

**Technical Report on
XXIII IUFRO World Congress, Seoul, Republic of Korea**

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The XXIII IUFRO World Congress was held at Coex, Seoul, Republic of Korea from 23 – 28 August 2010 under the joint sponsorship of the Korea Forest Service and Korea Forest Research Institute and under the theme of “Forests for the Future: Sustaining Society and the Environment”. The congress was third to be held in Asia in its 117-year history and drew over 2,700 participants from 92 countries, the largest number of participants in the Congress’ history. Participants from six continents with 57% representation from Asia, followed by 20% representation from Europe, 11% from North America (11%) and 2.5% from South America attended the Congress.



The congress logo symbolized the Earth composed of trees, forests, mountains, and the waters in harmony. The five elements are understood as different types of energy in a state of constant interaction and flux with one another. The different colors of the logo are symbolic of the five elements: white (metal), blue (wood), purple instead of black (water), red (fire), and yellow (earth). The logo illustrates the philosophy of conservation and management of global forests following the natural law.

The technical and poster sessions of the congress focused specifically on: forests and climate change; biodiversity conservation and sustainable use of forest resources; forest environmental

services; Asia's forests for the future; forest products and production processes for a greener future; emerging technologies in the forest sector; frontiers in forest and tree health; forests, communities and cultures; and forests, human health and environmental security. The major issues discussed in this international forum were

- narrowing knowledge gaps between science and policy
- need for the discipline of forestry and forestry education to evolve with changing demands on forests
- need for greater interdisciplinary work efforts
- importance of adopting more socio-ecological perspectives
- need for, and role and approaches of, forestry in climate change mitigation and adaptation.



The Opening ceremony was held on 23 August 2010 with address by Don Koo Lee, IUFRO President, IUFRO emphasizing the IUFRO's history of advancing global cooperation on forest science through the activities of its member organizations.

Eduardo Rojas-Briales, UN Food and Agriculture Organization (FAO), highlighted difficulties faced due to the increase in financial constraints on the forest sector and the demand for forest environmental services (FES). He called for efforts towards increasing forestry education. Lee Myung-bak, President of the Republic of Korea, discussed the country's efforts to restore its once barren lands and also stated that the Republic of Korea ranks fourth in the Organization for Economic Co-operation and Development for its ratio

of forests to total land area. The ceremony was attended by 2700 participants from international organizations, governments, academia, the private sector and civil society.

The congress had 5 plenary sessions, 15 sub-plenary sessions and 150 technical sessions organized around the Congress's nine thematic areas. There were 2,027 presentations and 1,053 posters presentations.



The first day of the congress (23 August 2010) had one plenary, three sub-plenaries, 12 IUFRO business sessions and 19 technical sessions and poster sessions. The opening plenary was chaired by Jung-Hwan Park, Republic of Korea and nobel prize winning poet, Ko Un called for the development of a Human Charter for the

Forest to prevent future atrocities committed against forests. In the afternoon, three concurrent sub-plenaries took place on forest health in a changing environment, keeping Asia green, and perspectives of the Collaborative Partnership on Forests (CPF) on biodiversity, climate change and forestry. The technical sessions were encompassed all the nine themes of the congress.

The second day of the congress (24 August 2010) had a plenary and three sub-plenaries on urban forests, the next generation of forest research, and forests and climate mitigation. Additionally, 38 technical sessions met, covering all nine Congress themes, along with multiple side and business events, as well as the first of two official poster sessions.



The technical session on ‘**Frontiers in Forest and Tree Health**’ dealt with damage of tree in forests and plantations due to pest, pathogens and environmental factors. It highlighted the invasion of new pests and pathogens due to climate change and

the changed scenario of interaction of pest/pathogen with host due to environmental conditions.

The session was organized and moderated by Dr. Francois Lieutier, University of Orleans,



France and Dr. Daniel Herms, Ohio State University, USA. Six presentations were made in this technical session revealing research on tree resistance/ susceptibility to biotic stresses in the scenario of climate change. An oral presentation on “*Genomic bioprospecting of uncharacterized*

gene pools for biotic and abiotic stress tolerance: A case study from Casuarina equisetifolia”

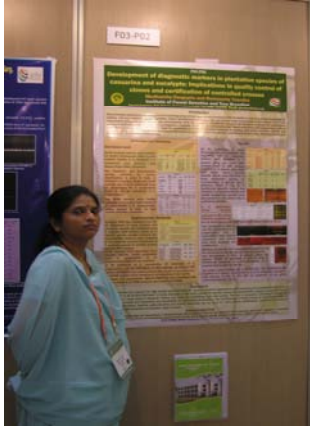
was made under the theme under the category ‘**Climate factors and tree susceptibility/resistance to insects and pathogens**’ was made by me. The presentation highlighted the isolation and identification of transcripts during biotic stress from the uncharacterized genome of *Casuarina equisetifolia*. The isolation of a full length class I chitinase (*CeChi1*) was also presented. Further, the study on the differential expression of few transcripts during biotic and abiotic stress was elucidated. The study highlighted the need for gene mining in non model tree species towards understanding the molecular dynamism of woody perennials against stress and also as a novel gene resource. The presentation invoked few basic queries including

- the need for proteome analysis to understand the role of specific peptides like heat shock proteins in tree defense
- the role of nodulin in *C. equisetifolia* during nodulation

The clarifications were given stating the difficulty in conducting the proteome analysis in species like *Casuarina*, as the protein/ nucleotide database had no sequence representation from the species, hampering the analysis. Further, it was also clarified that the role of nodulin and *enod* genes were well documented in legumes and tree legume like *Casuarina glauca*, but in the present study, its role during nodulation was not studied, since the plant was challenged with a pathogen and not a symbionts like *Frankia*.

The session also had detailed discussion on the increase of pest/ pathogen incidence due to climate change and the need to conduct simulation studies was expressed. However, it was elucidated that studies on the pest/pathogen incidence due to climate change might not be a correct approach, as the plant is also expected to react to the environmental cues and such studies need to have a global approach, targeting the interaction of the two dynamic live systems, rather than working on individual entities. The session outcome was summed up by Dr. Francois Lieutier and need for global studies were emphasized. He also expressed the need for conducting molecular research for better understanding of the genetic response of tree species to environmental and biotic elements.

Three posters were also presented in the different technical sessions of the congress including



1. Allelic Diversity in Cellulose Synthase gene in Eucalyptus tereticornis: Implications in Candidate Gene Association studies (Theme: Biodiversity Conservation and Sustainable Use of Forest Resource; Category B-10:Conservation and sustainable use of forest genetic resources)



2. Development of diagnostic markers in plantation species of casuarina and eucalypts: Implications in quality control of clones and certification of controlled crosses (Theme: Emerging Technologies in the Forest Sector; Category F-03:Biotechnology applications in forest breeding and plantation management)

3. Mining of novel antifungal proteins from medicinal plants: towards utilization of Forest Genetic Resources (Theme: Biodiversity Conservation and Sustainable Use of Forest Resource; Category B-

26:Sustainable management and use of non-wood forest products)

A side event on 'Asia Pacific Forest Genetic Resources' was organized by Asia Pacific Association of Forestry Research Institutions (APAFRI), Malaysia and was moderated by Heok Choh Sim, APAFRI. The theme of the event was on dissemination of achieved outputs of an ITTO project. Presentations were made by representatives of the participating countries on the genetic resource management and utilization. The Indian scenario was presented by Dr. G.S. Rawat, Director General, ICFRE and country coordinator.

The third day of the congress (25 August 2010) continued with three sub-plenaries on forest

genetic resources, forest monitoring for climate change, and forest biomass utilization. Thirty-nine technical sessions met, along with multiple side and business events, as well as the final official poster session.



A side event was organized by ICFRE on “Networking of Forest Genetic Resources: Evaluation and Conservation”. A total of 45 participants attended the side event that included delegates from Germany, Costa Rica, Japan, China, Nepal, Canada, Bangladesh, Brazil and India. The side event highlighted the importance of networking for FGR conservation, management and their sustainable utilization. Dr. G.S. Rawat, Director General, ICFRE presented an overview on the



FGR conservation and management activities being carried out in India with special emphasis on efforts made towards establishment of Forest Genetic Resource Management Network (FGRMN). Further, presentations on the FGR conservation and improvement activities in ICFRE Institutes were made by Dr. R. Yasodha and me. Dr. G.A. Kinhal,

ICIMOD, NEPAL, gave a presentation on global networking for conservation and utilization of medicinal plants. Dr. Syam Viswanath, Scientist, IWST, Bangalore gave a brief outline about the conservation strategies for *Santalum album* in India.

The IFGTB and RFRI activities were also highlighted through poster presentations during the side event. Finally, Dr. R.B.S. Rawat, PCCF, Uttarakhand state supported the remarks made by the chair regarding requirement of networking of FGR in India and Asia Pacific region.

On 26 August, eight in – congress tours were conducted for the participants of the congress. It included

IC-1 Protected Area for Biological Diversity

IC-2 Landscape Restoration & Sub-alpine Forest

IC-3 Non-Timber Forest Products

IC-4 Conservation & Utilization of Genetic Resources

IC-5 Forest & Human Health

IC-6 SFM & Ecosystem Approach

IC-7 Old-aged Natural Forests & Landfill Restoration

IC-8 Wood Processing Industry

I had opted for the IC-8 tour to wood processing industries and were taken to two wood related industries including

1. Dongwha Enterprise, leading producer of particleboards, medium density fiberboards and processed wood boards (MFC, MFM)
2. YoungLim Timber Co., Ltd, a medium and small-scale industry for high-value added production through secondary processing

The penultimate day of the congress (27th August 2010) had twenty technical sessions in the morning and a key note presentation by Elinor Ostrom, Indiana University and Arizona State University, 2009 Nobel Prize laureate in economics. The two other subplenaries focused on agroforestry: the way forward, and enhancement of service life of wood in an environmentally conscious global society. Another 18 technical sessions met in the afternoon, as did numerous side events and business events.



In the closing ceremony, Jung-Hwan Park, Chair of the Congress Organizing Committee, thanked the government of the Republic of Korea and the Korea Forest Research Institute for their contributions, and acknowledged efforts of: John Parrotta, Chair of the IUFRO Congress Scientific

Committee; IUFRO President Don Koo Lee and the IUFRO team; the Korea Forest Service; and all participants and exhibitors. He also acknowledged IUFRO for financing participation of 182 developing country participants. Su See Lee, IUFRO Board member, then announced the IUFRO 2010 Best Poster Award winners:

Dr. John Parrotta presented the 2010 Congress Resolution, stating that IUFRO would strive to promote the themes of: forests for people; climate change and forestry; bio-energy; forest biodiversity conservation; forests and water interactions; and forest resources for the future. The Resolution also committed IUFRO to:

- improving communication within and outside of IUFRO;
- expanding work on the science-policy interface;
- renewing and strengthening forest monitoring activities;
- expanding the IUFRO membership; and
- promoting high-quality forest-related research and interdisciplinary cooperation.

An address by the incoming IUFRO President Niels Elers Koch highlighted the strength and dedication of IUFRO's international network and volunteers, and called on members to "look outside the forest box," across sectors and at the science-policy interface. Further, the IUFRO

President, Lee handed over the IUFRO flag to Ann Bartuska, US Forest Service, who invited participants on behalf of the host city Salt Lake City to the XXIV IUFRO World Congress in 2014. President Lee delivered closing remarks, expressing his appreciation to participants for their contribution to the success of the Congress, and closed the Congress.