

CONSULTATIVE MEETING ON BIO-FERTILIZERS-2018
("Use of Bio-inoculants in Plantation Forestry")
28-12-2018; Conference Hall, IFGTB, Coimbatore-2

India's National Forest Policy, 1988 envisages one-third of geographical area should be under forest or tree cover. This needs planting of forestry species on degraded forest lands, wastelands and fallow lands by promoting the plantation forestry. Although, plantation forestry was initiated with the exotic species mainly for the production of industrial raw materials as well as fuel wood and fodder, it gained momentum and wide acceptance in greening the degraded land masses, which otherwise not suitable for any other kind of vegetation growth. The exotic tree species viz., *Eucalyptus*, *Casuarina* and some Acacias like *Acacia auriculiformis* and *A. mangium* are the major ones having larger land area under key plantations compared to other tree species. However, in the recent years much emphasis is given for raising the plantations of economically important native tree species viz., Ailanthus, Cadamba, Dalbergia, Gmelina, Melia, Sandal, Indian Mahogany, Teak, Thespesia, etc. to meet the demand of industrial raw materials. Many entrepreneurs both under private and public sectors are now taking up planting of native tree species on commercial scale for better productivity and hence, it is very essential to produce healthy and quality planting stock of these tree species.

Bio-fertilizers, being essential component of organic farming, are efficient strains of nitrogen fixing, phosphate solubilizing or cellulolytic microorganisms, which can be applied to seed, soil or composting materials for augmenting such microorganisms and their microbial processes that make optimum bio-availability of essential nutrients required for the plants in the soil. Bio-fertilizers are reported to play a very significant role in improving soil fertility by fixing atmospheric nitrogen either in association with the plant roots or without it, solubilise the insoluble soil phosphates and produce plant growth substances in the soil. The bio-fertilizers can make significant contribution towards production of high quality and healthy seedlings, which would increase greenery in waste/unproductive lands in the country.

The use of bio-inoculants in forestry is more important to ensure better quality planting stock. Therefore, identification and use of selective bio-inoculants holds promise for improving seedling quality, field planting performance and increased resistance to root diseases and climatic stresses in the field. The role and importance of bio-inoculants in sustainable production of mainly the cash crops have been reviewed by several authors and the results of the studies are much promising in raising good quality planting stock using suitable bio-inoculants. Also, use of these bio-inoculants would not only reduce the impact of chemical fertilizers, but also provide economic benefits. Application of bio-inoculants in seedling stage is an excellent solution to strengthen them to withstand the adverse conditions prevailing in degraded locations.

In this backdrop, a consultative meeting on bio-fertilizers has been proposed for a thorough discussion on the recent trends and advancements in the field of bio-fertilizer technology.

Program

The meeting had two technical sessions comprising of invited presentations by Eminent Scientists and Professors working on Agriculture and Forestry from leading Universities at National level. Representatives of State Forest Departments, Forest Development Corporations, Wood based Industries, Tree Growers and other stakeholders. The invited speakers presented their view points on the use of bio-inoculants in plantation forestry as well as their actual requirement case by case and shared their experiences for large scale production and sustainable utilization of potential bio-inoculants in forestry sector.

Dr. S. Murugesan, Scientist-G & Group Co-ordinator (Research) welcomed the invited speakers, guests and all the participants and highlighted the importance of bio-inoculants in forestry practices.

Dr. V. Mohan, Scientist-G & Organizing Secretary of the meeting gave an overview of the meeting and explained about the usefulness of different microbes in human kind including reclamation and rehabilitation of mined out areas, polluted areas and other degraded areas.

Dr. Mohit Gera, IFS, Director, explained in detail about the use of bio-inoculants for production of quality and healthy seedlings and their disease-free condition subsequently in the field condition are very important aspects of the plantation management. He highlighted that the IFGTB has taken up tree improvement programme on many commercially important tree species for obtaining quality seeds and propagules for raising orchards and clonal plantations and hence, it is essential to produce and utilize the quality planting material for their better productivity. Dr. Gera also pointed out this meeting would bring out the current status of the Research & Development and use of bio-inoculants in forestry at the regional and national level; to develop strategies on use of bio-inoculants in forestry production systems and issues of quality of bio-inoculants, quality control, regulatory requirements and commercialization; to identify the role of stakeholders in promoting the use of bio-inoculants in agriculture, horticulture and forestry and bring out recommendation and way forward.

Technical Session – 1:

In this session, 7 presentations were made by the invited speakers and by the IFGTB scientists.

Dr. V. Mohan, Scientist, IFGTB, made presentation on "Research on Bio-inoculants in Forestry: A Stock Taking". Dr. D. Balachandar, TNAU, made presentation on "Recent Trends in Bio-inoculants Technology". Prof. N. Mathivanan, Director, CAS in Botany, University of Madras, Chennai, presented on the topic "Recent advances in plant-microbe interaction and biological control of plant pathogens in agriculture and forestry".

Dr. D.J. Bagyaraj, INSA Honorary Scientist & Chairman, CNBRCD, Bangalore, presented about "Overview of Bio-inoculants Research in India and Identification of Research Gaps".

Dr. Archana Kalyani, IFS, DCF (Genetics), TNFD, shared here presentation on "Status of Research on Bio-fertilizers in Forestry carried out by Tamil Nadu Forest Department". A representative from Modern Nursery Division, TNFD, Dharmapuri, has presented on "Status of Bio-fertilizer Production and supply by TNFD". Dr. A. Karthikeyan, Scientist, IFGTB, has presented on the topic "Scope and application of *Micromonospora* in Forestry".

Technical Session – 2:

In this session invited speakers from wood based industries, progressive nursery grower and progressive farmers presented their perception about the bio-inoculants. Dr. P. Chezihan, Manager (Plantations), TNPL, presented on the topic "Need for Bio-fertilizers by the Industry". Shri. N. Sakthivel, Nursery grower, Cuddalore district, has given overview of large scale production of Casuarina clonal plants in his nursery and performance application of bio-fertilizers like VAM fungi, *Frankia* and *Micromonospora* bio-fertilizers in nursery as well as in field conditions. Shri. Madan, Progressive Farmer, Salem district, Tamil Nadu, gave his experience and feed back about the use of nitrogen fixing bio-inoculants and their efficacy on different agriculture and vegetable crops.

Discussion, Wrap-up and Concluding Session:

This session was chaired by Dr. Mohit Gera, IFS, Director, IFGTB. Dr. S. Murugesan, Group Co-ordinator (Research), Prof. D.J. Bagyaraj, Prof. N. Mathivanan, Dr. Archana Kalyani, IFS, Dr. V. Mohan, Dr. A. Karthikeyan, Dr. P. Chezihan, Mr. N. Sakthivel, Mr. Madan, Head of Divisions, Scientists, Assistant Chief Technical Officers and Research Scholars attended the session.

The Chairman has envisaged that the presentations made by the Invited Speakers & IFGTB Scientists has brought out recent developments of bio-fertilizers technology in agriculture and forestry sectors and he stressed that there is a need for cost effective and sustainable mass production of potential bio-inoculants for easy availability to all the end users. Dr. Mohit Gera facilitates the formulation of recommendations for the future programme on bio-fertilizer technology. The meeting concluded with the vote of thanks delivered by Dr. V. Mohan, Scientist-G & Organizing Secretary of the meeting.



Dr. S. Murugesan, Scientist-G & GCR welcoming the gathering



Dr. V. Mohan, Scientist-G delivering the overview of the meeting



Dr. Mohit Gera, IFS, Director, delivering his remarks and setting agenda for the meeting on Bio-fertilizers



Dr. Mohit Gera, IFS, Director, IFGTB felicitating Prof. D.J. Bagyaraj, INSA Honorary Scientist



Prof. D. Balachandar, TNAU, deliver lecture on Recent Trends in Bio-inoculants Technology



Dr. V. Mohan, Scientist-G, deliver lecture



Prof. N. Mathivanan, Director, CAS in Botany, Madras University, deliver lecture on Plant Microbe-Interactions



**Prof. D.J. Bagyraj, INSA Honorary Scientist,
deliver lecture on Overview of Bioinoculants Research in India**



**Dr. Archana Kalyani, IFS, DCF (Genetics),
deliver lecture on Biofertilizer research by TNFD**



**Mr. Umasankar, Research Scholar, Modern Nursery Division,
deliver lecture about Production and supply of bio-fertilizers by TNFD**



Dr. A. Karthikeyan, Scientist-F, deliver lecture on Scope of Micromonspora



Dr. P. Chezhan, Manager (Plantations), TNPL, deliver lecture on "Need for Bio-fertilizers by the Industry"



Mr. N. Sakthivel, Nursery grower and Mr. Madan, Progressive Farmer, deliver lecture on Need for Bio-fertilizes



Display of Bio-fertilizer products developed by IFGTB and Modern Nursery Division, TNFD, Dharmapuri



Dr. Mohit Gera, IFS, Director, IFGTB, conducting Discussion, Wrap-up and Concluding Session



Vote of thanks by Dr. V. Mohan, Scientist-G