

# Spot the difference on laurel leaves

Researchers from **TEAGASC** and UCD are investigating disease issues in cherry laurel, an important species for the Irish cut foliage sector.

Ireland's cut foliage industry supplies leafy stems of various tree and shrub species, such as eucalyptus and cherry laurel (*Prunus laurocerasus*), into the lucrative €2.5 billion European cut flower trade. High quality blemish-free foliage stems are required for a discerning market. Cherry laurel is the most important species, and foliage growers plant three different cultivars: 'Etna'; 'Caucasica'; and, 'Novita'. The cultivar 'Rotundifolia' is the main one used for hedging and is propagated in nurseries, largely for export. Research conducted by Teagasc and UCD has addressed disease issues of this important crop. In its native habitat, *P. laurocerasus* grows in the forest understorey but for foliage production it is grown in the open, in managed plantations that are harvested annually; thus, the plants are more exposed and remain relatively small (main image).

## Shot hole

One of the most noticeable diseases to affect cherry laurel is shot hole disease, which is caused by the bacterial pathogen *Pseudomonas syringae* pv *syringae* (*Pss*). There are no antibacterial pesticides to control it apart from copper, which can be toxic to the soil and plants if applied on a regular basis. Growers are increasingly asked to follow sustainable production guidelines, similar to food crops, with minimum input of pesticides and increased implementation of integrated pest management (IPM) principles. This raises challenges for the sector, especially as the temperate climate, ideal for growing lush green foliage, also facilitates diseases and pests that can cause unsightly damage. However, as the industry is relatively new, little is known of the factors affecting shot hole development and spread within managed cut foliage

plantations. To address this, Teagasc's Brian McGuinness and Danielle Boland undertook a survey of cherry laurel plantations and nurseries to collect information on the main pathogens affecting the crop, and UCD's Leighton Smith and Angela Feechan looked at the epidemiology of *Pss* on cherry laurel.



## Survey

Eleven commercial cherry laurel plantations and seven nurseries were visited and surveyed in a systematic manner to obtain diseased material, and to identify the pathogens associated with shot hole symptoms and other blemishes. In 2017, the predominant organism associated with disease symptoms was the *Pss* bacterium, with 28 % of samples testing positive for the diagnostic syringomycin B gene (n = 320). Shot hole symptoms can vary from distinct shot holes to leaf-edge necrosis, making the recognition of symptoms more challenging (**Figure 1**). A total of 6 % of samples were associated with a fungus identified as a *Neofabraea* sp., the first time this has been recorded on *P. laurocerasus* (**Figure 1**), while the known *P. laurocerasus* fungal pathogen *Eupropolella britannica* was isolated from just two samples. Many samples yielded no pathogen, most likely because once shot holes have formed, the pathogen has been excised from the plant and is no longer present. Other bacteria and fungi that were isolated from diseased samples were used to re-infect healthy leaves but none was able to do so. Separately, a new bacterial pathogen of *P. laurocerasus* Rotundifolia was isolated from an infected cherry laurel hedgerow and identified as *Micrococcus alovera* (**Figure 2**) (Smith *et al.*, 2020). Thus, not all shot hole symptoms are caused by the same organism – they may be a generalised response to infection, although this hypothesis needs further work.

## Epidemiology

The epidemiology studies of *Pss* on cherry laurel at UCD found that the cultivar Caucasica was the least susceptible to shot hole disease, followed by Etna, while Novita and Rotundifolia (**Figure 3**) displayed the most severe symptoms. Abiotic factors such as wounding, exposed sites and mild temperatures were all found to promote shot hole disease and may account for why the disease can be prolific in cut foliage plantations. Thus, to sustainably reduce the occurrence of shot hole, growers may need to consider providing more shade for cherry laurel (e.g., interplanting with taller species), or counteracting 'wounding' effects by increasing the interval between harvests.



FIGURE 1: Disease symptoms on cherry laurel cultivars. Pss on Etna (left and middle); *Neofabraea* sp. on Etna (right).



FIGURE 2: Shot hole symptoms on a *P. laurocerasus* Rotundifolia hedge associated with *Micrococcus aloeverae*.

### *Xanthomonas arboricola* pv. *pruni*

*Xanthomonas arboricola* pv. *pruni* (*Xap*) is a destructive pathogen of stone-fruit *Prunus* species worldwide, such as peaches, apricots and plums, and is also known to infect cherry laurel (Figure 4). It can cause a bacterial shot hole symptom so there could be confusion and misidentification were it to occur on cherry laurel in Ireland. Currently *Xap* is absent from the UK, which has 'Protected Zone' status, meaning that the UK restricts imports of *Prunus* plants to countries that also have Protected Zone status. In Ireland, the Department of Agriculture, Food and the Marine is seeking Protected Zone status for *Xap* in Ireland, which would be a distinct advantage for the sector, facilitating the growth of exports of *P. laurocerasus* cultivars for hedging.

### Conclusion

From a plant health perspective, most shot hole symptoms on cherry laurel in cut foliage plantations and nurseries are caused by *Pseudomonas syringae* pv. *syringae* but other bacteria can cause similar damage. Ireland is well placed to embrace sustainable *P. laurocerasus* production for both cut foliage and hedging.

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FIGURE 3: Pss symptoms on (from left): Rotundifolia, Novita, Etna and Causcasica.

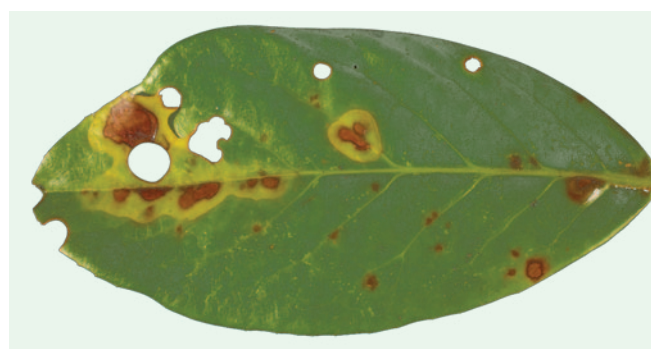


FIGURE 4: *Xanthomonas arboricola* pv. *pruni* on *P. laurocerasus*. (Image: UK Crown Copyright – courtesy of Fera.)

### Reference

Smith, L., *et al.* (2020). 'First report of shot hole disease on cherry laurel (*Prunus laurocerasus*) caused by *Micrococcus aloeverae* in Ireland'. Available from: <https://doi.org/10.1094/PDIS-03-20-0521-PDN>.

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