

ANTHRACNOSE OF GRAPE

Anthracnose, caused by the fungus *Elsinoe ampelina*, has been reported from all grape growing areas in the world. Anthracnose is considered a disease of rainy, humid regions. This disease is a problem in east of the Rocky Mountains in the United States. Anthracnose reduces the quality and quantity of the crop and weakens the vine. Once the disease is established in a vineyard, it can be very destructive.

Symptoms

All succulent parts of the plant including stems, leaves, petioles, tendrils, young shoots, and berries can be attacked, but lesions on shoots and berries are most common and destructive.

Symptoms on young, succulent shoots first appear as numerous small, circular, and reddish spots (Figures 1 and 2). Spots then enlarge become sunken and produce lesions with gray centers (Figure 2). Dark reddish-brown to violet-black margins eventually surround the lesions. Lesions may coalesce and kill the shoot.



Figure 1. Anthracnose lesions on a grape leaf (Courtesy APS, W. Gartel).



Figure 2. Anthracnose lesions on a grape shoot (Courtesy APS, W. Gartel). round or angular edges (Figure

A slightly raised area may form around the edge of the lesion. Infected areas may crack, causing shoots to become brittle. Anthracnose lesions on shoots may be confused with hail injury; however, unlike hail damage, the edges of the wounds caused by anthracnose pathogen are raised and black. In addition, hail damage generally appears on only one side of the shoot, whereas anthracnose is more generally distributed. Anthracnose on petioles appears similar to that on the shoots.

Leaf spots are often numerous and develop in a similar manner to those on shoots. Eventually, they become circular with gray centers and brown to black margins with round or angular edges.

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The necrotic center of the lesion often drops out, creating a shot-hole appearance (Figure 1). Young leaves are more susceptible to infection than older leaf. When veins are affected, especially on young leaves, the lesions prevent normal development, resulting in malformation or complete drying or burning of the leaf. Lesions may cover the entire leaf blade or appear mainly along the veins.

On berries, small, reddish circular spots develop. The spots then enlarge to an average diameter of ¼ inch and may become slightly sunken. The centers of the spots turn whitish gray and are surrounded by narrow reddish-brown to black margins (Figure 3). This typical symptom on fruit often resembles a bird's eye, and the disease has been called bird's eye rot. Fungal fruiting structures (acervuli) develop in the lesions. A pinkish mass of the fungal spores (conidia) exudes from these structures during prolonged wet weather.



Figure 3. Anthracnose lesions on grape berries (Courtesy APS, R. C. Pearson).

Disease cycle

Elsinoe ampelina overwinters in the vineyards as sclerotia (fungus survival structures) on infected shoots (Figure 4). In spring, sclerotia on infected shoots germinate to produce abundant spores (conidia) when they are wet for 24 hours or more at temperatures above 36°F. Thereafter, 2 mm or more of rain disseminates conidia to green tissue, where they germinate to cause primary infection when free water is present for at least 12 hours. Conidia can germinate and infect at 36-90°F. The subsequent incubation period varies from 13 days at 36°F to four days at 90°F. The optimal temperatures for disease development are 75-79°F.

Another type of spore, called an ascospore, is produced within sexual fruiting bodies may also form on infected canes and berries left on the ground or in the trellis from the previous year (Figure 4). Temperature and moisture are the main environmental factors influencing disease development.

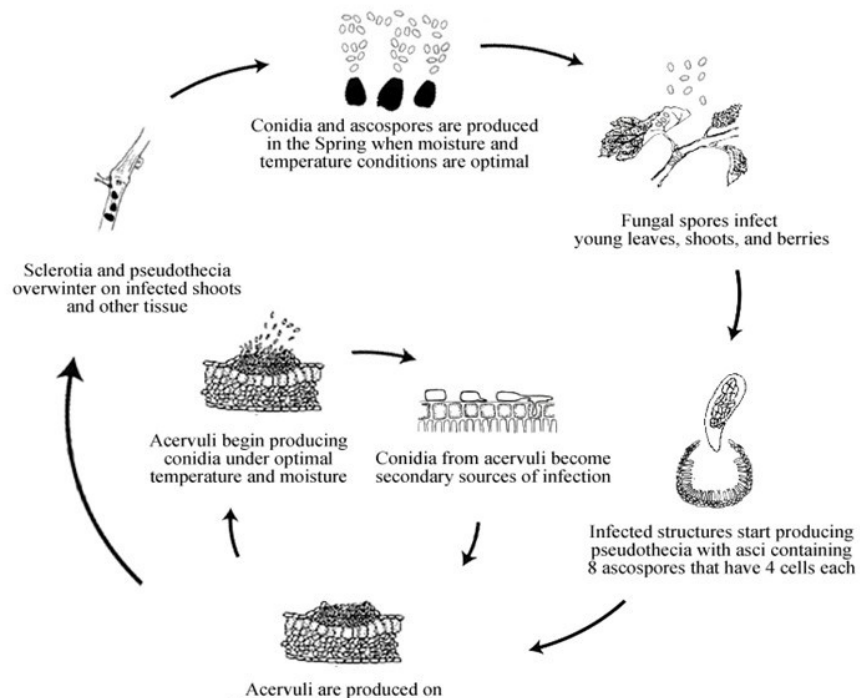


Figure 4. Disease cycle of grape anthracnose (Photo: Wikipedia).

Disease management

The following practices help to minimize infection and crop losses by anthracnose. 1) Cultivars differ in their susceptibility to anthracnose. Planting highly susceptible cultivars in heavy soils with poor drainage should be avoided. 2) Sanitation is very important. Prune out and destroy diseased plant parts during dormant season. This includes infected shoots, cluster stems, and berries. This should reduce the amount of primary inoculum for the disease in the vineyard. 3) Eliminate wild grapes near the vineyard. The pathogen can infect wild grapes, and infected wild grapes have been observed near diseased vineyard. Wild grapes are excellent place for the disease to develop and serve as a reservoir for the pathogen. 4) Canopy management can aid in disease management. Any practice that opens the canopy to improve air circulation and reduce drying time of susceptible tissue is beneficial for disease management. These practices include selection of the proper training system, shoot positioning, and leaf removal. 5) Fungicide use is necessary where the disease is established. A dormant application of Liquid Lime Sulfur in early spring, followed by application of foliar fungicides during the growing season. Phytosanitary regulations that prohibit transport of infected propagation material should be observed. For the update information on fungicide use for managing anthracnose of grapes, check the Midwest Fruit Pest Management Guide, University of Illinois Extension - ICSG (<https://ag.purdue.edu/hla/hort/documents/id-465.pdf>). This is an annually updated publication.