PP137

UF UNIVERSITY of FLORIDA
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Sour Rot[1]

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CAUSAL ORGANISM AND DISEASE CYCLE

Sour rot is caused by the fungus *Geotrichum candidum* which is a common inhabitant of citrus soils. The organism is windborne or splash-borne in soil particles to surfaces of fruit in the tree canopy. Higher populations of the fungus are recovered from fruit located in the lower part of the tree, and from fruit surfaces where soil is entrapped, such as scarred surfaces or areas under the button. Fruit dropped to the ground also possess higher populations due to adhering soil. The fungus penetrates the fruit only through injuries, particularly deep injuries that extend into the albedo. These injuries may be caused by insects or mechanical means, such as thorn or stem punctures, or by plugging at harvest.

Fruit are more susceptible to sour rot as they become more mature, and if they contain high amounts of rind moisture, such as with fruit harvested early in the morning following irrigation or rainfall. The disease develops most frequently on specialty fruits, such as tangerines, tangelos and Temple oranges, and late-season grapefruit. Even in ripe fruit, the disease may not develop unless the rind has a relatively high water content and the fruit are stored at high relative humidities. The disease develops most rapidly at temperatures near 80°F that often occur during warm and foggy fall and winter days.

Sour rot.

plugging.

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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.

Field soil and diseased fruit contaminate pallets, washer brushes, belts, conveyors, and other fruit on the packingline. The fungus can also accumulate with dirt and debris in drenchers and soak tanks. Rotten, macerated tissue containing mycelium, spores, and enzymes of the fungus spreads the decay from infected to healthy fruit in packed containers, resulting in a nest of decay. The sour odor, characteristic of sour rot, attracts fruit flies, which can disseminate the fungus to other injured fruit.

SYMPTOMATOLOGY

Initial symptoms of sour rot are similar to those of green and blue mold. The lesion first appears water-soaked, light to dark yellow, and slightly raised. The cuticle is more easily slipped from the epidermis than from lesions formed by *Penicillium*. At high relative humidities, the lesion may be covered with a yeasty, sometimes wrinkled layer of white or cream colored mycelium. The fungus degrades the fruit thoroughly, causing it to disintegrate into a slimy and watery mass. Sour rot is often associated with green mold and is stimulated by its presence.

CONTROL

Sour rot can be reduced by harvesting the fruit carefully to minimize injuries, and by preventing fruit contact with the soil. Harvests delayed until later in the day will help reduce peel moisture and fruit turgidity that enhance injury. Fruit should not be harvested when it has reached an excessively mature stage. Fruit should be graded heavily at the packinghouse immediately following the dump to assure that no rotten fruit are permitted to contaminate the washer brushes and packinghouse line. The packinghouse and packingline, including the washer brushes, should be sanitized daily to eradicate inoculum. Aqueous solutions in drenchers and soak tanks should be treated continuously with a sanitizer, such as chlorine, to prevent the accumulation of sour rot inoculum. Chemical sanitizers and treatments available for the control of sour rot are discussed in Circular 359-A, Postharvest Decay Control Recommendations for Florida Citrus Fruit. Packaging materials that physically separate individual fruit or layers of fruit in packed cartons will help reduce the spread of sour rot from infected to healthy fruit. Storage temperatures of 50°F or below significantly retard sour rot development, but the fungus will rapidly resume growth when fruit are transferred to a higher temperature for retail sale.