

## Anthracnose<sup>1</sup>

G.E. Brown<sup>2</sup>

### CAUSAL ORGANISM AND DISEASE CYCLE

Anthracnose is caused by the fungus *Colletotrichum gloeosporioides*. The decay develops primarily on fruit subjected to ethylene during commercial degreening. The fungus is a common symptomless inhabitant of citrus rind, and only manifests itself when the rind is weakened. In some instances, ethylene treatment causes sufficient weakening to induce the disease. Spores of this fungus are produced in specialized structures called acervuli, which are formed on the surface of deadwood present in the tree canopy. Initial infection of this deadwood occurs from airborne spores that are produced on debris located in the soil. Fruit infections occur primarily from the localized dispersal of waterborne spores produced on the deadwood. Spores are disseminated to the fruit surfaces during the warm, rainy summer months. The spores germinate and form thick-walled survival structures called appressoria. A small number of the appressoria germinate, form germ tubes that penetrate the healthy rind, and then remain quiescent within the first 3

layers of cells of the flavedo. Injuries can cause these quiescent infections to become active and form lesions.



**Anthracnose.**

Early season cultivars can develop significant amounts of anthracnose following ethylene degreening which stimulates the remaining appressoria to germinate. The Robinson tangerine is particularly susceptible if degreening exceeds 24-36 hours, but serious levels can also develop on navel oranges, Fallglo and Dancy tangerines, and grapefruit. The disease is most severe on the more poorly colored fruit following degreening, but the decay will not spread from infected to healthy fruit in packed containers.

1. This document is PP136, one of a series of the Plant Pathology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date June 1994. Reviewed April 2003. Reviewed February 2011 by Mark Ritenour. Visit the EDIS website at <http://edis.ifas.ufl.edu>.

2. G.E. Brown, courtesy professor, Department of Plant Pathology, Citrus Research and Education Center, Lake Alfred, Florida, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

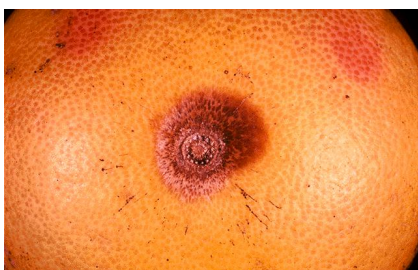
The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee or warranty of the products named, and does not signify that they are approved to the exclusion of others of suitable composition.

## SYMPTOMATOLOGY

Anthracoze lesions associated with bruised or injured rind appear as brown to reddish brown or black spots that may be firm and dry, or if sufficiently advanced, the rind becomes softened. Under humid conditions, the masses of spores on the lesion surface appear pink or salmon-colored. Anthracoze lesions associated with uninjured rind are initially silvery gray and leathery, and they retain the same degree of firmness and elevation as the adjacent healthy rind. As the decay advances, the rind becomes brown to grayish black, and eventually a soft rot occurs. Lesions may develop on any area of the fruit surface, and may form tear-drop patterns in association with appressoria formed by water dispersed spores. Lesions may also form immediately around the button where the fungus colonized the senescent button before spreading into the adjacent healthy rind.



**brown to reddish brown or black spots.**



**button.**

reduce the time of degreening required, and subsequently less decay.

The use of chemical treatments to help reduce the occurrence of anthracnose is discussed in Circular 359-A, Postharvest Decay Control Recommendations for Florida Citrus Fruit .

Immediate storage of packed fruit at temperatures below 40°F will help suppress development of anthracnose.

## CONTROL

Good cultural practices that produce thrifty trees with minimal amounts of deadwood, or removal of deadwood by pruning can aid in the control of anthracnose. Proper ethylene concentrations of 5-10ppm required for optimum degreening should be maintained, because higher levels will not enhance degreening but will significantly increase the incidence of anthracnose. Spot picking or delayed harvest for better natural fruit color development will