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NSW DEPARTMENT OF
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Black heart of stone fruit

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Orange

Black heart of stone fruit is fairly uncommon in New South Wales. When it occurs, it is usually where orchards have been planted after, or interplanted with, tomatoes or potatoes infected with the fungus.

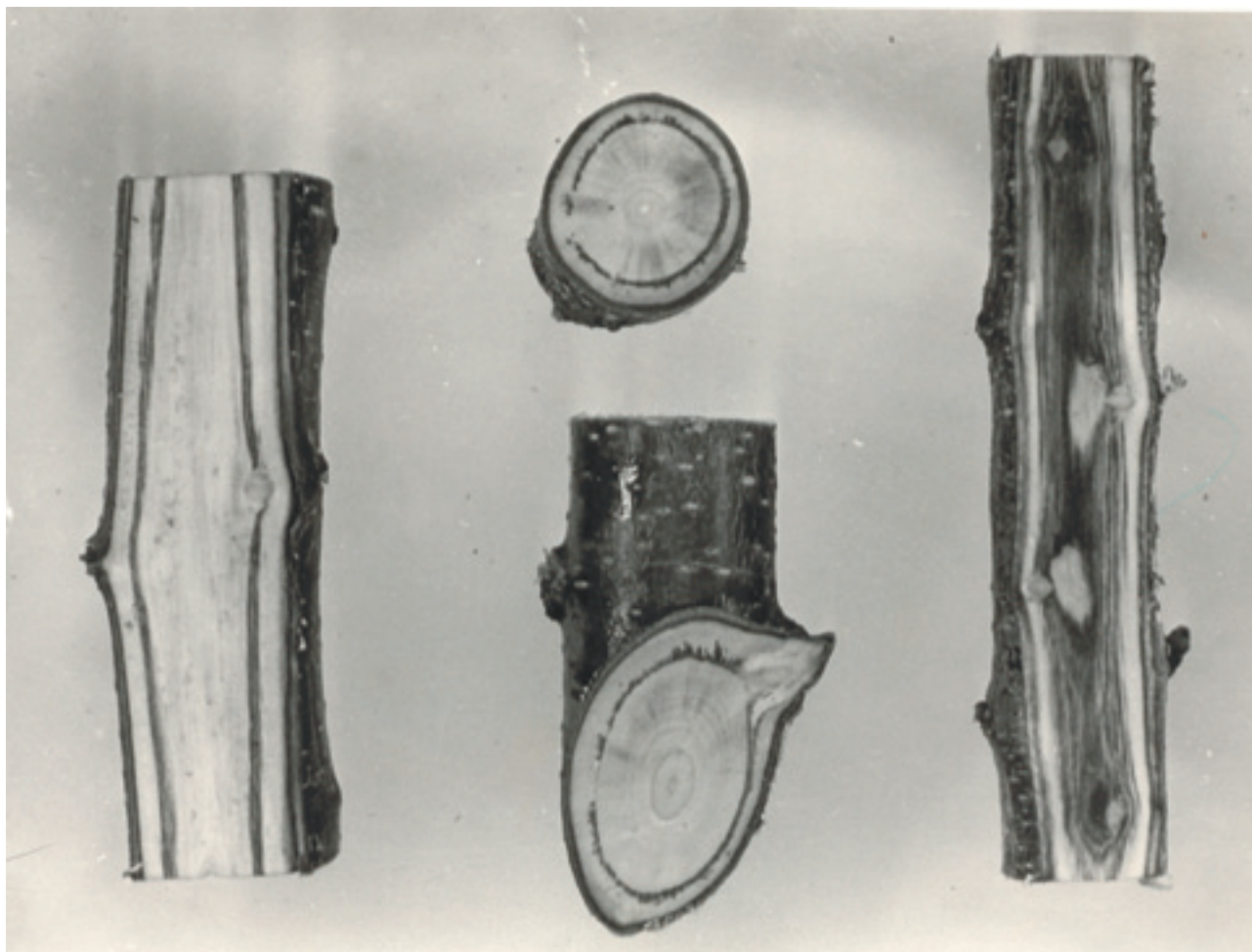
CAUSE

The fungus *Verticillium dahliae*.

SYMPTOMS

The first obvious symptom is wilting of the leaves at ends of the laterals or leaders, usually after the onset of hot summer weather. Often this occurs on one side of the tree. Initially the other side of the tree may appear healthy. Wilting soon spreads and affected leaves yellow and fall. When an infected tree is pruned, the

Typical wood staining from black heart in four-year-old apricot.



wood is stained brown to black in a central ring and this characteristic symptom gives the disease its common name 'back heart'.

THE DISEASE

Once introduced into the soil, the fungus can survive for years: the longest known infection period in New South Wales is 5 years.

The fungus attacks a wide range of plants including stone fruit, tomato and potato. Most infection of stone fruit seems to come from infected tomato plants grown in the area before the trees were planted or grown between rows of young trees. Some weeds can also harbour infection.

The disease is spread by cultivation of infested soil, which spreads the resting bodies of the fungus, or by planting infected plants.

Soon after the trees are planted into infested soil in late winter, soil temperatures start to rise towards the optimum 20°C to 25°C for infection by *Verticillium dahliae*. The fungus attacks through the roots and progresses up through the vascular (water-conducting) tissue. Gum is produced internally and this, plus the mycelium of the fungus, blocks the water passages and causes the plant to wilt.

Black heart is only an economic problem in young trees 3 to 6 years old. Severely infected trees may die within a year of developing symptoms. This often makes it necessary to replant a whole block with some other fruit, which means not only direct loss of the infected trees but also a loss of about 3 years' production from that land. Less severely infected trees may partially recover if infected limbs are removed, but their economic life cannot be predicted.

VARIETAL REACTION

Apricots, plums, peaches and nectarines and almonds have been infected in New South Wales.

CONTROL

There is no known cure for infected fruit trees. Reduce the chance of infection by not planting stone fruit in land that has grown tomatoes or potatoes, and do not use these vegetables for inter-row cropping. Ideally, new plantings should follow several years of grass pasture.

Weeds like fat hen (*Cenopodium album*) can also be infected, so keep the area weed-free. To help reduce infestation, consider cropping with grass and clover between the rows of young trees. When replanting a site where an infected tree has died, remove as many roots as possible. Treat the area for about 3 m diameter with a registered fumigant before putting in new trees. Consult your district horticulturist for details.

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