



Diplodia Tip Blight and Canker of Pine

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The Oklahoma Cooperative Extension Service Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education

for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.

- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Pine trees are appealing additions to the landscape as they provide year round color and versatility. However, pine trees are susceptible to environmental stresses including drought. This stress predisposes pine trees to the disease Diplodia tip blight and canker. When left uncontrolled, the disease may disfigure or kill a tree over several years.

Symptoms

Diplodia tip blight and canker is most common on mature trees (15 years or older). The symptoms begin in the spring (usually April) when new needles are killed as they emerge and elongate. The stunted needles turn yellow and then brown (Figure 1). White, crusty resin droplets may be visible on killed needles and shoot tips (Figure 2). As the disease progresses, it invades the twigs and causes branch flagging (Figure 3). As years go by, the disease progression is indicated by death of larger branches and/or large portions of the tree (Figure 4). Resinous cankers may be visible on larger branches (Figure 5). In late summer or fall, fruiting structures may be visible at the base of stunted, brown needles or on the cone scales (Figure 6).

Diplodia tip blight is occasionally confused with environmental stress and/or pine tip moth damage. Environmental stress factors including drought or winter damage are common problems. With environmental stress, the shoots are often killed before the new needles start to emerge rather than death occurring during emergence. Pine tip moths hollow out the tip of pine shoots. If the shoot tip is broken off, a hollowed-out area (sometimes containing a larva) is present.

Disease Cycle

Diplodia tip blight and canker is caused by the fungus *Diplodia pinea* (previously known as *Sphaeropsis sapinea*). The fungus survives in diseased shoots and branches or on pine cones, and produces pycnidia (fruiting structures) which release conidia (spores) that are dispersed in splashing water and short distances by wind. As the new pine needles emerge in the spring, they become infected through stomata (small openings in the needles for gas exchange). The spores may also enter through wounds or cracks in the bark. Free moisture is required for infection, so the disease is more severe in years with rainy springs. Latent (asymptomatic) infections occur and the disease symptoms may appear after several months or longer.



Figure 1. Pine needles are stunted and killed as they emerge in the spring.



Figure 2. Drops of white to amber colored resin are indicated by arrows on the needles of this pine shoot.

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Figure 3. Several branches on the pine trees in this wind-break are flagging (wilting and browning) due to Diplodia tip blight and canker.



Figure 4. Diplodia tip blight and canker progresses over several years so that large parts of the tree are blighted or the tree may be killed.



Figure 5. Over time, Diplodia tip blight and canker disease causes resinous cankers (arrows) and broken areas on limbs.



Figure 6. Fungal fruiting structures may develop on pine cone scales. Inset shows the black pepper sized structures on a single cone scale.

Management

Diplodia tip blight and canker is most severe on trees that have been stressed by drought or other environmental factors. Proper tree care including irrigation during periods of drought and maintaining fertility, reduces the likelihood of Diplodia tip blight infections.

Pruning and sanitation are often effective methods for control of Diplodia tip blight and canker, especially when trees are newly infected. Diseased shoots should be removed as soon as they are noticed. It is best to prune during dry weather periods to prevent disease spread, and pruning cuts should be made 8 inches or more below visible damage into healthy wood. Pines do not have dormant buds on the older, barren portions of the trunk, so avoid pruning beyond shoots

with needles; cutting all the green needles off pines will kill the plants. Pruning tools should be cleaned with a household disinfectant between cuts to prevent spread of the disease. Discard diseased clippings by burning or in the trash.

Where infections have been severe, fungicides may facilitate disease control. A fungicide containing copper hydroxide should be applied early in the spring as the buds open, and at least once more as the needles elongate at seven- to ten-day intervals. Additional products may be registered in your area. Consult your local county Extension office for current recommendations. Longer needled pines may need a total of three applications. Fungicides should be applied yearly in the spring to prevent new infections. Depending on the size of the tree, home gardeners may need to hire a professional to ensure adequate spray coverage.