



Extension

UNIVERSITY OF WISCONSIN-MADISON

Provided to you by:

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.

What does root/crown rot look like?

Gardeners often become aware root/crown rot when they see above ground symptoms. 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 water molds (i.e., fungi-like organisms) and true fungi can cause root/crown rots, including (most frequently) *Phytophthora* spp. and *Pythium* spp. (both water molds), and *Rhizoctonia solani* and *Fusarium* spp.

(both true fungi). These organisms have wide host ranges, and prefer wet soil conditions. Water mold root rot organisms such as *Pythium* and *Phytophthora* produce thick-walled spores (called oospores) that can survive for long periods (years to decades) 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) around trees and shrubs. Excessive mulch can lead to overly wet soils. Chemical fungicides (e.g., PCNB, mefenoxam, metalaxyl, etridiazole, thiophanate-methyl and propiconazole) and biological control agents (e.g., *Gliocladium*, *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(s) is(are) affecting your trees and shrubs. 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.



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Establish healthy plants in a well-drained site, and when planting, place the root collar just at the soil surface. To 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.



A thinning canopy with red or yellow leaves can indicate a root/crown rot problem.

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 organisms). After working with plants with root/crown rot, decontaminate tools and footwear by treating for at least 30 seconds with a 10% bleach solution or

70% alcohol (e.g., rubbing alcohol, certain spray disinfectants). If you use bleach to decontaminate metal tools, be sure to thoroughly rinse and oil your tools after you are done gardening to prevent rusting.

For more information on root/crown rots: Contact the University of Wisconsin Plant Disease Diagnostics Clinic (PDDC) at (608) 262-2863 or pddc@wisc.edu.

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Thanks to Karen Delahaut, Ann Joy and Sharon Morrissey for reviewing this document.

A complete inventory of UW Plant Disease Facts is available at the University of Wisconsin-Madison Plant Disease Diagnostics Clinic website: <https://pddc.wisc.edu>.

Submit additional lawn, landscape, and gardening questions at <https://hort.extension.wisc.edu/ask-a-gardening-question/>.