

# Basal rot of *Cinnamomum iners*

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## Introduction

Wild cinnamon (*Cinnamomum iners*) are widely planted as hedge/screening trees as well as for shade in Singapore. They have been planted along roadsides and private housing estates in Singapore where rooting areas are restricted. It has been observed that *Cinnamomum iners* are susceptible to basal rot disease. The basal rot of *Cinnamomum iners* is a disease of concern as infected trees can fail suddenly. In the field, the disease has been observed to infect mature trees usually above 1 m in girth. Younger and smaller trees are not affected. In this RTN the symptoms of basal rot of *Cinnamomum iners* are described and illustrated. Control strategies are also presented.



**Fig 1.** Healthy *Cinnamomum iners* trees with reddish-pink, cream and light green new leaves (A) and dark green mature leaves (B).

## Disease Symptoms

The crowns of healthy mature *Cinnamomum iners* trees have dark green leaves. New leaves are reddish-pink and progressively become cream, light green and finally after a few days, dark green (Fig 1 A-B). However, leaves of infected trees remain pale yellow (Fig 2 A-D) and are generally smaller than those on healthy trees. Eventually, these pale yellow leaves show signs of wilting and browning (Fig 3 A-F). The crowns of infected trees show signs of tip die-back. Upon close examination of infected trees, horizontally and vertically cracked bark can often be observed on the lower trunks and root flares (Fig 4 A-F). Bark cracking can also be occasionally found on the upper trunks and branches (Fig 5 A-F). In areas where the cracked bark is removed, the wood is often visibly discoloured (Fig 4 B & E, Fig 5 C). It has been observed that infected trees fail around the areas of the cracked bark (Fig 6 A-C).

## Casual Agent

The remnant stumps and root systems of infected trees often bear bracket-shaped fungal fruit bodies (**Fig 7 A-E**). Pathogenesis tests are currently underway to formally confirm the causal agent(s) of this disease. Research is also underway in CUGE to identify biological control agents that can prevent susceptible trees from infection.

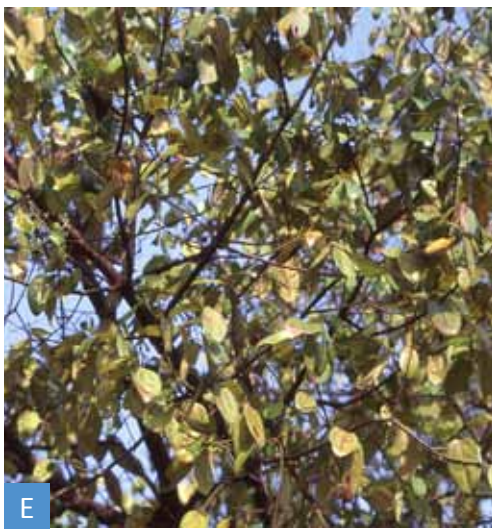
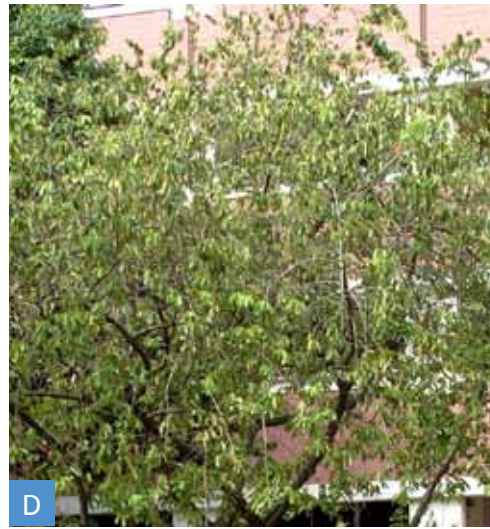
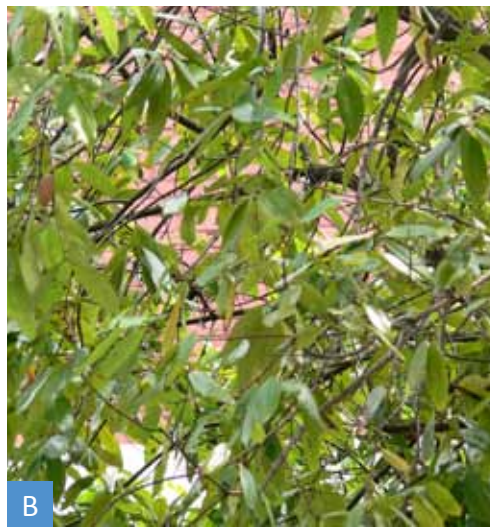
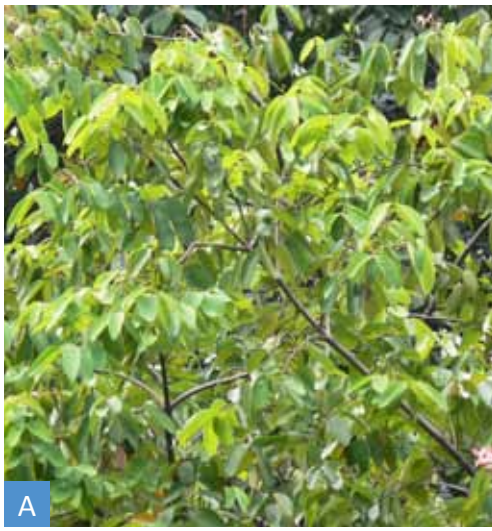
## Recommended Control Strategies for the Disease

1. Actively identify infected *Cinnamomum iners* trees along the roadsides and parks.
2. Remove severely infected trees immediately. Severely infected trees display symptoms such as sparse crowns, pale yellow leaves, severe bark cracking at lower trunks and root flares. They are hazardous and may snap either at the trunk collar or lower trunk and fall. In addition, remove as much of the root systems and contaminated soil as possible.
3. Inspect infected trees with above crown symptoms (described in point 2 above) for root problems such as root diseases, root girdling or insufficient rooting space. If the root systems are neither infected by root diseases, nor affected by root girdling and restricted rooting space, samples of leaf from these trees and soil at the root systems should be collected and sent for nutrient and pH analysis.
4. Avoid injury to lower trunks, root flares and root systems of trees as wounds are potential portals of entry for soil borne diseases. Care must be taken when grass cutting machinery is used in the vicinity of trees. Root flares and exposed roots of *Cinnamomum iners* can be protected by mulching.
5. Keep all *Cinnamomum iners* trees growing in narrow planting road verges strong and vigorous by regular fertilizing. Weak trees are more prone to diseases.



**Fig 2.** Infected trees with pale yellow leaves (A-D).





**Fig 3.** The leaves of infected trees are pale yellow and often smaller than leaves of healthy trees. These leaves eventually show signs of wilting and browning (A-F).





**Fig 4.** Infected trees with cracked bark on the lower trunk and root flares. The bark often cracks both horizontally and vertically (A-F).





**Fig 5.** Infected trees with cracked bark on upper trunk and branches. The bark cracks horizontally and vertically (A-F).





**Fig 6.** Visibly decayed wood tissues underneath areas of cracked bark (A-C).





**Fig 7.** Bracket-shaped fungal fruit bodies growing on the stumps of infected *Cinnamomum iners*.

