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Special Issue / August '10 Scientific Awards

The International Union of Forest Research Organizations (IUFRO) honours through a variety of awards those who advance science and promote international cooperation in all fields of research related to forestry. At each IUFRO World Congress, the following awards for scientific work are presented:

- **Scientific Achievement Award (SAA),**
- **Outstanding Doctoral Research Award (ODRA),**
- **Best Poster Award (BPA).**
- **The IUFRO World Congress Host Scientific Award** will be presented for the second time at this Congress.
- **IUFRO Student Awards for Excellence in Forest Science (ISA)** will also be presented for the second time.

Apart from the Best Poster Award winners, who will be chosen during the Congress, all award winners have already been selected and are presented in this special issue.

SCIENTIFIC ACHIEVEMENT AWARD (SAA)

Awards will be made for outstanding research published in scientific journals, proceedings of scientific meetings or books, or appropriate patents or other relevant evidence that clearly demonstrates the importance of the nominee's achievements to the advancement of regional or world forestry or forest research. Other criteria of judgement are dissemination of results, implementation of knowledge, methods or techniques in practical forestry and skilled research management, and involvement in IUFRO activities.

The SAA will be presented during the Opening Ceremony of the Congress on Monday, August 23.

OUTSTANDING DOCTORAL RESEARCH AWARD (ODRA)

Awards will be made for path-breaking doctoral dissertations within six years after completion of the dissertation. In order to be judged as outstanding, the work should be relevant, show innovative thinking, use appropriate methodology, and results should already be presented or published and made available to the scientific community and transmitted to stakeholders.

The ODRA will be presented at a special sub-plenary session "IUFRO Award Winners – the Next Generation" on Tuesday, August 24 where Awardees will participate in a special panel discussion.

BEST POSTER AWARD (BPA)

Awards will be made for outstanding poster presentations at the IUFRO World Congress, for quality of research design, presentation of data, organization and neatness of the poster. Research suitable for the Best Poster Award may be self-

contained, or part of a larger project or a preliminary communication from a study yet to be completed or published.

Special mention of the award winners will be made during the Closing Ceremony of the Congress on Saturday, August 28.

IUFRO WORLD CONGRESS HOST SCIENTIFIC AWARD

The Congress Host Scientific Award honours a truly outstanding and accomplished scientist from the Congress host country who has elevated the profile of forest science and research.

The Host Scientific Award will be presented during the Opening Ceremony of the Congress on Monday, August 23.

IUFRO STUDENT AWARD FOR EXCELLENCE IN FOREST SCIENCE (ISA)

This award recognizes outstanding individual achievements in forest science made by Master's degree students (or equivalent), and is to encourage their further work within the fields of research covered by the Union.

The ISA will be presented at a special sub-plenary session "IUFRO Award Winners – the Next Generation" on Tuesday, August 24 where Awardees will participate in a special panel discussion.

Find out more about IUFRO awards for scientific work and for services to IUFRO at: <http://www.iufro.org>

SCIENTIFIC ACHIEVEMENT AWARD WINNERS 2010



Janaki Alavalapati was born and raised in a rural village in India, and spent most of his childhood surrounded by agriculture, forests and people. With an M.Sc. in Botany, he chose the forestry profession and studied for a Master's degree in Forestry. He served as a Forest Officer in India for ten years. In order to expand his knowledge of social science perspectives

in forest management, he joined the University of Alberta, Canada and pursued an M.S. in Forest Rural Sociology and a Ph.D. in Forest Economics. His research focuses on exploring market solutions to promote sustainable use and management of forests and environment at local, national, and international levels. In pursuit of this goal, he has maintained internationally recognized scientific research and teaching programs, advised and educated graduate students, research associates, and post doctoral fellows from Asia, Africa, Latin America, and North America, presented and published research results in various fora, and actively engaged in professional forestry activities and organizations. Recently, he had a lead role in initiating and establishing a cooperative, i.e. Conserved Forest Ecosystems: Outreach and Research (CFEOR) to facilitate integrated research and outreach to promote sustainability of Florida's forest ecosystems. As the Director of CFEOR, he coordinated research with 11 governmental and non-governmental organizations. More recently, he served as a Senior Advisor for International Energy Affairs at the U.S. Department of State, Washington, D.C. where he helped develop and expand a series of bilateral, multilateral, and interagency bioenergy initiatives.



Michael Battaglia has made seminal contributions to a range of interrelated sciences through his internationally recognised personal research and his leadership of multidisciplinary teams that have delivered outstanding achievements for advancing forest science and its applications. These include: New contributions in building fundamental

knowledge about the physiology of *Eucalyptus*, a predominant genus in plantation forestry in temperate, sub-tropical and tropical environments; developing innovative and versatile process-based models serving as research engines for Australian forest science, linking disciplines of eco-physiology, soil science, hydrology, pathology, wood science, remote sensing and spatial sciences in ways not possible before; leading the applications of models to complex contemporary forest management issues at the landscape, regional and continental scale, and setting the framework for enhancing the opportunities, preparedness and response strategies of the Australian forestry sector arising from climate change. Michael Battaglia has shared his outstanding skills with scientists internationally through partnerships. The tools developed from his work are now being revised and adapted to support sustainable forestry in tropical environments with particular focus on small growers in Indonesia and Vietnam. Because of his highly respected leadership qualities including team building skills, he attracts talented scientists from different disciplines to work together. He successfully secures resources to accomplish major science tasks and delivers science-based options and solutions for industry and enables development of science based-policies by governments.



Yousry A. El-Kassaby occupies an Industrial Research Chair in the Department of Forest Sciences at the University of British Columbia (UBC), Canada. His position is partly funded by industry and partly funded by government through the Natural Sciences and Engineering Research Council of Canada. The purpose of the

Chair is to focus on issues related to increasing the value captured by the forest tree improvement delivery system. Accordingly, Dr. El-Kassaby's current research strives to maximize the efficiency of tree improvement programs through the creation of effective, seamless and integrated tree improvement delivery systems. Another responsibility of the Chair is the development of *in situ* tools for investigating wood quality attributes for their integration into end-product value via tree improvement and silviculture. His current projects include: (i) understanding pollination dynamics in tree improvement production populations (seed orchards) and their role in capturing and maximizing genetic gain and diversity; (ii) development of efficient advanced generation seed orchard designs capable of coping with the increased complexity caused by co-ancestry build-up; (iii) increasing the utilization efficiency of genetically improved seed through understanding seed germination biology and ecology; (iv) development of accurate and efficient *in situ* wood quality assessment methods for tree breeding and utilization programs; and (v) applying Artificial Neural Networks (ANNs) to seed orchard management and wood quality assessment. Dr. El-Kassaby also has a long-term interest in association genetics and is currently one of eight principal investigators engaged in a large collaborative applied genomics SNP (single nucleotide polymorphism) association study of biofuel-related traits in *Populus trichocarpa*.



Tonni Agustiono Kurniawan's M.Sc. and Ph.D. dissertation won the 2008 Best Thesis Competition submitted to the BioInfo Bank Library (Poland) after ranking the first and the second respectively. The annual competition, sponsored by the BioInfo Bank Institute is open to recent graduate students worldwide across disciplines. His international reputation as

a prominent early-career researcher in the field of environmental chemistry has been recognized by peers through exceptional citation counts of his first SCI publication, while he was a graduate student at Sirindhorn International Institution of Technology (SIIT), Thammasat University (TU) in Thailand. The article entitled "Low cost adsorbents for heavy metals uptake from contaminated water: a review" was published in the Journal of Hazardous Materials 97 (2003): 219-243. His outstanding achievements in the environmental field have been established not only because of this high-impact review paper, but also due to a series of original studies that he has completed at the SIIT-TU (Thailand), the Hong Kong Polytechnic University (Hong Kong SAR), and the University of Kuopio (Finland). The results of his research projects, sponsored by international funding agencies such as the South East Asian Center for Water Environment Technology (SEACWET), Kurita Water and Environment Foundation (Japan), and the European Commission (Brussels), have been published in various peer-reviewed SCI journals with high impact factor, conference proceedings, and book chapters.



Sun-Young Lee has strived for amalgamation of forest products technology with nanotechnology. His research emphases include wood plastic composites, nanocomposite materials, nanocellulose, nanopapers, and secondary ion battery separator. From the results of his research in wood plastic composites he has

provided considerable technical support and advice to industry. He has also developed multifunctional biocomposites for engineering performance and durability, using low cost natural resources and efficient manufacturing parameters. He was successful in manufacturing nanocellulose fibers and nanocellulose whiskers using mechanical and chemical treatments. In addition, his active research on the isolation of nanocelluloses from plants has enabled their usage as a reinforced material in nanocomposites, providing a new direction for the development of value-added novel composites. He is developing methods for the manufacture of nanopapers using nanocellulose fibers which are ultra-strong compared to commercial papers. This technology may shine a new light on the paper industry. In addition, he is trying to substitute the expensive secondary ion battery separator with chemically modified web-bonded ultra-strong nanopapers. This research can be considered as feasible challenge to meet the global standards of low carbon discharge and green growth. Dr. Lee has been very active and untiring in his various researches, publishing many scientific research papers and providing professional conference presentations.



Andrew M. Liebhold has conducted and published outstanding research on forest insect pests for more than 20 years. He is unquestionably amongst the best-known and most highly respected forest entomologists in the world. His research has focused on invasive forest insects, considering concepts relating to their spread and

to developing a holistic understanding of forest insect and disease invasion biology. He is acknowledged as a pioneer in recognizing the importance of forest insect and disease invasions and is a global advocate on this important topic. He has received numerous awards for his exceptional research and service to science including a USDA Distinguished Scientist award in 2006. During the course of his career, Dr. Liebhold has been deeply involved in IUFRO activities including terms as a Working Party Coordinator, Division 7 Web Moderator and most recently, Coordinator of Research Group 7.3 "Forest Entomology". Dr. Liebhold's current work focuses on two areas: population ecology of forest insect invasions and spatial dynamics of forest insect outbreaks. Much of his work on insect invasion biology focuses on identifying weak links in the process of population arrival, establishment and spread which can be exploited in managing invasions. His work on forest insect outbreak spatial dynamics focuses on understanding population interactions (e.g., predator/prey, host/pathogen, etc.) that cause observed large-scale patterns as seen in forest insect outbreaks. This work concentrates on the development of mathematical models that can ultimately be used to predict the spatial distribution of pest damage and be integrated into operational pest management programs.



Shawn Mansfield is currently Associate Professor in the Wood Sciences Department, Faculty of Forestry at the University of British Columbia (UBC), Canada. He graduated from Mount Allison University (B.Sc.), Dalhousie University (M.Sc.) and holds a Ph.D. degree from UBC. His teaching

interests are: tree/plant physiology; forest practices as they relate to, and affect wood quality; wood ultrastructure and chemistry; forest products; forest products biotechnology and tree biotechnology. Dr. Mansfield has been continuously commended for his exceptional clarity and phenomenal interplay with students, being equally acknowledged by students and peers. His research is directed at understanding the innate differences in fibre composition and morphological characteristics existing in tree lines within species, and elucidating what impact these phenotypic traits have on wood processing and product quality. Dr. Mansfield has been very productive, with more than 109 papers (incl. co-authorship), 14 non-refereed publications and reports, 30 invited presentations, 45 international conference presentations and is equally appreciated by students, peers and colleagues from the global research community. He has established several collaborative projects with a number of international researchers on a wide range of interdisciplinary projects and currently supervises 8 fully funded graduate students, 4 post doctoral fellows, several undergraduate co-op students. His long-term goal as a faculty member in Forestry at UBC is to contribute to establishing and maintaining the Faculty's reputation as a world leader in the field of forest biotechnology.



Nor Azah Mohamad Ali received her tertiary education from the University of Waterloo, Canada, Universiti Kebangsaan Malaysia and Universiti Putra Malaysia. Upon graduation in 1987, she joined the Forest Research Institute Malaysia (FRIM) as an Assistant Research Officer and was promoted to Senior Research Officer

in 2003. Dr. Nor Azah has 23 years of research experience in natural product and analytical chemistry related to forestry, agriculture and herbal industries. She currently leads a multidisciplinary research group which is actively involved in essential oil research, herbal research and cosmeceutical product development in FRIM. Some of the research areas covered by her group include essential oil extraction technology, olfactory evaluation, chemical profiling, bioactivity and product formulation. In response to the encouragement of FRIM, she has filed three invention disclosures and has won nine innovation awards for her research. Some of her research work has been taken up and commercialized by the herbal industries. Apart from product development, Dr. Nor Azah is directly involved in agarwood (gaharu) research which focuses on the chemical characterization, fingerprint profiling, sensory pattern evaluation of agarwood oils and artificial inducement of agarwood.



Jerry Vanclay has made wide and profound contributions to forest modelling, from mensuration to biodiversity, and from the social to the political arena. Much of his research is visionary and has affected the management of forests in many countries. One of his outstanding contributions has been his book titled “Modelling Forest Growth and Yield”,

published by CABI in 1994. This text has been accessed by foresters and forestry researchers from all forested continents, and is commonly recommended reading for graduate students. Dr. Vanclay has written over 300 publications, more than 125 of which appear in refereed journals. These publications include several myth-busting papers on private native forestry, on faunal richness, and on timber harvesting. He has published in a very wide diversity of journals. As examples of this diversity, he published “The Effectiveness of Parks” in *Science*, “Bias in the Journal Impact Factor” in *Scientometrics*, “Spatially-explicit competition indices and the analysis of mixed-species plantings with the Simile modelling environment” in *Forest Ecology and Management*, “Scientific Research or Advocacy? Emotive labels and selection bias confound survey results” in *Conservation Ecology*, “Colour variation and correlations in *Eucalyptus dunnii* sawnwood” in *Journal of Wood Science*, and “Managing water use from plantations” in *Forest Ecology and Management*. He has made direct contributions to many countries including Australia, Zimbabwe, the Philippines, Kazakhstan, Denmark, and Ghana. Dr. Vanclay has made major contributions to the extension and promotion of science and research, and has been involved in organising many international forestry conferences and other professional meetings. He has made substantial contributions to education through his books and research papers, as well as through developing programs in Australia and other countries.



Jiaojun Zhu's major interest has been on management of shelter forests and their importance as an ecological restoration measure. In particular, the Three-North (north, northwest and northeast of China) Shelter Forest Program (started in 1978 which will last until 2050; covering 42% of China's territory with more than 24.5 million ha shelter forests established till 2008) is

considered the largest eco-forestry program in the world, providing wind reduction/sand dune fixation, farmland protection and soil and water conservation in the Three-North regions. Over the past two decades (1988-2008), he has made significant research contributions dealing both with the theories and practical techniques for the management of shelter forests. His main research findings dealing with the protective maturity, methods for structure determination and decline mechanisms of shelter forests were summarized in “Encyclopedia of Ecology”. The techniques such as thinning, modification of shelter forest structure, regeneration patterns, and improvement of shelter forests have been adopted by the Chinese government and applied in the management practices of the shelter forests in more than 8 provinces (Liaoning, Jinlin, Heilongjiang, Shaanxi, Gansu, Hebei, Neimenggu and Shanxi) of China. Dr. Zhu has so far published 116 scientific papers and 4 books, of which a significant number have been published in international

scientific journals. In particular, the concepts of optical stratification porosity (OSP) and tri-dimensional shape of canopy gap (TSCG) suggested by Dr. Zhu provided accurate and new methods for determining the vertical structures and gap size, gap shape and canopy height. The theory of protective maturity can be applied to the management of shelter forests all over the world. Techniques such as structure regulation, patch thinning and regeneration pattern have been demonstrated in the practice of shelter forest management both in North China and other similar regions.



Janusz Zwiazek received his training in Poland and Canada and since completing his Ph.D. degree, has focused on research on stress physiology of forest plant species. Dr. Zwiazek joined the then Department of Forest Sciences of the University of Alberta as an Assistant Professor in 1989 and rose to full Professor in 2000. In addition to his professional role

at the University, he has also served as the Associate Chair (research) for five years, using his research excellence and experience to successfully develop the departmental research program. Dr. Zwiazek has trained a large number of postgraduate students and postdoctoral fellows in his twenty plus years at the University of Alberta. Many of those trained in his lab have gone on to very important academic and management positions. Most of his graduate students are highly productive and Dr. Zwiazek has authored or co-authored more than 85 peer reviewed articles in high impact international journals. Dr. Zwiazek's research addresses some of the most important fundamental and applied questions that face the tree physiology scientific community and forestry industry. His research answers questions such as: what are the sensitivities and thus their tolerance of forest plant species to abiotic stresses such as drought, soil compaction, salinity and pollution; how to use knowledge gained in tree physiology research to improve planting survival and growth performance of tree species; what are the mechanisms of drought resistance in fast growing hybrid poplar trees; and how to use ectomycorrhizas to improve tree performance under stressful conditions and thus the success of reforestation programs.

OUTSTANDING DOCTORAL RESEARCH AWARD WINNERS 2010



Guillermo Gea Izquierdo, carried out his Ph.D. studies between January 2004 and June 2008 at CIFOR-INIA in Madrid, Spain, and the University of Berkeley, California, USA. In addition, he also completed a Master's of Science in Range Management in Berkeley. Dr. Gea Izquierdo's research work is related to modelling agroforestry systems in

Mediterranean ecosystems. There is a lack of models to manage these ecosystems sustainably, among other reasons is the secondary importance of wood compared to other non-timber products such as fruit production or raising livestock. There is a need to understand ecosystem functioning in a global change scenario, as well as the ecological and economic importance of these drought stressed ecosystems. Therefore, the research presented here analyses the role of trees in the ecosystem from different perspectives, modelling several aspects of tree growth and tree ecology. One of the most important species in the Mediterranean region was used to this effect, a species that might become more important if climate warming continues, i.e. *Quercus ilex*, an evergreen broadleaf which coincides with the area occupied by the driest morphotype. The absence of tree-ring studies for this species is mostly a consequence of the difficulty in distinguishing its annual rings. Dr. Gea Izquierdo's research is considered to have pioneering for a better understanding of this ecosystem and the species in order to increase its sustainability.



Marieka Gryzenhout received her Ph.D. in microbiology from the University of Pretoria, South Africa, in 2006. In the short period since then, she has established herself as a world leader in the field of forest mycology and forest pathology. The focus of her research has been to unravel the confused status of some of the world's most important pathogens residing in the

family Cryphonectriaceae, a family that she was responsible for describing. While the family includes the devastating chestnut blight pathogen *Cryphonectria parasitica*, she has shown that there are many other serious pathogens in the group. Most of these were unknown to Science prior to her studies. Her Doctoral dissertation gave rise to 11 publications in top mycological journals, and an authoritative book on the Cryphonectriaceae published in the USA in 2009. She has also been deeply involved in mentoring an impressive number of students interested in forest pathology and has published widely with them.



Jiali Jiang completed her Ph.D. in wood science and technology at the Chinese Academy of Forestry (CAF) in 2009. As a Ph.D. candidate, Dr. Jiang systematically investigated the dynamic viscoelastic properties of wood. She made the intriguing discovery that the occurrence of mechanical relaxation processes is the main mechanism which causes the

narrowing of the linear viscoelastic region. This work was accepted for publication in the highly prestigious *Canadian Journal of Forest Research*. In addition, seven other papers

from her dissertation were published or accepted in top-level journals in the field, such as *Wood and Fiber Science*, *Forest Products Journal*, *Drying Technology*, etc. Furthermore, one paper won the first prize for the outstanding papers award in 2006 in the national Ph.D. candidates' academic conference held by the Ministry of Education, China. Dr. Jiang also participated in national level research projects and went abroad to carry out cooperative projects several times during her Ph.D. program.



Finnvid Prescher is in charge of more than half of the Swedish seed orchards and other seed related functions as well as some aspects of the overall management of Svenska Skogsplantor, which supplies about one third of all forest plants used in Sweden. Dr. Prescher conducted his doctoral studies at the Department of Forest Genetics and Plant Physiology,

Umea Plant Science Centre, Swedish University of Agricultural Sciences. His main supervisor was Professor Dag Lindgren. His studies from 2004 to 2007 were carried out on a part-time basis, while he maintained his usual duties which are central to Swedish forestry. The research work discusses the results of 11 studies developing models and evaluating real seed orchard data to improve seed orchard management in *Pinus sylvestris* L. and *Picea abies* (L.) Karst. This body of work is a significant contribution to the improved establishment and management of seed orchards through an excellent interaction between science and application and is an example of the fact that working foresters can do outstanding science given a short break in their applied carrier.



Andreas Schindlbacher conducted his doctoral research work at the University of Natural Resources and Applied Life Sciences at Vienna, Austria. He has been engaged in forest ecology and in laboratory research since he completed his education in biology at the University of Vienna. Dr. Schindlbacher recognized the relevance of soil processes in the climate change

debate, considering that soils represent large pools of carbon and nitrogen and that both elements can form strong greenhouse gases (GHG, CO₂, N₂O). The soil models available at the beginning of his career had a considerable uncertainty on the effects of soil warming on GHG emissions. He designed elaborate laboratory and field experiments to scrutinize the conceptual understanding of the effects of soil warming. For his field research he chose a particularly difficult field site in the Austrian mountains and implemented and maintained a complex soil warming experiment. The installation is still effectively used. The results were published in renown journals. The diversity of experiments and the development of new techniques in field and laboratory research derived from the experimental challenges are of particular impact.

STUDENT AWARD FOR EXCELLENCE IN FOREST SCIENCES WINNERS 2010



Mahbubul Alam grew up in Bangladesh. After completion of his Bachelor degree in 2005, he served as junior consultant and research fellow on short-term consultancies and with research organizations in Bangladesh. He then moved to Japan for his post-graduate studies, and is currently serving as Teaching Assistant in the Faculty of Agriculture, Kochi University, Japan. In 2008, he received a Master's in Forest Science from Kochi University for his work on "Characteristics, Management and Economics of Homestead Forests in Bangladesh". In addition, Mahbubul Alam has twelve other articles published in peer-reviewed international journals and a number of non-review contributions. Many publications deal with Bangladesh forest research and show that "extension of education amongst forest owners would improve forest production". His main research areas and fields of interest are in agroforestry and climate change, forestry-livelihood-poverty linkage and ethnobiology, co-management of natural resources and policy research in forestry and the environment. Mahbubul Alam has been awarded with the Japanese Government Fellowship (Monbukagakusho) in 2006 for his Masters leading to Ph.D. research in Japan for the period 2006-2011.



Marco A. Contreras, Chilean, obtained his Bachelor of Sciences in Forest Engineering from the University of Talca, Chile. In 2001-2002 he participated in a student exchange program at the University of New Brunswick, Fredericton, New Brunswick, Canada. In 2006, he completed his Master of Sciences in Forestry at the University of Montana, USA, with his thesis entitled

"Applying ant colony optimization (ACO) metaheuristic to solve

forest transportation planning problems with side constraints". His approach allows foresters to design a timber transportation plan that limits negative environmental impacts while maximizing economic efficiency of timber management; this was not possible using the existing models and tools. Thereby, he has developed a real-world forestry application using one of the most recently developed state-of-the-art optimization techniques and improved the major limitation of the existing models. His research has been published in the *Canadian Journal of Forest Research*. Currently Marco A. Contreras is working as a Graduate Research Assistant at the Department of Forest Management of the University of Montana, USA.



Tnah Lee Hong is from Malaysia. She obtained her Bachelor of Science in Industrial Biology in 2004, and her Master's of Science in genetic resources in 2007 from the University of Technology Malaysia and Universiti of Putra Malaysia, respectively. The areas of her research include molecular markers technology, forensic forestry, phylogeography and plant population and conservation genetics. With her Master's thesis "DNA fingerprint Databases of Chengal (*Neobalanocarpus heimii*) for Forensic Forestry Investigations", she developed comprehensive DNA fingerprinting databases which are the first reported for tropical tree species. The methodology developed serves as a model for the study of other important timber species in Malaysia. With the availability of DNA fingerprinting databases for the important timber species in Malaysia, the capacity of the Forest Department officials to curb the problem of illegal logging will be enhanced, thus ensuring the conservation and sustainable use of forest resources.



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Sustaining Society and the Environment*

Hope to see you in Seoul!