

SoildiverAgro project

Adoption of new management practices to increase crop production and quality



THE WHAT AND WHY

Application of microorganisms to reduce input and improve the quality of a potato crop

The potato (*Solanum tuberosum* L.) is an extremely important crop, being one of the most widely consumed foods globally. The potato industry in southeastern Spain encounters some problems due to diseases in the soil and the constant requirement for external inputs to ensure optimal commercialization in terms of quantity, quality, and consumer satisfaction. The aim of this project was to reduce these inputs, improve profitability, and enhance sustainability by implementing new production systems based on Plant Growth-Promoting Microorganisms (PGPM) formulations. Four treatments were designed: a) F100 (conventional fertilization); b) BA+FU (nutrient solubilizing bacteria and fungi + 30% of fertilization reduction); c) BA (nutrient solubilizing bacteria + 30% of fertilization reduction);

d) F70 (only 30% of fertilization reduction) in a potato crop. Tuber volume is statistically significantly lower in BA than in F70 treatment. Starch content did not show any differences between the treatments. As for the pathogens that have caused harm to the crop, *Rhizoctonia* sp. was the species responsible for the main tuber damage. The treatment with the least amount of damage was BA+FU. Fertilization reduction did not affect the potato yield. Thus, by modifying the contribution of external inputs, compared to conventional production practices- i.e., reducing the chemical fertilizer with the application of beneficial microorganisms - it is possible to obtain a good quality and yield of the potato crop.



1. Potato (*Solanum tuberosum* L.) plantation in Mediterranean South region (Spain).

KEYWORDS

Biofertilizers, conventional fertilization, *Solanum tuberosum* L., crop quality, crop yield, *Rhizoctonia* sp.

AUTHORSHIP

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