



Reducing *Phytophthora* risk in nurseries – key considerations

Globally, environments are threatened by increasing numbers of invasive plant pathogens which can be spread in infested planting material. Invasive *Phytophthora* species in particular are responsible for many plant disease epidemics around the world. Their life cycles allow them to thrive in nursery environments, in plants, water and soil; and spread to wider landscapes.

A recent Euphresco project involving nine countries found that *Phytophthora* pathogens were widespread in many of the plant nurseries surveyed in participating countries. The risk from *Phytophthora* and other pests and pathogens can be reduced by ensuring good biosecurity practices are applied throughout plant supply chains.



Symptoms of *Phytophthora ramorum* on Rhododendron.

This guidance aims to help those growing or handling live plants to follow good biosecurity practices and reduce their *Phytophthora* risks from trade pathways. By considering these points, plant health will be protected in your nursery and in the landscapes your plants are placed into.

Key plant biosecurity considerations

Plant origin

Any movement of plant material through trade carries the risk of introducing *Phytophthora* into new areas. Reliance on imported stock increases *Phytophthora* prevalence and poses additional risks of introducing new *Phytophthora* species to a country or region.

Plant hosts

Phytophthora can infect any live plant material, including woody plants, and persist in growing media/soil. Assess the biosecurity procedures of all your suppliers and check that all stock arriving on site is 100% healthy.

Be aware of symptoms

All symptoms, including foliage discoloration or desiccation (wilting), however minor, should be investigated by a diagnostic lab and any affected plants removed from growing areas. See below for recommendations on plant disposal.

Phytophthora can be present in the absence of visible symptoms. Following the recommendations in this document will reduce this risk.

Assess your site(s) and know your suppliers

- Water source: Water is a carrier of many pathogens. Mains or underground water supplies tend to be low risk. Sourcing water from open reservoirs, ponds, rainfall butts or extracting from rivers, or using recirculated water can carry a higher risk, unless the water is treated using a method proven to kill damaging microorganisms.



Open irrigation reservoirs are often contaminated with *Phytophthora*.

- Drainage: Puddles and excess run-off can harbour and spread waterborne pathogens. Containerised plants should be grown on a clean, free-draining surface, raised above the ground. Persistent puddles in nurseries and plant retail areas – especially on roadways – are high-risk for pathogen movement.
- Potting mix: Potting mix should be stored in a covered area to prevent contamination by air-borne pathogens.
- Quarantine areas: ‘Quarantine areas’ should be used to ensure that imported stock is well separated from other plants. These areas should be monitored over several months for symptoms of *Phytophthora* on foliage such as black-brown leaf or stem lesions, bronzing and wilting.

- Surroundings: Shelterbelts and landscape trees/shrubs growing in and around the nursery premises should be monitored for disease symptoms.
- General nursery hygiene: The nursery site should be free of weeds, spilt soil/potting mix and piles of soiled pots. There should be facilities for disinfestation of tools, pots and boots.
- Plant disposal: Dumping unhealthy or unwanted plants close to the nursery premises carries a high risk of spreading *Phytophthora*. Plants should be disposed of through a contained composting system and isolated from stock or natural ecosystems. Reuse of growing media is high risk and should be avoided. See additional guidance on [plant disposal](#).



Burning of infected stock.

- Plant health knowledge: Every nursery should have a biosecurity management plan and a staff member trained in plant health and symptom awareness. All staff and visitors should be informed of site biosecurity procedures.

More information

Further details of our work on biosecurity is available at:

www.forestresearch.gov.uk

To discuss any aspect of Forest Research's work on biosecurity threats, contact:

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