

# BACTERIAL CANKER

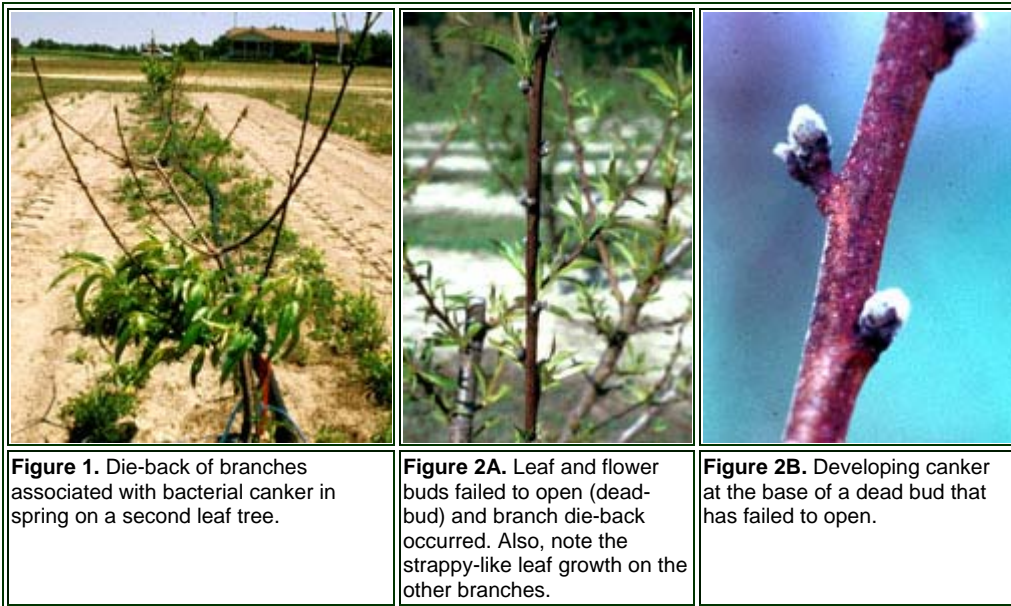
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Bacterial canker, caused by *Pseudomonas syringae* pv. *syringae*, van Hall, has been known to occur in stone fruits since the late 1800s. It can be a major component of the peach tree short life complex in southeastern United States peach orchards. This disease has sometimes been referred to as sour sap, blast, die-back, or gummosis. However, in the southeastern United States, gummosis is typically a reference to peach fungal gummosis caused by *Botryosphaeria* spp.

## SYMPTOMS AND DISEASE DEVELOPMENT

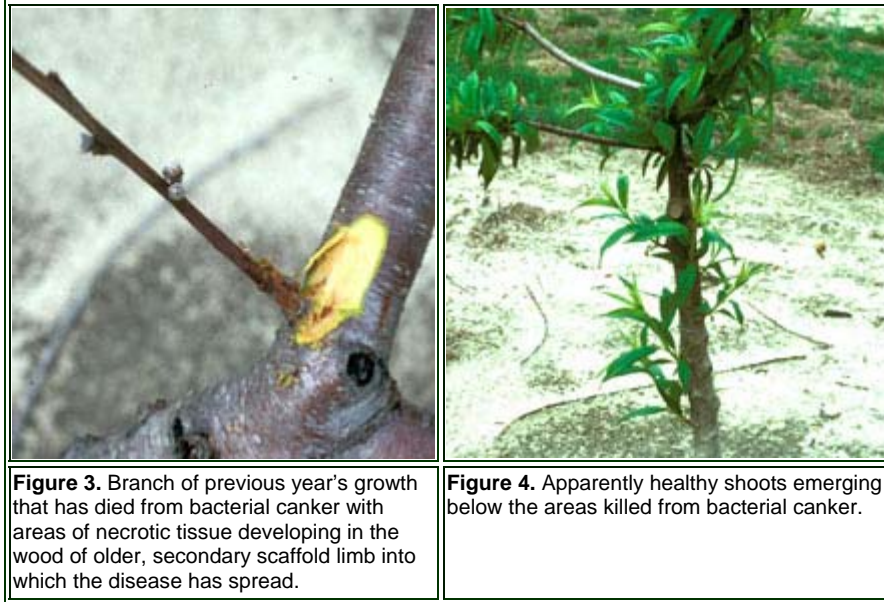
Bacterial canker is most severe in trees younger than seven years. Twig and branch die-back are often the first symptoms observed (Figure 1). However, twig die-back is preceded by the failure of flower and leaf buds to open (Figures 2A and 3) in spring and subsequent development of elongated cankers at the base of one or more dead buds (Figures 2A and B) usually on the previous season's terminal growth. Cutting into cankers reveals a brown margin, sometimes with streaks or flecks of necrotic areas extending beyond the surface canker margin (Figure 3). Trees diseased from bacterial canker may leaf out normally, but the foliage suddenly withers, turns brown, and dies (Figure 1). Closer examination usually reveals the presence of buds that failed to open with discolored bark and wood (Figure 3). Collapse and rapid tree death can occur within two months after bud break. However, in some instances trees will put out new shoot growth (Figure 4) and recover if not affected by *Cytospora* spp. or other canker-causing fungi. Successful diagnosis of bacterial canker is best accomplished when symptoms are examined during the early stages of development. This is usually 2-3 weeks before and after full bloom. After this period, it becomes very difficult to isolate the bacterial pathogen and to differentiate its symptoms from those caused by freeze injury, bacterial spot pathogen (*Xanthomonas arboricola* pv. *pruni*) canker, and secondary microbes. Bacterial canker is believed to be the major cause of sudden spring collapse of peach trees in California. In the Southeast, bacterial canker is regarded as a component in the peach tree short life complex; it is thought to typically be secondary to cold injury.



**Figure 1.** Die-back of branches associated with bacterial canker in spring on a second leaf tree.

**Figure 2A.** Leaf and flower buds failed to open (dead-bud) and branch die-back occurred. Also, note the strappy-like leaf growth on the other branches.

**Figure 2B.** Developing canker at the base of a dead bud that has failed to open.



**Figure 3.** Branch of previous year's growth that has died from bacterial canker with areas of necrotic tissue developing in the wood of older, secondary scaffold limb into which the disease has spread.

**Figure 4.** Apparently healthy shoots emerging below the areas killed from bacterial canker.

The bacterial canker pathogen can enter the twigs through leaf scars as leaf drop occurs in autumn. The bacterium is a weak, opportunistic pathogen, being ubiquitous and capable of surviving on the surfaces of host and non-host plants without causing disease. Numerous factors can predispose a peach tree to infection and development of bacterial canker. These factors include low soil pH, rootstock, nematodes (especially the ring nematode), soil type (more common in light, sandy soils), tree age, inappropriate cultural practices such as early pruning, deep disking that damages roots, and environmental factors such as excess autumn and winter rainfall and temperature extremes that injure the tree. Winter months in which rainfall is frequent, with temperatures seldom dropping below freezing, are most commonly associated with the occurrence of "dead bud" and bacterial canker the following spring on peach trees in the Southeast.

## CONTROL

In the Southeast, the occurrence of bacterial canker on peaches is sporadic. Controls, such as fall application of coppers timed with the occurrence of leaf drop, are generally not practical. In southeastern peach culture, management of bacterial canker is considered an important component of managing the peach tree short life complex. Management tactics for bacterial canker are described in the peach tree short life chapter.

## REFERENCES

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