



The World Bank



WORLD BANK FUNDED
NAHEP-CAAST PROJECT
"NGT-Microbiome enabled seed priming"
ABAC No. : 7703

Symposium on Endophytes and their Applications in Agriculture

24-26, September 2019, UAS, Bengaluru

Organizer

University of Agricultural Sciences
Bengaluru

(under the auspices of the World Bank sponsored ICAR-CAAST program)

Sponsors

ICAR-National Agricultural
Higher Education Project (NAHEP)
New Delhi

&
University of Agricultural Sciences
Bengaluru



Abstracts

DO CLIMATE AND PLANT TISSUE INFLUENCE THE COMMUNITY ECOLOGY AND POPULATION DIVERSITY OF ENDOPHYTES?

Ajit Kumar Savani¹, Ashok Bhattacharyya², Dinesh K.³ and Bandana Saikia⁴

^{1,2,4} Department of Plant Pathology, Assam Agricultural University-Jorhat

³ Department of Plant Pathology, University of Agricultural Sciences- Dharwad

In the present study endophytes were isolated from banana tissue samples (leaf, pseudo-stem and root) collected from different agro climatic zones of Assam. There were considerable differences in the distribution pattern of endophytic microorganisms across seasons and plant parts. The highest richness of endophytic microflora was recorded during the monsoon season. Endophytic bacterial population was highest in samples collected during pre-monsoon and monsoon seasons. However, samples collected during summer season from same locations yielded lower number of endophytic bacterial population. Similarly, highest endophytic fungal population were recorded in samples collected during pre-monsoon and monsoon seasons followed by post monsoon seasons. It was also observed that the highest number of endophytic microflora; fungi and bacteria were obtained from in root samples collected from different agro-ecological zones of Assam. Samples collected from banana pseudo-stem and banana leaf yielded an endophytes population of 76 (34 fungi and 42 bacteria) and 96 (26 fungi and 70 bacteria) respectively. Study on per cent colonization of bacterial endophytes population in different plant parts showed highest population (52%) in banana root samples, followed by (33%) and (15%) in pseudo-stem and leaf samples, respectively.

ISOLATION AND CHARACTERIZATION OF POMEGRANATE (*PUNICA GRANATUM* L.) ENDOPHYTES

Saranaya R. and Yashoda R. Hegde

Department of Plant Pathology, University of Agricultural Sciences, Dharwad

Endophytic fungi and bacteria were isolated from leaf and shoot of apparently healthy pomegranate plants. The plant samples were collected from 5 different districts of northern Karnataka which includes Bagalkote, Belagavi, Gadag, Koppal and Vijayapura. Totally 101 endophytes were isolated using standard isolation technique. Among them 69 were fungal endophytes (31 from leaf and 38 from shoot), and 38 were bacterial endophytes (18 from leaf and 14 from shoot). Cultural characters of fungal and bacterial endophytes were studied on potato dextrose agar and nutrient agar medium respectively. Among the 69 fungal isolates, growth characters of colony varied from white to grey and black on upper surface and pale yellow to light brown and black on lower surface, regular to irregular margin, fluffy to flat mycelial growth and smooth to coarse texture on PDA. Colony diameter ranged from 2.4 to 8.5 cm but maximum number of isolates showed above 8.0 cm colony diameter after ten days of incubation. The growth of isolates on nutrient agar medium showed considerable differences with respect to colony colour, appearance (form), elevation and margin. Colony colour varied from dull white to bright yellowish, circular to irregular form, flat to raised elevation and undulated to entire margin. Further these endophytes were evaluated against pomegranate wilt pathogens like *Ceratocystis fimbriata* and *Fusarium oxysporum*.

EXPLORATION OF BACTERIAL ENDOPHYTES IN MULBERRY AND ITS IMPACT ON SILKWORM, *BOMBYX MORI* L. IN HYDERABAD KARNATAKA REGION

Hadimani D. K.¹, Ashoka J.², Shyamrao Kulkarni³, Ramesh Metre⁴ and Yallappa M.⁵

¹Department of Sericulture, College Agriculture, Bheemarayanagudi UAS Raichur

²Department of Agricultural Entomology, UAS, Raichur

³Department of Agronomy, College of Agriculture, Bheemarayanagudi

⁴Department of Biotechnology, College of Agriculture, Bheemarayanagudi

⁵ Department of Agricultural Microbiology, College of Agriculture Bheemarayanagudi

Endophytes are bacterial or fungal microorganisms that colonize healthy plant tissue intercellularly and/or intracellularly without causing any apparent symptoms of disease called endophytes. However, increased environmental awareness, cost of chemicals and highly sensitive nature of mulberry silkworm to plant protection chemicals that a minute chemical residue sufficient to result huge crop loss, make farmers reluctant to use chemicals. The alternative methods are therefore very essential to contain the situation. Considering the broad spectrum beneficial effect of endophytic bacteria, the present study was attempted to isolate and evaluate few mulberry endophytic bacteria.