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## Development and evaluation of liquid plant growth promoting rhizo microbial consortia for healthy Radish (*Raphanus sativus*) production

Plant Growth Promoting Rhizo microorganisms (PGPRs) are more commonly known as beneficial microbial inoculants that can improve soil fertility and crop productivity. Now-a- days, the application of the liquid plant growth promoting microbial consortia in the vegetable production is gaining lot of importance because of their cost effectiveness and eco-friendliness. Different liquid plant growth promoting rhizo microbial consortia like *Azospirillum, Azotobacter*, phosphorus and potash solubilizing bacteria etc., are used in the field of vegetable production for increasing the yield and to reduce diseases and also to maintain the soil health for sustainable production. In the present study, attempts were made to isolate, characterize and screen native nitrogen fixing, phosphorus and potassium solubilizing bacteria from the different weed rhizosphere soils of Malnad region of Karnataka (India). Further, attempts were also made to develop and evaluate the effective liquid PGPR consortia on growth and yield of radish under greenhouse conditions. Out of 11 different weed rhizosphere soils collected, as many as *7 Azotobacter*, 6 phosphate solubilizing and 8 potassium solubilizing isolates were obtained. In the in vitro screening studies, the Azoto-7, PSB-2 and KSB-8 showed high efficiency in nitrogen fixation, phosphorus and potassium solubilization, respectively and all the efficient isolates were tentatively characterized as *Azotobacter*, phosphate solubilizing Bacillus *megaterium* and potassium solubilizing Bacillus mucilaginosus based on morphological and biochemical characters. Further, the efficient liquid plant growth formulation were developed and evaluated on Radish under greenhouse condition using varied levels of Recommended Dose of Fertilizers (RDF). Out of 16 treatments imposed, the treatment receiving 75% of RDF+FYM+efficient liquid PGPR formulation showed statistically highest germination percentage (100%) and number of leaves (15.70, 18.60 and 20.20 numbers of leaves at 15, 30 and 45 days after sowing). Similarly, the same treatment showed high chlorophyll content of 2.90 mg/g of tissue, fresh and dry weight of 141.10 and 29.90 g, respectively followed by the treatment receiving 100% of RDF+FYM+efficient liquid PGPR formulation. However, the same trend of observation was recorded with respect to tuber girth, tuber length and also showed the maximum accumulation of NPK content both in plant and soil at the time of harvest. Scale up studies further required evaluating the native PGPR formulations for different crops in combination with different bio-control agents for increased vegetable production.

### Biography

Nandish M S has completed his PhD in Agricultural Microbiology from University of Agricultural Sciences, Bangalore. He is currently working as an Assistant Professor of Microbiology, College of Agriculture, UAHS, Shimoga. He has published more than 25 research papers in reputed journals and more than 75 abstracts publications and handling 11 research projects in the field of agricultural microbiology as Principal Investigator and Co - Principal Investigator.

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