Fan Impact

Diagnostic Lab Closing

I will be attending a national conference for plant pathologists from Aug. 2nd – 11th, and the diagnostic lab will be closed during this period. I will have access to email, and will return both emails and phone calls ASAP. Admittedly, this is not the best timing for a conference, but it is necessary to interact with other turf pathology colleagues and draw upon their research and experiences to deliver back to turf managers in Missouri. For emergency diagnosis, I have listed a few labs that should be staffed below (which does not imply endorsement or non-endorsement).

North Carolina State
Rutgers
Oklahoma State
Turfgrass Diagnostics LLC

Weather

Still hot, still dry, still brutal. A cool snap may take our highs to the lower 90’s today and tomorrow, but next week’s forecast looks plenty hot again with little chance of rain. At this point, if your lawn has gone dormant the best recourse is to let it stay that way and don’t water. A great article by our K-State neighbor (stop booing it’s not football season yet) discusses water and dormancy in detail, and when it’s a good idea to shut the water off.

Our 2” soil temperature at 11 am on a sand-based creeping bentgrass this morning was 86°F, which means by 3 pm it is at least in the low to mid 90’s, and may be hitting 100. Four-inch native soil readings under tall fescue at 11 am are not much better, hovering around 82°F. Cool-season turfgrass roots are definitely not growing at these temperatures, and I would venture that most are not conducting water and nutrients during the day at all.

I did get a “well you could be this bad off” statement from an Oklahoma State colleague earlier in the week. Temperatures in Stillwater had been over 100°F for a record 27 straight days until a cool snap of a 96°F daily high snapped the streak.

Quick Hits:

- **Zoysia – Chinch Bug Outbreak:** In the last two days, I have received a three zoysia home lawn samples in St. Louis and southern MO with suspected chinch bug damage. These insects are sap suckers (literally), gathering at the base of the plant to inject toxic saliva. Damaged areas take on a droughty appearance and leaves bronze or yellow at the patch margin. Chinch bugs are small and fast, and are notoriously difficult to find. A water can or soap test can sometimes determine their numbers. Removing thatch in the fall can
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help reduce their overwintering site. If detected, an insecticide application is often warranted. Sprayable, hose-end applicator types are preferable, treating the damaged area and 2-3 feet beyond the margin.

- **Pythium Root Rot:** Still seeing Pythium root rot associated with a number of creeping bentgrass root systems, particularly those that are water logged from poor drainage or necessary syringing. As I have stated earlier, a watered-in Pythium fungicide such as Subdue, Banol, or Segway is necessary as a preventive measure.

- **Nematodes:** We picked up a few large nematode numbers from golf greens in Columbia, St. Louis, and SW Missouri. Ring nematodes have been most commonly found in the 2-3000#/100 cc range. A combination of lance (2500#/100 cc) and stunt (3800#/100cc) were found at another site. Although the numbers seem alarming, it is not surprising to find nematodes peaking at this time of year. Not much recourse is available as no active chemistry is on the market for curative control. Stress relieving cultural practices are necessary in these areas. More information on the current nematode outbreak can be found here.

- **Fairy Ring:** Several courses are having significant fairy ring problems this summer. To my knowledge, none of these courses employed a preventive spring DMI application strategy. At this point, a fungicide (ProStar, Heritage, Insignia, Disarm) plus wetting agent is the only curative control option. I have heard a few superintendents talk about Triton FLO working curatively, but this result needs to be validated with research. Water-in all of these curative applications.

- **Brown Patch on Fescue:** Fescue samples with this disease are still pouring in, particularly on irrigated sites. Make sure to water early in the morning and not in the middle of the day or at dusk to keep leaf wetness to a minimum and restrict disease severity. Do not fertilize.

- **Field Day Report:** It was hot, but hopefully everyone learned a little something to take home with them. Thank you to all who braved the heat, including attendees, speakers, and vendors. The industry support was strikingly apparent, and we appreciate it as we continue to build this program.

**A Fan of Fans**
I wrote an article about fans last September, and for 99.9% of the golf superintendents it simply stated the obvious. However, I want to reiterate some of these points again, particularly the impact that fan and syringing use has on not just air, but also soil temperatures. As I noted above in the weather report, soil temperatures are at obscene levels now, and plant roots are suffering from a lack of growth, reduced (if not eliminated) efficiency, and an increased susceptibility to pathogen attack.

Temperatures over the last month have equated to a lot of hose pulling in the heat of the day for golf maintenance crews engaged in a practice called syringing. Syringing is the application of a light mist of water to the turf canopy to reduce temperature and increase evaporative cooling. Although syringing is an essential practice to save heat-stressed bentgrass, there are several disadvantages. One potential problem is the over-application of water to the root zone. A saturated root zone has clogged pore spaces, not allowing oxygen in for respiration and toxic gases out. Additionally, water holds its temperature longer than air, so when water in the soil profile gets hot in the summer, it tends to keep the overall soil temperature elevated longer than a drier soil. Lastly, a saturated soil is a prime environment for Pythium root rot, which I have seen in spades in the diagnostic lab this summer. A second problem for some superintendents is their water source (i.e. irrigation lake) is also very warm, with several superintendents reporting temperatures coming out of the hose at 90°F and above – see last week’s post. Lastly, the cooling effect is very short-lived, as canopy temperatures are decreased for less than an hour after syringing. On many greens this year, syringing needs help.
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Since the late 1990s, fan use on putting greens has steadily increased, and the travails of this summer will certainly heighten this trend. By increasing air movement, fans reduce ambient air temperature, reduce humidity, and dry out dew and guttation fluid from the leaf blade quicker. Reported canopy temperature reductions can be from 5-7°F between greens with fans installed vs. those that do not.

The impact of fans on soil temperature is even more striking, and is potentially the greatest stress reducer during the summer heat. Research out of Rutgers University showed reducing soil temperatures from 95°F to 90°F at a constant 95°F air temperature increased leaf and shoot growth of creeping bentgrass, and reducing it to 84°F resulted in enhanced root growth. This summer, two-inch soil temperatures on sand-based greens during the day are frequently at 100°F, and are starting to average over 90°F in many parts of the state.

Much of the field research on the impact of fan use has been conducted in the Southeast. In research performed at Auburn University, fan use during the hottest part of the day + syringing were synergistic in reducing soil temperatures. All day fan use during the summer resulted in soil temperatures lower than syringing treatments alone, and resulted in a longer and more dense bentgrass root system. Combined with the research from Rutgers, these differences in soil temperatures may literally be the difference between life and death for bentgrass under heat stress.

In an ironic twist, the University of Alabama installed fans on their football field last year. Hmm... Auburn and Alabama learning from each other? To read the Alabama story click this link: http://www.al.com/sports/index.ssf/2010/08/less_sunlight_air_in_bryant-de.html

To read Dr. Han's full article click this link: http://www2.gcsaa.org/GCM/2006/may/pdfs/CoolBentgrass.pdf

National Turfgrass Disease Update from last year: http://www.turfdiseases.org/2010/07/no-wind-dead-grass.html