

SENTINEL NURSERIES AS EARLY WARNING SYSTEM AGAINST ALIEN TREE PESTS

Locations	Worldwide
Dates	03/12/2014 - 02/12/2018

Summary

Many of the alien pests and diseases of woody plants were unknown before they were established in new countries. No policy or measures to avoid their introduction and spread were therefore implemented. Recently, monitoring sentinel plants in exporting countries has been proposed as a valuable tool to identify harmful organisms prior to their arrival. This Action advances the use of sentinel plants through international collaboration of scientists and regulators.

The problem

Many invasive tree pests and pathogens are introduced to new countries through the international trade in live plants which causes untold environmental and economic damage. Many of these were previously unknown to be harmful, or even to science, and were therefore not regulated before they invaded. This suggests that the current system to identify harmful species doesn't provide sufficient protection.

Better knowledge of organisms that may be introduced and harmful to a country would enable them to develop and apply measures to mitigate these risks.

By monitoring trees planted in regions that export plants, it is possible to identify potentially harmful organisms that need regulation. However, as this is new, the methods, regulations and network required for implementing this promising tool need to be developed further.

What we are doing

COST Action Global Warning is establishing a global network of scientists and regulators in countries where sentinel nurseries could be established from propagation material, or where botanical gardens or arboreta with exotic trees already exist.

We will also develop common protocols for monitoring and identifying pests, as well as explore ways to regulate how these nurseries are established and the data collected by them should be used.

This Action will bring together detailed information about the international trade in trees and the environmental value of native trees in Europe.

The Action will produce printed and electronic and workshop outputs, as well as at least five short-term scientific missions per year.

Aspects of the sampling will be investigated by Iva Frani? who will help to assess the full range of organisms associated with a tree species or genus. Funded by the Swiss National Science Foundation, Iva is a PhD student at CABI's centre in Switzerland. Her work, which has close links to the COST Action, is supervised by CABI's René Eschen and Marc Kenis, as well as Dr Simone Prospero of the Swiss Federal Institute for Forest, Snow and Landscape Research, WSL and Prof Eric Allan of the University of Bern.

Results so far

The Action resulted in several scientific publications and two training schools (about import regulations for plants for planting and pest risk analysis and about classical techniques for fungal identification) were organised. An open-access identification guide on the damaging agents of woody plants was also developed by members of this project from around 25 countries and will be used by practitioners worldwide.

Project participants synthesised molecular identification methods that can be used in sentinel plantings, based on an inventory of the available methods and their advantages and disadvantages, and developed guidance for selecting locations and the time of sampling of sentinel plantings.

A large number of participants co-wrote a field guide to determine the most likely biotic and abiotic causes of damage observed in sentinel plantings. A questionnaire survey was also carried out among representatives of all signatories to the International Plant Protection Convention to obtain information about regulations concerning the import of propagation material of exotic tree species and planting trees grown from that material in the environment.

A worldwide study of insects and fungi associated with dormant tree tissues of selected genera was conducted to identify harmful organisms that may be moved with the live plant trade. Additionally, participants of the Action drafted a European and Mediterranean Plant Protection Organization (EPPO) Standard for Phytosanitary Measures about sentinel plants. Thus, among the successes of the project are outputs that are the result of active collaboration of tree pathologists and entomologists, as well as collaboration between scientists and representatives of Plant Protection Organisations.

Donors

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Partners	The International Plant Sentinel Network, European and Mediterranean Plant Protection Organization (EPPO), Consortium of over 45 countries around the world






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