

Title Effectiveness of fludioxonil against *Penicillium* decay in citrus fruit
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Abstract

Fludioxonil (FDL) is a 'reduced risk' fungicide recently registered for postharvest treatments of different horticultural crops in the USA. FDL is a broad spectrum fungicide with a mechanism of action different from other fungicides currently in use for pre- or postharvest treatments of selected fruit crops, including citrus fruits in the US. The effectiveness of postharvest 30-s-dips in aqueous mixtures of (FDL) and 20°C or imazalil (IMZ) containing 300 or 600 mg L⁻¹ (active ingredient, a.i.) at 20°C was compared for controlling green mold caused by *Penicillium digitatum*. In fruit treated 24h after artificial wounding or wound-inoculating with *P. digitatum* (10⁶ conidia ml⁻¹) the effectiveness of FDL was similar or slightly inferior to IMZ, respectively, following conditions of low or high disease pressure. In experiments aimed at assessing the protective activity of FDL with fruit subjected to the fungicidal treatments 24h before inoculation with *P. digitatum*, the effectiveness of FDL was found to be dependent on the mode of fungal inoculation. Activity of FDL was superior in fruit wounded and inoculated by spray application compared to fruit inoculated by dipping a steel rod into the conidia suspension before puncturing. The lower performance of FDL in fruit inoculated by puncturing was ascribed to the lack of systemic properties of the fungicide. However, during storage it is unlikely that fruit become wounded: re-infections may take place mainly through old wounds caused before or at the time of fungicide treatments. In normal situations FDL can be highly effective as a curative as well as a protective agent against *Penicillium* decay and can successfully be used in place or in combination/rotation of/with IMZ or thiabendazole to overcome the risk of selection of resistant strains of pathogens.