

ICE ALERT

By Don White, Brad Pedersen & Troy Carson
University of Minnesota

When we left for Orlando and the GCSAA meetings, there was little, if any, ice on the turf, just lots of dense snow. During the time we were gone, however, a substantial (up to 2") ice cover had developed. This happened even in some places with good surface drainage. So it is important that you evaluate the situation, at least on greens and tees, so that you can develop a strategy to deal with the situation if ice has formed.

This note will be primarily in the form of a discussion because every situation is going to be different. And, we are not sure that there is much that should be done for a while. We know that different turfgrass species will tolerate ice cover for different lengths of time.

In fact, under extremely cold conditions and while the soil is frozen, ice can be somewhat protective by limiting the intensity of cold that plants are exposed to and by protecting the turf from rapid changes in temperature. And for this reason, it may be important to leave the ice in place until just before things start to melt.

Because this ice formation is recent, one could expect that the critical exposure time may not be reached for some time yet. Most observations indicate that damage is most likely to take place during the transition of winter to spring when temperatures fluctuate widely above and below freezing and melt water is abundant.

We also need to consider the kind of ice we are dealing with. Although there are many ways to describe ice, a two level description is convenient for our situation and fits with ice commonly found over turf. However, each results in a different condition and requires a different response. 1) White ice is less dangerous because it is filled with air bubbles and usually allows for gas exchange. 2) The more dangerous ice is "black" or "clear" ice, which is a dense clear ice that can be seen through and has few bubbles. This ice can restrict gas exchange resulting in dead turf plants. When black ice is found, it is normally important to create air passages through it. This can be accomplished by spreading Milorganite or other dark material over the surface, if the ice is not too thick. Or by cracking or breaking up the ice to allow for air passage. This is critical just before the ice starts to melt.

Most of the damage to turf appears to take place during the transition of winter to spring and the freeze-thaw cycles that result in exposure of crowns to melt water and above freezing temperatures during the day and freezing temperatures during the night. Under these conditions, crowns and annual bluegrass, as well as other grasses, when exposed to free water can become hydrated. Hydrated

crowns are very vulnerable to freezing damage at temperatures that would not normally bother the turf plants. Crown hydration takes place at above freezing temperatures and when accompanied by exposure to temperatures in the low 20°F range can kill plants by freezing and macerating the crown tissue.

The most critical thing at this point is to reduce the potential for exposure of turf to free water (melt water). This means that we need to ensure that surface drainage is operating at the best possible level. It also means that we can expect to lose turf wherever water accumulates, in depressions, behind ice dams, in the low places, etc. It is imperative that the melt water be removed from the site immediately or that the snow or ice be removed prior to melting.

Anything you can do to enhance surface drainage, including physical removal of ice or snow, should help. *Please read on before running out to remove snow and ice right now.*

So after all this, what should we do? Frankly, I'm not sure, because so much depends on the weather (and we all know how fickle weather can be in Minnesota) but I will share some observations that I hope will be helpful.

1. If everything goes wrong, like it might, conditions are right for substantial damage to many grass species this spring, but especially the annual types of *Poa annua*, perennial ryegrasses and tall fescues.
2. Temperatures over the next few days are predicted to be substantially above freezing which can be expected to result in substantial melt water.
3. In addition, rainfall is predicted to accompany the thaw.
4. The soil is still frozen and ice on the surface can be expected to intercept water from rainfall or snow melt for a while.
5. We still have substantial opportunity for cold temperatures and more snow before the thaw.
6. If we experience rainfall in the next few days and the ice maintains its integrity, the ice may protect the surface from free water. In addition, if we experience substantial snowfall before the real thaw, having the ice on the green may actually help in the snow removal process (which ultimately removes melt water from the greens or tees.)

With the above in mind, I am inclined to wait this out a little longer and be prepared to do all that I can to remove the potential melt water as run-off, snow or ice just before or at the start of soil thawing.*

However, if we end up with no snow cover and "black

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Ice Alert—

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ice" is exposed to sunlight, it would probably be prudent to break up the ice or melt through it to create avenues for air exchange.

*Remember, the soil thaws from the top down and from deep in the soil up toward the surface. The most crucial time is when there is a residual zone of frost between 4" and 8" below the soil surface. This usually results in the top few inches above the frost layer being saturated and can result in problems unless the water has run off before the soil surface thaws.

Please do not hesitate to call either Brad Pedersen at 624-7407 or 507-835-3620, or Don White at 624-9206 or Troy Carson at 624-4907 if you think we can help.

Best wishes for a good year and please keep us posted as to how things go.

Spring Bull Session

The Spring Bull Session, usually taking place at Alexandria Golf Club, will be held this spring at Detroit C.C. in Detroit Lakes on Monday, March 18.

An informal meeting will start at 9 a.m. and run until 2 p.m. Coffee and doughnuts available with lunch on your own. Come with questions and be ready for a good "round table" discussion.

All superintendents are invited. Contact Brad Klein at 218-847-8070 for more information.



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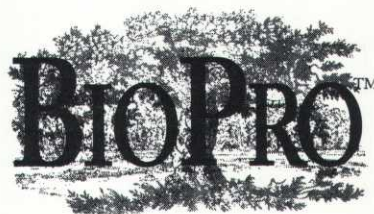
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