

Plant health

November 2020

Let's talk about: *Pestalotiopsis*

A large number of samples come into the clinic at Ashtown every year that are suffering from dieback caused by the fungal pathogen *Pestalotiopsis* (Pes-tal-o-tee-opsis). Let's look at this organism in depth and how you can spot it, diagnose it and treat it.

Many *Pestalotiopsis* species are phytopathogens associated with a large number of diseases, including tip blight, needle blight, shoot dieback, cankerous lesions, leaf spots, fruit rots and many post-harvest diseases. It also exists as an endophyte i.e. living within a plant and not causing disease and has been the subject of much interest recently due to its production of a diverse range of chemically active metabolites. This is no comfort to commercial producers of many conifers and woody plants such as *Thuja*, *Juniperus*, *Chamaecyparis*, *Cupressus*, *Calluna*, *Erica*, *Pieris*, *Rhododendron* and *Vaccinium spp.*

When a sample of any of the above plants is submitted to the Ashtown Plant Clinic showing symptoms of dieback or leaf browning, the first thing we look for is *Pestalotiopsis*.

After analysis, the majority of these samples will be suffering from a *Pestalotiopsis* infection.

Luckily from a plant disease diagnostics perspective, this pathogen produces very distinctive large spores which are easily seen using a low magnification microscope or hand lens (x10-x20). On the plant itself you can also easily see the small black spore producing structures on the stems or leaves (Acervuli).

As a budding plant pathologist, if you are experiencing a dieback symptom on any of the plants listed above, your first step should be to take out your hand lens and check around the affected area for these black spots, focussing on the tips and stems.

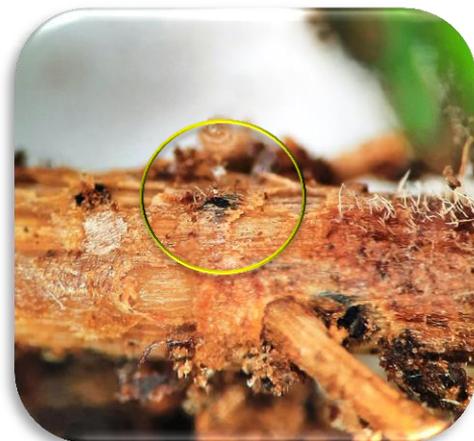


Fig 1. *Pestalotiopsis* fruiting body on *Calluna*



Fig 2. *Pestalotiopsis* spore at x1000

The importance of Hygiene

A study by the Scottish Agriculture College on nurseries producing *Calluna vulgaris* highlights the importance of nursery hygiene in the prevention of disease by *Pestalotiopsis*. Nursery materials were sampled for the presence of the pathogen (Table 1). The results were striking and prompted a re-evaluation of procedures on the nurseries in question. In my opinion, basic hygiene should be the number 1 priority for all nurseries in the prevention of *all* plant diseases. It is relatively cheap, easily implemented and proven to be effective in a wide range of Horticultural industries (particularly the mushroom sector and the nursery stock sector). Regular hand hygiene, surface disinfection and proper waste management are key measures to focus on.

Table1. Isolation % of *Pestalotiopsis* from nursery materials collected from 2 nurseries producing *Calluna vulgaris*

Source	Nursery A	Nursery B
Soil	19%	11%
Used medium	28%	34%
Used Pots	21%	35%
Floor covering	33%	20%
Walkway Dust	32%	35%

Treatment of *Pestalotiopsis*

The first port-of-call should be your Nursery Stock Advisor (Dónall Flanagan, Ashtown Research Centre) for up-to-date information relative to your own situation.

Previously, Prochloraz alternating with Carbendazim in a 14 day rotation were effective against *Pestalotiopsis spp.* but they can no longer be used. The best option now may be Score, Signum and Switch used in 14-day rotations for propagation.

***Pestalotiopsis* in the news**

The Genus *Pestalotiopsis* is the subject of much research at the moment with the discovery that some species may be useful in the degradation of the plastic '*Polyurethane*', a material used in the building and car industry for its' insulating properties. Polyurethane waste is a global issue. Some species of *Pestalotiopsis* produce an enzyme known as '*Polyurethanase*', allowing the organism to use polyurethane as a carbon source, leading to the degradation of the problematic plastic.

The fall and rise of *Escallonia*



In 2006 after a wet summer season, a leaf spot disease began to affect the popular hedge plant *Escallonia*. Many cultivars were badly affected, particularly *E.rubra-macrantha* and *E.Iveyi*. The first cases submitted to the plant-clinic were from the South-East, but soon disease outbreaks were being spotted all over the country. Shortly afterwards, reports were coming in from the U.K. about a leaf spotting disease on *Escallonia* cultivars whose symptoms matched the ones we were seeing in Ireland.

As part of a study conducted by Teagasc, we compared the DNA of the U.K. *Escallonia* disease with the Irish disease and found that they were exactly the same organism.

In the following years, this new disease had a severe impact on the plant itself, almost making it a semi deciduous plant. Plants would lose their leaves in autumn and make a recovery the following spring. In

severe cases plants gradually declined over a period of time, eventually succumbing. Plant sales were badly impacted with *Escallonia* quickly losing popularity due to the unsightly nature of the leafless evergreen plant. *Escallonia*, once a staple hedge plant, particularly in coastal counties, fell from grace and began to be replaced by alternatives such as *Griselinia* and *Prunus*, which although functionally fit for purpose, lacked the same impact that the glossy leaves and numerous bright flowers that *Escallonia* displayed.

A Teagasc led project began to investigate this new disease and find ways of treating the problem. Samples were collected from all over Ireland and the organism isolated and tested. The leaf spotting organism turned out to be a novel species of *Septoria*. *Septoria* is a well-known Genus of plant pathogens which cause leaf spot issues on a wide range of plants including, most notably, Cereals, where it is responsible for significant crop damage every year.

We still do not know where this disease came from but one theory is that at one point this organism was an endophyte, living comfortably within *Escallonia* plants, not having any adverse impact on the plants' health'. For some reason, possibly wetter-warmer summers, it took its' opportunity and became pathogenic. Several fungicides were tested by Teagasc on *E.rubra-macrantha*, the most popular variety in Irish Nurseries. We found that Signum™

(boscalid-pyraclostrobin) had a significant effect on the disease when applied in early September. Bravo™ (chlorthalonil) and Amistar™ (azoxystrobin) had an insignificant effect, while Serenade (*Bacillus subtilis* QST713) a biological control, had little or no effect on disease development. The National Botanic Gardens in Dublin had a collection of 16 different species of *Escallonia* planted. Surveys of these plants were carried out over a period of 2 years and it was found that some *Escallonia* taxa did not seem to be affected as badly by the disease. Based on these observations and on-going observations on plants around Ireland, *Escallonia resinosa* seems to be resistant to the leaf spotting disease. It is a scented variety with distinct white flowers. Maybe this is a species worth considering for future hedge plantings?



Fig 3. *Escallonia resinosa*

***Xylella sp.* quick update**

Xylella fastidiosa is a bacterial plant pathogen that affects over 200 types of plant and is spread by over 70 types of insect. In September 2020 it was reportedly found on Lavender (*Lavandula x intermedia* 'grosso') on a nursery in the Occitane region of France. The site was temporarily closed while control and monitoring measures were put in place. Additionally a 2.5km perimeter was put in place around the site. Updates can be found at gd.eppo.int/taxon/XYLEFA/reporting

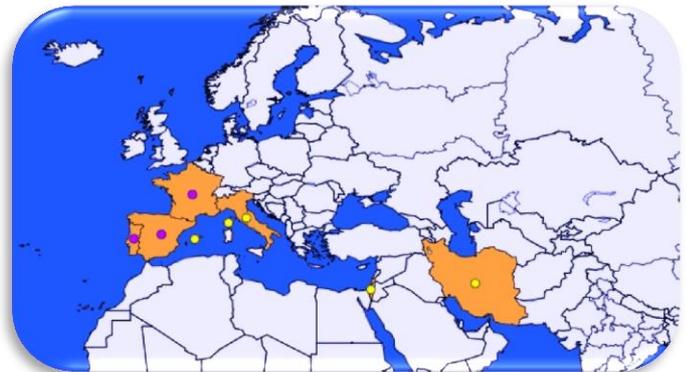


Fig 4. Distribution map of *Xylella fastidiosa* in Europe and the Middle East

Finally, many thanks to everyone who provided feedback and suggestions for this newsletter, We'll continue to take on board any suggestions and ideas for content.

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