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EVALUATION OF INHIBITORY EFFECTS OF TRICHODERMA ASPERELLUM METABOLITES ON MYCELIAL GROWTH OF SCLEROTINIA SCLEROTIORUM

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Common bean (Phaseolus vulgaris L.) is an economically important food commodity in Brazil. However, it can suffer serious damage by white mould disease caused by the pathogen Sclerotinia sclerotiorum. Species of the genus Trichoderma can act as biocontrol agents against this pathogen. This study describes the identification based on morphological, MALDI-TOF MS and molecular analysis of these 29 Trichoderma sp. isolates and their in vitro antagonistic behaviour against S. sclerotiorum. In order to evaluate the disease incidence greenhouse experiments were also performed using bean seedling. According to the results obtained, MALDI-TOF MS technique was appropriate for all Trichoderma species identification confirming the morphological and molecular-based identifications through analysis of rDNA ITS sequence data. In vitro inhibition experiments showed that 38% of Trichoderma isolates colonised the entire surface of the medium (grade 1 evaluation score) in dual cultures against S. sclerotiorum. Pathogen exposition to non-volatile metabolites produced by Trichoderma resulted in the inhibition of their mycelia growth between c.a. 83 and 100%. Moreover, 19 Trichoderma isolates enabled a total suppression of disease in bean seedlings when evaluated in greenhouse experiments. Two Trichoderma isolates identified as Trichoderma asperellum (CEN201 and CEN162) were responsible to the highest rates of growth promotion in bean plants, which ranged from 26 to 34%. The MALDI-TOF technique was appropriate for species designation for the majority of Trichoderma species, confirming most molecular-based identifications through analysis of rDNA ITS sequence data.