MICRO BIOTEC 19

CONGRESS OF **MICROBIOLOGY** AND **BIOTECHNOLOGY 2019**

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BOOK OF ABSTRACTS

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III12. Microbial-Host Interactions

FP438. The banana root endosphere microbiota is an important reservoir of potential biocontrol agents against *Fusarium oxysporum* f. sp. *cubense*

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Banana (*Musa acuminate* Colla) is a widely cultivated crop in (sub)tropical regions. *Fusarium* wilt of banana (FWB), caused by the soilborne fungus *Fusarium oxysporum* f. sp. *cubense* (Foc), poses a great risk to banana industry worldwide. Pesticides do not represent a sustainable option for its control and other alternatives, such as biological control agents (BCA) are gaining interest. The fact that beneficial endophytes can colonize the same niche than Foc favors them as potential control tools against FWB. We pursued two aims: the unravelling of the banana root endosphere microbiota, and the isolation, identification and characterization of culturable members of this specific niche as potential BCA within a FWB integrated management strategy. A thorough root surface sterilization protocol was implemented to ensure only the handling of banana root endophytes, originated from plants of different farms at Tenerife, La Palma and La Gomera islands. On the one hand, DNA from each sample was purified and the 16S rDNA gene (for bacteria) and the ITS2 region (for fungi) were amplified and sequenced by MySEQ. On the other hand, individual colonies (bacteria and fungi) from ground root tissues showing distinctive morphology when growing in different culturing media were isolated. A collection of indigenous endophytes (>1000) was thus generated (80% and 20% single/pure bacteria and fungi cultures, respectively). Subsequently, *in vitro* antagonism tests against different Foc races were conducted. More than 100 strains showing antagonism were molecularly identified and a phenotypic characterization was performed to identify traits associated to biocontrol and plant growth promotion. Based on these results the best isolates were selected. Both culturable and non-culturable approaches showed low microbial diversity, particularly within bacterial communities. Only few significant differences in alpha-diversity were found. Concerning beta-diversity, the most relevant significant differences were observed among farms regardless of the island from where they originated. Results point to the fact that banana roots are a good source of potential BCAs against FWB. Biocontrol assays using the selected native endophytes were successfully carried out and their results will be discussed.

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