

BACTERIAL ENDOPHYTES OF SWEET POTATO TUBEROUS ROOTS INFLUENCED BY THE PLANT GENOTYPE AND THE PLANT AGE

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This study aimed to characterize for the first time the endophytic bacterial communities in the tuberous roots of three sweet potato genotypes, IPB-149, IPB-137 and IPB-052, in order to evaluate the hypothesis that plant genotype and plant age influence their composition. For that, independent and dependent cultivation methods were used. The sweet potato genotypes - IPB-149, IPB-137 and IPB-052 - were sampled three and six months after planting in the field. Total community DNA and the isolates were obtained from surface-sterilized tuberous roots of each sweet potato genotype. The DGGE fingerprints based on 16S rRNA gene fragments amplified from total community DNA showed that plant age influenced the endophytic bacterial communities. Moreover, statistical analyses based on permutation test ($p < 0.05$) showed that the genotypes also influenced significantly these communities, but only at the first sampling (three months after planting). In total, 93 strains were isolated from the roots of the different genotypes and their diversity was huge as revealed by BOX-PCR (59 groups). Representative strains from each group which were identified by 16S rRNA gene sequencing belonged to the phyla *Proteobacteria* (*Gammaproteobacteria* and *Alphaproteobacteria*), *Actinobacteria* and *Firmicutes*. Most of the isolates (54.8%) were affiliated with the genus *Bacillus*. The IPB-137 genotype showed significantly higher CFU counts of endophytic bacteria when compared to IPB-149 and IPB-052. Furthermore, almost half of the strains isolated from IPB-137 roots (47%) were *Gammaproteobacteria*. In addition, the isolates were tested for antimicrobial substance and indole acetic acid production, organic and inorganic phosphate solubilization, siderophore production and for the detection of nitrogenase gene. All isolates with antagonistic activity against the sweet potato-pathogenic fungus *Plenodomus destruens* belong to the genus *Bacillus*. Indole acetic acid production was predominantly found among the strains isolated from IPB-137; suggesting again an influence of the sweet potato genotype on its endophytes.

Keywords: endophytic bacterial communities, sweet potato genotypes, plant age.

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