

Melting Ice On Putting



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When given lemons make lemonade. When given an ice sheet, conduct an ice melt study. On January 31 at the Hancock Turfgrass Research Center (HTRC) at MSU we conducted an ice melting study in cooperation with Dr. Brian Horgan, Andrew Hollman, and Sam Bauer from the University of Minnesota. We tested 20 products for their ability to melt ice. Conditions during our treatment window which began at approximately 11 am and concluded at 5:30 pm had temperatures hovering around 25 °F and constant cloud cover. The treatments can be broken down into three general categories:

Greens



Standard Chemicals/Salts (all application rates 28 lbs./1000 ft.²)

1. Calcium chloride
2. Sodium chloride
3. Potassium chloride
4. Magnesium chloride

‘Safer’ ice melt products (all application rates 28 lbs./1000 ft.²)

5. Calcium magnesium acetate

- (CMA)
6. Sodium acetate (NAAC)
7. Enviro Melt (carbonyl diamide/urea)
8. Safe Paws (modified amide/glycol admixture)
9. Paw Thaw (CMA and fertilizer)
10. Tenderfoot Ice Melter (urea and DeFrost)
11. Ammonium sulfate

Solar Absorption Products (dark colored)

12. Milorganite greens grade (56 lbs./1000 ft.²)
13. Sustane greens grade (40 lbs./1000 ft.²)
14. Top Cut biosolids SGN 90 (53 lbs./1000 ft.²)
15. Top Cut SGN 200 (53 lbs./1000 ft.²)
16. Top Cut + DeFrost SGN 200 (53 lbs./1000 ft.²)
17. BioDac + DeFrost SGN 200 (47 lbs./1000 ft.²)
18. BioDac + DeFrost + Colorant SGN200 (47 lbs./1000 ft.²)
19. Eon 75 humic acid (47 lbs./1000 ft.²)
20. Black sand (100 lbs./1000 ft.²)

We recorded surface ice temperatures prior to treatment application and at intervals following applications using an infrared temperature sensor. We rated ice melt based on observation of standing water on the plots on a scale from 1-5 with 1 = no visible melt, and 5 = visible standing water.

Surface temperatures prior to treatment application were very similar to air temperatures 25-26 °F.

One hour after treatment application the treatments were separated into two groups, the standard salts and safer ice melt products vs. the solar absorption products. The solar absorption products with their dark coloration had surface ice temperatures of 35-37 °F whereas the salts and safer treatments had surface ice temperatures of 27-31 °F. Treatments were still significantly different at 4.5 hours after treatment application although



Solar absorbing products had the greatest melting



Calcium chloride melted holes all the way to the turf surface.

the temperatures for the solar absorption products declined to 30-32 °F, most likely due to the sun setting.

There were also differences in visible melt from the treatments. The following treatments produced the most visible melt: Milorganite, Sustane, Top Cut biosolids SGN 90, Eon 75 humic acid, and black sand. The standard salts and safer ice melt treatments produced very little visible ice melt.

The standard salts were the only treatments we observed that were able to penetrate through the 2 inch ice sheet so they could be effective in facilitating gas exchange with the surface but of course there is the risk of turf burning from the salt properties of these treatments.

Overall, even though temperatures were below freezing and cloud cover persisted the solar absorption treatments were effective at melting the ice surface but were unable to melt to the surface of

the turf given our 2 inch ice sheet. We are planning to replicate this trial again this coming week at both MSU and Minnesota when temperatures are forecast to be above freezing. We will also be assessing turfgrass phytotoxicity from the treatments this spring.

Helping the Melt

Next week most areas of Michigan are forecast to have temperatures above freezing and possibly into the mid 40's in combination with rain. Many superintendents have been

attempting to clear greens down to the ice layer to facilitate melting. Keep in mind that if this melt occurs there is going to be a tremendous amount of water that will be moving off greens. Ensuring the water can exit the greens will be critical to try and prevent water backing up onto the green and refreezing if temperatures drop below freezing at night. Ultimately Mother Nature is going to dictate whether or not our *Poa annua* putting greens have survived the ice sheet and the pending melting and freezing in the next month.



Roger Stewart, CGCS, and 2014 MGCSA President on the left, thanks Scottie Hines, CGCS for his two year term as MGCSA President after the MGCSA 2014 Annual Meeting at the Northern Green Expo.