PHC2020/04: Improving knowledge of *Xylella fastidiosa* vector ecology: modelling vector occurrence and abundance in the wider landscape in Scotland

Background: *Xylella fastidiosa* is a bacterial plant pathogen that can cause disease in a broad range of hosts. Disease symptoms include leaf scorch, wilting of foliage, dieback and plant death. *Xylella fastidiosa* was first detected in Europe in 2013 in Puglia in Italy and was identified as *X. f.* subspecies *pauca,* which has gone on to devastate olive plantations in this region. There are currently major *Xylella* outbreaks in Southern France, including Corsica, Italy, mainland Spain and the Balearic Islands. Although *Xylella* has so far not been detected in Scotland, an outbreak would have serious impacts on any host plant-related activities/businesses and the wider environment. In order to understand the risk posed to Scotland's plants from *Xylella*, and to be adequately prepared if it is detected, there are important knowledge gaps that must be addressed, including: production of a detailed picture of the presence and abundance of *Xylella* vectors across differing landscapes; assessment of appropriate vector trapping methods for *Xylella* surveillance programmes; refinement of *Xylella* spread and risk models that incorporate Scottish *Xylella* vector data; and the analysis of the suitability of current EU *Xylella* eradication strategies (Decision (EU) 2015/789 and Decision (EU) 2017/2352) versus alternatives, within the Scottish context.

Impact: This project will build on the results of the previous PHC *Xylella* projects (PHC2018 / 04 /05 / 06) to further refine Scottish Government's contingency and preparedness measures for the possible arrival of *Xylella fastidiosa.* It will generate detailed knowledge on how the abundance of potential *Xylella* vectors varies spatially between and within habitat and over time in Scotland (taking into account data on vector distribution in Scotland generated within the BRIGIT project - https://www.jic.ac.uk/brigit/), producing recommendations for appropriate vector trapping methods, refining *Xylella* spread models that map the risk of likelihood and impact of an outbreak using vector presence and abundance data, and delivering recommendations as the suitability of eradication strategies if deployed in Scotland.

Objectives and research required for this call:
- Trapping potential *Xylella* vectors in Scottish landscapes over time, where data on their presence and abundance is lacking.
- Comparison of *Xylella* vector trapping techniques to identify the most suitable.
- Produce an updated *Xylella* spread model, building on the model developed in PHC2018-04 to incorporate vector data, and the relative risk map for *Xylella* developed in PHC2018-05.
- Model the efficacy of eradication strategies using the EU strategies (Decision (EU) 2015/789 and Decision (EU) 2017/2352) as the reference point.

Outputs required:

The outputs of the study will include:

- A report summarising findings against the objectives outlined above, following the PHC reporting guidelines.
- A stand-alone 1-2 page policy summary.
- Evidence of stakeholder engagement.
- Update of contingency and surveillance plans following consideration of the outputs from the analyses in the project.

Detailed milestones to be confirmed by bidder.

Indicative key dates:

- Deadline for submission of application form: 12pm on 21st December 2020
- Project start date: 1st March 2021
- Overview of plans and project start-up meeting with PHC Directorate: by end of March 2021
- Submission of Final Report and Policy Summary: 30th October 2021
- Meeting with Scottish stakeholders: to be confirmed

Project Duration: 8 months

Date all work needs to be completed by: 30th October 2021

Project type: Collaborative

Maximum funding available (including VAT where applicable): £70, 000