RESEARCH LABORATORY TECHNICAL REPORT

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Chalara ash die-back

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Identification, Biology & Management

Ash dieback (*Hymenoscyphus fraxineus syn. Chalara fraxinea*), causes leaf loss and crown dieback in *Fraxinus angustifolia* and *F. excelsior* trees. History has shown that once prevalent losses up to 98% can occur. This disease was previously known as *Chalara fraxinea* (asexual stage) but later revised to *Hymenoscyphus fraxineus* (sexual stage). Chalara dieback is however still used as a common name.

Symptoms

Ash dieback symptoms may be visible on leaves, shoots and branches of affected trees. In severe cases, the entire crown can show leaf loss and dieback, epicormic shoots may also be an indication of severe infection.

Foliage: Leaves suffer from wilting and blackening; a black-brownish discolouration can also occur at the leaf tips and midrib (rachis). Later dieback of shoots and twigs will occur.

Branches and Stems: Small lesions or necrotic spots appear on the stems and branches often where infected leaves or branches join, these enlarge to form black (when developing) to brown/grey (when old) diamond shaped cankers (Figure 1). This can cause further wilting and dieback of shoots and branches in the upper crown. “Pompom” type response growth in the crown, below infected twigs is also characteristic.

Whole Tree: Trees with withered tops and shoots are very typical. Heavily infected trees will have extensive shoot, twig and branch dieback and on occasion extensive epicormic growth. *Hymenoscyphus fraxineus* has also been isolated from the roots of symptomatic trees, as well as from leaves, shoots and branch/stem

Figure 1: Diamond shaped canker that typify ash die back cankers

Causal Agent

The disease has two phases to its lifecycle: sexual and asexual. During the sexual stage spores are produced on the previous year's fallen leaves between June to September. Spores land on leaves and other parts of the plant, the asexual stage then grows in through the leaves and begins attacking twig, stem and bark tissue. *Fraxinus angustifolia* and *F. excelsior* are both susceptible to the disease while *F.e.* 'Pendula' is particularly sensitive, and has been described as a "*canary in a coal mine*" for ash dieback.

Local spread may be via rain splash and leaf movement. Over longer distances the risk of disease spread is most likely to be by the movement of diseased ash trees and wind-blown spores. Movement of logs or unsawn wood from infected trees may also be a pathway for the disease

Figure 2: Young dying ash trees infected by Chalara

Control

Control cannot be guaranteed however appropriate management can extend the life of trees and protect against other infections.
Monitor the extent of symptoms and tree structural integrity; remove if/when the tree becomes structurally unsound. In a mature, unmanaged trees this is likely to be >5 years, and generally not primarily caused by ash dieback but opportunistic *Armillaria* species as a result of ash dieback infection.

Mature tree removal because of ash dieback infection alone is not recommended. Some trees do not decline as rapidly as expected and therefore monitoring, appropriate pruning and treatments are highly recommended to facilitate tree retention.

No fungicides are licenced for application against ash dieback. However, consider an application of potassium phosphite to enhance tree vitality and promote the trees own naturally occurring defense systems, this should in turn reduce the severity of disease attack.

Leaf removal to prevent the completion of the fungi lifecycle will be highly beneficial to reduce reinfection next season.

Canker infections are more likely to progress through a tree if the tree is under stress. Therefore, ensure that the root collar area of the plant remains free from excess soil and mulch.

Submit a soil for nutrient analysis and follow a prescription fertilisation recommendation if necessary. An soil application of biochar is also highly recommended.

For biosecurity reasons avoid moving material off the site. Twigs and leaves should remain on site, and be burned, buried or composted. Strict biosecurity measures must be employed. Disinfect pruning tools by rinsing in alcohol or a solution of 1 part bleach to 9 parts water. Remove all leaves and soil from footwear, clothing and vehicles.

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