



WIDESPREAD WINTER WOES

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There were over 75 participants at the recent Minnesota Golf Course Superintendents Association monthly meeting hosted by John Harris at the Lafayette Club on April 29, 1997. The topic of discussion was the extent and severity of winterkill to turf that occurred on golf courses across Minnesota between November 1996 and March 1997. Courses in Minnesota suffered more and more severe winter loss of turf this past winter than did golf courses in Wisconsin.

There were no positive responses to the first question of the evening... "Who did NOT experience significant winter injury to turf this spring?" Over 1/3 of the attendees believed that the extent of the injury was unusually severe. Other Minnesota superintendents I contacted during March and April responded in a similar manner. It was not a question of whether or not winterkill occurred; instead, the questions were (1) "where did the injury occur?" and (2) "how extensive was the damage?"

At least three weather events are partially to blame for the winterkill. Each of these events alone could account for significant losses of turf.

(1) A heavy rainfall during late November was followed by a rapid drop in temperature. Some frost had already developed in the upper soil profile, so little of the rain soaked into the turf. This was an ideal scenario for severe crown hydration to *Poa annua* and perennial ryegrass turf. A thick layer of ice formed in low-lying portions of greens and fairways at this time. The ice cover remained all winter at a number of courses. I agree with many superintendents that a considerable amount of injury seen in spring occurred during the November freeze/thaw event.

(2) The shallow frost in the upper soil profile quickly disappeared. The result was unfrozen turf buried and insulated by a layer of ice and snow. These conditions provided an ideal

environment for snow mold activity.

(3) Another rapid drop in temperature occurred in early April and, again, a heavy rain fell just before the freeze. Some additional turf that had been weakened by the earlier weather events may have been killed at this time.

Every superintendent I contacted this spring experienced injury to turf in poorly drained areas on fairways. Almost 100% loss of turf cover occurred on greens at other less fortunate courses. The pattern of injury seen during Turf Advisory Visits this season indicates crown hydration as the primary cause of damage. Significant thinning from snow mold also accompanied the crown hydration. Some superintendents believe that the heavy rain in late November reduced the effectiveness of the snow mold fungicide treatments, especially when the treatments were applied within a week of the rainfall event.

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 refreezing at night. Clearing the snow from around 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, cover 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 seen 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 and 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. Pregerminating 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. 🌱