

Screening for PGP Activities of Diazotrophic Bacteria Isolated from Saline Soil and their Effect on Maize Growth under Saline Stress

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Abstract

Plant growth-promoting rhizobacteria (PGPR) have a beneficial effect on host plants and may increase plant growth by different mechanisms. In this study the influence of saline soil on the stimulatory effects of selected diazotrophic bacteria on maize growth was investigated. A total of 22 strains were isolated from saline soil (rhizosphere of different plants) in five different areas of the perimeter of the Mina (Relizane province ? west Algeria), each isolate was evaluated to produce Indole acetic acid (IAA), phosphate solubilization, production of Hydrogen cyanide (HCN) and ammonia production. On the basis of multiple PGP traits, three strains were selected to test their potential to enhancing growth and yield of maize plants under saline conditions.

Among 22 isolates, 12 were able to produce IAA with quantities ranged from 10,25 to 110,75 µg/ml. All the isolates were able to solubilize phosphate and produce ammonia. Only two isolates (SE15, SD1) were able to produce Hydrogen cyanide. The isolates were identified as *Azospirillum genera*. Salinity severely reduced various growth and yield parameters of maize. However, the inoculation with the strain SE12 enhanced growth and yield by alleviating the toxic effects of salinity.

Keywords: Azospirillum, Maize, PGPR, IAA, Phosphate solubilisation, HCN.