

April showers bring May... Disease?

An Introduction to Water Molds

Dr. Nicole Ward
University of Kentucky
Asst. Professor of Extension

Spring rains can create growing conditions that are devastating to most landscape plants. For example, excess water is responsible for a disorder called “wet feet,” which results from the suffocation of plant roots as waterlogged soil loses oxygen. However, suffocation is not the only injury to nursery or landscape plants during rainy spring weather. Wet soils are favored by a group of pathogens called water molds, or oomycetes, which cause a range of root and stem diseases.

Water molds are found in most soils, but plant stress and high pathogen numbers can lead to severe disease. Common water molds such as *Phytophthora* and *Pythium* cause roots rots, stem rots, collar rots, and damping off diseases in both woody and herbaceous plants. They are also responsible for downy mildews and some foliar blights in upper plant parts.

Symptoms

Symptoms differ according to plant type and infection site. Root rot symptoms begin, not surprisingly, at the roots. However, because roots are concealed, disease often goes undetected until plants begin to decline or upper plant parts wilt as a result of root reduction. Disease often begins during rainy spring weather, but it is typically not noticed until hot dry weather initiates wilting.

Water molds can also cause above-ground infections. These symptoms can range from yellow mottling of leaves to water-soaked lesions on leaves and succulent stems. Woody stems and trunks may develop cankers just above the soil line, often at a wound site. Cankers are usually dark-colored and may exude sap or “bleed.”

Uniqueness of water molds

Water mold pathogens are very different from true fungi; they require free water to complete their life cycles. Initial infections often occur during rainy spring weather as temperatures begin to warm. After infection, pathogens release large numbers of “swimming” spores that move on films of water. This is the repeating stage that leads to disease epidemics if wet conditions continue. Spores are spread by splashing water and movement of contaminated soil particles.

Once established, water molds can produce survival structures that allow them to lie dormant during hot dry seasons. Available water can reinvigorate these structures and the disease cycle can begin again. Many water molds occur naturally in soils, and proliferation under wet conditions can be devastating to plants.

Disease Prevention Using Cultural Practices

Most water mold diseases can be prevented or managed using cultural practices. Consider the management tips below to prevent infections or to help manage infected nursery or landscape plants.

- Improve drainage
 - Manage surface water
 - Plant in raised beds
 - Divert downspouts
 - Use organic matter to improve internal drainage
 - Limit irrigation
 - Manage nursery runoff from infested areas
- Disinfect tools, containers, and greenhouses to eliminate spread
 - Commercial sanitizers are available
 - 10% Lysol® concentrate and 10% bleach are also effective. Bleach is corrosive on metals, so rinse tools well before storage.
- Dispose of infested potting media
 - Do not reuse contaminated soils
- Destroy infected nursery and greenhouse plants as soon as possible
 - Do not compost infected plants
- Remove plant debris and other sources of inoculum before spring
 - Rake and destroy leaves and debris
- Reduce splash
 - Use drip irrigation
 - Mulch exposed soils
- Use resistant cultivars whenever possible

Management using fungicides

Water molds are not true fungi, so not all fungicides will be effective against these pathogens. Fungicides must be specifically labeled for oomycetes. Select fungicides that contain one of the active ingredients listed below. Efficacy of these fungicides is dependent on plant and pathogen type; read labels carefully.

Fungicide active ingredients effective against water molds:

- Azoxystrobin (Heritage)
- Cyazofamid (Segway)
- Etridiazole (Terrazole, Banrot)
- Mefenoxam (Subdue)
- Propamocarb (Banol*)
- Phosphorus acid (Alude, Agri-Fos)

* Not for use in residential landscapes, for commercial use only.

See our fungicide guides [PPFS-OR-W-14](#) and [PPFS-GH-3](#) at www.ca.uky.edu/agcollege/plantpathology/extension for more information concerning fungicide use or contact your local UK Extension agent for assistance.



Pythium infection on roots and crown of African violet (photo John Hartman)



Phytophthora dieback on rhododendron (NC State photo)



Phytophthora crown rot on dogwood (John Hartman photo)

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