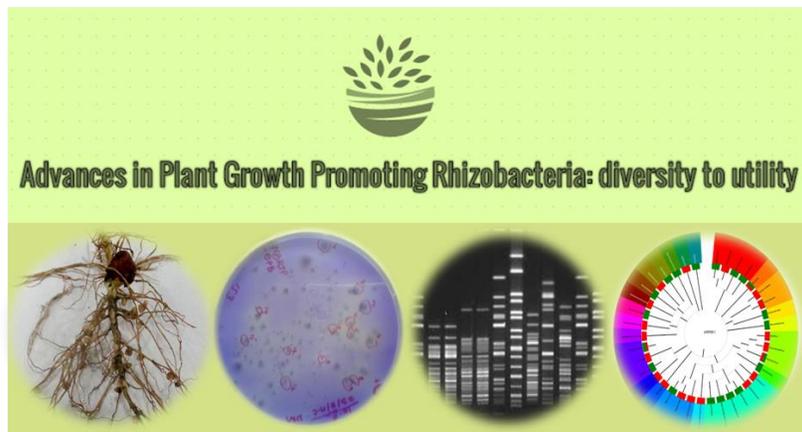**National Training**
on
Advances in Plant Growth Promoting Rhizobacteria: Diversity to Utility
11th to 20th January, 2016

ICAR-National Bureau of Agriculturally Important Microorganisms (NBAIM), Mau, Uttar Pradesh-275103, India

National Training
on
Advances in Plant Growth Promoting Rhizobacteria: Diversity to Utility

Introduction

Soil is important for sustenance of life as it provides the foothold and necessary nutrients for growth of plants and animals. Capacity of soil to supply the essential plant nutrients in available and suitable balance form for healthy plant growth largely depends on microbial activity in soil and its positive interaction with the plant. Due to the influence of root exudates in the rhizospheric region greater counts of bacteria are observed in the rhizosphere zone than that of non-rhizospheric soils or non root exudates influenced zone. As the root exudates provides the bacteria with the essential growth factors for their life sustenance there is larger colonization of bacteria in the rhizosphere zone and hence a micro niche is formed by these bacteria at the root zone, therefore these bacteria are also called as rhizobacteria. Some group of rhizobacteria during their growth produces antibacterial metabolites, biologically fix nitrogen, produce plant growth hormones, mineralize and solubilise clay fixed plant essential nutrients like phosphorous, potassium and zinc etc., which is highly beneficial in improving the plant growth and increasing tolerance towards stresses (biotic and abiotic) and are known as plant growth promoting rhizobacteria (PGPR).

Isolation, characterization, identification and determination of population structure of plant growth promoting rhizobacteria (PGPR) are key to find an efficient bacterial strain which could really enhance growth and yield of crop in field conditions, further helping in reducing cost of cultivation and leading to increased cost-benefit ratio. Thorough characterization of PGPR for various growth traits along with their stability widens the scope of their utilization under field conditions. However, many a times the initial experiments for screening and data analysis in the search of PGPR remains erroneous; resulting in selection of inefficient strains/isolates and ultimately leading to failure. To avoid such pitfalls, a holistic experimental approach should be undertaken. In this perspective, the following thematic areas will be addressed in this training-

1. Isolation, and identification of PGPR using phenotypic, biochemical and genotypic tools
2. Structural and functional characterization of rhizobacteria for plant growth promoting attributes
3. Molecular marker systems for diversity assessment of PGPR
4. Renovating bacterial taxomony using cutting edge bioinformatics and phylogentic analysis tools
5. Statistical analysis and interpretation of the data generated in PGPR research

The training programme includes both lectures and practical sessions on the above theme areas. Resource experts from the Bureau and other reputed institutes will address the participants. The programme will consist of hands-on research experience, training and exposure to tools and techniques used in PGPR research

Expected Benefits to the Participants

1. Participants will get hands on research experience and training from bench to data analysis in the field of PGPR research
2. Early- stage experimental researchers and anyone involved or embarking into this field will be benefited by getting exposure and know how to cutting edge research and better understanding of various techniques involved in PGPR research.

Date	Program
11.01.2016	Registration, inauguration and course overview
12.01.2016	Lecture and practical module on cultivation, and identification of PGPR using phenotypic, biochemical and genotypic tools
13.01.2016	Lecture and practical module on on structural and functional characterization of rhizobacteria for plant growth promotion
14.01.2016	Lecture and practical module on statistical analysis and interpretation of the data generated in PGPR research
15.01.2016	Lecture and practical modules on molecular marker systems for diversity assessment of PGPR (Module-1)
16.01.2016	Lecture and practical modules on Molecular marker systems for diversity assessment of PGPR (Module-2)
17.012016	Lecture and practical modules on amplicon based sequencing and its application in PGPR research
18.01.2016	Lecture and practical module on application of cutting edge bioinformatics tool for bacterial taxonomy
19.01.2016	Lecture and practical module on advanced pholyphasic methodologies for molecular identification and characterisation of PGPR
20.01.2016	Evaluation and Valedictory function

About NBAIM

National Bureau of Agriculturally Important Microorganisms (NBAIM) is among the premier institutions of Indian Council of Agricultural Research (ICAR) for microbiological research in India. The Bureau is aimed to work for the collection, conservation and preservation of agriculturally important microbial cultures and their genomic resources for future needs. The Bureau is engaged in the cutting-edge research themes in microbial biotechnology and bioinformatics for the development of technologies, processes, protocols and products which will ultimately benefit Indian academics, research institutions and farmers. As part of our Human Resource Development (HRD) Programs, NBAIM successfully organized several National and international training programs on different areas of molecular microbial identification, characterization, molecular taxonomy, biocontrol, plant-microbe interactions and the applications of bioinformatics in gene mining since the inception of the Bureau.

Microbial research at NBAIM basically focuses in the areas of microbial diversity analysis from extreme habitats, biological control of plant diseases, microbe mediated plant growth promotion, plant-microbe interaction, quality microbial management system with special emphasis on biosystematics, DNA fingerprinting, microbial genomics and proteomics, metabolomics, stress tolerance in microbes and bioinformatics.

Eligible participants

Scientists/Assistant Professors/Lecturers or above, technical officers, research scholars, post-docs and students of universities/institutes/organizations working in the area of biological sciences

Fees for the training

Rs. 2500 per trainee for students/ research scholars and Rs. 5000/- for Scientist/Lecturers/Assistant Professors or above/Technical officers from Universities or Govt. Institutions. Rs. 10000 per trainee for researchers from private or non-government organizations**.**

How to apply?

Eligible participants may write to the Director, NBAIM along with their RESUME on/or before 20th December, 2015. The selected candidates will be notified on 30th December, 2015 by email.

Duration

11th January to 20th January (10 days)

Total no. of participants

20 (Twenty only)

Last date of application/nominations

20th December, 2015

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