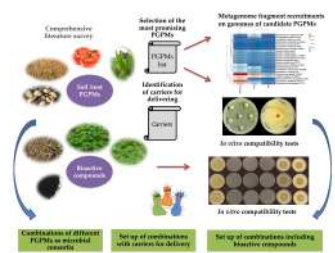


APPLICATION OF BENEFICIAL MICROBIAL CONSORTIA AS PLANT PROBIOTICS FOR A SUSTAINABLE AGRICULTURE

MICROBIOME APPLICATION FOR SUSTAINABLE FOOD SYSTEM

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Overview

The use of beneficial microbes for improving plant growth and yield, and increasing plant resistance to biotic and abiotic stress, represents a promising tool that may provide a response to the new challenges of modern agriculture.

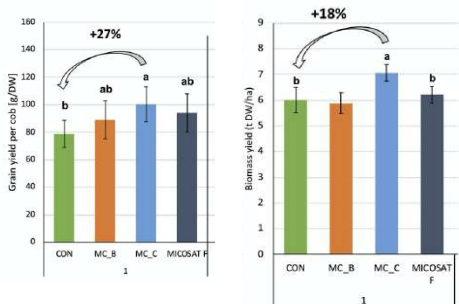
Objectives

In the present work, we employed well-designed multifunctional microbial consortia with the aim to either increase crop yield or sustain yields with reduced chemical inputs.

Methods

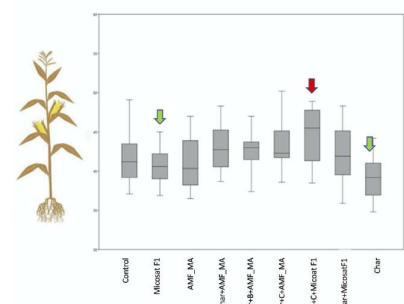
Microbial consortia were applied via seed coating or delivered as a powder, liquid suspension or incorporated in wood biochar, with or without arbuscular mycorrhizal fungi (AMF).

MAIZE FIELD EXPERIMENTS IN GERMANY



Microbial consortium MC_C significantly increased shoot biomass production and the grain yield per cob at the low and medium fertilization stages.

MAIZE FIELD EXPERIMENTS IN ITALY



The treatment with Biochar in combination with MC_C determined a positive effect on chlorophyll content which is related with an increased availability of N for the plant.

Research Contributions to the Congress

- Highlight the **interaction** between **soil, plant, bacterial communities** and **environment**
- Report how **microbiome-based approaches** can sustain the agriculture, promote soil fertility, improve crop yield and reduce the dependency of plants on chemical fertilizers

Overall, our microbial consortia proved capable to act as 'plant probiotics' in view of a more environmentally friendly management of crops, reducing the need for chemical inputs in agriculture, promoting soil fertility and improving plant productivity.