

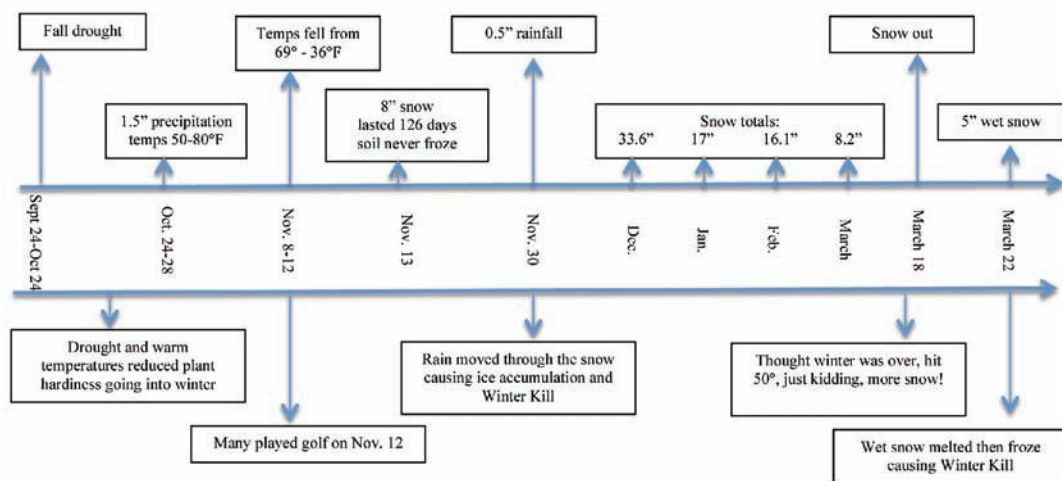
Winter Kill

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Each year, golf courses across Minnesota experience varying levels of damage due to Winter Kill. Winter 2011 was an especially challenging year for our golf courses and many lost grass due to Winter Kill. Couple winter injury with poor spring growing conditions and this is why some golf courses are struggling with playing conditions. After visiting many Minnesota golf courses, working with the golf course Superintendents and studying the weather conditions, we can draw some conclusions about what is happening.

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Winter 2011 Timeline:



Turf Establishment Products from Profile & the Tessman Company



- ▶ Futerra Environet is created for slopes and environmentally sensitive sites
- ▶ Works great on new construction for golf courses and sports fields
- ▶ 2 sizes, 40" x 135' Natural (32 rolls/pallet) or 82" x 135' Natural (16 rolls/pallet)



- ▶ Fast germination means F4 Netless excels at vegetation establishment
- ▶ Provides high levels of slope protection
- ▶ F4 Netless weighs much less than any other blanket on market, installs quickly with less man-hours per square yard
- ▶ Size 39" x 90' Natural (32 rolls per pallet) or 78" x 90' Natural (16 rolls per pallet)



- ▶ Expanding cellulose/ wood fiber mulch granules enhance germination and seedling emergence by holding seed in place and absorbing water
- ▶ Organic tackifier reduces soil erosion, water runoff and seed wash out.
- ▶ Can be applied by hand, with high volume drop spreader or large opening broadcast spreader.

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Winter Kill-

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So what happened?

1) Warm fall with extended drought periods reduced hardiness, making plants more susceptible to winter stresses.

2) Length of time the turfgrass was under snow and ice when the soil was not frozen caused toxic gasses to build up and suffocated the grass. This is called anoxia. The hardiest grass can last 120 days under ice. Some golf courses held ice cover for 126 days.

3) Damage occurred on putting greens with and without different types of winter covers.

4) The heavy snow that fell on March 22 melted and refroze at night causing crown hydration. This damage tends to follow drainage patterns on the putting surface and is not a uniform kill.

It is summer, why hasn't the turf recovered?

Golf course Superintendents across Minnesota have overseeded, punched holes, verticut, topdressed and fertilized. Unfortunately, this has been an exceptionally cool and wet spring. Soil temperatures have remained below average. Grasses that have germinated are struggling to develop due to the cool nights and excessive rainfall.

To put this into perspective, scientists look at growing degree-days (*defined as heat accumulation to predict plant development rates*).

Growing degree-days for April 1 - June 24 totaled 748; the same period in 2010 totaled 1086. In other words, we are 30% behind compared to last year.

No One to Blame!

Winter Kill is not something that could have been predicted. No two golf courses had the same conditions nor do they have the same grasses, soil types, surface drainage, number of trees, or management programs. Remember, there is no "normal" winter. Mother Nature always wins!

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