

Title Integrated approaches to postharvest disease management in California citrus packinghouses

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Abstract

Practices in the citrus industry evolve rapidly to minimize postharvest decay losses, mostly a result of green mold or blue mold, caused by *Penicillium digitatum* or *P. italicum*, respectively. Current problems include the continued development of fungicide resistance among these pathogens, and compliance with emerging secondary residue standards and other privatized regulation of production and postharvest practices, the rising popularity of new cultivars (such as mandarin oranges, where natural decay resistance is low) and the decline of others (such as Valencia oranges, where natural decay resistance is high), and marketing issues, including exceptionally long storage for distant markets or a requirement for food safety interventions, such as chlorination at high rates. Recently (since 2000) introduced practices in California include fungicide bin drenching of harvested fruit on transit trailers, the use of fungicides in aqueous solutions rather than in waxes to improve their performance, the application of sodium bicarbonate or potassium sorbate in heated tanks or through high-pressure washer nozzles, ozonation of storage rooms to oxidize ethylene and retard sporulation of *Penicillium digitatum* and *P. italicum*, and the introduction of new fungicides (pyrimethanil, azoxystrobin, fludioxonil). Recently evaluated experimental practices include pre-harvest applications of fungicides and growth regulators, mycofumigation with natural volatiles from the fungus *Muscodor albus*, UV-assisted sorting to remove fruit with mechanical injuries before storage (since these later decay at a high frequency), thermal and chemical disinfection of packinghouses and storage rooms, and the use of phosphites before and after harvest.