

## Seiridium Canker

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Seiridium canker is a fungal disease that affects members of the plant families Cupressaceae and Taxodiaceae. In landscapes, Seiridium canker is most severe on Leyland cypress (*x Cupressocyparis leylandii*), Italian cypress (*Cupressus sempervirens*) and Monterey cypress (*Cupressus macrocarpa*). It can be caused by the fungi *Seiridium cardinale*, *S. cupressi*, or *S. unicorne*. The disease progresses in the canopy from the lower canopy to the higher branches, causing dieback of branch tips or whole branches making them unsightly. Because infections are favored by high leaf wetness and shade, the disease is more severe in dense plantings and older trees with extremely dense canopies.

### Symptoms

Seiridium canker causes foliage of branches to discolor from green to straw to reddish-brown. These symptoms, at first, can be seen on lower branches of the tree, but then progress upward in the canopy (Figure 1). However, symptoms can also appear to have a random distribution in the canopy occurring in the most dense/shaded parts. While symptoms can be observed at any time of year, like most canker diseases, these symptoms will appear magnified during periods of hot, dry weather typical of summer conditions.

Discolored foliage can be followed back to cankers on twigs or branches (Figure 2). These cankers are typically dark in color, and will be sunken. Scraping under the bark will reveal girdled and dead cambium tissues which caused the branches to desiccate and turn brown. Left unmanaged, cankers can progress into the main trunk of the tree, which can result in death. Large amounts of resin exudation will generally be associated with actively progressing cankers (Figure 2).

### Causal Agent

Seiridium canker can be caused by any of three species in the *Seiridium* genus: *Seiridium cardinale*, *S.*

*cupressi*, or *S. unicorne*. All three species cause similar symptoms as described previously, and microscopy is required to delimit the three species of *Seiridium*. Black fruiting structures called acervuli (Figure 3) form on the cankered branches. These structures are where spores are produced to create future infections. The acervuli can persist on dead foliage and branches for several years.

**Figure 1: Seiridium canker symptoms. Branch dieback and discoloration of foliage in the lower portion of the canopy of a Leyland cypress**



Spores (Figure 3) are released from the acervuli by rain splash, and new infections occur during wet weather. Spore production halts in hot and dry conditions. Although spores can infect healthy, green tissues, infections typically occur through wounds or natural openings. Acervuli will then form on the cankered tissue once it dies from the infection, and the disease cycle continues.

**Figure 2: Close-up of Seiridium canker symptoms. Dieback and browning of foliage (left) and discolored sunken canker on twig with resin exudation (right)**



## Management

Seiridium canker is a manageable disease, but requires several approaches for success. Pruning trees to reduce the crown density should be started when trees are young so the lateral branch spacing becomes larger. This allows more light and air penetration to pass through the tree, reducing the shade and leaf wetness period, and thus, the likelihood of infections since spores require leaf wetness to germinate.

If trees are already infected, dead and diseased branches should be removed from the tree. This will reduce the amount of infectious spores in the tree. In addition, pruning to reduce the crown density will help prevent future infections. Importantly, trees should be pruned during dry periods to minimize the chance of spreading the infection.

In addition to pruning, watering trees during periods of drought and extreme heat will keep trees vigorous and resilient to infections. Canker diseases are faster to develop in water-stressed plants. To minimize water loss and competition with weed species, tree roots should be mulched. Mulch will reduce belowground competition with other plant roots, retain moisture during summer months, and add organic matter to the rhizosphere (root zone).

Lastly, if done simultaneously with the above cultural practices, broad spectrum products can help protect new foliage from infections. However, this is solely preventive and multiple applications of these products are required when flushes of new growth emerge. In addition to broad spectrum products, there is some data from the Midwestern U.S. that showed the growth regulator paclobutrazol can slow canker development in spruce trees infected with *Cytospora kunzei*. Similar to the broad spectrum products, growth regulators have to be applied preventively, and in combination with the aforementioned cultural practices to be successful.

**Figure 3: Close-up of Seiridium canker signs. Black spore-bearing structures (acervuli)(left) and infectious spores of *S. cardinale* (right)**

