Understanding and Managing Fairy Ring in Turfgrass

Fairy ring is particularly troublesome because it can be difficult to control. Adhering to beneficial cultural practices and knowing the proper use of appropriate fungicides are essential in controlling fairy ring.

**Causal Agents:** Fairy ring is the name for characteristic symptoms produced in turfgrass when certain non-pathogenic fungi inhabit soil, thatch, or leaf litter. Fairy rings are caused by over 60 different species of Basidiomycete fungi. Mycelium of these fungi reach between two to 20 inches into the soil. There are two types of fairy ring: Edaphic (soil colonizing) and Lectophilic (leaf litter, thatch colonizing). Both types are further classified based on severity and the amount of mycelium and mushrooms.

**Disease Conditions (Epidemiology):** Fairy ring development is common after establishment of new greens. They may cause severe problems on light textured soils under dry conditions and low fertility. Fairy ring can be especially troublesome on turfgrass with thick thatch grown in soils with high sand concentration. There is a complex relationship between the fairy ring causing fungus and the symptoms observed based on the type of fairy ring.

**Symptoms:** The most common symptoms include outer rings of dark green or faster growing turfgrass (stimulated turf), and possibly a zone or patch of dead grass inside the lush outer ring. Toadstools, mushrooms, or puffballs may emerge in the outer ring. The rings may expand as the fungus progresses. The ring interior is generally hydrophobic due to the high concentration of mycelium and the depletion of organic matter. Both the stimulated turf and dead zones are simply by-products of the fairy ring fungus. The sudden appearance of variable green-colored rings is due to the release of nitrogen, more specifically ammonia. This has sometimes been observed after the application of fairy ring active fungicides, which may result from accelerated nitrogen release as the fungus is killed.

**Beneficial Cultural Practices Include:**
- Balanced fertility throughout the season. Avoid fluctuations in fertility.
- Maintain deep soil moisture (syringing greens may increase fairy ring symptoms).
- Aerify and verticut to keep thatch levels low. Remove cores, clippings, and organic matter produced by mechanical cultural practices.
- Use soil wetting agents to help alleviate dry spots.

**Fungicide Control:** Control of fairy ring fungi can sometimes be difficult due to the large number of fairy ring species and the depth to which they can reach in the soil. There are currently only two fungicides labeled for use against fairy ring on turfgrass: Heritage® and ProStar®. Use a wetting agent or subsequent irrigation (at least 1/4” of water) with Heritage. The Heritage label recommends four gals of water per 1000 ft² with wetting agents. The keys to success with Heritage are 1) Product contacting the causal organism, and 2) The sensitivity of the causal fungus to the fungicide.

Heritage is labeled for *Lycoperdon* spp, *Agrocybe pediades*, and *Bovistra plumbea*. It is advised to get the fairy ring identified by a state or university extension agent prior to use of any fungicide. Multiple applications of Heritage are allowed per year for fairy ring control, while only two ProStar applications (4.5 oz per 1000 ft² per year) are allowed.

Sample Spray Program:
- START at early symptom development
- Symptoms declining 4 wks later
- 4 weeks later
- Repeat as necessary
- Irrigation with at least 1/4” of water after Heritage applications may accelerate efficacy but decrease residual. Results may take from 2 to 3 weeks to become apparent. If symptoms don’t decline weeks after the first Heritage application, switch to another fairy ring controlling fungicide for the second application. Utilize cultural practices in conjunction with the use of fungicides.

Figure 1: Curative fairy ring control by Heritage and ProStar in FL. Bars show the amount of disease in plots. Aqueduct™ is a soil wetting agent.

Figure 2: Curative fairy ring control by Heritage and ProStar on creeping bentgrass in SC. Bars show the amount of disease in plots. Primer is a soil wetting agent (wai is weeks after initial application).

Call 1-800-395-8873 to contact your local Syngenta turf and ornamental sales representative and learn more about Heritage.