

**Title** *Bacillus subtilis* attachment, colonization, and survival on avocado flowers and its mode of action on stem-end rot pathogens

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#### **Abstract**

Stem-end rot (SER) is an economically important postharvest disease of avocado. It is caused by several fungi, which infect fruit through inflorescences. Targeting the flowering stage in the disease cycle for dispersal of antagonists is believed to be an alternative application strategy for controlling SER. The aim of this study was therefore to determine the ability of *Bacillus subtilis* B246, commercially registered as Avogreen and used as a biocontrol agent against avocado pre- and postharvest diseases, to attach, colonize, and survive on avocado flowers and to study the interaction of the SER pathogens and the antagonist on avocado flowers. Avocado flowers inoculated with a liquid commercial formulation of the antagonist were observed at different time intervals under the scanning electron microscope (SEM). Population dynamics of the antagonist on the flowers were determined by means of total viable counts using reference cultures and background counts from the control. Flowers were also inoculated with antagonist-pathogen (*Dothiorella aromatica* and *Phomopsis perseae*) combinations to determine in vivo interactions. The SEM observations and population dynamics study confirmed that the antagonist could effectively attach, colonize, and survive on avocado flowers. It could also attach to conidia and hyphae of the pathogens and cause cell degradation. These modes of action can give new insights into the control of pathogens by *B. subtilis*.