

PROCEEDINGS & RECOMMENDATIONS

NATIONAL SYMPOSIUM

On

Assessment & Conservation of Forest Genetic Resources through Biotechnological Interventions

19-20 December 2011 IFP Ranchi



Forests are the most important repositories of terrestrial genetic diversity. Tree species are long-lived organisms, which have evolved natural mechanisms to maintain high levels of intraspecific variation which is needed to ensure the adaptability of the species in changing climate. Thus, benefits from forests and trees will only be sustained if forest genetic resources are conserved. The high levels of genetic variation within tree species can be beneficially used by foresters and tree growers. Genetic variability in forest trees serves as

building blocks for future evolution, selection and human use in breeding for suitability of growing in wasteland, degraded soils, mined areas etc. Therefore, forest genetic resources have vast social, economic and environmental importance. However, continuous deforestation and changes in land use and management practices, pollution and climate change, are threatening forest genetic resources and conservation of forest genetic diversity is essential.

Advances in biotechnology, especially in the area of tissue culture and molecular biology, provide some important tools for improved conservation and management of forest genetic resources. Rapid advances in DNA technology have stimulated the screening of germplasm for functional diversity and identify variation at an early developmental stage. Despite the progress made in recent years, there remain many unresolved questions especially in tropical broad-leaved species, which need immediate attention of the researchers.

Hence, a 2 days “National Symposium on Assessment & Conservation of Forest Genetic Resources through Biotechnological Interventions” was organized on 19-20 December 2011 at Institute of Forest Productivity, Ranchi. This Symposium was one of major event of Ministry of Environment and Forests, Govt. of India to commemorate International Year of Forests 2011.



The Symposium was inaugurated by Prof. M. P. Pandey, Vice Chancellor BAU Ranchi. Sh. S. C. Joshi, Director Institute of Wood Science and Technology, Bengaluru was the distinguished guest of the inaugural ceremony which was attended by around 100 participants from all over the country.

Eminent scientists, forest officials and young scholars presented their research papers in four technical sessions during the symposium on following themes-

SESSION 1: Priorities, approaches and Strategies for assessment and conservation of Forest Genetic Resources

SESSION 2: Characterization of genetic diversity among and within populations/species using modern tools and techniques

SESSION 3: Conservation of FGRs in their natural environment /habitats: Scientific and participatory management

SESSION 4: *Ex situ* conservation and sustainable utilization of FGRs

Key speakers of Symposium included: Prof. MNV Prasad, University of Hyderabad; Prof. S. Rama Rao, NEHU Shillong, Prof. Salil K. Tewari, GB University Pantnagar, Prof. Amita Pal, Bose Institute Kolkata, Dr. S. A. Ansari, Tropical Forest Research Institute Jabalpur, Sh. Jagdish Chander, Forest Department Haryana and Dr. A. K Mandal, Ranchi among others.



The Programme started with Welcome address of Sh. R. Das, Director IFP Ranchi followed by Inauguration with lighting of lamp by Chief Guest and other dignitaries. Chief Guest Prof. M.P. Pandey in his key note address appreciated the recent FGR conservation efforts of ICFRE which is implementing research and development projects to improve the productivity of trees like Casuarina, poplar, teak and eucalypts. He stated that Biotechnology especially molecular genetics has an important role to play in conservation and characterizing plant genetic diversity for betterment of society.

Director, Institute of Wood Science and Technology, Bengaluru Sh. S.C. Joshi opined that continuous deforestation and changes in land use and management practices, pollution and climate change, are threatening forest genetic resources. He further added that genetic variability in forest trees serves as building blocks for future evolution, selection and human use in breeding for suitability of growing in wasteland, degraded soils, mined areas etc. Thus, the forest genetic resources have vast social, economic and environmental importance. Joshi called for coordinated effort of academicians and field foresters for conservation of forest biodiversity and countering the global climate change.

Delivering welcome address Director of the IFP R. Das talked about the role of community in conserving forest resources. He said if the community is encouraged and motivated, forest resources could easily be conserved. This apart, if livelihood avenues are created for those dwelling in forests, erosion of forests could be stopped.

Organizing secretary of the symposium, Dr. Sanjay Singh said, “Advances in biotechnology, especially in the area tissue culture and molecular biology provide some important tools for improved conservation and management of forest genetic resources”. Dr Singh also proposed vote of thanks.

Symposium has been funded by United Nations Development Programme (UNDP), Indian Council of Forestry Research & Education, Ministry of Environment & Forests, New Delhi and the Foundation for Scientific Forestry.

AWARDS AND RECOGNITIONS

Foundation for Scientific Forestry announced 3 awards to Sh. S. C. Joshi (Eminent Forester Category), Dr. S. A. Ansari (Senior Scientist) and Dr. Tarun Kant (Young Scientist Category) for their noteworthy contribution in forestry.



In various sessions “Best Paper Presentation” awards were also conferred to scientists and young research scholars namely: Dr. Thamilarasi K, IINRG Namkum; Dr. Naseer Mohammad, TFRI Jablapur; Dr. S. K. Bishnoi, NBPGR; E. Menason IFGTB Coimbatore; Satya P. Mishra, IFP Ranchi; Gautam Kumar, BIT Mesra; Dr. S. Nath, IFP Ranchi; Sh. Pran Ranjan, Society for Promotion of Wasteland Development; Binod K. Horo, SPAR Ranchi; and Sh. HC Sindhuveerendra, IFP Ranchi.



RELEASE OF NEWSLETTER AND CD

Newsletter of UNDP funded project on Community Based Natural Resource Management in the state of Jharkhand was also released on the occasion. The newsletter contains the progress made under the projects through various interventions involving community for improvement of environment and rural livelihood.

A CD on sustainable and scientific cultivation of lac by the local community in the tribal dominated Khunti area of Jharkhand was also released on the occasion.



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RECOMMENDATIONS

SESSION 1: Priorities, approaches and Strategies for assessment and conservation of Forest Genetic Resources

Chairperson: Sh. S. C. Joshi, Director IWST Bengaluru

Co-chairperson: Prof. Salil K. Tewari, GBPUAT, Pantnagar

Rapporteurs: Dr. S. Nath and Dr. M. V. Durai

- Identification of stakeholders, prioritization of tree species conservation, capacity building and establishing networking for operational synergy should be the major activities for Forest Genetic Resource assessment and conservation.
- Appropriate conservation strategy amalgamating *in vitro* and *ex vitro* measures should be adopted for FGR conservation depending upon the species and conservation status.
- While giving attention to FGR conservation of tree species, herbaceous vegetation, orchids and non/lower vascular plants such as bryophytes, pteridophytes, ferns, mosses should also be given due consideration as they constitute important part of forest genetic resources.

SESSION 2: Characterization of genetic diversity among and within populations/species using modern tools and techniques

Chairperson: Prof. MNV Prasad, University of Hyderabad

Co-chairperson: Dr. S. A. Ansari, TFRI Jabalpur

Rapporteurs: Dr. M. Ray and Mrs. Ruby S. Kujur

- The vast genetic resources of forest tree species need to be characterized by DNA based molecular markers preferably co-dominant markers.
- The information generated through molecular markers analysis should be utilized for chalking out conservation strategy, course correction of tree improvement programme and selection of superior genotypes for propagation.
- The molecular markers combined with traits of economic interests should be employed for identification of QTLs using linkage disequilibrium.

SESSION 3: Conservation of FGRs in their natural environment /habitats: Scientific and participatory management

Chairperson: Sh. R. Das, Director IFP Ranchi

Co-chairperson: Sh. Jagdish Chander, IFS

Rapporteurs: Dr. A. Kumar and Sh. Pankaj Singh

- FGR conservation in natural environment/habitats should incorporate indigenous traditional perception and knowledge along with sound scientific principles of ecology and genetics.
- Better understanding of reproductive biology of the tree species will be required for their effective conservation in the natural habitat.
- Biodiversity-based livelihood should be promoted involving local communities in assessment, documentation and conservation of Forest genetic resources.

SESSION 4: *Ex situ* conservation and sustainable utilization of FGRs

Chairperson: Prof. Amita Pal, Bose Institute, Kolkata

Co-chairperson: Dr. A. K. Mandal, IFP Ranchi

Rapporteurs: Dr. Animesh Sinha and Dr. B. N. Diwakara

- Logistic application of micropropagation of vulnerable tree species and callus-mediated *in vitro* regeneration of tree species in order to develop variables and to broaden genetic base of the species need to be provided.
- Whole Genome Sequencing (WGS) programmes in multi-institutional network mode should be initiated on with focus on a few selected keystone indigenous tree species of the country.

