



STEM-PITTING DISEASE OF STONE FRUITS

Stem-pitting, a serious virus disease of peach and other stone fruits (*Prunus* spp), was first noted in 1958 on peaches in West Virginia. Since then, stem-pitting has been observed in the field in 36 commercially important peach cultivars and seedlings in the United States (California, Delaware, Georgia, Kentucky, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Virginia, and West Virginia). The disease was first observed in Illinois in June, 1969, in a small peach orchard in Calhoun County. The trees were purchased from an Eastern nursery, one located in an area where the disease is prevalent. Stem-pitting is now rare in Illinois stone fruit orchards.



Figure 1. Peach tree severely stunted due to stem-pitting.

The same disease, closely resembling peach stem-pitting, has been observed in a number of other stone fruits. Stem-pitting has been reported in Maryland and Pennsylvania, appearing in European and Japanese plums; Chinese wild peach; sweet, sour, and Duke cherries; St. Lucie cherry; and apricot. Stem-pitting in European plum was observed in Oregon; also, in sour and sweet cherries and apricot in British Columbia (Canada).

Orchards in several Mid-Atlantic States have had as much as 75 percent of the trees diseased. Since the virus is infectious, other fruit trees and wild perennial plants may serve as reservoirs for the spread of the stem-pitting disease.

Recent studies show that certain strains of the tomato ringspot virus are implicated in stem-pitting of stone fruit trees. The natural spread of the disease has been observed in stone fruit orchards.

Typically, the spread is in the row from an infected tree to an adjacent, healthy tree. The general symptoms of stem-pitting in peach and other stone fruits are strikingly similar, and there is conclusive experimental evidence that peach stem-pitting and the stem-pitting disease in other stone fruits are caused by the same virus, which is transmitted from infected to healthy trees by grafting and budding and through the soil.

General foliar symptoms similar to stem pitting are known to be caused by wood- and root-rotting fungi, crown gall, Valsa canker, tree borers, girdling by mice or woodchucks, nutrient deficiencies, cultivator or herbicide injury, and cold damage.

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SYMPTOMS

Foliage. Trees affected by stem-pitting have the general appearance of being girdled or damaged by an infectious root or trunk disease (Figure 1). Terminal shoot growth becomes slightly to severely stunted. The leaves curl or roll upward (lengthwise), droop, and may be pale green to yellowish. The leaves become progressively more yellow, often reddish to purplish in the late summer, and drop sooner than those on healthy trees. Once infected, stem-pitted trees do not resume normal growth.

Bark and wood. As the disease progresses, the trunk often becomes noticeably enlarged at the ground level and below (Figure 2). Below ground level, the enlarged portion of the trunk has very thick, spongy bark, two to four times or more the normal thickness.

When bark is removed from the enlarged trunk area, shallow to deep longitudinal pits and grooves in the sapwood, and corresponding bark growth ridges embedded in the wood are seen (Figure 3). The occurrence and extent of pitting will depend on the *Prunus* species, variety (cultivar), scion-rootstock combination, stage of the disease, and perhaps other factors. In the very early stages, stem-pitting symptoms may not be evident on trees with an enlarged trunk area and thickened, spongy bark. Pitting usually starts in the enlarged trunk area below ground, progressing to the soil line and then above and downward into the main roots.

Young, diseased trees tend to break off easily in the enlarged trunk area, up to four years after transplanting in an orchard, exposing highly disorganized tissue throughout the woody cylinder. This type of breakage has been confused with rootstock-scion incompatibility, although the break is seldom at the graft union. The lack of normal growth rings suggests that the trees are affected in the nursery. Infected trees often have weak, poorly anchored root systems. The feeder roots are often decayed.

The tendency to break is directly related to a high proportion of disorganized woody tissue. Trees that are prone to break show fewer normal annual growth rings than disorganized ones in the woody cylinder. Affected peach trees with a large number of normal annual growth rings, surrounded by few disorganized ones, have excellent anchorage. Diseased trees in the nursery are difficult to detect.

Fruit. Fruits on stem-pitted trees ripen prematurely, have poor flavor, do not size properly, are often more deeply colored than normal, and may drop prematurely. It is difficult to make a positive and quick diagnosis of the stem-pitting disease at an early stage by scientific tests.

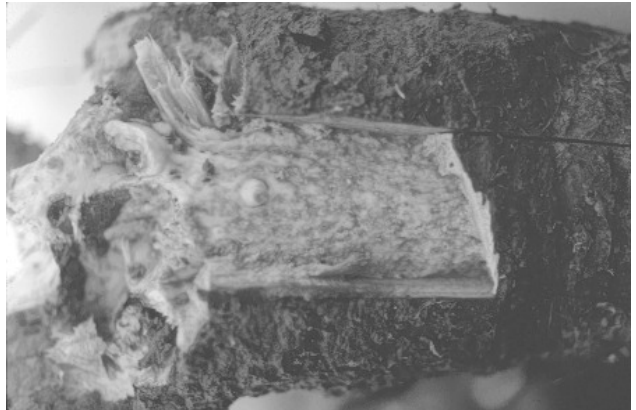


Figure 2. Thick, spongy bark on trunk of peach tree , caused by stem-pitting.

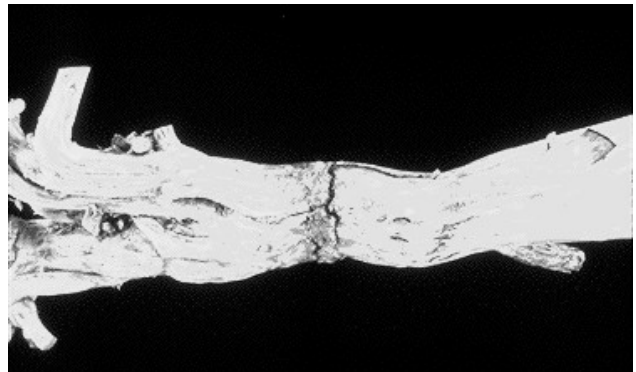


Figure 3. Note longitudinal pits and grooves in wood of peach tree.

Control

1. Stone fruit trees for sale in Illinois and other states should be correctly labeled concerning the name and origin of both rootstock and scion. Proper labeling by nurseries on plant health and disease, required by state and federal regulatory agencies, should be demanded by orchardists.
2. Orchardists should purchase only nursery trees certified as free of specific viruses, including the *Prunus* stem-pitting virus.
3. The prompt removal and burning of stem-pitted trees in place is advisable. No diseased trees are known to have recovered. Avoid dragging uprooted, pitted trees through an orchard or nursery, since this may spread the *Prunus* stem-pitting virus.
4. Do not immediately replant in orchard or nursery sites where stem-pitted trees have been destroyed. Avoid repeated use of infested nursery sites for growing stone fruit trees.
5. Only Marianna 2624, among commonly used rootstocks for stone fruits, is immune to the *Prunus* stem-pitting virus.