

## Wilt/blister bark disease of casuarina

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*Casuarina equisetifolia* is an important multipurpose agroforestry trees species mainly grown for its fuelwood. It plays an indispensable role as a windbreak and shelterbelt tree along coasts in several tropical countries including China, Vietnam and India. Poles cut from the main stems are also extensively used for construction purposes. Wilt or blister bark disease is the most destructive disease of this tree. Caused by a hyphomycete fungus, *Subramanianospora vesiculosa* Narayanan, Sharma & Minter (= *Trichosporium vesiculosum* Butler) (Narayanan *et al.*, 2003), it was first reported from India in the early 1900s. Later, epidemic outbreaks were reported from India, Mauritius and Sri Lanka (Narayanan *et al.*, 1996). In recent years the disease has been reported to cause large-scale mortalities in India as well as in China, Kenya, Thailand and Vietnam (Narayanan *et al.*, 2003).

Discolouration of the foliage are the initial symptoms of blister bark disease. As the disease advances, necrotic lesions appear all over the main stem and branches. Subsequently, all the affected trees exhibit symptoms of wilting and drying. During the final stages of the disease, the pathogen produces conidia beneath the necrotic lesions. Due to this excessive production of conidia beneath the lesions, the bark is pushed outward forming numerous 'blisters'. Such blisters, of varying size and shape, can be located all over the main stem and branches of affected trees. Later, these blisters rupture and release sooty black conidia which become deposited all over the tree, imparting a black appearance to trees, as if burnt by fire. Conidia of the pathogen can also be detected in the roots. In severe cases, diseased trees develop vertical cracks and splits in the main stem and die. As blister bark disease affects the timber of surviving trees and result in mortality of susceptible trees, every outbreak of the disease, particularly in mono-culture plantations, result in severe economic losses.

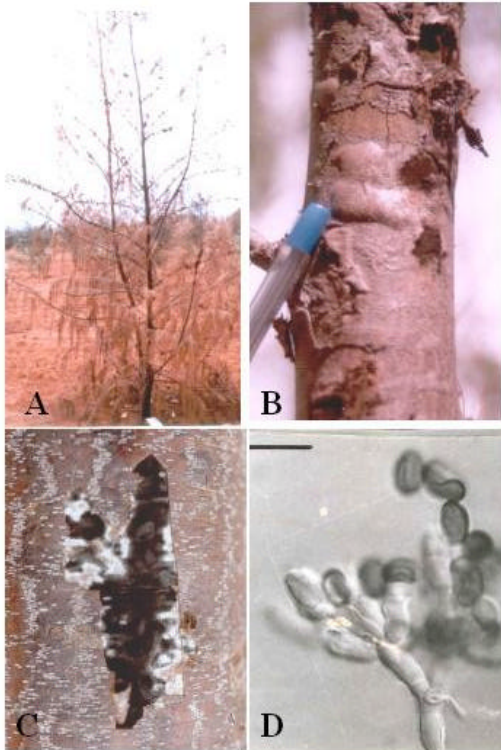
Selection and propagation of disease resistant germplasm is the only long-term management solution. Research based on international provenance trials has indicated high levels of genetic variation with reference to disease susceptibility among different provenances of *Casuarina equisetifolia*. This offers a wide scope for selection and breeding of disease tolerant genotypes. Since the pathogen produces large amounts of conidia, which get deposited all over the tree, it is most likely that seeds collected from otherwise healthy trees in a diseased plantation could carry conidia. Until this mode of seed dispersal of the pathogen is established, it is important to follow strict quarantine procedures during exchange of seed germplasm, as there is a potential risk of introducing the pathogen into new places where disease is so far unknown.

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**Narayanan, C.**, Mark Dudzinski, J.K.Sharma and C. Mohanan. (1996) The Extent, recognition and management of blister bark disease. In : Pinyopusarerk, K., J.W. Turnbull and S.J. Midgley (Eds.) Recent *Casuarina* research and development. CSIRO Forestry and Forest Products, Canberra, Australia, pp. 74-79.

**Narayanan, C.**, J.K. Sharma and D.W. Minter. (2003) *Subramanianospora vesiculosa* - a hyphomycete causing wilt disease of *Casuarina equisetifolia*. *Indian Phytopathology* **56 (2)**: 159-163.



- A. A two-year-old *Casuarina equisetifolia* tree affected by *Subramanianospora* wilt
- B. Close-up view of a blister. Note that the bark is pushed outwardly due to excessive production of conidia of the pathogen.
- C. Outer bark tissue removed to show underlying blackish conidial layer interspersed with mycelia of the pathogen.
- D. Conidiophore and conidia of *Subramanianospora vesiculosa*