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## Root Rot in Woody Ornamentals

The past two years have been rough on our woody plants. The excess soil moisture has caused widespread death of plants.

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**Rapid death of cucumber magnolia (*Magnolia acuminata*) in an established landscape due to root rot. Photo: Alyssa Collins, Penn State**

Excess soil moisture causes two major problems for many ornamental plant species. First, when soil space is filled with water for extended periods of time, there is no room for oxygen molecules. If you don't remember, plants take in oxygen through the root system. The other problem that can develop is an infection of the plant by a pathogen that is favored by wet soil conditions. One very common one is *Phytophthora cinnamomi*, which is a fungal-like organism. Azaleas,

rhododendrons, yews, junipers and many other woody plants are highly susceptible. There are also numerous herbaceous annuals and perennials that are susceptible to *Phytophthora*. In both cases, early symptoms include wilting leaves (similar to drought stress) and the death of twigs and small branches. This can quickly progress to the complete death of the plant.

So, what can be done? This can be a tough situation. Redesigning an established landscape to raise plant root systems above the old soil line is probably not a viable option. For new plantings, topsoil could be brought in and a raised bed can be established. Water from downspouts can be redirected away from valuable landscape plants. For plants that have been confirmed to have *Phytophthora*,

either resistant cultivars of the plant or a different, resistant plant species would have to be introduced, and they may not be what is preferred in that location.

There are fungicides that can be used to try and manage the pathogen in the soil. These are applied as drench applications, which are taken up by the roots and move systemically in the plant. Fungicides that can be used in nursery and landscape settings include fosetyl-Al (Aliette), metalaxyl-m (Subdue MAXX) and pyraclostrobin + boscalid (Pageant Intrinsic). There are two additional products that can be used in nurseries: etridiazole (Terrazole) and propamocarb hydrochloride (Banol T&O).

In addition to *Phytophthora* root rot, there are additional pathogens that can impact ornamental plants by causing root problems. *Fusarium*, *Pythium*, and *Rhizoctonia* are true fungi that can kill plants. They are more commonly seen on seedlings of herbaceous annuals and perennials. Like *Phytophthora*, *Pythium* is a fungus-like organism and is virulent under wet soil conditions.

Symptoms of *Fusarium* and *Rhizoctonia* present themselves under warmer and drier soil conditions when the compromised plant begins to undergo water stress. Pathogen identification is key to determining treatment as not all fungicides provide protection against all diseases equally. Knowing what culprit you are dealing with will also help you choose the right cultivars for plant replacement. Visit the [Penn State Plant Disease Clinic](#) to learn how to submit a sample for identification.