



## Assessment of *Trichoderma viride* as biocontrol agent against main phytopathogenic fungi associated with *Capsicum* peppers cultivated in IPM system

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**Introduction:** Diseases caused by fungi are the main causes of yield losses in agriculture. Fungi are responsible for numerous plant diseases and their infections can occur in the field and affect the fruits. The use of specific microorganisms for the control of pathogens and plant pests is an environmentally friendly approach to overcoming the inconveniences caused by the excessive use of chemical pesticides. Fungal species belonging to *Trichoderma* genus are filamentous imperfect saprophytic soil fungi, well known for their biotechnological potential due to their antagonistic capacity exerted either indirectly, by competing for nutrients and space, modifying the environmental conditions, or promoting plant growth and plant defensive mechanisms and antibiosis, or directly, by mechanisms such as mycoparasitism.

**Results:** A total of 35 fungal strains belonging to 10 genera were isolated from the pepper fruits, *Alternaria alternata*, *Alternaria solani*, *Colletotrichum* spp., *Fusarium solani*, *Fusarium equiseti* and *Fusarium oxysporum* being the predominated species. The *T. viride* Tv20 strain showed antagonistic activity against the selected phytopathogenic fungi, limiting their growth and development. The most pronounced inhibitory action was against *Colletotrichum* species in a percentage of 49.10% to 61.30%. *Alternaria* species were inhibited by 38.23% to 60.71%, while *Cladosporium* spp. was limited from 44.82% to 53.76%. The species of *F. solani*, *F. oxysporum* and *Fusarium* sp. were inhibited in a percentage between 26.07 % and 47.94%.

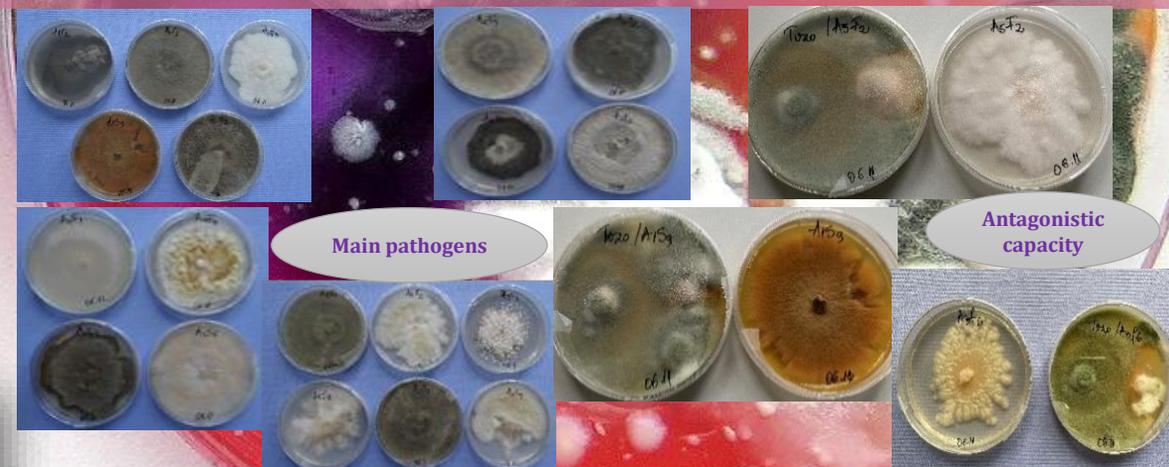
**Keywords:** peppers, biological control, phytopathogens, *Trichoderma* spp.

**Aim:** The present study aimed to assess the occurrence of fungi responsible for field losses in peppers cultivated in IPM system and also the biological control capacity of one *Trichoderma viride* Tv20 strain against the main phytopathogens associated with pepper crop during pre-harvest period.

**Material and methods:** For the mycoflora evaluation, the biological material consisted in pepper plants and seed samples and classic techniques were used for the isolation and morphological characterization of fungal strains. The assessment of biocontrol capacity of *Trichoderma* spp. against the phytopathogenic fungal strains was performed by dual culture method with *Trichoderma viride* - Tv20 strain from RDIPP collection.



Laboratory aspects



Main pathogens

Antagonistic capacity

**Conclusions:** Our study on pepper associated microbiota established that *Alternaria* spp. *Fusarium* spp. and *Colletotrichum* spp. are the predominant species, while *Aspergillus* spp. and *Penicillium* spp. incidence is low during vegetation period. Tv20 strain exerted an efficient biocontrol activity against the phytopathogenic fungi, limiting their growth and development. The use of biological control in management disease system is a viable alternative to limit the incidence of contaminating microorganisms.