

INTROPi**ca**

Issue 1 • Jan-Apr 2008

INSTITUTE OF TROPICAL FORESTRY AND FOREST PRODUCTS

Centre of R&D in Tropical Biocomposite and Canopy Management

Kenaf

A gift from
Nature

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Bismillahirrahmanirrahim...

Malaysia is zooming fast down the industrial highway towards Vision 2020 in a way that has propelled us into the economic stratosphere well above most developing nations. While the radiance of the economic sun is still rising, and the population is buoyed up in this cup of plenty, dark clouds are slowly gathering in the horizon that may threaten the gains that we fought so hard for. This harbinger of a dawning apocalypse is very much the child of success that resides in man's seeming inability to harmonise physical development with sustainable resource and intact environment. We have long celebrated our *Ibu Pertiwi*, the proverbial Mother Earth that has sustained our blood and soul, and the provenance of our cultural heritage and identity. But in our headlong pursuit for material progress we seemed to have forgotten her.

It is entirely possible and feasible to develop and modernise without chopping down every tree or without levelling every mound. And we don't have to be enslaved to injudicious consumption and wanton pollution of the environment. We have with us about the greatest gift and natural heritage that God has bestowed on humanity - the great Dipterocarp Forest Formation, which is fast becoming the iconic apex ecosystem, the most complex and oldest continuously existing ecosystem on planet Earth. But we seemed to be oblivious to its greatness and significance, indeed its reflection on God's Absolute Creativity. If ever, this is THE heritage we owe to all mankind and we as its custodian should be conscious of our sacred duty to conserve and manage it for posterity.

The conceptualisation and genesis of INTROP was based on this perception and premised on this belief and philosophy. INTROP is about discovering that vast reservoir of knowledge still hidden under our forest canopy; INTROP is about sustainable management of our forest and its myriad resources and potential wealth; INTROP is about innovating and producing green products to augment our massive wood-based industry; and INTROP is also about looking into every avenue to safeguard our forest resources and extend globally our marketing reach and prowess. In this first issue of INTROPica, let us pray to Almighty Allah that we have the strength and fortitude to remain on course on this long journey.



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Message From The Editor

Bismillahirrahmanirrahim...

Dear Reader,

Welcome to INTROP's first issue of INTROPica, our newsletter designed to give you a thumbnail view of current activities. INTROPica also seeks to inform, create awareness and forge networking with researchers, academics, students and the public in general who have interest in the Malaysian tropical forest and the overall development of her wood-based sector, particularly in biocomposites, through a coverage that spans from forest stand to the market. It is an area with gigantic economic impact, dynamic trends and promising future that can continue to play a major role in Malaysia's development. And INTROP aspires to play a meaningful role in this exciting development in the forestry sector through RDIC (Research, Development, Innovation and Commercialisation). It is our intention through this newsletter to spur research interest, establish contact and cultivate close cooperation with all interested parties, with the noble objective of advancing the sector. For further information you are invited to surf our webpage at www.introp.upm.edu.my. If you have any queries about INTROP, please feel free to contact us at intropica@introp.upm.edu.my



INTROP: An Introduction

INTROP was initially known as Biocomposite Technology Centre (BTC) under the Institute of Bioscience (IBS), UPM. BTC was officiated by the Minister of Primary Industries, YB Dato' Seri Lim Keng Yaik on October 20 1998. In January 2002, BIOCOMPOSITE programme was accepted as one of the programmes under Laboratory Bio-Engineering, at the Institute of Advanced Technology (ITMA), UPM. The significance of Biocomposite Research has prompted UPM in its 9th Malaysia Plan to propose 12 Points AgroBio Initiatives to the Prime Minister in October 2004. All the 12 Initiatives have been approved including the establishment of a Tropical BioComposite Institute to be operational in 2005.

In June 2005 Institute of Tropical Biocomposite (INTROB) was established to facilitate R&D in biocomposite industry due to strong industrial demand in commercial biocomposite products which contribute significantly to the Malaysian economy and provide impetus for greater integrated BioComposite R&D with special emphasis on Commercialization of R&D using wood and other potential tropical industrial crops (eg. bamboo, hemp, kenaf, ramie, pineapple Frond etc.) In the second half of 2006, following the RU status awarded to UPM, INTROB was once again restructured by merging INTROB and RAINFOREST ACADEMY and the new name for the Institute is currently: INSTITUTE OF TROPICAL FORESTRY AND FOREST PRODUCTS or INTROP.

INTROP: Laboratories

LABORATORY OF BIODIVERSITY AND CONSERVATION

The Laboratory of Biodiversity and Conservation is led by Assoc. Prof. Dr. Mohammad Pauzi Zakaria, assisted by two Programme Heads, i.e Assoc. Prof. Dr. Rusea Go and Assoc. Prof. Dr. Ahmad Ainuddin Nuruddin. There are 3 programme under the laboratory:

1. **Forest Environmental Forensic**
(Assoc. Prof. Dr. Mohammad Pauzi Zakaria)
2. **Biodiversity and Conservation**
(Assoc. Prof. Dr. Rusea Go)
3. **Canopy Science**
(Assoc. Prof. Dr. Ahmad Ainuddin Nuruddin)

LABORATORY OF SUSTAINABLE BIORESOURCE MANAGEMENT

The Laboratory of Sustainable Bioresource Management is led by Prof Dr Nor Aini Ab Shukor, assisted by two Programme Heads, i.e Prof Hj Mohd Basri Hamzah and Dr Manohar Mariapan. There are 3 programmes under the laboratory:

1. **Species Screening and Plantation Development**
(Prof. Dr. Nor Aini Ab Shukor)
2. **Sustainable Forest Management**
(Prof. Mohd Basri Hamzah)
3. **Nature Tourism**
(Dr. Manohar Mariapan)



INTROP: Laboratories

LABORATORY OF BIOCOMPOSITE TECHNOLOGY

The Laboratory of Biocomposite Technology is led by Dr. Khalina Abdan and assisted by three Programme Managers, i.e Dr. Nor Azowa Ibrahim, Assoc. Prof. Dr. Paridah Md Tahir and Assoc. Prof. Dr. Rahinah Ibrahim. There are 3 programmes under this laboratory which are:

1. **Hybrid Biocomposites**
(Dr. Khalina Abdan)
2. **Conventional Biocomposites**
(Assoc. Prof. Dr. Paridah Md Tahir)
Sub-Programme: **Stem Processing Technology**
(Dr. Khalina Abdan)
3. **Furniture and Products Design**
(Assoc. Prof. Dr. Rahinah Ibrahim)



LABORATORY OF BIOPOLYMER AND DERIVATIVES

The Laboratory of Biopolymer and Derivatives is led by Assoc. Prof. Dr. Luqman Chuah Abdullah, assisted by two Programme Heads, i.e Assoc. Prof. Dr. Jalaluddin Harun and Dr. Salmiaton Ali. There are 3 programmes under the laboratory:

1. **Biopolymer**
(Assoc. Prof. Dr. Luqman Chuah Abdullah)
2. **Pulp and Paper Technology**
(Assoc. Prof. Dr. Jalaluddin Harun)
3. **Pollution Control**
(Dr. Salmiaton Ali)



LABORATORY OF TECHO-ECONOMICS & POLICY

The Laboratory of Techno-Economic and Policy is led by Assoc. Prof. Dr. Ahmad Ainuddin Nuruddin, assisted by two Programme Head, i.e Prof. Dr. Shahwahid Haji Othman and Dr. Pakhriazad Hassan Zaki. There are 3 programme under the laboratory:

1. **Ecosystem Services**
(Assoc. Prof. Dr. Ahmad Ainuddin Nuruddin)
2. **Techno Economic & Environmental Economics**
Valuation and Accounting
(Prof. Dr. Shahwahid Haji Othman)
3. **Policy**
(Dr. Pakhriazad Hassan Zaki)



INTROP: An Organization

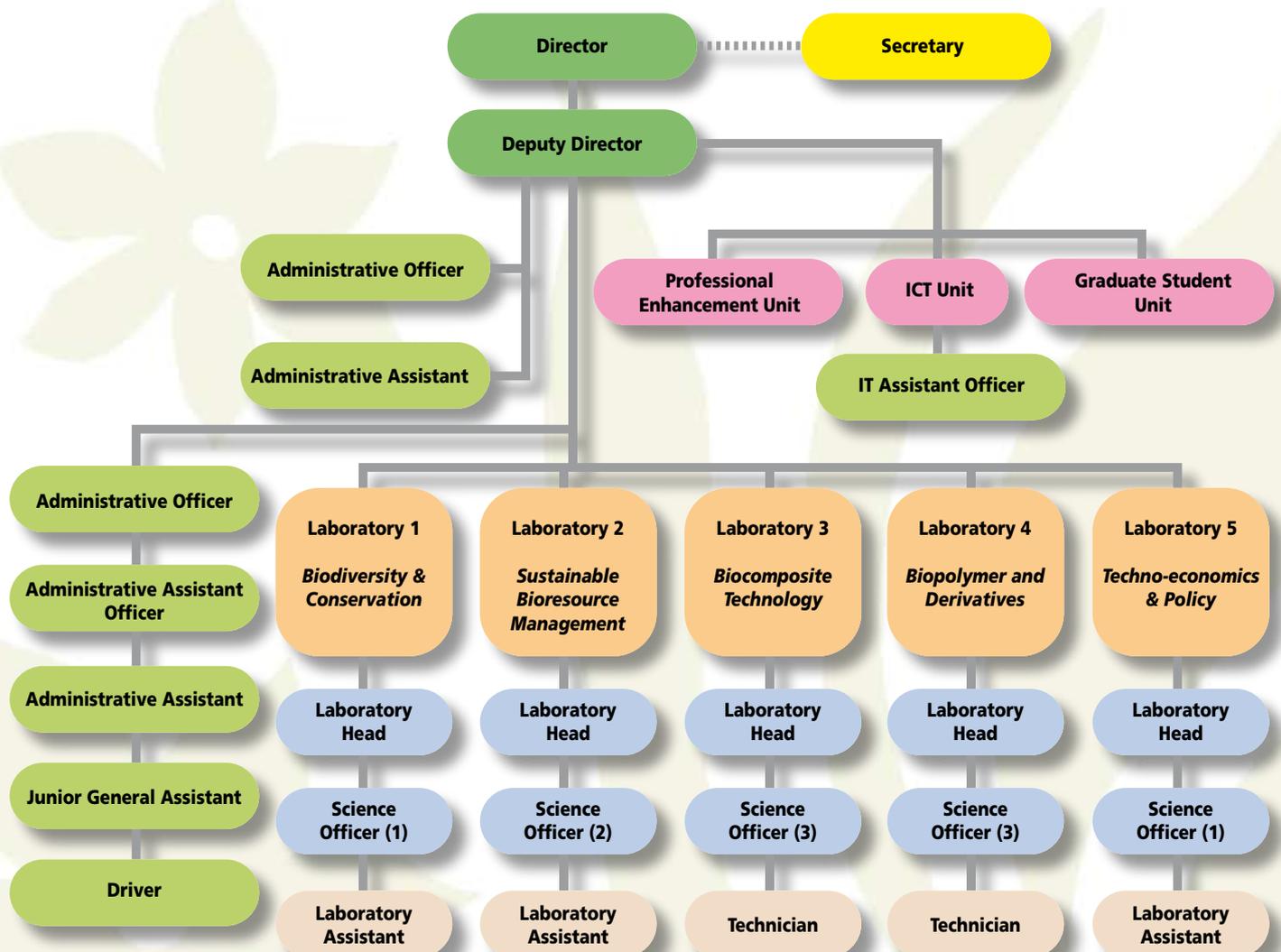
VISION ●●●

The Institute of Forestry and Forest Products shall become the national referral and R&D centre in Tropical Forestry and Forest Products research.

●●● MISSION

The Institute of Tropical Forestry and Forest Products strives to become the Referral and R&D centre for Tropical Forestry and Forest Products focusing on Bicomposites and Forest Canopy Management. The activities of Institute shall be governed and driven by environmental friendly technology through optimization of sustainable bioresource management.

ORGANIZATION CHART



INTROP: Research Updates

SPATIAL DISTRIBUTION OF PETROLEUM HYDROCARBON IN SEDIMENTS OF MAJOR RIVERS FROM EAST COAST OF PENINSULAR MALAYSIA

Mahyar SAKARI*, Mohamad Pauzi ZAKARIA*§, Madihah Binti Md. JUNOS*, Nur Atiqah ANNUAR*, YUN Hew Yan*, HENG Yong Sin*, Syed Mohd Hazrin SYED ZAINUDDIN* and CHAI Kian Leong*

Petroleum hydrocarbon pollution in the marine environment has been a major concern in recent years. A 50-year history of industrialization process in Malaysia is rapidly spreading to the East Coast regions. Some components of petroleum hydrocarbon had been demonstrated to disrupt endocrine systems in human. Very few measurement and compound specific studies has been made for the characterization and composition in the East Coast's rivers and estuaries. A total of 14 surface sediment samples were collected in August, 2006 from the Kelantan, Besut and Terengganu rivers. The samples were dried, Soxhlet extracted, fractionated and injected into GC-FID and GC-MS for alkanes and polycyclic aromatic hydrocarbons (PAHs), respectively. In general, elevated concentrations hydrocarbons were found in all stations located in the vicinity of urban runoffs for all rivers. The concentrations of aliphatic hydrocarbons range from 1000 to 716 8000 ng/g (dry wt.) and PAHs concentration ranged from 58 to 1689 ng/g (dry Wt.) for the rivers. The PAHs patterns in urbanized stations suggest the dominance of low molecular weight PAH components (2-4 rings). Based on MP/P ratio, the source of hydrocarbons influenced by the city runoffs are mostly petrogenic origin. The sources of hydrocarbons on the upstream and downstream stations have been to be of pyrogenic origin. In general, the concentrations of PAHs and alkanes for a number of stations in this study are comparable to more polluted sites in Malaysia. In conclusion, all three rivers showed low to moderate petroleum hydrocarbon contamination. These results suggested that immediate remedial measure in preventing further contamination has to be implemented by local, state and federal agencies.

Keywords: Spatial Distribution, n-alkane, PAHs, East Coast, Malaysia



PROPERTIES OF ELECTRON BEAM RADIATION KENAF FIBRE THERMOPLASTIC COMPOSITES

Dr. Khalina Abdan

Department of Biological and Agricultural Engineering, Faculty of Engineering, University Putra Malaysia

The aim of this study was to determine the effect of electron beam radiation of kenaf fibre reinforced thermoplastic composites properties. Kenaf bast fibres were exposed to electron beam radiation at 10 kGy doses and were aligned using unidirectional orientation technique in between of two pieces hexagon mould. Then, the thermoplastic material was filled into the mould using low pressure compress moulding machine. The morphological, chemical and thermal properties of the composites were investigated to observe the effect of irradiated fibre. The mechanical properties of virgin kenaf fibre thermoplastic composite were also examined to compare with the theoretical values. The results of this study demonstrated that irradiated of unidirectional fibre composites gave higher flexural strength and modulus as compared to untreated composite but it reduces the decomposition temperature. The enhancement of composites modulus may due to the crosslinking effect created from radicals of the fibre and the polypropylene. Beside that it found that the theoretical value superior strength as compared to experiment value. It concludes that the electron beam radiation improve the composite strength properties and inferior in the decomposition. Future studies should examine effect of various fibre weight fractions and their effect to the strength and chemical properties. The method of fibre orientation applied should be study in order to examine its effect on the composites performance.

INTROP: Research Updates

INTROP's PRPI 2007 Achievement

Bil	Researcher	Title	Award
1	Prof. Dr. Nor Aini Ab Shukor	Genetic Variation and Growth Performance of Four Selected Acacia Genotypes	Gold Medal
2	Prof. Dr. Nor Aini Ab Shukor	Acacias for Carbon Sequestration in Forest Plantation Programme for Development of Biofuel Energy	Gold Medal
3	Prof. Dr. Nor Aini Ab Shukor	Isolating Gene(s) Conferring Resistance to Infection by <i>C. cassicola</i> in <i>Hevea brasiliensis</i>	Gold Medal
4	Prof. Dr. Nor Aini Ab Shukor	Planting Stock Production of <i>Labisia pumila</i> (Kacip Fatimah) by Cuttings	Gold Medal
5	P.M. Dr. Ahmad Ainuddin Nuruddin	A Decision Rule Based Approach for the Mapping of Tropical Forest Canopy from Airborne Hyperspectral Data	Gold Medal
6	P.M. Dr. Ahmad Ainuddin Nuruddin	Forest Fire Hazard Mapping in Peat Swamp Forest Using Integrated Remote Sensing and Geographical Information System (Gis) Techniques	Gold Medal
7	P.M. Dr. Paridah Md Tahir	An Efficient Method of Reducing Moisture Content and Surface Roughness in Oil Palm Stem Veneer	Silver Medal
8	P.M. Dr. Ahmad Ainuddin Nuruddin	Effect of Thinning on Nine Years Old <i>Azadirachta Excelsa</i> (Jack) Plantation in Merlimau, Melaka, Peninsular Malaysia	Silver Medal
9	Dr. Khalina Abdan	Design and Development of Biocomposite Compress Moulding	Bronze Medal
10	Dr. Khalina Abdan	Laminated Hybrid Biocomposite for Heat Insulator Application	Bronze Medal
11	P.M. Dr. Luqman Chuah Abdullah	Extraction and Freeze-Drying of <i>Piper betel</i> L. Standardized Extract as Antioxidant	Bronze Medal
12	P.M. Dr. Paridah Md Tahir	Utilization of 4 - Year Old Rubberwood using Rrim 2000 Series Clone for Particleboard Manufacture	Bronze Medal
13	P.M. Dr. Paridah Md Tahir	Production of Durable Oil Palm Stem Plywood (OPSP) against Termite and White Rot Fungi	Bronze Medal
14	P.M. Dr. Luqman Chuah Abdullah	Cow Dung: A Potential Biofiller for Biocomposite Applications	Bronze Medal



Instron Universal Testing Machine

Mini Wood Chipper



List of Equipment in INTROP

Fibre/Particle Processing

1. Band Saw
2. Pallman Chipper
3. Fibre Cutter (coming soon)
5. Grinder (coming soon)
6. Andritz Refiner Mechanical Pulp (RMP)
7. Pallman Flaker
8. Vibrator Screener
9. Sieve Shaker

Sample Characterization/Analyser

1. Chemical Analysis Equipment (basic)
2. Gas Chromatography Mass Spectrometry (GCMS)
3. Instron Universal Testing Machine
4. Image Analyser Microscope
5. Weather Station Data Logger

Products Manufacturing

Equipment Biocomposite Products

1. Fibre and Particle Resin Blender
2. Flake resin Blender
3. Hot Compression Moulding
4. Hot Press (coming soon)
5. Twin Screw Extruder (coming soon)
6. Injection Moulding (coming soon)



Band Saw

OSB Mixer



The Miracle Crop

Who would have guessed that an ordinary lesser known agricultural plant will now bring a new revolution to the world especially in the biocomposite industry. Kenaf (*Hibiscus cannabinus* L.) is a 4000 years old new crop with roots in ancient Africa and a very promising future as it produces long fibres with great potential in the Malaysian biocomposite industry. A member of the genus *Hibiscus* in the family Malvaceas it is closely related to cotton and okra. Kenaf has the promise to be the new miracle crop due to its productivity which is estimated at about four times higher than *Acacia mangium*. *Acacia* is the current most productive forest plantation species which features prompt growth and yield very high wood and fibre volume. However, *acacia* is no longer economical as fibre source since the species now commands strong demand in the market, especially in the furniture and flooring sectors. Kenaf on the other hand, reflects a good source of high quality cordage fibre that can be processed into a number of products such as pulp and paper, fibre and particle boards, fibre reinforced plastic components, chemical absorbents and others. Young kenaf plants also contain high protein content and can be utilized as a premium quality animal feed besides being consumed as a herb in some parts of India.

Therefore, interest has been rekindled primarily through the determined effort over several research by the MTEN Technical Committee, comprising 25 researchers from

MARDI, UPM, JPHM-VRI, FRIM, IHK and MINT with MARDI as the overall coordinator to study and commercialize kenaf for industrial use. Currently, kenaf will be developed as a fibre crop to provide an alternative material for the wood-based sector, particularly in the production of fibre boards which form a significant component of the biocomposite industry. In addition research efforts are being made to develop efficient kenaf production technology of selected lines and all aspects of mechanization involving sowing, crop management, harvesting, processing, drying and packaging. The need to monitor and control any emergence of new pests and diseases that could pose a major threat to large scale kenaf cultivation was also emphasized.

This wonderful plant has indeed the added environmental-friendly appeal regarding its being a natural, organic and renewable resource. Furthermore, it provides high yield without significant irrigation and it can also be recycled. In Indonesia, kenaf is well established as tobacco. The crop appear destined to be an excellent supplement to tobacco but not to replace it. Tobacco production is now tightly controlled through a quota system by the government as a policy objective based on health reasons. In addition, kenaf has been identified by the National Tobacco Board (Lembaga Tembakau Negara, LTN) as the most viable crop to supplement the income of tobacco small holders, the traditional and main producers, while at the same time help scale-up a new but economically important industry based on the utilization of its fibres. Specifically, the priorities of kenaf fibres have been



Crop In Waiting

studied and researched on kenaf fibre reinforced plastic composite (FRPC) conducted at the Biocomposite Technology Centre, UPM. The overall properties of FRPC developed from kenaf fibre indicated good potential material with relatively high strength.

Kenaf grows quickly, rising to a height of 3.7 m – 4.3 m in as little as 4 to weeks or more, per plant with each individual flower blooming for only one day. The stalks consist of two distinct fibre types. The outer fibre is called 'bast' and comprises roughly 40% of the stalk's dry weight. The refined bast fibres measure 2.6 mm and are similar to the best softwood fibres used to make paper. The whiter, inner fibre is called 'core' comprises 60% of the stalk's dry weight. The refined fibres measure 6 mm and are comparable to hardwood tree fibres, which are used in a widening range of paper products. The plant is said to have a wider range of adaptation to climates and soils than any other fibre plant in commercial production. Kenaf yields have been highest in regions with high temperatures, a long growing season and abundant soil moisture. It is quite sensitive to cool temperatures and grows slowly when temperatures are below 10°C.

Looking back, these researchers have led to the identification of promising kenaf accessions for forage and fibre production and have strengthened the case for this 'next miracle crop' being a cash-generating plant to be revealed and introduced to Malaysian wood-based industry. This would enable the introduction of kenaf as an environmentally friendly crop with multifarious possibilities for derived products. Despite its potential the introduction of kenaf will face some difficulties and resistance from both producers and consumers. Some effort is required to convince small holders that the crop is viable and a potential income earner. Large-scale consumers in the wood-based industry are more concerned about sustainable supply of the resource. Obviously large-scale production should be the solution but this will require sufficient land within economic distance to the factories. And small farmers may not be attached unless they are assured of long-term fair market price. For kenaf to become the next wonder crop these teething problem will need to be addressed.



INTROP: PostGraduate

In the second half of 2006, following the RU status awarded to UPM, INTROP has revised the PostGraduate field of study in order to achieve the KPI. Starting from the second semester of 2006/2007 the UPM senate approved nine new fields of study for INTROP to offer plus one field which was a carry-over from the Institute of Bicomposite Tropical (INTROB).



Graduate Fields of Study

- Conservation & Forest Canopy Management
- Forest Disturbance Impact Evaluation
- Bioresource Management
- Nature Tourism
- Biocomposite Technology
- Biocomposite Product Design
- Pulp & Paper Technology
- Biopolymer & Derivatives
- Bioresource Valuation
- Techno Economic In Biocomposite



PostGraduate Students of INTROP

Programme	No. of Students	
	International	National
PhD	7	5
MSc	-	16
Total	28 students	



INTROP: Activities

5th International Conference on Marine Pollution and Ecotoxicology

Date : 3 - 6 June 2007
 Organizer : Centre for Coastal Pollution and Conservation and Department of Biology & Chemistry, City University, Hong Kong.

The conference primarily focuses on the following 6 key areas:

- Innovative technology in marine pollution
- Chemicals of emerging concern in the marine environment
- Hypoxia and eutrophication
- Pollution monitoring and remediation
- Ecotoxicology and risk assessment
- Persistent organic pollutants and endocrine disruptors

Assoc. Prof. Dr. Mohammad Pauzi Zakaria presented a paper titled "Distribution Characterization and Origins of Polycyclic Aromatic Hydrocarbons (PAHs) in Surficial Sediment of Penang, Malaysia".



2007 International Symposium on Kenaf and Allied Fibers

Venue : Xiamen, China
 Date : 19 - 22 June 2007
 Organized by : China Consulting International, Inc.
 Industrial Visit : Ramie Industry, Changsha, China.
 Date : 23 - 26 June 2007
 Venue : Hunan Institute of Ramie Research, (HAU), Hunan Agricultural University (HAU), Changsha, Visit to Hunan Huasheng Dongting Ramie Textile Co. Ltd. Factory, Yueyang. Visit to Ramie Plantation Site, HAU

The conference was held at the International Conference Center, Xiamen University, Xiamen, China. 100 participants from 14 countries attended at the symposium. 30 papers and 25 posters were presented (technical & commercial) and 9 exhibition booths during 3 days of symposium.

This symposium was organized in collaboration with numbers of famous companies such as CCG International Inc., International Jute Study Group, Japan Kenaf Association & Hemp Society, Anduiz Inc. USA., Center for Biofining, University of Minnesota, USA and many more.



Assoc. Prof. Dr. Paridah Md Tahir has presented a paper entitled "Properties of Kenaf Board Utilizing Kenaf Bast and Core Material". The presentation include the output of the research regarding fiber production, kenaf processing & produced from two different materials which were bast and core. The feedback from the presentation was very impressive especially from Korea and South Africa.

INTROP: Activities

Bengkel Hala Tuju INTROP

Bengkel Hala Tuju INTROP conducted in two phases:

- 1) 23-25 February 2007, Selesa Beach Resort, Port Dickson
The objectives of the workshop were to set up mission, vision and strategic plan for 5 years (2007-2011). It is also to determine the main research areas for INTROP to sustain its growth and secure its place in the uncertainties of globalization.
- 2) 17-18 August 2007, Royal Adelphi, Seremban
The main goal was to set up the key performance indicator for INTROP, firmed up the strength of five laboratories and evaluation of the performance for the first half year of 2007 and also to set up the target for the second half year of 2007.



Technical Visit to Indonesia

- Date : 29 October 2007 - 3 November 2007
- Organizer : National Tobacco Board, Malaysia
- Technical Program : Visit to Ramie Plantation
Visit to Jathropa Plantation
Visit to Tobacco Plantation
Visit to Araco
Visit to Research Institute (IPPB) at Jakarta

Assoc. Prof. Dr. Jalaluddin Harun was invited to join the technical visit.



INTROP: Activities

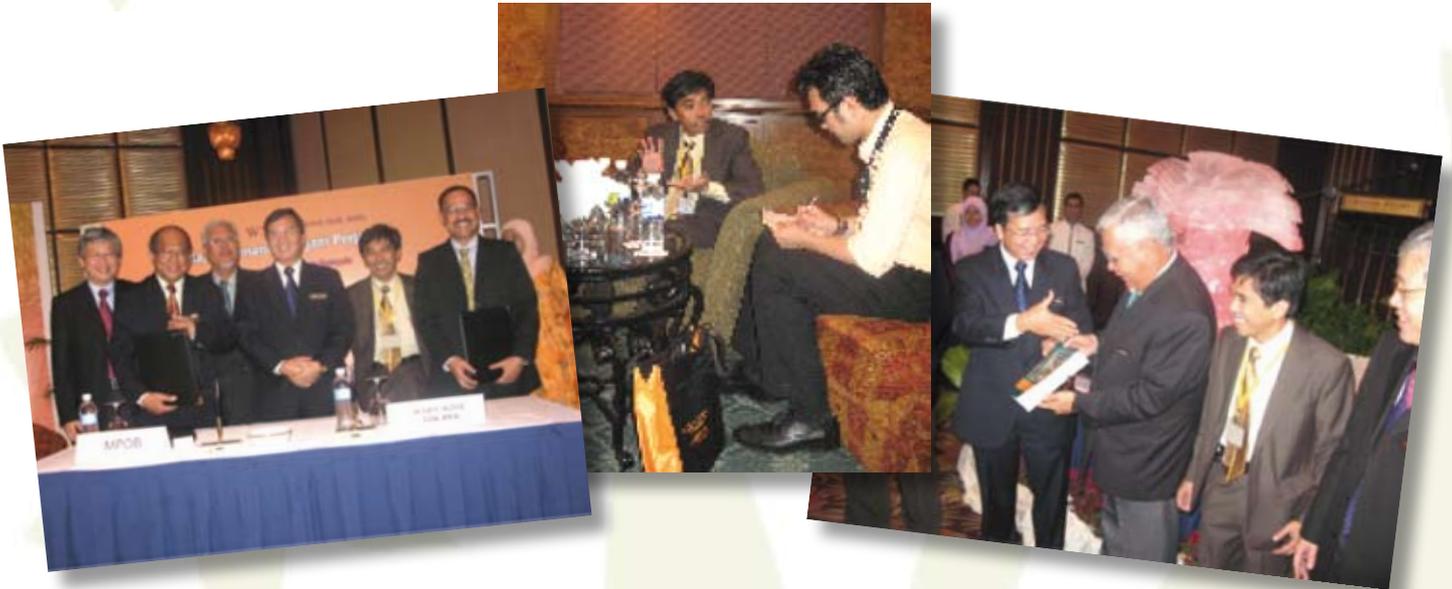
7th National Conference on Oil Palm Tree Utilisation

Date : 13 - 15 November 2007
 Venue : Sunway Resort Hotel & Spa, Bandar Baru Sunway, Petaling Jaya.

This conference (then called Seminar) is an important scientific event organized by the Oil Palm Tree Utilisation Committee (OPTUC) which comprises MPOB, UPM (INTROP), FRIM, Guthrie, Golden Hope and Felda. A series of conference was held in 1991, 1994, 1997, 2000, and 2003. Since the first meeting, the subsequent seminars have been well attended and looked forward to by most national scientists, oil palm millers, students, planters and industrialist who are keen to use this avenue as an opportunity to present and share their experiences and findings. The 7th Conference not only conducted in oral presentation but also included the poster presentation and exhibitions.

The objectives of this conference includes:

- To update on current status of raw material supplies from oil palm tree residues.
- To provide and update on oil palm-based products and technologies.
- To discuss issues and formulate effective strategies for commercial exploitation of oil palm biomass.



Public Talk by Jean Weber on “Possible Effects of Fungal Networks on Distribution Patterns of *Shorea leprosula* in Lowland Dipterocarp Forest”

Date : 5 December 2007
 Venue : Meeting Room, INTROP 2, UPM

Dr. Jean Weber was teaching “Earth and Life Sciences” in France. His postgraduate studies were focused on the development of molecular tools for the detection of mycorrhizas of an American *Laccaria bicolor* strain introduced in European Douglas-fir plantations. In 2000, he came to the National Institute of Education (NIE-NTU) in Singapore for a PhD program on the interactions between fungal and nitrogen-fixing partners of *Acacia mangium*. During his stay in Singapore, his interest moved to the symbiotic associations of the native dipterocarpaceae family.

Dr. Jean Weber presented his research on “Possible Effects of Fungal Networks on Distribution Patterns of *Shorea leprosula* in Lowland Dipterocarp Forest” at INTROP on the 5th of November 2007. The study was held in the Pasoh forest reserve in Peninsular Malaysia, in collaboration with Dr. Lee Su See (FRIM - Malaysia), Prof. Thorsten Wiegand (University of Leipzig - Germany) and supported by a grant from the Center of Tropical Forest Science (CTFS) - Smithsonian Tropical Research Institute. The approach used in this study illustrates that hypotheses involving belowground decomposers might be advantageously addressed in the dipterocarp forests where the mixed distribution between ectomycorrhizal and non-ectomycorrhizal species allows spatial correlations between functional tree classifications.

INTROP: Activities

Joint Steering Committee (JSC) Ministry of Plantation Industry & Commodity with UPM

The Joint Steering Committee (KPPK-UPM) has established the joint collaboration to increase R&D and Human capital within various agencies under KPPK with Faculty / Institute at UPM align with the government aspiration to instill research culture & innovation within university researches & government.

The chronologies of the the JSC (KPPK-UPM) :

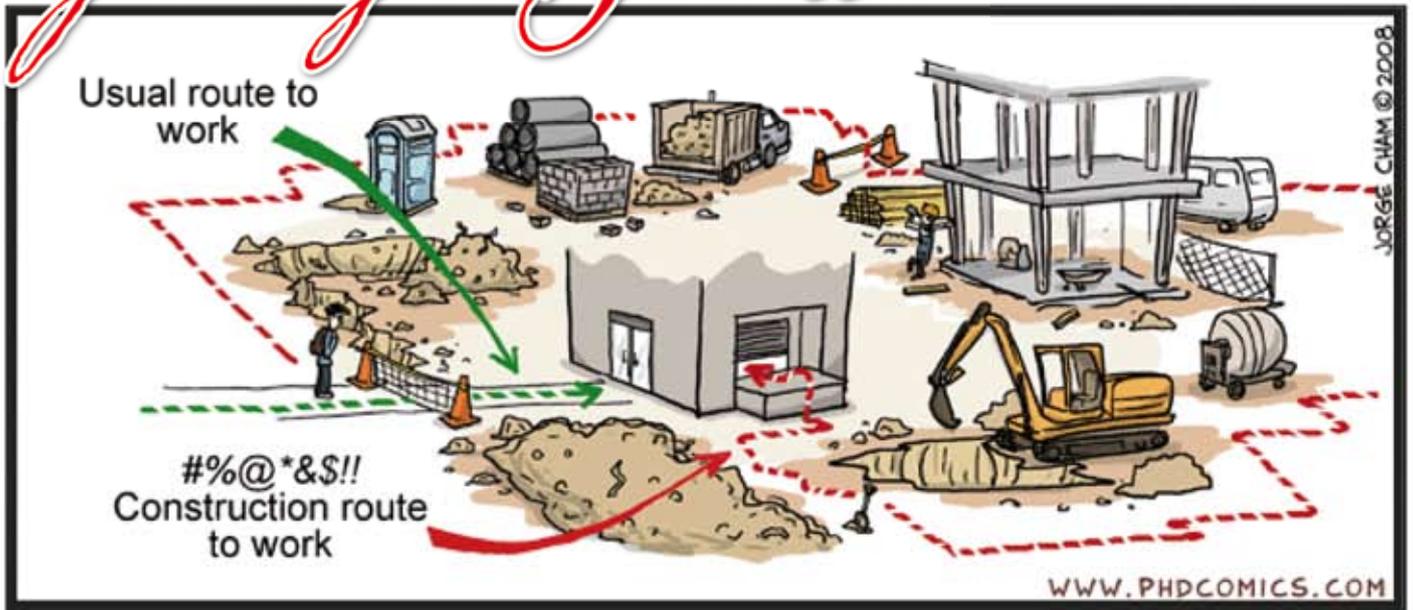
- 1st Bilateral Dialogue with KPPK & UPM was held on 26 May 2005 at UPM. The dialogue has been chaired by YB Datuk Peter Chin Fah Kui, Minister of KPPK together with Y. Bhg Prof Dato' Dr. Ir Mohd Zohadie Bin Bardaie, former UPM Vice Chancellor.
- 2nd Bilateral Dialogue was held on 23 March 2006 at KPPK, Putrajaya chaired by YB Minister together with Y. Bhg Dato' Dr. Nik Mustapha R. Abdullah, the new UPM Vice Chancellor. The second dialogue has been stabilized the dialogue structure and R&D programme planned by both parties. The result of the dialogue, JSC will monitor and coordinate overall activities. The Joint Technical Committee (JTC) will monitor and implement the programmes. Both committees will plan and make the decision together. As the result, Human Capital & Research Unit (PIMI) will be representative KPPK and INTROP will represent UPM as a secretariat to organize meeting under JTC and JSC.
- The 3rd Bilateral Dialogue was held on 13 December 2007. The purposes of this 3rd Dialogue was to foreseen the development and monitor the output. The both committees had shown the progress in various aspects such as secured grant, implementation of the activities and future planned. Some of the successful prorammes in 2006/2007 includes secured R&D grant, organizing of seminar and MoU.



LIST OF VISITORS

Name of Visitor	Country / Organisation	Date
Dr. Lee Harding	University of British Columbia, Canada	5 December 2007
Prof. Shidgeo Fujii	Kyoto University	14 December 2007
Dr. Jonathan Miles Adams	Rutgers University, United State	24 January 2008
En Abdolhamid Abraham	Wetland Conservation International, UNESCO Counterpart	24 January 2008

Journey to Success...



Wedding



*Aida Mazreena Alauddin (Science Officer)
& Mohamad Aidil Ahmad*
24 November 2007

New Born



*Muhammad Arham
Aqif Bin Arham
Syazaili*
22 November 2007
*Siti Khatijah Bte
Othman (Mother)
Admin Assistant*

COGITATION

A believer never stops seeking knowledge until he enters Paradise. (At-Tirmidhi)

Allah bestows blessings upon those who instruct other people in beneficial knowledge, and His angels and all those in Heaven and earth—even ants in their hills and the fish in the water invoke blessings upon them also. (At-Tirmidhi)

TIPS CORNER



Lidah jin; Kayu bulu; Kemarau enam bulan; Hulubalang pandang

Uses

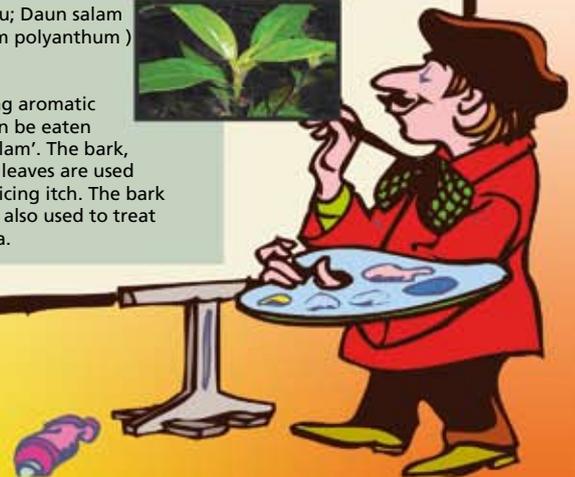
A decoction of the root is used as a tonic, and also remedy for diarrhoea, colic and fever.

Serai kayu; Daun salam (Syzygium polyanthum)



Uses

The young aromatic leaves can be eaten raw as 'ulam'. The bark, root and leaves are used for poulticing itch. The bark extract is also used to treat diarrhoea.



Flashback



Public Talk Jean Weber



Bengkel Hala Tuju INTROP



INTROP's Participation in 10th Anniversary UPM-MTDC Technology Centre

3rd Bilateral Dialogue between Ministry of Plantation Industry & Commodity and UPM

Launching Ceremony of Training Module of Industrial Building System (IBS), Malaysia Timber Industry

7th National Conference on Oil Palm Tree Utilisation