Summer officially rang in last Tuesday feeling more like early Fall. Temperatures have been a roller coaster in the last two months. June 1-10 in Columbia was the warmest since 1934, and then we slipped back into the 70’s and low 80’s for highs. I even sent out an email alert for a forecasted heat wave for last weekend that luckily never panned out.

Most diseases have been at a standstill, and cool season grasses including tall fescue and creeping bentgrass should be growing well at this point of the season. Many golf superintendents took advantage of the cool spell and got the big machines out for some last minute aerification and topdressing before the heat really settles in. This week may be the start of summer, with highs settling into the hot and humid 90’s for an extended period.

Quick Hits
- Puffballs indicative of fairy ring activity were observed last weekend on our L-93 and A4 research greens. On Friday, our Penncross disease green had type II rings (green rings) and puffballs. At this point, curative treatments of flutolanil, or one of the QoI fungicides (i.e. Heritage, Insignia, etc.) should include a wetting agent to drive the fungicide into the root zone. Also, remember to water these treatments in!
- A severe case of localized dry spot (LDS) was observed on putting greens last week near Kansas City. LDS is caused by microbial activity coating the sand particles with organic acids, and creating a hydrophobic condition in the soil. In this case, a reduced rate of wetting agent was used on a shorter interval.
Summer is Official – 6/26/11

instead the full rate on its normal interval. As with most chemical applications, wetting agents should be applied at full rates to achieve the maximum benefit and desired efficacy window.

- Brown patch and Pythium on tall fescue got a little natural fungicide in the way of unusual cool breezes over the last two week. The heat and humidity are picking up now, and I anticipate these two diseases will pick up right where they left off in early June.

Pythium Root Rot – A Problem for Programs

Programs have been the buzz word for turf managers (particularly golf superintendents) for the past year or so. Developing a program that covers all of the major diseases, and properly schedules control practices is and has been critical to the success of putting greens. Recently, university researchers have started evaluating fungicides as part of a program for total disease control, as opposed to applying the same fungicide over and over again in a very atypical and unpractical manner for real world application. I personally think this is a great step forwards for evaluating fungicides, and can bring a dose of applicability from our research farm to your operation. However, using a university program is not a guarantee of a perfect turfgrass stand.
There are a few problems with university-researched programs that may not be initially obvious.

- A program developed in one region of the country may not be suited to the climate of another.
- A program needs to include application method. For instance, a fungicide targeted at a root infecting pathogen should be watered-in or applied in a heavy dose of water (4-5 gallons H₂O/1000 ft²).
- Some programs don't account for all of the diseases that superintendents may encounter. In particular, preventive use of the DMIs for fairy ring control may not be included in a program.
- Programs developed on a research farm green are usually not subjected to the same intense stress and disease pressure as the worst PITB (pain-in-the-you-know-what) green on your course (surrounded by trees, limited air flow, poor drainage, etc. etc.).
- Not every disease will slip right into the mold of a calendar-based program approach to applying fungicides.

The last two points certainly apply to the major problem with prescheduled fungicide treatments: Pythium root rot. Pythium is commonly referred to as a “water mold” but in reality is not a fungus at all. Pythium is classified as a stramenopile and is a member of a completely different Kingdom than fungi. Pythium have zoospores that swim through water films with flagella (much like bacterial cells). Because of this, the presence of excess moisture is normally a key ingredient to severe Pythium epidemics. Pythium is diagnosed by its characteristic resting structure, the oospore (I call it the uh-oh spore).

Several disease symptoms are caused by Pythium spp.: Pythium blight, Pythium root dysfunction and Pythium root rot. Pythium blight is a foliar symptom observed during very high temperatures (90°F and up) in cool season turf such as Kentucky bluegrass, tall fescue, and creeping bentgrass. Pythium root dysfunction has been recently characterized in North Carolina on newly constructed (< 5-7 years old) creeping bentgrass putting greens. This symptom breaks the Pythium rules, and routinely occurs in drier areas of a putting greens and infects roots during lower spring temperatures. The species that causes this symptom has not been found in Missouri.

So that leaves Pythium root rot. Recently, a superintendent contacted me about a problem on his greens, and exclaimed “It just can’t be a disease because I am on the best rated program!” The green had Pythium root rot. Pythium root rot is caused by a myriad of different Pythium spp. that vary in their temperature ranges for growth and infection. Because of this, Pythium root rot can infect bentgrass roots during any temperature regime depending on the species present. All Pythium root
rot needs is moisture, and lots of it. Poorly drained and shaded areas are obviously most susceptible (think your PITB green).

So how does this fit into a programmatic framework for applying fungicides? It doesn’t. If you receive a lot of rainfall, particularly followed by a stressful heat event, Pythium root rot can cause significant turf loss. Areas that have had trouble in the past should have a preventive application down in anticipation of a heavy rain event, and because it’s a root infecting pathogen most applications (excluding Signature and the phosphites which move up and down in the plant) should be watered in.

I suggest using researched programs as a guideline to building your own, knowing that (you and) your program may have to be flexible to accommodate weather conditions that are conducive to certain diseases. At MU, we are evaluating six fungicide programs for putting greens this year, and will include more in future seasons. Many of these programs only vary by a few fungicides here and there. For information on these programs, please visit us on field day!!! Also for more information, research is underway at North Carolina State evaluating standard programs vs. a flexible program that adapts to the changing weather conditions. Click here to visit the Program ’11 blog.

Save the Date: July 26, 2011

Make plans to join us at the University Missouri Turf & Ornamental Research Farm on July 26th for our annual field day! In addition to the research mentioned above, we have prepared an agenda that is packed with useful information and demonstrations that can help your turf and ornamental management operation. This agenda is posted, and participant registration is now open – just click here.

For vendors, this is the best deal in the Midwest to capture your audience and display your ‘wares. Not to mention your dollars will go towards funding the very research that makes Field Day and the Missouri Golf Industry Conference successful. It’s a true win-win!! If you are interested in having a display at the event, or being an event sponsor, vendor online registration is now open – just click here.

Looking forward to seeing you there.

Lee Miller
Extension Turfgrass Pathologist
University of Missouri