

2018 Turfgrass Winterkill Update

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The weather forecasts suggest that that warm weather has finally arrived to stay for much of Virginia and we can clearly assess just how much winter damage has occurred on our warm season turfgrasses. Reports on living or dead bermudagrass from turfgrass managers that pulled plugs and brought them inside to monitor greening have been quite mixed to this point. In a reversal of fortunes from our last significant winter damage season of the winter of 2014-15, much of eastern VA had snow cover in place during some of the most extreme winter weather of this winter season rather than central and SW Virginia. For the winter of 2017-18 the winterkill phenomenon is probably not caused by single low temperature events, but by the sustained period of almost two weeks of temperatures that never got above freezing at many locations over the last week of 2017 and the first week of 2018. Another possible contributor was record warm temperatures in February that were followed by a return to winter temperatures in March.

To date as we observe greening, damage is pretty consistent with where it's anticipated to occur: poorly drained soils, north-facing slopes, heavy traffic areas, fairways shaded by the tree lines etc. Damage and concerns are not isolated to Virginia as there are plenty of reports of winterkill throughout TN, GA, and the Carolinas. This is of special concern on ultradwarf bermudagrass greens throughout the upper transition zone of the south, particularly for facilities that did not have turf blankets (and we have significant damage to our covered experimental greens at our research site at Independence Golf Club, as well as some of the covered Champion putting greens on the championship course).

In general, the standard cold tolerant varieties that have withstood the test of time for cold tolerance in Blacksburg NTEP variety trials (Latitude 36, Patriot, Northbridge, Yukon, and Riviera) have certainly fared better than other varieties, but even some of these have been damaged at some locations. There are also new varieties like Tiftuf and some exciting experimentals that are soon to hit the market that are looking very promising as bermudagrasses that are adapted to Virginia's climate. These types of winters are always a reminder that genetics can and does become a factor in winter survival of bermudagrass in the Mid-Atlantic.

Besides the dead grass, what is most unfortunate about this loss of turf are the questions being asked of the turfgrass managers, with the primary one being “What did you do wrong?” The answer most likely is “nothing”. Welcome to the reality of living in a transition zone state where you can grow just about any turfgrass, just not very well. In anticipation of winter damage and to prompt turfgrass managers to think about what they perhaps should or should not do on grass that might have been damaged, the turf team devoted its February VT Turfgrass Tuesday webinar topic to winterkill and we tag-teamed with NC State faculty Travis Gannon and Grady Miller. You can review this webinar here:

<https://youtu.be/d5k6bNWzw60>. However, we were only hypothesizing what we thought might have happened at that time. It turned out after that webinar that we had spring in February, revisited winter during March, and then went through the weather roller coaster ride that is April/early May in this state (70s one day, 40s the next).

Why does winterkill occur? There is an excellent on-line extension publication entitled Scouting for Bermudagrass Winterkill from our colleagues at Oklahoma State from a few years ago that does a great job defining why so much damage can occur at <http://turf.okstate.edu/news-files/scouting-for-bermudagrass-winter-kill-2014/> In no particular order, here are the most important factors that I have seen during my travels across Virginia and testimonials from bermudagrass managers so far this spring.

Traffic. Damage is always most prominent on any turf stand in ANY winter that is heavily trafficked during the winter and spring, whether it be a soccer field or the entry /exit points to golf course fairways etc. Traffic not only wears down the protective cover of the warm-season canopy, it also increases soil compaction, reduces soil oxygen levels, restricts water movement etc. Heavy traffic and temperature extremes in an already challenging climate are a very effective combination for winterkill. One of the biggest hurdles seen is the expansion of our sporting seasons on these natural grass surfaces to almost 12 months of the year. This type of use in meeting the expectations of our clientele for golf and sports turf at essentially any time and any season is simply not realistic when one is talking about a biological entity expected to perform even under the harshest conditions.

Shade. Again, year in/year out, some of the most predictable warm-season turf damage in any winter occurs where the turf gets restricted sunlight. Shade can increase winterkill both directly and indirectly. The indirect effects stem from the lack of energy production that consistently weakens the overall health of the turf during the growing season and leaves the turf more susceptible to winter stress. The direct effects involve the influence shade can have on how harsh local winter conditions will be to turf. Shade tends to increase duration of wetness and leads to crown hydration that is deadly to turfgrass tissue during freezing temperatures. Shade also will prolong the duration of freezing temperatures when they occur. For example, on several occasions we have witnessed these effects as significant stand

loss of one of our most cold-tolerant zoysiagrasses (Meyer) where the damage directly followed the shade line of trees separating golf holes.

Suboptimal mowing heights entering dormancy. Grasses maintained at very low cutting heights have consistently shown more damage/stress as grasses emerge from winter dormancy during the spring 2018 transition. A winter like this year serves as a good reminder of the possible value of raising those cutting heights before killing frosts arrive.

Predictably unpredictable. Showing just how coy Mother Nature is, some of the other “standard winterkill scenarios” really have not been consistent this year. There are southwest slopes that typically promote better winter survival both living and dead this year. Similarly, there are some poorly drained areas that are usually heavily damaged turfs coming out of the winter thriving this spring (as well as some that are completely dead). Winterkill: you know what it is when you see it, but you just can’t tell exactly what it is.

What can you say we learned? The genetic enhancements in cold tolerance of our improved varieties are always revealed in winters like this, but even they were no complete guarantee for winter survival under the additional stresses detailed here. The most frustrating thing seen this year is the loss of turf under blankets. There is no doubt that the covers helped whatever survival we have, but their use was unfortunately not a guarantee for protection. Our research efforts at Independence now shift to other strategies of how to better protect our bermudagrass greens. Fundamental questions moving forward include: “How do we get the most protection from turf blankets?” and “What role might blankets play in accelerating early greenup during brief warming spells and ultimately increasing turf sensitivity to spring frost?”

If you have had significant damage, what are you going to do now? First review what factors you think resulted in the loss of grass at your site. Is there anything that you can do differently (both turf management AND people management) that might improve your turf’s performance in the future. Is bermudagrass the right grass for your situation? While bermudagrass remains a prominent golf and sports turf grass in our area in general, Mother Nature reminds us every so often that she is ultimately in charge in the transition zone. If you decide to convert to a cool-season grass, move very quickly if seeding and remember the challenges that you will face with weed pressure, water management, and the turf’s upcoming use schedules for later this year. It would be highly advantageous to install a premium cool-season sod if you’re committed to going in the cool-season direction.

If you return to bermudagrass for sports field or golf turf use, consider the use newer cold tolerant varieties. And be prepared to go with regressing as soon as possible. While mid-spring soil temperatures



have typically been 2-3 weeks 'behind' our normal soil temperatures for this time of year, don't hesitate to get your warm season grasses established. Not knowing what kind of summer we are going to have, if one is going to err on the side of caution, it would be better to get seed or sprigs in the ground earlier rather than later this year. Sprigging at 800-1000 bushels per Acre rather than what we usually think of as our 'minimally acceptable standard' of 500 bushels per Acre can greatly assist in achieving complete coverage of bermudagrass as soon as possible (likely no more than 8 weeks in an average summer... whatever an average summer is anymore!). If you seed, prep the soil and be prepared to manage the irrigation and weeds. Use 0.5-1 lb of pure live bermudagrass seed per 1000 sq ft of our improved seeded varieties. If you would like to talk to Virginia Tech in more detail about how to utilize lower quality seeded bermudagrasses with the improved seeded varieties as a means of saving money and enhancing the rate of coverage, contact Mike Goatley to discuss the possible benefits of this approach based on our Virginia Tech research. For those of you pondering about whether or not a blanket might be a good investment at your facility, remember that you can use the more translucent turf blankets to assist you in grow-ins of both warm-season AND cool-season grasses, in addition to winter protection.

Finally, there is no doubt that sod installation of our warm season grasses is obviously the quickest way to restore the turf to its optimal condition. However, if you wish to go this route, be aware that some of our sod producers have had equal challenges with their production fields and not all grasses are as far along as they normally would be due to the challenges of the winter at their sites.

Please let the Virginia Tech Turf Team know if it can assist you in any facet of your turfgrass management programs.