

# Diseases of Avocado in Florida

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Commercial and backyard plantings of avocados have increased all over south Florida in recent years. In the subtropical environment, where this crop is grown, diseases, especially those incited by plant parasitic fungi, commonly cause important reductions in yield and quality of avocado fruit. This fact sheet describes some of the commonly encountered diseases of avocado in Florida, and the weather conditions conducive to outbreaks of each disease. Due to frequent changes in the availability and use restrictions for specific agricultural chemicals, consult the University of Florida Extension Service for specific, current fungicide recommendations.

## Scab

Avocado scab is caused by the fungus *Sphaceloma perseae*. The disease is most prominent and most easily diagnosed on the fruit of very susceptible varieties. On the fruit, spots are first oval, slightly raised, and brown to purplish-brown. As the fruit matures, spots coalesce and the centers of these spots become sunken (Fig. 1). A large portion of the fruit may become rough.

The lesions on the leaves are less well-known and less readily observed, because they most often occur in the upper part of the tree canopy. Scab starts on leaves as discrete, small spots less than 1/8 inch (3.5 mm) in diameter.

The spots are especially common on veins on the underside of leaves. As leaf spots develop, they very often take on a star-like pattern (Fig. 2), with the center eventually dropping out to give a "shot-hole" effect. Symptoms on petioles and twigs include oval to elongate spots that may, on hurried inspection, be confused with scale insects.

Scab infection is favored by cool, moist conditions. This fungus is a pathogen of young tissue. Leaves become quite resistant after 1 month. The fruit of all varieties become resistant once they reach about half size. One of the most important economic aspects of scab fruit infection is the creation of portals for the entry of fruit-rotting organisms (see anthracnose below).

Chemical sprays play an important role in the adequate control of this disease. There is considerable variability among varieties in their susceptibility to scab. Lula, Hall, and most avocado seedlings are very susceptible. The varieties Booth 3, 5, 7, 8; Monroe; Choquette; and Trapp are moderately susceptible. Waldin, Pollock, Booth 1, and Collins are only slightly susceptible.

## Cercospora Spot

Cercospora spot is caused by the fungus *Cercospora purpurea*. Individual spots on leaves are very small, less than 1/10 inch (2.5 mm) in

diameter, and brown to purple in color. The angular appearance of the leaf spots is highly diagnostic (Fig. 3). Many of these leaf spots are surrounded by yellow haloes. During the rainy season, grayish spore masses may be seen on the surface of the spots with a hand lens. Individual leaf spots may coalesce to form irregular areas of brown tissue.

On the fruit, damage begins as small, irregular, brown spots that enlarge and coalesce (Fig. 4). Fissures often appear in these spots and are very commonly entry points for the anthracnose fungus.

Wind and rain play an important role in dissemination of *C. purpurea* spores. Insects may also spread the pathogen. The most favorable time of year for fruit infection appears to be during the rainy season from May through September.

The disease can be controlled to a great degree by timely fungicide applications. However, control is more difficult and requires more fungicide use for late-maturing varieties, such as Lula and Choquette.

### **Anthracnose**

Anthracnose, caused by the fungus *Colletotrichum gleosporioides*, is a serious disease of avocado fruit. As far as is known, no other plant parts are infected. Fruit lesions start as circular, slightly sunken, brown to black spots. These lesions enlarge rapidly, under favorable conditions, very often becoming conspicuously sunken, and very often develop cracks radiating from the lesion center (Fig. 5). One observes the most serious aspect of this disease on maturing fruit. The fungus can progress into the flesh of the avocado fruit, producing a greenish-black decay, which eventually may involve a large portion of the fruit.

This fungus is considered to be a "weak" pathogen of avocado fruit; i. e., it requires some

type of wound created by some other means, in order to penetrate the avocado and subsequently cause disease. Mechanical damage, scab, and especially *Cercospora* spot lesions are known entry sites for the anthracnose fungus. Insects may also provide wound-infection sites.

Since all varieties are susceptible, good anthracnose control depends on good control of other diseases (especially *Cercospora* spot) and avoidance of cuts and bruises to the fruit in handling. Fruits showing any sign of anthracnose should not be packed in cartons with healthy fruit. Harvesting fruits in an immature condition may substantially contribute to anthracnose appearance at the market place, because the fungus may be carried on the immature fruit and will subsequently invade the flesh through small cracks made during postharvest handling procedures.

### **Powdery Mildew**

Powdery mildew, caused by the fungus *Oidium*, is a sporadic disease affecting only avocado foliage. To diagnose this problem the observer usually needs to examine the undersurface of leaves. On young leaves the powdery mildew spots are dark green and covered with a dry powdery layer of the causal fungus. On mature leaves, these spots turn purplish brown (Fig. 6), with a whitish fungal growth. These spots eventually lose their undersurface fungal coating, and leave distinctive net-like, brown blotches on the undersurface (Fig. 7). Yellowish areas may later appear on the upper leaf surface, opposite the net-like lesions.

Powdery mildew can occur in all seasons, but can be particularly bad during cool, dry times of the year. If the trees are being sprayed for the other diseases mentioned above, the disease severity is not thought to be above a damage threshold for the crop.

## Algal Leaf Spot

During a period from late summer to late winter an alga named *Cephaleuros* produces leaf spots on avocado, barely visible at first, but attaining 1/4 inch (6.2 mm) in diameter within a few months. The slightly raised roughly circular spots are green, yellowish-green, or rust colored, with rather smooth or fringed margins.

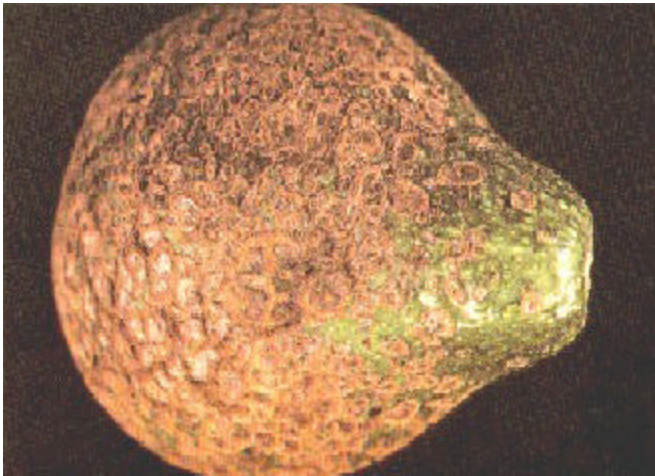
The alga eventually produces rust-colored, microscopic "spores" on the raised surfaces of spots (Fig. 8). For this reason, the disease is sometimes called red alga spot.

Young spots are visible on the upper leaf surface. Later, as they enlarge and become gray to white, they discolor the opposite, lower side of the leaf darkgreen, olive-green, or brown. A yellowish halo may surround these old spots.

Wind and rain carry the "spores" from diseased to healthy leaves. Copper fungicides used for other avocado diseases have provided control in the past.

## Acknowledgement

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**Figure 1. Severe scab infection with much coalescing of lesions on 'Lula' avocado fruit.**



**Figure 2. Scab infection on the underside of avocado leaf.**



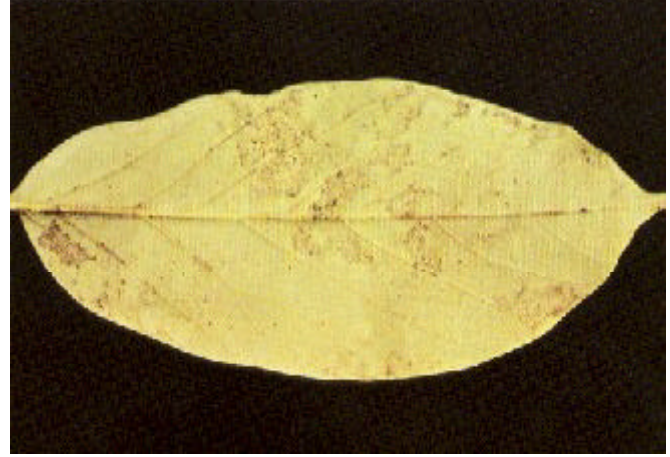
**Figure 3.** *Cercospora* leaf spot on leaf of 'Booth 8' avocado.



**Figure 4.** Advanced state of *Cercospora* infection on fruit of 'Ruehle' avocado.



**Figure 5.** Avocado fruit with anthracnose. The anthracnose is specifically the very large, dark lesion, in the middle of the fruit, with the characteristic splits in the center.

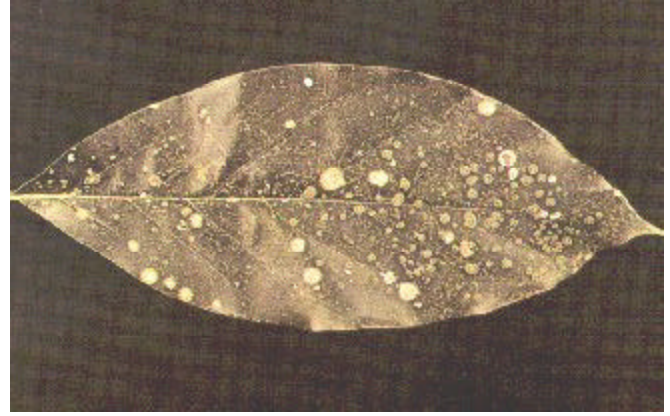


**Figure 6.** Powdery mildew on underside of mature avocado leaf.





**Figure 7. Star-like pattern characteristic of old powdery mildew lesions on underside of avocado leaf.**



**Figure 8. Agal Leaf spot (*Cephaleuros*) on avocado leaf.**