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Anthracnose of Sycamore and how to

An American sycamore with severe anthracnose symptoms. Most of the leaves were killed shortly after leaf emergence in the spring.

ONE OF the more unsightly nonlethal shade tree diseases is sycamore anthracnose. This disease is caused by a fungus that attacks leaves, twigs, and occasionally trunks of sycamore. It is most evident in May and June following opening of buds and emergence of new shoots. Young shoots are killed when the leaves are ½ inch to 2 inches wide. An attacked tree has the general appearance of severe frost injury. Although the entire crown may be defoliated, often the lower half of the crown is affected more severely than the upper half. New leaves will appear during the summer but repeated attacks reduce growth and vigor of the tree. Occasionally trees become deformed and unsightly.

Sycamore anthracnose has been reported from almost every state in the United States in which American sycamore is a native tree. The states most frequently reporting severe occurrence are Missouri, Illinois, Indiana, Ohio, Pennsylvania, Maryland, Delaware, New Jersey, New York, Connecticut, and Massachusetts. Apparently the conditions favorable for disease development occur more frequently in these states.

Sycamore anthracnose is extremely severe in some years and almost negligible in others.

Shoot blight. Many of the young shoots on this branch were killed shortly after emerging from the buds. A few shoots were not killed and on these the leaves are normal in size.

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It has long been observed that the disease occurs during "cold, wet springs." Recently it has been determined that spring temperature, not rainfall, is the dominant factor associated with disease severity. The temperature during the 2-week period immediately following first sycamore leaf emergence in the spring is of crucial importance. If the daily mean temperature for this 2-week period averages below 55 degrees, sycamore anthracnose is likely to be severe. As this temperature increases from 55 to 60 degrees sycamore anthracnose tends to be less severe. If the temperature for this period is above 60 degrees, few or no anthracnose symptoms will appear.

Most Susceptible Species

The species of *Platanus* subject to this disease are *P. occidentalis*, American sycamore (also called American plane); *P. acerifolia*, London plane; *P. orientalis*, Oriental plane; *P. racemosa*, California sycamore. The disease is more severe and occurs more often on *P. occidentalis* than on the other species named. However, there appears to be a variation in susceptibility within the species *P. occidentalis*. Because of severity of sycamore anthracnose on *P. occidentalis* in England, Holland, Belgium, Northern France, and Germany, the common *Platanus* species grown in these countries is *P. acerifolia*, the London plane.

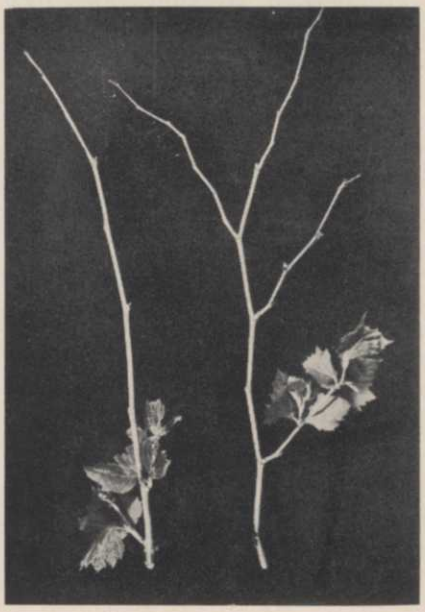
The fungus that causes sycamore anthracnose is named *Gnomonia platani*. Earlier the fungus was mistakenly named *Gnomonia veneta*. Unfortunately, most European and American writers have continued to call the sycamore anthracnose fungus *Gnomonia veneta*.

The fungus causing anthracnose of oak often has been identified as the same fungus causing anthracnose of sycamore. Considering morphological, cultural, and pathogenic differences, the author feels that the fungus causing oak anthracnose is distinct and separate from the fungus causing sycamore anthracnose. The oak anthracnose fungus is *Gnomonia quercina*.

Four Developmental Stages

There are four developmental stages of sycamore anthracnose: bud, twig, shoot, and leaf blight. One or more of these may be observed during one season. The leaf blight stage probably originates following penetration of the leaf by fungus inoculum from an external source. During the summer and fall the fungus grows down the leaf veins, through the petiole, and infects the current season twig. The bud, twig, and shoot blight stages develop the following spring. They are the result of girdling action and canker formation in the infected twigs. The fungus in the canker usually remains active the second year

Bud blight. The buds failed to open because the twig tissue surrounding the buds was killed by fungus action.



Twig blight. The terminal portions of these twigs died after the twigs were girdled by the fungus.

following infection, and the canker increases in size. The repeated killing of twigs and accompanying canker formation throughout the crown causes abnormal branching and gnarled growths on many trees. Occasionally small trees are killed.

The four stages of anthracnose are described as follows:

Bud blight. The fungus present in the twig girdles and kills the tissue surrounding an individual bud before the bud expands or opens in the spring.

Twig blight. The fungus present in the twig girdles and kills the distal (tip) portion of the twig prior to bud expansion in the spring.

Shoot blight. This is similar to bud and twig blight but occurs later in the season. The fungus present in the twig girdles and kills tissue surrounding shoots that emerge from individual buds, or girdles and kills the entire twig containing many emerging shoots. Shoot blight occurs when the leaves on the emerging shoots are from ½ to 2 inches wide. It is often confused with frost injury.

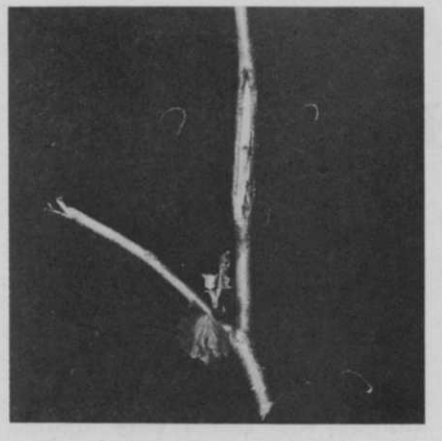
Leaf blight. This stage occurs still later in the growing season. The first symptoms on the leaf blade are small faded, chlorotic spots. Spots that occur alongside or near veins increase in size and become necrotic (dried and shriveled). Necrotic areas along the midrib or main veins increase rapidly in size. When a major portion of the leaf blade or the petiole becomes diseased the leaf falls.

How to Protect Sycamores

Sycamores can be protected from anthracnose by application of an organic mercury fungicide. In areas where anthracnose occurs frequently, and where the American sycamore is highly valuable, the fungicide should be applied annually. In areas where sycamore is less valuable, the fungicide should be applied the year following disease occurrence to prevent excessive weakening of affected trees due to attacks during two consecutive years. Spraying of London plane is usually not warranted.

In most instances one application of the fungicide, properly timed, is adequate. Application of the fungicide following appearance of disease symptoms is of little or no benefit. The spray must be applied in the spring when the sycamore buds are swelling and the bud caps are breaking.

Leaf blight. Necrotic areas along the leaf veins are characteristic leaf blight symptoms of sycamore anthracnose.



A 2-year-old canker on a twig of American sycamore.

Suggested organic mercury fungicides and rates of usage per 100 gallons of spray are as follows:

Coromerc, 1½ pounds; Puratized Agricultural Spray, 1½ pints; or Phix Apple Spray, ½ pound. In those unusual years when the weather remains cold for an extended period following application of the fungicide, a second application is recommended after 14 days and at two-thirds the previously suggested rate.

Why the organic mercury fungicides are effective in controlling anthracnose is not fully understood. Apparently they are able to penetrate the bark or wood of twigs in sufficient concentration to reduce fungus growth and prevent girdling of the buds or twigs.

The sycamore is a fast-growing tree that has been used extensively in recent years as a shade tree for home plantings. In areas where anthracnose is severe, sycamore will need special care, and planting other tree species is recommended.

Systemics Promising For Shade Trees

Systemic insecticides, which are absorbed by trees and translocated to stems and leaves, have definite advantages over spraying, according to Dr. Carlton S. Koehler, associate entomologist at the University of California, Berkeley. However, he does not expect systemics to replace conventional sprays.

Cautioning that some trees cannot be treated with systemics, the California entomologist adds that an overdose of systemic insecticide can do more harm to a tree than overspraying. He lists the advantages of systemics as their long residual action, economy, freedom from destruction of natural enemies of tree pests, simplicity of equipment required for treatment, and the ability to treat trees with systemics in unsatisfactory spraying weather.

Dr. Koehler also reports that in tests with Bidrin implantations at 6″ intervals around elm trunks, aphids were controlled for 50 days and elm leaf beetles for an entire season.

T-H Improves Tedion

A new wettable powder formulation of its Tedion miticide has been announced by Thompson-Hayward. Containing 50% actual Tedion concentrate, the new W-50 formulation is said to be more economical and easier to handle than products previously available. Also marketed in an emulsifiable concentrate, W-50 is formulated for killing mite eggs, larvae, and nymphs.

Additional information on the new formulation and its uses can be obtained from Thompson-Hayward Chemical Co., Kansas City, Kans. 66110.