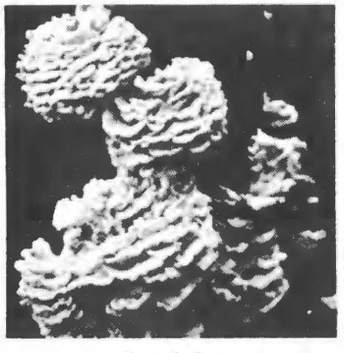
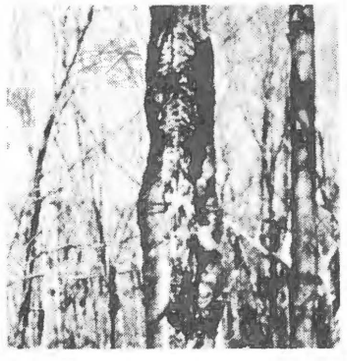
Forest Tree Diseases of Virginia

RUST

DECLINE



DECAY



CANKER

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ANNUAL CANKERS OF HARDWOODS

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The quality of hardwoods is dependent upon the quantity and size of defects that downgrade the wood used for veneer or furniture manufacture. Many of the important hardwood forest trees in Virginia are susceptible to canker causing fungi that are active for only one year. The resultant injury of the bark and cambium (growth layer of cells under the bark) cause serious defects as the tree responds by covering over the dead areas with callus tissues. It is doubtful that even severe cankering will cause death of trees over 4 inches in diameter. It is quite possible that cankering will weaken trees to such an extent that other pathogens such as Armillaria mellea (a root rot fungus) or stem decay and stain organisms may be able to enter and cause the death of the standing tree and/or further degradation of the lumber obtained from affected trees.

Range and Suscepts: Annual cankers of hardwoods occur throughout the major timber-growing areas of the United States. The intensity of canker incidence will vary and restricted areas of high canker incidence may develop on certain aspects or slopes. Cankers have been found on many hardwood species. Those of commercial value include sugar maple, red maple, ash, oak, birch, hickory, sweetgum, tulip poplar, sycamore, cottonwood, and black gum. Others of lesser economic importance but of landscape importance along forested highways or recreational areas include dogwood and redbud.

Cause: Many different fungi have been found capable of inducing canker formation. These fungi live in the outer bark and invade the inner bark and cambial areas during the dormant season (Fall-Winter-very early Spring). Various studies have indicated that drought, insect activity, bark moisture levels, and temperature factors may, either singly or collectively, be involved in predisposing individual tree species to invasion.

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Symptoms: Annual cankers can be distinguished from those of a perennial nature by the lack of additional callus folds of either a concentric or diffuse nature, i.e. there is not year-after-year of callus fold death followed by new callus fold development (*Figure 1*). The canker type that is commonly found on the main stem is elongate in shape and may be either a sunken area (recent) or it may appear as a raised bump caused by callus folds covering over the killed tissues. Cankers may vary in length from less than one inch to several feet. The number of cankers per stem may vary from less than 10 to several hundred within a few feet of stem (*Figure 2*). In cross-section the cankers are "T" shaped due to callus fold closing and the formation of a bark pocket-type of defect (*Figure 3*). Often cankers are avenues of entrance for stain and decay fungi. Trees exhibiting cankers on the surface usually have a past history of infection and numerous cankers can be found within the tree.

Control: Direct control of annual cankers is seldom feasible because of the nature of the infection process and for reasons of economics. Cankered trees will produce very low grade hardwood stock and should be removed during normal timber stand improvement operations if saw timber is the desired product.

FIGURE 1. Four annual cankers occurring in one growth ring. Note that each is separated by healthy tissues.

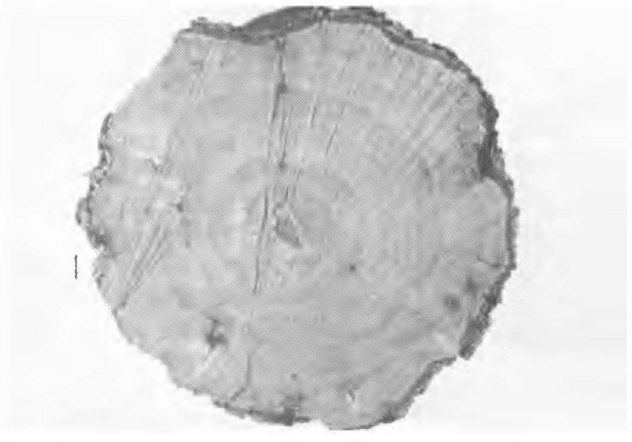

FIGURE 2. Cross-section of heavily cankered stem. Note rough appearance of outer stem surface and numerous cankers that would cause downgrade of lumber.

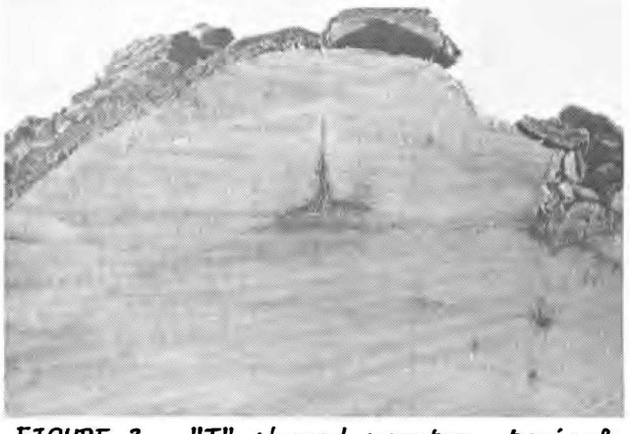

FIGURE 3. "T" shaped symptom, typical of annual cankers. Note new canker developing on extreme right portion of photo.