



Coming Out of Winter: How Did Your Turf Do?

By Dr. Brian Horgan
University of Minnesota

Whoa, another challenging Minnesota spring. Your general manager is asking you questions. Greens committees are referencing the golf course down the street that looks great. Consultants have been hired. Sales representatives have made site visits. Informal get-togethers by superintendents are trying to answer questions. Unfortunately, there seems to be more questions than answers at this time.

Questions like: Is your turf brown? Do you have Poa death? Does it smell? Did you cover your greens? What kind of covers did you use? Did you spray fungicides for snow mold protection? What fungicides did you spray? Was your soil wet going into the winter? Was your soil dry going into the winter? Did you fertilize your turf last fall? Did you have ice cover on your greens? How long was the ice present? Did you have open conditions this winter? Was your golf course used for recreational



Ouch!

activities this winter (x-country skiing, snow shoeing, etc...)? Did you perform a late fall aeration?

So what did we see coming out of this winter and was this unique? Dead Poa was visible on many courses this spring. And speaking with some of our senior superintendents, this sort of injury happens more frequently than we care to admit.

Two Types Of Damage, With And Without Covers

In some situations, the Poa died without any artificial greens covers. I did not observe any completely dead greens, only spots that seemed randomly distributed. This makes sense to me. Poa has many different biotypes ranging from true perennials to true annuals and every possibility in-between. Some biotypes are more susceptible to low temperatures, some are more sensitive to wind desiccation, and still others are more susceptible to crown hydration. Observing a highly mottled Poa putting green exemplifies the survival of the fittest theory. Unfortunately, those areas that contained large percentages of annual biotypes and died will probably initially grow more annual biotypes of Poa this spring and possibly lead to the same problem next year.

In other situations, the Poa died and were covered throughout the winter. The Poa under greens covers that allowed some gas exchange had damage similar to the not covered category. Again, this is the nature of the beast (growing Poa).

The Poa under greens covers that were impermeable seemed to have the biggest problems this spring. I will attempt to address this situation through a series of questions and a couple of scenarios of what might have happened starting with the placement of greens covers.

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Q1: When did you put your covers down? Timing of covering putting greens defines success or failure. One rule of thumb: wait until the plant has hardened off and until we have had a good freeze. This will ensure that the plant and microbes in the soil are ready for a long winter's sleep. However, don't wait too long as it will be difficult to insert the staples or stakes to hold the cover in place.

Q2: Prior to covering the greens, what was the moisture status of your soil? The books all say that your soil should be at or near field capacity. This will provide adequate soil moisture to take your plants through the winter until spring rains or your irrigation system is operable. If your soil is too dry and you do not cover greens, low temperature kill or desiccation from wind can be a problem. Therefore, follow-



Oooooooh!

ing the fall blow-out of your irrigation system, if warm weather reappears, you may need to tank water to your greens that have dried-out. Keep your soil probe handy.

If your soil is too wet and you cover, you could possibly see crown hydration or even toxic gas build up under the cov-

ers (most important with impermeable covers). If we have a wet fall, or if you saturated the soil late in the season, you MUST allow time for drainage or for evaporation to take place prior to covering

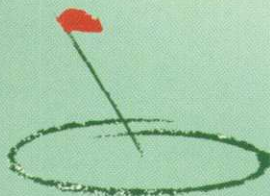
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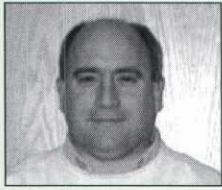
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Musing the Minutes

By Rick Traver, Jr., CGCS
Monticello Country Club

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with an impermeable cover. Not doing so will potentially cause you significant problems in the spring dependent upon soil types!

Q3: What happened with the weather?

+ Looking through climatological data for the Twin Cities Metropolitan Area (TCMA), November ended with 4" of snow cover and temperatures hovering around freezing. This snow eventually melted in early December.

+ An inch of frost initially developed around November 25. This increased to 3 inches the first week of December. The ground thawed around December 15 before refreezing the 25th.

+ We had an additional 9" of snow which melted in mid-December.

+ Air temperatures warmed up, from December 15 through January 3, where 17 of 19 days, the daily high exceeded 32°F.

+ Remember, the snow melted and was gone in mid-December and did not return until January 24, 2004.

+ Temperatures declined dramatically after January 3 and we had our coldest temperatures for the winter during the last week of January (daily highs below zero).

Uncovered Poa greens were injured dependent upon retained snow cover, biotypes of poa present, snow/ice melt drainage patterns and exposure to the elements.

Poa death on native soil putting greens seemed to be most common amongst a large group of superintendents who used an impermeable greens covers. Another similarity was wet soil. Maybe not saturated, but the soil was wet when the greens were covered.

A couple of things could have happened underneath the covers: Environmental conditions following the snow melt that occurred in mid-December when temperature fluctuations led to the loss of frost in the soil could have caused soil moisture to be drawn to the soil surface and water condensation under the impermeable cover. When the next batch of frigid air occurred at night, the water that had condensed under the covers would have frozen, causing an ice layer to form. We would also expect that the condensed moisture would be present in the upper soil profile near the crowns of the plant which could lead to super-hydration after freezing. Repeated cycles of this phenomenon from December 15 through the 25th, is when some of this damage could have occurred.

The other possible scenario involves the formation of toxic gases under these impermeable covers. If the covers were placed over greens that had excessive moisture (moisture greater than field capacity), anaerobic bacteria could still have been active. These respiring bacteria can produce lethal concentrations of CO₂, CH₄ (methane) or H₂S (hydrogen sulfide) and by placing an impermeable cover over the anaerobic soil, in effect, seals in these toxic gases causing plant death.

If this were the cause of Poa death, it probably occurred very soon after covering during a transition period when soil temperatures were adequate for bacteria and anaerobic decomposition. Upon removal of the covers, you probably noticed a putrid smell which is indicative of rotten, decaying plants. In addition, you may have witnessed variable kill of the Poa near the edge of the cover where gas exchange may have occurred.

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I hope everyone is having a great and stress free spring. The last board of directors meeting was enjoyable and short, so this column shall also be a bit brief. The MGCSA Board of Directors met on Monday, April 5th at Monticello Country Club. The highlights to this months meeting were the roster and again the new golf tournament proposed by BASF.

* * * *

The roster is currently being completed and you will soon have the updated sheets to put in the binder you received last year. It appears we will be saving about \$2,000 on the cost of producing the new sheets by having them copied rather than printed. The only drawback to this could be that the ink could smear if it got wet. The board felt that because you will get new sheets every year this was an acceptable risk for the cost savings.

* * * *

Kudos to Fred Taylor, CGCS, for his response to an editorial written in the Mankato Free Press. It appears Fred has had to do some written sparring with one of the professors in his neighborhood who doesn't have a high regard for golf courses and their supposed negative affect on the environment. While I haven't read the article, those who did stated that Fred's response was very articulate and represented our association well.

* * * *

Thanks to Jack MacKenzie, CGCS for getting his club to host the new BASF People vs. the Pro tournament this year. It was short notice and I am sure it took some salesmanship. Also thanks to Dave Oberle for bringing this event to the MGCSA. This could be an excellent event for our association, so send in your registration early. Class A & B members do have priority placement, but applications must be in early.

* * * *

In other news, James Bade reported that all is well with the MTGF; their new president is John Hopko and vice president is Dan Miller. The MTGF has also committed \$25,000 to the design of the new TROE Center building as well as giving \$30,000 to Dr. Horgan's program and \$15,000 to Dr. Wadkins' program.

* * * *

Paul Eckholm, CGCS reported that Dr. Frank Fleger is retiring as head of the plant pathology department at the U of M. He has been a strong advocate of hiring a new turf pathologist and his leaving could make filling that position a tougher sell. Eckholm also reported that the legislature is looking at Restricted Use Pesticides and are entertaining the idea of requiring all users of RUP products to file a report monthly to the MDA.

* * * *

Here's wishing you all a great spring. I hope to see many of you at Glencoe Country Club. I grew up on that course when it was still nine holes. I am looking forward to getting the opportunity to play there again. Take Care! RT

Turf-

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Couple these previous two scenarios together. If soil moisture moved to the surface in mid-December and an ice layer developed under an impermeable cover, toxic gas build-up and/or crown hydration could have caused death. The longer these covers were in place or the longer the ice was present, the more death occurred. Data suggests that bentgrass can survive ice cover for 100 days but Poa can die under ice after only 60 days.

Q4: What about those of us that grow bentgrass on a USGA specification putting green? You tell me, did you have any damage. My experience this year tells me that damage did not occur on well-drained soils growing bentgrass. In other

words, this is a drainage issue.

After talking with many of you that had significant damage, I would ask the question, "Are you planning on using these same covers next year"?

Of course the initial response is NO!

The question then is usually turned to me, "Should I use covers next year"? My answer is no and yes. If you have soils that do not drain well, I would not recommend using an impermeable cover. If you

have well-drained soils in areas that do not hold snow cover, I would recommend a cover to protect the plants from desiccation or low temperature kill.

Stay tuned as I'm sure 2004-2005 will continue this soap opera of the Fickle Finger of Fate.

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Make Plans to Attend the Spring Mixer at Glencoe Country Club on Monday, May 17

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