Hyderabad Chapter – Indian Society of Soil Science
Department of Soil Science and Agricultural Chemistry
College of Agriculture, PJTSAU, Rajendranagar, Hyderabad
3rd Dr. M.V. SHANTARAM MEMORIAL LECTURE
18.04.2015, College of Agriculture, Rajendranagar

Ecofriendly soil supporting plant growth promoting rhizobacteria

ABSTRACT

Soil microorganisms are important in the geobiochemical cycles of inorganic and organic nutrients in soil and maintenance of soil health and quality. The rhizosphere of plants is inhabited by complex and dynamic communities of microorganisms, notable among which are plant growth promoting and soil supporting bacteria. Soil-plant-rhizobacteria interactions are complex and there are many ways in which the outcome can influence the plant health and productivity. The PGPR's are also potential biocontrol agents of several soil-borne plant pathogens. The rhizosphere provides the frontline defense of roots against attack by pathogens. Biodiversity is an important ingredient of environmental conservation and is central to agriculture production. Most microbial diversity of the soil ecosystem is confined to the rhizosphere. Rhizodeposition through plant root exudates plays a major role in defining resident microflora, which differs from that in bulk soil. Rhizobacterial diversity is influenced by both plant and soil type. Soil factors, plant root exudates and agricultural management are the factors that determine the community composition within the rhizosphere .The two factors which have impact on microbial community structure are plant type and soil type which exert their effects in a complex manner. The fact that in some situations the soil and in others plant type is the determining factor affecting the soil microbial community may relate to the effects being either stronger or weaker in accordance with the relative strength of the selective forces exerted by soil or the plant. Also, this determining factor may be related to the complex microbial interactions in soil, including interactions between microorganisms and soil and microorganisms and plants. Plants clearly affect microbial communities but to what extent in time and space are not very clear. The effects of abiotic condition of soil (soil moisture content, temperature, etc.) on the relationships between the two main drivers of microbial community structure, plant and soil type will enrich the understanding further. The availability of new and powerful technologies for studying cooperative microbial interactions, the rhizosphere guarantees a greater understanding of the processes which will facilitate their successful applications in biotechnology.

****

Biodata of Prof.K.V.B.R.Tilak For M.V.Shantaram Memorial Lecture

Prof. K.V.B.R.Tilak , Retired Head, Division of Microbiology, Indian Agricultural Research Institute, New Delhi and Senior Scientist and Platinum Jubilee Fellow, The National Academy of Sciences, India, Department of Botany, Osmania University, Hyderabad, Telangana).

Prof. Tilak has a very distinguished background in the field of soil microbiology, biological nitrogen fixation, biofertilizers and plant-microbe interactions. He was a coordinator of Indo-US Science & Technology Initiative (Senior Scientific Panel) program during 1984-91 and visited various universities in USA in a bilateral programme on Biological Nitrogen Fixation and Biofertilizers including Mycorrhizae.

Dr. Tilak held various positions at Indian Agricultural Research Institute, New Delhi as Professor of Microbiology; National Coordinator, Indian Council of Agricultural Research (ICAR) of Biological Nitrogen Fixation Program; Project Director, National Facility for Blue-Green Algal Collections and Head, Division of Microbiology for over a period of 30 years besides serving a number of organizations in the country on programmes dealing with Biofertilizers and Soil (Agricultural) Microbiology. He was awarded Senior Scientist and, Platinum Jubilee Fellowship by the National Academy of Sciences, India, in the Department of Botany, Osmania University, Hyderabad, A.P. He was DAAD Fellow, Germany (1966-69) and Alexandee von Humboldt Foundation Fellow in Microbilogy,Germany (1980-81,1986).

For his contributions towards research in Soil Microbiology and Biofertilizers, he was awarded the prestigious Prof. S.R. Vyas Memorial award by the Association of Microbiologists of India. He was the recipient of the Best Teacher Award of the Indian Agricultural Research Institute, Late Prof. Uma Kant Sinha Memorial award by the Indian Botanical Society, K.C. Mehta memorial Award in Plant Protection by the National Academy of Agricultural Sciences and Life Time Achievement Award for contributions in Microbiology(Bioferilizers) by the Association of Microbiologists of India besides receiving the Life Time Achievement Award in Agricultural Microbiology at the National Workshop on PGPR held at Banaras Hindu University, Varanasi,U.P. He also received the LIFE TIME ACHIEVEMENT AWARD IN LIFE SCIENCES at Global Sustainable Biotechnlogy Conference held at Jalgaon, Maharastra,India on December 4, 2014.

He is a Fellow of National Academy of Sciences, India, Fellow of National Academy of Agricultural Sciences, India, Fellow of the National Academy of Biological Sciences, Fellow of Andhra Pradesh Academy of Sciences, India, Fellow of Indian Botanical Society and Fellow of Association of Microbiologist's of India.. He was the president of Association of Microbiologist's of India. He has guided 30 students for doctoral degrees in Microbiology besides teaching at IARI, New Delhi and Osmania University, Hyderabad. He has published over 250 research papers in reputed Indian and International peered journals and serving in editorial boards of peered journals.

****