

PEACOCK SPOT and CERCOSPORA FOLIAR DISEASES ON OLIVE

By Paul Vossen

There are two foliar diseases of olive that need to be managed in order to have highly productive orchards. Peacock spot is caused by an organism called *Spilocaea oleaginea*. This is a fungus disease that thrives in years when we get frequent fall, winter, and spring rains. It normally causes dark spotting with a halo around each spot – see the photo below. Another defoliating fungus called *Cercospora cladosporioides* (*Mycocentrospora cladosporioides*), has been isolated from orchards on the north coast of California. Cercospora causes sooty-mold-like symptoms on the undersides of the leaves, yellowing, and leaf drop, but no spots. The two diseases develop under very similar conditions. In rainy years, the only orchards without yellow leaves and significant defoliation are those that had been sprayed with copper, before the fall rains began.



These diseases are particularly important since they cause leaf drop and partial defoliation of branches, which weakens the trees and reduces crop set. Olive trees store most of their energy in their leaves. Defoliation will result in less shoot growth, decreased fruit set, and poor flower bud formation for the following year. With a high level of inoculum in an orchard from peacock spot and cercospora fungi, the likelihood of more disease is increased, especially if we get early fall rains that can spread it to the new shoot growth. The more it rains, the more peacock spot and cercospora you will see. During drier winters, the problem will be minimal.

Most of the symptoms of this foliar disease complex become evident in the late spring, but nothing can be done to control peacock spot and cercospora at that time. Treatment is preventative and must begin in the fall. An application of fixed copper fungicide as early as possible after harvest, and hopefully before most of the fall rains, is essential for good control. Complete coverage is necessary, requiring a power sprayer with high pressure to cover the leaves on both sides, especially in the interior of the tree.

Infection occurs in the fall with temperatures between 35°F and 80°F, but the optimum temperature is 58°F to 75°F. About 48 hours of free moisture allows the germinating spores to infect the leaf and cause significant disease. The warmer the temperature, up to about 75°F, the shorter the time necessary for infection to occur; it can be as little as 14 hours. Both old and young leaves are vulnerable, and most varieties are susceptible, yet there are some differences. Winter and spring infections can occur too if there is continued rainfall, so in wet areas or when disease pressure is high, a second preventive application should go on about late February.

Peacock Spot and Cercospora are much worse in low lying areas or under conditions of heavy dew, fog, high humidity, low sunlight, a closed tree canopy, or excessive sprinkler irrigation that keeps the trees wet. If these conditions exist during the summer, the fruit can also become infected.

These diseases are not significantly affected by tree nutrition, but excessive nitrogen and low calcium may predispose the trees to greater infection. The only reliable control is covering the leaves with fixed copper sprays as a protectant. Foliar nutrients and compost tea have not been proven effective. Copper sprays should be applied before major fall and winter rains have a chance to spread the spores to the new leaves. Copper must not be applied to the fruit near harvest, because it is intentionally made difficult to wash off and you absolutely do not want any copper residue in the olive oil.

Since the fall rains usually come prior to harvest this leaves orchards open to infection. Oil olives



that are harvested late (November to January) may get rained on several times before they can be protected. The best that can be done is to get the application of fixed copper on immediately after harvest. If the orchard is non-bearing, it can be sprayed any time. Fixed coppers come in various formulations of copper hydroxide, copper oxychloride, tribasic copper sulfate, and copper oxide. Some are legally classified as organic minerals.

The key to controlling this disease complex is consistent suppression; maintaining a low inoculum level should be your primary concern. During years when we get a lot of rainy weather prior to or during harvest you will be pleased if you have had very little of these diseases built up and very frustrated if it is raining and you can not do anything until after harvest.

For more information see the University of California Integrated Pest Management (IPM) Guidelines at: <http://www.ipm.ucdavis.edu/PMG/selectnewpest.olives.html>