

Title: MORPHOLOGICAL AND TAXONOMIC CHARACTERIZATION OF *Bacillus* BACTERIA ISOLATED from TOMATO plants AND SELECTION of SUSCEPTIBLE TOMATO VARIETY TO *Fusarium oxysporum* f. sp. *lycopersici*

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Abstract:

Bacillus sp. are spore-forming bacteria that show great persistence in adverse environmental conditions. These bacteria are used in microbial control of insects by producing inclusions of crystal proteins with entomopathogenic activity. Moreover, they can provide antimicrobial activity against phytopathogenic bacteria and fungi. This study aimed to characterize bacteria of the genus *Bacillus* isolated from stems and roots of tomato plants, healthy and sick, grown in infested soil area with *Fusarium oxysporum* f. sp. *lycopersici* at Nova Friburgo, RJ. The stems and roots were surface sterilized by immersion in chloramine-T (1%) and macerate in saline solution. A suspension (1 ml) was submitted to pasteurization process (80°C for 12 minutes followed by incubation on ice for five minutes). It was isolated 193 bacterial strains with morphological characteristics similar to bacteria of the genus *Bacillus*. The Gram staining test carried out to characterize the isolates showed that the majority of cells showed blue color, characteristic of Gram-positive bacteria. However, some morphological characteristics of bacteria *Bacillus* showing reddish color was also observed, suggesting the presence of Gram-variable. The complete sequencing of 16S rRNA subunit of 32 representative bacteria, amplified by PCR using primers 27F and Amp2, showed a high diversity of *Bacillus* species with most of them belonging to species *B. thuringiensis*, *B. megaterium*, *B. cereus*, *B. toyonensis*, *B. stratosphericus* and *Paenibacillus barcinonensis*. In addition, a pilot experiment was made to select a susceptible tomato variety to the three fungal races. The fungal races were inoculated in four tomato varieties and the results showed that the Perinha variety was more susceptible to the fungi 15 days after inoculation. This variety of tomato is now being used to study the antagonistic activity of these bacteria in presence of the fungi to select strains with potential use in the biological control of Fusarium wilt in susceptible varieties of tomatoes.

Key-words: *Bacillus* sp., growth promotion, antagonistic activity, Fusarium wilt.

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