IPSN International Plant Sentinel Network

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BOTANIC GARDENS CONSERVATION INTERNATIONAL

BEECH (Fagus spp.)

Beech (*Fagus spp.)* are long-lived trees and can reach a height of up to 40m when mature. Beech trees will produce both male catkins and small female flowers in the spring. These are followed by the fruit known as a beechnuts/mast; found in small burrs that drop from the tree in autumn. The following emerging diseases are known to afflict beech trees.

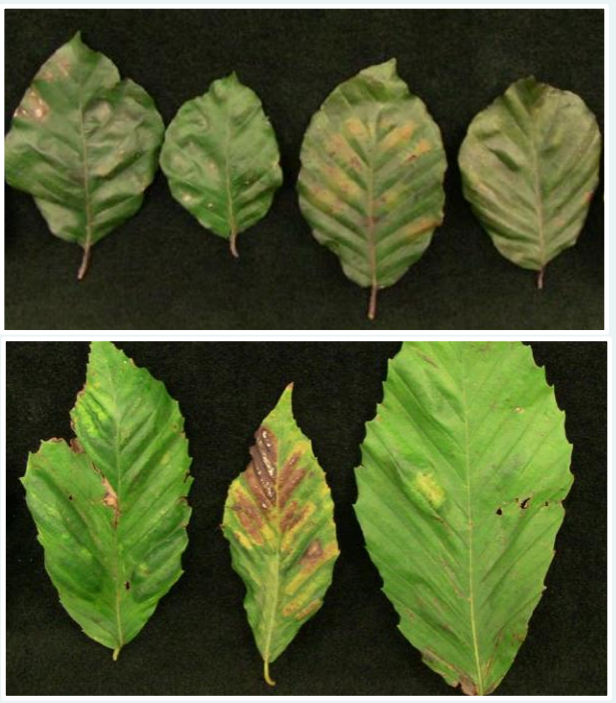
Beech Leaf Disease (BLD)

'Beech Leaf Disease' (BLD) is a new disease of beech trees (*Fagus* spp.) first reported on American beech in Ohio and rapidly spreading to forest and landscaped areas in neighbouring regions. A nematode (*Litylenchus crenatae mccannii*) has been isolated from the symptomatic leaves and buds. The disease is spread both long-distances and locally by infested plants, windborne infested plant material (leaves/ shoots) and leaf/litter/soil infested with nematodes. BLD has recently been described as a syndrome, but further research is needed to assess the potential roles of this nematode and to evaluate if the disease is associated with a complex of pathogens.
BLD is mainly known to affect the American beech (*Fagus grandifolia*), though it is also been observed on European beech (*F. sylvatica*) and Oriental beech (*F. orientalis*). Chinese beech (*F. engleriana*) is also considered as a potential host.

Symptoms

Symptoms of beech leaf disease include: dark bands forming between the veins of leaves (Fig.a); leaves becoming curled, deformed, and shrivelled (Fig. b); premature leaf drop; aborted buds; and thinning canopy. Early symptoms include dark green striped bands between lateral leaf veins and reduced leaf size. Banded areas usually become' leathery' and leaf curling may be observed. It can be quite helpful to stand underneath the canopy and look upwards as this may help you see the dark bands between the veins of the leaves. As symptoms progress, buds fail to develop, leaf production is reduced and premature leaf drop lead to an overall reduction in canopy cover, ultimately, resulting in death of young trees within 5 years and mature trees within 10 years. In areas where the disease has established, the proportion of symptomatic trees can reach more than 90%. However, some variability in susceptibility and symptom development has been reported. The numbers of nematodes present in symptomatic foliage will fluctuate throughout the year and they can overwinter in buds and fallen leaves.

a) dark-green striped bands between lateral veins of leaves



b) Chlorosis and necrosis of leaves, leathery appearance and reduction in leaf size.

The key diagnostic feature of bands between veins of leaves will not be seen until early summer and then into early autumn. Symptoms become harder to distinguish during autumn due to natural senescence

Petrakia leafspot *Petrakia liobae*

Petrakia liobae (Petrakia leafspot) is an emerging fungal pathogen threatening beech. It is thought to be a European species and not introduced. The fungal pathogen was first discovered in Switzerland in 2008, followed by findings in Germany, Austria, Slovakia and most recently Slovenia in 2018. Infected trees develop brown, irregular leaf spots with sharp, dark borders. These necrotic spots are around 1–50mm in diameter and may merge in cases of heavy infection (Fig.c). Mature lesions may also have tiny white spots of fluffy white propagules (detachable spores) associated with the leaf spot. Look for symptoms in the lower canopy as the *P. liobae* overwinters in leaf litter and re-infects beech trees in the spring.

c) Beech leaves with necrotic spots, blotches and white fluffy propagules caused by *Petrakia liobae*.

REPORT ANY SUSPECTED SIGHTINGS TO _____ DATE: _____

For more information about the IPSN go to: www.plantsentinel.org

Please note: If you see symptoms in your specimens similar to those highlighted above please follow the guidance provided by the Observatree Field guide (https://www.observatree.org.uk/resource-library/field-identification-guides/) and report to: TreeAlert https://www.forestresearch.gov.uk/tools-and-resources/fthr/tree-alert/ (GB) or Tree check https://www.treecheck.net/twa-ui/#/public/report (Northern Ireland)