



Diplodia Tip Blight

Introduction: Dead, brown needles at the tips of pine branches may signal the presence of *Diplodia* tip blight. Surveys indicate that no species of pine (*Pinus*) is immune to this disease, although some species are more severely affected than others. Austrian pine (*Pinus nigra*) is one of the most severely damaged species in New York. Tip blight infection year after year can weaken and even kill large Austrian pine trees. Douglas-fir, white, Norway, and blue spruce may also be infected, but infection of these species usually develops only on trees that are injured or stressed and when infected pine are nearby to provide a source of inoculum (spores).

Symptoms: A few brown needles at the tip of the current season's growth are the first evidence of tip blight. These blighted needles are usually located on the lower branches of the tree. Needles that are in the early stages of development stop growing after infection and therefore appear stunted when compared to healthy needles (**Fig. 1**). The number of blighted needles increases until the new growth for that year has been killed. This stunted and dead new growth on lower branches draws attention to the disease

With a hand lens you may see minute black fruiting bodies (pycnidia) at the base of diseased needles (**Fig 2.**), especially under the papery leaf sheath. These are sure signs of this disease.

Symptoms of tip blight are not restricted to the needles. Future tree growth is often reduced by damage to or death of terminal buds during infection. Twigs may be infected and become stunted or deformed. Stunted twigs may exude resin (**Fig. 3**) which traps blighted needles before they fall to the ground. Close examination of these twigs reveals cankers at the first branch whorl and often near the leaf scars of blighted needles. Enlargement of these cankers results in the girdling of the twig and rapid death of the branch tip. In most cases, these symptoms are not observed beyond the current season's growth.



Fig. 1. Infected twig showing the stunted needles and new growth (Note the white resin near the red arrows). (H.G.I.C. University of Maryland)



Fig. 2. Black pycnidia on infected needles (USDA Forest Service - Forest Health Protection - St. Paul Archive, USDA Forest Service, www.Bugwood.org)

Disease Cycle: The fungus which causes tip blight of pine trees is *Sphaeropsis sapinea* (also known as *Diplodia pinea*). This fungus is present throughout the year in dead needles, leaf sheaths, twigs, and cones located either on an infected tree or on the ground. Small black fruiting bodies mature during late spring or early summer in this material (**Fig. 4**). The brown oval spores ooze out of the fruiting structure during wet conditions and are scattered by wind, splashing rain, animals, or pruning equipment. Some spores land on young needles of the current season's growth. After the spore germinates, the fungus enters the needle through a stomate (or pore) and grows toward the base of the needle. A few hours later, a brown area develops near the point where the fungus entered the needle. By this time, the fungus has grown into the twig. The progressive invasion of the twig by the fungus results in browning of the attached needles and canker production in the twig.

Management Strategies: The damage caused by this disease is most severe on old or weakened trees. Old trees or trees exposed to unsuitable growing conditions, mechanical injury, or damage by insects may eventually be killed. Thorough weekly watering during extended dry periods of the growing season and spring broadcast fertilization will result in a tree that is more vigorous and more resistant to tip blight.

When only a few branches of a tree show symptoms of tip blight, a program of pruning and sanitation should help minimize disease. Prune off blighted twigs and destroy or discard them. Since fungal spores can be transported to healthy twigs during the pruning operation, prune when the tree is dry. Disinfect pruning tools before each cut by swabbing the cutting blades with a solution of 70% rubbing alcohol between each cut. Rake up all blighted needles, twigs, and especially cones which harbor the fungus and destroy or discard them.

Where disease is severe on smaller landscape trees, homeowners in New York State may apply some fungicides containing either potassium bicarbonate or propiconazole to try to minimize new infections. Follow label directions. Homeowners are discouraged from trying to apply pesticides to large landscape specimens, and should consider hiring a professional applicator if good cultural practices and fertilization do not sufficiently improve the overall health of such trees.

Reprinted from *Diplodia Tip Blight Sphaeropsis sapinea*, The Plant Disease Diagnostic Clinic at Cornell University, Ithaca, NY. Updated, SLJ, 6/09.

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This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (NYSDEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional NYSDEC office. Read the label before applying any pesticide.

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Fig. 3. A stunted dead shoot with exuding resin, which has turned white and become hardened. (Andrej Kunca, National Forest Centre - Slovakia, www.Bugwood.org)



Fig. 4. Black pycnidia present on a pine cone. (H.G.I.C., University of Maryland)