

Root and Crown Rots

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What is root/crown rot? Root/crown rot is a general term that describes any disease of woody ornamentals where the pathogen (causal organism) attacks and leads to the deterioration of a plant's root system and/or lower trunk or branches near the soil line. Root rots can be chronic diseases or, more commonly, are acute and can lead to the death of the plant.



Discoloration of maple crown and roots typical of *Phytophthora* root/crown rot.

How do you know if your tree or shrub has a root or crown rot? Gardeners often become aware of a root/crown rot when they see above ground symptoms of the diseases. Affected plants are often slow-growing or stunted and may show signs of wilting. Often the canopy of an affected tree or shrub is thin, with foliage that is yellow or red, suggesting a nutrient deficiency. Careful examination of the roots/crowns of these plants reveals tissue that is soft and brown.

Where does root/crown rot come from? Several soil-borne fungi can cause root/crown rots, including (most frequently) *Phytophthora* spp., *Pythium* spp., *Rhizoctonia solani*, and *Fusarium* spp. These fungi have wide host ranges, and prefer wet soil conditions. Some root rot fungi such as *Pythium* and *Phytophthora* produce spores that can survive for long periods in soil.

How do I save a plant with root/crown rot? **REDUCE SOIL MOISTURE!** Provide enough water to fulfill a plant's growth needs and prevent drought stress, but **DO NOT** over-water. Remove excess mulch (greater than four inches) that can lead to overly wet soils. Chemical fungicides (PCNB, mefenoxam, metalaxyl, etridiazole, thiophanate-methyl and propiconazole) and biological control agents (*Gliricladium*, *Streptomyces*, and *Trichoderma*) are labeled for root/crown rot control. However, **DO NOT** use these products unless you know **exactly** which root/crown rot pathogen is affecting your tree or shrub. Contact your county Extension agent for details on obtaining an accurate root/crown rot diagnosis and for advice on which, if any, fungicides you should consider using.

How do I avoid problems with root/crown rots? Buy plants from a reputable source and make sure they are root/crown rot-free prior to purchase. Establish healthy plants in a well-drained site, and when planting, place the root collar just at the soil surface. Moderate soil moisture. Add organic material (e.g., leaf litter or compost) to heavy soils to increase soil drainage and **DO NOT** over-water. Also, **DO NOT** apply more than three inches of mulch around trees and shrubs, and keep mulch from directly contacting the base of trunks and stems. Prevent physical damage (e.g., lawnmower injury) that can provide entry points for root/crown rot pathogens. Finally, minimize movement of root/crown rot fungi in your garden. **DO NOT** move soil or plants from areas where plants are having root/crown rot problems. **DO NOT** water plants with water contaminated with soil (and thus potentially with root/crown rot fungi). After working with plants with root/crown rot, disinfect tools and footwear with a 10% bleach solution, a detergent solution, or alcohol.

For more information on root/crown rots: See UW-Extension Bulletin A2532, or contact your county Extension agent.

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