

# Crown Rot of Hosta

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## Introduction

Crown rot disease is caused by the soil-borne fungus *Sclerotium rolfsii*. This particular fungus has one of the largest known host ranges. It is a destructive and lethal disease of more than 500 genera of ornamentals, fruit trees and vegetables. Some of the more common ornamental plants attacked include daylily, impatiens, salvia, pansy, annual vinca, begonia and peony. Crown rot, also known as southern blight or white mold, is also an important stem disease of cotton, peanut and soybean.

The fungus can easily become a long-term “resident” in the soil, often persisting for several years by means of small resting bodies called sclerotia. These mustard seed sized bodies are produced on the plant by the fungus. These survival structures can remain in the soil or on plant debris. Long distance spread of the fungus is usually by movement of infested soil or infected plant material. The crown rot fungus seldom produces spores, so it can't spread by wind. The fungus usually attacks the plant stem at or just below the soil line. Leaf petioles of Hosta are particularly vulnerable when they are in direct contact with infested soil. Crown rot is most destructive in the warm or hot climates of the U.S. and tropical areas. As the name suggests, the southern blight fungus can be found in most soils in the southern and southeastern states where hot and steamy weather conditions can



FIG. 1. Initial symptoms of crown rot on Hosta.

prevail. The disease usually begins to appear as temperatures reach the high '80s and above. Once thought to be a disease that was mostly restricted to southern climates, crown rot has been reported on Hosta as far north as Iowa.

## Symptoms

Crown rot symptoms can sometimes be confused with Pythium root rot and Rhizoctonia root diseases that can also damage many plant types. Initial evidence of fungus infection on Hosta is leaf yellowing, usually concentrated around the margins and progressing toward the middle of the leaves near the bottom of the plant. Leaf margins turn yellow, then brown as the fungus ramifies the tissues at the bases of the petioles (FIG. 1). The bases of the petioles collapse, becoming soft and mushy and developing a brown rotted appearance. In the final stages of the disease, leaves lay flat on the ground and can be easily pulled away from

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FIG. 2. Rotted petioles with sclerotia of *Sclerotium rolfsii*.



FIG. 3. Mycelium mat of the crown rot fungus.

the crown of the plant (FIG. 2). The rotted area soon becomes covered with strands of white fungus mycelium that resemble a mat of cobwebs (FIG. 3). Sclerotia soon form among these strands. These bodies are initially white, but form a brick red rind with age. Sclerotia are approximately 2-3 mm in diameter and are easily seen. Sclerotia may be produced as soon as a week after infection of the plant. Under high moisture conditions, the fungus mycelium can often be seen to “fan out” across the wood mulch or soil adjacent to the dying plant. Whole plants can collapse and die in just a few days if the weather conditions are right.

## Management

The best disease management strategy for crown rot is preventing the introduction of the fungus into the planting area. Once established in the soil, the fungus is difficult to control. As with most soil-borne pathogens, plant removal, soil removal or treatment, crop rotation, use of resistant varieties and exclusion of infected plant materials are involved with disease management. Since this fungus has such a broad host range, crop rotation is not an effective treatment. Only disease-free plants should be purchased and installed into the landscape. Growers should closely inspect plants at the nursery or garden center for telltale symptoms of leaf yellowing, wilted leaves, sclerotia, softening of petiole bases and white mycelium at the crown area. Saving infected plants is difficult. Infected plants and surrounding soil should be removed from the plant bed and destroyed immediately. Since the fungus can overwinter on wood mulch, it is a good idea to remove mulch back from the crowns of the

plants. Sclerotia can be moved around in the landscape by infested soil. For this reason, sanitation is particularly important to the grower to carefully clean soil from gardening tools and even shoes. If the gardener suspects crown rot, the plant and soil and mulch around it should be removed carefully and thrown out quickly. Although labor intensive, soil exchange may be an option if the planting bed is small. Infested soil can be removed to a depth of 8-10 inches and replaced with fungus-free soil. This alone may not be sufficient to ensure that all of the fungus has been eliminated. Since these sclerotia are only infective on or near the soil surface, burying can significantly reduce inoculum.

Soil solarization may be effective in reducing the number of viable sclerotia if it is practiced annually. Clear plastic sheeting is usually applied to the planting area for four to eight weeks, depending on the time of year. Months with higher temperatures are more effective. Areas should receive direct and full sunlight. This technique may not be practical for use in large planting beds. No resistant varieties are currently available. Chemical control of crown rot can be inconsistent. Fungicides containing flutolanil, fludioxonil or azoxystrobin are labeled for *Sclerotium rolfsii* on many ornamentals. These materials are most effective if applied preventatively as a directed spray or soil drench during the early stages of infection. Some of these products are only available through commercial pesticide dealers and may not be cost effective or practical for homeowner applications. Consult Extension publication *MP154, Arkansas Plant Disease Control Products Guide*, for available fungicides.

## Additional Information

An effective disease management program begins with an accurate diagnosis. A microscopic laboratory exam in conjunction with background information about the disease situation may be required for an accurate diagnosis. For further information about crown rot on *Hosta* and other ornamental diseases in the landscape, contact your local county Extension office or the Arkansas Plant Disease Clinic at [ssmith@uaex.edu](mailto:ssmith@uaex.edu).

Additional fact sheets are available at <http://www.uaex.edu>.

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