

TITLE: BACTERIAL COMMUNITY ASSOCIATED WITH SWEET POTATO PLANTS (*IPOMOEA BATATAS*) SLIGHTLY RESPOND TO THE INTRODUCTION OF ANTIMICROBIAL SUBSTANCE-PRODUCING *BACILLUS* STRAINS IN A GREENHOUSE EXPERIMENT

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ABSTRACT: Sweet potato (*Ipomoea batatas* (L.) Lam.) is a subsistence crop with great social importance in Brazil. In the Northeast region of the country, this crop is often committed by sweet potato foot-rot disease, which is caused by the phytopathogen *Plenodomus destruens*, resulting in great economy losses. In a previous study, two endophytic strains (T149-19 and T052-76) identified as *Bacillus* sp. and able to produce antimicrobial substances (SAMs) against *Plenodomus destruens* were isolated from sweet potato roots. However, their ability to persist *in situ* in close contact to sweet potato roots has never been tested so far. Therefore, in this study a 180 days-greenhouse experiment was carried out using the two strains and sweet potato seedlings. The effect of the introduction in separate of the two strains on the root-associated microbial community (rhizosphere; rhizosphere/rhizoplane and endosphere) and the persistence of the bacterial inoculants were evaluated using molecular approaches (Polymerase Chain Reaction-Denaturing Gradient Gel Electrophoresis - PCR-DGGE) based on the *rrs* gene (16S rRNA coding gene for bacteria) and the ITS region (internal transcribed spacer for fungi) and statistical analysis (Permutation test, $P < 0.05$). A band corresponding to each of the inoculated bacteria was observed in the different DGGE until the end of the experiment. DGGE fingerprints showed that strain T052-76 influenced the bacterial community present in the rhizosphere and rhizosphere/rhizoplane samples up to 90 days of experiment. Statistical analysis showed a significant difference (41% of dissimilarity) between the inoculated samples and the controls (without T052-76 inoculum). Oppositely, no significant statistical difference (1% of dissimilarity) was observed when strain T149-19 was used. When the fungal communities were considered, they varied throughout the experiment period but no significant influence was observed with the inoculation of either T149-19 or T052-76. The results presented here demonstrate the stability of both *Bacillus* strains in the sweet potato rhizosphere and also their low influence in the microbial community associated with the plant. These characteristics make *Bacillus* sp. T149-19 and T052-76 of great interest for agriculture.

Keywords: Antimicrobial substance, *Bacillus* sp., *Plenodomus destruens*, Rhizosphere, Sweet potato

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