Diseases Awaken Early

Weather

Spring feels like it started yesterday, but is already acting like an aged, old mid-May veteran. April temperatures are currently 6 – 7 degrees above normal throughout the state, which has catapulted many plants, and unfortunately weeds, into early germination, leafing, and flowering. The blooms of many forsythias in mid Missouri have littered the ground, soil temperatures are in the mid 50s - low 60s, and most degree day totals have eclipsed 200 for base 50 and 700 for base 32. Also, as you’ll note below, many diseases that normally arrive in late spring have already begun in earnest on our research farm.

Along with the tropical wave of warmth, the southern flow of air also brought a steady stream of precipitation through early and mid April. Most areas of the state, including Kansas City, Columbia, and Springfield have received 1.5 - 2” of rainfall in the last two weeks, while localized areas in St. Louis were hit with 3.5 – 4”. Normal precipitation totals for the first two weeks of April across the state are ~ 1.5”, but the frequency of rainfall events (approximately every 3-4 days) and persistence of cloud cover has left many soils saturated. Keeping up with mowing has been difficult in some areas, much less weed control, fertilization, and other necessary spring practices.

The NOAA forecast shows a greater chance of temperatures moderating and declining over the next 6-14 days, resulting in our normal rollercoaster temperature swings of spring. Rainfall chances are expected to remain significant over the week, however, which will continue to make maintenance scheduling difficult. Regardless, several pests have reached environmental thresholds or are emerging now, and will require attention over the next week.
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Quick Hits:

![Image](https://example.com/image.png)

**Early Dollar Spot Outbreak at MU Turf Farm**

A. 4/13: Dollar spot popped on creeping bentgrass research greens on the MU Turfgrass Research Farm in Columbia, MO.
B. In previous research, we’ve observed Lexicon treatments resulted in quicker dollar spot recovery than Emerald or Honor treatments.

- **Dollar spot** snuck up on us at the turf farm this year, as outbreaks began over the weekend on most bentgrass putting green and fairway plots. Looking back in the records, dollar spot activity is normally reserved for May, with first observations made on May 5, May 20, and May 12 in 2011, 2013, and 2014, respectively. The one exception was the fantastically warm March of 2012, where dollar spot popped on March 28th. The warm April temperatures along with a slightly warmer than normal March (+1.3 degrees) got the fire cooking. The frequent rains also provided enough moisture and humidity for the disease, and potentially reduced the impact of our nitrogen fertilizer application and left the turf susceptible.

Keep in mind that we do keep quite the dollar spot beast cooking at our research farm. We annually inoculate to ensure even disease pressure across our plots, and we commonly let some dollar spot occur after a treatment regime in concluded to determine residual efficacy.

Dollar spot is a difficult disease to recover from, however, and the disease should be controlled preventively on high amenity surfaces. If curative treatments are warranted, consider tank-mixing a contact, a systemic, and a small shot (0.1 lb N/1000 sq ft) of nitrogen in addition to your normal program. Also in previous studies we’ve observed that plots treated with Lexicon Intrinsic tended to recover quicker from dollar spot than plots treated with Emerald or Honor ([click here to see graph](https://example.com/graph.png)).
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- Two weeks ago it was pink snow mold evident on our creeping bentgrass variety trial, but now the disease has turned into its alter-warmer weather-ego Microdochium patch. This disease caused by the same pathogen does not need snow cover to develop and causes brick red rings, patches or spot symptoms. During humid, wet conditions (which we’ve had in spades), the disease may track along mower or drainage patterns that transport pathogen spores. The continued progress and damage caused by this disease necessitate its control in spring. We let the disease continue on our NTEP bentgrass putting green cultivar to fully assess differences, but at this point we've got enough information and we'll treat the area.
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Weather Suited for Ducks & Black Algae
A. Black algae infested this green after aerification, fertilization, and an inch of rain in a day.
B. Greasy matted layer of black algae. Note the black algae is not in the aeration holes.

- **Black algae** incidence has been significant over the past week on putting greens, particularly in St. Louis where the above pictures were taken. In some locales, over an inch of rain occurred in a day. Heavier fertilization to recover from aerification combined with heavy and steady rain in some areas (over an inch per day in some locales) provided a good environment. Cultural practices to reduce the problem include aerification (as shown above) to dry down the turf surface and mat layer. Regular applications of chlorothalonil and mancozeb may aid in algae reduction.

- **Crabgrass** has begun emerging at the MU turfgrass farm over the last few days. If you haven’t applied a preemergent herbicide on lawns yet and are planning to do so, you should consider applying one that has some reach-back ability such as dithiopyr, which will also control seedling crabgrass. As you can see on the [gddtracker site here](https://gddtracker.missouri.edu), most of Missouri is “Done” for making at least the first crabgrass preemergent application effectively.
- **Yellow tuft** occurred last August on our new ‘Penn A1’ putting green, and has recurred in the exact same spot. The disease is favored by poor drainage, and this area has settled a bit and is the lowest on the green. Yellow tuft is caused by *Sclerophtora macrospora*, which also causes downy mildew of other plant hosts. Yellow tuft also occurs on other turfgrasses, and has been implicated in similar, but more severe, symptoms on zoysiagrass in the spring. As stated in the previous report, the pathogen is an obligate parasite and weakens its host or causes growth irregularities. In this case, the disease symptom is chlorosis and a witches broom type symptom with excessive plant tillering from a single node. Cultural controls include aerification and increasing drainage. Oomycete targeting fungicides like mefenoxam/metalaxyl may also reduce symptoms. In this case, aerification is not being performed on this area of the green, since microplots were installed for our project involving Pythium root-infecting species.
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- **Large patch**: Spring preventive applications for areas with a history of large patch should be made shortly, as we are about 50% greenup here in mid Missouri. In our previous trials, we’ve observed good large patch suppression in the spring/early summer with single spring fungicide applications. We are continuing this research with a trial sponsored by the United States Golf Association and additionally supported by the Heart of America Golf Course Superintendents Association. In this research, we are evaluating the impact of post-application irrigation, application timing, and pigment on the efficacy of spring-applied fungicides. Our aim is to develop a fungicide application strategy that maximizes residual efficacy.

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### TREATMENTS

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<tr>
<td>Heritage TL (1.5 fl oz/M)</td>
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<tr>
<td>Torque (0.6 fl oz/M)</td>
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<td>Mirage (1.08 fl oz/M)</td>
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<th>PAI</th>
<th>Timing</th>
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<tr>
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<td>Early Spring (4/6)</td>
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<tr>
<td>1/10”</td>
<td>Late Spring (4/27)</td>
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<td>1/4”</td>
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**Large Patch Control w/Spring Fungicide Applications**

A. 4/16/15: Kyle Robertson and John Koehler operating the post-application irrigation system after Daniel Earlywine applied an early spring application.

B. Fungicide selection, spring timing, and post-application irrigation (PAI) are being evaluated in an effort to maximize residual efficacy.
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Timing the “Prevent Defense”

In most cases, the prevent defense installed too early in a game is risky, and few, if any, would be bold enough to think they’ve won in the season’s 1st quarter. However, along with preventing large patch, it’s also time to consider prevention of soilborne diseases on creeping bentgrass putting greens. An early run or touchdown pass doesn’t hurt. The overall strategy is recapped below:

- **Disease Targets**: Fairy Ring, Take-all Patch, Summer Patch, Dollar Spot
- **Fungicide**: Low rates of fungicides in the demethylation inhibitor (DMI) class including Trinity, Mirage, Torque, Tourney, Eagle, and Bayleton.
- **Timing**: First application when 2” soil temperatures average 55-60°F for five consecutive days. Second application 28 days later.
- **Site**: Golf putting greens
- **Why Now**: 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.
- **Important Notes**: Two applications 28 days apart. Do not tank-mix preventive fungicide with a wetting agent. Try to keep other PGR applications (particularly paclobutrazole and flurprimidol) 1-2 weeks away from DMI preventive applications. Water in the application with 1/8” (preferably ¼”) of irrigation immediately after application (preferred) or at least that night. Remember the pathogen is in the soil, so put the fungicide there.

In Missouri, we are running about a week ahead of schedule compared to previous years, and are currently right in the wheelhouse for making these applications. A few additional notes below:

- If you have recently aerified, you may consider holding off a week to let aerification holes recover before making the DMI application. The DMIs are plant growth regulators in the same class as paclobutrazole and flurprimidol, and may limit bentgrass regrowth. Additionally, we are forecasted for a cooldown so we should sustain at the current 55-60 F soil temperature level for at least a week.
- If you have ultradwarf bermudagrass greens, (outside of MO) pay attention to the fungicide label. Due to growth regulation, many DMIs should not be applied to the ultradwarfs unless completely greened up, and some shouldn’t be applied at all. Consult with your local university turfgrass pathologist or specialist for fungicide selection guidance.
- In our studies, we have found residual dollar spot control from this application strategy. Triadimefon and tebuconazole provided the longest
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residual control, resulting in a significant decrease in dollar spot severity through early August.

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