

INFLUENCE OF *PSEUDOMONAS* VP-2 ON GROWTH OF SOYBEAN CROP

Vishal Kumar Deshwal

Department of Microbiology, Doon (PG) Paramedical College, dehradun-248 001

* Correspondence author E-mail ID: vishal_deshwal@rediffmail.com;

Abstract: *Pseudomonas* VP-2 showed highest shoot, root dry weight, number of nodules per plant and nodules dry weight by 186.36, 283.33, 201.33 and 225% respectively as compared to control. All *Pseudomonas* strains showed improved shoot dry weight, root weight ranges between 147 to 186% and 194.66 to 201% respectively as compared to control. Although control plant also produced nodules but *Pseudomonas* bacterized seeds improved nodulation by 188 to 201% as compared to control. Similarly, nodules dry weight also got enhanced by 212.5 to 225% as compared to control. All the results suggested that *Pseudomonas* improves the plant growth and productivity in Soybean crop.

Keywords: *Pseudomonas*, PGPR, Soybean

REFERENCES

- Bano, N. and Musarrat, J.** (2003). Isolation and characterization of phosphate degrading soil bacteria of environmental and agronomic. *Letter Applied Microbiology*. **36**: 349-353.
- Deshwal, V.K., Pratibha, Narayan, A. and Sharma M.** (2011a). Effect of carbon and nitrogen on the production of catechol-type of siderophores by *Rhizobium* sp. isolated from root nodules of pea plant (*Pisum sativum*). *Developmental Microbiology and Molecular Biology*, **2**(1): 45-51
- Deshwal, V.K., Dubey R.C. and Maheshwari, D.K.** (2003). Isolation of plant growth-promoting strains of *Bradyrhizobium* (*Arachis*) sp. with biocontrol potential against *Macrophomina phaseolina* causing charcoal rot of peanut. *Current Science*. **84** : 443-448.
- Dey, R., Pal, K.K., Bhatt, D.M. and Chauhan, S.M.** (2004). Growth promotion and yield enhancement of peanut (*Arachis hypogaea* L.) by application of plant growth-promoting rhizobacteria. *Microbiological Research*. **159**: 371-394.
- Deshwal, V.K., Vig, K., Amisha, Dwivedi, M., Yadav, P., Bhattacharya, D. and Verma, M.** (2011c). Synergistic Effects of the Inoculation with Plant Growth-Promoting *Rhizobium* and *Pseudomonas* on the Performance of *Mucuna*. *Annals of Forestry*. **19**(1): 13-20.
- Deshwal, V.K., Kumar, T., Dubey, R.C. and Maheshwari, D.K.** (2006). Long-term effect of *Pseudomonas aeruginosa* GRC₁ on yield of subsequent crops of paddy after mustard seed bacterization. *Current Science*. **91**: 423-424.
- Deshwal, V.K., Devi, M.S., Bhajanka, N., Mistri, J., Bose, A. and Saini, N.** (2011b). *Pseudomonas aeruginosa* strains and their role in plant growth promotion in medicinal plant. *Global Journal of Applied Agricultural Research*. **1**: 49-55.
- Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T. and Williams, S.T.** (1994). In, *Bergey's manual of Determinative Bacteriology*, Williams and Wilkins Press, Baltimore, USA.
- Kloepper, J.W. and Schroth, M.N.** (1978). Plant growth promoting rhizobacteria on radishes. In: *Proceeding of the 4th International Conference on Plant Pathogenic Bacteria*, Station de Pathologie Vegetale et Phytobacteriologie, INRA, Angers, France. **2**: 879-882.
- Lata, Saxena, A.K. and Tilak, K.V.B.R.** (2002). Biofertilizers to augment soil fertility and crop production. In *Soil Fertility and Crop Production* Science Publishers, USA. (Edited by Krishna KR): 279-312.
- Lugtenberg, B.J.J. and Dekkers L.C.** (1999). What makes *Pseudomonas* bacteria rhizosphere competent?. *Environmental Microbiology*. **1**(1): 9-13.
- Lippman, B., Leinhos, V. and Bergmann, H.** (1995). Influence of auxin producing rhizobacteria on root morphology and accumulation in maize *Zea mays* L. caused by inoculation with Indole-3-acetic acid IAA producing *Pseudomonas* and *Actinobacter* strains or IAA applied exogenously. *Angewandte Botanik*. **68**: 31-36.
- Misko, A.L. and Germida, J.J.** (2002). Taxonomic and functional diversity of pseudomonads isolated from the roots of field -grown canola. *FEMS Microbiol. Ecol.*, **42**: 399-407.
- Rodriguez, H. and Fraga, R.** (1999). Phosphate solubilizing bacteria and their role in plant growth promotion. *Biotechnology Advances*. **17**: 319-339.
- Vasanthakumar, A. and McManus, P.S.** (2004). Indole-3- acetic acid-producing bacteria are associated with cranberry stem gall. *Phytopathology*. **94**: 1164-1171.
- Wu, S.C., Cao, Z.H., Li, Z.G., Cheung, K.C. and Wong, M.H.** (2005). Effects of biofertilizer containing Nfixer, P and K solubilizers and AM fungi on maize growth: A greenhouse trial. *Geoderma*. **125**: 155-166.