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Deciphering the suppressive soil microbiota from an avocado crop

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Different strategies based on ecological principles have been approached in sustainable agriculture causing positive effects, including the induction of soil suppressiveness against a wide range of soilborne pathogens. Suppressiveness against the phytopathogenic fungus *Rosellinia necatrix* was observed after the application of composted almond shells in avocado crops. Previous works have analyzed the use of this traditional strategy and applied new microbial community analysis techniques in order to help in the identification of targeted sustainable agricultural strategies. These studies have focused on the microbial profile from an induced-suppressive soil where the soil microbiome had a proven essential role. Microbial profiles based on the 16S rRNA gene and ITS regions sequencing were analysed and an increase in *Gammaproteobacteria* and *Dothideomycetes* groups, as well as a reduction in *Xylariales* (where *R. necatrix* is allocated) were observed. These results led to the bacterial isolation of different groups of *Gammaproteobacteria* from this suppressive soil in order to identify new strains with biological control properties. Different characterization tests were performed, and a final selection of representative strains belonging to the genus *Pseudomonas* and related groups showed, all of them, plant disease protection abilities. Moreover, using previously described biological control agents against *R. necatrix*, a bacterial synthetic community have been design in order to improve the knowledge of the multitrophic interactions that occur during biological control process.

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