

Phytophthora Crown & Root Rot

When well-watered trees or other plants start to wilt, one reason may be *Phytophthora* root and crown rot, a soilborne plant disease.

Almost all fruit and nut trees and most ornamental trees and shrubs can develop root or crown rot if the soil around the plant remains wet for prolonged periods. Tomatoes, peppers, eggplant, and other vegetable crops also can be affected. The most important way to prevent *Phytophthora* root and crown rot is proper irrigation.



Jack Kelly-Clark, UCIPM

Phytophthora symptoms on Brussels sprouts.

Overall symptoms

- Leaves may wilt and turn dull green, yellow, red, or purplish.
- Generally, plants in the most poorly drained areas are affected.
- Unlike plants suffering from water stress, plants don't recover when irrigated.

Symptoms on roots and crowns

- Darkened areas in the bark around the crown and upper roots often develop, sometimes with gumming.
- Reddish-brown streaks or zones might be seen in the inner bark and outer layer of wood.
- In tomatoes and eggplants, roots develop water-soaked spots that turn brown, and roots may be rotted off.
- If mushrooms are present or fungal strands are seen within plants, damage is likely due to a fungal disease such as *Armillaria* root rot, not *Phytophthora*.



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Reddish-brown streaks on the inner bark of an infected tree.

Water management is key to preventing rot.

- Avoid prolonged soil saturation or standing water around tree bases.
- Adjust sprinkler heads and drip systems so water doesn't hit trunks.
- Provide good soil drainage.
- Raised beds can be a good solution for vegetables where drainage is a problem.
- Group plants by irrigation needs and water accordingly.
- Time watering to avoid plants becoming water-stressed.

Take steps to avoid problems when you plant.

- Don't plant trees or other plants deeper than they were planted in the nursery, and never cover the graft union with soil or mulch.
- Select certified nursery stock and disease-resistant rootstocks or varieties when available.
- Try not to have irrigated turfgrass around the base of trees.
- If *Phytophthora* has been a problem on tomatoes, plant a nonsusceptible crop such as sweet corn in its place for a year or two.

Trees can sometimes be saved if rot is caught early.

- At the first sign of leaf wilting, examine the tree at the soil line for rot.
- Cut away any bark that looks affected.
- Remove soil from around the base of the tree down to the top of the main roots and allow the crown tissue to dry out.
- Keep water away from the crown and trunk by only watering at the dripline, the area under the canopy.
- Young infected trees may die rapidly; older trees may survive for several years.

What you do in your home and landscape affects our water and health.

- Minimize the use of pesticides that pollute our waterways and harm human health.
- Use nonchemical alternatives or less toxic pesticide products whenever possible.
- Read product labels carefully and follow instructions on proper use, storage, and disposal.

For more information about managing pests, visit ipm.ucanr.edu or your local University of California Cooperative Extension office.