



TECHNOLOGICAL ASSOCIATION MALAYSIA

TAM NATIONAL CONFERENCE 2023

"TECHNOLOGY WITHOUT BORDERS (TWB) 2023"

IMPERIAL HOTEL, KUCHING, SARAWAK

15 APRIL 2023

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Foreword



On behalf of the Technological Association (TAM) I would like to welcome you to the TAM National Conference 2023 in conjunction with the TAM's 76th National AGM. It is truly an honor to have our YAB Dato' Sri Fadillah bin Haji Yusof, the Honorable Deputy Prime Minister, Minister of Plantations and Commodities as our Guest of Honor.

The Theme of this Conference is "Technology Without Borders" is apt in that various technological industries are gathered here today resulting in a melting pot of technologists. Today's conference cut across 4 major sectors: agro based technology, bio technology, health and medical technology, building and construction technology. These 4 are out of the 24 sectors under the purview of the Malaysian Board of Technology (MBOT). These are key areas which are often overlooked but their importance is undeniable. The advancement of technology in the agriculture field is much needed to improve productivity, yield and quality. Biotechnology has impacted human health, healthcare system as well as society as a whole through its platform that uses biological system along with the enhancement of medical technology. The progress in these sectors would ultimately spur the development in infrastructure. Emphasis should also be given for the construction of appropriate buildings and others to ensure sustainable and environmental friendly development. The above sectors, embracing technology as their enablers are contributors towards the Sustainable Development Goals (SDGs) as envisaged by the United Nations to ensure a sustainable future for all.

TAM, envisaged to play its role in the above quest for a better Future for All. As the oldest technical civil society, established in 1946, it represents a wide spectrum of technologists and technicians. TAM will continue to play its role in championing advances in technological progress and the pursuit of knowledge in the field of technology.

This conference, attended by the various stakeholders, would offer a significant platform to deliberate ideas, share experiences as well as address our priorities for the future and all these would definitely be for the betterment of Science and Technology. Here, I would also like to convey my sincere thanks and gratitude to those philanthropists who donated their time, knowledge and expertise towards this conference in the hope of gearing us towards a better world. To our Guest of Honour, YAB Dato Sri Fadillah bin Haji Yusof, my heartfelt appreciation for gracing this occasion and also not forgetting other guests such as those from the Malaysian Board of Technologists, sponsors, esteemed speakers and last but not least the organizing committee who has worked tirelessly, my sincere appreciation for the kind support and contributions towards the success of this conference.

Ts. Tung Chee Kuan, *KMN*
President TAM

Guest of Honour



YAB Dato' Sri Fadillah Bin Haji Yusof

Deputy Prime Minister Malaysia
Minister of Plantation and Commodities

Plenary Speaker

YBhg. Datuk Ts. Ir. Dr. Siti Hamisah Binti Tapsir, FASc.

President
Malaysia Board of Technologists



Speakers

TECHNOLOGY SESSIONS

Agro-based Technology (AF) | Biotechnology (BT)



Mr. Vincent Sawat
Deputy Director General (Development)
Malaysian Pepper Board



Dr. Maclin Dayod
Head of Crop Research &
Development Division
Department of Agriculture Sarawak



Mr. Ahmad Shukri Bin Mohamad Mortadza
CFO / Head of IT / Hydroponic NFT
Specialist
Toclan Group of Companies

Health and Medical Technology (HM)



Dr. Alan Fong
Head of Clinical Research Centre
Sarawak General Hospital



Dr. Isabel Fong Lim
Senior Lecturer
Faculty of Medicine and Health
Sciences
Universiti Malaysia Sarawak

Building and Construction Technology (BC)



Ir. Ts. Richard Anak Tajan
Director
Public Works Department Sarawak

Objectives of Conference



1

The objective for TWB 2023 is to enhance and explore type of technology in various field of industry.



2

The TWB 2023 will validate and complement each other in today's industry of digitalization; and to network with all technology fields.



3

The TWB 2023 organizers are pleased to offer the opportunity to support one or more aspects of the conference.

Field of Technology Involved

- Biotechnology (BT)
- Agro-based Technology (AF)
- Health and Medical Technology (HM)
- Building and Construction Technology (BC)

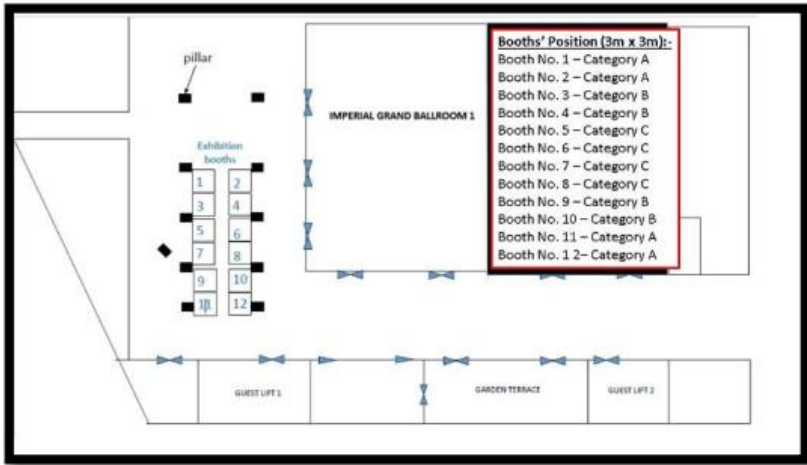
Conference Program

15 April 2023 (Saturday)	
Time	Activity
8.00am	Registration
9.00am	Keynote Speaker 1: Mr. Vincent Sawat Deputy Director General (Development) Malaysian Pepper Board Title: <i>Creating Opportunities with Innovations in the Malaysian Black Pepper Industry</i>
9.20am	Keynote Speaker 2: Dr. Maclin Dayod Head of Crop Research & Development Division Department of Agriculture Sarawak Title: <i>Agriculture Technology Development in Sarawak: Initiatives by the Department of Agriculture Sarawak</i>
9.40am	Keynote Speaker 3: Mr. Ahmad Shukri Bin Mohamad Mortadza CFO / Head of IT/ Hydroponic NFT Specialist Toclan Group of Companies Title: <i>Hydroponic with IoT: Towards Sustainable Soilless Farming</i>
10.00am	Tea Break and Networking
10.30am	The arrival of the Guest of Honor - YAB Dato Sri' Fadillah Bin Haji Yusof, Deputy Prime Minister Malaysia and Minister of Plantation and Commodities
10.40am	Deputy Prime Minister and MBOT President visit the exhibition booth and signing of Conference Guest Book at TAM Booth
10.50am	National Anthem - Negaraku - Ibu Pertiwiku
11.00am	Welcoming Remark Ts. Tung Chee Kuan, President, TAM
11.10am	Plenary Speaker YBhg. Datuk Ts. Ir. Dr. Siti Hamisah Binti Tapsir, FASc, President, Malaysia Board of Technologists
11.30am	Opening Speech by Guest of Honor YAB Dato Sri' Fadillah Bin Haji Yusof, Deputy Prime Minister Malaysia and Minister of Plantation and Commodities
11.50am	Launching of TAM Sarawak Symbolic launching of TAM Sarawak by YAB Dato Sri' Fadillah Bin Haji Yusof, Deputy Prime Minister Malaysia and Minister of Plantation and Commodities witness by MBOT President and TAM President
12.20pm	Certificate of Appreciation to the Sponsor Certificate presented by TAM President to the Sponsor

12.30pm	Souvenir Presentation to Guest of Honor To be presented by TAM President
12.45pm	Group photo from the Stage
1.00pm	Lunch and Networking
2.00pm	Keynote Speaker 4: Dr. Alan Fong Head of Clinical Research Centre Sarawak General Hospital Title: An ISO-Accredited Medical Laboratory – for Clinical Research
2.20pm	Keynote Speaker 5: Dr. Isabel Fong Lim Senior Lecturer Faculty of Medicine and Health Sciences Universiti Malaysia Sarawak Title: Modulation of Anticancer Mechanisms of Action By Clinacanthus Nutans Extracts in Colorectal Cancer Cell Lines
2.40pm	Keynote Speaker 6: Ir. Ts. Richard Anak Tajan Director Public Works Department Sarawak Title: Exploiting Alternative Aggregate for Construction: A Catalyst to Rural Connectivity
3.00pm	Tea Break and Networking
3.20pm	Industrial Talk 1: Mr. Ling Wang Soon Asteel Ajiya Sdn Bhd Title: Innovative IBS
3.40pm	Industrial Talk 2: Assoc. Prof. Ts. Ir. Dr. Kuok King Kuok Swinburne University of Technology Sarawak Campus Title: Application of Building Information Modelling Technology in Drainage System using Autodesk InfraWorks 360 software
4.00pm	End and Networking
6.00pm	TAM 76th Anniversary Dinner at Imperial Hotel Kuching, Sarawak

16 April 2023 (Sunday)	
Time	Activity
8.00am	Registration
8.30am	Welcoming Speech by TAM President 2022/2023
9.00am	Honorary Secretary General and Honorary Treasurer General Reports 2022
9.30am	Voting of new TAM Exco Member 2023/2024
1.00pm	Lunch and Networking
2.00pm	End

Exhibition Booth



Booth No.	Name
1	Sarawak Metro Sdn. Bhd.
2	Bureau Veritas (M) Sdn. Bhd.
3	Sarawak Metro Sdn. Bhd.
4	Technological Association Malaysia
5	Bimage Consulting (M) Sdn. Bhd.
6	Technological Association Malaysia Sarawak Branch / Registration Counter
7	PLYTEC
8	Department of Agriculture Sarawak
9	Malaysian Pepper Board
10	Group Engineers Malaysia Sdn. Bhd.
11	Malaysian Pepper Board
12	Meds Venture Sarawak Sdn. Bhd.

TECHNOLOGY SESSIONS

Agro-based Technology (AF) | Biotechnology (BT)



Mr. Vincent Sawat

Deputy Director General (Development)
Malaysian Pepper Board

Creating Opportunities with Innovations in the Malaysian Black Pepper Industry

Black pepper is the most widely used and cultivated spice in the world, being grown in over 26 nations. The piperine alkaloid and volatile oil contribute to the pepper's pungency and flavour, which contribute to the pepper's value. As a result, the worldwide supply and demand for pepper continue to rise. Malaysia is one of the top five pepper producers in the world, exporting approximately 90% of its annual production of roughly 25,000 tonnes. Sarawak pepper is sold at a premium price due to its superior quality, despite ranking behind other leading pepper-producing countries in terms of production volume. The Malaysian Pepper Board (MPB) is responsible for developing the pepper industry in production, marketing, and research. Despite high demand, the pepper industry still faces several challenges. Persistent threats of pepper-related diseases, low pepper prices, the high cost of farm inputs, and fierce competition from other major pepper-producing nations are the key challenges to be addressed. Therefore, several strategies and innovations must be taken to ensure the commodity sector remains competitive and relevant in a constantly shifting market environment. These approaches include strengthening the industry through the modernization of production technology, developing more value-added products through effective Research, Development, and Innovation (R&D&I) initiatives, strengthening current market share while exploring new market opportunities, and enhancing smallholders' capability through efficient use of modern technology. Therefore, the pepper industry should be strategically developed, as the crop can improve rural farmers' socioeconomic status and standard of living while generating additional export revenue.

TECHNOLOGY SESSIONS

Agro-based Technology (AF) | Biotechnology (BT)



Dr. Maclin Dayod

Head of Crop Research & Development
Division
Department of Agriculture Sarawak

Agriculture Technology Development in Sarawak: Initiatives by the Department of Agriculture Sarawak

Application of modern and innovative agricultural technologies is the key to accelerate agricultural growth and development. In Sarawak, Department of Agriculture Sarawak is one of the key agencies that aspire to boost agriculture sector into an advanced and sustainable sector. Through its research and development initiatives since early 1950s, various technologies have been recommended either through introduction, adaptation, selection, and development. These include the Sarawak Pepper such as Semongok Emas and Semongok Aman cultivars; Terung Mas, a recommended cultivar of Terung Asam Sarawak; Dabai Laja and Lulong, recommended cultivars of Dabai Sarawak; and highly priced traditional paddy varieties namely Beras Bajong, Beras Biris and Beras Bario. The department had also recommended few local and indigenous vegetables such as Midin Sarawak, Wrinkie (Cangkuk Manis), Sweetie (Okra), Tomato Tarat and Chilli Tarat. In term of food safety aspect, a net-house technology was introduced and adapted for production of pesticide-safe produce especially leafy and fruit vegetables. The department is also actively developing and promoting value-added products based on indigenous crops such as Dabai Sarawak, Terung Asam Sarawak and Midin Sarawak. Recently, to align with the Sarawak digital agenda, fertigation, hydroponics, and internet of things technologies were introduced and promoted. In addition, geospatial technology and ICT were also being adopted and developed. All these technologies, if use in a holistic manner, can enhance crop productivity and return on investment in agriculture, consequently contributing to the reduction in import bills.

TECHNOLOGY SESSIONS

Agro-based Technology (AF) | Biotechnology (BT)



Mr. Ahmad Shukri Bin Mohamad Mortadza
CFO / Head of IT / Hydroponic NFT Specialist
Toclan Group of Companies

Hydroponic with IoT : Towards Sustainable Soilless Farming

- Hydroponic: The Toclan's Way
- IoT Management powered by SMURFS
- Mineralwool: The right choice of planting media

TECHNOLOGY SESSIONS

Health and Medical Technology (HM)



Dr. Alan Fong

Head of Clinical Research Centre, Sarawak General Hospital

Represented by:

Mr. Jerry Gerunsin

Laboratory Director (Medical Testing)

Laboratory Manager (Bioanalytical Testing)

Clinical Research Centre, Sarawak General Hospital

An ISO-accredited medical laboratory – for Clinical Research

Historically, medical laboratory services that support clinical care in hospitals are located in separate levels or buildings from the wards and clinics. On 1 November 2016, the Clinical Research Centre, Sarawak General Hospital (CRC SGH) became operational. It comprised of a clinical ward, clinic consultation rooms, and a laboratory as well as inpatient pharmacy, adjacent to each other, on the same level. With the growing importance of laboratory services in medical practice, the need for medical laboratory services is also being appreciated in research field, specifically in clinical research. As such, the utilisation of the medical laboratory, particularly in scientific activities, is essential to develop and stimulate scientific thought, enhancing the reputation of the medical institution. At CRC SGH, having both laboratory and clinical ward located on the same level of a single hospital building have made clinical research even more efficient. In addition, the medical laboratory at CRC SGH could also support hospital's clinical care during critical periods, such as the recent Covid-19 pandemic. Having the laboratory adjacent to a clinical ward or clinic at a hospital facility also requires careful implementation of accreditation processes. CRC SGH Laboratory utilises two standards (MS ISO/IEC 17025:2017 and MS ISO 15189:2014) which are integrated into one quality management system, after considering its nature and function. Taking almost 2 years to accomplish, the accreditation enables the CRC SGH laboratory to perform chemical (bioanalytical) and medical testing (chemical pathology and haematology) to cater for clinical research services, and to enable cross-disciplinary research to be done under one roof. As clinical laboratories and medical testing sites are evolving, with the setting up of a clinical research laboratory within a medical facility adjacent to clinical areas, coupled with integrated standard, will not only aspire others, and also aims to function as an international reference laboratory for clinical research.

TECHNOLOGY SESSIONS

Health and Medical Technology (HM)



Dr. Isabel Fong Lim

Senior Lecturer

Faculty of Medicine and Health Sciences

Universiti Malaysia Sarawak

Modulation of Anticancer Mechanisms of Action By *Clinacanthus Nutans* Extracts in Colorectal Cancer Cell Lines

Befitting the objective of 2023 entitled 'Technology Without Borders', this talk briefly describes the move from extracting the plant with different solvents to analysing the phytochemical components and their potential across the fields of medicine and health sciences, particularly in the field of cancer research. Colorectal cancer is one of the commonest malignancies in the world. In the Globoscan 2020 report, there were an estimated 9,063 new cases and 4,133 colorectal cancer deaths reported in Malaysia. According to the detailed Malaysian National Cancer Registry Report 2012-2016, colorectal cancer was the second most common cancer, accounted for 13.6% of new cases. By gender, it was the most common cancer in men (14.8%) and second most common in women (11.1%) after breast cancer. It was also reported to be the second leading cause of cancer-related deaths in Malaysia, accounting for 13.2% of all cancer deaths. In terms of morbidity, colorectal cancer can have a significant impact on the quality of life of these individuals, their families and caregivers. With early detection through regular screening and timely treatment, the chances of survival can be improved and the morbidity associated with the disease can be lessened. Currently, the treatment options for colorectal cancer include surgery, radiation therapy, and chemotherapy. However, these options may be accompanied by side effects and complications. Due to its 15-year window for intervention, chemoprevention against this cancer is another non-invasion treatment alternative that warrants in-depth investigation into this non-communicable disease. *C. nutans*, also known as the Sabah Snake Grass or Belalai Gajah, is a plant species that is native to Southeast Asia, including Malaysia. It is a medicinal herb that has been traditionally used in folk medicine as treatment for various health conditions. The leaves of *C. nutans* contain bioactive compounds such as flavonoids, terpenoids, and phenolic acids, which are responsible for its therapeutic properties including antiviral, anti-inflammatory, antioxidant and antibacterial properties. Using the different advancement in biotechnology, the abilities of this extract to trigger antiproliferation and induce cytotoxicity were studied using MTT and SRB assays. Further studies on the cell cycle arrest and apoptotic potentials of the *C. nutans* extract were conducted using Flow cytometry on early and late stages human colorectal cancer cell lines. The outcomes were found to be promising and will be presented in this talk.

TECHNOLOGY SESSIONS

Building and Construction Technology (BC)



Ir. Ts. Richard Anak Tajan
Director
Public Works Department Sarawak

EXPLOITING ALTERNATIVE AGGREGATE FOR CONSTRUCTION: A CATALYST TO RURAL CONNECTIVITY

The Government is adamant to connect all rural communities in the State to uplift their living standard and comfort. However, geographical factor has inhibited this noble effort as the major and preferred road construction material can only be sourced from southern part of the State, resulting in higher cost in development. Therefore, JKR Sarawak is exploiting alternative aggregates which is abundantly and locally available at other development regions through applied scientific research collaboration. Studies on other natural aggregates such as limestone, sandstone and river gravel are being prioritized. The subsequent findings have been promising and technically viable.

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