



# IFGTB NEWS



Quarterly Newsletter on societal applications of research **Interventions in Forestry, Genetics and Tree Breeding** from the Institute of Forest Genetics and Tree Breeding, Coimbatore.

(A national institute of the Indian Council of Forestry Research and Education,  
Ministry of Environment, Forest & Climate Change, GOI)

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## From the Director's Desk

IFGTB caters to the research needs of the State Forest Departments and Forest Development Corporations, wood based industries, forestry research and academic institutions, nursery growers as well as the farming communities.

IFGTB therefore gives due importance for dissemination of the research findings to its stakeholders. In this direction, IFGTB has been conducting Farmers mela to bring together the Research community, foresters and the farmers.

This issue of "IFGTB News" highlights the Tree Growers Mela that was conducted at IFGTB, as well as the products released during the mela, including the microbial biocontrol agents "Bio-Bacillin" and "Mona 20", effective against Casuarina diseases. It is hoped that the information provided would enable their wider dissemination and benefit the farmers.

**Sh. S. Senthilkumar,**  
Director, IFGTB



### TREE GROWERS MELA - Linking Tree Growers To New Technologies & Markets

Rajesh Gopalan, A. Vijayaraghavan, P. Chandrasekaran & R. G. Anithaa

IFGTB's mandate to conduct forestry research and extension activities in the states of Tamil Nadu, Kerala and union territories of Puducherry & Andaman & Nicobar Islands links the institute to myriad of stakeholders. ICFRE's vision 2030 envisages the adoption of aggressive extension strategies for outreach and demonstration of its research findings. The institute had been organizing Tree Growers Melas (TGM) in several districts of the mandated states since 2009 as the most important extension activity and a flagship programme. TGMs serve as a platform for linking scientists, research institutions, SFDs, VVKs, KVKs, NGOs, industrial partners and government agencies. The responses of the farmers shared on such a platform provide valid insights on the research gaps; thus, TGMs contribute immensely towards forestry research. ICFRE has recently received an exclusive five years scheme on "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" from the Compensatory Afforestation Fund Act, 2018 (CAMPA), MoEF & CC, GoI with a total budget outlay of Rs. 313.67 crores. Of the total outlay, Rs. 47.88 crores are earmarked for fostering and accelerating extension strategies and activities of ICFRE. Befitting to the ICFRE's extension strategy outlined in the scheme; IFGTB organized a two-day TGM at the research institute's premise on 10<sup>th</sup> & 11<sup>th</sup> Mar 2020.

#### Day 1: 10<sup>th</sup> March, Theme: Clonal Farm Forestry for Increased Productivity

Shri. I. Anwardeen, IFS, Addl. PCCF, Salem Circle &

Director, Tamil Nadu Forest Academy (TNFA), Coimbatore, graced the Inaugural session as Chief Guest. Dr. N. Krishnakumar, IFS (Retd.,) President OISCA International, TN Chapter & Formerly PCCF & HoFF, TNFD, & Dr. Seenivasan, General Manager (Operations), TNPL, graced the occasion as Guests of Honour. The first technical session on "**Cultivation practices of Pulpwood Tree Species**" was chaired by Dr. N. Krishnakumar while the technical session on "**Industrial wood procurement - Prospects & Challenges**" was chaired by Dr. Seenivasan. Panellists of the session were Shri. Pon Senthil Kumar, Pasumai Vikatan (Agricultural journal) and Dr. Ravi Kumar Theodre, Head Training and Extension division, Directorate of Extension Education, TNAU. An in - house publication on "**Cultivation of *Neolamarckia cadamba***" (Malayalam) authored by Dr. A. Vijayaraghavan, Scientist - E, & a bio product, **Bio - Bacillin** developed by Dr. V. Mohan, Scientist - G were released during the Mela.

#### Day 2: 11<sup>th</sup> March, Theme: Smart Tree Cultivation for Increasing Farm income and Green cover

Shri. Debasis Jana, IFS, Addl. PCCF, Coimbatore Circle, TNFD, delivered key note address as chief guest. Shri. K. Balasubramanian, Executive President, Vanam India Foundation, Palladam, graced the occasion as Guest of Honour. Dr. R. Yasodha, Scientist - G, IFGTB chaired the session on "**Cultivation practices of Timber Tree Species**". Shri. V. Naganathan, IFS, CCF, Erode Circle chaired the session on "**Significance**



#### TGM HIGHLIGHTS:

Talks on Cultivation practices of Teak & agroforestry models (Dr. C. Buvaneshwaran), Casuarina (Dr. A. Nicodemus), *Eucalyptus*, (Dr. V. Sivakumar), *Gmelina* (Dr. A. Mayavel), Tree Borne oil seeds (Dr. R. Anandalakshmi), *Ailanthus* (Dr. D.R.S. Sekar), *Cadamba* (Dr. A. Vijayaraghavan), *Thespesia* (Dr. Kannan C.S. Warriar), Bioproducts (Dr. N. Senthilkumar) and integrated pest & disease management (Dr. Prashant Jacob, Dr. V. Mohan & Dr. A. Karthikeyan) were delivered.





## of Trees outside Forests - Timber Marketing and Trade”.

Panellists of the sessions were Shri. P. Kathirvel, IFS, CF, IFGTB, Shri. D. Venkatesh, IFS, DFO Coimbatore and Dr. R. Alagesan, Programme Coordinator, ICAR-KVK MYRADA, Gobichettipalayam. An IFGTB publication “**Malai vembu Sagupadi Kalavazhikatti**” (Tamil) authored by Dr. Rekha Warriar, Scientist - F and a bio-product, **Mona 20**, developed by Dr. A. Karthikeyan, Scientist - F were unveiled on the second day of mela.

An exhibition showcasing an assemblage of tree cultivation technologies, clonal technologies, agroforestry models, nursery management practices, bio products, timber procurement and marketing options was also organised during the mela. '**Makathana villachal tharum Marasagupadi**' (Tree cultivation practices for high yields), a training manual in Tamil compiled and published by the Extension division of IFGTB was given to all the participants of the mela. This training manual details on the tree cultivation practices of selected and prioritised species for Tamil Nadu along with list of technical services offered by IFGTB. Tree growers of 21 districts of Tamil Nadu, Trissur and Pallakkad districts of Kerala and Union territory of Puducherry participated in

**TGM PARTNERS: SFD's:** TNFD (Coimbatore, Erode, Salem & Tiruppur divisions). **KVKs:** ICAR KVKs Avinashilingam, Karamadai & MYRADA, Gobichettipalayam, KVK, Tiruppur and KVK, Trissur (Kerala). **Industrial partners:** TNPL, Karur & SPB, Erode. **NGO's:** Vanam India Foundation, Palladam & VETRY, Tiruppur. **Mass media partner:** Pasumai Vikatan, Chennai.

the two days mela. More than 1000 tree growers, managerial staff of state forest department of Tamil Nadu, KVKs, representative of wood-based industries, NGOs and members of Tree Growers Associations actively participated in the mela.

### Major take away from the TGM:

Important feedback received from the farmers include

- ◆ Standardisation of package of practices for high yielding clones of IFGTB.
- ◆ Developing clones tolerant to Casuarina wilt disease.
- ◆ Developing digital platform connecting tree growers with other stakeholders.
- ◆ Generating an alert system for wood market price information and a tree helpline.
- ◆ Dissemination of technologies through short films, documentaries and social media platforms.

Melas are time tested models for technology dissemination. Transforming institution based extension strategies to technology driven programmes like e-platforms, documentaries, short films etc., can help reach out to a wider mass through social media.

**TGM GOES LIVE ONLINE :** The two-day mela was live streamed in and can be accessed through the link <https://youtu.be/3PdKjQfjNns> & <https://youtu.be/QXvPOoVq00> YouTube. This was done as part of the several initiatives taken by the institute towards technology driven extension programmes under ICFRE NFRP Extension project “Developing and Popularizing Digital Interactive platform for Tree Growers and other stakeholders of Tamil Nadu”.



### “Bio-Bacillin” A Bio-control and Bio-booster Product for *Casuarina equisetifolia*

V. Mohan, S. Krishnamoorthi, Anish V. Pachu, K. Sushamani and C. Prasanya

Recently, wide spread mortality in different age groups of *Casuarina* plantations due to collar rot disease caused by *Diplodia natalensis* and bacterial wilt disease caused by *Ralstonia solanacearum* have been reported by tree farmers in Tamil Nadu.

With an aim to develop potential bio-control agents for controlling the problem, different beneficial microbes isolated from soil samples of healthy *Casuarina* plantations were tested for their bio-control efficacy against various pathogens under *in-vitro*, nursery and field conditions. *Bacillus velezensis* has been selected as potential candidate microbe for the preparation “Bio - Bacillin”, which has been formally released and made available to various stakeholders during Tree Growers Mela-2020.

Bio-Bacillin contains approximately  $1 \times 10^9$  colony forming unit of bacterial cells / mL of selective strain / isolate of *B. velezensis*, which is a known plant growth promoting rhizobacterium having the

**'Bio-Bacillin' is a bio-formulation containing beneficial microbe “*Bacillus velezensis*” useful for *Casuarina* and other tree crops.**

potential to synthesize various antimicrobial peptides and secondary metabolites, having effects on plant growth directly and indirectly. The product is

useful for tree crops such as *Casuarina*, *Cadamba*, *Tamarind*, *Teak*, *Ailanthus*, *Sandal* etc. This product can be applied as seed treatment, foliar application to seedlings, saplings & young trees and soil application in the form of trenching around the trees in field conditions.



### *Micromonospora*: A promising biocontrol agent for bacterial wilt disease in *Casuarinas*

A. Karthikeyan, K. Kanchana Devi and R. Kalaiselvi

A rapid spread of bacterial wilt disease caused by *Ralstonia solanacearum* in *Casuarina* clones was a cause of concern for *Casuarina* growers from Tamil Nadu. To control this disease the bacteria *Micromonospora* was evaluated in field conditions.

*Micromonospora* is an actinomycetous bacteria and recognized as a source of secondary metabolites that can control pathogens. *Micromonospora* was isolated from the root nodules of *Casuarina equisetifolia*. The isolated strain was identified as *M. maritima* by 16s rRNA

**'Mona 20' is an effective biocontrol formulation for controlling bacterial wilt disease in *Casuarinas*.**

sequencing. Besides, the pathogenicity test of *R. solanacearum* in *C. equisetifolia* seedlings, antibiosis test with *M. maritima* were conducted at laboratory conditions. In the pathogenicity test the infected *C. equisetifolia* showed chlorosis and

wilting of cladophylls due to application of *R. solanacearum*. The antibiosis test results showed suppression of *R. solanacearum* by *M. maritima*. Based on these findings the *M. maritima* broth was applied in the root zone of infected *Casuarina* clones (CH5) @ 20 ml / plant.





After 30 days of application, the infected CH5 clones developed new foliage and new sprouts. The infected plantation recovered up to 95 % and also showed improvement of growth. It is understood from this study that the *M. maritima* controlled the soil borne pathogen *R. solanacearum* possibly by secretion of secondary metabolites and its antagonistic activity. The formulation 'Mona 20' containing broth culture of *Micromonospora* was released for distribution to casuarinas growers and paper industries during Tree Growers Mela : 2020. The cost of the product is Rs. 300 /litre.



## Award / Recognitions

### New grass species named in honour of IFGTB scientist

A recently discovered grass species has been named after Dr. C. Kunhikannan, Scientist G, IFGTB, Coimbatore. The article describing the grass *Iseilema kunhikannanii* appeared in the February 2020 issue of journal "Phytotaxa". The authors of the article, Dr. K. Chandra Mohan, *et al.*, discovered this new species from the Bundi forest division in Rajasthan, India. This is the eighth species of grass occurring in India, and is a fodder for wild animals. The authors have named this species in honor of Dr. Kunhikannan for the life-long contribution in the fields of forest ecology and plant biodiversity in India.



*Iseilema kunhikannanii* has been named to honour the contributions of Dr. C. Kunhikannan in the field of forest ecology and plant biodiversity in India.

Dr. Kunhikannan is a member of the committee for 'Rehabilitation and Reclamation Planning' for iron ore mines in three districts of Karnataka, and is also involved in 'Environmental auditing and performance rating' for coal mines of Coal India Ltd., 'Biodiversity assessment' in proposed coal mines in Chhattisgarh, and iron ore mines in Orissa. Dr. Kunhikannan has completed several 'EIA studies' of proposed bauxite mines (AP), iron

ore mines (Jharkhand and Karnataka) and hydroelectric projects (Bhutan). The recent study on "Survey and documentation of phytodiversity in and around Singanallur Lake", conducted in collaboration with the Centre for Urban Biodiversity Conservation and Education (CUBE) and Coimbatore City Municipal Corporation (CCMC) has shed light on the existence of 453 plant species out of which 328 were medicinal plants. Other significant contributions have been in natural

regeneration studies at Kerala's Silent Valley, species recovery research in the Medicinal Plants Conservation Area in Silent Valley and Kolli Hills, and documentation and diversity studies of sacred groves in Alapuzha district. Dr. Kunhikannan has authored nearly 44 papers including four books. Furthermore, services have been rendered to innumerable researchers and students for plant identification. In recognition of these outstanding contributions, Dr. Kunhikannan has been elected as a Fellow of the Indian Association for Angiosperm Taxonomy (FIAT).



## Events: Jan - Mar 2020

- ◆ **Tree Growers Mela (TGM) 2020:** Tree Grower's Mela 2020 at IFGTB, Coimbatore (10<sup>th</sup> -11<sup>th</sup> Mar).
- ◆ **Meetings / Seminars:** "Growth Promoting Actinobacteria in Forest Tree Crops" (10<sup>th</sup> Jan), "CRISPR for Prosperous Forestry: Scope, Challenges & Opportunities for New Thrust Area in Bioprospecting of Forest Resources" (7<sup>th</sup> Feb), "Impact of Plantation Forestry: Medium & Small Scale Industries" (11<sup>th</sup> Feb), "Forest Genetic Resource Management" (05<sup>th</sup> Mar), "National Program for Conservation and Development of Forest Genetic Resources" (06<sup>th</sup> Mar).
- ◆ **Trainings:** "Junior Rangers - Nature Connect Programme" (7-9<sup>th</sup> Jan), "Teak Cultivation Practices in Tamil Nadu"(30-31<sup>st</sup> Jan), "Recent Advances in Forestry Research & Tree Improvement" to the Forest Officials, Research wing, UP Forest Department" (20-24<sup>th</sup> Jan & 17-21<sup>st</sup> Feb), "Access and Benefit Sharing" (28 - 29<sup>th</sup> Jan), "Tissue Culture of Important Tree Species and Bamboos" (24-28<sup>th</sup> Feb), "Urban Forestry" (13-14<sup>th</sup> Feb), "GSDP - Quality Planting Material Producer" (03<sup>rd</sup> Feb - 13<sup>th</sup> Mar), "Bamboo Nursery and Management" (02<sup>nd</sup> -07<sup>th</sup> Mar), Winter-Internship for 15 college students (Dec-Mar).
- ◆ **Awareness programmes:** PRAKRITI program (2650 school and 760 College students) at Gass Forest Museum (Jan - Mar).
- ◆ **Days Celebrated:** Republic day, Martyr's day, World Wetlands Day, 70<sup>th</sup> year of the adoption of the Constitution of India (27<sup>th</sup> Feb), International Day of Forests.
- ◆ **Superannuation:** Sh. A.M. Kumar, Technical Officer (Jan 31), Sh. K.T. Moorthy, Forester (Feb 29), Dr. S. Murugesan, Scientist G and Director (Mar 31).



## About IFGTB

The Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, is a national institution of the Indian Council of Forestry Research and Education (ICFRE), an autonomous council under the Ministry of Environment, Forest and Climate Change, Government of India. IFGTB has a mandate to develop new varieties, management and silvicultural techniques to maximize productivity of natural and planted forests under different ecological considerations and changing environment.

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