Besieged by Bugs – 4/20/11

Weather

First off, I wanted to pass on some information from Pat Guinan, our state climatologist. Temperatures for April have been warm, but we are looking at a cool-down to close the month and bring us right about on average. There is no threat of frost for the next 7 days, so historically it appears that we may have seen the last freezing temperatures of the winter except for those in northern Missouri.

What we do have is a threat of severe thunderstorms over the next few weeks. We look to be nestled between two opposing masses of cold air to our northwest and warm air to our southeast. This is a recipe for extreme rainfall events over the next 5 days, with 1-4” being forecasted for the period starting tomorrow afternoon. Yesterday, we started the day in Kansas City to initiate a trial and it was 45°F at 11 am and when we got back to Columbia at 2 pm it was 80°F. Say hello to some April showers.

With this rain, it may be wise to keep a wary eye on rivers and streams if they are close to you. To our north in Davenport, IA, extreme flooding is occurring along the Mississippi and including the impending rainfall could set up some messy situations. Pat Guinan has set up a Missouri specific site monitoring river levels, which can be found by clicking here.

Aphid Outbreaks - Lawns

In the past week, there have been no diseases to report, but I am literally bug-bit as I found my first tick of the year chewing on my leg last night.
In the last few days, I visited two sites (a commercial property and a residence in Columbia) that had severely damaged fescue/bluegrass lawns, and thought they had a disease or winterkill issue. The damage was impressive, (see figure below), and occurred in a very short amount of time. Distinct reddish-brown or rust colored lesions were apparent on leaf tissue around the margins of the damaged areas.

The culprit could be seen with a 10X hand lens, dozens of small greenbug aphids feeding on the leaf tissue. These insects pierce leaf tissue with their stylet to feed and also inject a toxin, causing the lesions. In talking with Dr. Brad Fresenburg, we have both seen an aphid explosion in the last week that neither of us has experienced before. In most years, insect predators like ladybird beetles (which were running around the areas engorging themselves) or green lacewings will control populations to insignificant levels. Aphids have a high reproductive rate, and it appears this year the aphids have soundly beaten the predators out of the gate.

There is no need to apply insecticides preventively (or wastefully) for these aphids, as they occur very erratically and in most cases are maintained by natural predation. If turf damage is occurring, stop mowing the area immediately as these aphids can be readily spread via equipment. A spray application of acephate (Orthene) is typically recommended, but other insecticides such as bifenthrin (Talstar), lambda-cyhalothrin (Scimitar), permethrin (Astro) will also work. Neem or other insecticidal oils may also be effective as spot treatments. Again to avoid unnecessary insecticide application, just spot apply to the infested area and add a 3-foot buffer around the damage. Do not mow or irrigate for 24 hours after application. Granular insecticides are not effective. Damaged areas will need to be sodded or re-seeded now (quickly) or in the fall.
Preventive Use of DMI Fungicides on Golf Putting Greens

Overall Strategy

1. **THE WHO** = Diseases targeted – Fairy Ring, Take-all Patch, Summer Patch, potentially Dollar Spot
2. **THE WHAT** = Low rates of fungicides in the DMI class including the 4 T’s (Triton, Trinity, Torque, Tourney), Eagle, and Bayleton.
3. **THE WHEN** - First application when 2” soil temperatures average 55-60°F for five consecutive days. Second application 28 days later. **Now: (4/11 – 4/20)**
4. **THE WHERE** - Golf putting greens
5. **THE WHY** – DMI fungicides are plant growth regulators, and should not be utilized in the summer heat on bentgrass putting greens. Curative applications may need to be applied repeatedly and often result in more fungicide use.
6. **THE HOW** - Two applications 28 days apart. Do not tank-mix preventive fungicide with a wetting agent. Try to keep other PGR applications (particularly Trimmit) 1-2 weeks away from DMI preventive applications. Water in the application with ⅛” (preferably ¼”) of irrigation immediately after application (preferred) or at least that night. Remember the pathogens we are targeting are in the soil, so put the fungicide there.

**THE WHY (just not apply curatively?)**

Water repellency

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**Fairy Ring - Water Repellency**
A. Hydrophobicity in the soil caused by fairy ring fungi can be difficult to remediate. On this bermudagrass green, the outer ring is the current season’s fairy ring growth, and the inner algae-infested arc is last year’s outbreak - which was still hydrophobic and not allowing turf regrowth. B. Hydrophobic layer in fairy ring infested soil core. The droplet with the white arrow was freshly applied, whereas the droplet indicated with the yellow area was applied 2 days prior and still hadn’t infiltrated the soil core! Also note the characteristic orange color associated with a severely infested thatch layer.
Fairy ring causes turf symptoms through a variety of mechanisms, but most often forms a hydrophic layer in the soil/thatch, impeding water and nutrient uptake during summer stress periods. This layer is made up of fungal mycelium (which is hydrophobic on its own) and sand/soil particles coated with organic acids, the by-products of the fungus’ degradation of organic matter. In figure A above, two rings are apparent on this bermudagrass green – an outer ring which is the current year’s growth, and an inner ring which had not recovered from the previous year due to lingering water repellency. Figure B shows how severe an impact fairy ring fungi can have on water infiltration into a soil profile. Because of this, it is very difficult to control fairy ring once it occurs (no water penetration = no fungicide penetration), and it is also necessary to remediate the soil physical properties to allow for turf recovery. To do this, aerification and the judicious use of wetting agents along with higher fungicide rates is necessary in these curative situations.

For areas with a history of fairy ring issues, it only makes sense to apply fungicides preventively before the fairy ring fungus sets up a water repellent barrier. The preventive applications have been shown effective at reduced fungicide rates (and therefore cost), and recovering from the detrimental effects of a hydrophobic soil is not an issue.

**Plant Growth Regulation**

DMIs are also plant growth regulators, (PGRs), and for that reason should not be used during the summer stress periods for risk of phytotoxicity. Excessive growth regulation due to the DMI fungicide use during the summer has been shown to result in significantly increased algae infestations. This effect can be exacerbated by combined use of the PGRs flurprimidol (Cutless) or paclobutrazol (Trimmit), which are related to the DMI chemistry and therefore produce an additive growth regulation effect.

Therefore, spring applications are a wiser choice for this fungicide class. Bentgrass is actively growing at its optimal temperature range, and DMI growth regulation is not as much of an issue. Current trials at the Mizzou Turf Farm are evaluating spring use of paclobutrazol (Trimmit) for *Poa* control in relation to the use of spring DMI applications, to develop a best method for incorporating the two practices. This research will be highlighted at the University of Missouri Field Day to be held on July 26. Another mild hint follows...

*This concludes the article series involving spring applications of DMIs on putting greens. The window for first application is now in Missouri. If you have any questions, feel free to email me via the link below.*
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! We will be presenting the latest research on cultivar evaluations, pest controls, and management considerations for turf, trees, and woody ornamentals. It's a fine day and a fine way to interact with colleagues and your local Mizzou research team.

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