

Globalization and climate change are putting phytophthora tree pathogens on the rise

Two of the biggest global threats to biodiversity (invasive species and climate change) are gaining ground in forests and urban environments, threatening the survival of important broadleaved trees species. Researchers combine their expertise to better understand what the future may hold.



Damage to trees in forests and urban environments caused by fungal-like, Phytophthora pathogens, is on the rise in many parts of the world, including the Nordic region. International plant trade is the main cause behind the introduction of non-native Phytophthora species, several of which are aggressive pathogens on a broad range of horticultural and other woody plants and trees. Climate change is also escalating the damage because changing weather conditions (temperature and moisture) will ultimately affect host susceptibility to pathogens, and pathogen development, which can trigger a disease outbreak.

Given the importance of healthy trees for forest and horticultural sectors, for nature conservation and for society in general, it is crucial to find better

solutions to reduce the negative impacts caused by Phytophthora diseases on trees species of high economic and ecological importance. The SNS network brought together researchers with wide-ranging expertise from Nordic and Baltic countries of Phytophthora in nurseries, forests and urban environments, and with common interests to address this growing problem in northern Europe.



The project gives a full picture

The project aimed to build more understanding of the present diversity and distribution of Phytophthora species across the Nordic and Baltic regions by mapping their occurrence and host associations in each country and through a joint collaborative project to which characterizes Phytophthora populations across a soil-climate gradient. The major impact of the networking activities were the exchange of knowledge, strengthened communication, and collaboration for ongoing work aimed at management strategies to minimize losses from Phytophthora diseases in horticulture, forestry and urban environments.

Policy implications

International trade in plants for planting is a main source of introduction for several invasive pests and pathogens that threaten trees, including Phytophthora. Prevention and early detection are the best methods to tackle possible threats and therefore it is especially important for researchers to work closely with the plant trade sector, horticulturalists, urban tree managers, botanical institutions and the general public, to increase awareness on the problem and what preventative measures could be taken to minimize their introduction and spread.

Climate change is increasing the risk of future damage caused by Phytophthora pathogens by creating ideal conditions that favour disease development. Baseline information on Phytophthora species diversity, distribution, and host associations in the Nordic region provided through this and previous network projects, provides a basis now for further assessments of the risks under likely regional climate change scenarios, which will help to formulate optimal mitigation and management strategies.

Priorities for future research

As forests are such a vital component of society's well-being, for climate change, and for working towards sustainable bioeconomy, research that contributes to maintaining 'healthy' trees and forests, and improving biosecurity efforts to minimize the risk of new introductions of invasive pests and pathogens, should be highly prioritized in the future.