

TF2021

Tropical Forestry 2021

PROGRAMME BOOK WITH ABSTRACTS

TF2021

**Virtual Conference
December 14 - 15, 2021
Kota Kinabalu, Sabah**



Transformasi Ke Arah
UNIVERSITI 4.0
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<https://tf-2021.ums.edu.my>



conference.fpt@ums.edu.my



SECRETARIAT TROPICAL
FORESTRY 2021
Faculty of Tropical Forestry
Universiti Malaysia Sabah
Jalan UMS, 88400,
Kota Kinabalu, Sabah

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CONFERENCE PROGRAMME

This conference applies Malaysia Standard Time (MYT)

TIME (MYT)	DAY 1 - 14 th DECEMBER 2021 (TUESDAY)
0830-0930	OPENING SESSION (Virtual Room 1A) National and State Anthem Doa Recital Welcoming Address: Dean Faculty of Tropical Forestry Officiating Speech and Launching of the Conference: Vice Chancellor UMS
0930-1000	Keynote Speaker: Tan Sri Dr. Salleh Mohd Nor (Former <i>FRIM, Malaysia</i>) <i>Paper title: "Challenges in Forestry Tertiary Education in the 21st Century"</i>
1000-1030	Invited Speaker 1: Prof. Dr. Koichiro Kuraji (<i>The Universiti of Tokyo Forests, Japan</i>) <i>Paper title: "Ecosystem Services with Special Reference on Water Resource"</i>
1030-1100	Invited Speaker 2: Assoc. Prof. Dr. Feng-Cheng Chang, (<i>National Taiwan University, Taiwan</i>) <i>Paper title: "Development of Bamboo Fiber Reinforced Composite Materials"</i>
1100-1200	Concurrent Session 1 URBAN FORESTRY : Virtual Room 1A FOREST HYDROLOGY : Virtual Room 1B FOREST SOIL AND SILVICULTURE : Virtual Room 1C Q&A
1200-1400	Lunch Break
1400-1600	Concurrent Session 2 FOREST ECOLOGY AND CONSERVATION (I) : Virtual Room 2A FOREST POLICY, ECONOMICS AND FOREST MANAGEMENT: Virtual Room 2B BIODIVERSITY AND GENETIC CONSERVATION : Virtual Room 2C Q&A
1600	End of Day 1
TIME (MYT)	DAY 2 - 15 th DECEMBER 2021 (WEDNESDAY)
0900-0930	Invited Speaker 3: Dr. Ahmad Zuhaidi Yahya, A.M.N. (<i>Roxburghii Forestry Consultant, Malaysia</i>) <i>Paper title: "Crown Diameter Prediction Models of Selected Forest Plantation Species in Malaysia"</i>
0930-1000	Invited Speaker 4: Datuk Frederick Kugan (<i>Sabah Forestry Department, Malaysia</i>) <i>Paper title: "Tropical Forestry in Sabah The Way Forward"</i>
1000-1200	Concurrent Session 3 FOREST ECOLOGY AND CONSERVATION (II) : Virtual Room 3A SOCIAL FORESTRY AND AGROFORESTRY : Virtual Room 3B FOREST REMOTE SENSING AND GIS/ PRECISION FORESTRY : Virtual Room 3C Q&A
1200-1400	Lunch Break
1400-1600	Concurrent Session 4 NATURE TOURISM AND RECREATION : Virtual Room 4A FOREST PRODUCTS AND ENGINEERING :Virtual Room 4B PLANTATION FORESTRY : Virtual Room 4C Q&A
1600-1700	CONFERENCE RESOLUTIONS AND CLOSING SESSION (Virtual Room A)
1700	End of Conference

PROGRAMME DETAILS

This conference applies Malaysia Standard Time (MYT)

DAY 1: 14th DECEMBER 2021 (TUESDAY)

0800	Entry of Invited Guest and Participants Virtual Room 1A Opening Session
0830	National and State Anthem: Lagu Negaraku and Sabah Tanah Airku Reciting Doa
0850	Welcoming Address by Associate Professor Dr. Normah Awang Besar@Raffie, the Dean Faculty of Tropical Forestry.
0900	Officiating Speech and Launching of the Conference by Professor Datuk ChM. Ts. Dr. Taufiq Yap Yun Hin, the Vice Chancellor of Universiti Malaysia Sabah.

PLENARY 1

Virtual Room 1A

Chairperson: Prof. Gs. Dr. Phua Mui How

9:30 am to 11:00 am

	KEYNOTE ADDRESS: CHALLENGES IN FORESTRY TERTIARY EDUCATION IN THE 21ST CENTURY
0930	<i>Tan Sri Dr. Salleh Mohd Nor</i> Former First Director-General of Forest Research Institute Malaysia, Malaysia
	INVITED SPEAKER 1: ECOSYSTEM SERVICES WITH SPECIAL REFERENCE ON WATER RESOURCE
1000	<i>Prof. Dr. Koichiro Kuraji</i> Head of Executive Office, The University of Tokyo Forests, Japan
	INVITED SPEAKER 2: DEVELOPMENT OF BAMBOO FIBER REINFORCED COMPOSITE MATERIALS
1030	<i>Assoc. Prof. Dr. Feng-Cheng Chang</i> School of Forestry & Resource Conservation, National Taiwan University, Taiwan

CONCURRENT SESSIONS

(Please refer the details in page 14)

Session 1

Day 1	URBAN FORESTRY	FOREST HYDROLOGY	FOREST SOIL AND SILVICULTURE
	Chairperson: Assoc. Prof. Dr. Andy Russel Mojiol	Chairperson: Dr. Anand Nainar	Chairperson: Dr. Mandy Maid
1100 - 1200	Virtual Room 1A	Virtual Room 1B	Virtual Room 1C
Q&A Lunch Break			

Session 2

Day 1	FOREST ECOLOGY AND CONSERVATION (I)	FOREST POLICY, ECONOMICS AND MANAGEMENT	BIODIVERSITY AND GENETIC CONSERVATION
	Chairperson: Dr. Mandy Maid	Chairperson: Dr. Walter Lintangah	Chairperson: Dr. Maria Lourdes T. Lardizabal
1400 - 1600	Virtual Room 2A	Virtual Room 2B	Virtual Room 2C

End of Day 1

PROGRAMME DETAILS

This conference applies Malaysia Standard Time (MYT)

DAY 2: 15th DECEMBER 2021 (TUESDAY)

0830 Entry of Invited Guest and Participants

PLENARY 2 Virtual Room 1A

Chairperson: Assoc. Prof. Ts. Dr. Liew Kang Chiang
9:00 am to 10:00 am

- 0900 **INVITED SPEAKER 3: CROWN DIAMETER PREDICTION MODELS OF SELECTED FOREST PLANTATION SPECIES IN MALAYSIA**
Dr. Ahmad Zubaidi Yahya, A.M.N.
Roxburghii Forestry Consultant, Malaysia
- 0930 **INVITED SPEAKER 4: TROPICAL FORESTRY IN SABAH THE WAY FORWARD**
Datuk Frederick Kugan
Chief Conservator of Forests, Sabah Forestry Department, Malaysia

CONCURRENT SESSIONS (Please refer the details in page 18)

Session 3

	FOREST ECOLOGY AND CONSERVATION (II) Chairperson: Assoc. Prof. Dr. Colin Maycock	SOCIAL FORESTRY AND AGROFORESTRY Chairperson: Dr. Jephthe Sompud	FOREST REMOTE SENSING AND GIS/ PRECISION FORESTRY Chairperson: Dr. Kamlisa Uni Kamlun
Day 2	Virtual Room 3A	Virtual Room 3B	Virtual Room 3C
1000 - 1200			

Q&A
Lunch Break

Session 4

	NATURE TOURISM AND RECREATION Chairperson: Dr. Rosmalina Abdul Rashid	FOREST PRODUCTS AND ENGINEERING Chairperson: Dr. Ismawati Palle	PLANTATION FORESTRY Chairperson: Dr. Affendy Hassan
Day 2	Virtual Room 4A	Virtual Room 4B	Virtual Room 4C
1400 - 1600			

Conference Resolutions and Closing Session
Virtual Room 1A

End of Conference

CONCURRENT SESSION DETAILS

This conference applies Malaysia Standard Time (MYT)

DAY 1: 14th DECEMBER 2021 (TUESDAY)

SESSION 1 – URBAN FORESTRY

Chairperson: Assoc. Prof. Dr. Andy Russel Mojiol

Time : 1100 - 1200

Virtual Room : 1A

- PAPER 1
1100 **THE BENEFIT OF URBAN GREEN AREA IN KOTA KINABALU, SABAH** TF-003
- **Andy Russel Mojiol, Lim Wing Shen, Kaede Chan Lip Chung and Jesleen Linus** (1)
1110 Dani
- PAPER 2
1110 **SPECIES FAILURE AND DEFECT PROFILE FOR SELECTED STREET** TF-027
- **TREES OF KUALA LUMPUR** (1)
1120 **Sreetheran Maruthaveeran and Asmidah Sisam**
- PAPER 3
1120 **GREEN INFRASTRUCTURE CONCEPTUAL FRAMEWORK FOR KUALA** TF-007
- **LUMPUR** (2)
1130 **Owen Yeo Thian Seng, Mohd Johari Mohd Yusof, Sreetheran Maruthaveeran,**
Helmi Z. M. Shafri and Kei Saito

Q&A

SESSION 1 – FOREST HYDROLOGY

Chairperson: Dr. Anand Nainar

Time : 1100 - 1200

Virtual Room : 1B

- PAPER 1
1100 **DIFFERENCES IN STREAM RESPONSIVENESS BETWEEN A TROPICAL** TF-045
- **MONTANE CLOUD FOREST (TMCF) AND A TROPICAL LOWLAND** (1)
1110 **RAINFOREST (TLRF)**
Anand Nainar, Koichiro Kuraji, Fera Cleophas, Vanielie Terrence Justine,
Nasrulkhakim Maidin, Kamlisa Uni Kamlun, Rozaidi Hassan, Kawi Bidin, Maznah
Mahali
- PAPER 2
1110 **TOTAL SUSPENDED SOLID (TSS) DETERMINATION FROM THE FIRST** TF-021
- **YEAR OF FOREST HARVESTING IN PENINSULAR MALAYSIA** (1)
1120 **Siti Aisah Shamsuddin, Mohd Azahari Faidi, Shahzerul Hisam Kamarudzaman,**
Hafizi Mohd Jaffar and Siti Khatijah Othman,
- PAPER 3
1120 **RAINFALL EROSIVITY AND SOIL EROSION IN PENAMPANG (GUNUNG** TF-006
- **ALAB AND INOBONG SUBSTATION), SABAH** (2)
1130 **Atika Bakar, Maznah Mahali, Kamlisa Uni Kamlun, Hamjah Rusli, Anand**
Nainar, Koichiro Kuraji, Vanielie Terrence Justine, Nasrulkhakim Maidin and
Kawi Bidin
- PAPER 4
1130 **CANOPY PRECIPITATION INTERCEPTION IN A LOWLAND TROPICAL** TF-023
- **FOREST IN RELATION TO STAND STRUCTURE** (1)
1140 **Fera Cleophas, Maznah Mahali, Baba Musta, Nur Zaida Zahari and Kawi Bidin**

Q&A

SESSION 1 - FOREST SOIL AND SILVICULTURE

Chairperson: Dr. Mandy Maid

Time : 1100 - 1200

Virtual Room : 1C

- PAPER 1
1100 THE EARLY GROWTH PERFORMANCE OF OCTOMELES
- SUMATRANA IN A SPACING AND FERTILISER TRIAL AT SEGALIUD TF-015
1110 LOKAN FOREST RESERVE SANDAKAN SABAH (2)
Ade Esah Azzahra Jobin, Julius Kodoh, Jephthe Sompud, Paul Liau, Darrysie Salapan, Soliano Alfanso and Mandy Maid
- PAPER 2
1110 POTENTIAL OF NIR FOR FOLIAR NUTRIENTS ASSESSMENT IN TF-009
- FORESTRY (1)
1120 Agustan Alwi, Roger Meder, Yani Japarudin and Hazandy Abdul Hamid
- PAPER 3
1120 ESTIMATING SOIL ORGANIC CARBON AT TAKASAGO UNIMAS
- EDUCATIONAL FOREST FOR FOREST REHABILITATION TF-013
1130 Mohd Effendi Wasli, Nathaniel Noel Celestine Laujang, Meekiong Kalu, (1)
Hafsah Nahrawi, Zinnirah Shabdin, Hashimah Elias, Mohd Akmal Mohd Raffi and Mogeret Sidi
- PAPER 4
1130 ESTIMATION OF CARBON POOL AT MANGROVE FOREST, KUDAT, TF-034
- SABAH, MALAYSIA (1)
1140 Syahrir M.H, Nurul Syakilah Suhaili, Ejria Saleh and Normah Awang Besar

Q&A

SESSION 2 - FOREST ECOLOGY AND CONSERVATION (I)

Chairperson: Dr. Mandy Maid

Time : 1400 - 1600

Virtual Room : 2A

- PAPER 1
1400 AN ASSESSMENT OF *Shorea leprosula* AND *Dryobalanops lanceolata*
- (DIPTEROCARPACEAE) SEED TREES AND CANDIDATE TREES TF-008
1410 DURING A DROUGHT YEAR IN SABAH, MALAYSIA (1)
Mandy Maid, Nur Nadira Atira Abdullah Salleh, Julius Kodoh, Jephthe Sompud, Paul Liau, Darrysie Salapan
- PAPER 2
1410 IN-SITU CONSERVATION OF MANGROVE SPECIES IN BAGAN
- DATUK, PERAK TF-015
1420 Nurcahaya Khairany Mohamad Azmi, Farah Shahanim Mohamed (1)
Mohidin and Zahirah Mohamad Tahir
- PAPER 3
1420 IN VITRO PROPAGATION OF *Castanea sativa* Mill. TF-010
- Siti Aishah Zakeri, Hashimah Elias, Nur Kusaira Khairul Ikram, Khairunnisa (2)
1430 Othman
- PAPER 4
1430 DIURNAL CHANGES IN LEAF WATER POTENTIAL OF *Cinnamomun*
- *iners* Reinw. Ex Blume AT DIFFERENT BRANCH AND CANOPY LEVEL TF-035
1440 Rhema Debully Maripa, Norahisma Nadirah Rahiman, Farrah Sahanim (1)
Binti Paduka, Nurul Fatihah Binti Abd Naser and Maznah Mahali

PAPER 5
 1440 **DIVERSITY AND ABUNDANCE OF RIPARIAN PLANT SPECIES AT**
 - **LATA KEDING, JELI, KELANTAN** TF-024
 1450 Nazahatul Anis Amaludin, Nor Nadia Mohd Zulkaflī, Siti Azieza Ahmad
 Zu, Nur Anis Zarifa Zamri, Nur Aina Ab Majid, Shaparas Daliman, Amal
 Najihah Muhamad Nor, Radhiah Zakaria (1)

PAPER 6
 1450 **RAPID ASSESSMENT OF INSECTS IN SUNGAI TIAGAU FOREST** TF-018
 - **RESERVE, KALABAKAN, SABAH, MALAYSIA** (1)
 1500 Razy Japir, Momin Binti, John Lee Yukang and Arthur Y.C. Chung

PAPER 7
 1500 **POTENTIAL OF *Aglaia odoratissima* (MELIACEAE) AS BOTANICAL**
 - **INSECTICIDES AGAINST *Callosobruchus maculatus* (FABRICIUS)** TF-021
 1510 Maznah Muning, Radhiah Rajimin, Norhelina Latiff, Zahora I., Adam
 Harris G., Dzolkhifli Omar, Mohd Aspollah Sukari, Mohd Hamami Sahri,
 Ahmad Said Sajap (2)

Q&A

SESSION 2 – FOREST POLICY, ECONOMICS, AND MANAGEMENT

Chairperson: Dr. Walter Lintangah

Time : 1400 - 1600

Virtual Room : 2B

PAPER 1
 1400 **SUSTAINABLE FOREST MANAGEMENT (SFM) CONTRIBUTION TO**
 - **FOOD SECURITY: A STAKEHOLDERS' PERSPECTIVES IN SABAH,** TF-030
 1410 **MALAYSIA** (1)
 Walter Lintangah, Vilaretti Atin, Amirah Liyana Ibrahim, Beatrice Johnlee
 Kulik, Hardawati Yahya, Ricky Alisky Martin, Gordon John

PAPER 2
 1410 **MODELING HEIGHT-DIAMETER RELATIONSHIP OF EIGHTEEN**
 - **TREE SPECIES PLANTED ON RECLAIMED AGRICULTURAL LANDS** TF-016
 1420 **WITH RANDOM SPECIES EFFECTS** (1)
 Tzeng Yih Lam

PAPER 3
 1420 **ASSESSING INTRASPECIFIC WOOD DENSITY VARIATIONS OF** TF-012
 - ***Syzygium* sp. IN TROPICAL FOREST OF SOUTHWEST SABAH** (2)
 1430 Jacqueline Joseph, Rhema Debully Maripa and Phua Mui How

PAPER 4
 1430 **FOOD SECURITY AND SUSTAINABLE FOREST MANAGEMENT (SFM)**
 - **IMPLEMENTATION AT THE FOREST MANAGEMENT UNIT (FMU)** TF-008
 1440 **LEVEL: A CASE STUDY IN SALAROM TAKA, NABAWAN, SABAH** (2)
 Vilaretti Atin and Walter James Lintangah

PAPER 5
 1440 **VISITOR'S WILLINGNESS TO PAY ON BIODIVERSITY**
 - **CONSERVATION USING THE CONTINGENT VALUATION METHOD:** TF-002
 1450 **A CASE OF KUALA LUMPUR FOREST ECO PARK, MALAYSIA** (1)
 Fazilah Musa and Intan Nursuhada Mohd Shahrudin

Q&A

SESSION 2 - BIODIVERSITY AND GENETIC CONSERVATION

Chairperson: Dr. Maria Lourdes T. Lardizabal

Time : 1400 - 1600

Virtual Room : 2C

- 1400 PAPER 1
- **DIVERSITY OF CANOPY ARTHROPODS ON TREES PLANTED AT** TF-054
1410 **RESTORATION FOREST, LUASONG SABAH** (1)
Maria Lourdes T. Lardizabal and Jane Vanessa Sandra Abin
- PAPER 2
1410 **GENETIC RESCUE AND CONSERVATION MANAGEMENT FOR** TF-017
- **SABAH'S RARE AND ENDEMIC DIPTEROCARP: A CASE STUDY ON** (2)
1420 **FRAGMENTED POPULATIONS OF *Dipterocarpus ochraceus***
Richard J. Majapun, Berhaman Ahmad and Vijay Kumar
- PAPER 3
1420 **BIODIVERSITY ASSESSMENT IN A FOREST IN AN OIL PALM** TF-001
- **PLANTATION LAHAD DATU, SABAH** (1)
1430 **Dzulhelmi Muhammad Nasir, Mohd Yazid Hassan and Ahmad Afandi**
Murdi
- PAPER 4
1430 **PREVALENCE AND RISK OF PARASITES TO FRESHWATER FISH: A** TF-039
- **DOUBLE-EDGED SWORD BETWEEN BIODIVERSITY AND** (1)
1440 **EPIDEMIOLOGICAL STUDIES**
Hairul Hafiz Mahsol, Marina Hassan and Abdul Hamid Ahmad
- PAPER 5
1440 **BORNEAN PYGMY ELEPHANT HABITAT USAGE OF NATURAL SALT** TF-043
- **LICKS IN SEGALIUD LOKAN FOREST RESERVE** (1)
1450 **Jephte Sompud, Baba Musta, Mohd Sani Sarjadi, Julius Kodoh, Mandy Maid,**
Collin Goh, Marylyn Jonalius and Adams Anathasius Zati
- PAPER 6
1450 **RESEARCH NOTES ON BATS' SPECIES ASSEMBLAGE IN MADAI** TF-004
- **CAVE OF SEGAMA VALLEY, SABAH, MALAYSIA** (1)
1500 **Azniza Mahyudin, Vijay Kumar Subbiah, Sue Suzaine Sukiman, and**
Mohamad Zahirul Hoque
- PAPER 7
1500 **MONITORING OF MIGRATORY BIRDS AT PULAU ULAR AND** TF-056
- **WETLAND ECOSYSTEM IN LABUAN FEDERAL TERRITORY** (1)
1510 **Anna Wong, Nur Syamimi Makbul, Noralip Hasanudin and Mohd Aswad**

Q&A

DAY 2: 15th DECEMBER 2021 (WEDNESDAY)

SESSION 3 - FOREST ECOLOGY AND CONSERVATION (II)

Chairperson: Assoc. Prof. Dr. Colin Maycock

Time : 1000 - 1200

Virtual Room : 3A

- 1000 PAPER 1
- **A PRELIMINARY LIST OF THE POTENTIALLY INVASIVE PLANTS OF**
1010 **SABAH** TF-042
(1)
Colin R. Maycock and Sandy Tsen
- 1010 PAPER 2
- **THE REMAINING BLACK JEWELS ECOSYSTEM IN SOUTHERN**
1020 **PENINSULAR MALAYSIA: FLORISTIC COMPOSITION OF PEAT** TF-040
SWAMP FOREST IN MUAR, JOHOR (1)
Hyrul Izwan Mohd Husin, Ismail Parlan, Siti Aisah Shamsuddin and Tariq Mubarak Husin
- 1020 PAPER 3
- **REHABILITATION OF DEGRADED FOREST AREA USING**
1030 **DIPTEROCARP AND NON-DIPTEROCARP SPECIES IN MERLIMAU** TF-031
FOREST RESERVE, MELAKA (1)
Farah Shahanim Mohamed Mohidin, Nurcahaya Khairany Mohamad Azmi and Zahirah Mohamad Tahir
- 1030 PAPER 4
- **THE EFFECT OF ANTHROPOGENIC DISTURBANCES ON TREE**
1040 **GENERIC DIVERSITY AND COMMUNITY COMPOSITION IN A** TF-022
TROPICAL MONTANE FOREST OF ULU PADAS, SABAH (1)
Keiko Ioki, Daniel James, Phua Mui How and Nobuo Imai
- 1040 PAPER 5
- **CHECKLIST AND DISTRIBUTION OF ALIEN PLANTS IN KINABALU** TF-019
PARK, SABAH, MALAYSIA (1)
1050 Vanielie Terrence Justine, Handry Mujih, Jamil Kasmin, Alovial Alphonsus, Rimi Repin, Nasrullhakim Maidin, Liew Thor Seng and Monica Suleiman
- 1050 PAPER 6
- **EX-POST ANALYSIS OF A COMMUNITY-BASED PEATLAND FOREST** TF-037
RESTORATION IN PENINSULAR MALAYSIA (1)
1100 Tapan Kumar Nath

Q&A

SESSION 3 - SOCIAL FORESTRY AND AGROFORESTRY

Chairperson: Dr. Jephthe Sompud

Time : 1000 - 1200

Virtual Room : 3B

- 1000 PAPER 1
- **LINKING COMMUNITY LIVELIHOOD IN SOCIAL FORESTRY WITH**
1010 **FOOD SECURITY: DISCLOSE THE GAPS AND ADAPTING** TF-025
STRATEGIES (1)
Hardawati Yahya, Hasniar Mohd Amir, Walter James Lintangah, Diana Demiyah Mohd Hamdan, Fazlini Mohd Fadzwi and Gordon John Thomas

1010	<u>PAPER 2</u>		
-	THE POTENTIAL OF TIMBER-AGROFORESTRY TO MEET	TF-028	
1020	SARAWAK'S FORESTRY DEMAND	(1)	
	Abraham Ngu and Nur Hazwani Abdul Bahar		
	<u>PAPER 3</u>		
1020	SELECTION OF AGROFORESTRY TREE BASE ON PARTICIPATORY	TF-002	
-	AND ECOLOGICAL APPROACH IN CENTRAL KALIMANTAN,	(2)	
1030	INDONESIA		
	Eldy Indra Purnawan, Renhart Jemi, Hiskia Kasim, Lira Asaria Uthan, Jhanson Regalino and Arief Hamidi		
	<u>PAPER 4</u>		
1030	STUDIES ON GERMINATION, EARLY SEEDLING GROWTH AND	TF-009	
-	DEVELOPMENT OF <i>Castanea sativa</i>	(2)	
1040	Mohamad Tajul Arifin Mohd Rafiee, Hashimah Elias, Mohd. Effendi		
	Wasli, Mogeret Sidi, Meekiong Kalu and Hafsa Nahrawi		
	<u>PAPER 5</u>		
1040	DIVERSITY AND COMPOSITION OF PLANT SPECIES IN A	TF-017	
-	COMMUNAL AGROFORESTRY SYSTEM AT MANGGATAL, SABAH	(1)	
1050	Mandy Maid, Teckonia Mudi, Adele Ding, Jenne Lajuni and Julius Kodoh		
	<u>PAPER 6</u>		
1050	RATTAN INDUSTRY: AN ECONOMIC STUDY TO SET-UP RAW	TF-006	
-	MATERIALS PROCESSING, FIBER SUSTAINABILITY, AND	(1)	
1100	ENHANCEMENT FURNITURE PRODUCTS DEVELOPMENT		
	Mohamad Saiful Sulaiman, Razak Wahab, Rashidah Kamarulzaman, Nasihah Mokhtar, and Sofiyah Mohd Razali		
	<u>PAPER 7</u>		
1100	SUSTAINABLE FOREST MANAGEMENT IN PROTECTED FOREST	TF-044	
-	AREA OF CENTRAL INDIA : SIGNIFICANCE OF TRIBAL WOMEN	(1)	
1110	PARTICIPATION		
	Garima Tiwari		
	<u>PAPER 8</u>		
1110	COMPARISON OF DIRECT VISUAL DISTINCTION AND 15N TRACER	TF-057	
-	TECHNIQUES OF PLANT ROOT IN FIELD INTERCROPPING	(1)	
1120	Affendy Hassan, Dorte Bodin Dresbøll and Kristian Thorup-Kristensen		

Q&A

SESSION 3 - FOREST REMOTE SENSING AND GIS/ PRECISION FORESTRY
Chairperson: Dr. Kamlisa Uni Kamlun
Time : 1000 - 1200
Virtual Room : 3C

	<u>PAPER 1</u>		
1000	MAPPING THE IMPACT OF EARTHQUAKE ON THE CHANGES OF	TF-012	
-	LAND COVER IN MELANGKAP, KOTA BELUD, SABAH USING	(1)	
1010	LANDSAT 8 AND SENTINEL-2 IMAGES		
	Kamlisa Uni Kamlun, Diana P. Duma, Wan Arash Mudhiesh Wan Azman, Charmila Flora Miuse, Wilson Wong, Maznah Mahali and Mui-How Phua		

PAPER 2
 1010 **VERTICAL ACCURACY COMPARISON OF MULTI-SOURCE DIGITAL**
 - **ELEVATION MODEL (DEM) WITH AIRBORNE LASER SCANNING** TF-013
 1020 **(ALS) DATA** (2)
 Chai Lee Ting and Phua Mui How

PAPER 3
 1020 **AN INTEGRATED FRAMEWORK FOR ASSESSING LAND-USE/LAND-**
 - **COVER OF KELANTAN, MALAYSIA: SUPERVISED AND** TF-005
 1030 **UNSUPERVISED CLASSIFICATIONS** (1)
 Lee Bak Yeo, Wan Saiful Nizam Wan Mohamad, Ramly Hasan, Nurul Izzati
 Othmani, Nor Hamizah Abdul Hamid and Noorliyana Ramlee

PAPER 4
 1030 **UTILIZING LANDSAT 8 OLI FOR LAND COVER CLASSIFICATION IN** TF-016
 - **PLANTATION AREA** (2)
 1040 Syazwani Nisa Anuar and Wilson V. C. Wong

Q&A

SESSION 4 - NATURE TOURISM AND RECREATION

Chairperson: Dr. Rosmalina Abdul Rashid

Time : 1400 - 1600

Virtual Room : 4A

PAPER 1
 1400 **ASSESSING THE TOURISM POTENTIAL OF KOTA MARUDU, SABAH** TF-010
 - **Rosmalina Abdul Rashid, Hamimah Talib, Jennifer Chan Kim Lian and** (1)
 1410 **Halimatun Mat Rani**

PAPER 2
 1410 **PUBLIC HIKING SATISFACTION AND THE REASON FOR** TF-018
 - **PARTICIPATING HIKING ACTIVITY, SABAH** (2)
 1420 **Jesleen Linus Dani and Andy Russel Mojiol**

PAPER 3
 1420 **AGROTOURISM: A REVIEW ON THE DEVELOPMENT AND ITS** TF-019
 - **CONTRIBUTION IN MALAYSIA** (2)
 1430 **Orryel Jaunis, Russel @ Andy Immit Mojiol and Julius Kodoh**

PAPER 4
 1430 **SUSTAINABILITY ASSESSMENT OF MANGROVE FOREST AS A** TF-029
 - **TOURIST DESTINATION: A CASE STUDY USING GSTC CRITERIA IN** (1)
 1440 **KOTA BELUD, SABAH**
 Hamimah Talib, Nurul Hudaa Nadzri, Rosmalina Abdul Rashid, Kamlisa
 Uni Kamlun and Jennifer Chan Kim Lian

PAPER 5
 1440 **LOCAL COMMUNITY PARTICIPATION IN ECOTOURISM** TF-041
 - **DEVELOPMENT: A CASE STUDY IN BUKIT HAMPUAN FR, RANAU,** (1)
 1450 **SABAH**
 Elne Betrece Johnlee, Jarry K. Lajanga, Hasniar Amir, Jeddy Jerpyan Jakiwa,
 Nurul Shabariah Abu Bakar, Fazidah Ismail, Jaffirin Lapongan

PAPER 6
 1450 **SUITABILITY FOR SALT-LICK TOURISM: A PRELIMINARY** TF-001
 - **ASSESSMENT ON THE NATURAL SALT-LICKS AT SEGALIUD-LOKAN** (2)
 1500 **FOREST RESERVE, SANDAKAN, SABAH**
 Lim Wing Shen, Andy Russel Mojiol, Yip Pui Mun, Collin Goh, Paul Liau,
 Liaw Yi Chuang and Sanchez Vincent John

1500	<u>PAPER 7</u>		
-	IMPACTS OF MASS CAMPING ACTIVITY ON SOIL AND	TF-052	
1510	VEGETATIONS IN KAWANG FOREST RESERVE	(1)	
	Wilter Azwal Malandi and Rozaidi Hassan		

Q&A

SESSION 4 - FOREST PRODUCTS AND ENGINEERING

Chairperson: Dr. Ismawati Palle

Time : 1400 - 1600

Virtual Room : 4B

1400	<u>PAPER 1</u>		
-	EFFECT OF SANDING TREATMENT ON <i>Acacia mangium</i> PLYWOOD	TF-058	
1410	PANEL PROPERTIES	(1)	
	Ismawati Palle and Wong Li Zen		

1410	<u>PAPER 2</u>		
-	CONVERTING OF THE LIGNOCELLULOSIC WASTES MATERIALS	TF-047	
1420	INTO OTHER VALUE-ADDED APPLICATIONS: REVIEW	(1)	
	Nasihah Mokhtar, Sofiyah Mohd Razali, Mohamad Saiful Sulaiman, Taharah Edin and Razak Wahab		

1420	<u>PAPER 3</u>		
-	COMPARATIVE IN PHYSICAL AND STRENGTH PROPERTIES	TF-011	
1430	BETWEEN NATURAL AND OIL HEAT TREATED 10 AND 15-YEAR- OLD <i>Tectona grandis</i>	(1)	
	Razak Wahab, Rashidah Kamarulzaman, Mohamad Saiful Sulaiman, Sofiyah Mohd Razali, Taharah Edin, Nasihah Mokhtar and Muhammad Haziq Razak		

1430	<u>PAPER 4</u>		
-	RELATIONSHIP BETWEEN HARDNESS AND DENSITY PROFILE OF	TF-004	
1440	GLUE-LAMINATED TIMBER MANUFACTURED FROM	(2)	
	VISCOELASTIC-THERMAL COMPRESSION (VTC) MODIFIED FAST- GROWING TREE SPECIES		
	Charles Michael Albert and Liew Kang Chiang		

1440	<u>PAPER 5</u>		
-	MORPHOLOGICAL AND BENDING PROPERTIES OF LAB-SCALED	TF-005	
1450	PROTOTYPE CROSS-LAMINATED TIMBER MANUFACTURED WITH	(2)	
	DENSIFIED LAYERED COMPOSITE FROM FAST-GROWING TREE		
	Tan Yu Feng and Liew Kang Chiang		

1450	<u>PAPER 6</u>		
-	DISCOLORATION AND REDUCTION OF <i>Bambusa vulgaris</i> STRENGTH	TF-055	
1500	AFTER WEATHERING PROCESS	(1)	
	Rafidah Md Salim, Yuhana Suliman, Liew Kang Chiang, Zaidon Ashaari, Razak Wahab and Roziela Hanim Alamjuri		

1500	<u>PAPER 7</u>		
-	DENSITY PROFILE OF LAB-SCALED PROTOTYPE 3-LAYERED	TF-003	
1510	TIMBERS MANUFACTURED WITH ALKALINE-TREATED AND	(2)	
	DENSIFIED LAYERED COMPOSITE FROM <i>Paraserianthes falcataria</i>		
	Vinodini Raman and Liew Kang Chiang		

1510	<u>PAPER 8</u>		
-	SEMI-PERMANENT CHITOSAN COATING FOR WOOD	TF-038	
1520		(1)	
	Amena Anak Andok and Melissa Sharmah Gilbert Jesuet		

Q&A

SESSION 4 - PLANTATION FORESTRY

Chairperson: Dr. Affendy Hassan

Time : 1400 - 1600

Virtual Room : 4C

PAPER 1

- 1400 **TREE IMPROVEMENT PROGRAMS FOR THE 3 MAIN TAXA IN**
- **BORNEO MALAYSIAN** TF-050
1410 **Mahadir Lapammu**, Yani Japarudin, Paul M. Warburton, David I. Boden,
Michael J. Wingfield, Roger A. Meder, and Jeremy T. Brawner (1)

PAPER 2

- 1410 **EFFECT OF NPK AND SILICON FERTILIZER ON GROWTH AND**
- **DEVELOPMENT OF *Turnera ulmifolia*** TF-020
1420 **Mogeret Sidi**, Dzolkhifli Omar, Hashimah Elias, Hafsa Nahrawi and Mohd
Effendi Wasli (1)

PAPER 3

- 1420 **BORNEO FORESTRY COOPERATIVE: REALISING THE POTENTIAL**
- **FOR COLLABORATIVE RESEARCH IN TREE PLANTATION** TF-014
1430 **FORESTRY IN BORNEO** (1)
Paul Warburton

PAPER 4

- 1430 **PROSPECT FOR PROFITABLE TREE PLANTATION IN MALAYSIAN**
- **BORNEO: THE IMPORTANT OF RESEARCH AND DEVELOPMENT** TF-051
1440 **Yani Japarudin**, Mahadir Lapammu, Paul M. Warburton and Roger A.
Meder (1)

PAPER 5

- 1440 **HOW DROUGHT TOLERANT ARE TROPICAL WOODY CROP SPECIES**
- **TURGOR LOSS POINTS FOR THE FIVE MOST COMMON SPECIES** TF-053
1450 **IN THE EMERGING LANDSCAPES IN SOUTHEAST ASIA** (1)
Norbert Kunert and Johannes Brändle

Q&A

SESSION 4C: PLANTATION FORESTRY

PAPER 1 [TF-050 (1)]

Tree Improvement Programs for the 3 main taxa in Borneo Malaysia

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Abstract. After the demise of *Acacia mangium* due to the Ceratocystis cancer wilt disease the eucalypts have come into commercial production. Pest and diseases have increasingly become more important and with the need to develop programs for multiple genera. As *A. mangium* was predominantly for pulp it also necessitates to review the end utilisation to increase plantation profitability. This paper outlines the breeding programs undertaken by Sabah Softwoods and the Borneo Forestry Cooperative (BFC) which include the testing of progeny, provenance and clones. The acacia breeding program currently uses a broad genetic base of pooled germplasm that is screened to develop tolerance material which eventually after a 9-year period it was hybridize to develop genetic material tolerant to Ceratocystis. The *Falcataria moluccana* breeding program, now into its second generation, has developed excellent fast-growing families. The *Eucalyptus pellita* program is currently the main focus of the breeding program and over 9 years has developed multiple progeny trials and seed orchards over a range of sites. A clonal and hybrid program based on local candidate plus trees has been initiated. Selection of superior wood qualities in *E. pellita* breeding population has been implemented using non-destructive methodology. These breeding initiatives are designed to produce high yielding and high value timber tolerant to current pests and diseases to underpin a viable local tree plantation industry in Borneo.

Keywords: progeny testing; hybridization; high tolerance material; wood quality; breeding population.

PAPER 2 [TF-020 (1)]

Effect of NPK and silicon fertilizer on growth and development of *Turnera ulmifolia*

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Abstract. *Turnera ulmifolia* is a beneficial plant commonly planted in the oil palm plantation as it easily adapts to various environmental conditions, mainly to conserve beneficial insects. Nevertheless, the planted plants were left without proper maintenance, and still few studies have been conducted on the best method in producing this plant. Thus, this study aimed to examine the effect of NPK, silicon fertilizer, and their combination on the growth and development of *T. ulmifolia*. Treatments including T0 Control (No Fertilization Application), T1 (0.2 g NPK), T2 (0.2 g NPK + 3.9 g silicon), T3 (0.2 g NPK + 4.9 g silicon), T4 (3.9 g silicon), and T5 (4.9 g silicon) were applied 20 days after transplanting at monthly interval for three months. Results revealed that the

most significant height and the number of the branch produced were observed in T1 (0.2 g NPK) at 30, 60, and 75 days after treatment. Overall, the chlorophyll content ranged between 27.92 to 31.18 SPAD values for three observation periods. All treatments gave the same effect on morphometric measurements at 30 first day observations. After 60 days, the highest value for broad tube width and length was observed in T4, which differs significantly from other treatments.

Keywords: biological control; beneficial insects; chlorophyll content; morphometric measurements.

PAPER 3 [TF-014 (1)]

Borneo Forestry Cooperative: realising the potential for collaborative research in tree plantation forestry in Borneo

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Abstract. 2021 marks the 11th year since the Borneo Forestry Cooperative (BFC) was formed between two founder members, Sabah Softwoods Berhad and Asian Forestry Company (Sabah) who saw the potential benefits of collaborative research and development. The objective of the BFC is to improve the prospects and value of industrial tree plantation forestry through its members in Borneo particularly, but more generally throughout Malaysia. The Cooperative is committed to producing high quality timber as the basis for a profitable and sustainable tree plantation industry. This is being undertaken through sound research and development in the key components of the plantation value chain such as species selection and site-species matching, tree improvement, wood properties and down-stream prospects, pest and disease and silviculture. Information and germplasm are shared between members to leverage results and deliver greater impact. The BFC's philosophy, that by sharing everyone benefits, is enshrined by the quote "cooperation and collaboration are the keys to innovation".

Keywords: BFC; collaborative research; plantations; Borneo; tree improvement.

PAPER 4 [TF-051 (1)]

Prospect for profitable tree plantation in Malaysian Borneo: the important of research and development

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Abstract. *Acacia mangium* intended for the production of pulp logs, dominated the plantation landscape in Malaysian Borneo and Sabah Softwoods from early 90's. The widespread devastation of *A. mangium* in Sabah by the Ceratocystis wilt and canker pathogen has led to a species change to red mahogany (*Eucalyptus pellita*) which has also necessitated a review of downstream end-product options. Plantation-grown timber species producing high-value end products are one of the key means to optimise the profitability of industrial tree plantations in Malaysian Borneo. *E. pellita* have a number of advantages when grown in Borneo. It has offered real opportunity for solid wood utilisation and engineered wood products. This paper discussed the growth characteristics of *E. pellita* grown in Sabah and shows considerable potential for more profitable value-added markets. Findings demonstrate the value of interdisciplinary research and development for high yielding and