RHIZINA ROOT DISEASE

Mondi Ltd.

INTRODUCTION

Rhizina root rot was first recorded in South Africa in 1944. Since then, losses due to this pathogen have been reported from commercial pine plantations in Mpumalanga, Kwazulu-Natal and the Cape. The causal agent is *Rhizina undulata* and the disease is characterised by the death of seedlings or plantation trees in groups. The fruiting bodies or sporophores of this fungus are usually found on the ground following a slash burn or forest fire.

SYMPTOMS

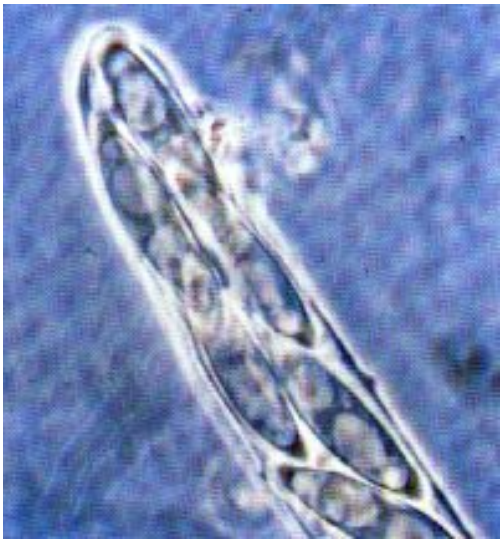
Sporophores or fruiting structures of *R. undulata* are irregularly lobed, red to dark brown to black. The margins are usually paler in colour. The fruiting structures are usually found in spring or early summer and are formed during wet weather. The pathogen causes symptoms similar to those induced by drought and water logging. Heat stimulates spore germination and, under suitable environmental conditions they colonise roots of the previous tree stand. When roots of newly planted seedlings come into contact with infested roots, they become infected and the seedlings dies. Where larger trees are subjected to burning but not killed by fire, *Rhizina* can lead to the onset of disease and death. In such situations patches of dying trees are often found in plantations and death of trees can continue over a number of years.

MANAGEMENT STRATEGIES

The adage "prevention is better than cure" is applicable to preventing an outbreak of *Rhizina* root rot. Burning after clearfelling should be avoided. Accidental forest fires do unfortunately occur and the most effective method to reduce losses is to delay re-planting until the pathogen ceases to be active. The period of activity of *Rhizina* is variable and apparently influenced by factors such as, time of the year of the fire, rainfall and soil type. In order to avoid widescale losses, it is recommended that monitoring plots be planted randomly on affected sites. Once seedling death abates in these plots, commercial planting can begin. Chemical control strategies to enable immediate planting are currently under investigation. The discontinuation of slash burning has led to a situation where populations of root feeding insects such as *Hylastes angustatus* build up. Thus, in order to reduce losses due to insect damage, insecticide treatments at planting are often required.

Trees damaged by fire and infected with *Rhizina*.

Older fruiting body that has become darkened with age.



Spore bearing structure (ascus) that contains eight thick walled spores known as ascospores.

HOST RANGE

All commercially planted pine species are reported to be susceptible to *R. undulata*. It has also been found to occur on the following *Pinus* species, viz. *P. canariensis*, *P. contorta*, *P. densiflora*, *P. elliottii*, *P. kesiya*, *P. leiophylla*, *P. nigra maritima*, *P. patula*, *P. pinea*, *P. pinaster*, *P. radiata*, *P. rigida*, *P. roxburghii*, *P. sylvestris*, *P. strobus*, *P. taeda*, and *P. thunbergii*. This pathogen only occurs where there has been a previous rotation of pines. Thus, burning of veld or indigenous bush prior to planting poses no danger.

Section through the upper part of a fruiting body showing fungal tissue and spores.

Populations of the bark beetle *Hylastes angustatus* build up in slash that is not burnt in order to avoid *Rhizina* infections.

If you need any further information, please contact us.

Young *Rhizina* fruiting bodies that are red/brown in colour with light margins. These are often associated with dying seedlings.

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