



Extension

UNIVERSITY OF WISCONSIN-MADISON

Provided to you by:

Root Rots in the Garden

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What is root rot? Root rot is a general term that describes any disease where the pathogen (causal organism) attacks and leads to the deterioration of a plant's root system. Most plants are susceptible to root rots, including both woody and herbaceous ornamentals. Root rots can be chronic diseases or, more commonly, are acute and can lead to the death of the plant.



Brown discoloration of roots typical of root rots.

What does root rot look like?

Gardeners often become aware of root rot problems when they see above ground symptoms of the disease. Plants with root rot are often stunted, wilted, or have top-down dieback. They may also have leaves with a yellow or red color, suggesting a nutrient deficiency. Examination of the roots of these plants reveals tissue that is soft and brown.

Where does root rot come from?

Several soil-borne water molds (i.e., fungi-like organisms) and true fungi can cause root 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 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 (*Gliocladium*, *Streptomyces*, and *Trichoderma*) are labeled for root rot control. However, **DO NOT** use these products unless you know **exactly** which root rot pathogen(s) is(are) affecting your plants. Contact your county Extension agent for details on obtaining an accurate root rot diagnosis and for advice on which, if any, fungicides you should consider using.

How do I avoid problems with root rots? Buy plants from a reputable source and make sure they are root rot-free prior to purchase. Establish healthy plants in a well-drained site. Moderate soil moisture; add organic material (e.g., leaf litter or compost) to heavy soils to increase soil drainage, and **DO NOT** over-water.



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Stunting, top-down dieback, and red or yellow foliage can indicate a root rot problem.

Provide just enough water to fulfill a plant's needs for growth and prevent drought stress. Also, DO NOT apply more than three inches of mulch in flowerbeds. Excessive mulching can lead to over wet soils, which favor root rot fungi growth and reproduction. Finally, minimize movement of root/crown rot fungi in your garden. DO NOT move soil or plants from areas where plants are having root rot problems. DO NOT water plants with water contaminated with soil (and thus potentially with root rot organisms). After working with plants with root 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 rots: Contact the University of Wisconsin Plant Disease Diagnostics Clinic (PDDC) at (608) 262-2863 or pddc@wisc.edu.

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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/>.