

New Canker Disease Found in Pecans

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During the spring of 1969 a canker disease of pecans that occurred in commercial plantings in the Sahuarita and Continental areas of Pima County was identified and shown to be caused by a species of the fungus, *Cytospora*. Approximately 150-200 trees failed to leaf out during April and May and were shown to be killed by fungal infections that girdled the main trunk. Cankers were also numerous on scaffold and other branches. The disease was scattered throughout a four thousand acre planting but occurred primarily on 2 and 3 year-old trees. Although the disease is common on a large number of other trees including apple, apricot, cherry, peach, plum, walnuts, and a number of native Arizona trees including cottonwood, it has never previously been reported on pecan. To the authors' knowledge, this is the first published report of the disease on pecans in the United States.

The fungus pathogen needs injuries to gain entry into host tissue. Infections on the main trunk of 2 and 3

year-old trees were common. The most likely injury-factors for fungal infections were either winter-low temperature damage, a late spring frost during 1968, summer-sun burn, or pruning injuries. The extent of canker development was determined by superficially removing the bark from suspected diseased areas and noting the sharp delineation between healthy and diseased tissue (light and dark colored wood, respectively). Orangeish spore masses in long chains were microscopically visible in the cankered areas. The spores are extruded from small, black, pinhead-sized fungal structures, partially imbedded in the diseased bark, called pycnidia. These air-borne spores, which are produced during periods of moisture, are the primary sources of infection. Original inoculum probably came from diseased native trees in the area as examinations of a large number of newly planted trees were disease-free, indicating healthy planting stock. The disease occurred on the varieties Barton, Bradley, and Western Schley.

The variety, Riverside, used as a rootstock, appeared to be disease free.

CONTROL — Sunburn damage to young trees prior to adequate canopy development may be reduced by application of reflective materials to reduce trunk temperatures. Various dilutions of latex paint (white, indoor) with water have been recently used in other states to reduce the incidence of *Cytospora* canker in stone fruits. The material may be sprayed or painted on the trunk and scaffold branches. Winter injury may be reduced by preventing excessive tree growth late in the fall caused by late fertilization and irrigation. Pruning, if possible, should be done in early spring so that active growth and subsequent callus formation may reduce the period of susceptibility to fungus infection. Diseased wood, because it is a source of inoculum, should be removed. Pruning wounds should be treated with a wound dressing. Although the efficacy of fungicide applications to pruning wounds in pecans has not been determined, it is reasonable to believe from studies in other trees that this would be a valuable control measure. Tools used in the pruning operations should be dipped in a disinfectant such as alcohol, formaldehyde, or sodium hypochlorite. Mechanical, herbicidal, or other types of injury should be avoided.

Because the fungus is inactive during the summer, inoculation studies will be initiated in the fall to determine if differences in disease tolerance exist in pecan varieties adapted to Arizona growing conditions.

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(Root Rot in Pecans)

Unfortunately, there are no known pecan varieties found to be resistant to Root Rot.

Planting Replacement Trees

When a tree is lost from Root Rot infestation, the soil can be prepared prior to the planting of a replacement tree. Dig the tree hole 8 by 8 by 2.5 feet, a hole which will yield 80 cubic feet of soil. Twenty pounds of soil sulphur, ten pounds of ammonium sulphate, and eight cubic feet of manure should be distributed through the soil.

Fill the hole in the following manner alternating the layers:

Step one: put one inch of manure on the bottom of the hole upon which you scatter some of the sulphur and

ammonium sulphate.

Step two: place two inches of the soil on top of the manure.

Step three: repeat step one. Step four: repeat step two. Continue building alternating layers until the hole is filled to four inches from the top. Flood the depression to settle the soil and make sure it is thoroughly soaked.

Wait one month, then apply water before placing the replacement tree into the hole. If you are impatient, plant the new tree in the treated hole making sure that the roots do not come in contact with the treated soil. Use untreated soil around taproot.

This method has been used successfully for 25 years in planting replacement trees.