

SoildiverAgro project

Adoption of new management practices to increase crop production and quality



THE WHAT AND WHY

Plant Growth Promoting Bacteria

Plant-microbe interactions in the soil are the determinants of plant health, productivity, and soil fertility. Plant growth-promoting bacteria (PGPB) are plant-associated bacteria that can enhance plant growth and protect them from diseases and abiotic stresses. Members of the bacterial genera *Azospirillum*, *Rhizobium*, *Bacillus*, *Pseudomonas*, *Serratia*, *Stenotrophomonas*, and *Streptomyces* are well-studied PGPB. Based on the beneficial plant-microbe interactions, it is possible to develop microbial inoculants for agricultural application, that, depending on their mode of action and effects, can be used as biofertilizers, biopesticides, phytostimulators, and bioremediators. Nowadays, there is a strong growing market for microbial inoculants worldwide with an annual growth rate of approximately 10%.

Bacterial inoculants are a promising and environmentally friendly strategy to increase agronomic efficiency by reducing production costs and environmental pollution, once the use of chemical fertilizers can be reduced or eliminated. In Southeast Spain, farmers are concerned about the difficulties to maintain high crop yields due to soil nutrient depletion, pests, and disease incidence. They are also aware of how fertilizers and pesticides should be replaced by other products or management practices in line with agroecological principles. However, despite the fact that some farmers have already been using PGPB for years, the majority of traditional farmers are still vaguely familiar with the employment of PGPB to increase soil health and fertility.



1. *Rhizobium radiobacter* by Mostly*harmless
(<https://www.flickr.com/photos/21997898@N04/10163758826/>)

KEYWORDS

Plant growth promoting bacteria, PGPB, microbial, soil.

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