

## Brown Rot<sup>1</sup>

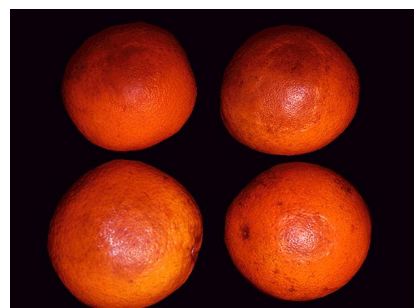
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### CAUSAL ORGANISMS AND DISEASE CYCLE

Brown rot is caused by two species of *Phytophthora*, *P. citrophthora* and *P. parasitica*. *Phytophthora citrophthora* is the predominate cause of brown rot because it produces spores more rapidly and abundantly on infected fruit than *P. parasitica*. *Phytophthora* is a common inhabitant of the soil, particularly the heavier soils of the east coast of the state. Brown rot is a localized disease of mature fruit that may recur year after year in the same grove. It may be severe in seasons with unusually long durations of rainfall and wetting caused by slow-moving tropical depressions or hurricanes. Such conditions are more likely to occur in the early fall than later in the season and therefore, brown rot is found more frequently on early maturing cultivars, such as Hamlin oranges and grapefruit. Spores are produced in the soil and splashed by water to low-hanging fruit of the tree canopy. Additional spores may be produced on these infected fruit, and disseminated by water to fruit higher in the tree. Spores encyst in free water on fruit surfaces, germinate, and the hyphae penetrate the intact rind in a matter of a few hours. Lesions become visible

within a matter of 3 to 4 days at ambient temperatures. Infected fruit may not show symptoms when inspected and graded in the packinghouse, and are packed with sound fruit where the disease may spread in containers during transit and storage. This may be particularly disastrous in export grapefruit shipments to Japan and Europe.



**Brown rot.**

### SYMPTOMATOLOGY

The decay initially occurs as a light brown discoloration of the rind at any location on the fruit surface. The affected area is firm and leathery, and it retains the same degree of firmness and elevation as the adjacent healthy rind. Under humid storage conditions, delicate white mycelium forms on the

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1. This document is PP133, 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. Visit the EDIS Web Site 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.

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lesion surface. Fruit with brown rot have a characteristic pungent, rancid odor, which distinguishes the disease from the stem-end rots.



**delicate white mycelium forms on the lesion surface.**

## **CONTROL**

Cultural practices of pruning to remove low-hanging branches, proper irrigation and soil drainage management, and mowing and herbicide treatment to reduce ground vegetation will help to minimize long periods of wetness in the field under the tree canopy, and reduce the severity of brown rot. Following infection, harvest can be delayed until infected fruit fall to the ground, a period usually requiring 2 weeks. This is suitable only if no additional infection occurs.

Fruit storage at 40°F will significantly reduce development and spread of brown rot. Postharvest fungicides are not effective against this decay, but control can be achieved with field sprays that are described in Circular 359-A, Postharvest Decay Control Recommendations for Florida Citrus Fruit.