

Title Alternatives for an effective control of imazalil resistant *Penicillium digitatum* (Pers:Fr.) Sacc. strains during citrus postharvest

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Abstract

Control of postharvest citrus diseases is vital for maintaining quality and shelf life in a market where transport from producer to consumer may take several weeks. Green mold of citrus fruit, caused by *Penicillium digitatum*, is one of the most economically important postharvest disease for citrus industry. In Uruguay, the common strategy to control this kind of pathogen is based on fungicides. Actually, many issues make the development of new strategies to control postharvest decay on citrus really necessary, including the occurrence of fungicide resistant strains. Our objectives were to find an alternative strategy to control *Penicillium digitatum*, working with the more aggressive strains (imazalil sensitive SS22 and resistant RS20) selected previously from the phitopathology lab collection, INIA SG. We based our decision on trials with inoculated fruits, being the two first of 22 strains that developed lesions of 6cm diameter around the inoculation site. Valencia oranges were inoculated with both strains (1,0 x 10⁶ spores/ml), 2mm deep and 22 hours after, the treatments were applied. Treatments were applied at an experimental packing line, evaluating also the best application method between spray and drencher (fall). *Penicillium* incidence and sporulation level was evaluated after 7, 11 and 15 days at 20°C. PhilabusterTM (imazalil and pyrimethanil) alone (750ppm) or combined with potassium sorbate (KS, 2%) resulted in a great improvement at the control of incidence and sporulation of the most aggressive *P. digitatum* both sensible and resistant strains. The incidence was reduced from 75-80% among controls to 0-8% between treatments. Imazalil applied at 1500ppm in water (spray or fall) did not control the incidence and sporulation of resistant strain. However, when it was applied with KS, there was an 80% reduction respect to imazalil alone, especially for fall application. The application of KS alone reduced in 50-70% the incidence and sporulation of both strains. There was no difference ($p \leq 0.05$) in the control reached between both application methods. All treatments were effective on reducing the sporulation of sensible strain, being only the PhilabusterTM alone or with KS2% effective on controlling resistant strain. We concluded that PhilabusterTM (750 ppm) alone or with KS at 2% resulted in a new alternative to control Uruguayan *Penicillium digitatum* sensible and resistant-imazalil strains.