

Title: Assessment of large-scale plant biosecurity risks to Scotland, from:

- 1. Non-specialist and online horticultural sales (PHC2019/04)**
- 2. Large scale plantings for landscaping and infra-structure projects (PHC2019/05)**
- 3. Large scale tree plantings for environmental benefits (PHC2019/06)**

Background: Scotland contains plant-based assets of enormous economic, social, and conservation value. These include agricultural lands, forestry plantations, woodland, parks, gardens, amenity plantings and the natural environment. These assets are facing increased risks from plant pests and pathogens due to increased global trade and plant and soil movements, coupled with climate change. The UK Plant Health Risk Register now includes information on more than 1000 recorded pest and pathogen species of concern.

In response to this growing threat, plant health strategies in the UK and Scotland target actions along a continuum from pre-border and border control through to in-country responses. A major challenge, however, is the sheer number and volume of human-induced pest and pathogen movements, and the complicated landscape of economic and social factors driving this. This leads to some steep operational gradients in the adherence to biosecurity practices – ranging from tightly regulated, carefully controlled, well-executed movement of materials with rigorous steps for quarantine, inspection and control, through to large-scale transport of potential pest- and pathogen-containing material with less stringent biosecurity and/or lower awareness of pest and pathogen risks.

This Tender focuses on three self-contained but closely related projects, which collectively aim to better understand potential large-scale threats to plant biosecurity in Scotland. **Tender applications can either be for a single project, two projects or all three. A separate application form should be completed for each project.** On commissioning, the project partners from all three projects will be expected to meet regularly to ensure cross-fertilisation of ideas and information. The three projects are:

1. PHC2019/04: Sales of plants for homes and gardens via non-specialised horticultural outlets (e.g. supermarkets) and/or via non-local suppliers (e.g. online horticultural sales)

Retail horticulture is a large-scale industry in the UK, with ornamental horticulture and landscaping worth an estimated £24.2 billion national GDP in 2017¹. The industry is characterised by a large volume of individual transactions and the transport of a diverse range of plant materials (with accompanying soil and packaging) to a highly distributed set of final destinations (households). These horticultural sales represent a complex and pervasive vector network, which carries the risk of transportation of pests and pathogens to surrounding parks and gardens, agricultural systems, woodlands, forests and the wider environment. The diversity of the plant material in trade and the multitude of suppliers and recipients creates a major challenge for managing biosecurity.

In response to this challenge, the horticultural industry has launched key biosecurity initiatives such as Plant Healthy (<https://planthealthy.org.uk>). Plant Healthy provides a set of tools and resources for

Plant Health Centre

C/o James Hutton Institute, Invergowrie, Dundee DD2 5DA

Phone: +44 (0)1382 568 905

Email. info@planthealthcentre.scot; Web: www.planthealthcentre.scot

horticultural businesses to manage plant health threats, with plans in place to extend this to a formal quality assurance scheme. However, there is a wider challenge to engage retailers outside of the mainstream horticultural trade, including some supermarkets/DIY stores and some online suppliers. Large volumes of plant materials, soil and packaging are moved via these alternative routes, but there is considerable uncertainty about the extent to which biosecurity practices are integrated into these supply chains.

Key knowledge gaps: Assessing the degree to which biosecurity is visible and important in key business operations and decisions (e.g. awareness), the importance of biosecurity in the procurement process, the degree to which biosecurity procedures are in place, the efficacy of implementation, and the main barriers to increasing biosecurity and decreasing plant health risks for non-traditional horticultural sales. For online sales, there is additional uncertainty as to the overall volume of traffic, the number of providers and the source of the material they supply.

Key stakeholder: The Horticultural Trades Association; the major body representing the UK garden industry (<https://hta.org.uk/>) is a key stakeholder and an important initial point of contact.

The project will also involve information gathering from various businesses involved in the supply chain from nursery to customers, including supermarkets/DIY stores and online suppliers.

2. PHC2019/05: Large scale plantings associated with major infra-structure projects (e.g. housing developments; major transport links)

Large scale infra-structure projects such as transport networks and major housing projects typically include extensive landscaping and planting programmes. These operate at a large scale (tens/hundreds of thousands of plants for each development), they often require instant visual impacts (necessitating large stature semi-mature shrubs and trees), and face significant cost pressures (the landscaping is typically a small component of the overall project and usually delivered towards the end of the project, and is hence susceptible to cost-cutting if the overall budget is exceeded). An additional issue is the modest scale of domestic production creating challenges in obtaining material from local sources. These pressures can favour low-cost large-scale plant imports rather than UK or Scottish grown material – with associated risks of pest and disease entry (e.g. as has been seen previously with ash dieback and oak processionary moth).

In addition to direct movements of plants and soil, major infra-structure projects have other associated biosecurity risks including large-scale movement of wood packaging (crates/containers), and machinery contaminated with soil, all of which may act to transport pests and pathogens across borders.

Key knowledge gaps: An overview of where the construction sector sources its plant material, how species choices are made, assessing the degree to which biosecurity is visible and important in key business operations and decisions (e.g. awareness), the importance of biosecurity in the procurement process, the degree to which biosecurity procedures are in place, the efficacy of implementation, and

Plant Health Centre

C/o James Hutton Institute, Invergowrie, Dundee DD2 5DA

Phone: +44 (0)1382 568 905

Email. info@planthealthcentre.scot; Web: www.planthealthcentre.scot

the main barriers to increasing biosecurity and decreasing plant health risks for major infra-structure projects.

Key stakeholders: The British Association of Landscape Industries; network of landscape contractors, landscape architects, garden designers and suppliers, and registered directory of accredited members (<https://www.bali.org.uk/about/>). The Landscape Institute; professional body for landscape practitioners, including landscape architects, landscape planners, landscape managers and urban designers (<https://www.landscapeinstitute.org/>). The Confederation of Forest Industries (<https://www.confor.org.uk/>).

The project will also involve gathering information from various businesses in the supply chain including nurseries, construction companies, landscapers and intermediaries, along with key decision makers in project commissioning and procurement, and planning authorities.

3. PHC2019/06: Large-scale plantings for environmental benefits (e.g. tree plantings for carbon sequestration; habitat restoration)

The UK and Scotland have ambitious tree planting targets, with a major driver being carbon sequestration. In 2018/19, a total of 13,400 hectares of trees were planted in the UK with the vast majority of this being in Scotland (11,400 ha). The aspiration for net-zero carbon emissions for the UK translates to tree planting aspirations of 30,000 ha per year and a total of 1.5 billion trees planted by 2050. Scotland's Forest Strategy² outlines a target of 15,000 ha per year. In addition to carbon management, other major drivers for tree planting are commercial forestry, habitat restoration and the establishment of new woodlands for biodiversity and amenity value. Scotland's Forest Strategy² outlines a target of 3,000-5,000 ha of new native woodland per year, and restoration of an additional 10,000 ha of native woodland. This involves planting a large volume of trees. From a biosecurity perspective, the sourcing of large volumes of locally grown material with rigorous pest and pathogen management is the lowest risk option. However, the supply chain of locally grown material to deliver on targets of this scale is not in place. There is considerable uncertainty as to where and how this volume of trees will be sourced, and associated uncertainty as to the biosecurity threats posed.

In addition to tree planting, there are a set of wider large-scale plant movements associated with habitat restoration and conservation (e.g. montane scrub restoration, wildflower mixes for meadows and amenity plantings, and species reintroductions/translocations for targeted conservation recovery programmes).

Collectively, these extensive and ambitious programmes involve widespread movement of plant material, soil and other potential pest and pathogen transport routes (people, machinery etc). Many of these plantings are close to natural areas of high biodiversity value and/or near other valuable plant assets. A diverse set of actors are involved, ranging from well-established highly experienced organisations and individuals operating under strict procedures, through to those with less practical experience and/or awareness of legislative requirements and biosecurity awareness.

Key knowledge gaps: An overview of the major sets of stakeholders driving planting for environmental benefits and their major sources of plant material, assessing the degree to which biosecurity is visible and important in key business operations and decisions (e.g. awareness), the importance of biosecurity in the procuring of plant material, the degree to which biosecurity procedures are in place and the efficacy of implementation, and the main barriers to ensuring that future planting for environmental restoration and conservation will minimise plant health risks.

Key stakeholders: Scottish Natural Heritage as the statutory body with responsibility for natural environment in Scotland (<https://www.nature.scot/>); Forestry and Land Scotland as the statutory body with responsibility for Scotland's National Forest Estate (<https://forestryandland.gov.scot/>).

The project will also involve gathering information from key professional bodies (e.g. the Confederation of Forest Industries; <https://www.confor.org.uk/>), and various organisations ranging from the nurseries supplying plant material, the organisations involved in undertaking plantings, and the key decision makers who are responsible for choosing plant species, plant sources, planting locations and working practices.

Objectives and research required for all projects in this call:

- Identify key decision-makers for biosecurity activities within the project remit and, through dialogue, gauge their level of awareness of pest and pathogen threats, together with their roles, level of responsibility and the scale (local, regional, national and global) of their operation.
- Identify from these key decision-makers the primary factors that influence decision making relevant for biosecurity (including procurement and other business decisions) and the degree to which biosecurity is already considered or could feature more strongly in future.
- Summarise the major biosecurity strengths and weaknesses / major current biosecurity threats.
- Assess the barriers to more stringent biosecurity practice.
- Assess the degree to which adherence to the recently developed Plant Health Management Standard³ by plant growers/suppliers would address biosecurity needs.
- More generally, summarise any obvious opportunities for enhancing biosecurity including awareness raising, incentives and regulation.

It is expected that the research will be conducted via direct interaction with the stakeholder community – for example, face-to-face or telephone interviews using agreed semi-structured questionnaire. Confidentiality is likely to be an important requirement given potential commercial and reputational aspects; the interviews may commence with a few key individuals (starting with the key stakeholders identified above) and then expand in number by making use of their personal networks/recommendations (i.e. snowballing techniques). The emphasis will be on understanding typical behaviours/processes rather than detailed case-specific data, but it is anticipated that discussion of specific projects or activities will help focus discussions. It is expected that the research will also incorporate relevant previously published findings on biosecurity issues in the UK and connect with relevant ongoing research networks and consortia.

Plant Health Centre

C/o James Hutton Institute, Invergowrie, Dundee DD2 5DA

Phone: +44 (0)1382 568 905

Email. info@planthealthcentre.scot; Web: www.planthealthcentre.scot

To coordinate activities within each project, and to ensure common approaches and synergies between them, a member(s) of the Plant Health Centre will oversee progress and coordination of the three projects. There will be a:

- Commissioning meeting with the Plant Health Centre to initiate activities for each project (teleconference)
- Combined project launch meeting where leads from each project present work plans (1/2 day)
- Monthly progress updates (teleconference)
- Combined interim project meeting where leads from each project present updates (1/2 day)
- Combined Project completion meeting where leads from each project present their outcomes (1/2 day)

Outputs required: The outputs of the exercise must include:

- A report summarising findings against the objectives outlined above, following the PHC reporting guidelines (<https://www.planthealthcentre.scot/call-for-projects>).
- A policy summary including recommendations on future engagement by the Chief Plant Health Officer for Scotland (CPHOS) and/or the Scottish Plant Health Centre with the relevant sectors, as well as potential barriers and solutions.
- A popular article, media, blog etc targeted to a key relevant stakeholder group.
- Subject to confidentiality agreements, detailed interview material and a database of relevant contacts.
- Presentation on the project at Scotland's Plant Health Conference 2021

Impact: The projects will inform the Chief Plant Health Officer for Scotland and other plant health authorities about current biosecurity risks, what drives them and how biosecurity might be enhanced – including who to target in awareness raising and what would be required to improve practices (e.g. accreditation/regulation).

Key milestones:

- Project start by 17th February
- Project launch meeting
- Confirmation of semi-structured questionnaire and finalised project plan
- Interviews
- Interim progress report 30st April 2020
- Consolidation of findings

Final report – and presentation and discussion with CPHOS and others by 18th September 2020

Milestone dates to be confirmed by nominated project lead.

Ethics: The projects described in this Tender document involve the undertaking of interviews on topics including commercially and reputationally sensitive information. Applicants must outline their approach to considering, evaluating and managing ethical issues that may arise during the project and

Plant Health Centre

C/o James Hutton Institute, Invergowrie, Dundee DD2 5DA

Phone: +44 (0)1382 568 905

Email. info@planthealthcentre.scot; Web: www.planthealthcentre.scot

indicate that they have institutional ethics and data management policies that they will adhere to throughout the project.

Date all work needs to be completed by: 18th September 2020

Project type: Call down - collaborative, synthesis.

Maximum funding available (including overheads and VAT, where applicable): Indicative cost £40K per project

References

¹Ismail O, Tran A (2018) The Economic Impact of Ornamental Horticulture and Landscaping in the UK. Oxford Economics <https://hta.org.uk/uploads/assets/uploaded/d9afcd6e-8a2c-48a1-89c1d67d94e19d2d.pdf>

²Scottish Government (2019) Scotland's Forest Strategy 2019-2029
<https://www.gov.scot/publications/scotlands-forestry-strategy-20192029/>

³Plant Health Biosecurity Steering Group (2019) Plant health management standard: General requirements for plant growers and suppliers <https://planthealthy.org.uk/assets/downloads/Plant-Health-Management-Standard-v1.0-Published-240119.pdf>

Plant Health Centre

C/o James Hutton Institute, Invergowrie, Dundee DD2 5DA

Phone: +44 (0)1382 568 905

Email. info@planthealthcentre.scot; Web: www.planthealthcentre.scot