

# Managing Phytophthora in Cut Flowers

## Description

*Phytophthora* species are fungal-like microscopic, soil and water-borne organisms closely related to algae and protozoans. Most pathogenic species attack the roots and basal stem tissue of plants, causing a range of diseases such as root rot, crown rot, cankers, blights, and wilts. Numerous *Phytophthora* species are found in Australia with *P. cinnamomi* being the most widespread and destructive. *Phytophthora* diseases thrive in wet, poorly drained soils or media and are spread through water movement, contaminated soil, and infected plant material. As water status and temperature have a large impact on *Phytophthora* diseases, severity will vary greatly depending on climatic and weather conditions. *Phytophthora* root and collar rots cannot be distinguished on symptoms alone. Laboratory confirmation is necessary.



Image: Leif Forsberg

**Figure 1.** *Phytophthora* bulb rot of an orchid  
<https://www.horticulture.com.au/globalassets/hort-innovation/resource-assets/ny11001-phytophthora-diseases.pdf>



Image: Dr Len Tesoriero

**Figure 2.** *Phytophthora* root rot in Boronia

## Quick Facts

- **HOST PLANTS:**  
Affects a wide range of ornamental plants and cut flowers including those susceptible to root, crown, and stem rots
- **WHERE TO CHECK:**  
Inspect the root zone, basal stem, and areas with poor drainage or waterlogged conditions
- **WHEN TO MONITOR:**  
Monitor during periods of wet weather or when irrigation is frequent, especially in poorly drained soils
- **HOW OFTEN:**  
Conduct regular checks, especially after prolonged periods of rain or irrigation, to detect early symptoms
- **ACTIONS:**  
Implement strict hygiene measures, improve drainage, and apply appropriate cultural, biological, and chemical controls to manage the disease

## Damage

Most *Phytophthora* species infect the root and lower stem tissues, leading to the decay of roots and stem bases. Early symptoms include wilting, chlorosis (yellowing of leaves), and reduced vigour (Figure 2 left). Infected roots may appear water-soaked or mushy and can turn dark brown to black (Figure 3 following page). The disease can rapidly escalate, causing plants to die back due to extensive root and basal stem damage. *P. nicotianae* attacks the collar region preferentially without causing root rot. Collar rot usually results in rapid death. Leaf infection results in partial blighting or death of the entire leaf.

## Disease Management

### Cultural

- **Hygiene:** Maintain strict farm and crop biosecurity. Use foot baths.
- **Potting Mix:** Use well-drained pasteurised media. Ensure all components are pathogen-free.
- **Water Management:** Use a water disinfection system for dam or river sources. Manage soil moisture to prevent waterlogging or long periods of high soil moisture.
- **Manage soil/media pH and electrical conductivity (EC):** High soluble salts can kill rootlets and provide a site for infection by *Phytophthora* species and other root rot organisms.
- **Soil Pasteurisation:** Pasteurising with aerated steam at 60°C for 30 minutes. Steam is then turned off and air continues to be blown through to cool media and assist colonisation by beneficial organisms.

### Chemical

- Some fungicides are registered for use but only suppress and do not eradicate *Phytophthora* species. They are not a substitute for good hygiene and cultural practice.



Figure 3. Browning and rotting of roots infected by *Phytophthora* sp.

### Take Aways

- **Prioritise Hygiene:** Clean tools, use foot baths, and ensure incoming and outgoing material is *Phytophthora* free
- **Water Wisely:** Only use clean, disinfected water and avoid waterlogged conditions

## References / More Information

- <https://www.horticulture.com.au/globalassets/hort-innovation/resource-assets/ny11001-phytophthora-diseases.pdf>
- <https://cdn.environment.sa.gov.au/environment/docs/phytophthora-management-guidelines-gen.pdf>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10189891/>

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