

Susceptibility of Canadian Flora to EU2 Lineage of *Phytophthora ramorum* and Pathogen Sporulation Potential

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To assess the risk posed by an invasive alien pathogen such as *Phytophthora ramorum*, it is often a good strategy to evaluate its capacity to infect plants prevalent in the area of interest. This approach has been used successfully where potential hosts were identified by artificial infections before being found naturally infected by *P. ramorum*. Establishment of *P. ramorum* in Canadian nurseries and landscapes could result in large economic losses and limitations to trade in ornamental plants and threats to biodiversity and sustainability of forest ecosystems. To date, we have investigated the susceptibility of selected eastern and western Canadian host plants to three lineages (NA1, NA2 and EU1) (Elliott et al. 2011, Jinek et al. 2011). However, there is an urgent need to determine the susceptibility and risk assessment of the newly emerged lineage EU2 in the UK and its potential threat to Canadian flora and impact on nursery and forestry.

A total of 33 host species commonly found in western and eastern Canadian landscapes were selected in this study. Detached leaves/needles were inoculated with *P. ramorum* EU2 mycelia which was isolated from a stream bait near an infected larch plantation in Scotland. Inoculation methods, assessment of lesion area and sporulation potential were conducted using the methods of Shamoun et al. 2017, and Harris and Webber 2016, respectively.

There was a large variation in aggressiveness and sporulation potential among the evaluated hosts. Among the non-conifer species, the EU2 isolate produced the largest lesions on Pacific dogwood (*Cornus nuttallii*), manzanita (*Arctostaphylos spp.*), *Camellia*, *Rhododendron caucasicum x ponticum*, and salal (*Gaultheria shallon*) in the west; sumac (*Rhus typhina*), yellow birch (*Betula alleghaniensis*), wintergreen (*Gaultheria procumbens*), and white ash (*Fraxinus americana*) in the east. For conifer hosts, we found that the EU2 isolate was most aggressive on both balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*) in the east and grand fir (*Abies grandis*), sitka spruce (*Picea sitchensis*), Douglas-fir (*Pseudotsuga menziesii*), and western larch (*Larix occidentalis*) in the west. As for sporulation potential, Garry oak (*Quercus garryana*), red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) in the west; sugar maple (*Acer saccharum*) in the east, were potential spore producers but not significantly different from bay laurel. For the sporangia per unit lesion area, Himalayan blackberry (*Rubus discolor*), raspberry (*Rubus idaeus*), and grape (*Vitis vinifera*) were significantly higher than California bay laurel (*Umbellularia californica*). These results confirm the potential threat of EU2 lineage to Canadian flora.

References

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