RESEARCH ARTICLE

PGPR: AN ALTERNATIVE IN SUSTAINABLE AGRICULTURE

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Received-17.01.2016, Revised-26.01.2016

Abstract: In the current farming practices, the use of PGPR as an alternative is likely to increase the soil fertility and produce better crop yield than the conventional mode of farming. This type of agriculture uses special farming techniques. Sustainable agriculture is vital in today's world as it offers the potential to meet our agricultural needs. In the present farming practice, PGPR and environmental resources can be fully utilized. The alternative scientific technologies are productive, economic, resource serving and appropriate to many farming situations all over India. Thus the technique is ecofriendly and ensures safe and healthy agricultural products. Microbial populations are instrumental to fundamental processes that drive stability and productivity of agro-ecosystems.

Keywords: PGPR, Sustainable agriculture, Conventional method, Biological farming, Mineralization

REFERENCES

Alagawadi, A.R., Gaur, A.C. (1992). Inoculation of Azospirillum brasilense and phosphate-solubilizing bacteria on yield of sorghum (*Sorghum bicolor L.*)

Cho, K., Toler, H., Lee, J., Owenley, B., Stutz, J.C., Moore, J.L., Auge, R.M. (2006). *Mycorrhizal*

Glick, B.R., Karaturovic, D.M., Newell, P.C. (1995). Anovel procedure for rapid isolation of plant growth-promoting pseudomonads. *Can. J. Microbiol*. 41, 533–536.

Glick, B.R., Todorovic, B., Czarny, J., Cheng, Z., Duan, J., McConkey, B. (2007). Promotion of plant growth by bacterial ACC deaminase. *Crit. Rev. Plant Sci.* 26, 227–242.

Harish, S., Kavino, M., Kumar, N., Samiyappan, R. (2009b). Differential expression of pathogenesis-related proteins and defense enzymes in banana: interaction between endophytic bacteria banana bunchy top virus and Pentalonia nigronervosa. *Biocontr. Sci. Technol.* 19, 843–857.

Kavino, M., Harish, S., Kumar, N., Saravanakumar, D., Damodaran, T., Soorianathasundaram, K., Samiyappan, R. (2007). Rhizosphere and endophytic bacteria for induction of systemic resistance of banana plantlets against bunchy top virus. *Soil Biol. Biochem*. 39, 1087–1098.

Kloepper, J.W., Lifshitz R, and Schroth, M.N. (1988). Pseudomonas inoculants to benefit plant production. ISI Atlas Sci: *Anim. Plant Sci*. pp. 60-64.

Kohler, J., Caravaca, F., Carrasco, L., Roldan, A. (2006). Contribution of Pseudomonas mendocina and Glomus intraradices to aggregates stabilization and promotion of biological properties in rhizosphere soil of lettuce plants under field conditions. *Soil Use Manage*. 22, 298–304.

Kucey, R.M.N., Janzen, H.H., Leggett, M.E. (1989). Microbially mediated increases in plant-available phosphorus. *Ad. Agron*. 42, 199–228.

Lynch, J.M. (1990) Beneficial interactions between microorganisms and roots *Adv.* **8**:335-345.

Mantelin, S., Touraine, B. (2004). Plant growth-promoting bacteria and nitrate availability: impacts on root development and nitrate uptake. *J. Exp. Bot*. 55, 27–34.

Podile, A.R.,Kishore, K. (2007). Plant growth-promoting rhizobacteria. In: Gnanamanickam, S.S. (Ed.), Plant Associated Bacteria. *Springer, The Netherlands*, pp.195-230.

Rodriguez, H., Fraga, R. (1999). Phosphate solubilizing bacteria and their role in plant growth promotion. *Biotech. Advan.* 17, 319–339.

Saravanakumar, D., Samiyappan, R. (2007). ACC deaminase from Pseudomonas fluorescens mediated saline resistance in groundnut (Arachis hypogea) plants. *J. Appl. Microbiol.* 102, 1283–1292.

Sheng, X.F., He, L.Y. (2006). Solubilization of potassium-bearing minerals by a wildtype strain of Bacillus edaphicus and its mutants and increased potassium uptake by wheat. *Can. J. Microbiol*. 52, 66–72.

Symbiosis and response of sorghum plants to combined drought and salinity stresses. *J. Plant Physiol. 163, 517–528.*

Van Peer-R, and Schippers-B. (1989). Plant growth responses to bacterization with selected *Pseudomonas* spp. strains and rhizosphere microbial development in hydroponic cultures. *Can. J. Microbiol.* **35**:456-463.

Zahir, A., Arshad, Z.M., Frankenberger, W.F. (2004). Plant growth promoting rhizobacteria. *Adv. Agron*. 81, 97–168.

Zaidi, A., Mohammad, S. (2006). Co-inoculation effects of phosphate solubilizing microorganisms and glomus fasciculatum on green grambradyrhizobium symbiosis. *Agric. Sci*. 30, 223–230.

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