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## Plant Growth Promoting Rhizobacteria and Chemical Fertilizers: Impact on Soil Health and Productivity of Capsicum (*Capsicum annuum* L.)

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There is no commercial agent which could act as biofertilizer, bio-control and bio-stimulant for enhanced capsicum productivity in North-Himalayan Western Region. Therefore, indigenous plant growth promoting rhizobacteria were isolated from rhizosphere and root samples of capsicum. All thirty-four morphological distinct isolates were P-solubilizers, nitrogen fixers, siderophore producers, 18 isolates were indole acetic-acid producers, 19 isolates were ACC-deaminase producers, 12 isolates were ammonia producers and only 5 isolates were HCN producer. All the tested isolates possess antagonism against one or more test pathogens i.e. *Fusarium solani*, *Rhizoctonia solani*, *Pythium spp.*, *Ralstonia solanacearum*, *Phytophthora capsici* and *Colletotrichum capsici*. The application of isolated indigenous PGPR *Providencia* sp. (ROH6) reduced the disease incidence of bacterial wilt (*Ralstonia solanacearum*) by 70% as compared to pathogen inoculated control. The conjoint application of PGPR isolate (JHA6 and ROH14) along with 80 per cent NP (N80 and P61 kg/ha) brought a significant increase in yield by 8.93%, increased available N and P contents by 8.64 and 20.73 per cent, over recommended doses (N100 and P76 kg/ha) besides saving of 20 per cent chemical fertilizers. Further, the application of indigenous plant growth promoting strains (JHA6 and ROH14) at varied levels of drought stress induce drought tolerance by increasing the antioxidant enzymes (SOD, CAT and POD) activities. Thus, the application of PGPR isolates has good prospects to be used as biofertilizer, biocontrol and bio-stimulant agents not only for enhanced growth and yield of capsicum but also to sustain soil health.

### Biography:

I was INSPIRE scholar during my Ph.D. in microbiology, which I have completed from Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Solan, INDIA. I have 2.5 years of working experience with plant growth promoting bacteria. Till now, have published 12 research papers, 4 research articles and three review articles. I have participated in 10 National conferences/seminar and 3 International conferences. I am ICAR SRF and NET qualified, and have been awarded with best poster presentation award in National and International conferences. Currently I am working as Subject matter expert in Biology, with Chegg, Inc., an American education technology company.