



Soil hydrophobicity associated with type-I fairy ring in turfgrass.

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Fairy ring is the name commonly given to circles of mushrooms or rapidly growing, lush green circular bands of grass observed in established turfgrass areas. Fairy ring disease occurs worldwide in all cultivated turfgrasses, and is often observed on golf course putting greens, fairways, tees, and roughs as well as general lawn areas. Turfgrass injury symptoms and damage due to fairy ring are observed at any time during the year, but often occur during periods of hot, dry, and drought-like weather. Fairy ring is described on the basis of visual symptoms of the affected turfgrass: type-I fairy rings are those that kill or seriously damage turfgrass, type-II fairy rings stimulate plant growth as evident by circular bands of dark green turfgrass, and type-III fairy rings do not stimulate turfgrass growth and cause no damage, but produce mushrooms in circles or arcs. Type-I fairy ring is especially destructive due to the development of hydrophobic or water repellent thatch and soil conditions attributed to many soil-inhabiting basidiomycete fungi. The result is root dieback below the soil and severe turfgrass injury visible above the soil. Current strategies for type-I fairy ring control in turfgrass involve suppression, antagonism, and eradication. Suppression methods employ cultural practices including aeration and core cultivation, fertilization, irrigation to thoroughly water the soil profile, and fungicide and soil surfactant applications. These methods are aimed at suppressing the fungus, masking turfgrass injury symptoms, promoting turfgrass recovery, and alleviating soil hydrophobicity. With the antagonism method, turfgrass sod is removed, the soil is tilled and mixed in several directions on the premise that fairy ring fungi will eliminate each other when they come into direct contact, and the area is seeded or replaced with new turfgrass sod. Eradication involves soil fumigation or soil removal from the affected fairy ring area and

in most cases is impractical and cost prohibitive. Current research on type-I fairy ring in turfgrass involves the use and delivery of fungicides and soil surfactants, as well as further investigations on the biology and ecology of basidiomycete fungi associated with fairy ring and soil hydrophobicity.