CORNELL Turfgrass CUTT Short
Your Weekly Link to Turfgrass Information!

# Gazing in the Grass

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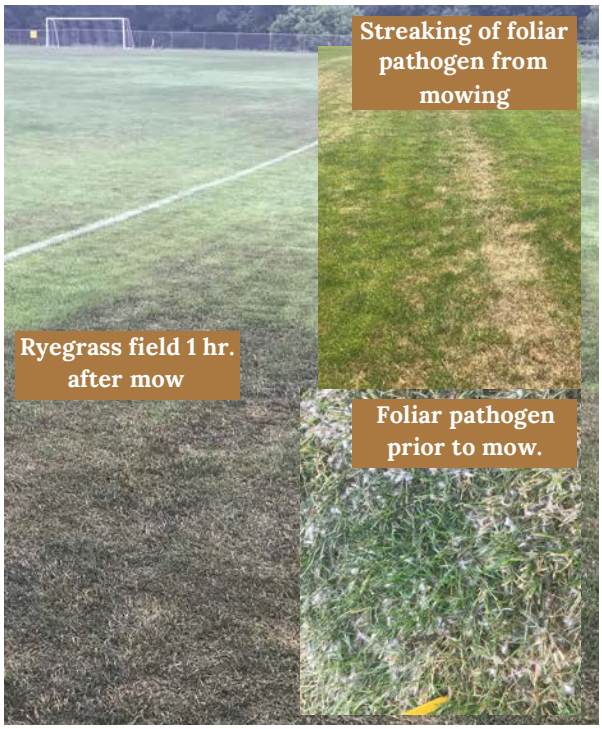
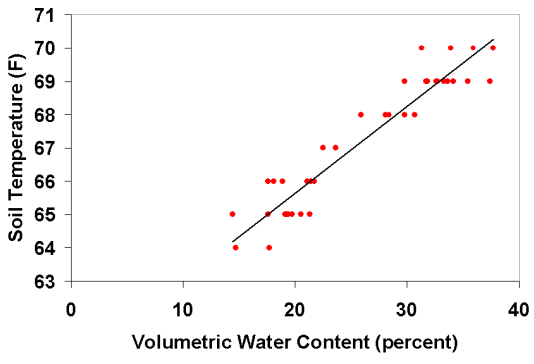
As predicted much of the Eastern US experienced severe high temperature and high humidity over the weekend. This was after a cooler than normal week, leaving plants not well acclimated to heat stress conditions. In many cases drought stressed turf was set back further and if not treated with fungicide are likely more susceptible to additional biotic stress from foliar pathogens that are active during periods of high humidity, especially noteworthy on susceptible cool season grasses such as perennial ryegrass (see image).




Soils at the 2" depth are reaching into the low 80's! Widespread reports of hydrophobic soils, especially sand-dominated rootzones. Keep in mind that wet soils hold more heat. See the graph below from Dr. Larry Stowell at PACE Turf in CA. There is a linear relationship between %VWC and soil temperature. During periods of high humidity, water management becomes more complicated as it often is held in the system but symptoms of wilt can still occur. My colleague in Missouri, Professor Lee Miller describes the persistent wet soils as "boiled root soup".

Most cool season grasses are experiencing natural root decline with high soil temperatures at this time. As a result, plants will be shallow rooted, areas with high surface organic matter will have higher %VWC, and foliar pathogens that thrive on prolonged leaf wetness will be more active. These are periods where air movement is the key on high value golf, sports and lawn turf. Research at Auburn University found that fans blowing air across the turfgrass canopy increase water movement through the system in the form of evaporation from the soil or transpiration from the plant (ET). Increasing ET leads to cooler canopy conditions and some relief of heat stress. Use of fans reduces canopy moisture and disrupting leaf wetness period, a factor that can be most valuable in the evening hours when fungal pathogens can be more active.




***Heat stress periods are a good time to consider skipping mowing for a day or two!***

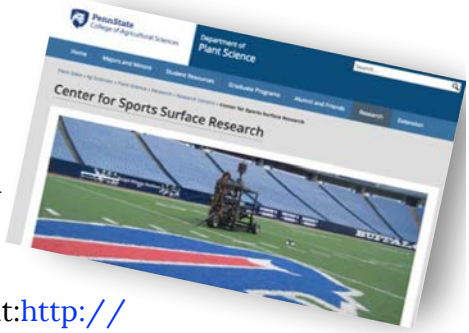
## Frequently Asked Questions (FAQ):

*We installed a multi-use in-filled synthetic turf field two years ago. I'm trying to understand how to answer questions on safety, can you help? Also, We have summer camps and air temperatures are in the 90'sF. Coaches are asking about field safety in the heat. Can you provide some recommendations for synthetic field use during periods of high temperature?*

There is little question that synthetic turf fields have a role for many communities and sports organizations. These surfaces allow almost constant use, especially during periods of marginal weather when many natural turf fields would sustain significant damage. However there are rampant misconceptions regarding use, care, and potential health effects. Research has been conducted on a number of aspects but what remains poorly understood are the regular maintenance practices required. For example, monitoring and maintaining infill volume has been a constant question. A recent study published in 2016 suggested potential injury issues associated with different volumes of infill. Injury surveillance data was studied for 52 high school synthetic turf fields in a variety of climates. The research indicated that as the artificial infill surface weight decreased, the incidence of game-related high school football trauma significantly increased. The trend was found to be consistent even when accounting for weather and playing conditions. The research recommends that high school football fields contain a minimum of 6.0 pounds per square foot of infill weight to optimize player safety on artificial surfaces.


The warm weather requires additional communication with coaches, parents and players regarding ways of mitigating heat stress. Keep in mind young people do not adapt to changes in temperature as well as adults. The surface temperature of infilled synthetic turf has been measured in excess of 150 F on a bright sunny day with air temperature of 80F. The inset photo from Sports Turf Manager at Mississippi State University taken at Midday on Natural grass and two synthetic fields with different color surfaces at the same ambient 80F air temperature. While much of the focus is on the infilled material much of the heat is generated by the turf fibers and studies on various "cooling" infill material conducted by Penn State suggests there is little meaningful mitigation of the temperature by using alternative materials. Additionally, the benefit of irrigating synthetic turf field to reduce temperature shows these effects are small and short-lived. In fact temps after an irrigation return to initial temperature within 15-30 minutes. A guideline utilized by many turf managers is "no use when surface temps are above 120 F" and "conditions and athletes should be regularly monitored". More info on this and other synthetic turf issues at the Penn State Center for Sports Surface Research highlighted below.

## Synthetic Turf Safety




The persistent high temperatures creates the need to understand the potential heat risk associated with synthetic turf. The Turfgrass Scientists at Penn State University's Center for Sports Surface Research has several excellent resources to address the issue. How warm do you expect the turf to get? Are there safe thresholds? Does irrigation help? How deep should infill be?How should it be tested and maintained? Answers to these and other questions can be found at:visit:http://plantscience.psu.edu/research/centers/ssrc (BTW-Like the Bills Logo!).