

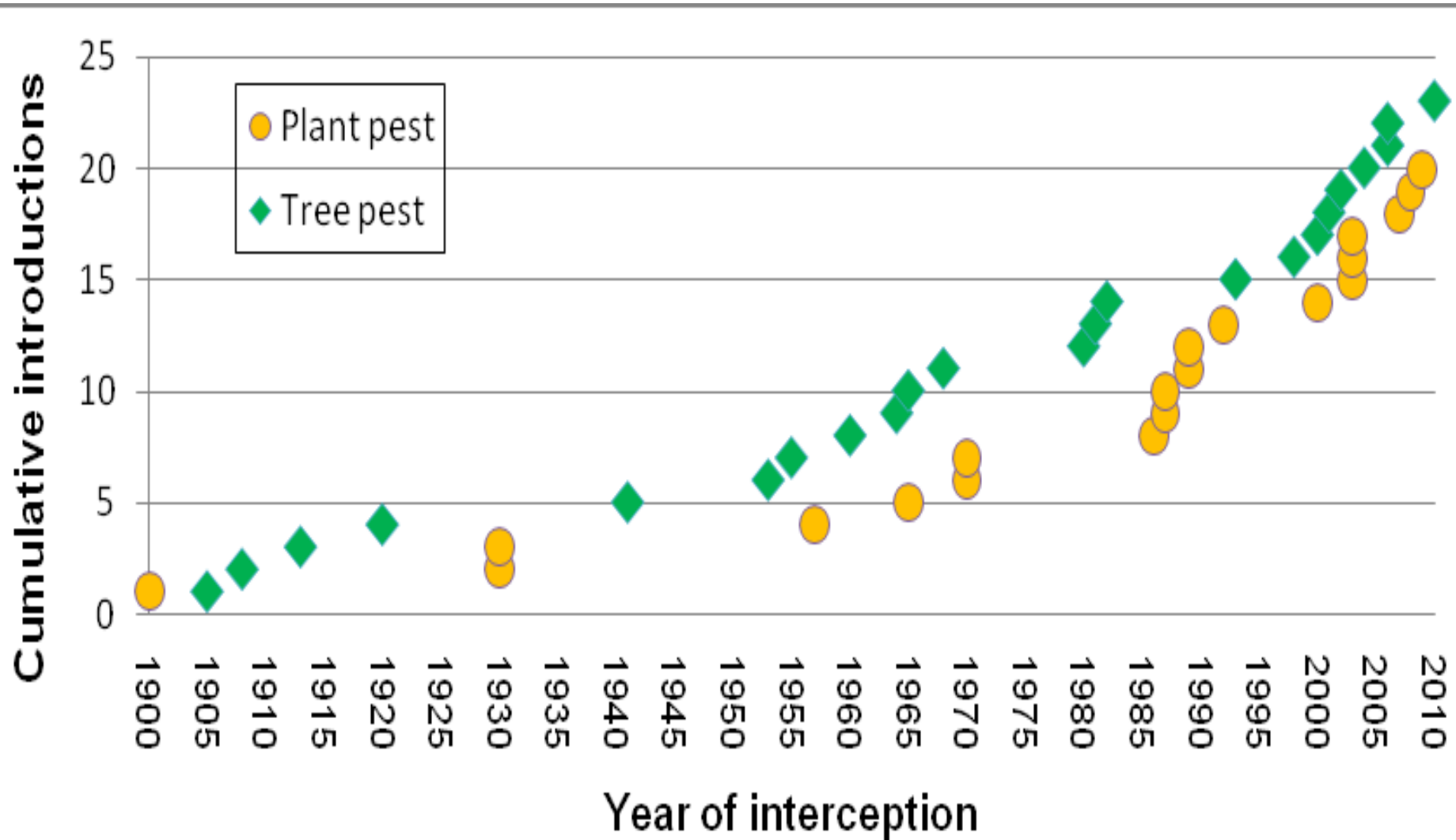


Department
for Environment
Food & Rural Affairs

The Tree Health Resilience Strategy: building the resilience of our trees, woods and forests to pests and diseases

Professor Nicola Spence
Chief Plant Health Officer

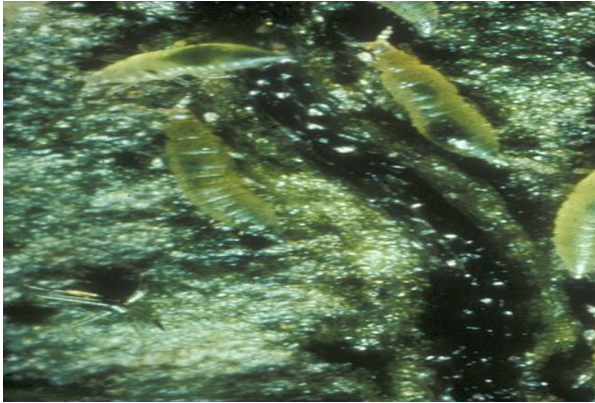
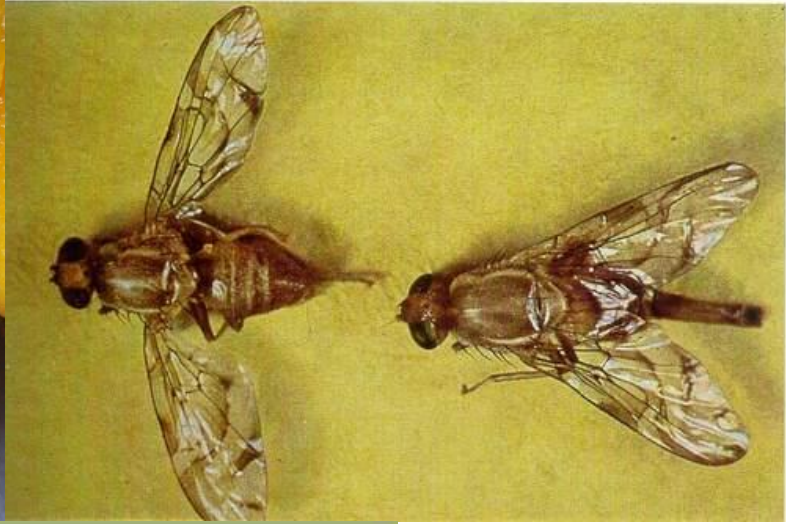
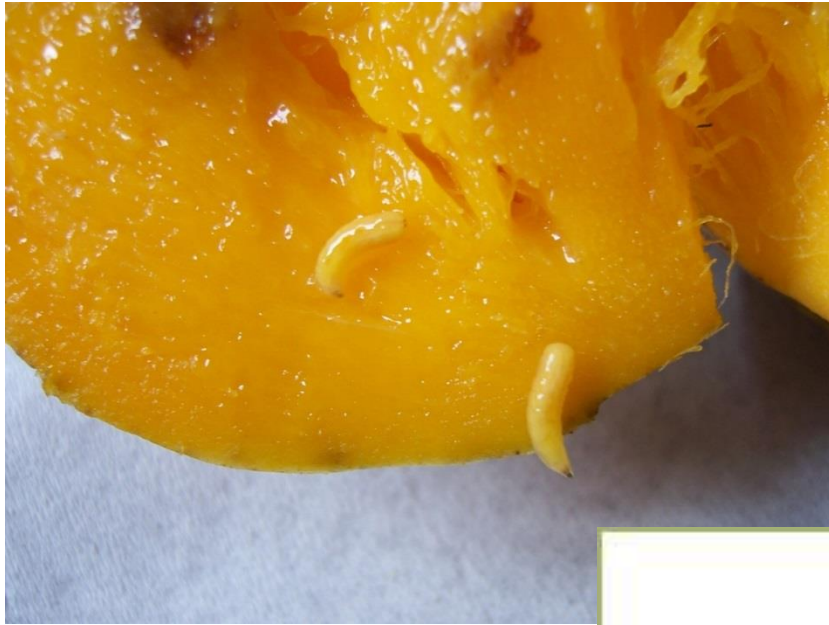
Arrival of pests and pathogens in Britain



Increasing demand for mature plants/trees



Risks in plant products



Wood and wood products



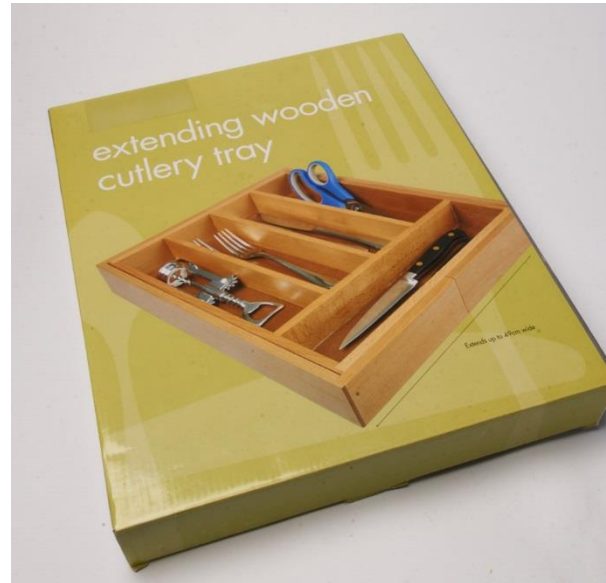
Machinery, vehicles and equipment



Direct sales and postal services



Household items



Larger furniture





Works of art



Steel consignments...



Non-compliant wood packaging



Sports venues...



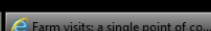
Masterchef...



Gardeners...



UK Plant Health Risk Register



UK Plant Health Risk Register

 Department for Environment, Food & Rural Affairs

Search for a Pest or Organism

794 pests in the Risk Register

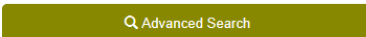


☒ Preferred Name

☒ Synonym

☒ Common Name

☒ Host



About

The UK Plant Health Risk Register is a major step in implementing the recommendations of the independent Task Force on Tree Health and Plant Biosecurity. It is a tool for government, industry and stakeholders to prioritise action against pests and diseases which threaten our crops, trees, gardens and countryside. The Register is publicly available.

Risk Register News

Additions to the Risk Register

31/07/2015

The following pests have been added to the Risk Register recently:...

[View More](#)

Pest Interceptions

21/07/2015

The following pests have all been recently intercepted or detected in the UK. They are considered to...

Example Searches

Show pests marked as a priority for...

Which entries are pests of *Fraxinus*?

Which entries are pests of *Solanum*?

About Plant Health

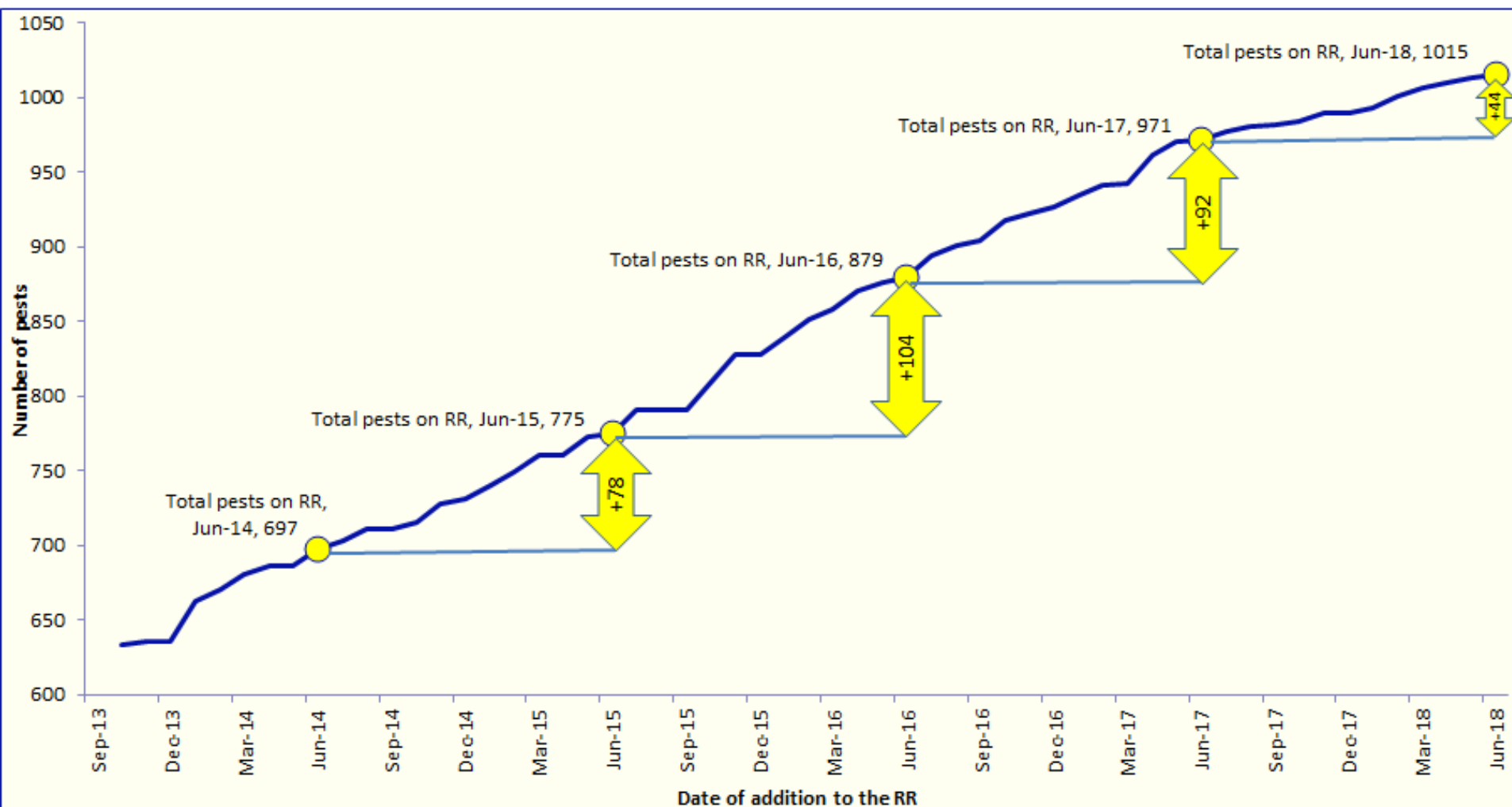
What's New

Latest Pest Risk Assessments

Legislation

Licensing of non-native biocontrol

Steady increase in Risk Register entries



The total number of pests and scenarios on the UK Plant Health Risk Register, illustrating that the number of pests included is steadily rising over time. Note that some pests (e.g. *Xylella fastidiosa*) have multiple risks and are counted multiple times on this graph.

Action: Regulating high risk hosts and pathways



Voluntary action by industry



Citizen science



Asian Longhorn Beetle



Dothistroma Needle Blight



Great Spruce Bark Beetle



Acute Oak Decline



Sirococcus tsugae



Oriental Chestnut Gall Wasp



Oak Lace Bug



Phytophthora austrocedri



Sweet Chestnut Blight



Plane Wilt



Red-necked Longhorn Beetle



Chalara Dieback of Ash



Mountain Ash Ringspot



Plane Lace Bug



Oak Processionary Moth



Elm Zigzag Sawfly



Horse Chestnut Leaf Miner



Bronze Birch Borer



Emerald Ash Borer



Phytophthora lateralis



Pine Processionary Moth



Citrus Longhorn Beetle

Observatree priority pests and diseases



You can learn more about the project and the pests and diseases we are most concerned about

Visit www.observatree.org.uk

Observatree is a citizen science project led by Forest Research, in collaboration with key organisations



If you think you have seen something unusual and would like to find out what you need to report, please visit

www.forestry.gov.uk/trealert



Advocates and Champions for tree health



Tree Health – value at risk per annum

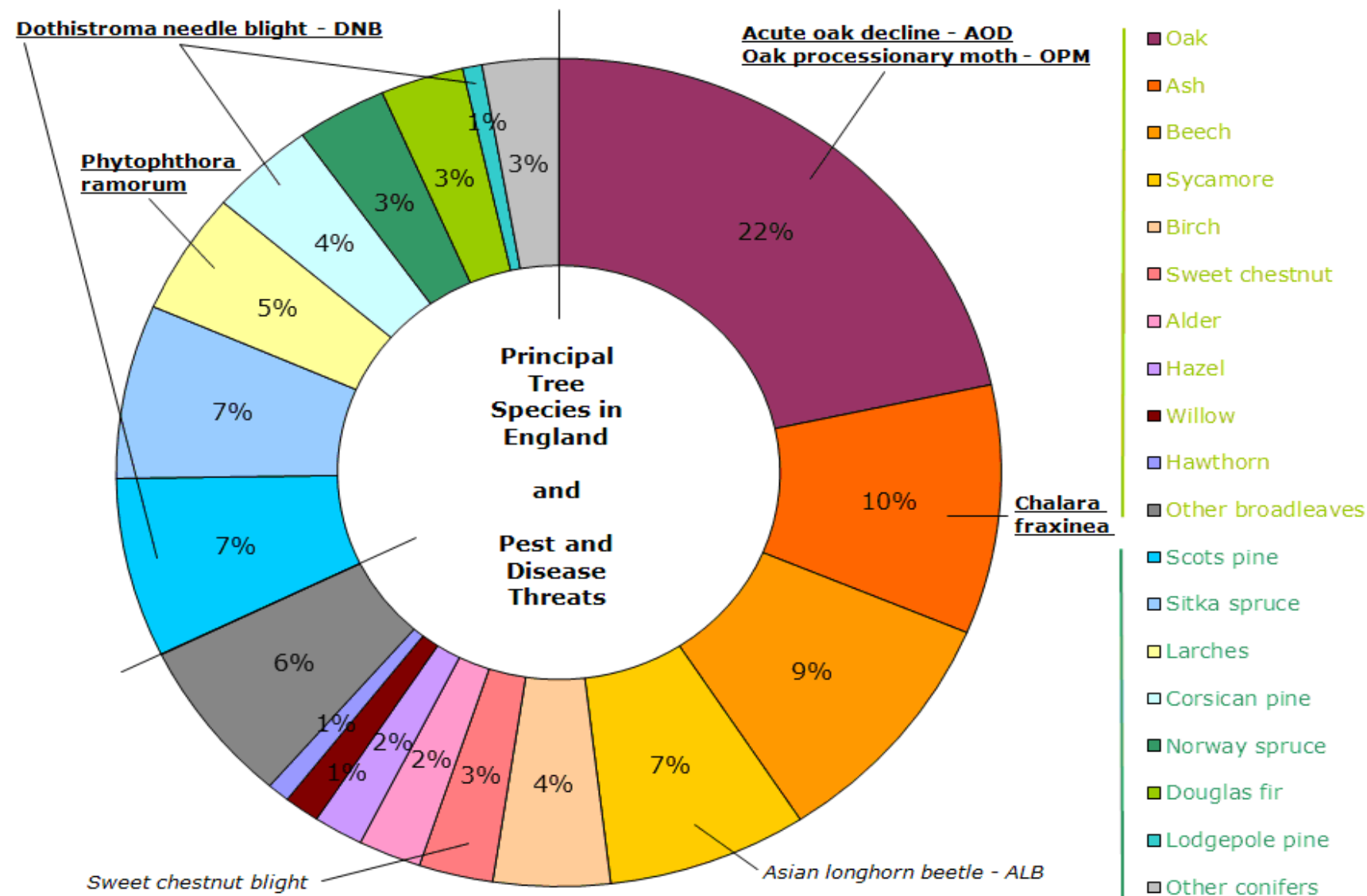
Tree Value Estimate Summary:

- **Commercial** value – from Forestry and Sawmilling: **£1.1bn**
- **Environmental** value – Sequestration **£1.2bn**, and air filtration services **£0.8bn**
- **Social** value – Recreation, landscape and biodiversity, **£1.9bn**

Total annual public benefits of **£3.9bn**
Plus unquantified benefits



The proportion of standing volume in English woodlands by species and associated pest and disease threats



Produced by: Forestry Commission England

Measure: Standing Volume in Millions of Cubic Metres Overbark Standing. Source: Forestry Statistics 2013

Broadleaves: National Forest Inventory: Preliminary estimates of quantities of broadleaved species in British woodlands, with special focus on ash (2012)

Conifers: National Forest Inventory: Standing timber volume for coniferous trees in Britain (2012)

Italicised pests and disease are thought to have been eradicated



Department
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Food & Rural Affairs

Tree Health Resilience Strategy

**Building the resilience of our trees,
woods and forests to pests and diseases**

May 2018

Our vision....

To build the resilience of England's trees, woods and forests. To enhance the benefits trees provide, by mitigating and minimising the impact of pests and diseases and improving the capacity of our trees to adapt to changing pressures.



Tree Health Resilience Strategy

The **UK Forestry Standard** defines resilience as:

“The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.”

The strategy is built around a series of decision steps to help apply the concepts of resilience to the management of trees, woods and forests.

- **Chapter 2:** Defines what we want to protect and why – the **features and values** of our treescape
- **Chapter 3:** Identifies the **threats** to our trees, woods and forests
- **Chapter 4:** Identifies the attributes of our trees, woods and forests that we want to enhance – setting out **environmental goals** for a healthy treescape
- **Chapter 5:** Defines the **resilience outcomes** we want to achieve – as described by a resilience circle
- **Chapter 6:** Identifies priority areas for focus and appropriate actions – setting out a **national level action plan**
- **Chapter 7:** Defines what success looks like by developing an **evaluation plan** and a suite of indicators to measure impact



Environmental Goals

The government's new **25 year plan for improving the environment** recognises key pressures, sets out government action to manage them and calls for a new approach that puts the environment first.



The **Tree Health Resilience Strategy**, proposes 4 new environmental goals to improve the baseline diversity, health and condition of our treescape and equip our trees to be able to withstand future threats.

- Environmental Goal 1: Extent** – a continued increase of trees, woods and forests
- Environmental Goal 2: Connectivity** – enhancing the linear forest and matrix of trees within other habitat settings
- Environmental Goal 3: Diversity** – enhancing the genetic diversity and increasing the structural diversity of our treescape
- Environmental Goal 4: Condition** – encouraging healthier trees and thriving woodlands and forests

Resilience Outcomes

The new **resilience circle** is focused on **three outcomes**... which can be flexibly applied to different contexts and at a national or local level.

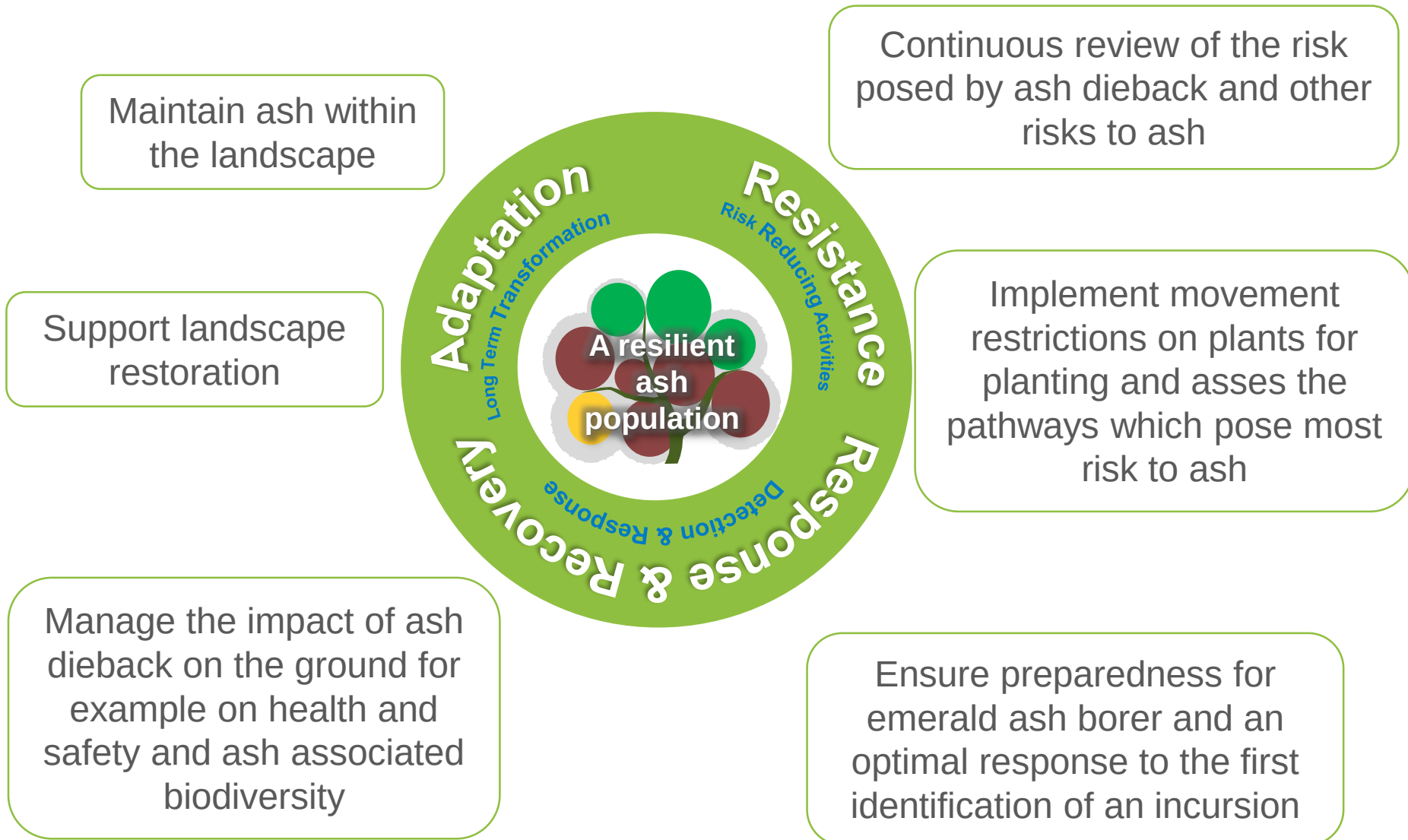


Resistance: Reducing the threat or absorbing the impact of a risk with no change

Response & Recovery: Facilitating a suitable response when threats do occur, to allow our trees to recover wherever possible.

Adaptation: Driving long term changes which will strengthen our natural resource and favour the survival of our trees and woods, and supporting landscapes in adapting to established pests and diseases

For example - policy objectives for ash



What we know to date: risks to ash

29 pests or pathogens on the UK Plant Health Risk Register which are considered to be pests for ash

Hymenoscyphus fraxineus and *Agrilus planipennis* are the only ash specific entries with a mitigated risk score above 75

UK Plant Health Risk Register



Department for Environment, Food & Rural Affairs

Search for a Pest or Organism

1,017 pests in the Risk Register

e.g. Asian longhorn beetle

Search

☒ Preferred Name

☒ Synonym

☒ Common Name

☒ Host



Advanced Search

Download Entire Risk Register

Mitigated Risks

show / hide

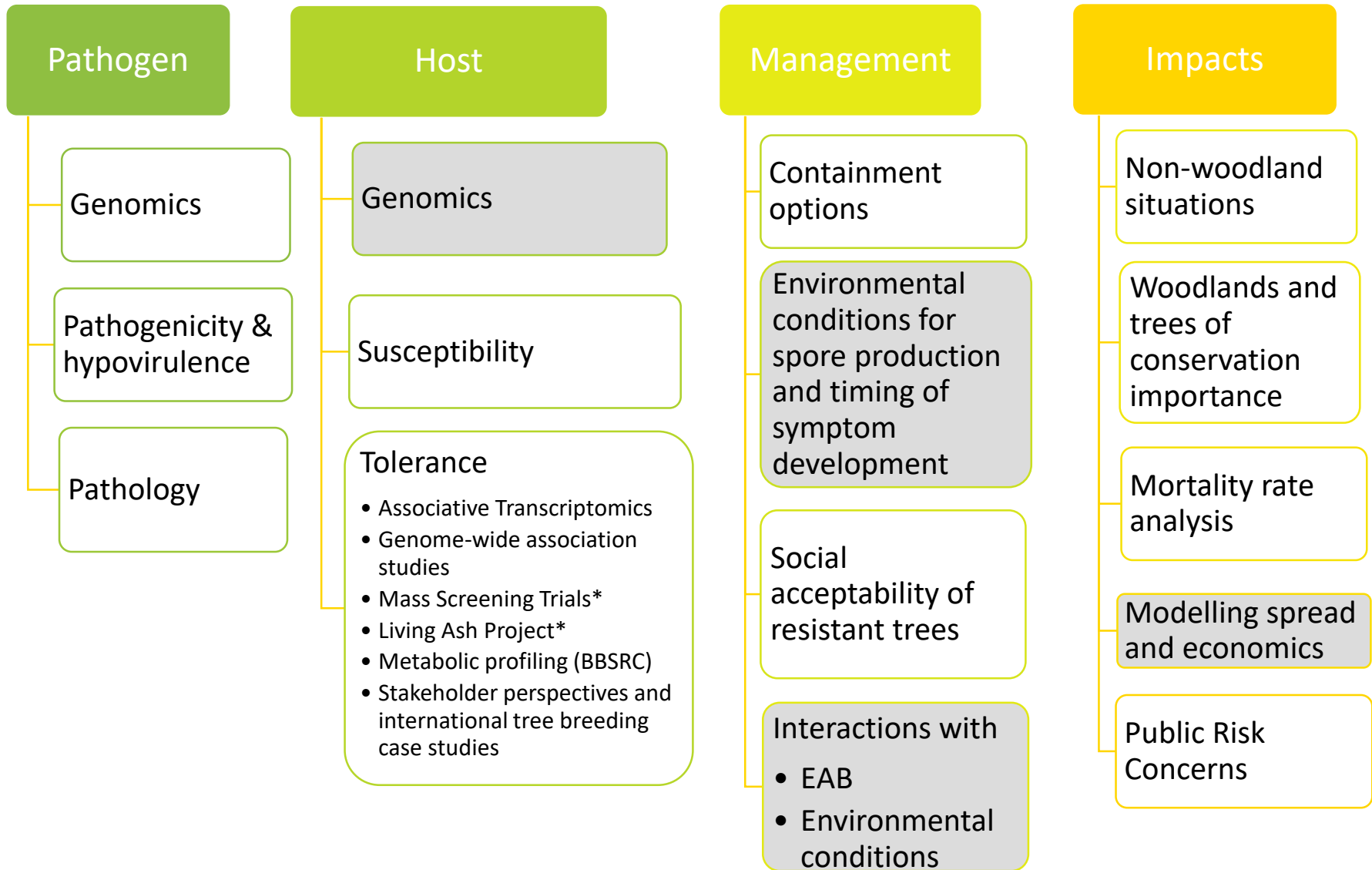
Likelihood [1 - 5]	4
Spread [1 - 5]	4
Impact [1 - 5]	4
Value at Risk [1 - 5]	5
Likelihood x Impact [1 - 25]	16
UK Relative Risk Rating [1 - 125]	80

Mitigated Risks

show / hide

Likelihood [1 - 5]	3
Spread [1 - 5]	4
Impact [1 - 5]	5
Value at Risk [1 - 5]	5
Likelihood x Impact [1 - 25]	15
UK Relative Risk Rating [1 - 125]	75

Ash dieback Defra funded research



Emerald Ash Borer - International Research

Insect

Population dynamics

Climate

Pheromones

Pathways

Host

Genomics

Susceptibility of different species

Resistance

Management

Non-native biological control

Early detection methods – trapping & sniffer dogs

Slowing Ash Mortality (SLAM)

Outbreak and pathway modelling

Impact

Outreach

Ecological impact on the loss of ash

Seed & genetic conservation strategies



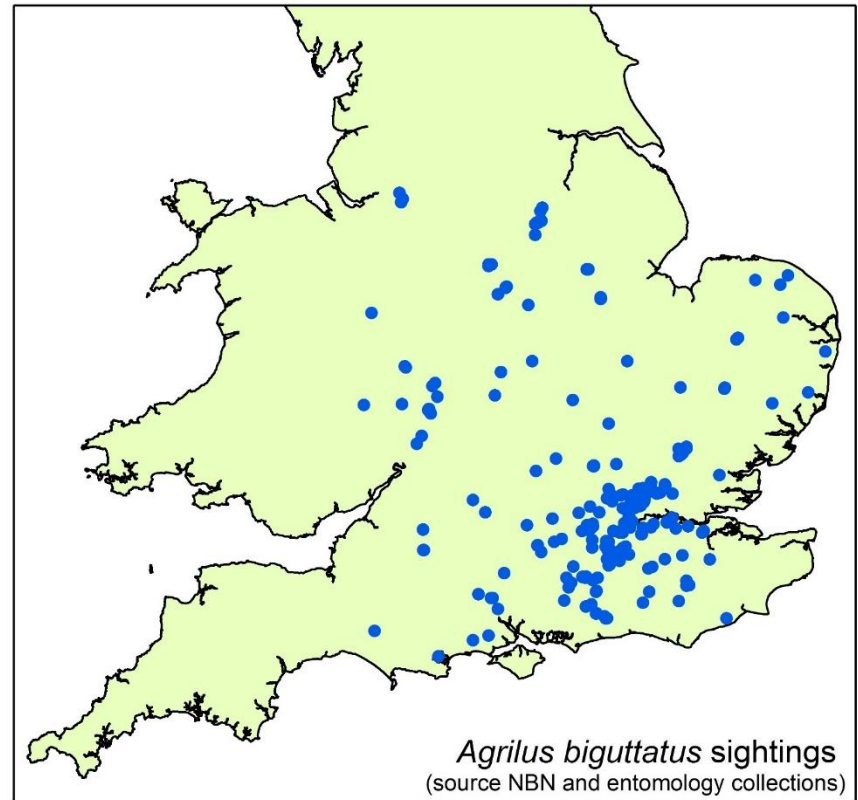
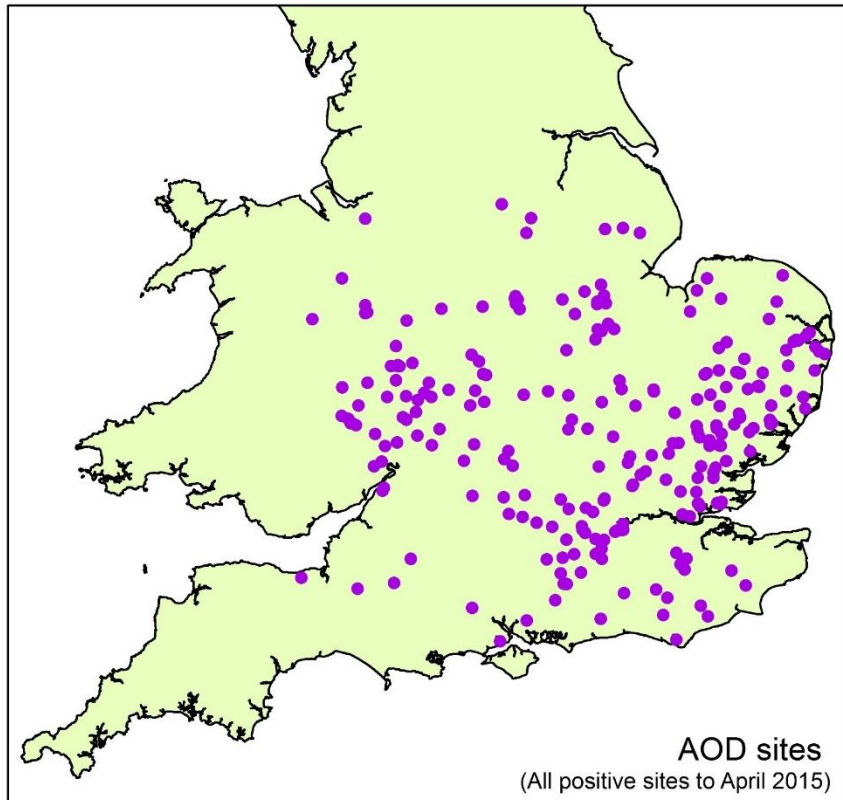
Action Oak Partnership



Oak health monitoring

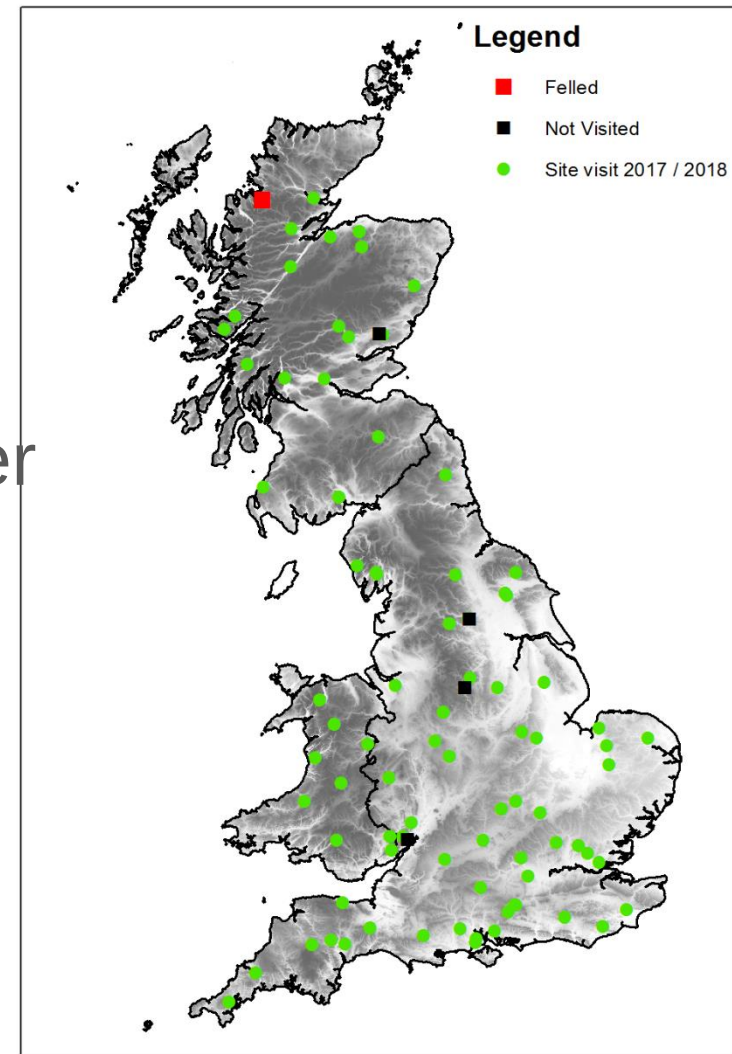


Monitor disease and vector



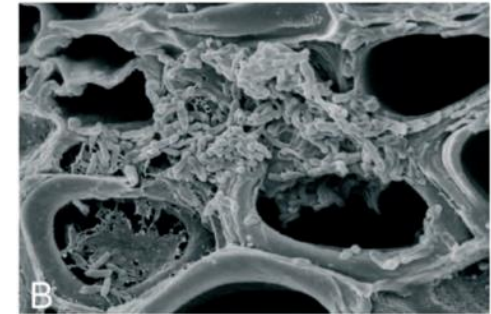
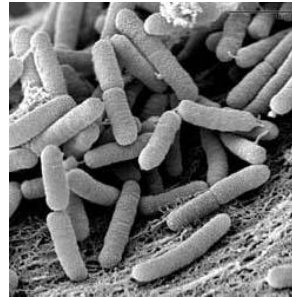
Action Oak – Core network

- FCS (85 sites)
 - Historical data
 - Established sites
- NFI additional (500 sites, 100 per year)
 - Established sites
 - Extra data at some NFI sites
- Open grown trees
 - Comparison to woodland
 - New plots needed



Enhancing preparedness for *Xylella fastidiosa*

- *Xylella* is one of the highest priority and highest profile plant health threats
- A complex disease, with many potential hosts and diagnostic difficulties
- Vector transmitted bacteria
- Wide host range – including agriculturally important plants:
 - Pierce's disease – 1880's USA (grape)
 - Phony disease of Peach – 1930's
 - Blueberry and oleander leaf scorch
 - Citrus variegated chlorosis – 1990's Brazil



Symptoms



Olea europaea (Xfp), Apulia, IT



Sampling



Correlation between detection and sampling symptomatic parts of tree. (M. Saponari, 2015)



Xylella R&D

- Defra has funded a number of projects focussed on *Xylella fastidiosa* focussed on applied research that will enhance the way we respond to a finding of the disease:
 - Improving diagnostics
 - Learning more about the distribution and behaviour of potential vectors.
 - Identifying optimum methods to control vectors
 - Developing new in-field data capture platforms
 - Collaborating with researchers in other European countries to learn about the efficacy of management strategies

Xylella R&D

- More than **£18 million** through a joint bid with BBSRC focussed on bacterial plant pathogens, and *Xylella fastidiosa* in particular
- BRIGIT project launched in December 2018, with a budget of more than **£5 million**
- Consortium made up of 10 research institutions led by  [John Innes Centre](https://www.johninnescentre.org/)
- Research focuses on remaining evidence gaps, including:
 - Behaviour of the disease in key native hosts, including movement within the plant and triggers for symptom development
 - Behaviour of potential vectors
 - Epidemiological modelling
 - Social science



Information sharing: UK Plant Health Information Portal

The screenshot shows the UK Plant Health Information Portal in a Google Chrome browser. The address bar shows the URL <https://planthealthportal.defra.gov.uk>. The page has a green header with the Department for Environment Food & Rural Affairs logo and navigation links: Home, Pests and diseases, Plant Biosecurity Strategy, Citizen science, and Resources. Below the header is a green bar with the text "UK Plant Health Protected Zones". A yellow banner with the word "BETA" in red and the text "Your [feedback](#) will help us improve the UK Plant Health Information Portal" is displayed. The main content area has a light gray background. It features the title "UK Plant Health Information Portal" in green, followed by the subtitle "An online hub for plant health information, data and resources". Below this is a search section with the prompt "Enter the name of a pest or plant you are interested in" and a search input field with the placeholder text "Start typing to see suggestions...". To the right of the input field is a magnifying glass icon. Below the search field, there is a link: "Alternatively, use [additional searches based on risk register priorities for actions](#) or try an [image based search](#)". The page is divided into two columns. The left column is titled "About the UK Plant Health Information Portal" and contains two paragraphs of text. The right column is titled "Pests and diseases" and contains a list of links, each preceded by a right-pointing triangle icon.

UK Plant Health Information Portal - UK Plant Health Information Portal - Google Chrome

Secure | <https://planthealthportal.defra.gov.uk>

Department for Environment Food & Rural Affairs

Home Pests and diseases Plant Biosecurity Strategy Citizen science Resources

UK Plant Health Protected Zones

BETA Your [feedback](#) will help us improve the UK Plant Health Information Portal

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

Start typing to see suggestions...

Alternatively, use [additional searches based on risk register priorities for actions](#) or try an [image based search](#)

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, with 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](#)

International Year of Plant Health 2020

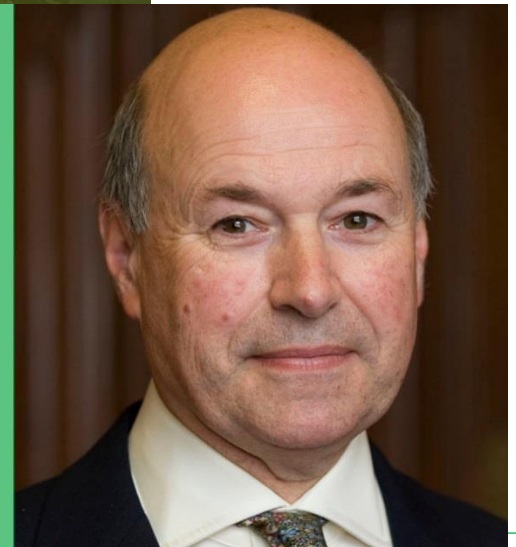


"I was delighted to hear that the International Year of Plant Health will take place in 2020 as this provides a unique opportunity to raise awareness of the importance of plants and how we can enhance the environment for the next generation."

Lord Gardiner
Parliamentary Under Secretary of State for Rural Affairs and Biosecurity


Department
for Environment
Food & Rural Affairs

#IYPH



Follow me on Twitter @plantchief

Home Moments Notifications Messages Search Twitter Tweet

Nicola Spence
@plantchief
UK Chief Plant Health Officer - botanist, plant pathologist and plant lover, helping protect plants, trees and honey bees from pests and diseases; views my own
defra.gov.uk
Joined March 2014

Tweets 1,950 Following 860 Followers 2,107 Likes 854 Lists 1 Moments 0 Edit profile

Tweets Tweets & replies Media

Pinned Tweet
Nicola Spence @plantchief · Jun 29

Please don't bring plants, flowers, fruit or vegetables back into the UK
They can carry pests and diseases that would destroy UK plants and crops.
For more information search [Plant Health Portal](#)

3 67 60

You Retweeted
John Innes Centre @JohnInnesCentre · Dec 17
POSTDOC VACANCY - We are looking for a Postdoctoral Researcher to join the lab of @SaskiaHogenhout on a large collaborative project to study froghopper & leafhopper species that are candidate insect vectors of the invasive plant

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