

# DAFM Plant Pest Factsheet

## *Litylenchus crenatae maccannii* Beech leaf disease



Fig 1: Beech leaves infected with *Litylenchus crenatae*

### Pest Characteristics

- **Pest:** *Litylenchus crenatae maccannii*
- **Disease:** *Litylenchus crenatae maccannii* is a nematode which is currently considered to be the most likely casual agent of the US tree disorder: Beech Leaf Disease (BLD) which inflicts high levels of tree mortality.
- **Hosts:** BLD has been observed on several beech tree species including European beech (*Fagus sylvatica*), American beech (*F. grandifolia*), Oriental beech (*F. orientalis*) and Chinese beech (*F. engleriana*).
- **Invasive Risk:** The exact origin of the pest is still unknown. BLD was first observed in Ohio (USA) in 2012 and has subsequently spread rapidly throughout the United States and southern Canada. Beech trees and hedging are widely distributed throughout Ireland. Should the pest enter and establish it could pose a serious threat to the Irish beech population.
- **Entry Pathways:** The likelihood of entry of this pest from live host plants is low due to existing EU legislation. EU Reg 2018/2019 prohibits the import of *Fagus sp.* plants from third countries.
- **Impact:** The pest is causing severe damage to Canadian and US beech forestry. In 2014, a survey of beech trees in the Holden Arboretum natural park (Ohio) found a 97% of incidence rate of BLD. The estimated impact calculations of the effects of BLD in Ohio suggests that a 50% loss of beech trees would result in projected economic costs of up to \$225 million.
- **Visual Symptoms:** The first signs of disease are the appearance of dark green banding between leaf veins in the lower tree branches (Fig 1, 2 & 3). The leaves then fully darken, becoming shrunken, leathery and crinkled in the process. Symptoms then spread to the buds causing bud abortion.



Fig 2: *Litylenchus crenatae maccannii* nematode (a), leaf banding (b), leaf thickening and curling (c).





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Fig 3: Typical BLD seasonal symptoms

- **Dispersal:** Since the first recorded observations of BLD in the US, the pest has displayed a considerable ability to rapidly spread outward from an initial site of establishment. There are a number of possible means for aiding in the spread of the pest such as natural means (wind dispersal of infected leaves), potential biotic vectors such (birds and arthropods) and human facilitated spread (anthropogenic activities – trade in infected material, machinery contaminated with infested organic material).
- **Distribution:** The pest is known to be present in Canada, Japan, USA and New Zealand. However, *Litylenchus crenatae maccanii* is considered to be native to the Pacific region and it is unknown how the nematode was first introduced into the North America. In North America the pest is currently only found in Ontario (Canada) and North-Eastern USA States (Fig 4).
- **Lifecycle:** Little is known about the lifecycle of *L. crenatae* to date. DAFM nematologists are participating in ongoing European research to understand this organism. What is known to date is that population levels increase from spring to autumn and both adults and eggs can over-winter in both tree buds and in detached leaf material.
- **If suspected:** DAFM Inspectors conduct annual surveys to substantiate Ireland's pest free status for BLD. If you find a suspected sighting please submit images to DAFM at: [plantpestreport@agriculture.gov.ie](mailto:plantpestreport@agriculture.gov.ie)

Photo credits: All images used in Figures 1-4 were obtained from the Euphresco BLD project

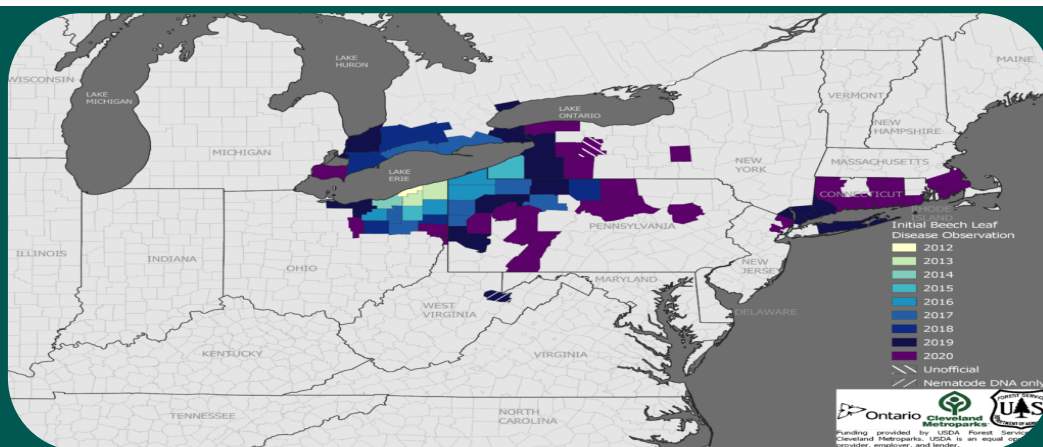


Fig 4: Known distribution of *L. crenatae maccanii* in North America (taken from USDA, 2021).



An Roinn Talmhaíochta,  
Bia agus Mara  
Department of Agriculture,  
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