

Diagnosing Phytophthora Diseases On Landscape Ornamentals

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Phytophthora spp. is an aggressive plant pathogen that affects many landscape ornamental plants. In fact, the word *Phytophthora* is derived from Greek, meaning “plant destroyer.” Root rot, root collar rot, and stem cankers are the most common problems caused by this pathogen; however, leaves, petioles, and fruit can also be infected on certain ornamental hosts.

Phytophthora is a fungus-like organism that infects plant tissue under high-moisture conditions. Ornamentals planted in poorly drained, water-logged soils are most susceptible to infection as *Phytophthora* spreads via motile zoospores that are able to swim through films of water in the soil. In some cases, these zoospores can also splash onto and infect above ground plant parts causing stem cankers, shoot blighting, and leaf spots (Figure 4). When zoospores come in contact with a susceptible host, they germinate and invade the plant tissue.

Disease symptoms can take days, weeks, or months to develop under favorable environmental conditions. Symptoms may include dieback, decline, bleeding cankers, stunting, leaf chlorosis, and/or plant death depending on the host and severity of the infection (Figures 1 and 2).

Phytophthora has a wide host range including many woody ornamental landscape plants. Since *Phytophthora* is mainly a root decay pathogen, many of the hosts prone to infection are intolerant of saturated soils (Figure 3). Even in cases of *Phytophthora* canker, high moisture from frequent rainfall events or irrigation systems encourages disease development (Figure 5). Although root rot and canker are both caused by *Phytophthora*, they are different diseases caused by different species of *Phytophthora* that occur on different host plants.

Figure 1: Phytophthora root rot on *Taxus*



Figure 2: Close-ups of Phytophthora root rot on *Taxus*



The following list distinguishes between hosts that commonly develop root rot and those that develop Phytophthora cankers.

Hosts Susceptible to Canker	
American/European beech	California live oak
Sweet birch	Southern live, pin, and red oaks
Flowering/Pacific dogwoods	Tulip poplar
Sweet gum	Weeping willow
Horse-chestnut	Avocado
Linden	Apple
Madrone	Citrus
Black, Norway, red silver, sugar, and sycamore maples	Other fruit trees
	Zelkova
Hosts Susceptible to Root Rot	
Azalea	Andromeda
Rhododendron	Fir
Japanese holly	Camellia
Boxwood	White pine
Hemlock	Yew
Mountain laurel	Butterfly bush
Dogwood	



Accurate diagnosis of *Phytophthora* diseases is crucial for proper treatment and long-term plant health. An initial diagnosis can be made in the field by observing symptoms of the disease followed by a positive result with an ALERT LF™ (lateral flow) test. If the lateral flow test is negative or not used, further analysis of host tissue by microscopic examination, culturing, and/or Enzyme Linked Immunosorbent Assay (ELISA) is necessary to accurately confirm *Phytophthora*. ELISA is the diagnostic tool currently used by the Bartlett Plant Diagnostic Laboratory to diagnose most cases of this disease.

Figure 4: Foliar Phytophthora damage on Euphorbia



Figure 5: Phytophthora canker on live oak



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