A NEW BIOSTIMULANT/BIOFERTILIZER PRODUCT OBTAINED FROM WHEY: EFFECT ON SOIL BIOLOGICAL PROPERTIES

@PLANTBIOSTIMULANT

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Introduction

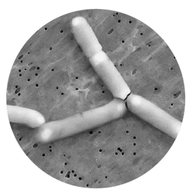
WHEY WASTE

FERMENTATION PROCESS

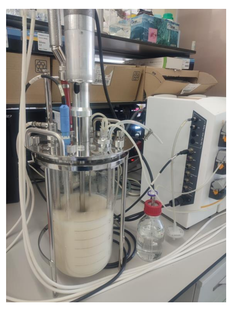
BIOSTIMULANT/BIOFERTILIZER

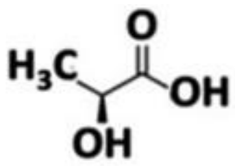
Enviromental problem, production 185 millions tons per year worldwide.

Rich organic matter, primarily lactose and protein



Lactobacillus Rhamnosus





Lactic acid

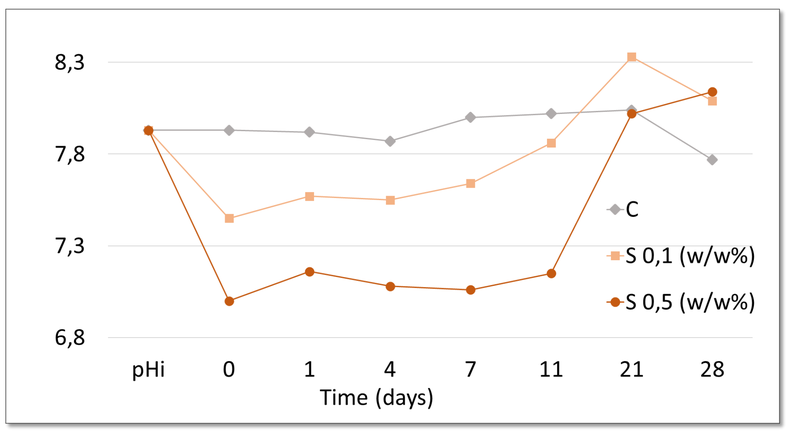
Peptides

Biomass

Results and discussion

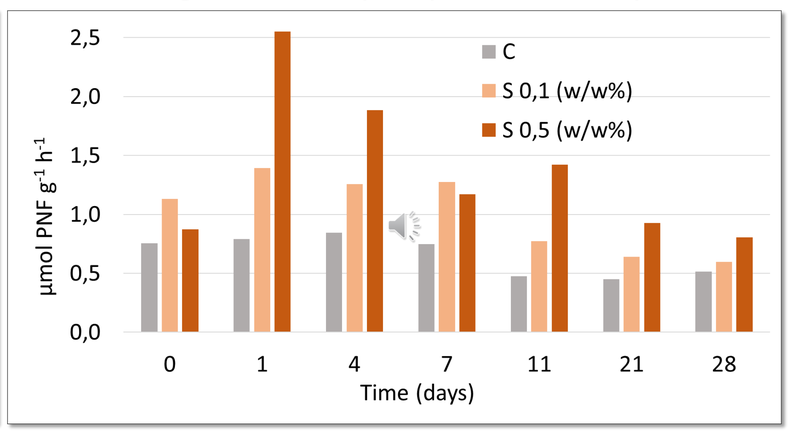
SOIL CHEMICALS AND BIOCHEMICALS EFFECTS

Figure 1: pH Evolution



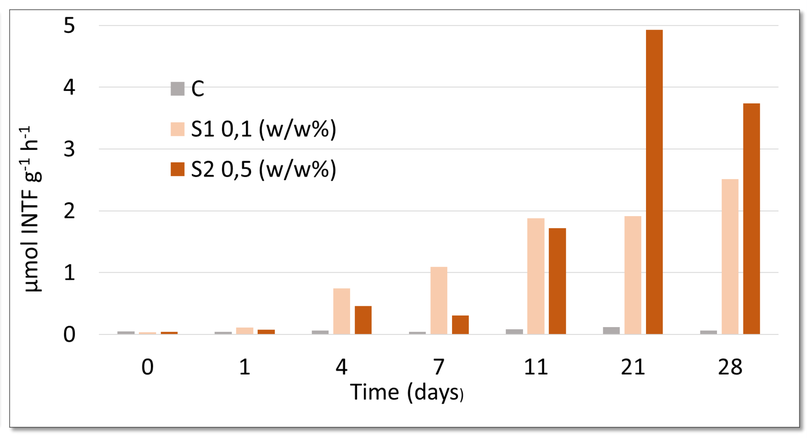
Day 0: ↓pH - ↑ Lactic acid content
Time extension: ↑pH - ↓ Lactic acid due to its consumption by microorganisms.

Figure 2: Basic phosphatase activity



Day 1: High activity as a result of the need phosphorus for bacterial growth

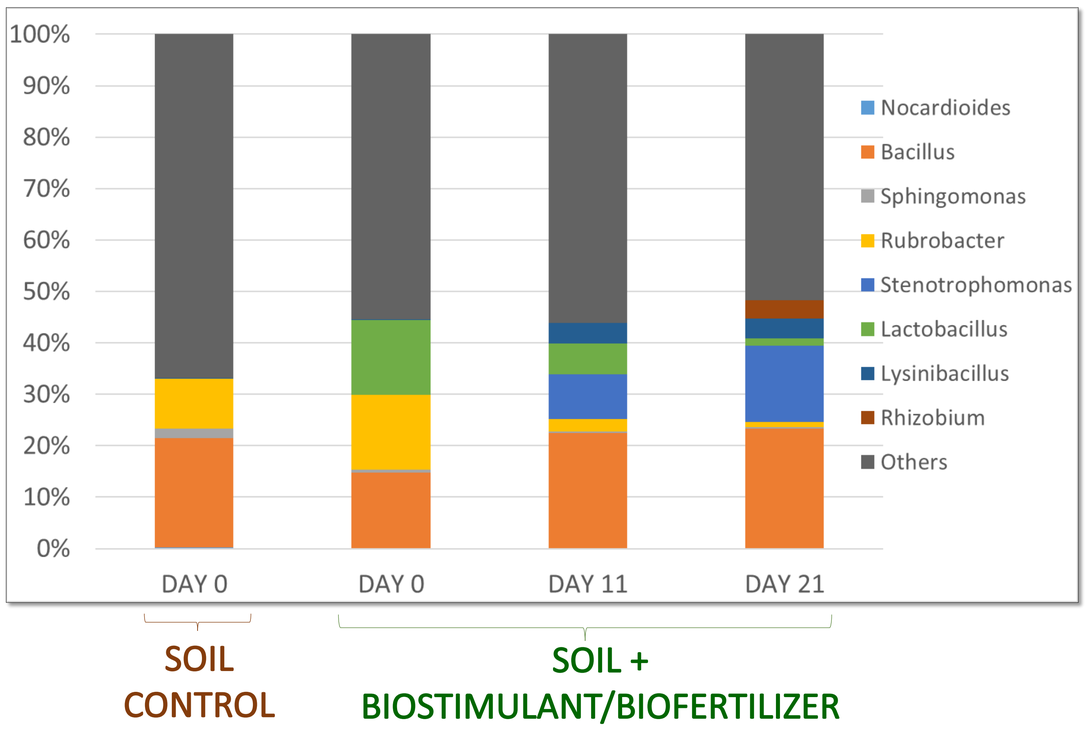
Figure 3: Dehidrogenase activity



↑Time - ↑DHA Directly related to oxidative phosphorylation and, therefore, a higher quantity of microorganisms

EFFECT ON SOIL MICROBIOTA

Figure 4: 16S rRNA Metabarcoding



PROBIOTIC

Lactobacillus remains viable for up to 21 DAYS

Bacteria that possess PGPB (Plant Growth Promoting Bacteria) properties and are nitrogen-fixing

As a consequence of the ***BIOSTIMULANT*** activity of the product

Rhizobium ↑

Stenotrophomonas ↑

Lysinibacillus ↑

Conclusions

The effectiveness of a new biostimulant/biofertilizer created using a circular economy approach with whey has been examined in relation to the biochemical and microbial characteristics of the soil, revealing positive effects on the chemical and microbiological composition of the soil that are directly related to fertility levels.

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Plan de Recuperación, Transformación y Resiliencia

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