

Field Identification Guide

Chalara ash dieback



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Chalara ash dieback

Ash dieback is caused by the fungus *Hymenoscyphus fraxineus* and is commonly referred to as Chalara ash dieback. Once a tree is infected the disease is usually fatal. The disease can kill a tree host directly through the actions of the pathogen, or indirectly by weakening it to the point where it succumbs more readily to attacks by other pests or pathogens. Ash dieback only affects ash trees (*Fraxinus* spp.) and ash trees of all ages can be affected.

Species affected	European ash (<i>Fraxinus excelsior</i> , including the variety 'Pendula') is highly susceptible to the disease and the narrow-leaved ash (<i>F. angustifolia</i>) is also susceptible.
Signs and symptoms	<p>Symptoms of ash dieback are most obvious on young trees, saplings and young coppice re-growth. The first symptoms to appear after infection are small necrotic spots on the leaves caused by airborne spores. These spots expand into leaf lesions and can extend through the petioles of the leaf into the leaf rachises (leaf stalks) to the shoots. Lesions can also be found on branches of all sizes as well as the main tree stem. Infected leaves may fall prematurely.</p> <p>One of the most obvious symptoms of this disease is the diamond-shaped lesions which develop on the bark of branches and stems of infected trees. Lesions on smaller stems/branches and twigs are often not diamond shaped and instead are areas of discoloured bark sandwiched between areas of healthy bark. These bark lesions are always associated with the insertion points of leaves, shoots and branches. The colour of the lesions ranges from light to dark brown and can have a purple hue and contrast with the green colour of young ash bark. They penetrate deeply, killing the bark tissue and staining the underlying wood to a dark brown colour. The lesions can eventually girdle stems or branches, thereby compromising the transport of water and nutrients within the tree and causing clumps of leaves to wilt, wither and die, but remain hanging on the tree.</p> <p>Another symptom of this disease is branch dieback caused by successive years of stem girdling. Over time the tree dies back from the periphery, with tufts/clumps of epicormic growth being produced below the girdling lesion on stems, in the crown of the tree and at the base of saplings.</p>

	<p>Retained blackened rachises on the trees during winter are another symptom of ash dieback.</p> <p>If rachises from the previous year are on the ground beneath the tree, small (maximum 2 mm diameter of cup), cream, cup-like fruiting bodies may be present. Spores are released from these fruiting bodies and go on to produce new foliar infections. If there is sufficient spore production from the leaf litter, lesions at the base of the stem may form, leading to tree mortality.</p> <p>Please be aware that other pests and diseases such as honey fungus (<i>Armillaria</i> spp.) may also be present in trees already weakened by ash dieback and that other pests, diseases and cultural conditions can cause similar symptoms to those of ash dieback.</p>
Timing	<p>Spores are released from fruiting bodies and cause infections on the leaves between May and October. The leaf symptoms are most obvious in September and October. Stem lesions develop from October through to spring.</p>
Biosecurity	<p>Fruiting bodies on leaf rachises in the leaf litter are the main source of spores for this disease. Please ensure that no leaf litter leaves the site with you on boots/clothing or car tyres.</p> <p>If you are removing infected rachises with fruiting bodies present, please double bag the material before leaving the site.</p>
Reporting requirements	<p>Please report possible cases through Tree Alert (www.forestry.gov.uk/treealert).</p> <p>In Northern Ireland please report via the TreeCheck website (www.treecheck.net) or phone app, or by emailing planthealth@daera-ni.gov.uk</p>

Based on information available in August 2016.

Signs and symptoms



Photograph courtesy of Forestry Commission / © Thomas Kirisits

Leaves wilting above a lesion that has girdled the stem in a sapling.

Signs and symptoms



Dieback on an infected sapling.

Signs and symptoms



Photograph courtesy of Forestry Commission / David Boles

Bark lesion on a sapling.

Signs and symptoms



Photograph courtesy of Forestry Commission / David Boles

Typical diamond-shaped stem lesion on a young tree.

Signs and symptoms



Photograph courtesy of Forestry Commission / Mick Biddle

Typical diamond-shaped stem lesion.

Signs and symptoms



Photograph courtesy of Forestry Commission / Clive Brasler

Larger stem lesion.

Signs and symptoms



Photograph courtesy of Forestry Commission

Developing diamond-shaped lesion centred on a dead side shoot.

Signs and symptoms



Photograph courtesy of Forestry Commission

Older lesion centred on a dead side shoot.

Signs and symptoms



Photograph courtesy of Forestry Commission / © Thomas Kirisits

Old lesion centred on a dead side shoot.

Signs and symptoms



Photograph courtesy of Forestry Commission / © Thomas Kirisits

Chalara lesion staining underlying wood.

Signs and symptoms



Photograph courtesy of Forestry Commission

Chalara lesion staining underlying wood.

Signs and symptoms



Photograph courtesy of Forestry Commission / Ben Jones

Dead, blackened, retained leaves.



Photograph © Lea Vig McKinney

Small, white, fruiting bodies of *H. fraxineus* on blackened rachises.

Signs and symptoms



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Close-up of *H. fraxineus* fruiting bodies.

Signs and symptoms



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Leaves showing spotting caused by infection from aerial spores.

Signs and symptoms



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Infected leaves showing leaf lesions.



Photograph courtesy of Forestry Commission / Ana Perez-Sierra

Leaves showing infection spreading from the leaf lesion down through the midrib of the ash leaflet.

Signs and symptoms



Photograph courtesy of Forestry Commission / Joan Webber

Leaf necrosis extending into leaflet vein and rachis (leaf stalk).

Signs and symptoms



Photograph courtesy of Forestry Commission / © Thomas Kirisits

Lesion on rachis (between the arrows).

Signs and symptoms



Photograph courtesy of Forestry Commission / Rory Vereker

Chalara lesion staining underlying phloem and wood.



Photograph courtesy of Forestry Commission / Mick Biddle

Necrosis of rachis with associated desiccation of leaflets.

Signs and symptoms



Photograph © Iben Margrete Thomsen

Crown symptoms on an infected mature tree.



Photograph © Iben Margrete Thomsen

Crown symptoms on an infected mature tree.

Signs and symptoms



Photograph courtesy of Forestry Commission

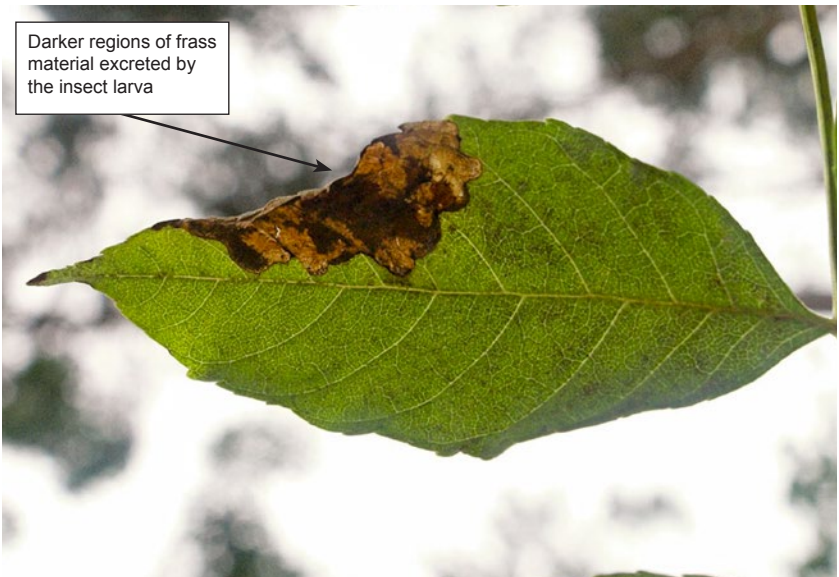
Lesion of *H. fraxineus* at base of stem.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission

Browning of leaf caused by mining insects.



Photograph courtesy of Forestry Commission

The browned area is translucent when held up to the light.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / Robert Strouts

Wilting of young leaves caused by the ash bud moth (*Prays fraxinella*).

Look-alike signs and symptoms



Ash bud moth (*Prays fraxinella*) damage on a shoot.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission

Frost damage on leaves.

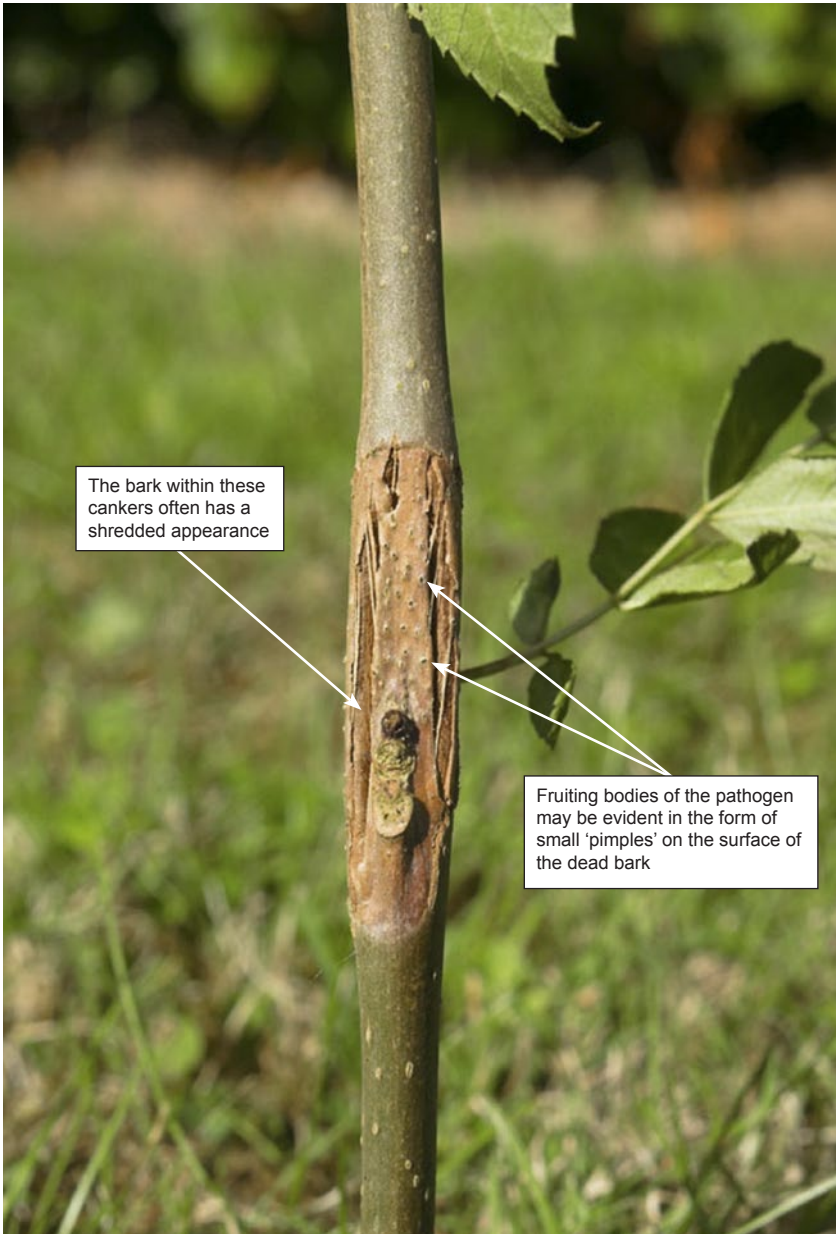
Look-alike signs and symptoms



Photograph courtesy of Forestry Commission

On young ash, cankers on shoots may be formed by the fungus *Phoma exigua*.

Look-alike signs and symptoms



On young ash, cankers on shoots may be formed by the fungus *Phoma exigua*.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / Robert Strouts

Nectria cankers on ash (caused by *Neonectria galligena*) with a characteristic roughened or target-like appearance.



Photograph courtesy of Forestry Commission / Robert Strouts

Nectria cankers on ash (caused by *Neonectria galligena*) with a characteristic roughened or target-like appearance.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / George Gate

Bacterial canker of ash.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / Suzanne Sancisi-Frey

Bacterial canker of ash.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / Suzanne Sancisi-Frey

Lesion caused by *Phytophthora syringae* on ash.

Look-alike signs and symptoms



Photograph courtesy of Forestry Commission / Suzanne Sancisi-Frey

Lesion caused by *Phytophthora syringae* on ash.

Look-alike signs and symptoms



Photograph © Iben Margrete Thomsen

Honey fungus (*Armillaria* spp.) fruiting bodies.



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This booklet forms part of a set that supports Observatree volunteers when out looking for priority pests and diseases. It supplements face-to-face training and is not intended as a full or detailed description. It will also be useful for others who have some knowledge of the particular pest or disease and understand how to look for these. Further information is available online from the websites listed below:

Observatree: **www.observatree.org.uk**

Forestry Commission: **www.forestry.gov.uk**

Forest Research: **www.forestry.gov.uk/forestresearch**