Mercedes García-Sánchez

UMR Eco&Sols, Montpellier

AgreenSkills annual meeting

11-14th June

Co-funded by the European Union

AgreenSkills Pathways for inventive researchers

agreenium institut agronomique vétérinaire & forestier de France

INRA SCIENCE & IMPACT

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Mercedes GARCÍA-SÁNCHEZ
Prague to Montpellier

PhD at the University of Granada, Spain

Department of Soil Microbiology and Symbiotic Systems (EEZ-CSIC).

"Laboratory of Biofertilization and Bioremedation by Rhizospheric fungi"

Research activities:

Valorization of a residue from olive oil production (DOR) through saprophytic fungi

Physiological response of tomato plants to DOR mycoremediated.

Bioprotection effects of arbuscular mycorrhizal fungi against DOR toxicity.

Postdoctoral researcher at the Czech University of Life Sciences, Prague (Czech Republic)

Department of Agro-Environmental Chemistry and Plant Nutrition

Research activities:

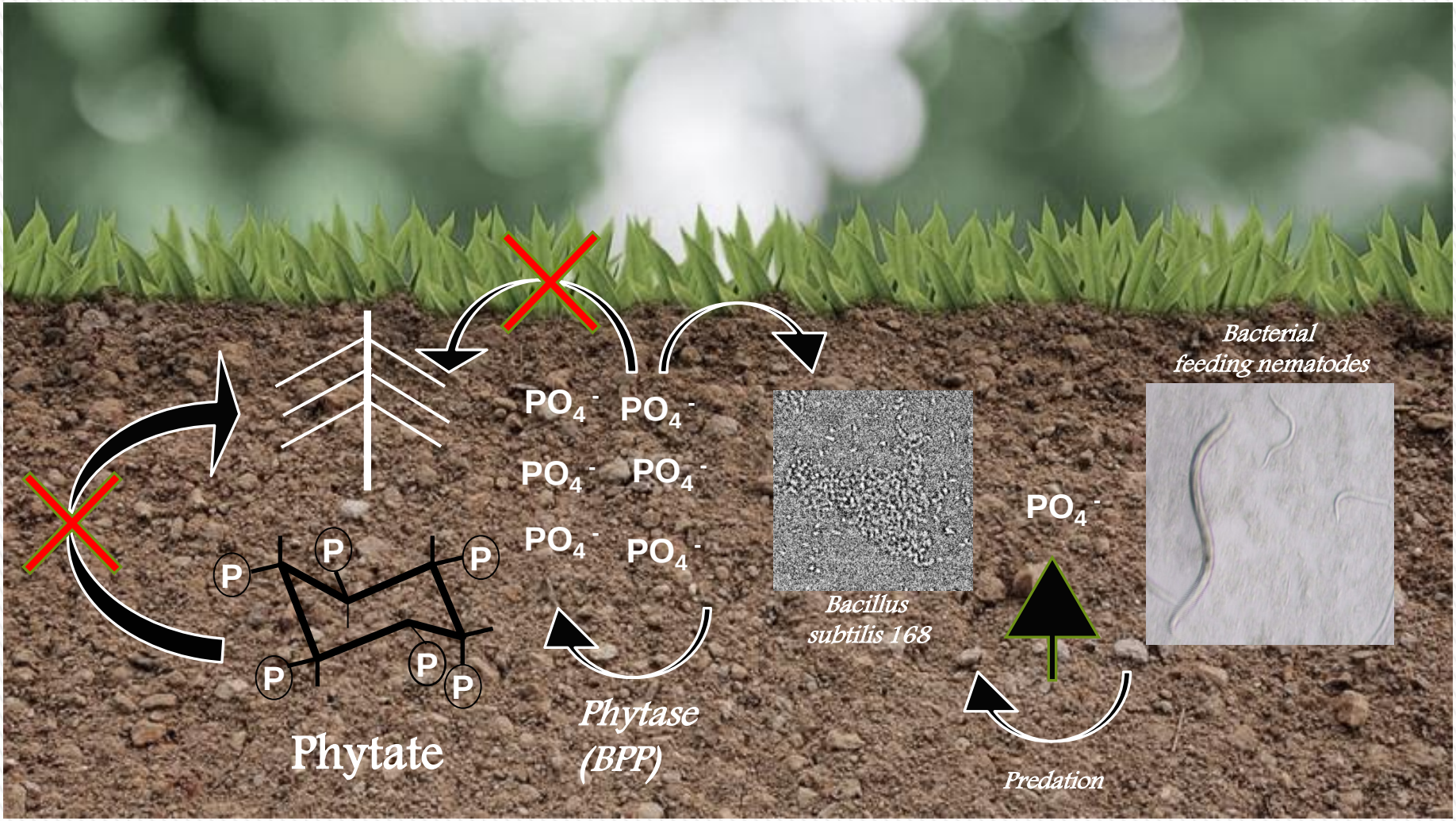
Functionality, physiological diversity, structure and size of microbial communities of degraded soils (low content in OM, pH and high content in risk elements).

The use of waste materials from bioenergy processes, i.e. digestate and fly ash.

Soils with different agro-chemicals properties were used (Chernozem, Luvisol and Fluvisol), and amended with these materials under two experimental conditions (micro and mesocosms).

Introduction

"Enhancing the mobilization of recalcitrant organic P by plants: is the microbial loop between P-mineralizing bacteria and their bacterial feeding-nematodes determinant to improve ecosystem functioning?"



Research topic

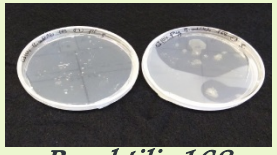
"Enhancing the mobilization of recalcitrant organic P by plants: is the microbial loop between P-mineralizing bacteria and their bacterial feeding-nematodes determinant to improve ecosystem functioning?"

Axis 2: *"microbial loop mechanisms affecting phytate mobilization"*

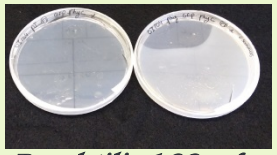
i) the microbial loop efficiency depends on the bacterial group and/or phytase type as a key element enhancing P mobilization from phytate

ii) the presence of bacteria at different ecological niches might influence somehow the nematodes performance (*"nematode taxis"*).

The capacity of nematodes belonging to Acrobeloides sp. and Rhabitidae sp. to feed on gram negative *Bradyrhizobium* sp.) and positive (*B. subtilis* 168) bacteria will be tested. *Bradyrhizobium* sp. has an intracellular phytase whereas *B. subtilis* 168 produce an extracellular phytase.

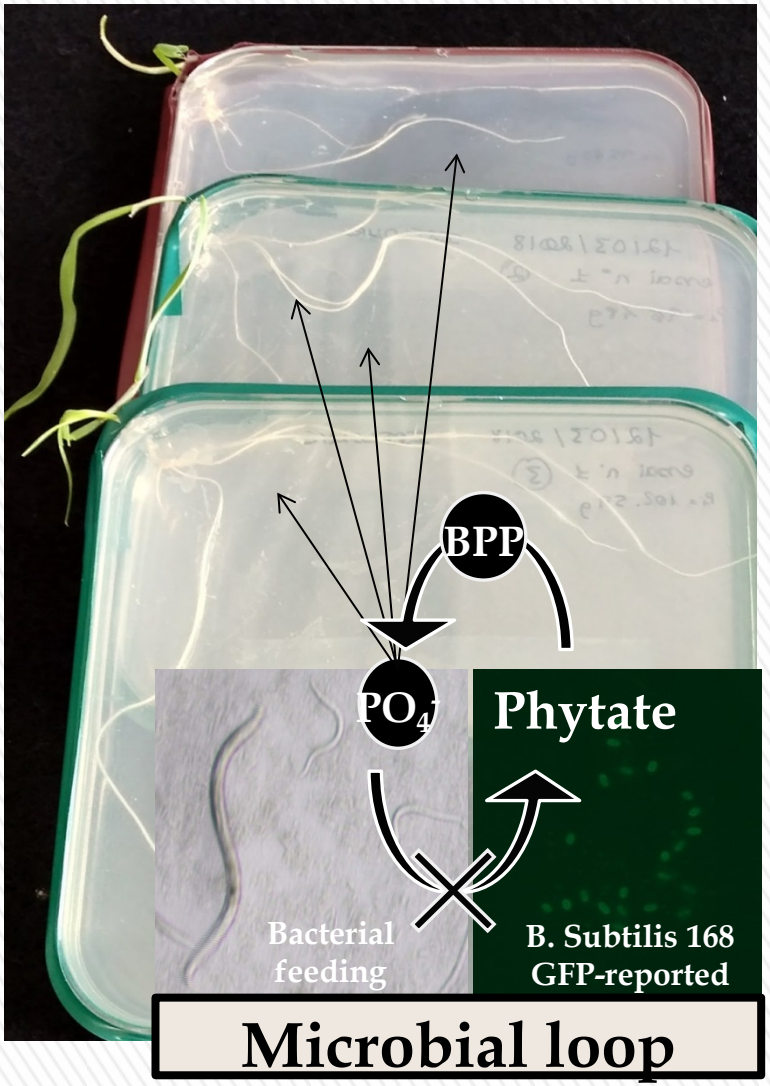


B. subtilis 168



B. subtilis 168–gfp

Bradyrhizobium sp.

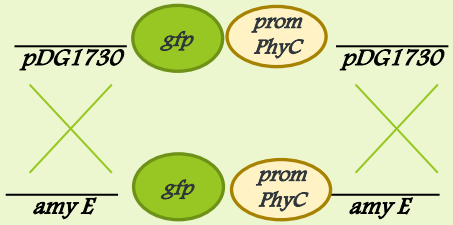


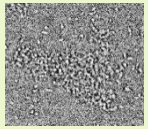
Axis 1: *"factors influencing phytate mineralization and P uptake"*

The role of the phytase produced by *Bacillus subtilis* 168 (beta propeller phytase–BPP) and the microbial loop on cycling of phytate in the rhizosphere of tomato, durum wheat and chickpea:

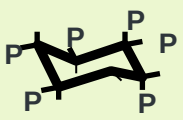
i) phytate calcium availability
ii) different densities of *B. subtilis* 168
iii) nematofauna diversity and density
iv) soil conditions (sterilized and/or non-sterilized).

The interaction between the BPP and the microbial loop will be monitored through gen reported coding a green fluorescent protein (GFP) and the promoter of BPP (promPhyC).





Bacillus subtilis 168



Phytate

B. Subtilis 168 GFP-reported

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