

## Leucostoma Canker of Stone Fruits

### *Leucostoma personii*

**I. Introduction:** Leucostoma canker, also known as perennial canker, peach canker, Cytospora canker, and Valsa canker, is one of the most destructive diseases of stone fruits (peach, nectarine, apricot, sweet cherry, and plum) in the mid-Atlantic region. The disease is most damaging to young orchards, where it may cause tree death. In older orchards, trees gradually lose productivity and slowly decline as individual scaffold limbs are killed.

**II. Symptoms:** The fungus attacks the woody parts of stone fruit trees through any injury to the bark, pruning cuts, and dead shoots and buds. The first visible symptom is the exudation of gum at the point of infection. The canker starts from a small necrotic center that slowly enlarges with the collapse of the inner bark tissue. The canker enlarges more along the length than the width of the branch. Older cankers are therefore oval to elongate in outline (photo 2-64).

In new cankers, the outer bark usually remains intact except at the points of gumming. In older cankers the bark in the center of the canker becomes torn. The gum turns black due to alternate wetting and drying and the presence of



saprophytic fungi. Older cankers are surrounded by a roll of callus tissue. Each year the canker enlarges by repeated invasion of healthy tissue. With renewed growth in the spring, the tree forms a callus ring around the canker as a defense mechanism. This can be a very effective defense except when the lesser Peachtree borer breaks the callus ring by burrowing through the callus into healthy tissue.



**III. Disease Cycle:** The fungus which causes the disease overwinters in cankers and dead twigs. Small black fruiting bodies containing spores of the fungus are produced on the smooth bark covering diseased areas on dead wood. These spores are washed from the fruiting structures during wet weather. The optimum temperatures for growth of the fungus are 77 to 86°F (25-30°C). Spores are produced anytime the temperatures are above freezing. Most infections occur during the fall, early spring, and winter months when the trees are not growing vigorously.

The fungus cannot penetrate healthy bark or buds. Cold injured buds or wood and pruning cuts are the most important sites of infection. The fungus can also penetrate brown rot cankers, oriental fruit moth damage, sunscald wounds, hail injury, leaf scars, and mechanical wounds. The fungus becomes established in the wood and forms a canker by invading the surrounding healthy tissue.

**IV. Monitoring:** After shuck fall, monitor all trees in the orchard for cankers (photo 2-64). Cankers can be very small or can girdle the entire limb or trunk. Remove cankers surgically if possible or prune out the entire diseased area. Monitoring for and removal of cankers is best done at the same time.

**V. Management (HTML/JPEG slide show):** All attempts to control peach canker must take place within the framework of an integrated crop management strategy. All phases of orchard management from establishment of new plantings to care of bearing orchards are important. Management of cankers is based on preventative measures designed to decrease winter injury and insect damage, promote optimum plant health, and facilitate rapid wound healing. As with any other disease, once established in an orchard, new infections become increasingly difficult to control.

Proper site selection for new peach plantings is essential if young trees are to enter their productive years free of disease. The site should have deep, well-drained soil and good air drainage to minimize the chances for winter injury. Tile drainage systems should be

installed where feasible and whenever natural drainage is impeded. New plantings should be reasonably isolated from sources of inoculum. Young trees should not be planted adjacent to older, heavily infected peach blocks and the down-wind side of older blocks should be avoided.

Nursery stock should be disease-free and not excessively large (greater than 11/16 caliper). Trees with small cankers on lateral branches may be planted if they are pruned so that at least 10 cm of healthy tissue below the canker is removed. Examine all trees closely. Plant trees immediately after receiving them from the nursery to avoid any additional stress. Protect trees from peach tree borer by dipping the roots and crown of new trees in an appropriate insecticide. Newly planted trees should be pruned when their buds begin to break and trees should be headed back to about 100-115 cm to promote wide-angled branching. Small trees can be pruned to whips, but four to six side branches on larger trees should be pruned to two or three nodes since trunk buds may not develop. Trees should be inspected after growth begins and any dead branches should be removed.

Control oriental fruit moth and peach tree borer even in the first few non-bearing years. These insects can cause serious damage and their feeding activity creates infection sites for *Leucostoma* spp. It is also important to control brown rot since twig infections by the brown rot fungus are often invaded then enlarged by *Leucostoma* spp.

Trees must be trained during the first season so that the tree branches develop the wide crotch angles that are necessary for long orchard life. Where narrow crotch angles form, the tissue in the crotch is susceptible to winter injury and invasion by borers. Also, portions of bark become included in narrow crotches where normally there should be solid wood, thus making the branch more likely to split when bearing a heavy crop. Wire spreaders or wooden spreaders with nails should be avoided because they injure the bark which may then become infected by *Leucostoma* spp.

Rodent damage should be prevented with wire or plastic guards. Plastic wrap-around guards should be removed each summer because they may delay hardening of the wood in late fall, they may harbor boring insects and interfere with trunk sprays for borer control. Latex paint with Thiram also discourages rodent feeding.

Low temperature injury is always a potential problem with stone fruits. This injury occurs to buds, twigs, branches and branch crotches, and trunks. Cold temperatures can injure peach trees early in the winter before the trees are completely acclimated to the cold. Practices to avoid include excessive or late fertilization with nitrogen and late season cultivation. Nitrogen fertilizer should be applied in late winter or early spring to avoid inducing late, cold-susceptible growth in the fall. Foliage should show a healthy green color and terminal growth should be about 30 cm on bearing trees and 45-60 cm for non-bearing trees. Trees with pale, nitrogen deficient leaves are more susceptible to infection by *Leucostoma* spp. Balance nitrogen fertilizer application with an adequate

supply of potassium. Use leaf analysis to determine fertilizer requirements. In clean cultivation management systems, cease cultivation and sow a cover crop within 3 weeks of early fruit drop. Sod management, as an alternative to annual clean cultivation, with trickle irrigation, in addition to maintaining tree growth and fruit size, has the added benefit of making trees more resistant to *Leucostoma* spp.

Southwest-injury or sunscald is caused by the warming of the bark by direct sunshine on the south and west exposures of the trunk and scaffold limbs and may occur even during relatively mild winters. This injury may be the most damaging since it occurs on trunks, scaffolds, and crotches. These sites are commonly infected by *Leucostoma* spp. To avoid southwest injury, trunks and scaffolds should be covered with white latex paint which can reduce bark temperatures on sunny winter days. Small mounds of soil or mulch that drain water away from the tree trunk may prevent direct cold temperature injury to the crown. In addition, the mulch prevents formation of ice collars which could cause physical injury. Do not use gravel to fill depressions around tree collars.

Infection at pruning cuts is less frequent when pruning is delayed until late in the spring. The faster a wound heals, the less risk there is for infection. Wound healing is temperature dependent, therefore pruning should be delayed until the first forecasts of warm, dry weather. Approximately 390 accumulated degree-days (base = 0 C) are required for complete wound healing. In general, any practice which promotes tree health encourages more rapid healing. Pruning should be well planned each year so that large cuts, which heal more slowly, will not be needed. When pruning, avoid leaving stubs which may become infected. When pruning side branches from larger limbs, the cut should be made just beyond the ridge of thickened bark where the smaller branch joins the larger limb. The branch bark ridge should not be removed because it is in this region where the most rapid wound healing occurs. On one-year-old wood, the ridge of thickened bark is slightly inset and it is difficult to make the proper cut. In this situation, cut as close as possible to the larger branch without injuring it or leaving a noticeable stub. Prune to open the center of trees to light penetration because shaded branches are weakened and more susceptible to winter injury and *Leucostoma* infection. Remove all dead and weakened wood.

Cankers should be removed from the tree and burned, buried, or moved out of the orchard. Cankers on trunks and large limbs can be removed surgically in mid-summer when trees heal most rapidly. Surgery should be performed in dry weather with a forecast of dry conditions for at least three days. During surgery, remove all diseased bark around the canker and about three and five centimeters of healthy tissue from the sides and ends, respectively. Disinfect cutting tools between cuts with an alcohol or bleach solution. The resulting wound when finished should have a smooth margin and be slightly rounded above and below to favor rapid wound closure.

The practice of covering pruning cuts in spring with a thiram-latex paint mixture provides some degree of protection against fungal infection. Sites of surgery heal best if

left uncovered. Leaf scar infections by *L. cincta* take place as the tree defoliates in autumn. Fall or spring sprays applied for leaf curl control have been shown to reduce leaf scar infections. There are no fungicides registered specifically for control of *Leucostoma* spp.

**Online references:**

Ellis, M.A. 1997. Peach Canker. Factsheet HYG-3005-94, The Ohio State University Cooperative Extension, Columbus, OH.

**TEXT PREPARED BY A. R. BIGGS, J. W. TRAVIS, AND J. L. RYTTER**

**READ LABELS CAREFULLY AND USE CHEMICALS IN ACCORDANCE WITH LABEL CAUTIONS, WARNINGS, AND DIRECTIONS. REQUEST A MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER FOR EACH PRODUCT YOU USE.**

Trade and brand names are used only for the purpose of information, and the West Virginia University Extension Service and/or West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others, which may also be suitable. The West Virginia University Extension Service and/or West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences assume no responsibility in the use of hazardous chemicals.