



DOTHISTROMA NEEDLE BLIGHT



INTRODUCTION

Dothistroma needle blight, also known as red band needle blight, is a serious foliar disease of many pine species. It is caused by the fungus *Dothistroma septospora*. The disease results in the premature loss of needles. Dothistroma needle blight is considered to be most damaging to trees grown in plantations in the Southern Hemisphere and most notably *P. radiata* in New Zealand, Australia, Chile and parts of Southern Africa. The disease has been reported from many parts of the world and in

HOST RANGE

Many pine species, as well as other conifers, for example *Larix* spp., are susceptible to infection by *D. septospora*. Approximately 30 pine species are reported to be susceptible to this fungus. However, *P. radiata* is by far the most notable susceptible pine species, while *P. patula* is thought to be the most important disease tolerant species.



Conidia or asexual spores of *Dothistroma septospora*.

SYMPTOMS

BIOLOGY

Dothistroma septospora is a primary pathogen that invades and kills the host tissue. It is an obligate pathogen and therefore, does not compete successfully in the absence of its host. This fungus is capable of only limited survival in the litter of a damp plantation, and this is probably due to competition from saprophytes. Diseased nursery stock can be responsible for long distance spread of *D. septospora*. The spores of this fungus are also dispersed in wind-blown rain and in heavy mist conditions. Temperatures of over 18°C and rainfall as low as 13 mm per week has been reported to be sufficient to permit multiple infections of *D. septospora*.

MANAGEMENT STRATEGIES

Considerable progress has been made in identifying families of *P. radiata* that are tolerant to *D. septospora*. This work is proceeding rapidly and hybrids of *P. radiata* and other species are also most promising. In countries such as New Zealand, Australia and Chile, chemical control is necessary and routinely applied. At present, the disease is not

some cases has prevented the establishment of certain pine species particularly *Pinus radiata*. In the 1940s, *P. radiata* was planted extensively in East and Central Africa but due to severe damage by *D. septospora* further plantings were suspended. Dothistroma needle blight was first reported in South Africa in the mid-1960s. Today, sporadic outbreaks of the disease occur on *P. radiata* in the various parts of the Eastern Cape Province.



Needle blight on the lower canopy of *P. radiata*.

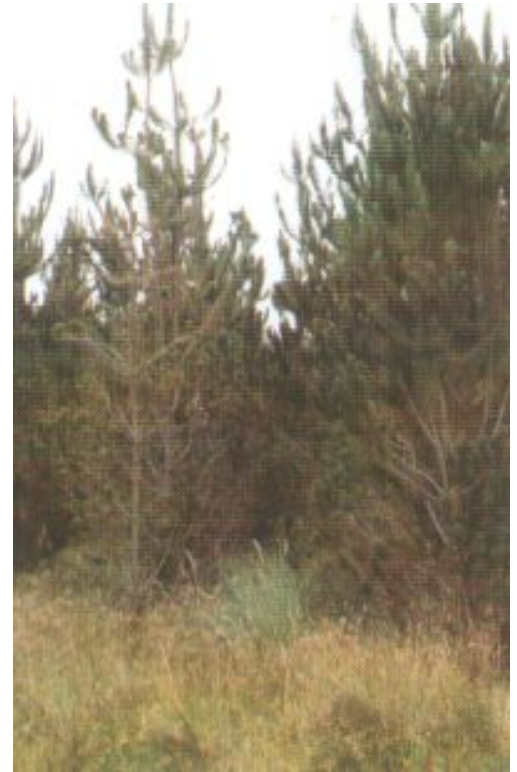
Early symptoms on the needles are deep green bands and yellow and tan spots on needles. The green bands do not last long and are only detected at the onset of symptom development. Later, the spots turn brown to reddish-brown, and finally become necrotic. The distal ends of infected needles above the lesion often turn brown, then die. Small, black stromata (fruiting bodies) produced on the diseased tissue result in a rupturing of the epidermal tissue and spores of the fungus under humid conditions are produced from these structures.

The disease first appears on the needles on the main stem and at the bases of the lower branches. In wet weather the fungus may spread throughout the tree and cause the loss of all needles except those at the branch tips. Successive years of severe infection result in decreased growth and ultimately death.



Yellow/tan bands, typical of *Dothistroma*, on needles.

sufficiently important in South Africa to warrant this approach.



Susceptible and disease tolerant trees alongside each other.



Fruiting body or stroma below the epidermis of a needle.

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