Role of arsenic-resistant bacteria in enhancing tomato growth

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Abstract

Plant growth promoting rhozobacteria (PGPR) has been used in agricultural industry to enhance plant growth. Some PGPR stimulate plant growth by production of mimicking volatile phytohormone compounds. Arsenic-resistant bacteria (ARB) consortium was tested for their ability to increase tomato (*Lycopersicon lycopericum*) growth by solubilizing insoluble $FePO_4$ under P-free condition. Fourteen-day tomato seedlings were acclimatized for 10 days and then ARB was applied in P-sufficient and P-free conditions. After 7-d hydroponic experiments, tomato under P-sufficient with ARB increased plant biomass, shoot height, and root length (18, 11, and 11%, respectively). Tomato decreased 30% plant biomass under P-free conditions and ARB did not increase plant biomass under P-free with insoluble $FePO_4$. Increasing plant biomass might be due to ARB phytohormone production. Arsenic resistant bacteria may have potential to promote plant growth in arsenic-contaminated soils.

Keywords: arsenic-resistant bacteria, *Pteris vittata*, $FePO_4$, tomato.