Light at the End of the Tunnel?

Weather

August Relief
A. August started off with a temperature bang, but milder, below normal temperatures have plunged many of us into much needed relief for cool season grasses.
B. Unlike the temperature relief, much of the state above I-70 is still gripped in a Midwest drought situation. This 30 day departure from normal map shows the Springfield area receiving adequate rainfall, but not much else for other areas. The red areas in Illinois are no good. This is affecting row crops in a big way, and also non-irrigated lawns.

Well, maybe if you take the state turf pathologist out of the state then the weather magically improves. On the day of my departure, the high temperature reached a startling 108°F, the hottest for Columbia since August 29, 1984!! As a frame of reference, “Ghostbusters” was the #1 music single during that week.

During my hiatus, the weather broke magnificently on the fourth of August and has stayed relatively mild since. Nighttime lows are actually below normal for the first time since June. I stepped off the plane last Thursday and jokingly commented that I needed a jacket. Cool season turf, particularly bentgrass putting greens, greatly needed this break. Soil temperatures are back down into the “root growing zone” which should aid in recovery from summer stresses. The 10-day forecast looks promising for maintaining the mild temperatures, and I don’t want to jinx it, but we may be looking at the end of the tunnel for the summer of 2011. As the graph above shows, after mid-August Missouri typically starts getting cooler as days and sunlight intensity diminish.

Precipitation is another story, however. Yesterday’s full day of rain for mid-Missouri will help, but we are still gripped in a Midwest drought. The lack of rain and July’s hot nights has corn and soybean growers worried, and non-irrigated turf is lying in a solid state of dormancy now.

From a disease standpoint, the lack of rain and lower temperatures has put some natural fungicide down for turf diseases. Brown patch and Pythium outbreaks have
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slowed, and comparatively very few samples have come into the diagnostic clinic over the last 10 days. Only one quick hit to speak of.

Quick Hits:
- **Dollar Spot**: Not surprisingly, the cooler temperatures have switched the focus from brown patch to dollar spot on our cool season plots. New infections are happening on a daily basis, and it is important to have a good preventive fungicide down on high value creeping bentgrass or Kentucky bluegrass areas to combat these outbreaks. Late summer and fall is the time of the season when fungicide resistant dollar spot strains will be noticed more, since they have been exposed to fungicide selection pressure for much of the season.

American Phytopathological Society Annual Meeting Recap

As I mentioned in the last update, I attended a national conference for plant pathologists last week. Turf pathology colleagues from around the nation were present, and I wanted to share some highlights from some of the presentations.

- Several (if not many) new fungicides are in the pipeline for turf disease control. Just as an informational tidbit, the current cost of bringing one of these chemistries to the market (agriculture included) stands now at about $260 million. Stay tuned...
- Along with the multi-state collaborative initiative among turf pathologists, dollar spot research is booming. Several topics including the investigation into the location of initial inoculum (Wisconsin), fungicide timings (start
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early!!) (Connecticut), and fungicide resistance (UMass & NC State) were presented.

- The great thing about these national conferences is branching out to other crops or other disciplines of interest. I attended a number of these talks and one of the highlights revolved around fungicide resistance. George Sundin from Michigan State (with other contributors) gave a talk regarding IPM’s contribution to the fungicide resistance crisis in apple disease management. As ecologists and environmentalists, we consider the principles of IPM to be a great thing, particularly in regards to limiting pesticide exposure as much as possible. Where apple scab is concerned, however, Midwest apple growers have lost nearly all available chemistries to resistant pathogen strains. The premise of “hit ‘em hard, hit ‘em early” was replaced by the IPM strategy of determining disease thresholds and spraying when symptoms are present. This strategy is taken directly from insect management, but the situation in managing diseases is quite different. For insects, spraying when 35 Japanese beetles are found means you are affecting 35 individuals. For apple scab, (and many turf diseases) spraying after you scout 35 apple scab lesions, means you are affecting 1,800,000 spores!!! This means the potential for fungicide resistance in high risk pathogens is much greater when you are selecting for resistant pathogen strains out of a much larger pool. This tenet gets back to some of our early spring fungicide application strategies and managing diseases in their early inoculum phase as opposed to getting behind the “8-ball” and chasing disease activity with curative applications.

- On the last day of the conference, the turf pathologists held a symposium entitled “New and Emerging Technologies in Turfgrass Disease Management”.

  o Jim Kernels from Wisconsin set the table by recounting the history of turf disease management from the good messy days of dustily spreading Bordeaux mixture, to the advent of newest form of fungicides which act by turning on plant defenses.
  o Our neighbor Megan Kennelly from Kansas State followed up with a talk on application technology, and selecting nozzles that both reduce drift and provide better coverage (coarse droplet sizes are bad).
  o Joanne Crouch from the USDA provided a primer on the state of taxonomy of turfgrass pathogens, and the development of molecular technologies for pathogen detection (“pathochips” and isothermal amplification using recombinant proteins.
  o Tom Hsiang from the University of Guelph in Canada delivered information regarding Civitas and its companion product Harmonizer, (not labeled in Missouri as of now) which his research found activated pathogen defense genes in turfgrass.
  o In the “coolest” category, Nathan Walker from Oklahoma State University displayed his research regarding transformation of
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turfgrass pathogens so they glow green or red. Big deal right? Well, with this technology and advanced microscope techniques, Nathan showed us a 3-D (!!!) image of a turfgrass root being infected by the spring dead spot pathogen (*O. herpotricha*). We wore the blue/red glasses and everything. With these observations, we can potentially detail how the infection process unfolds, evaluate the amount of infection needed to incite symptoms, and identify stages in the infection cycle that may be most vulnerable to arresting via control measures.

Lastly, John Kaminski from Penn State showed us the many ways that social media can be utilized by us extension specialists to infiltrate your lives, deliver relevant information to you in a concise and effective manner.