

**Title** Pyrimethanil – a new fungicide for the control of postharvest decay of citrus fruit  
**Author** Smilanick JL, Bylemans D, Torres Leal GJ and Lesar K  
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### Abstract

Pyrimethanil (PYR, Penbotec<sup>TM</sup> 400SC) recently entered commercial use to control citrus green and blue molds, caused by *Penicillium digitatum* and *P. italicum* respectively. The EC<sub>50</sub> of PYR to inhibit germination of *P. digitatum* conidia was 0.2-0.4 mg/L and was similar from pH 4 to 7. PYR was more effective than several other fungicides when applied up to 24 h after inoculation. Green mold prevalence was reduced more than 90% by PYR at 500 mg/L or higher applied by immersing or drenching lemons or oranges for 30 s, while PYR at 1000 or 2000 mg/L applied in wax over rotating brushes reduced it about 65%. Effective treatments were associated with fruit residues of 1 to 2 mg/kg, below the US regulatory limit of 10 mg/kg. Thiabendazole and imazalil-resistant *P. digitatum* isolates were controlled by PYR. The addition of sodium bicarbonate or potassium sorbate improved PYR performance. PYR was not compatible with chlorine. Mild heating of the PYR solution significantly improved its effectiveness, particularly if the contact time was long, but fruit residues were greatly increased; they approximately doubled for each 5°C increase above 30°C. Control of sporulation by aqueous PYR solutions was better than those in wax, but it was inferior to imazalil and other fungicides. A PYR and imazalil formulation was introduced (Philabuster<sup>TM</sup> 400SC). The recommended discriminatory PYR concentration in glucose agar to identify significantly commercially resistant isolates of *P. digitatum* is 4 mg/L. The range of natural sensitivity of *P. digitatum* isolates to PYR is large and the development of less-sensitive isolates can be induced in culture. PYR-resistant isolates of *Penicillium expansum*, cause of postharvest blue mold of apple, occurred after exposure to UV light and they were stable and relatively fit. However, no commercially significant resistant isolates of *P. digitatum* (n = 900) have been found, although measures to minimize their development are recommended; such as PYR use in aqueous solutions, in mixture with imazalil, bicarbonates, or sorbates, and rigorous programs of resistance monitoring and sanitation. PYR will be particularly useful to control isolates of *P. digitatum* resistant to thiabendazole and imazalil, which can become common in packinghouses.