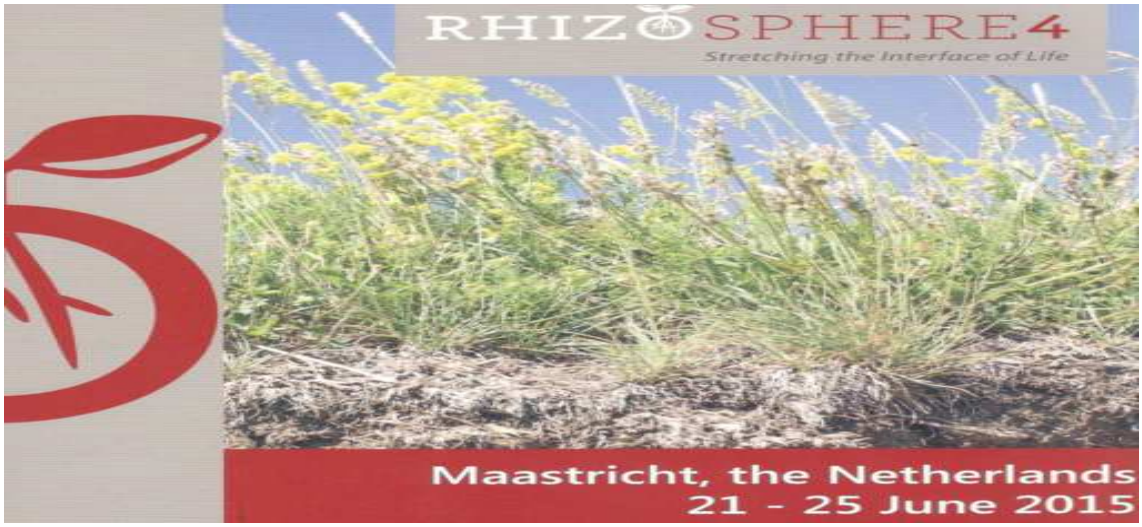

Potential of rhizospheric and endophytic microorganism to enhance P availability from organic and inorganic phosphate and phytohormones production

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Rhizosphere microorganisms contribute significantly to solubilization of inorganic and organic forms of phosphorus fixed in soil, but only a few endophytic microorganisms are known in this respect. Since the amount of organic phosphorus in soil with no-tillage farming is increased and use of organic fonts, microorganisms efficient in the mineralization of organic P are more promising as plants inoculants. Apart from the P solubilizing abilities, the phosphate solubilizing microorganisms have the ability to produce plant growth hormones and enzymes for mineralization of organic phosphorus. The aim of this work was to investigate the potential of phosphate solubilization and mineralization of rhizosphere and endophytic microorganisms in order to select bacteria as plants inoculants. The production of phytase and phytohormone auxin indole-acetic acid (IAA) were also evaluated. Nine rhizobacteria from Embrapa collection and 113 endophytic bacteria isolated from maize roots, leaves and sap were evaluated for calcium and phytate phosphate bio-solubilization. The soluble P produced was quantified by a modified ammonium molybdate method after 3,6 and 9 days of bacterial growth. The most efficient phosphate solubilizing bacteria were identified based in the 16S rDNA sequence and evaluated for phytase and IAA production. IAA production was evaluated in a liquid culture medium supplemented with tryptophan. The rhizobacteria *Bacillus subtillis* strain B70 showed the highest calcium-P (167.8 mg P.mL-1) and phytate-P releasing (93,79 mg P.ml-1). The best intracellular phytase producer were identified as *Pantoea* sp. 1931 (85 mU.ml-1) and the above mentioned *B. subtillis* B70 (64mU.mL-1). The highest IAA production (150 µg.mL-1) was observed with the above mentioned *Pantoea* sp. 1931 and a non-identified endophytic bacteria (isolate 1913). It was concluded that bacterium from corn rhizosphere and endophytic microbiome have promising features of bio-solubilization and plant promotion of growth. Furthermore, Bacillus isolates were identified as promising candidates for future inoculation studies in plants.