

Rhizobacteria-Vertical transmitted endophyte Signalling in Plant Growth Promotion

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Aims:

To investigate the use of different rhizobacteria microbial communities in the promotion and maintenance of plant growth

To determine if the presence of vertically transmitted endophytes affects plant growth promotion by rhizobacterial communities.

To investigate possible rhizobacteria-endophyte signalling in plant growth promotion.

Methods:

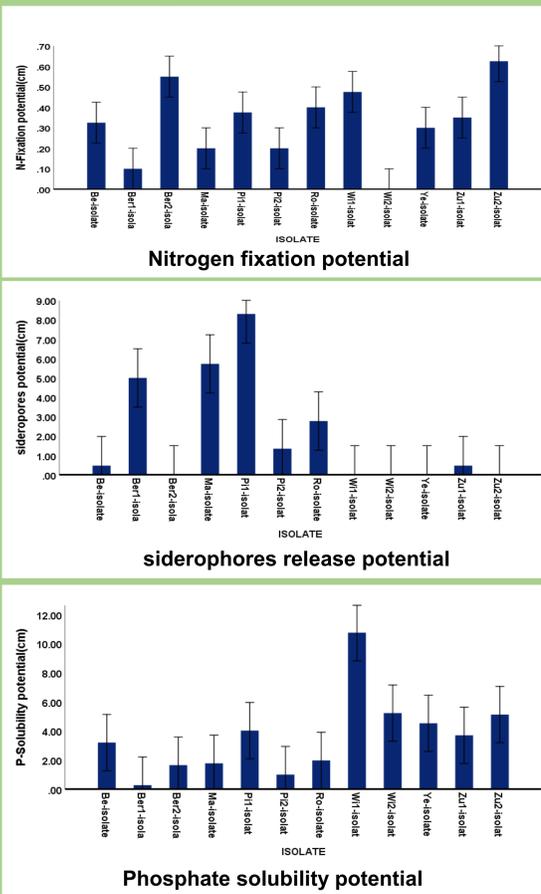
Vertically transmitted endophytes were isolated from nine tomato cultivars from surface-sterilised seeds

Rhizobacterial communities were obtained from pristine soils.

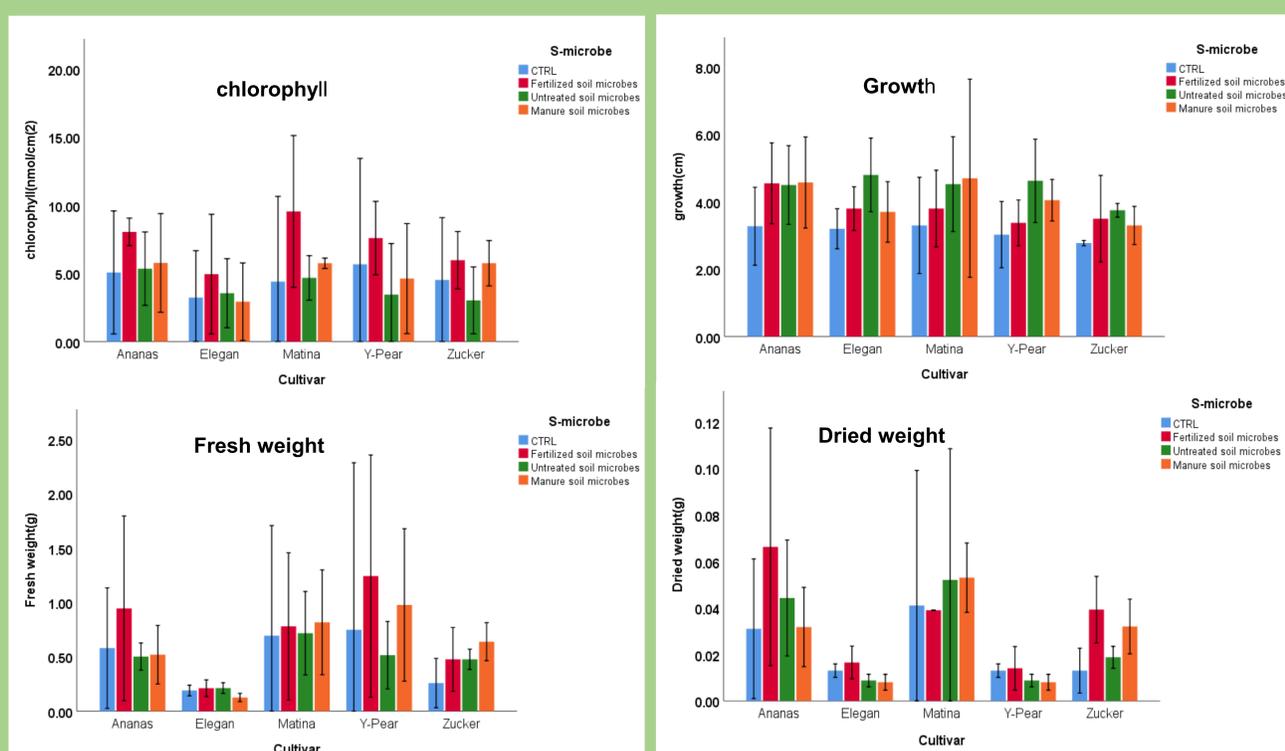
Five hydroponically grown tomato cultivars were inoculated with four rhizobacterial communities from different soils and grown for sixty-three days.

Plant biochemical and phenotypic data were recorded. Endophytes were screened for their plant growth-promoting potential by assaying to produce siderophores, fixation of nitrogen and phosphate solubilisation, ACC deiminase enzymes and 3-indole acetic acid

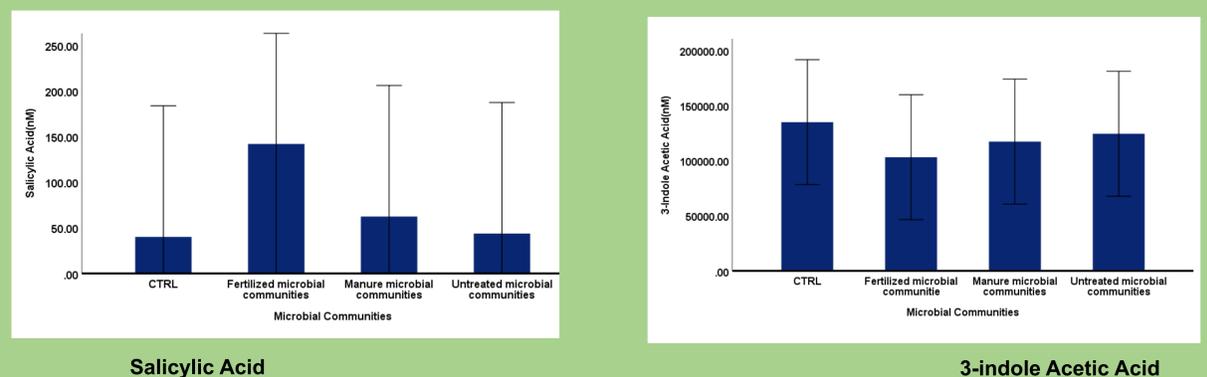
Plant Growth Promoting traits In The Vertical Transmitted Endophyte



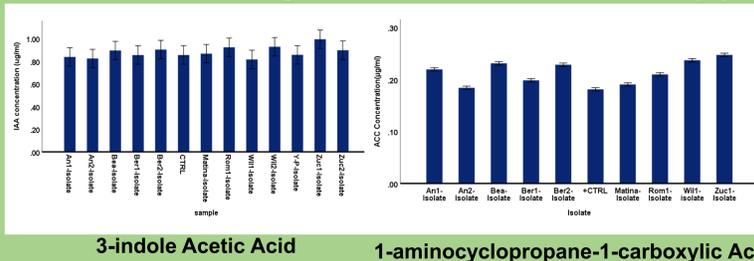
Plant-microbe Interaction Effect Plant Chlorophyll, Growth And Weight



Plant-microbe Interaction Effect Plant Phytohormones Release



Plant Growth Promoting Traits In The Vertical Transmitted Endophyte



Results:

Vertically transmitted endophytes were present in eight of the nine tomato cultivars, both bacterial and fungal endophytes were isolated.

The endophytes had significantly different phenotypes in terms of their plant growth promoting potential.

The plant-growth promoting effects were more prominent in cultivars that had vertically transmitted endophytes

The presence of fertilized soil rhizobacterial communities in hydroponically grown tomato cultivars influences chlorophyll content, salicylic acid and weight

There is evidence that presence of the endophytes primes the plant for rhizobacterial interaction.

Conclusion:

Results suggest possible signalling between the vertical inherited endophyte and the rhizobacteria in the rhizosphere of the host plant, it also suggest that vertical transmitted endophyte serve as a priming agent for plant-rhizobacteria interaction