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Defining optimal dose of a biocontrol agent to postharvest fruit rot in mangoes caused by *Lasiodiplodia theobromae* and *Botryosphaeria dothidea*

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Abstract

Mango is the most important fruit crop cultivated in the irrigated areas of the São Francisco Valley (Brazil), reaching an area around 27 thousand hectares and producing almost 600 thousand tons per year. In the last years, heavy losses on fruit production and quality have been caused by *Lasiodiplodia theobromae* and *Botryosphaeria dothidea*, post harvest pathogens able to cause quiescent infections to mango fruits. In this work we evaluated the optimal doses of a yeast strain (L10) previously selected for post-harvest disease control. A technical grade preparation (TGP) containing 10^4 to 10^8 yeast cells mL^{-1} were applied to mangoes previously treated in processing lines of fruit packing houses in the region. The TGP were pulverized at the last stage of fruit processing which were kept in lab environmental conditions for 24 hours. Inoculums of *L. theobromae* e *B. dothidea* were obtained scraping a heavily colonized plates to which was added a solution of Triton X-100 0.01%. Twenty microliter of a conidial suspension containing 10^5 conidia mL^{-1} was applied to wounds artificially produced in fruit skins. After that they were kept in groups of eight fruits in paper boxes and maintained in incubation chamber at $25\text{ }^\circ\text{C}$ (± 2). Disease symptoms evaluations were performed at each 24 hours after treatments measuring the lesions with a digital caliper. The experiment was conducted in a completely randomized design with nine replicates. The yeast strain L10 confirmed control results obtained in previous studies; however optimal dose was highly dependent of the pathogen inoculated. Fruit rot severity produced by *L. theobromae* were effectively reduced (70%) at a dose of 2.0×10^6 cells mL^{-1} , while *B. dothidae* only achieved similar results at a dose of 5.0×10^7 cells mL^{-1} .

Keywords: Yeast, Mango, disease