P-1021 Rooting induction of olive plants cuttings by plant growth promoting rhizobacteria

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Chemical agents used to prevent diseases symptoms or to fertilize plants can cause detrimental effects on human health and persist in natural ecosystems so, in the last decade conventional chemicals products are being replaced by biological agents, such as microorganisms (bacteria and mycorrhizae). Actually, in organic agriculture it is forbidden to use chemical compounds.

Free living soil bacteria that provide some benefit to plants are usually referred to as plant growth-promoting rhizobacteria (PGPR).They may facilitate plant growth and development indirectly through their ability to prevent or decrease the damage to plants or directly through iron sequestration, phosphate solubilization or the production of plant growth hormones such as indole-3- acetic acid (IAA), the most common auxin which stimulate root elongation.

Azospirillum brasilense has been widely used as a PGPR owing its capacity to produce and release a broad spectrum of plant growth regulators. Among several *A. brasilense* strains, the strain Cd was the one that produced the highest levels of IAA.

Nowadays, the olive propagation adopted by nursery growers, is mostly through semi-woody olive plants cuttings. They are treated during several seconds with an IAA solution (2-4 mg/L). The use of IAA in organic agriculture is forbidden so to find an ecologic alternative to the use of IAA is needed.

In this work we have studied rooting induction by the use of some bacteria previously described as highly effective as auxin's producers, and others isolated from the rhizosphere of organic olives trees, and selected by its *in vitro* capacity to solubilize phosphate, and to produce siderophores and IAA.

P-923 Effect of P availability on the diversity and functioning of mycorrhiza and mycorrhizosphere bacteria in maritime pine stands of the Landes forest ecosystem

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The maritime pine (*Pinus pinaster*), distributed from Moroccan Atlantic coast to South of Europe, is the most planted forest species in France with 1 million hectares located in the Landes region. Most of these monospecific plantations grow on sandy acidic soils that are deficient in mineral elements, phosphorus in particular. Since mycorrhiza associated to pine roots play an important role in P availability, the different fertilization regimes applied to pine plantations throughout the Landes forest could have a direct effect on the diversity and functioning of mycorrhiza and their associated bacteria.

We analysed the diversity of pine ectomycorrhiza and that of their associated mycorrhizosphere bacteria (MB) in thirty representative forest sites ranging from 6 to 93 years-old, along three successive surveys (autumn 2005 to autumn 2006). After intensive mycorrhiza samplings from soil cores combined to a systematic survey of sporophores, mitochondrial DNA of mycorrhiza and sporophores was sequenced (ML5/ML6 primers). MB were isolated on trypcase medium from the surface of mycorrhiza and their ability to solubilize P was assessed after incubation on TCP agar medium. Among the isolated MB, fluorescent pseudomonads, known to include mycorrhization helper bacteria, were also detected using the King's B medium.

The first results show a great diversity of mycorrhizal species (± 30) with a predominance of Russulaceae species. Clear differences are observed in the proportion of various fungal species according to the site and between belowground fungal microflora (mycorrhiza) and aboveground one (sporophores). The proportion of MB able to solubilize inorganic phosphate is significantly higher in non-P-fertilized plots than in those regularly fertilized with P, 70% vs 45% respectively. Among all the MB isolated, the proportion of fluorescent pseudomonads varied dramatically according to the season, i.e. from about 5% in autumn to 45% in spring.

16S gene sequencing of MB will be performed to investigate specific affinities and functional relationships between bacterial and fungal partners.