
Workshop on Role of Mycorrhiza in Sustainable Agriculture and Forestry

I. BACKGROUND

The Mycorrhiza Network at TERI has been actively involved in development and application of mycorrhizal biofertiliser, technology development and its transfer; and information dissemination activities. The Network functions with the objective of helping scientists carry out research in the field of Mycorrhiza and promoting communication among mycorrhiza scientists. The Centre for Mycorrhizal Culture Collection of the Network provides opportunity to researchers to obtain specific cultures of interest; preserve germplasm available in India and elsewhere; procures strains of both ecto- and arbuscular mycorrhizal fungi from India and abroad; multiplies and maintains these fungi in pure culture; and provides starter cultures. The network publishes a quarterly newsletter in order to promote communication among mycorrhiza scientists in India and other countries; and caters to the needs of the mycorrhiza researchers.

As part of the Mycorrhiza Network Programme, TERI organized a one day workshop on "Role of Mycorrhiza in Sustainable Agriculture and Forestry" at TERI, New Delhi on Wednesday, 22 March 2017. The event was sponsored by the Department of Biotechnology, Government of India and the Science & Engineering Research Board, Department of Science and Technology, Government of India.

II. OBJECTIVES

The workshop aimed at generating awareness amongst researchers and students of India to combat soil contamination and enhance food productivity by using this benevolent mycorrhizal bio-fertilizer.

The prime objectives of the workshop, therefore, were to:

- provide a forum for education, knowledge transfer, and professional development;
- promote networking and collaboration opportunity;
- facilitate interaction between different scientific working groups to discuss the state of mycorrhiza research around the world, and sharing of local and international experiences;
- make awareness generation amongst students, faculty and researchers for mycorrhiza research

III. WORKSHOP SESSIONS

Inaugural session

Dr Shantanu Ganguly, while setting the theme, mentioned that most of the plants that we see are associated below ground through their mycelial connections, much like our internet. Fungus expert Paul Stamets called them "Earth's natural internet" in a 2008 TED talk.

The workshop started with opening remarks by Mr Prabir Sengupta

(Distinguished Fellow & Director, Knowledge

Management, TERI), followed by Prof. C Manoharachary (NASI Senior Scientist, TERI) and

Dr Alok Adholeya. Dr Alok Adholeya spoke on the role of mycorrhiza in sustainable agriculture and traced the origin and development of mycorrhizae, followed by the role of TERI in establishing mycorrhizal research network and the Centre for Mycorrhizal Culture Collection. Dr T Madhan Mohan, Adviser, Department of Biotechnology, Govt of India delivering the keynote and inaugural address not only stressed the role of mycorrhizal biofertilizers but advised to work on their genomics.



Technical session



Topic: Commercialization of AM Fungi and Biofertilizer
Dr C Manoharachary, NASI Senior Scientist

Topic: Mycorrhiza in Sustainable Agriculture, Horticulture and Forestry

Prof. D J Bagyaraj, INSA Hon. Scientist and
Chairman, CNBRCD, Bangalore





Topic: Role of Ectomycorrhizae in Forestry Development

Prof. N Raaman, Director, Centre for Advanced Studies in Botany, University of Madras

Topic: TERI's in vitro Mycorrhizal Technology: its journey and successful case studies for application in agriculture and bioremediation.

Dr Reena Singh, Fellow, Centre for Mycorrhizal Research, Sustainable Agriculture, TERI



Topic: Scope and Limitations of AM Bio-fertilizers

Prof. B F Rodrigues, Department of Botany, University of Goa

Topic: Arbuscular Mycorrhiza in cultivation of medicinal plants

Prof. Rupam Kapoor, Department of Botany, University of Delhi



Interactive session

During the important interactive session, the participants have raised the questions on suitability of AM fungi for different crops, the role of soil conditions, nutrient status of the soil, and effective bio inoculants, purity of inoculum, quality and shelf life of commercialized mycorrhizal product and on other related issues. The panel of experts included Prof. C Manoharachary, Prof. D.J. Bagyaraj,



Prof. B.F.Rodrigues, Prof. Rupam Kapoor, and Dr Reena Singh who have given suitable answers to the queries and also provided necessary practical solutions for the problems faced by the users.



IV. KEY MESSAGES AND RECOMMENDATIONS

The key messages and recommendations that emerged out from the workshop for the participants and policy makers are:

- (i) The current agricultural practices involving overuse of chemical for producing crops is not sustainable;
- (ii) Most of the chemical fertilizers become converted into forms that are not available to the plants;
- (iii) Mycorrhizae increase the absorbing area of the roots 100 to 1000 times also make unavailable and other tightly bound soil essential nutrients available to the plants thereby facilitate the ability of the plants to utilize soil resources more efficiently;
- (iv) In addition to their role of increasing absorption and translocation of nutrients from soil to plants, mycorrhiza also improve the tolerance of plants towards varied stresses (high soil temperature, drought, heavy metal toxicity, salinity etc.) and build up macro-porous structure of soil through their extraradical hyphae that allow penetration of water as well as air and prevents erosion. Mycorrhizae are thus a viable alternative to current agro-chemicals and can play a vital role in sustainable agriculture;
- (v) It has been recommended that short duration (2-3 days/one week) training workshop on mycorrhiza to be organized by TERI, where researchers can be given training on different aspects of mycorrhiza research so that they can conduct mycorrhiza research at their respective institutes.

