

Quality and Yield of Potato Seed Tubers as Influenced by Plant Growth Promoting Rhizobacteria

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Abstract : Fertilization increases efficiency and obtains better quality of product recovery in agricultural activities. However, fertilizer consumption increased exponentially throughout the world, causing severe environmental problems. Biofertilizers can be a practical approach to minimize chemical fertilizer sources and ultimately develop soil fertility. This study was carried out to isolate, identify and characterize bacteria from medicinal plant (*Rumex tuberosus* L. and *Verbascum* sp.) rhizosphere for in vivo screening. 25 bacterial isolates were isolated and several biochemical tests were performed. Two isolates that were positive for most biochemical tests were chosen for the field experiment. The isolates were identified as Go1 *Alcaligenes faecalis* (Accession No. OP001725) and T11 (*Bacillus* sp.) based on the 16S rRNA sequence analysis that was compared with related bacteria in GenBank database using MEGA 6.1. For the field trial isolate GO1 and T11 (separately and mixed), NPK as a positive control was used. Both isolates increased plant height, chlorophyll content, number of tubers, and tuber's weight. The results demonstrated that these two isolates of bacteria can potentially replace with chemical fertilizers for potato production.

Keywords : biofertilizer, *Bacillus subtilis*, *Alcaligenes faecalis*, potato tubers, in vivo screening

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