Preventive Use of DMI Fungicides on Golf Putting Greens

This is the second article in our series describing the application strategy for applying DMI fungicides preventively in the spring.

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. 
   - *Very Soon: (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 ½” (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 WHEN – quick update**

![Soil Temperature at 2-inches Under Bare Soil (Columbia, MO - 2011)](chart)

Preventive Spring Fungicide Applications
WHEN - Our temperature spike last weekend, brought our soil temperatures back to near normal levels. We were having a particularly cool spring.
Our current 5-day average 2” soil temperature in Columbia is hovering right at 50°F. The brief heat episode this past Sunday, (near 90°F in Columbia), has vaulted us right back to normal as far as soil temperatures go (see figure above taken from Horizon Point report). We also have forecasted high temperatures near 80°F this weekend, with some lows only dipping into the 60's. With this forecast, I would expect our averages to jump considerably over the next 5 days and reach the threshold for the first application by early next week. Ten-day forecasts, (which I don't put a lot of stock in) have next week leveling off, and soil temperatures should stabilize in the 55 - 60°F window. So, bottom line – the when for the first application is probably **next week or the week after (4/11-4/20).**

Pay particular attention to the **HOW** and **WHAT** sections above, and make sure you don’t tank-mix a wetting agent with the applications and make sure to water the applications in. Also I added in a note about PGR applications and trying to keep them separated from the DMI application (DMIs have PGR activity too). If you have any questions regarding the strategy, don’t hesitate to email (turfpath@missouri.edu) or call.

**THE WHAT**

My research at NC State with Dr. Lane Tredway focused on developing this strategy for use in fairy ring prevention. We had taken a clue from superintendents in Gulf Coast states who were using Bayleton for preventive fairy ring control. A preliminary trial showed that two spring Bayleton applications worked well, whereas traditional curative fairy ring fungicides such as Heritage and ProStar did not work in this two spring application strategy.

In a study involving single applications of Bayleton and a formulation of tebuconazole (the active ingredient in Torque), we noted that if applied at the correct time there were no noticeable differences in the level of control afforded by the low and high rates of the two fungicides. We did note, however, that a single application would not last throughout the season, which is why the recommendation is to make **two** applications 28 days apart.
Subsequent research suggests there are slightly varying degrees of fairy ring control within the DMI fungicide class (see figure above). Banner, and interestingly Bayleton, seem to be weaker on fairy ring caused by the pathogen *Bovista dermoxantha*, which may be one of the principal fungi responsible for fairy ring in Missouri. Observations from last year and from other colleagues in the Midwest suggest that Bayleton may not provide as high a level of control here as it did on my research green in the Southeast. Further testing this year with appropriate timing will attempt to confirm these observations. Note again in the graph above that traditional curative fungicides (Heritage and Endorse) do not provide consistent control with just two spring applications.
The reason we would like to keep Bayleton in this strategy is that we observed very good dollar spot suppression throughout the season with the two applications. The graph above shows that two spring applications of Bayleton effectively suppressed dollar spot activity in our plot, whereas two Triton applications provided moderate suppression. The question is can we apply Bayleton as a first (or second) app, another fungicide for the other app, and achieve both dollar spot and fairy ring control? Ahh... the beauty of research. It often creates as many questions as answers, and keeps me a very busy and happy turf pathologist.

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