

Risk mapping of the likelihood and impact of a *Xylella fastidiosa* outbreak in Scotland

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Introduction

X. fastidiosa causes disease in a wide range of north American street-tree species including elm, sycamore, oak and maple.

Four sub-species of the bacteria cause severe disease in several key European crops including grapes, olives, prunus species, rosemary and lavender. It was discovered in southern Italian olive groves in 2013 and has subsequently spread across the Apulia region and elsewhere in the Mediterranean.

We present a broad-scale, spatial assessment of the pathogen, potential vector and host species in the UK to assess the risk of infection in Scotland.

The work is intended to inform the Scottish Government's contingency plan and preparedness measures for the arrival of *Xylella* in the UK.

Acknowledgements

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Objectives

- Consider the likelihood of arrival of *X. fastidiosa* into Scotland: map the extent of suitable climate, host and vector species in the UK and Scotland.
- Consider the potential impact of *Xylella* on the Scottish economy and ecology: map the extent and distribution of vulnerable host species with high economic values and ecological significance.

Project outcomes

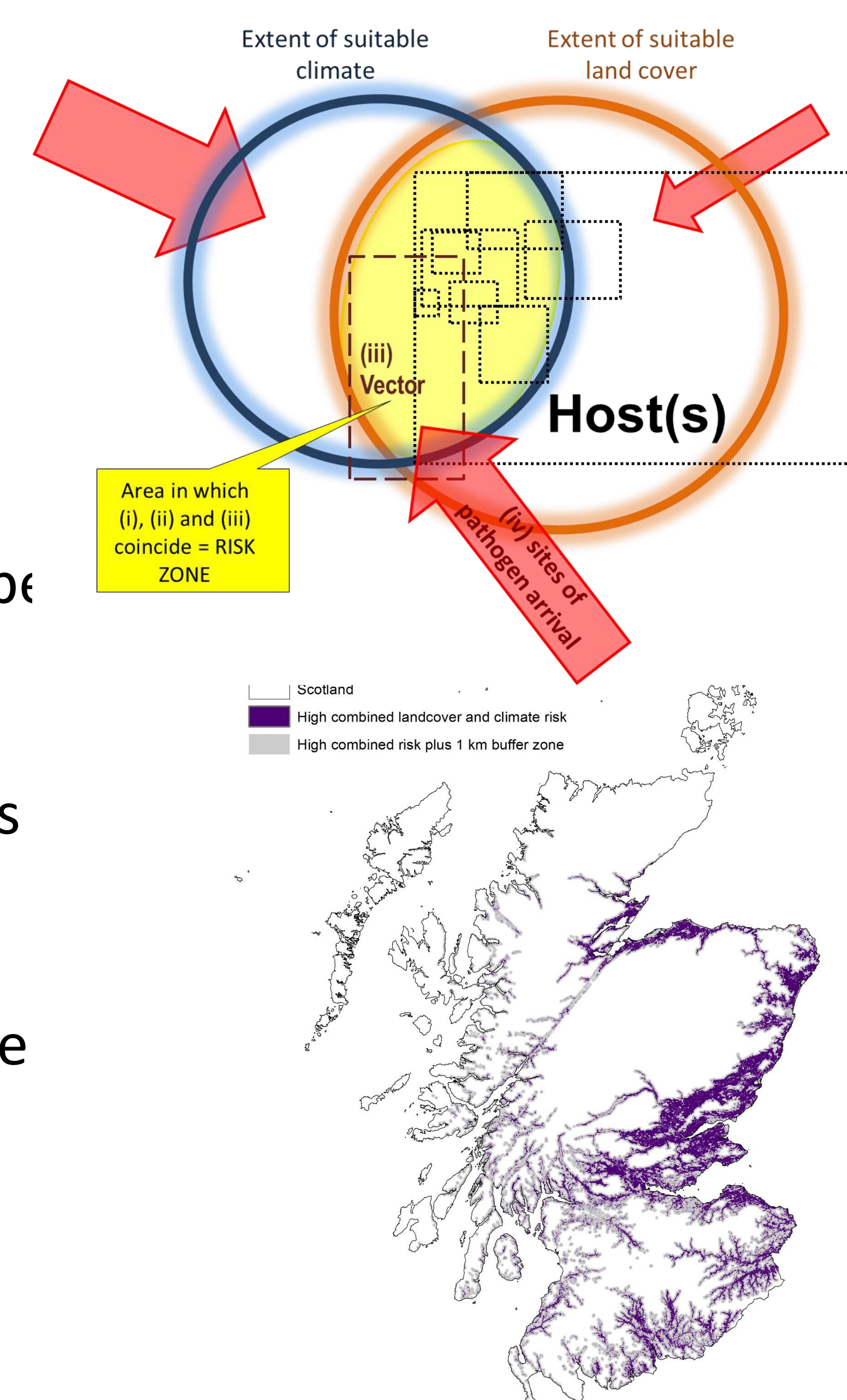
Mapping approach

Climate range of *Xylella* in north USA was compared to the UK using long term meteorological data.

Potential host species in the UK remain highly uncertain; the extent and distribution of land cover likely to contain native species known to be susceptible was determined.

The **xylem-feeding insect vector** common-meadow spittlebug was used as a model species and its environmental range in the UK defined using the NBN gateway.

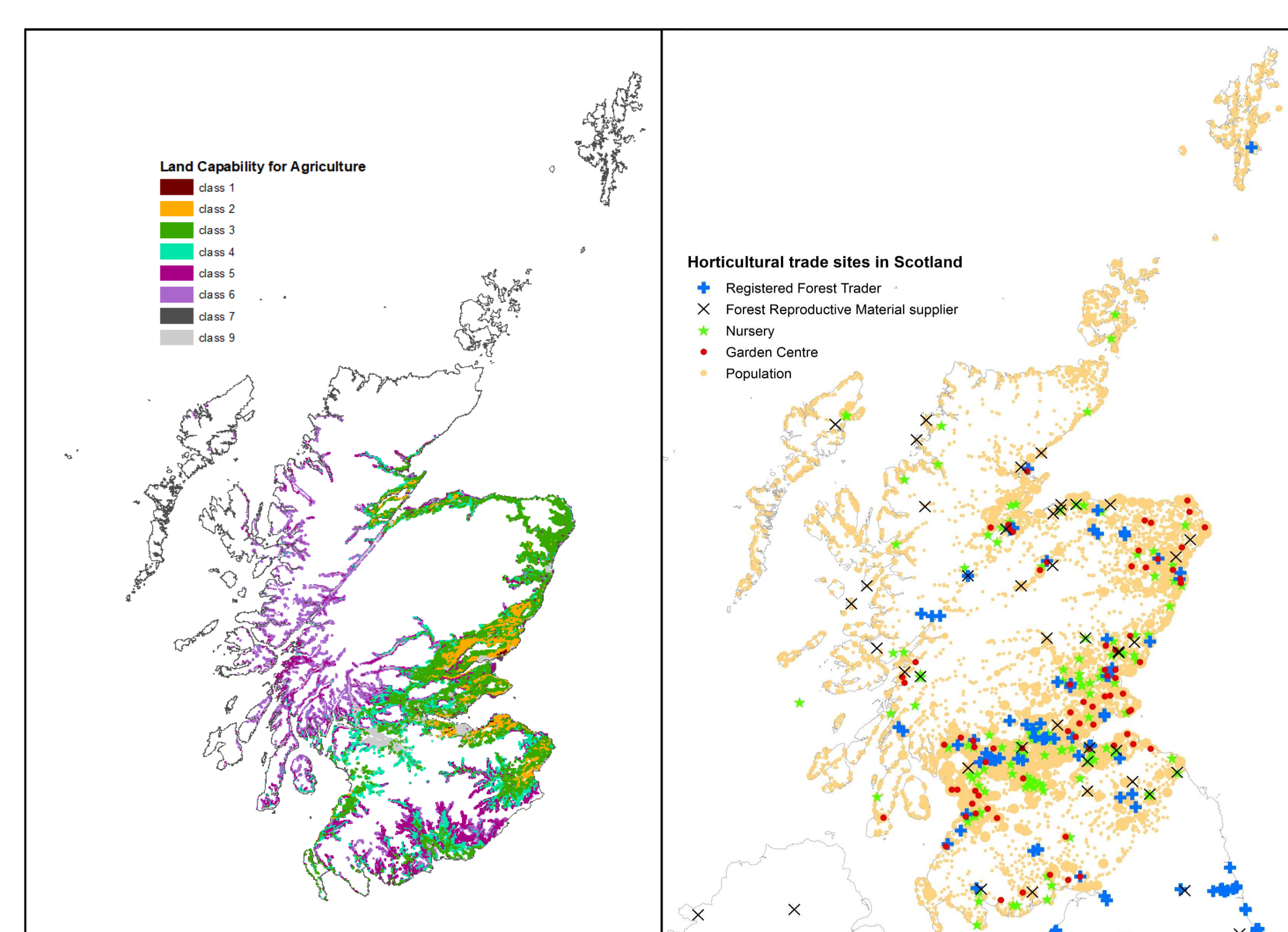
The area in which these maps overlap define the combined high-risk zone in which disease transmission is unlikely to be constrained by either climate or lack of insect vectors.



Impact of *Xylella* infection in Scotland

The high-risk zone includes

- 81% Population
- 86% Garden Centres
- 79% Plant Nurseries
- 96% of Best Agricultural Land - Grade 1 and 2
- 12% of SSSI designation
- 16% of National Parks
- 51% of Native Woodland
- 41% National Forest



Key messages

- The potential severity of *Xylella fastidiosa* disease in Scotland is unknown.
- The current spread of the pathogen in Europe is controlled by rigorous monitoring and coordinated control strategies, making the role of the Scottish climate in controlling disease spread uncertain.
- If *Xylella* became established in the UK it may survive in the coastal region of southern and central Scotland, with predicted climate change increasing risk.
- The ecological conditions in Scotland may limit virulence and severity of disease.