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BIOCONTROL POTENTIAL OF *Bacillus* sp. LABIM40 STRAIN AGAINST PLANTS PATHOGENIC FUNGI¹ / Potencial de biocontrole de *Bacillus* sp. cepa LABIM40 contra fungos fitopatogênicos. J. P. BAPTISTA², P. P. SANCHES², A. HIGASHI², R. M. GONÇALVES², M. I. BALBI-PENA², A. G. DE OLIVEIRA². ²State University of Londrina (UEL). E-mail: admilton@uel.br

Bacillus species are often regarded as ideal candidates for commercial biocontrol agents due in part to their ability to synthesizing a vast array of beneficial substances for agronomical and industrial purposes and to form heat-and desiccation-resistant endospores. This study investigated the potential of the bacterial strain LABIM40 against plants pathogenic fungi. LABIM40 was isolated from air samples in the city of Londrina (Paraná State) and was identified as belonging to the genus *Bacillus* based on morphological and biochemical characteristics. LABIM40 strain was tested against the plant pathogens *Sclerotinia sclerotiorum* (SS), *Rhizoctonia solani* (RS), *Macrophomina phaseolina* (MP) and *Botrytis cinerea* (BC) by evaluating fungal growth inhibition through the dual culture assay and well diffusion with cell-free culture filtrates from different growing times (48, 72 and 240 h). The results showed inhibition of mycelial growth of 46%, 33%, 42% and 49% in the dual culture assay for SS, RS, MP, and BC, respectively. The largest zone of inhibition was 25 mm at 24 h and 72 h, and 31 mm at 240 h against MP. For SS, RS, and BC, zones of inhibition ranged from 16 to 26 mm at different growing times. Morphological changes in fungal mycelia at the inhibition zone were evaluated using scanning electron microscopy (SEM). SEM revealed that metabolites produced by LABIM40 strain caused damage and reduced hyphae growth in all plant pathogenic fungi tested. In BC, besides the morphological alterations of hyphae, a reduction of the extracellular matrix was observed when compared to the control. These results showed that LABIM40 strain produces antifungal metabolites against important plants pathogenic fungi, indicating its potential as a biocontrol agent. However, further research is needed focusing on the efficiency of disease control using the LABIM40 strain in plants, especially under field conditions.

Key words: *Bacillus* sp; Biological control; Scanning electron microscopy.

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