

# Preliminary Observations On Fairy Ring Control

by

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When you hear someone mention fairy ring, it conjures up several images. However, did you know that the origin of this term has deep roots in English myths and superstitions dating back to medieval times? The ring was believed to have been formed by dancing fairies, and its location a place of enchantment. Must have been some party! However, partying is the last thing on the minds of superintendents once they confront this problem on their greens or fairways (unless they feel like drowning their sorrows, so to speak)!

Since those bygone days, fairy rings ([figure 1](#), [figure 2](#)) are now recognized as being caused by a class of fungi known as mushrooms (Basidiomycetes). In Florida and other parts of the world, fairy ring is caused by species of fungi known as *Calvaria* (coral mushrooms), *Chlorophyllum* (parasol mushrooms), *Lycoperdon* (puffballs), *Marasmius* (gilled mushrooms), and others.

Typical symptoms of fairy ring are generally first noticed as a circular or semi-circular band or ring of stimulated, dark-green grass or necrotic (dying) grass or combinations of both. Fairy rings are further classified into three types according to their effect: **Type 1**-those where the grass is killed or badly damaged, **Type 2**-those where the grass growth is stimulated only and **Type 3**-those where there is no damage to the turf, but the fruiting bodies of the fungus (sporocarps) are found in rings. In addition, three distinct zones in the band or ring can be observed: an inner zone where there is luxuriant grass growth, a middle zone where the grass may be under drought stress or dead, and an outer zone where there is some stimulated grass growth.

It is not known exactly how fairy rings get started, but once they do, the fungus begins active growth at a point in the soil and grows radially outward. The fungus supposedly lives by decomposing organic matter in the thatch and/or soil. The fungus may grow deep in the soil as a dense, white, threadlike mass known as mycelium. The type of ring symptoms that develop are believed to occur because of one or more of the following: older mycelium dies releasing nitrogen as it decomposes organic matter creating inner ring of stimulated grass, dead zones appear because of an extensive buildup of the fungus making the soil hydrophobic and preventing water from infiltrating, dead zones occur because nitrogen may accumulate in lethal concentrations of ammonia, the fungus may directly produce toxic levels of hydrogen cyanide, grass roots may be directly infected by the fungus and weakened grass plants might be killed by other pathogens. So, you can see there is a lot of speculation on the process of how turfgrass is either stimulated or killed by fairy rings. Further research is needed in this area.

Control of fairy rings usually consists of cultural or chemical management strategies. We recently explored the possibility of using a wetting agent (Aquaduct) and fungicides (ProStar 50WP and Heritage) to curatively control an established epidemic of fairy ring on a golf green. The wetting agent was used because they are believed to help 'break-up' the hydrophobicity of the soil. ProStar 50WP (chemical name-flutolanil) was used because it has been reported and shown to have some suppressive effects against certain basidiomycetes that cause fairy ring. Heritage (chemical name-azoxystrobin) is a new chemistry of fungicide developed from a mushroom. The entire green was completely infected by a species of *Lycoperdon*. The green was divided into four replications and received the treatments as presented in the table. The wetting agent was applied first

and then the fungicides were applied in all the combination treatments. The first application occurred on May 15th and the second on May 29, 1997. On June 9th, all treatments were rated for percentage of apparent ring. Although all treatments reduced the size of the ring in comparison to the control between 12.5 and 56.2%, only Heritage alone or in combination with the wetting agent was significantly different from the non-treated control. As has been reported previously, these and other fungicides have the capability of curatively controlling fairy ring. They are also known to act preventatively but this was not part of our study. Although Heritage significantly reduced the apparent ring, it was too early to tell if this will always be the case. This was one experiment, in one location, during one season. Research will need to be conducted and expanded to multiple sites over multiple years to determine not only efficacy but consistency of these and other products, also.

<b>Effect of a wetting agent and fungicides on reducing fairy ring</b>		
<b>Treatments*</b>	<b>Rates</b>	<b>% ring area</b>
1. Control	-----	85.0 a**
2. Pro Star 50WP	6oz/1,000 sq. ft.	72.5 a
3. Pro Star + Aqueduct	6 oz/1,000 sq. ft. + 6oz/1,000 sq. ft.	67.5 a
4. Aqueduct	6oz/1,000 sq. ft.	62.5 a
5. Heritage + Aqueduct	0.4 oz/1,000 sq. ft. + 6oz/1,000 sq. ft.	28.8 b
6. Heritage	0.4 oz/1,000 sq. ft.	28.8 b

\*All treatments were applied twice, fungicides were applied in 10 gal water/1,000 sq ft.

\*\*Numbers followed by same letter are not significantly different (P=0.05).

**The data reported herein is preliminary in nature, is provided only for informational purposes, and does not constitute a treatment recommendation for the control of fairy rings by the University of Florida-IFAS.**



Symptoms of Type I fairy ring caused by a species of Lycoperdon (puffball mushrooms) on a golf course Tifdwarf Green in South Florida, May, 1997.



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