

## Bacterial Canker of Stone Fruits



Twig and branch dieback on a peach tree

**Introduction:** Bacterial canker of stone fruits is caused by *Pseudomonas syringae* pv. *syringae*, an organism which is ubiquitous in the environment and is generally only capable of causing disease on trees which are stressed. All *Prunus* spp. may be affected by this disease but cherry, peach, and apricot are most susceptible. In peach orchards, trees 2-8 years of age which are under stress are at the greatest risk for infection. The factors which most commonly predispose trees to infection include winter or spring freeze damage; sunscald damage; presence of the ring nematode *Mesocriconema xenoplax*; light, sandy soils; poorly drained soils; mechanical injury; use of a rootstock not suited to planting site; and improper pruning practices including pruning in fall or winter.

**Symptoms:** Bacterial canker symptoms vary, but are typically first seen in spring and include the dieback of young twigs associated with the failure of infected buds to open. Further inspection of the vascular tissue behind the outer bark of twig tissue adjacent to necrotic buds will reveal cankering and vascular necrosis. Infections on one part of a branch can cause a delay in bloom and leaf emergence on other, uninfected parts of that branch. Infections may also spread rapidly within a branch to kill foliar and floral tissues shortly after they emerge. Cankers may occur on larger branches and trunks but will not extend below the soil line. Gummosis and water-soaked areas on bark having a distinct sour-smelling sap may be associated with cankers and an increase in the production of water sprouts may occur. *P. syringae* can also cause a leaf spot with similar features to leaf spots caused by *Xanthomonas arboricola* pv. *pruni*. These are small spots which begin a dark purplish color, then become necrotic and develop a shot hole appearance when the necrotic tissue drops out. In the Southeast, a complex known as Peach Tree Short Life (PTSL) occurs, causing an overall collapse of trees in spring, including a failure of many buds to open and wilting of new leaves. PTSL is typically brought on by some combination of winter freeze damage, bacterial canker infection, and the presence of the ring nematode *M. xenoplax*. Nematode infection increases susceptibility of trees both to cold

damage and infection by *P. syringae*, and this combination of factors will significantly disrupt water relations within the plant.

**Transmission:** This bacterium colonizes the surfaces of healthy plant tissues without causing disease but can enter into living tree tissues through leaf scars in fall, or wounds created by pruning or other means. However, *P. syringae* pv. *syringae* is a weak pathogen which is only capable of spreading and causing disease in trees which are stressed by some external factor. The rate of spread of the pathogen within a tree will depend greatly upon the condition and age of the tree, as well as environmental factors. High rainfall in the fall and winter with temperatures generally remaining above freezing, favor the spread of the disease. Depending on stress severity and environmental conditions, the bacterium may be limited to small twigs or, in the most severe cases, it may spread rapidly within vascular tissues and lead to tree death within a couple of months.

**Management:** Trees which are healthy and growing vigorously are much less likely to be affected by bacterial canker. Choosing a suitable planting site and rootstock and maintaining tree health with a proper fertilization and watering regime will reduce the susceptibility of trees to bacterial canker as well as encourage tolerance to the disease where it is already present. Soil and leaf tissues should be tested annually to direct fertilization needs. The rootstock chosen can affect susceptibility to the ring nematode, *M. xenoplax*, associated with PTSL, with Guardian exhibiting the greatest resistance followed by Lovell and Viking. Nemaguard rootstock performs poorly in the presence of this nematode. On sites where this nematode is known to be present, a resistant rootstock should be used. Application of bactericidal chemicals is generally not recommended or effective for preventing or treating this disease. Pruning trees between October and January should be avoided as this has been correlated with the development of larger cankers in winter. In infected orchards, pruning tools should be treated with a 10% bleach solution between trees to prevent the spread of the disease.



Gummosis and water sprout production on a peach trunk

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