Late May has heated up with above normal high and low air temperatures over the last 3 days. Soil temperatures have followed suit. This high temperature trend is forecasted to continue into late May and early June (see below), which could spark off our first round of heat stress for cool season turfgrasses... and associated summer diseases.

As noted in the last report, precipitation has been below normal in May. May is typically our wettest month with the state averaging approximately 5” of total precipitation. Some areas in SW and central Missouri are 3” and almost 4” below normal for the month. Luckily, or unlucky for farmers trying to plant, April had above average precipitation (6th wettest on record). This dry May, however, may be an issue, and echoes the 2012 drought when a hot, warm May rolled right into a bone-dry summer. Fortunately, this week and early July looks to produce isolated, or scattered PM storms across the region. Let’s hope they are not so isolated and not quite so scattered.
Pythium Rots Away in May

Quick Hits:

- **Dollar Spot:** Dollar spot started popping up at the research farm right on schedule this late spring, with our first observation on May 12. The disease was noted on our ‘Penn A4’ and both of our ‘Penncross’ trial greens after the warm Mother’s Day weekend. Activity subsided in our ensuing cool snap, but has fired back up again in earnest. Dr. Pete Dernoeden recently wrote a great article
Pythium Rots Away in May

describing the seasonal nature of dollar spot (click here to read it).

- **Brown Patch Warning:** The last few days of warmth, high humidity, and popup showers have been nearly perfect weather for brown patch on tall fescue or creeping bentgrass. The nighttime lows, however, have been just a little on the cool side in mid MO to spark a sustained window for infection. That may be set to change this weekend though, as low temperatures are expected to climb into the high 60s or low 70s. If this does occur, the “6-8 flip flop rule” will be satisfied and we could see some activity. This rule (of thumb) states that high temperatures above 86 F and low temperatures above 68 F can lead to brown patch outbreaks. With an eye on this forecast, we’ll be inoculating our trials at the research farm, which means you should be scouting for the disease in your turfgrass. Pay particular attention in tall fescue lawns that are shaded, irrigated, or have been recently fertilized (too late) in May.

[Red Leaf Spot on Bentgrass Putting Greens](#)
A. Red leaf spot symptoms can be similar to copper spot or early brown patch activity.
B. Spores of *Drechslera erythropila* on a creeping bentgrass leaf

- **Leaf Spot on KBG & Bent Putting Greens Warning:** Similar to brown patch, we may also see leaf spots caused by *Bipolaris/Drechslera* species flare up over next week or so. These diseases normally begin in late spring/early summer on bentgrass or Kentucky bluegrass and can persist whenever adequate moisture is available. Symptoms normally occur as subtle leaf spots first, but can migrate down to crown and root tissue resulting in a “melting out” symptom. On Kentucky bluegrass, symptoms may appear similar to Pythium outbreaks and are routinely caused by *Drechslera poae*. On creeping bentgrass putting greens, the disease is called red leaf spot (caused by *Drechslera erythropila*), and symptoms may appear similar to early stage brown patch or copper spot. Susceptible turfs, particularly low mowed, heavily fertilized or shaded areas, should be monitored frequently for this disease as symptoms can expand quickly.
Pythium Rots Away in May

Many fungicides work well in controlling this disease, however, so additional applications aimed at prevention may not be necessary in high amenity situations.

- **Large Patch Still Around:** Large patch symptoms are still lingering, but warmer temperatures and dry conditions have not led to the high epidemic disease development like we experienced last year at the turf farm. With the forecasted warmer temperatures, affected zoysiagrass should start recovering now from the prior epidemic. This means billbug or chinch bug damage may be the culprit of any new problem.

- **Armyworm Warning:** From the news desk on the Ag side, SW Missouri is starting to be infested with true armyworms. Our last major infestation was 2010, and major outbreaks normally occur every 3-4 years. The good news from the turfgrass standpoint is armyworms normally prefer feeding on corn, wheat or tall fescue fields grown for pasture as opposed to lower mown, or endophyte infested tall fescue lawns or golf courses. If growing endophyte-free turfgrass or turfgrass near a susceptible field crop, managers (particularly sod farms) should scout for this pest. Larvae are nocturnal feeders, and a soap flush may be necessary to assess larval infestations. Increased bird activity may also be an indicator of armyworm presence in a field.
In the last few weeks, three cases of Pythium root rot have been diagnosed on putting greens samples sent in from STL and KC. Most of these samples were waterlogged from previous rains or irrigation events and had high organic matter. The disease can be caused by a number of different *Pythium* spp., and does not need to be sparked by a wave of extreme >90F temperatures to cause decline. Basically, all the pathogen needs is a pool to swim in (aka saturated soil profile) caused by rainfall or irrigation events. The disease also takes advantage of a hole in many greens fungicide programs, as most do not include a *watered in* fungicide that targets soilborne *Pythium* spp. To go along with this outbreak, numerous instances of Pythium root rot on seedling corn from April flooded fields have been diagnosed in the MU Plant Disease Clinic.
Max Gilley recently joined the Mizzou Turfgrass Pathology team as a Ph.D. student. He will be taking over the research project on soilborne *Pythium* spp., which was established through the Environmental Institute for Golf/GCSAA Chapter Cooperative Program along with funds pledged from the Heart of America, Ozark Turfgrass Association, and Wisconsin GCSAA Chapters. Max completed his M.S. degree in plant pathology at Mississippi State under the direction of Dr. Maria Tomaso-Peterson. While there, he worked on characterizing diseases of Giant Miscanthus, a bioenergy crop.

As a refresher, the project objectives are to define the distribution of *Pythium* species throughout the Midwest and provide management guidelines for Pythium root diseases occurring in the region. There are two distinct soilborne Pythium diseases that can occur on creeping bentgrass putting greens. Pythium root rot (PRR) occurs in over-saturated conditions or areas with poor drainage. Symptoms of PRR include red, yellow, or dark-colored areas occurring in irregular, mosaic-like patterns that can occasionally follow drainage patterns. Individual plants may have rotted crowns and roots. For more information regarding PRR see a previous disease update ([6/26/2011 update](#)) or disease profile ([PRR disease profile](#)). Pythium root dysfunction (PRD) as caused by *Pythium volutum* is a disease that was recently described in North Carolina on young (<5-7 years) bentgrass putting greens. While PRD has not been observed to our knowledge in Missouri, it is a disease we are on the look out for. Symptoms of PRD include plants that are initially wilted and chlorotic and develop a yellow-to-orange foliar decline in patches. Infected roots are tan and lack root hairs. Unlike PRR, symptoms of PRD are most severe during periods of hot and/or dry weather.

If you suspect a Pythium root disease (root dysfunction/root rot) and would like to submit a sample, please contact me ([turfpath@missouri.edu](mailto:turfpath@missouri.edu)) or Max Gilley ([gilleym@missouri.edu](mailto:gilleym@missouri.edu)) for more information.
Pythium Rots Away in May

Field Day, July 22nd – Save the Date.

Plans are underway for the 2014 Mizzou Turfgrass & Ornamental Field Day! The event will be held July 22nd at our research facility at South Farms. Presentation topics are set to include post-application irrigation impact on fungicide performance, NTEP warm season survival, impact of spring fertilizer technologies on tall fescue lawns, and a litany of others. Save the date and look forward to seeing you there.

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