WASHINGTON STATE UNIVERSITY
BENTON COUNTY EXTENSION

WOOD DECAY

Wood decay is a common occurrence among all kinds of trees. Decay can affect the roots, sapwood, or heartwood of a tree. The results may be seen in dying trees or in trees which have smaller leaves and slower growth. Some trees may appear to be healthy, yet have extensive decay within the heartwood. These trees, although appearing healthy, are structurally weakened and will be more vulnerable to windthrow.

Nearly all wood decay is caused by fungi. Mushrooms, sometimes called conks, are usually seen growing on the sides of trees. These are reproductive structures, commonly known as fungal fruiting bodies (figures 1 and 2). Trees are usually infected for many years before mushrooms are visible. Removing these conks will not cure the tree, since the fungus is living internally inside the tree.

Wood decay begins with any injury that breaks through the bark and exposes the wood. The injury may be the result of a weed whip, animal damage, broken branch, etc. The damaged cells undergo chemical changes and become discolored. Many microorganisms land on the surface of the wound. Some of these organisms, commonly referred to as pioneer colonizers, begin to grow and colonize the wounded tissue. These organisms chemically alter the wood tissue and usually cause an increase in discoloration of the wood. Later, wood-rotting fungi attack the chemically altered wood tissue.

The tree uses a natural process called compartmentalization as a defense against decay. During compartmentalization, the tree produces three zones to help prevent invasion and spread of the fungus. These zones produce defense compounds, which try to wall off the fungus by plugging the vascular tissue and producing callus tissue around the edge of the wound. The effectiveness of these three zones depends upon the type of fungus and the host tree. Some fungi are specifically adapted to tolerate the chemical-response compounds of the tree and will survive in spite of the tree's defense mechanisms.

Decay fungi in the tree develop much faster upward and/or downward than radially. Thus a tree may internally wall off decay protecting the new growth from becoming infected. With other wood rots, especially those of conifers, the decay cylinder may continue to expand outward until the tree is killed or blown over by strong winds. The process of decay may take many years to develop, with some older trees containing several different columns of decay.

Since tree decay is associated with wounds, avoid wounding trees. Protect young trees from animal damage by placing a protective barrier around the lower trunk of the tree. Young, thin-barked trees, like apple or maple, should be wrapped with tree wrap during the winter to prevent sunscald.

Keep trees growing vigorously by planting them on the proper site, mulching, watering, and fertilizing as needed. A healthy tree is better able to compartmentalize wood-rotting fungi.

It is also important to properly prune trees. Do not leave dead branch stubs, which can serve as entry points for fungi and do not injure the swelling, called the branch collar, that joins the branch to the trunk.