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Conifers disorder: Sphaeropsis shoot blight and canker

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Sphaeropsis shoot blight and canker, formerly known as Diplodia, is a serious disease of many pine species and other conifers. It has attracted considerable attention in Wisconsin since the late 1970s and has caused severe damage in more recent years. Sphaeropsis kills many of the growing points on branches, which eventually leads to the death of the branches. Austrian pine is a commonly affected ornamental, but the disease also damages red, jack, Scotch, and mugo pines. Other conifers, including cedars, cypresses, firs, spruces, and junipers may be affected by the same disease.

Symptoms and effects

Resin droplets are often the first indication of Sphaeropsis shoot blight. They exude from small, discolored lesions on needles and shoots. The lesions grow in size, and needles turn yellow, then reddish-brown as they die. Needles on affected shoots may not grow to full length and may die prematurely. They may also stick together due to abundant resin flow.



Needles affected by Sphaeropsis shoot blight. Some are fully elongated, while others were killed before growing completely.

The fungus can also enter through wounds in the bark, causing cankers on twigs or branches. Cankers are discolored, sunken or swollen areas where the bark dies and sapwood—the outermost layer of wood beneath the cambium—is stained black. Cankers exude resin abundantly, and it drips onto other branches or needles. Entire branches may be killed by these cankers, which sometimes form on the trunks of affected trees.

Symptoms of shoot blight and canker are sometimes confused with damage caused by other pests. The presence of heavy resin flow and the absence of tunnels in the wood help to distinguish Sphaeropsis from damage by the pine shoot moth and other insects.

Recognition of the pycnidia also aids diagnosis. Pycnidia are small, black fungal structures that grow on affected needles, shoots, and cones. They look like tiny black dots, often lined up in a row. These are the fruiting bodies of the fungus, which means they produce spores. The spores are especially abundant during wet spring weather, although they will also germinate under moist conditions during the rest of the growing season. Raindrops spread spores.



Sphaeropsis shoot blight.

Cause

The fungus *Sphaeropsis sapinea*, previously called *Diplodia pinea*, causes this disease. It usually enters young, growing needles through the stomates, or pores. It can also penetrate succulent, elongating shoots directly and invade the cones. Sometimes the fungus will enter branches through wounds caused by insects, hail, or pruning.

Control

Cultural

Stressed trees are particularly susceptible to Sphaeropsis. Thus, measures to improve tree vigor help them resist shoot blight and canker. Irrigation during periods of drought is especially helpful. To encourage healthy root development, provide adequate rooting zones, avoid soil compaction, and correct poor drainage. Fertilization every 3–5 years will encourage root growth, but avoid excessive applications of nitrogen.

Removing dead infected shoots and branches will improve the appearance of diseased trees. Pruning this material will also reduce the number of spores able to spread the disease within the tree and to other trees. Pruning should be done only in dry weather, and tools should be cleaned by dipping in alcohol after each cut. Removing affected cones is helpful but may be difficult.

Chemical

Application of a fungicide that contains thiophanate methyl may be effective if the inoculum concentration is not too great. Examples of such fungicides include Cleary 3336 and Fungo. The critical time for protection begins with bud break and continues through shoot elongation. In Wisconsin this period usually begins in May—early May in the south, later in the north. An application should be made at bud break and at least one more time about 14 days later. It is important to follow all label directions.

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