



# Forest Threats

*Pine fire fungus, Doughnut fungus / Rhizina undulata*

Tree Protection Co-operative Programme

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## Fungal diseases

### Pine fire fungus, Doughnut fungus / *Rhizina undulata*

*Rhizina undulata* Fr.

#### SYMPTOMS

*Rhizina undulata* is a pathogen of *Pinus* species. Common symptoms associated with *R. undulata* are wilting and death of young trees, especially after transplanting. Tree mortality may occur within weeks or months. Symptoms of infection in mature trees will include reduced shoot growth, resin production and necrotic needles. The roots become infected and the fungus remains dormant on the roots after the plant has died. After fire events such as slash and burn, when conditions of high humidity are present, fruiting structures will be seen on roots or stumps of burnt trees. These fruiting structures are typically used to confirm the presence of *R. undulata*.

#### BIOLOGY

*Rhizina undulata* is a soilborne pathogen that can survive for long periods of time on the roots of *Pinus* species. The fungus relies on fire to germinate and infects plants through the roots. Fruiting structures can be found during spring or early summer and usually require wet conditions to form.

#### MANAGEMENT

Management strategies include waiting for the fungus to go dormant before planting, not to slash and burn in a compartment that is known to have the fungus and the use of monitoring plots in sites that are known to have the pathogen.

