

EFFECT OF INOCULATION WITH DIAZOTROPHS ON GROWTH PROMOTION OF MAIZE (*ZEA MAYS L.*) UNDER GLASS HOUSE CONDITIONS

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ABSTRACT

Biological nitrogen fixation is an environmental friendly process for improving crop yield and maintaining soil health. A study was conducted to determine the effect of inoculation with diazotrophic bacteria on growth promotion of maize under glass house conditions. Seven free living diazotrophic isolates viz. *Xanthomonas sp.*, *Beijerinckia indica*, *Flavobacterium johnsoniae*, *Pseudoxanthomonas suwonensis*, *Lysinibacillus sphaericus*, *Stenotrophomonas maltophilia* and *Pseudomonas aeruginosa* were isolated from rhizosphere of wheat. All these isolates were able to produce ammonia and IAA, while some isolates solubilised P and produced siderophores. The inoculation of maize with diazotrophic bacteria resulted in increase in all the seed germination and plant growth promoting parameters as compared to the uninoculated control. *Stenotrophomonas maltophilia* and *Beijerinckia indica* were found to be the best for improving seed germination as well as promoting plant growth of maize. So these bacteria can be used as inoculants for improving plant growth and sustaining soil health.

KEYWORDS: Diazotrophic Bacteria, Functional Characterization, Maize, Plant Growth Promotion, Seed Germination