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Pitch Canker of Southern Pines

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Pitch canker was first observed in 1945 on Virginia pine near Asheville, N.C. It was found to be caused by an unreported fungus which, in 1949, was described and named *Fusarium lateritium* f. *pini* Hepting. The fungus has been found from northern Virginia to the southern tip of Florida and as far west as Mississippi and Tennessee. It has been isolated from cankers on Virginia, shortleaf, slash, longleaf, Scotch, pitch, and Table-Mountain pine. It has also been found on *Pinus occidentalis* in Haiti and demonstrated, by inoculation, to be very lethal to *Pinus radiata*. The following species were tested but appeared not to be susceptible to the disease: loblolly, pond, white, red, and Japanese red pine; white, Sitka, and Norway spruce; and eastern hemlock.

In addition to studies of pitch canker as a disease, considerable work has been done since 1949 in connection with the stimulation of gum flow from slash, longleaf, and Virginia pine by inoculation with the fungus.

Symptoms

The most noticeable symptom of the disease is a copious pitch flow which is far in excess of that accompanying any other known disease. The canker retains the bark and is usually sunken. The wood beneath the canker is deeply pitch-soaked. This heavy pitch soak is a diagnostic character useful in separating pitch canker from the other southern pine canker diseases. The fungus causing pitch canker very seldom produces spores on the cankers.

Twig cankers may form at the base of needle clusters or at injuries such as those caused by insect feeding. Trunk cankers also commonly develop at injuries on Virginia pines of any size, and often spread until the trunk is girdled (fig. 1). Slash and longleaf pine stems above

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5 inches d.b.h. are seldom girdled, although smaller stems are often killed. The pitch canker fungus sometimes infects at fusiform rust cankers, with the result that cankering by the two fungi develops concomitantly.

The Pathogen

Fusarium lateritium f. *pini* rarely produces fruiting structures on the cankers. However, the fungus is sometimes visible on cankers from which the bark has been removed, in the form of a light, white, patchy growth on the wood. Later these patches may become pink or purplish and produce spores.

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Figure 1.—Pitch canker on Virginia pine about 7 inches d.b.h.

The absence of fruiting on natural cankers suggests that the pathogen is not spread from them by wind or splashing rain. A large percentage of the infections studied have been associated with feeding scars or other insect injuries. Tip moth injury has led to pitch canker infection in slash pine, and feeding by weevils and pine sawyer adults have similarly led to infection of Virginia pine. The fungus can be easily isolated from cankers and readily grown in the laboratory. Infection can be induced artificially by introducing the fungus, growing on agar, into slight wounds in the bark.

Importance

Fusarium lateritium f. *pini* is a potentially dangerous pathogen. Although it is causing economic damage in only limited localities in North Carolina, South Carolina, Georgia, and Florida, it could develop into a major problem, depending upon the activity of the insects that carry the fungus and open wounds to infection.

It is important that foresters recognize this disease. On slash pine it can be confused with the more swollen and less pitchy fusiform rust canker or with tip moth injury. On Virginia pine it could be confused with the rust disease

caused by *Cronartium appalachianum* when the latter is not producing its orange spores in the spring.

Fusiform rust cankers sometimes become secondarily infected by the pitch canker fungus, following insect invasion of the rust cankers. Pitch-soaking of the wood beneath is certain evidence of the area of infection by the pitch canker fungus. Errors in diagnosis can interfere with management practices designed to control these other diseases.

Pitch canker has several particularly interesting features that should be understood by the southern forest manager. It has been known in this country only a few years and is already widely distributed. It may have been introduced here from Haiti. It causes not only copious gum flow but a heavy pitch-soaking of the wood under the canker that is unique among southern diseases (fig. 2). By making tree trunks flammable, this canker has greatly increased the fire hazard in young stands in South Carolina. Pitch canker is the most damaging disease of South Florida slash pine, a variety important to the economy of that area, and is the only disease that can readily kill Virginia pines regardless of size.

Control

Although control measures can be put on a sound basis only when the means of spread is known, timely thinning or other improvement cutting can rid a stand of infected trees that would otherwise die or become stagheaded culls. In South Florida slash pine, pitch canker is often the main factor in

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Figure 2.—Peeled trunk showing pitch canker 3 years after inoculation.

guiding thinning operations. Systematic removal of infected trees reduces the fire hazard. It also provides growing space for better trees and reduces a source of fungus inoculum.

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