving surface/subsurface drainage in wet areas are necessary to reduce the risk of winterkill in the future.

Winter Disease—

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present time I do not expect to find resistant strains, but will try.

A survey of golf winter programs is being done by the MGCSA and when those results are available we should again review programs to determine what works and what did not. While I did not have plots this past year, reports from Michigan and Wisconsin are consistent in that many have had failures. The year was not good for winter disease control. I expect more will be learned in the next several months.

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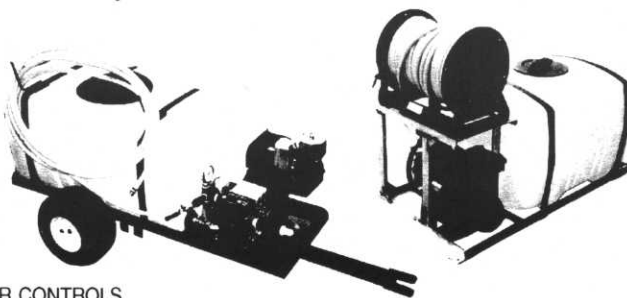
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