

Title The potential of a new fungicide fludioxonil for stem-end rot and green mold control on Florida citrus fruit

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Citation Postharvest Biology and Technology, Volume 46, Issue 3, December 2007, Pages 262-270

Keywords Postharvest diseases; Postharvest decay control; *Lasiodiplodia theobromae*; *Penicillium digitatum*; Orange; Grapefruit; Tangerine

Abstract

Fludioxonil is a newly registered and classified as reduced-risk fungicide by the US EPA for citrus fruit postharvest treatments. The efficacy of fludioxonil for the control of diplodia stem-end rot caused by *Lasiodiplodia theobromae* and green mold (*Penicillium digitatum*) on Florida citrus fruit was evaluated. The ED₅₀ values of fludioxonil against *L. theobromae* and *P. digitatum* in potato dextrose agar were 0.012 and 0.020 mg/L, respectively. Application of fludioxonil at 250–1200 mg/L on oranges using a simulated commercial drench system before fruit ethylene degreening reduced diplodia stem-end rot incidence by 75.7–88.6%, and fludioxonil at 500–1200 mg/L performed similarly to the commercial postharvest fungicide imazalil or thiabendazole (TBZ) at 1000 mg/L. Fludioxonil was compatible with chlorine in drench suspension as measured by the efficacy of fludioxonil for diplodia stem-end rot control. Fludioxonil also effectively reduced both diplodia stem-end rot and green mold when applied through a simulated commercial packingline system. Fludioxonil was more effective for diplodia stem-end rot control on non-ethylene-treated oranges than on ethylene-treated fruit. Fludioxonil was also effective for the control of TBZ-resistant *P. digitatum* isolates on oranges. An active suppression of *P. digitatum* sporulation by fludioxonil on citrus fruit was observed. However, fludioxonil showed a much less activity for *P. digitatum* sporulation control compared to postharvest fungicide imazalil. The registration of fludioxonil has provided a new alternative, reduced-risk compound for citrus postharvest disease control and fungicide resistance management in Florida.