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APPLICATION OF NATIVE BIOCONTROL STRAINS OF THE GENERA TRICHODERMA AND CLONOSTACHYS, AGAINST THE PHYTOPATHOGENIC FUNGUS FUSARIUM

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RESUMO

Introduction: The fungi of the genus *Fusarium* are pathogens of plants widely distributed worldwide, affecting more than 80 crops of commercial importance. These phytopathogens produce significant losses in the agricultural and forestry activity of the province of Misiones (Argentina). For its control traditional chemical pesticides are extensively used, which usually have many detrimental consequences on the environment, for this reason, the use of biopesticides of fungal origin is increasingly widespread. Among the main fungal genera used in biocontrol are *Trichoderma* and *Clonostachys*. Species of the genera *Trichoderma* and *Clonostachys* are used for biological control due to their ability to inhibit fungal pathogens through different mechanisms of action, such as mycoparasitism and the secretion of secondary growth inhibiting metabolites. Objective: In order to develop optimal biocontrol strategies, the aim of this work was to evaluate the *in-vitro* pathogenicity and biocontrol capacity of two native strains of *Trichoderma*, and one native strain of *Clonostachys* against a strain of a phytopathogenic fungus of the genus *Fusarium*. Methods: Each fungal isolate, the biocontrol fungi *Trichoderma* (POS 7 and Tricho H), *Clonostachys* (HEP30), and the phytopathogenic fungus *Fusarium* (LBM 232), were reactivated in a 60 mm Petri dish, containing PDA as a culture medium at a concentration of 3.9% (w/v), sterilized in an autoclave at 121°C, and 1 atm pressure higher than normal for 15 min. For antagonisms, 90 mm diameter Petri dishes were used with PDA medium 3.9% (w/v). Five millimeters wells were made in the plates under sterile conditions, and 50 µL of the spore suspensions of each of the strains, with concentrations of 10^7 spores/mL, were inoculated in each well. The plates were incubated at 28 ± 1°C, with controlled photoperiod (24h darkness) for a period of 10 days. As an experimental control, all the isolates of the biocontrol strains and phytopathogenic fungi were cultured in the absence of the antagonist fungus where 50 µL of each spore suspension were seeded in a well located in the center of each plate. From all these tests, photographic records of each confrontation were obtained daily to determine the diameter of colonial growth of each fungus. The diameter of growth was analyzed statistically using Statgraphics Centurion Software. Results: The results obtained from contrasting the growth halos showed a reduction of *Fusarium* Colony. In all cases, the biocontrol agents of the genus *Trichoderma* were more aggressive and faster in their development, covering the entire plate faster than the *Clonostachys* HEP30 biocontrol

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agent. Even growing on the phytopathogen colony. Although the growth of *Clonostachys* was slower, its mere presence produced the deformation of the growth halos of *Fusarium*. Conclusions: Thus, it can be suggested that the native strains of *Trichoderma* and *Clonostachys* genera cocultured possess an effective biocontrol capacity against the *Fusarium* phytopathogen.

PALAVRAS-CHAVE: Biocontrol agents, Biological control, Clonostachys, Mycoparasitism, Trichoderma.

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