

Plant Biosecurity: The role of local councils in delivering a healthier future for the UK's plants and trees

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What do we mean by ‘Biosecurity’?

Originally, “biosecurity” was mainly used in defence terms, in particular regarding the control of biological weapons.

Defra defines biosecurity as:

‘the prevention of disease-causing agents entering or leaving any place where they can pose a risk to farm animals, other animals and humans’

The **primary goal** of biosecurity is to protect against risks posed by diseases and organisms.

The **primary tools** of biosecurity are exclusion, eradication and control, supported by expert system management, practical protocols, and the rapid and efficient securing and sharing of vital information.

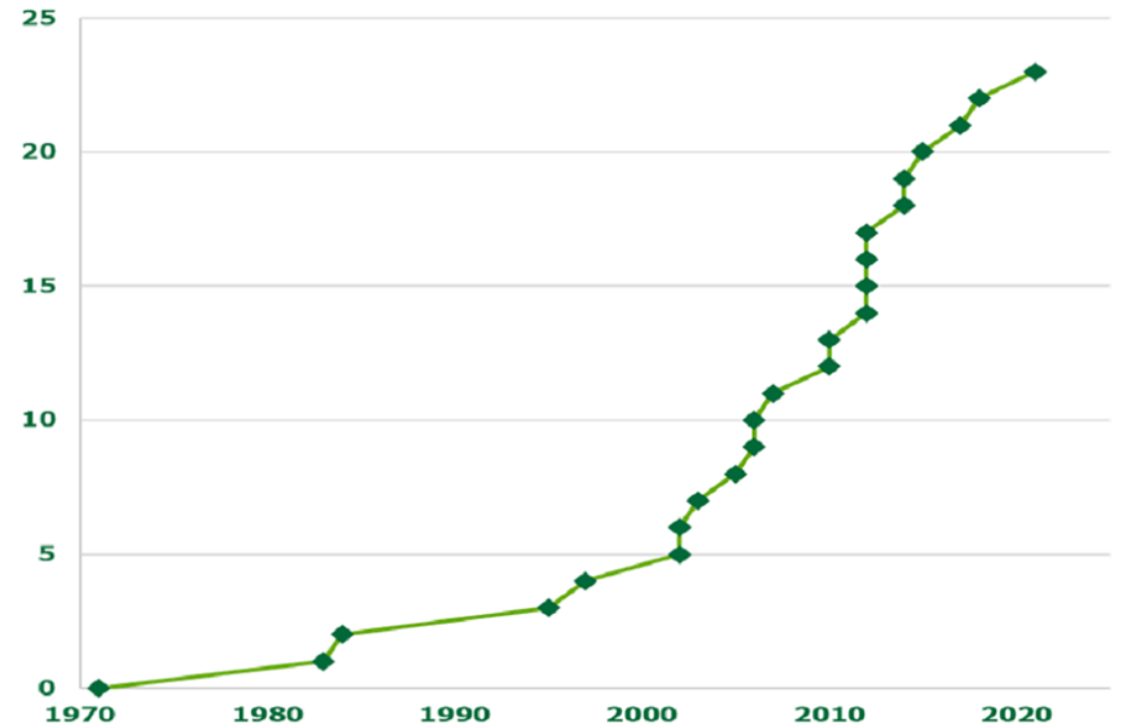


What do we mean by 'plant' biosecurity?

Plant Biosecurity refers to a set of precautions that aim to prevent the introduction and spread of harmful organisms. These include non-native tree and plant pests, such as insects, and disease-causing organisms, called pathogens, such as some bacteria and fungi.

Within this definition many include **non-native invasive species (NNIS)**

The spread of pests of cultivated and wild plants globally, including forest pests, pose potentially high impacts for natural capital, food security, livelihoods, medicines, and trade.



The increase in the number of new pests and disease outbreaks affecting trees since 1971 (Source Forestry Commission)

Year (since 1971)	New pest and disease outbreak
1971	Dutch elm disease
1983	Great spruce bark beetle
1984	Phytophthora alni
1995	Gypsy moth
1997	Dothistroma needle blight
2002	Phytophthora ramorum
2002	Horse chestnut leaf miner
2003	Phytophthora kernoviae
2005	Bleeding canker of horse chestnut
2006	Oak processionary moth
2006	Phytophthora pseudosyringae
2007	Pine tree lappet moth
2010	Acute oak decline
2010	Phytophthora lateralis
2012	Ash dieback
2012	Asian longhorn beetle
2012	Sweet chestnut blight
2012	Phytophthora austrocedri
2014	Phytophthora sikiyouensis
2014	Sirococcus tsugae
2015	Oriental chestnut gall wasp
2017	Elm zigzag sawfly
2018	Eight toothed spruce bark beetle
2021	Phytophthora pluvialis

When and where did it all start?

- For millions of years plants and trees had developed across the world each thriving in their own specific micro- environments.
- Around 12000 years ago, the first groups of hunter gatherers in the areas around Turkey, Iraq and Iran began to experiment with growing plants for food.
- As plants and trees were grown in new regions far away from their natural boundaries many brought pests and diseases which in their new environments had no natural predators.
- Even in new areas plant diseases and pests were still a problem.
- New approaches were adopted such as burning crop residues, turning over land and crop rotation, all in the hope land would regenerate and pests/diseases would die out.
- By the start of the early 20th century the ability to identify pests and diseases, using new agricultural techniques and increasingly application of chemicals led to a belief that a pest and disease-free world was possible.

When the drugs don't work

Weeds as well as insect resistance to herbicides and pesticides is increasing worldwide and threatening global food security.

Resistance to insecticides and herbicides was first noted in the 1950's and increasing resistance has continued to grow across a wide range of plants and insects.

Selection by an insecticide allows some insects with resistance genes to survive and pass the resistance trait on to their offspring.

Eventually, resistant insects outnumber susceptible insects, and the insecticide is no longer effective.

Similarly with herbicide resistance, this happens with the repeated use of the same herbicide, or herbicides with similar modes of action on a weed population

Non- Native Invasive Species

- Non-native plants are those that occur outside their natural range due to direct or indirect introduction by humans not all present a problem and become naturalised
- Those species which spread and outcompete native species can threaten ecosystems, habitats, or native species.
 - ✓ a lack of natural control mechanisms (such as herbivores);
 - ✓ rapid rate of spread (by seed or vegetatively)
 - ✓ suppression of other species such as the use of chemical inhibitors affecting germination or growth known as 'allelopathy',
 - ✓ increasing the competition for resources such as space water, soil and light.
- Only where this occurs are the plants termed **non-native invasive species**



Are Non-Native Invasive species that much of a problem?

*“invasive non-native species are one of the top five drivers of **global biodiversity loss** and have been a significant driver in over 60% of global **native species extinctions**. In Great Britain they have threatened a wide range of native species, habitats and ecosystems. They also cause serious economic damage, costing the British economy at least **£2 billion per annum**, and the global community well over \$400 billion USD”.*

The Animal and Plant Health Agency (APHA)

Where does APSE fit into this?

- Increasing numbers of network queries and general interest in how other local authorities were dealing with issues such as Japanese knotweed prevention, managing Ash Dieback and its implications, eradicating Himalayan balsam, operational approaches to reduced chemical usage etc.
- In response, presentations on these concerns were included in Advisory Groups, online seminars and briefing notes.
- More recently in partnership with a wide range of stakeholders including APHA, Defra, The Tree Council etc, an online seminar which dealt specifically with plant biosecurity was held.
- It was felt that it would be useful to gauge the level of understanding of the importance plant biosecurity was being given amongst APSE local authority members.

The APSE Plant Biosecurity Survey 2023

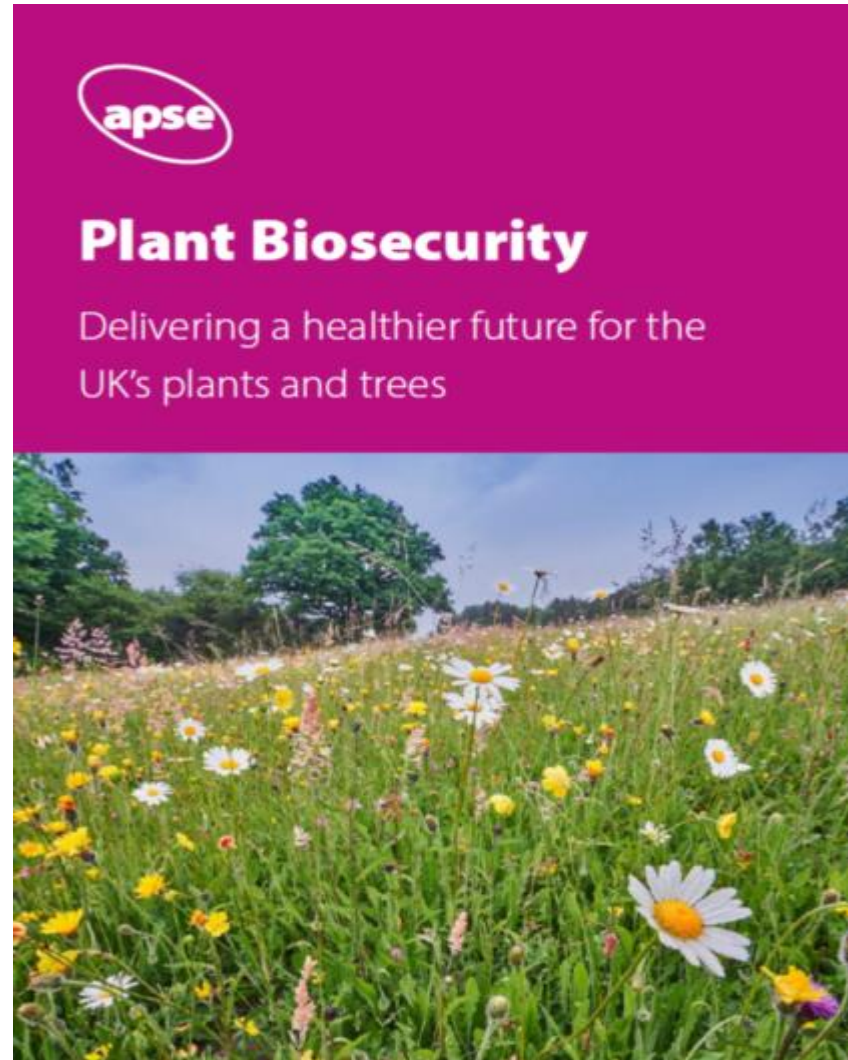
- Sent out to all members
- Questions included:
 - Awareness of national strategies on plant biosecurity
 - Whether plant biosecurity was considered in operational practices
 - Personal level of understanding on the subject.
 - What pests, pathogens and NNIS species were a cause for concern
 - What actions had been taken to address NNIS and pests and pathogens relating to plants
 - Whether the use of chemicals had been reduced and what had been the effects
 - Does the council have a specific plant biosecurity plan or policy.
 - Is training provided to raise awareness/improve plant biosecurity actions.

The Findings of the survey

- Most local authorities were aware of various pests, diseases and non-native invasive species affecting their areas, those most frequently mentioned were Ash dieback, Japanese knotweed, Himalayan balsam, Oak processionary moth and Giant Hogweed.
- Only 36% knew about the UK Plant Biosecurity Strategy (2023-2028)
- 58% did consider biosecurity measures in their operational practices, despite only 10% recording that they had a specific biosecurity policy.
- Biosecurity measures were being included in staff training, albeit often as part of wider training areas such as health and safety.
- When asked as to the means of dealing with pests, diseases, and invasive non-native species there was clearly a mixture of approaches from manual removal to the limited use of chemical treatment. Worryingly a notable proportion stated they did not have the funds to address such issues, which does not bode well both for their own authority or neighbouring authorities, for as previously mentioned, pests, diseases and invasive non-native species do not respect administrative boundaries.
- Regarding specific actions local authorities were taking to practically address biosecurity issues procuring locally sourced plants was a clear favourite, but again there needs to be a confidence that the growers of these plants are following effective biosecurity measures.
- Over 20% of respondents stated that they regularly monitored the presence and spread of pests, diseases, and invasive non-native species, reporting any information to relevant bodies such as Defra.
- A small number were also developing localised action plans to deal with specific outbreaks rather than hoping these would be addressed as part of the normal grounds' maintenance frequencies.
- An interesting response was that biosecurity requirements were being built into their contract specifications.

APSE Plant Biosecurity Research Report - 2024

- As a result of the surveys responses APSE has produced a research report covering relevant plant biosecurity issues which it hopes local authority managers and front-line staff will find useful.
- It needs to be remembered that plant biosecurity is not just a parks and greenspace issue but has relevance across a wide range of services within a local authority.
- The report aims to not only provide a background as to the development of the reasoning behind and the importance of plant biosecurity, but also practical examples of how adopting bio-secure practices will help ensure the health and sustainability of local authority parks and greenspaces.



Contents of the report

- **Potted History of Plant Diseases and Pests and the growth of science in understanding plant pest and diseases.**
- **Plant Biosecurity Strategies for Great Britain.**
 - Plant biosecurity strategy for Great Britain (2023-2028)
 - The Great Britain Invasive Non-native Species strategy (2023-2028)
- **What do we know about Plant Biosecurity? – a local authority perspective. – APSE Survey 2023**
- **Identifying the major plant diseases, pests and invasive non-native species affecting the UK.**
 - Tree pests and diseases , NNIS & dealing with invasive non-native species
- **Preventing the introduction and spread of tree pests and diseases.**
 - The need for greater emphasis on biosecurity precautions and control.
- **Plant biosecurity measures in parks and green spaces.**
 - Sourcing and procuring new plants. operational considerations, donations **staff training**
- **Local Authority Plant Biosecurity Policies.**

Plant Biosecurity: The role of local councils in delivering a healthier future for the UK's plants and trees

A report which explains why local authorities must not only be aware of how their actions can influence and improve the way we look after the UK's plants and trees, but also provides examples of best practice in meeting this responsibility

- <https://www.apse.org.uk/index.cfm/apse/research/current-research-programme/plant-biosecurity-delivering-a-healthier-future-for-the-uks-plants-and-trees/plant-biosecurity/>

What are we up against?

Growing trade driven by demand, for cheaper plants and 'instant trees.'

Since 1992 plant imports have more than doubled, most plants now sold in nurseries and other outlets are imported (approximately 30% are rooted plants).

Desire for semi-mature trees and shrubs e.g. New Zealand tree ferns and acers, olive trees etc.

Many of the areas where these plants come from are ecologically and biogeographically distinct.

EU was initially seen as one geographical area for the transportation of plants which may have led to the transportation of many pests and pathogens without sufficient checks.

The wider impacts of disease and pests go far beyond the host plant.

National Actions

- Plant biosecurity strategy for Great Britain (2023-2028)
- The Great Britain Invasive Non-native Species strategy (2023-2028)
- Phytosanitary Certificates and Plant Passports
- Inspection and regulation of plants and trees
- A strong scientific research programme which aims to identify and provide advice on how to, prevent, eradicate or control such outbreaks and threats.



What can local authorities do?

Ensuring plant biosecurity works at 'ground level' needs to take into consideration local authorities and their partners and residents, all have a role in ensuring the future health of the plants and trees we are all responsible for.

Operational procedures and practices

- Sourcing and procurement of plants and trees
- Receiving and transporting plants to site
- Site and operator hygiene
- Raising Awareness - Spread the message, not the pests
- Keep up to date / staff training
- Share the responsibility
- Corporate policies and action plans



Does plant biosecurity really matter?

Climate change as well as the increasing global trade in plants is altering the world's plant distributions together with the potential to increase the range of diseases, pests and NNIS.

Ash Dieback has the potential to destroy up to 95% of the UK ash trees, not to mention the potential of the emerald ash borer beetle! - current estimates of £15 billion to deal with the impacts of the disease.

Dutch elm disease has been estimated to have killed between 25-30 million trees in the UK alone.

The cost of managing and eradicating NNIS in the UK is currently considered to be in the region of £4 billion a year.

Between 20% - 40% of global food crops are lost annually due to pests and diseases.



The importance of healthy plants and trees

It is estimated that the natural capital value of the UK's plants and trees is £15.7 billion per year

£4.2 billion of this relates to the carbon sequestration role of plants and trees which will play a vital role in helping to achieve the Government's Net Zero target by 2050.

But it should be remembered the value of our plants and trees should not be seen purely in monetary value:

- 98% of the oxygen we breathe is produced by trees and plants,
- 80% of the food we eat is provided by plants, and
- 80% of the world's terrestrial species of animals, plants and insects live in forests etc.

New UK threats include:

- the bacterium *Xylella fastidiosa* which has the potential to be one of the biggest risks to the UK horticultural industry and wider landscape..
- Emerald Ash Borer Beetle and the Japanese beetle, (not currently in the UK but potential threats)
- Asian Longhorn beetle one appearance but eradicated but still a threat
- Pine Processionary moth



Conclusions

The destructive power of pests, diseases and invasive non-native species can have significant environmental, social, and economic impacts.

More recent pest and diseases have largely been introduced through global trade in plants.

Negative impacts of climate change are trying to be addressed through initiatives such as large-scale tree planting schemes and climate tolerant species of plants.

The sourcing of our trees and plants is just one area where strict plant biosecurity measures can help prevent the accidental introduction of pathogens and pests.

Local authorities need to be at the forefront of ensuring the green spaces they manage are bio-secure, through their procurement policies and management of new and existing plants and trees.

By understanding the importance of plant biosecurity and having a network of correct operational practices and expertise about trees and plants, both internal and external, then hopefully we will be able to ensure a healthier future for our greenspaces.

Plant Biosecurity for Local Authorities

February 4-5 2025 Online

[https://www.apse.org.uk/index.cfm/apse/training/
online-courses/plant-biosecurity-for-local-
authorities/](https://www.apse.org.uk/index.cfm/apse/training/online-courses/plant-biosecurity-for-local-authorities/)

