



A Type III fairy ring caused by *Chlorophyllum molybdites* in a home lawn. Photo by Dr. Matt Smith, University of Florida.

Fairy Rings Demystified



**“Fairy roses, fairy rings,
turn out sometimes
troublesome things.”**

—William Makepeace Thackeray



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Introduction

Feeling like fairy rings have you dancing in circles? If so, you are not alone in the turfgrass management world. Those frisky fairy rings, caused by mushroom producing fungi, commonly occur on lawns and golf courses throughout Florida. These fungi alter the soil environment and make it unfavorable for optimal turfgrass growth and productivity.

In Celtic traditions, fairy rings were believed to be places where fairies, elves and witches danced and played, and if a human dared to enter the circle, they would be cursed to frolic amongst the fungi until death from exhaustion.

Although fairy rings have sparked the imagination since ancient times, the science behind these mysterious mushrooms' management methods is not so mystical.



Chlorophyllum molybdites, the most common fairy ring mushroom in Florida landscapes. This one is poisonous and should be removed, especially near pets and children. Photo by Dr. Matt Smith, University of Florida.

What Are Fairy Rings?

Fairy rings are abnormal circular patterns on turfgrass that have distinctively different zones of color and texture inside or around the grass ring, and often times, appear with mushrooms circling the ring. The fairy rings are circles because the fungi that cause them grow from a single point inside the circle, expanding outward in a uniform pattern, forming a ring.

Several different species of fungi can cause fairy rings throughout Florida landscapes including *Chlorophyllum* spp., *Marasmius* spp., *Lepiota* spp., and *Lycoperdon* spp.

These species of fungi feed on decaying organic matter, while growing outward through the thatch and soil from a central location, causing the peculiar and particular pattern of circular growth. These rings can vary in completeness, appearing as a quarter circle, a semicircle



Marasimus vagus is a common fairy ring mushroom. This species is most likely an introduced species that has recently become more common in home lawns. Photo by Dr. Matt Smith, University of Florida.

Image 2. *Mycelium*, or white fungal threads, of the fairy ring fungi are often found below the soil level and can produce mushrooms, or fruiting bodies of the fungi, in wet weather.
Photo by Dr. Phil Harmon, University of Florida.



or even a full circle. The size of the circle can range from a few inches to more than six feet in diameter.

Often times, a layer of white, fungal mycelium, or fungal threads, is visible in the soil or below the grass ring. It's from these fungal threads that mushrooms, or the fruiting bodies of the fungi, originate.

Three different types of fairy rings can occur depending on the fungal species responsible, the soil type, and the environmental conditions present.

- **Type I** rings have a zone of dead grass just inside a zone of dark green grass. Type I fairy rings are more commonly observed on golf course greens than on home lawns. The Type I fairy ring fungi produce compounds that are hydrophobic, or water-repelling, leading to drought conditions. Eventually the grass inside the ring dies. Weeds commonly invade the dead zone. Toxic levels of ammonium and other salts can accumulate from the fungi altering the soil chemical properties, further exacerbating the drought conditions stressing the turf.
- **Type II** rings have only a band of dark green turf, with or without mushrooms present in the band. Type II fairy ring fungi release nitrogen and other nutrients into the soil while consuming decaying organic matter. This promotes lush growth, leading

to a ring of dense, dark green grass that grows more rapidly than the surrounding turf.

- **Type III** rings do not exhibit a dead zone or dark green zone, but a ring of mushrooms is present. In other words, Type III fairy ring fungi produce no observable effect on turf growth but instead produce the classic fairy ring, with mushrooms growing in a circle.

Where Do Fairy Rings Occur?

Fairy rings can occur in all warm season turfgrasses. They are commonly found on lawns, golf courses, athletic fields and other landscapes in areas with high organic matter from excessive thatch or buried tree stumps or logs.

Fairy rings that produce mushrooms (Type II or III) are most likely to appear after periods of extended rainfall during the summer rainy season of Florida.

The mushrooms tend to come and go, seemingly overnight sometimes, which has added to their mysterious nature. If left untreated, the fairy rings can get larger each year.

Type II fairy rings can often develop into Type I rings in hot, dry weather. On golf course putting greens, fairy rings are most common on newly constructed or sand-based greens.



Type I Fairy Ring. Photo by Dr. Phil Harmon, University of Florida.

How Do You Manage Fairy Rings?

Fairy rings are not only troublesome to turf due to altering the chemical properties and moisture content of the soil, but some of the mushrooms produced by fairy ring fungi, particularly *Chlorophyllum* spp., are poisonous so should be removed. Using a mower to chop and destroy is usually adequate. However, if children and pets are present, the mushrooms should be collected and disposed of in the garbage.

Cultural Controls

Nitrogen fertilizers can be added to the soil to mask the appearance of the dark green ring symptoms produced by Type I and Type II fairy rings. The rings will naturally disappear over time but could take many years. It is possible to excavate and fumigate fairy ring areas of turf, but unless the food source of the fungi, the underground organic matter, is not removed, the fairy ring will likely return.

For Type I fairy rings where the fungi coat the soil particles and make the soil hydrophobic, or water-repellent—resulting in rings of dead grass from the localized drought situation—a three-part approach is needed. This involves aeration or breaking up the soil under the dead grass using a pitchfork, adding a wetting-agent, and daily watering of the ring only (only water the ring). This can help to rewet the soil and encourage recovery of the turfgrass.

Chemical Controls

Several fungicides are registered for fairy ring control in turfgrass. Effective fungicides include azoxystrobin, flutolanil, metconazole, pyraclostrobin, and triticonazole. Keep in mind that fungicides inhibit the fungus only. They



Type II Fairy Ring, Citra, FL. Photo by Dr. Alex Lindsey, University of Florida.

do not eliminate the dark green or dead rings of turfgrass, and they do not solve the dry soil problem.

Fungicide labels indicate site application restrictions as some fungicides cannot be used on residential lawns. Label directions and restrictions for all pesticides should be followed as required by law. Caution should be exercised, as DMI (demethylation-inhibiting) fungicides have shown the potential to damage bermudagrass turf.

The UF/IFAS Extension Electronic Data Information Source (EDIS) website can be referenced for a homeowner's guide to turfgrass fungicides (https://edis.ifas.ufl.edu/document_pp154).

The "Turfgrass Disease Management" section of the Florida Lawn Handbook (<http://edis.ifas.ufl.edu/lh040>) can be referenced for explanations of cultural and chemical controls. 🌱



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