

Isolation, Characterization and Authentication of Rhizobia from Root Nodules of *Arachis hypogaea* And *Vigna Mungo*

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Abstract

Effective grain legume production depends upon improvement of symbiotic nitrogen fixation through successful inoculation. The formulation and commercial production of rhizobial inoculants require the integration of physical, chemical and biological parameters leading to both high target organism population and their long term survival over time under less than optimum conditions. To achieve these, effective nodules were collected from farmer's field grown plants of ground nut and black gram and also through baiting of trap soils separately. The isolated strains were purified and biochemical and morphological tests were carried out to characterize the purified strains. Two pot experiments were performed to determine the most infective and effective strains. Besides growth parameters and nodule number of the host plants, their leaf chlorophyll contents were also measured. The isolated strains showed different biochemical and morphological characters from each other. All the isolated strains could utilize fructose, glucose, mannitol, sucrose and lactose, but showed significantly different ($p < 0.05$) levels of utilization. The effectiveness of the strains as determined by the chlorophyll content and dry shoot weight of the host plants, showed significant differences ($p < 0.05$) among the strains. For ground nut it was found that dry matter content was positively correlated with the chlorophyll content ($R^2 = 0.5321$). Infectivity as determined by the nodule number was also significantly different among the isolated strains. In groundnut the GN/MIR/Bait strain was found to be most infective and effective and in black gram strains BG/MIW/Bait and BG/P1/B showed higher effectiveness and infectivity.

Key words: Characterization, Authentication, Rhizobia, Nodules, Ground nut and Black gram