

Title Control of Sphaeropsis rot in stored apple fruit caused by *Sphaeropsis pyriputrescens* with postharvest fungicides.

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Abstract

Sphaeropsis rot caused by *Sphaeropsis pyriputrescens* is a recently reported postharvest fruit rot disease of apple grown in Washington State. The objective of this study was to develop chemical-based mitigation measures for Sphaeropsis rot in stored apple fruit. To determine in vitro sensitivity of *S. pyriputrescens* to the three registered postharvest fungicides thiabendazole, fludioxonil, and pyrimethanil, 30 isolates of *S. pyriputrescens* obtained from various sources were tested for mycelial growth and conidial germination on fungicide-amended media. Golden Delicious apple fruit were inoculated with the pathogen in the orchard at 2 or 5 weeks before harvest. After harvest, fruit were either nontreated or dipped in thiabendazole, fludioxonil, or pyrimethanil solutions, stored at 0°C, and monitored for decay development for up to 9 months after harvest. The mean effective concentration of a fungicide that inhibits mycelial growth or spore germination by 50% relative to the nonamended control (EC₅₀) values of thiabendazole, fludioxonil, and pyrimethanil on mycelial growth were 0.791, 0.0005, and 2.829 µg/ml, respectively. Fludioxonil and pyrimethanil also were effective in inhibiting conidial germination of the fungus with EC₅₀ values of 0.02 µg/ml for fludioxonil and 5.626 µg/ml for pyrimethanil. All three postharvest fungicides applied at label rates immediately after harvest were equally effective in controlling Sphaeropsis rot in stored apple fruit, reducing disease incidence by 92 to 100% compared with the nontreated control. The results indicated that Sphaeropsis rot may be effectively controlled by the currently registered postharvest fungicides thiabendazole, fludioxonil, and pyrimethanil.