



Forest Threats

Lophodermium needle cast

Tree Protection Co-operative Programme

Created 17 June 2026

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Fungal diseases

Lophodermium needle cast

Lophodermium seeditiosum Minter, Staley & Millar (previously erroneously attributed to *Lophodermium pinastri* Schrad. ex Fr. Chev. (Minter et al. 1978)).

SYMPTOMS

All *Lophodermium* species have an endophytic lifestyle where the fungi colonise the living tissue of pine needles. Symptoms appear only after needles have died and are cast (Minter & Millar 1980). The exception is *Lophodermium seeditiosum*, a pathogen that colonises the mesophyll cells and vascular system of the needles, which are killed leading to premature defoliation (Diwani & Millar 1986).

Lophodermium spp. can infect seedlings in nurseries or trees in young plantations. Initial symptoms include small yellow spots at the site of infection (Sinclair & Lyon 2005). These spots later coalesce, turn red-brown and are surrounded by a yellow halo. In advanced stages of disease, the needles turn brown, become dry and are cast. Under favourable conditions, shiny black oval-shaped fruiting structures (ascocarps), develop on the cast needles. Successive defoliation reduces tree vigour and growth. In severe cases, young seedlings may die (Ostry & Nicholls 1989).

BIOLOGY

Lophodermium seeditiosum affects the current years' needles on the lower branches of trees. The fungus overwinters in dead needles still attached to the trees, needle litter and pine cones. Ascospores are liberated in summer at 100% relative humidity and temperatures between 20 - 30°C. Dissemination to lower branches is mainly by wind and rain. The spores germinate in the presence of water and optimal temperatures between 20 - 25°C (Gibson 1979). A germ tube is produced that later differentiates into an appressorium. The appressorium is a melanised structure that uses turgor pressure to directly penetrate the epidermal surface of the needle (Diwani & Millar 1986). The fungus incubates inside the needle for 2-3 weeks before the first symptoms are seen. The needles are killed and eventually cast early the following spring (Minter et al. 1978).

