

Plant Health – an update from the front line

Landscape Institute, Healthy Plants, Healthy Places: Embedding biosecurity in landscape projects

RBG Kew
14th June 2019

Helen Long
Senior Plant Health & Seeds Inspector

Overview

- Examples of recent major outbreaks
- The costs and consequences of getting it wrong
- Recent Government initiatives & sources of information
- Legislation versus the inspection reality
- Some current threats on the horizon – yes, do have nightmares!
- How industry can help with good practice and biosecurity

Some recent examples of major outbreaks....



The real cost of a major outbreak

- **Oak Processionary Moth**
- Egg masses imported in 2006 on semi-mature Oaks used to landscape a housing scheme
- Now established in Greater London and surrounding counties
- Major defoliation damage on a range of Oak species
- Human and animal health impacts including respiratory problems
- Local authorities, public attractions and parks engaged in costly annual spray control programmes
- **Annual Operational budget £1.2M+
Ongoing indefinitely**



The real cost of a major outbreak

- **Asian Longhorn Beetle** adult found in 2009 at a stone importer in Kent
- Follow up surveys conducted for several years with small outbreak found in 2012
- Sanitary felling and disposal of 2166 host trees / plants
- Restrictions on replanting of host species
- Intensive follow up surveillance activity for 7 years to confirm outbreak eradicated, including APHA & FC Inspectors, contracted tree climbers and tree surgeons



- **Total cost of outbreak £2M**

Ash dieback expected to cost British economy nearly £15bn

Biggest cost of tree disease will be loss of benefits such as clean air and water, study finds



▲ An ash tree showing symptoms of ash dieback near Canterbury, Kent. Photograph: Gareth Fuller/PA

The Guardian 6th May 2019

Palmageddon? Britain's palm trees face extinction after killer beetle discovered



The Telegraph 19th Nov 2016

What are the consequences of Xylella?

- Value that could (in theory) be damaged by Xylella:
 - **Around £500m per year quantifiable** (£160m Sycamore trees, £320m Oak trees, £25m Prunus sp.) Many other potential hosts not included in this estimate
 - 7% of this £500m per year is susceptible to Xylella if the outbreak is either small scale or wide scale with a timely response (~£30m/year is protectable)
 - Only 1% of this £500m per year is protectable if the outbreak is wide scale with containment or delayed response (~£5m/year is protectable)

(Source Defra Plant Health Economist)

- **An single infected plant outbreak could lead to ‘host’ destruction within 100m, and a 5km-wide zone banning all specified plant movements for five years.**
- Currently **60+ genera/species** listed as **EU host plants**; **300+** listed as **specified plants** worldwide

What are the consequences of Xylella?

- **Plant movement and waste disposal restrictions** will apply to all premises in demarcated areas including nurseries, retailers, parks, residential gardens, historic properties, shows, events...?
- **Restrictions** will remain in force for a minimum of **5 years** after official surveys have confirmed that *X. fastidiosa* is not present.
- **Restrictions on replanting** of host plants in infected areas – what's *not* on the list?
- New hosts would be added to plant passporting, some could be prohibited from import
- Implications for UK exports of becoming an 'infected country' – increased testing and certification costs for exports, prohibitions on some trades
- All 'professional operators' i.e. landscapers, designers, and anyone importing plants into the UK are now subject to the same stringent conditions as growers

Are you worried yet?

There are **47** other known tree pests and diseases that could arrive in Britain and which may cost an additional **£1 billion or more**

- Benefits of trees and plants is valued in the millions of £'s
- Most benefits provided by plants/trees are derived from e.g. social well being, water & air purification and carbon sequestration
- Additional risk associated with food security as some plant pests endanger food crops
- Early intervention, if successful, has significant positive cost/benefits



Recent Government Initiatives

- **EU Plant & Tree Notification scheme** – requires notification of first arrival into UK of all:
- ***Castanea*** (Chestnut Blight, Oriental Chestnut Gall Wasp)
- ***Fraxinus*** (*no movement as no UK Ash dieback disease free areas)
- ***Quercus*** (Oak Processionary Moth, Chestnut Blight, Oak Lace Bug)
- ***Olea* since Nov 2018 (*Xylella*)**
- ***Pinus*** (Pine Processionary Moth, Pine Wood nematode, Red & Brown needle blights)
- ***Platanus*** (Plane Wilt)
- ***Prunus*** (*Xylella*, Red-necked longhorn, *Xanthomonas arboricola pruni*)
- ***Ulmus*** (Elm Yellow's Phytoplasma, Elm Zig Zag sawfly, Oak Lace Bug)
- Notifications selected for physical inspections will continue after EU-Exit

Legislation versus the inspection reality....



Rootballed dormant trees from the EU laid out for inspection

4-5m Quercus ilex imported from Italy

Legislation versus the inspection reality....

- Semi mature trees are imported dormant = out of main season for symptom expression for most pests and diseases, latency periods vary
- Physical size and weight of specimens = access and health & safety issues, affects quality of inspection possible on site
- Impossible to inspect all imported consignments = risk based selection criteria applied
- Rapid speed of trade movements = resource intensive and time consuming to trace
- Distribution chain is non-linear = one consignment, multiple recipients across the UK
- **The bigger the plant specified, the bigger the ecosystem that travels with it** e.g. nematodes; termites; flatworms; poisonous spiders, scorpions and millipedes; tree frogs....
- Packing material, pallets and wooden bracing can also pose a risk of **hitch hikers** – think longhorn beetles, Asian Hornet, Pine Wood nematode, non native species

Sources of Information

- UK Plant Health Portal – latest info and pest factsheets
 - <https://planthealthportal.defra.gov.uk/>
 - UK Plant Risk Register – more than 1000 pests and diseases risk assessed with country distributions
 - <https://secure.fera.defra.gov.uk/phiw/riskRegister/>
 - APHA Topical Issues pages <https://www.gov.uk/guidance/protecting-plant-health-topical-issues>
 - Forestry Commission Pest & Disease resources:
 - <https://www.forestresearch.gov.uk/tools-and-resources/pest-and-disease-resources/>
 - Observatree – pest field identification guides, webinars, top 21 priority P&D for citizen science
 - <https://www.observatree.org.uk/>
-

Sources of information

Search for 'UK Plant Health Portal' <https://planthealthportal.defra.gov.uk/>

UK Plant Health Information Portal
An online hub for plant health information, data and resources

Enter the name of a pest or plant you are interested in

Alternatively, use [additional searches based on risk register priorities for actions](#)

About the UK Plant Health Information Portal

There are many pests and diseases that can seriously damage crops and plants in the UK. Assessing and understanding these threats is essential to informing the actions needed to protect plant health set out in [Protecting Plant Health - A Plant Biosecurity Strategy for Great Britain](#).

As the Strategy makes clear, tackling threats to plant health is not just a matter for government; success is dependent on partnership working between all those with a role to play. To this end the Portal is a shared resource providing information about plant pests and diseases, including the assessments of risk undertaken by government and the data underpinning those assessments. It links to other sites of interest, including non-government sites, as well as information on the plant health controls and services provided by government.

Pests and diseases

Find out more about the plant pests and diseases which threaten our crops, trees, gardens and countryside.

- [Reporting a pest/disease](#)
- [Contingency planning](#)
- [Pest and disease alerts](#)

UK Plant Health Risk Register

Department for Environment, Food & Rural Affairs

UK Risk Register Details for *Xylella fastidiosa* Wells et al.

Risk Records for this Pest

- Xylella fastidiosa* (all other strains and subspecies)
- Xylella fastidiosa* subsp. *pauca* and related strains
- Xylella fastidiosa* subsp. *multiplex*
- Xylella fastidiosa* subsp. *fastidiosa*

Plant Pest Factsheet

Department for Environment, Food & Rural Affairs

Xylella fastidiosa




Figure 1. *Polygala myrtifolia* infected by *X. fastidiosa* subsp. *multiplex* in Corsica. Photo: Bruno Legendre, Anses Plant Health Laboratory, Angers (FR)




Figure 2. Bacterial leaf scorch on a plant. Photo: John Hart, Kentucky (Bugwood/ Forestry Images)

Background

The bacterial pathogen, *Xylella fastidiosa*, colonises xylem vessels; and become blocked, disease symptoms are produced, which include wilts, and leaf scorches. The bacterium is spread by xylem feeding insects, such as meadow spittlebug (*Philaenus spumarius*), a very common species in the UK.

Pest Alert: Bemisia tabaci

- The tobacco whitefly, *Bemisia tabaci*, is a pest of a wide range of plants, including vegetables, salad crops and ornamentals, and is a vector of more than 110 viruses. It is unlikely to establish outdoors in the UK, but it could establish under protection.
- Bemisia tabaci* is frequently intercepted on ornamentals in the UK, particularly on poinsettia, *Nerium oleander* and *Mandevilla*. The number of these interceptions has risen in 2015.




Fig. 1. Pupa (fourth larval stage) of *Bemisia tabaci*. Photo courtesy of Fera.




Fig. 2. Adult *Bemisia tabaci*. Photo courtesy of Fera.

filter by host/pest

Sources of information

- APHA Topical web pages on gov.uk
<https://www.gov.uk/government/organisations/animal-and-plant-health-agency>



UK Plant Health Guidance Document



Xylella fastidiosa Implications for importers and users of trees, shrubs and herbaceous plants

Update 10 (03/17)

This guide is intended for growers, retailers, landscapers, garden designers, traders and anyone involved in **importing and professional use of plants**, including from within the EU.

Key Points

- There are known outbreaks of *Xylella fastidiosa* in Italy, France (Corsica and mainland France), Germany and the Spanish islands of Mallorca and Ibiza.
- An outbreak in the UK could lead to destruction of host plants within 100 m, and a 10 km movement ban for host plants for five years.
- The host list is likely to increase and includes trees, shrubs and herbaceous. Keep checking:
http://ec.europa.eu/food/plant/plant_health_bioresecurity/legislation/emergency_measures/index_en.htm
- Landscapers, designers, retailers and anyone directly importing plants are now subject to the same stringent measures as growers and suppliers. A new plant passporting obligation for all 'professional operators' has been introduced, which requires that the movement of all 'host plants' across the EU must be accompanied by a plant passport.
- Anyone importing host plants from the EU needs to ensure they are accompanied by a plant passport confirming they have been sourced from disease free areas/sites.
- Be vigilant for signs of *X. fastidiosa* and report any sightings.

Current threats on the horizon: *Xylella fastidiosa*

- Check the EU commission website for the latest maps of the outbreak demarcated areas updated 10th April 2019
- https://ec.europa.eu/food/sites/food/files/plant/docs/ph_biosec_legis_list-demarcated-union-territory_en.pdf
- **Current outbreaks:**
 - Italy (Apulia and **NEW Tuscany**)
 - France (Cote's d'Azure, Corsica)
 - Spain (Valencia and Madrid), all Balearic Islands
 - **NEW Portugal (Norte)**
 - **KNOW THE HIGH RISK SPECIES – can you substitute?**



Current threats on the horizon: *Xylella fastidiosa*

- Scale of demarcated area in Spain Valencia is 80,000 Ha, with all the implicit official controls in place
- **Recent Interceptions:**
 - Intercepted on olive plants in Belgium autumn 2018
 - Intercepted in a growing crop of *Polygala* in Almeria, Spain in Spring 2018
- EFSA opinion highlights concerns that Xf sits within olive for long periods asymptomatic. Latency is years rather than months.



Polygala myrtifolia infected with *Xylella* – chlorosis symptoms only

Current threats on the horizon: Granulate ambrosia beetle

Xylosandrus crassiusculus

- Very small (2-3 mm) beetle that is a pest of many broadleaved trees. Introduced to Italy in 2003 and has now spread to France.
- Attack usually kills younger trees, prior to or during leafing up
- Infestation leads to distinctive toothpick strands of frass
- Pest Alert released Nov 2015 asking for signs of the pest to be reported



Current threats on the horizon: Oak Lace Bug

- ***Corythucha arcuata***
- First found in Italy in 2000, now in 11 EU countries and spreading
- Attacks *Quercus* and other broadleaved trees including *Acer*, *Carpinus*, *Fagus*, *Tilia*, *Ulmus*
- Symptoms: yellowing and browning of foliage then premature leaf drop, reduced vigour
- Pathway is imported trees – check undersides of leaves for nymphs and adults



Current threats on the horizon: Red Necked Longhorn Beetle

- *Aromia bungii*
- Wood boring pest of *Prunus* (apricot, peach, plum, cherry inc *P. cerasifera*)
- Outbreaks under eradication in Germany and Italy. Widespread outbreak around Naples area, Italy.
- Pathway: imported trees. Adults may also hitchhike on wood pallets and packaging
- Long larval life cycle up to 3 years
- Larvae push out copious frass on top of pots or soil



How the industry can help with good practice

- For **contractors/designers**, ensure that plants you use have been ordered early and **monitored** for disease in a low risk area, before being planted at their final destination
- When purchasing from other EU member states or 3rd countries, think about quarantine **pest presence** – Defra risk register can help.
- Do you really need a very high risk species (e.g. mature Olives!) or can you specify a lower risk alternative? Educate yourself and your clients about the risks
- **Source** from known suppliers and/or visit suppliers to view their processes, procedures, bio-security arrangements and the plants they grow.
- Ask! Are plants coming direct from your chosen supplier or being topped up from a third party grower? Trade will always find a way to meet an order if they don't have the stock themselves.
- Make sure that imported plants both originate from and are sourced from **disease free areas**. Details on infected areas for a range of outbreaks on EU Commission web pages at http://ec.europa.eu/food/plant/plant_health_biosecurity/legislation/emergency_measures/index_en.htm

How the industry can help with good practice

- When buying / planning contracts in advance, **build in plant health** to your **quality standards** and **audit** processes.
- Build monitoring for pest and disease into maintenance contracts after planting – consider length of pest lifecycle & disease latency.
- Comply with the UK national requirements to notify the UK Plant Health Service about certain species of plants under the '**EU Plant and Tree Notification Scheme**'.
- Complete the plant healthy self assessment which set out key questions for trade to answer (20 or so) to self-asses their biosecurity <https://hta.org.uk/assurance-compliance/plant-healthy.html>
- Use the assessment to join the Plant Health Assurance Scheme that Defra seed funded last year with HTA <https://hta.org.uk/assurance-compliance/plant-health-assurance-scheme.html> to develop and improve your biosecurity. Industry lead scheme (supported by Defra and APHA) and looks to all in procurement to ask for in future.

How the industry can help with good practice

- Ensure that **plant passports arriving** with plants are correct and keep the plant passport to aid trace back if necessary.
- Label and **keep records** of the identity of all received batches of plants including: where the plants came from and when
- **Isolate or quarantine** new batches of plants and monitor them during the growing season for signs of the disease – whilst not a legal requirement it is good practice to place ‘imported’ hosts of *Xylella* in a quarantine area – ideally a good distance away from other host plants and if possible place under physical protection. If any outbreak is confirmed all ‘host’ material within 100m will need to be destroyed.
- Stock control and **separation**; internal plant movements between sites.
- Incorporate plant health into in house training and skills with QA/QC systems and **agronomists**. Have a ‘**what to do if....**’ and ‘**who to contact if....**’
- Raise P&D alerts at your internal team briefings – retail level, buyers, QA/QC, maintenance crews.

How the industry can help with good practice

- Have a set **feed back route** for staff queries or suspect problems and include details of the 'goods': label, plant passport or batch details, genera, pot size, bar code, 'returns' and trace back etc.
- Seasonality and don't let quarantine pests and disease '**drop off the radar**', as plants move from warmer countries or protected environments to cooler countries for retail or growing on.
- **Destroy old** or unusable plants – methods you use?
- Maintain records of any **pesticide** treatments
- Attend events such as this to raise awareness of the risks

Bio-security

- Before arrival

SOURCING PLANTS – Suppliers (visit them),
Origin, Plant type, Assurance schemes,
Check supplier/country plant health status

- At arrival

QUARANTINE – inspection on arrival/ QC,
holding period, traps

- On site

MANAGEMENT - Plant culture, hygiene,
water, waste, self monitoring, recording, training



Thank you!