



INSTITUTE OF FOREST GENETICS AND TREE BREEDING  
(Indian Council of Forestry Research and Education)

# VAN VIGYAN

## Newsletter

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### From the Director's Desk

The Institute of Forest Genetics and Tree Breeding has been spreading its wings far and wide trying to reach out to stakeholders from different fields, be it research, extension or education. The Institute for the first time has commercialised a technology developed in its lab for the benefit of researchers in the field of molecular biology. New international relations are being forged to enable the Institute to keep pace with latest research technologies in forestry sciences. IFGTB has been a part of the team contributing to impact assessment studies in mining areas of Bellary, which was a widely appreciated effort. In addition to catering to national needs, IFGTB also addresses issues of its jurisdiction states, providing solutions to the problems posed by them from time to time. Farmers have always been the main focus of all our research activities, as we believe that empowering the grass root workers helps in nation building. With the Green India Mission launched, our responsibility has also increased. To support the Mission, we are also providing regular trainings on planting stock production to farmers and forest field functionaries.

IFGTB has been identified as the Nodal Focal point for the preparation of the State of the World's Forest report for Forest Genetic Resources (FGRs). In this connection, we have been having consultations with various stakeholders for understanding the current state of FGRs and also suggest future strategies for its conservations. We wish that all the Forest Departments, Universities and Institutes join us in this effort which has to be a continuous endeavour. Our continuous request is to be in touch with the Institute for mutual benefit.

Dr. N. Krishnakumar  
Director, IFGTB

### Capacity building for tree farmers: enhancing skills for productivity enhancement and employment generation

The ambitious farm forestry activities of the wood based industries requires training the farmers in establishment of plantations and maintenance for higher biomass production and generation of employment. Training of farmers in clonal multiplication of economically important species like Eucalyptus, *Casuarina equisetifolia* and Bamboos will act like a bridge between the industries and farmers as they can provide the source materials for production of clonal planting stock. The industries can also have a buy back policy with the farmers which will generate more income for the farmers. Shortage in production of quality planting is faced by the industries. Training of farmers in clonal propagation of farm forestry species like *Eucalyptus*, *Casuarina equisetifolia* and Bamboos will make them self sufficient to satisfy their own requirements, to provide surplus stock to the industry for plantation programme. Production of planting stock will provide employment opportunities.

Demand for increase in wood production, the increase in area for establishing plantations, increase in per capita consumption of paper has created a situation for establishing plantations with high productivity. Vegetative propagation is an important tool for increasing the competitiveness of the forestry based industry. The drastic enhancement of productivity is only possible only by Clonal forestry. Clonal forestry encompasses systems for the efficient vegetative propagation and the delivery of improved and tested germplasm. This method reaches its highest potential when it is used to establish clonal forests of hybrids with better wood quality and higher volumetric growth for establishing their own plantations and provide surplus quality planting stock to the industries for enhancing productivity.

Productivity of plantations was at 19 mt tons/ha/ year by seed route while clonal plantations yielded 34 mt tons/ha/year which has also generated 11 lakh mandays of employment in the state of Tamil Nadu.

According to the IPMA (Indian Paper Mills Association) estimate, increase in consumption, the requirement of wood would grow from 5.2 million tons at present to 13.2 million tons by 2020. Currently the requirement of wood is met from 2.2 lakh hectare under pulp plantation mostly initiated through agro-forestry, mainly from private land owned by small and marginal farmers. The industry needs around 1.2 - 1.5 million hectare of degraded forestland for meeting the raising demand. India, one of the world's fastest-growing paper markets, is facing vast fiber shortages. Since the late 1980s, more than a lakh of farmers involved in clonal plantations of Ballarpur Industries farm forestry has benefited nearly 30,000 farmer households, and has greened nearly 40,000 hectares of degraded or marginal land. Environmental award winner JK Paper has provided income for 40,000 farmers. West Coast Paper Mills, provides steady income for 25,000 farm families.

So far forestry has largely been a state controlled enterprise. The time has come to recognize and support the private efforts in forestry sector. Public Private Partnership offers best strategy for sustainable development of forest resources in India. Certain forest based industries have joined with farmers for production of raw material. Some clonal plantations of Eucalyptus and Poplars have registered a growth of 20-58 m<sup>3</sup> / ha / per year. The net income to farmer is ranging from Rs. 50000/- to Rs. 1,50,000/- per year. These efforts are also helping to bridge the gap between

demand and supply of raw material for paper industry. Efforts are needed to encourage more public - private participation for improving the household income and forest productivity.

The industries are not able to meet their own massive requirement for establishing clonal plantations. Moreover farmers have to depend only on industries for quality planting stock. If a farmer can produce his own planting stock or if the planting stock is provided through people oriented nurseries (Kissan nurseries, Community nurseries) the burden of cost for planting stock can be reduced. Further, training of farmers, or farmer groups will not only benefit farmers but also help the wood based industries to overcome their planting stock shortage. Cutting techniques for the propagation of *Eucalyptus* is at ease because of its handling. Forestry research organizations, paper industries and Forest Development Corporations have adopted clonal forestry for improving yield and quality. Yields from *Eucalyptus* will continue to increase as more improved clones are developed, matched with site with better silvicultural operations.

**V.K.W. Bachpai**

### **Macro Level Environmental Impact Assessment (EIA) Study for Bellary District, Karnataka State as per the direction of the Hon'ble Supreme Court of India by the ICFRE, DEHRA DUN**

Dr. V. Mohan, Scientist-E, Forest Protection Division and Dr. C. Kunhikannan, Scientist-E, Biodiversity Division, IFGTB were nominated by the ICFRE to undertake Macro Level Environmental Impact Assessment (EIA) Study for Bellary District, Karnataka State as per the direction of the Hon'ble Supreme Court of India in Special Leave to Appeal (Civil) Nos.7366-7367/2010, to study the status of micro flora and plant flora respectively in different mining areas in Bellary district, Karnataka. Dr. Kunhikannan assessed plant diversity in the study locations. Dr. Mohan studied the soil microbial diversity in different study locations. The Team

consisted of Scientists and officers from different ICFRE institutes/Centres i.e., FRI, Dehra Dun, IWST, Bangalore, IFGTB, Coimbatore, FRC, Hyderabad, Shore Laboratory, IWST, Vizakhapatnam. The whole team visited different study locations and collected required information and data related to plant flora and micro flora. The team from IWST and its centre collected data on aquatic flora and socio-economic details. The report was prepared and submitted to the Supreme Court within the stipulated period.



For this service, the above mentioned scientists of IFGTB have received the **Certificate of Appreciation** from the **Director General, ICFRE, Dehra Dun** for significant and valuable contribution in carrying out in the Macro Level Environmental Impact Assessment (EIA) Study for Bellary District, Karnataka State and submitting the report to the Hon'ble Supreme Court of India within the specified time limit.

### **Commercialization of technology - An initiative towards end to end approach**

A low cost, high recovery technology was developed for the isolation of RNA from difficult tissues using non-biohazardous chemicals at Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore. The complete specification of the process was filed as a joint patent of IFGTB DBT (Application No. 1927/CHE/2009). The inventors of the technology are Dr. Modhumita Dasgupta, Scientist E and Ms. Radha Veluthakkal, Research Fellow of IFGTB. The technology was assessed for its market viability by

Biotech Consortium India Limited (BCIL), New Delhi and the process was defined to have high demand in R&D market. Subsequently, the commercialization of the technology was taken up with BCIL. Dr. Purnima Sharma, Managing Director & CEO, BCIL had visited IFGTB on 10th October 2011 and signed the Memorandum of Agreement between IFGTB and BCIL to facilitate the transfer of the technology titled "Isolation of nucleic acid from plant tissues" to biotech based industries. Dr. N. Krishna Kumar, Director, IFGTB signed the MoA on behalf of the Institute. Dr. Modhumita Dasgupta, Scientist, IFGTB signed the document as one of the inventor of the technology. This is the first initiative of the Institute on technology transfer to Biotech Industries. A brief presentation on the draft IP policy at IFGTB and presented by Dr. Modhumita Dasgupta and the event marked the conceptualization of the IP Management Cell at IFGTB.



### **Addressing Stakeholders issues - KERALA**

Dr. K. Palanisamy, Scientist-F, Dr. A. Nicodemus, Scientist-E and Dr. V. K .W. Bachpai, Scientist-C provided Training on Establishment of Seed Production Area (SPA) of Teak to Forest officials of Kerala Forest Department on 8 and 9 Nov 2011 at, KFRI, Peechi, Kerala. This training was a follow-up activity of surveying over 3000 ha of teak plantations and identifying around 1000 ha as potential plantations for conversion into SPAs by a joint team of Scientists from IFGTB and KFRI, Peechi, Kerala

## Research Advisory Group Meeting

The Research Advisory Group Meeting was conducted on 3rd & 4th October, 2011 at Institute of Forest Genetics and Tree Breeding,

Coimbatore. The meeting was attended by 17 RAG members and was chaired by Dr. N. Krishna Kumar, IFS, Director, IFGTB.



14 new projects were presented and deliberated and were approved for placing it before the RPC for final approval. 62 ongoing projects were also presented and reviewed by the RAG members. List of new projects presented are as follows:

1. Establishment of second generation seed orchards and selection of clones for high productivity in Eucalyptus
2. Germplasm assemblage and Improvement of *Leucaena leucocephala* (Lam) De Wit for industrial biomass productivity
3. Cytogenetic analysis in important native tree species
4. Gene-ecological variation in teak populations of Kerala and Tamilnadu
5. Incorporating resistance in Eucalyptus to *Leptocybe invasa* Fisher & La Salle (Hymenoptera: Eulophidae) through expression of insect specific dsRNA
6. Genetic diversity assessment for management of Eucalyptus seed orchards
7. Productivity studies on commonly cultivated bamboo species in different agro climatic zones of Tamil Nadu
8. Assessment of soil organic carbon under different land uses in Tamil Nadu

9. Establishment of model plantations of teak as subsequent rotation crop for enhanced productivity
10. Tree rich Biobooster: A Novel approach to Synergise growth and pest management in fast growing industrially important tree
11. Mapping and analysis of Casuarinas and Eucalyptus plantations in Tamilnadu using GIS and RS
12. Exploration and Collection of Forest Genetic Resources and Development of National Gene bank
13. Selection and assemblage of *Grevilla robusta* from large scale plantation programs in State of Tamil Nadu
14. Selection of production of germplasm of *Acacia nilotica* L. To improve productivity in Tamil Nadu



## International Co-operation

### Visit of delegation from Chinese Academy of Forestry

A delegation from the Chinese Academy of Forestry (CAF) led by Dr. Zhang Shougong, President with Mr. Cai Daoxiong, Director of Tropical Experimental Centre, Dr. Fu Feng, Director of Division of Scientific Management, Mr. He Guangsen Deputy Director, Division of International Cooperation, Dr. Zhong Chonglu, Researcher, Research Institute of Tropical Forestry, Dr. Xie Jinzhong, Researcher, Research Institute of Subtropical Forestry, visited the Institute of Forest Genetics and Tree Breeding on 21.12.2011. The team interacted with the officers and scientists of the institute. The research and extension activities of the institute were explained to the visiting team. The team was taken to Karunya and Walayar field research stations.



### Visit of officers from International Paper (IP)

A meeting was held with IP team Dr. James L. Rakestraw, Manager, Forest Research and Technology, International Paper USA, Mr. Marc Davison, Manager, Global Fiber Projects, IP USA, Mr. Luis Fernando Silva, General Manager, IP Brazil and Mr. J.K. Jain, Chief Forest Officer, IP, India, Hyderabad. Chaired by Dr. N. Krishna Kumar, Director the meeting was attended by Group Coordinator (Research), Heads of Departments and Scientists involved in Eucalyptus and Casuarina genetic improvement. During the meeting, presentations on tree improvement activities of IP in Southern USA which uses pines and Brazil which uses Eucalyptus as raw material was detailed. IP has operations in 20 countries in Africa, America (North and South), Asia and Europe and uses more than 50 million tones of wood annually to produce 6.1 million tonnes of paper. There was a well informed discussion between IFGTB Scientists and IP team. After discussing the strengths of each organization and the priorities for future tree improvement work on pulpwood species in India, the following broad areas were identified for future collaboration between IFGTB and International Paper.

1. Augmenting genetic base of major pulpwood species through infusions from natural and planted

sources. In particular expanding genetic base of *Leucaena* species recently taken up by IFGTB for genetic improvement.

2. Including new breeding objectives like pulp produced per unit area and time
3. Coordinated evaluation trials of elite germplasm released by IFGTB in target locations.
4. Evolving site- and clone-specific silvicultural practices especially for high density plantations of *Casuarina*.
5. Using GIS technology estimating planting area and growing stock.



## Education and Awareness

### Open Source Quantum GIS Training

A training programme on Open source QGIS was organized at IFGTB from 18-22 October, 2011 for the scientists of the institute. The training included talks and Lab Exercises related to Introduction to GIS and Remote sensing, Open Source QGIS, Displaying Vector and raster data, Projection, Symbology and Labelling, Editing and Querying data, Plug-ins and Map composer, F-tools analysis, Raster Tools, QGIS and GRASS plug-in using QGIS software and also an introduction to Open Source GRASS remote sensing software.



### Children's Day celebrations at IFGTB

Children's Day was organized at IFGTB for children of age 10-17 years from schools in around Coimbatore attended

the programme at IFGTB. Dr. N. Krishna Kumar, IFS, Director IFGTB, interacted with the children and explained about forests, wildlife and the role of people in forest conservation. He also explained briefly about the forest dwellers and their way of life. Later a short movie by Key Stone Foundation on "Kurumba Tribes- Honey Hunters and Forest Dwellers of Nilgiris Hills" was shown to children to create awareness on the problems faced by the Kurumba tribes due to loss of forests caused by extensive tea cultivation in Nilgiris. It was an educative programme for children mostly grown up in cities teaching them about forest conservation, forest dwellers and their life in forest.



### First Indian Forestry Congress

A side event on Discussion Forum for Forestry science and Scientists was organized by the Institute of Forest Genetics and Tree Breeding, Coimbatore on 24.11.2011 in New Delhi in the 1<sup>st</sup> Indian Forest Congress held by ICFRE at IARI campus, New Delhi from 22-25 November 2011. Dr. N. Krishnakumar, Dr. A. Balu, Shri K. Ravichandran, Shri R. Vivekanandan, Dr. R. Yasodha, Dr. V. Sivakumar, Dr. N.V. Mathish, Dr. V. Mohan, Dr. A. Karhikeyan, Shri S. Saravanan, Smti. R. Anandalakshmi, Shri Maria Dominic Savio, Dr. N. Senthilkumar and D. Rajasugunasekar participated. Shri D. Rajasugunasekar, Scientist C bagged the second prize for best poster presentation.



Vigilance Awareness period 2011 was observed at the institute and the concluding function was held on 4.11.2011. Essay competitions in Tamil and English were held and prizes were distributed to the winners.



Hindi Day Celebrations were held on 4.11.2011 at the institute and a brochure on IFGTB in Hindi was released on the occasion.



## FORTHCOMING EVENTS

1. Farmers' mela (23-24 Feb)
2. Stakeholders Workshop on SOW FGR (7-8 Feb)
3. National Seminar on Forest Health (21-22 March)
4. Training for farmers of Capacity Building for planting stock production (26-27 March)
5. Urban Forestry Training (1-2 March)

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