

Brown Patch Management & Control

Causal Pathogen

The causal pathogen of Brown Patch is *Rhizoctonia solani*. *Rhizoctonia solani* is a soil borne fungus which can be found in most soils and is known as a cause of disease in both established and seedling turfgrasses. The disease does not produce spores, but instead spreads rapidly by mycelial contact. The disease is disseminated via movement of sclerotia which are produced and remain in thatch material.

Rhizoctonia solani has a characteristic mycelium over other patch diseases, whereby the mycelium branches at a 90 degree right angle, allowing for accurate diagnosis in the lab.

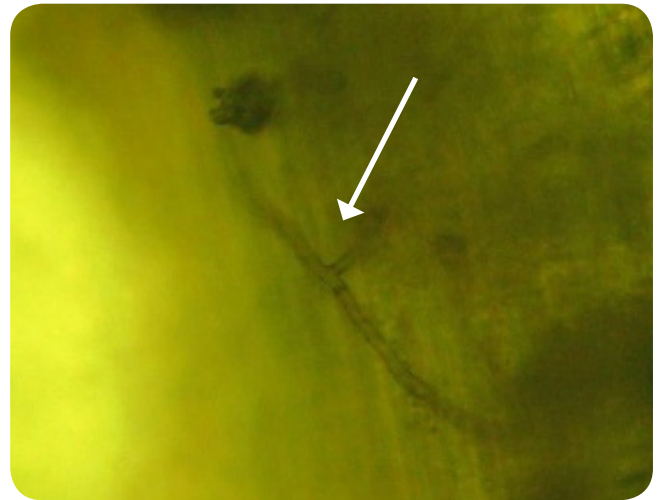
Symptoms

In Australia, Brown Patch is a disease primarily of the roots and crowns within the plant. The damage to turfgrass is in the form of a ring ranging from 5cm to 1-2m in diameter, with the grass in the centre of the ring usually remaining moderately healthy. The outer ring of the grass turns brown and dies, usually from desiccation due to its damaged root system.

When severe infection occurs, *Rhizoctonia solani* may infect leaf tissue also, making leaves appear water soaked, eventually drying and withering and turning brown. When humidity is high, a smoke ring, consisting of mycelial masses, may surround the perimeter of diseased patches in the morning. This occurrence disappears as the turf dries out.



Picture 1. Typical Brown Patch Symptoms in a golf green



Picture 2. Characteristic *Rhizoctonia solani* hyphae branching at a 90 degree angle on a turf root system

Occurrence

Rhizoctonia solani survives adverse periods as sclerotia / as mycelium on plant debris / or as a saprophyte in thatch. When soil temperatures rise to 15 - 20 Degrees Celcius, sclerotia germinate and the fungus begins to grow. Although growing at lower temperatures, *Rhizoctonia solani* does not infect plant tissue until air temperatures rise further and high humidity is experienced.

Fidanza, Dernoedon & Grybauskus (1996) found that infection is likely to occur once minimum air temperatures rise above 16 degrees celcius and mean relative humidity increases above 75%.








Cultural Control Practices

Nitrogen

High levels of nitrogen can increase the potential for Brown Patch infection. Hence, fertilisation with a high nitrogenous fertiliser prior to periods of high humidity should be avoided where possible.

Chemical Control Options

There are a number of systemic and contact fungicides registered for the control of Brown Patch in turf in Australia. These are outlined below:

Product	Pack Shot	Mode of Action Group	Contact/ Systemic	Key Points	Application Rate/100m ²
Rovral GT® Active Ingredient : Iprodione <i>A registered trademark of Bayer Environmental Science.</i>		2	Contact (Translaminar)	<ul style="list-style-type: none"> • Curative Activity • Broad Spectrum control • Up to 21 days protection • Proven Performer 	180mL
Heritage MAXX® Active Ingredient : Azoxystrobin <i>A registered trademark of Syngenta.</i>		11	Systemic	<ul style="list-style-type: none"> • Strong residual activity • Up to 28 days preventative activity 	60mL
Headway MAXX® Active Ingredient : Azoxystrobin Propiconazole <i>A registered trademark of Syngenta.</i>		11/3	Systemic	<ul style="list-style-type: none"> • Strong residual activity • Up to 28 days preventative activity 	90mL
Dedicate® Active Ingredient : Trifloxystrobin Tebuconazole <i>A registered trademark of Bayer.</i>		11/3	Contact/ Systemic	<ul style="list-style-type: none"> • Both curative and preventative activity • Systemic and contact action 	20-30mL
Fore Rainshield™ Active Ingredient : Mancozeb <i>A trademark of Ecofertiliser.</i>		M3	Contact	<ul style="list-style-type: none"> • Unique mancozeb formulation ensuring excellent protectant action on Brown Patch for up to 14 days. 	335-415mL
Daconil Wetherstik® Active Ingredient : Chlorothalonil <i>A registered trademark of Syngenta.</i>		M5	Contact	<ul style="list-style-type: none"> • Effective contact fungicide • Good protection for up to 14 days. 	200mL
TMTD 600™ Active Ingredient : Thiram <i>A trademark of Ecofertiliser Pty Ltd.</i>		M3	Contact	<ul style="list-style-type: none"> • Contact fungicide providing preventative activity up to 14 days. • Dust free easier to use formulations than other thirams. 	160mL