



UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

IKP NEWSLETTER

IN THIS ISSUE

*The 1st INTERNATIONAL CONFERENCE ON
PLANTATION TECHNOLOGY (ICPTech2021)*

ABOUT US INSTITUTE OF PLANTATION STUDIES (IKP)

Recently, Universiti Putra Malaysia has launched the Universiti Putra Malaysia (UPM) Strategic Plan 2021-2025 with the theme of 'The Evolution of UPM's 50 Years of Excellence'. The strategic plan was officially launched by the Deputy Higher Education Minister, Senator Dato' Dr. Ahmad Masrizal Muhammad on 3rd December 2021. The Strategic Plan was set to ensure UPM continues to dominate the agricultural agenda in line with UPM's thrusts and niches. One of the goals of the Strategic Plan is to strengthen agriculture and food security resilience.

Institute of Plantation Studies (IKP) is one of the research institutes in UPM which will play important roles in helping UPM to achieve the goals of the Strategic Plan. IKP focuses on research and development on plantation industries and strives to become the center of excellence for plantation industries through the creation of knowledge, discovery of new technologies and postgraduate studies in plantation crops. Among the main plantation crops in Malaysia are oil palm, rubber, cocoa and black pepper.

IKP is a home for many researchers in plantation industries, covering the research activities from upstream to downstream levels. With strong collaborations with various government agencies, plantation companies and technological providers, IKP would focus on the modernization of the industry using high-tech agricultural technologies. The research and development on the latest technologies for plantation will support the UPM's Strategic Plan to drive and strengthen agriculture and the country's food security.

For more information on IKP,
please visit us at:



ikp.upm.edu.my



Institut Kajian Perladangan,
Universiti Putra Malaysia



KajianUpm

FOREWORD FROM ACTING DIRECTOR

PROFESSOR DR. WONG MUI YUN



It gives me great pleasure to welcome you to the December 2021 issue of IKP's e-Newsletter, as an opportunity to share the Institute's exciting transformation covering news and activities from July to December 2021 with our colleagues, students and industry partners in the plantation sector.

Despite the challenges that we are facing in 2021 because of Covid-19 pandemic, IKP had successfully organized several major activities virtually including the 1st International Conference on Plantation Technology (ICPTech2021). The

main purpose of this conference was to bring together academics, scientists, policy makers and industry players in the he plantation sector throughout the country and from overseas in discussing current issues pertaining to technological development and socio-economy for the advancement of the plantation sector towards achieving the sustainable development goals of the United Nations (SDGs).

The mission of the Institute is to assist plantation sector in increasing its productivity through sustainable practices and efficient resource utilization by establishing strategic collaborations with relevant agencies and private companies. To realize its mission, the Institute hopes to have closer collaborations with the relevant agencies under the Ministry of Plantation Industries and Commodities (MPIC) such as Malaysian Palm Oil Board (MPOB), Malaysian Rubber Board (MRB), Malaysian Cocoa Board, Malaysian Pepper Board, National Kenaf and Tobacco Board (NKTB), Malaysian Palm Oil Council (MPOC), Malaysian Rubber Council (MRC), and Institute of Malaysian Plantation and Commodities (IMPAC). Similarly, the Institute hopes to strengthen collaborations with stakeholders in the oil palm, rubber, cocoa, pepper and kenaf industries.

I believe that this e-Newsletter will provide much information about IKP's activities throughout the second half of 2021. I hope that you will enjoy reading further about IKP on the following pages.



MAIN HIGHLIGHT | RESEARCH ASSOCIATES IN THE LABORATORY OF PLANTATION SYSTEM TECHNOLOGY AND MECHANIZATION (PSTM)

GET TO KNOW ABOUT PSTM

PSTM is established to carry out research and development in mechanization and automation, digital technology and smart farming technology for plantation industry in Malaysia. Research in this field is very important to support the implementation of National Agrofood Policy and National Commodity Policy. Research and development program in the field of mechanization and plantation technology can reduce the nation's dependency on foreign labor and improve farm productivity as well as competitiveness of our plantation sector. The application of simple and affordable digital technologies would be able to attract the younger generation to be involved in the plantation sector.



Prof. Ir. Dr. Azmi Dato' Yahya is a professor of Agricultural Machinery Engineering. He received his BSc. in Agricultural Engineering from Universiti Putra Malaysia and PhD in Agricultural Engineering from Iowa State University, USA. His research areas include Energy, Soil-Machine Dynamics, Machinery Design



Prof. Dr. Abdul Rashid Mohamed Shariff is a professor of Spatial Information Science and Engineering. He received his B. Surv. in Land from Universiti Teknologi Malaysia and PhD in Spatial Information Science and Engineering from University of Maine, USA. His research areas include GIS and Precision Agriculture.



Prof. Dr. Norhisam Mison is a professor of Electrical Machine and Power Electronic Drive. He received his B.Eng and PhD from Shinshu University, Japan. His research areas include Applied Magnetic, Magnetic Sensor, Electrical Motor Design, Electrical Generator Design and Power Electronic.



Prof. Ts. Dr. Wan Zuha Wan Hasan is a professor of Bio Medical Engineering, Robotic and Automation and Sensor and Solar Technology. He received his BSc. in Electronic and Computer from Universiti Putra Malaysia and PhD in Memory Testing from Universiti Kebangsaan Malaysia. His research areas include Microelectronics, Mobile Robot, and Automated Machine.



Assoc. Prof. Dr. Nazmi Mat Nawi is a lecturer of Agricultural Mechanization and Non-destructive Quality Measurement. He received his BEng. in Biological and Agricultural from Universiti Putra Malaysia and PhD in Agricultural Engineering from University of Southern Queensland, Australia. His research areas include Farm Machinery Design, Non-Invasive Assessment of Fruit Quality, Post-Harvest Engineering and Emergency Response and Planning.



Assoc. Prof. Dr. Siti Khairunniza Bejo is a lecturer of Imaging Technology and Precision Agriculture. She received her B.Eng. in Computer System and Communications from Universiti Putra Malaysia and PhD in Image Processing from University of Surrey, United Kingdom.



Dr. Muhammad Razif Mahadi is a lecturer of Machinery Design, Control and Automation. He received his B.Eng. in Mechanical from California State University Sacramento, USA and PhD in Mechatronics from University of Southern Queensland, Australia.



Dr. Muhamad Saufi Mohd Kassim is a lecturer of Imaging Technology and Agricultural Automation. He received his BEng. and PhD in Agricultural Engineering from Universiti Putra Malaysia.



Dr. Nik Norasma Che'Ya is a lecturer of Precision Agriculture and GIS. She received her BSc. in Geoinformatics from Universiti Teknologi Malaysia and PhD in Precision Agriculture from The University of Queensland, Gatton, Australia.



Dr. Ahmad Suhaizi Mat Su is a lecturer in Agricultural Mechanization. He received his BEng. in Agricultural and Biological from Universiti Putra Malaysia and PhD in Agricultural Mechanization from McGill University, Montreal, Quebec, Canada.



Dr. Aimrun Wayayok is a lecturer in Precision Farming Engineering. He received his BSc. in Soil Science from KMITL, Bangkok and PhD in Smart Farming Technology from Universiti Putra Malaysia.



Gs. Dr. Ya'akob Mansor is a lecturer in Physics. He received his BEng. in Electrical from Universiti Teknologi Malaysia and PhD in Remote Sensing from Universiti Putra Malaysia.



Dr. Anas Mohd Mustafah is a lecturer in Control and Automation, Agricultural Machinery Design and Control, Automation, Green Technology and Energy. He received his PhD in Mechanical Engineering from University of Sheffield, United Kingdom.



Dr. Zailani Khuzaimah is a Research officer of Remote Sensing, Geographic Information System, Disaster Management and Forestry. He received his BSc. in Forestry Science (Management) and PhD in Spatial Information Engineering from Universiti Putra Malaysia.



Mrs. Siti Nooradzah Adam is a Research officer of Spatial Information Engineering, Non-destructive Testing and Plantation Technology. She received her B.Eng. in Computer System and Communications and MSc. in Spatial Information Engineering from Universiti Putra Malaysia.



Mr. Ahmad Faiz Mokhtar is a Research officer of Plantation and Forest Management. He received his BSc. in Forestry Science (Management) from Universiti Putra Malaysia.

THE ORGANIZING OF THE 1ST INTERNATIONAL CONFERENCE ON PLANTATION TECHNOLOGY (ICPTech2021)

23-24 November 2021 – Institute of Plantation Studies has successfully organized the 1st International Conference on Plantation Technology (ICPTech2021) in conjunction with the 14th Regional Conference on Computer and Information Engineering 2021 (RC CIE2021). This virtual event was officiated by Yang Berhormat Datuk Hajah Zuraida Kamaruddin, Minister at the Ministry of Plantation Industries and Commodities. This program has attracted more than 140 participants from 14 countries, including the USA, Australia, Japan, China, South Korea, Turkey, Portugal, Nigeria, Iraq, India, Sudan, Indonesia, Vietnam and Malaysia. Among the keynote speakers in this conference were Prof. Dr. John Schueller (University of Florida, USA), Prof. Dr. Deng Ganran (Chinese Academy of Tropical Agriculture Sciences-CATAS, China), Dr. Mohd Azwan Mohd Bakri (Malaysian Palm Oil Board, Malaysia) and Prof. Ir. Dr. Azmi Yahya (Faculty of Engineering, Universiti Putra Malaysia).

On the second day, the participants had a chance to listen to the forum entitled “Potential Application of Mechanization, Automation and Digitalization Technologies for Sustainable Plantation Sector in Malaysia”. The panelists were among the experts in plantation crops as well as IR4.0 technology. The forum was moderated by Prof. Sr. Gs. Dr. Abdul Rashid Mohamed Shariff, a research associate at the laboratory of Plantation System Technology and Mechanization, IKP. Overall, this two-day program has successfully discussed contemporary issues in the plantation sector and the

latest technologies that could be employed to increase yield and reduce operational costs. According to the feedback, the participants were very satisfied with the conference.



ACTIVITIES

IMPLEMENTATION AND LAUNCHING OF *EKOSISTEM KONDUSIF SEKTOR AWAM* (EKSA) AT IKP

A briefing on EKSA was held on 30th June 2021 and was attended by IKP staffs and conducted via online by Ms. Nur Nadjla Ahmad Razei from School of Graduate Studies, one of the UPM EKSA Facilitators. She briefed about the possible strategy and initial action to be taken to implement EKSA in IKP, to enhance the service quality and productivity in such a conducive environment.

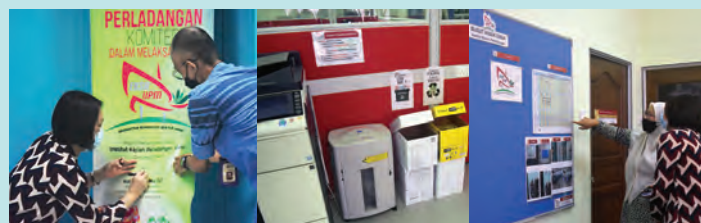
Activities that have been carried out

Following the briefing, IKP has started EKSA Program in October 2021 by conducting several activities includes:

1. 6th October - Tagging of file cabinets, office desk, file trays and pedestal cabinets
2. 11th October - *Gotong-royong* to tidy up SACP laboratory
3. 26th October - Board installation for EKSA corner and relocation of temperature screening counter
4. 28th October - Installation of the standard operating procedure for the fire extinguishers according to the PASS (Pull, Aim,

Squeeze, and Sweep).

On 20th December, a launching ceremony was held and launched by Prof. Dr. Wong Mui Yun, Deputy Director of IKP. Four EKSA corners were also introduced; Main EKSA Corner, Hevea Zone Corner (Administration Office Zone), Elaeis Zone Corner (Laboratory Zone) and Go Green Corner.



WEBINAR ON RESEARCH ARTICLE WRITING SERIES 2: MANUSCRIPT WRITING AND PUBLISHING

8th July 2021 - Institute of Plantation Studies has successfully organized Webinar on Research Article Writing Series 2: Manuscript Writing and Publishing via Zoom platform. The webinar was facilitated by Prof. Dr. Tan Chin Ping, a renowned Professor at the Department of Food Technology, Faculty of Food Science and Technology, Universiti Putra Malaysia. The sharing session was attended by 100 registered participants.

This webinar aims to provide participants with tips for publishing high-impact manuscripts and to improve the quality of research papers. Through this webinar, participants obtained practical insights on scientific manuscript writing starting from budding ideas to step by step efforts leading to publication.

INTERNATIONAL WEBINAR UB-UPM 2021

International Webinar UB-UPM 2021 Series 2 was conducted on July, 26th 2021. This webinar was organized by the Faculties of Agriculture from Brawijaya University and Universiti Putra Malaysia. This event was also co-organized by the Institute of Plantation Studies (IKP) and the Faculty of Forestry and Environment, UPM. This webinar has successfully attracted 200 participants from various universities and organizations from both Malaysia and Indonesia.

This webinar with the theme "Agroecosystem Management in Agriculture and Forestry" has met its objectives by sharing knowledge, experience, and research findings from both field in agriculture and forestry. Interesting topics were presented in this one-day webinar, by six invited speakers; Dr. Bagyo Yanuwadi (UB), Dr. Cahyo Prayogo (UB), Ms. Najihah Zakaria (UPM), Assoc. Prof. Dr. Mohd Rafein Zakaria (IKP,UPM), Dr. Karuniawan Puji Wicaksono (UB) and Mr. Mohd Zamakhsyary Mustapa (Malaysian Timber Industry Board). Through this platform, possibilities of engaging future collaboration between UPM and UB especially on palm plantation have also been highlighted.

IKP WAS GRANTED A REGIONAL CONFERENCE AWARD BY JICA

29th July 2021 – Laboratory of Plantation System Technology and Mechanization (PSTM), IKP, UPM was granted a sponsorship with the value of USD14,000 (RM56,000) from the Japan International Cooperation Agency (JICA) to organize "The 1st International Conference on Plantation Technology (ICPTech2021)". This sponsorship which is known as the Regional Conference Award is organized under the program of ASEAN University Network/ Southeast Asia Engineering Education Development Network (AUN/SEED-net).

With this sponsorship, the handling of the conference will be more effective. In addition to the financial support, JICA will also promote the conference in their website to increase the program visibility and this will increase the number of participants especially from Japan and South East Asia countries. This sponsorship proves the importance of the conference as a platform to discuss the application of the latest technologies to increase the yield, quality and sustainability of the plantation industry.

A SHARING SESSION ON SECURING INDUSTRIAL GRANTS

2nd August 2021 - Prof Dato' Dr. Mohd Ali Hassan has been invited by IKP to share his experience in successfully obtaining the industrial grants. This sharing session was aimed to increase the motivation and readiness among the young researcher in approaching the potential collaborators among the major industry players in national plantation sector.

The sharing session was attended by 30 registered researchers from various field of research areas and viewed online for two hours covering the topic of industry perspective and needs, self-development and preparation to be reasonable and relevant in the plantation sector, the need to work in team and appropriate research ecosystem and tips and strategy on dos and don'ts during the presenting and defending the proposal. It is hoped that the sharing session will provide aspirations and guidance to young researchers in preparing for the challenges of the plantation sector in the future.

INTERNAL AUDIT OF IKP

The Internal Audit for Quality Management System (QMS) ISO 9001: 2015 for IKP was held on 23-24 and 27-28 September 2021. As complying to new Standard Operating Procedures during pandemic, remote audit has been implemented this year. The Head Auditor is Mrs. Nor Azlin Aminudin from Support Service Section, Office of Vice Chancellor.

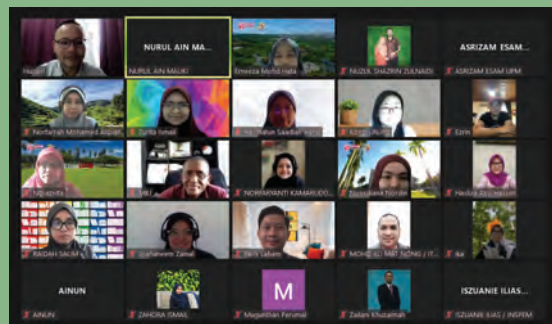
To ensure the audit process runs smoothly, a briefing session with staff was held on 18th August 2021 to familiarize the auditee on the method of online audit. The audited scope includes i) Management, ii) Main Service (Graduate and Research), iii) Support (Customer Service, Finance, Training, Equipment, Infrastructure, Human Resource Management, Health and Occupational Safety Management, Industry and Community Network and iv) Support Service Operations (Transgenic Green House).

The audit process was successfully conducted and necessary measures and action has been taken to serve the findings. An audit compliance training was conducted on 18th November 2021.

WEBINAR: A DAY IN THE LIFE OF A RESEARCH OFFICER: RESPONSIBILITIES AND CHALLENGES

The webinar was organized by Institute of Plantation Studies and Research Officer Association of UPM. Dr. Mohd Huzairi Mohd Zainudin from the Laboratory of Sustainable Animal Production and Biodiversity, Institute of Tropical Agriculture and Food Security (ITAFoS), UPM was invited as a guest speaker.

This webinar was held on 10th September 2021 via Zoom application and was attended by 62 Research Officers from different faculties and institutes in UPM. The webinar focused on knowledge sharing based on the personal experience of Dr. Mohd Huzairi as a successful Research Officer in UPM.



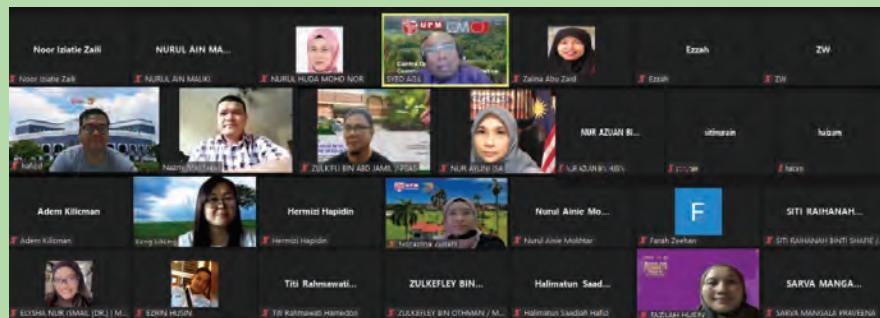
SHARING SESSION ON: HOW TO SECURE MRC INDUSTRY LINKAGE FUND

IKP has organized a sharing session on "How to secure MRC Industry Linkage Fund" delivered by Assoc Prof Ir. Dr. Nadras Othman from Universiti Sains Malaysia. The webinar was held on 14th September 2021 and attended by 15 participants. The objective of this sharing session was to provide an overview of the Malaysian Rubber Council (MRC) Industry Linkage funding programme. Assoc Prof Ir. Dr. Nadras Othman was one of the recipients of this grant. Thus she was invited to share her experience, strategy and tips. MRC linkage fund provides a platform for the industry to leverage the expertise and innovation in research and development of rubber products of public and private universities in Malaysia. Priority areas such as latex-based products, dry rubber products, automation and process improvement, wastewater and solid waste, green and sustainability, energy-saving and advancing manufacturing had been highlighted and become the centre of attention in the discussion. She strongly encourages the young researchers to strengthen the relationship with the rubber industry and take the opportunity to obtain this fund to improve the competitiveness of Malaysian rubber products in the global market.

WEBINAR: PERKONGSIAN TIP PENULISAN ARTIKEL DI MEDIA MASSA

A webinar entitled "Perkongsian Tip Penulisan Artikel di Media Massa" has been organized by inviting Ts. Dr. Syed Agil Shekh Alsagoff from the Faculty of Modern Languages and Communication, Universiti Putra Malaysia (FBMK, UPM) as a guest speaker.

The webinar was held on 22nd September 2021 through a zoom application and was participated by 85 participants comprising staff from various faculties and institutes in UPM. The objective of this webinar was to provide knowledge and exposure to increase the number of articles of expertise to the mass media and thus increase the visibility of UPM.



MoA SIGNING BETWEEN UPMCS AND LOTUS SDN FOR EUCALYPTUS CULTIVATION STUDY

A Memorandum of Agreement (MoA) signing ceremony between Universiti Putra Malaysia Consultation and Services (UPMCS) and Lotus Sdn. Bhd. for consultation project on *Eucalyptus* cultivation study was held on 29th September 2021 at the Ministry of Plantation Industries and Commodities (MPIC). The event was witnessed by Deputy Minister, Y.B. Dato Seri Wee Jock Seng. The event was also attended by researchers from IKP, Prof. Ir. Dr. Wan Azlina (Project Leader), Dr. Hakiman Awang Mansor and Assoc. Prof. Dr. Mohd Rafein Zakaria. The joint research will focus on the *Eucalyptus* seedling cultivations that will include collaborative activities through the exchange of research staff and students, study trips, joint courses and workshops.



MoU BETWEEN IKP AND MOVE ROBOTIC SDN BHD: A WAY FORWARD FOR ROBOTIC AND AGRICULTURE

24th June 2021 – A group of researchers from Laboratory of Plantation System Technology and Mechanization (PSTM), led by Assoc. Prof. Dr. Nazmi Mat Nawi participated in the first on-line meeting with Mr Mohd Hazeli Rasul, Chief executive Officer (CEO) of Move Robotik Sdn Bhd (MRSB). MRSB is the local company which focuses on the development of the autonomous robot and automation. The core businesses of the company are mechanical and electronic designs, integration and wiring of robot, development of control system, programming for robot operating system (ROS) and artificial intelligent (AI). In addition, the company also provides training and conducts research and development in the related field.

During the meeting, the company expressed its intention to venture into agricultural industry. For that reason, the company sought an engagement and expert advice from researchers in PSTM and UPM as well. As a result of the meeting, both parties agreed to establish a formal agreement for research collaboration through an official Memorandum of Understanding (MoU). In November 2021, the MoU was realized and activated with a special focus on providing solution to problems in agriculture and knowledge transfer and information sharing between both parties.

LIST OF PUBLICATIONS FROM PSTM IN CIJ FOR 2021

NO	ARTICLE TITLE	AUTHORS	JOURNAL
1	A Review on Photovoltaic and Nanogenerator Hybrid System	R. Sivasubramanian, C. Aravind Vaithilingam, S.S. Indira, S. Paiman, N. Misron and S. Abubakar	Materials Today Energy
2	Comparison of Field and SAR-Derived Descriptors in the Retrieval of Soil Moisture from Oil Palm Crops Using PALSAR-2	Shashikant, V., M. Shariff A.R, Wayayok, A., Kamal, M.R., Lee, Y.P., and Takeuchi, W.	Remote Sensing
3	Vegetation Effects on Soil Moisture Retrieval from water Cloud Model Using PALSAR-2 for Oil Palm Trees	Shashikant,V, M. Shariff A.R., Wayayok, A., Kamal, M.R., Lee, Y.P., and Takeuchi, W.	Remote Sensing
4	Utilizing TVDI and NDWI to Classify Severity of Agricultural Drought in Chuping, Malaysia	Shashikant,V., M. Shariff A.R.,Wayayok, A., Kamal, M.R., Lee, Y.P., and Takeuchi, W.	Agronomy
5	Plot-Based Classification of Macronutrient Levels in Oil Palm Trees with Landsat-8 Images and Machine Learning	Zhi Hong Kok, M. Shariff A.R., Bejo, S.K., Kim, Hyeon-Tae, Ahamed, T., Cheah, S.S. and Abd Wahid, S.A.	Remote Sensing
6	Support Vector Machine in Precision Agriculture: A review	Zhi Hong Kok, M. Shariff A.R., Meftah Salem M. Altfatni and Bejo, S.K.	Computers and Electronics in Agriculture
7	Temporal Changes Analysis of Soil Properties Associated with <i>Ganoderma boninense</i> Pat. Infection in Oil Palm Seedlings in a Controlled Environment	Mohd H.A. Aziz, Bejo, S.K, Wayayok, A., Fazirulhisyam Hashim, Naoshi Kondo and Aiman N.N. Azmi.	Agronomy
8	Multi-temporal Analysis of Terrestrial Laser Scanning Data to Detect Basal Stem Rot in Oil Palm Trees	Husin, N.A., Bejo, S.K., Abdullah, Ahmad F., M. Kassim, Muhamad S., and Ahmad, D.	Precision Agriculture
9	Automated Building Detection from Airborne LiDAR and Very High-Resolution Aerial Imagery with Deep Neural Network	Ojogbane, S.S., Mansor, S., Kalantar, B., Khuzaimah, Z., Mohd Shafri, H.Z. and Ueda, N.	Remote Sensing
10	Internet of Things (IoT)-based Aquaculture: An overview IoT Application on Water Quality Monitoring	Dipika Roy Prapti, M. Shariff A.R., Che Man, H., Mohamed Ramli, N., Thinagaran Perumal and Shariff, M.	Aquaculture
11	Comprehensive Comparison of Field Performances and Economics Between Transplanting and Direct Seeding Methods of Wetland Rice Cultivation	Elsoragaby, S., A. Yahya, M.R. Mahadi, N.M. Nawi and M. Mairghany	Agronomy Journal
12	Voltage Oriented Controller Based Vienna Rectifier for Electric Vehicle Charging Stations	Rajendran G., Aravind Vaithilingam C., Misron N., Naidu K. and A. Md Rishad	IEEE Access
13	Machine-Learning Approach Using SAR Data for the Classification of Oil Palm Trees That Are Non-Infected and Infected with the Basal Stem Rot Disease	Che Hashim I., M. Shariff A.R., Bejo, S.K., Muharam F.M. and Ahmad K.	Agronomy
14	Classification of Non-Infected and Infected with Basal Stem Rot Disease Using Thermal Images and Imbalanced Data Approach	Che Hashim, I., M. Shariff A.R., Bejo, S.K., Muharam F.M. and Ahmad K.	Agronomy
15	Implementation of Four Terminal Fruit Battery with Charge Switching	Misro, N., Ibrahim, N.A.,Kamal Azhar, N.S., Mohd Saini, I., Vaithilingam C.A., Tashiro K. and Nagata H.	IEEE access
16	Non-Destructive Detection of Asymptomatic <i>Ganoderma boninense</i> Infection of Oil Palm Seedlings Using NIR-Hyperspectral Data and Support Vector Machine	Bejo, S.K., Shahibullah M.S., Noor Azmi A.N., and Jahari M.	Applied Science
17	Evaluation of the Effect of Hydroseeded Vegetation for Slope Reinforcement	E. Okoli Jude, N. Haslinda, K. Bahare, K. Zailani, and S.S. Ojogbane	Land
18	Application of Optical Spectrometer to Determine Maturity Level of Oil Palm Fresh Fruit Bunches Based on Analysis of the Front Equatorial, Front Basil, Back Equatorial, Back Basil and Apical Parts of the Oil Palm Bunches	F. Jia Quan, M.S. Abdul Rashid and Nawi, N.M.	Agriculture
19	Challenges of IoT/5g Advancement in Oil Palm Upstream	Shashikant,V., Abdul Rashid M. Shariff, Lee Y. Ping, Aimrun Wayayuk and Kamal M. Rowshon	Basrah Journal of Agricultural Science

NO	ARTICLE TITLE	AUTHORS	JOURNAL
20	Detection of Deltamethrin in Cabbages Using Visible Shortwave Near-Infrared Spectroscopy	Ishkandar,C.D.M, Nawi, N.M., Janius, R., Mazlan, N. and Lin, T.T	Food Research
21	Determination of Tensile Properties for Twisted Fibre Bundles of Oil Palm Empty Fruit Bunch at Different Diameters	Nik N. Nasri, Nawi, N.M., Azhari S. Baharuddin and Saripa M. Lazim	Basrah Journal of Agricultural Sciences
22	Relationship of Oil Palm Crown Features Extracted Using Terrestrial Laser Scanning for Basal Stem Rot Disease Classification	Azuan N.H, Khairunniza-Bejo, S., Abdullah, A.F., Kassim, M.S.M. and Ahmad, D.	Basrah Journal of Agricultural Sciences
23	Energy Use, Efficiency, and Distribution in Malaysian Oil Palm Cultivation	H. Hasan, A. Yahya, N.M. Adam, D.E. Pebrian and A.S. Mat Su	AMA-Agricultural Mechanization in Asia Africa and Latin America
24	Energy Use, Field Performance and Greenhouse Gas Emission Evaluations of Pesticide Spraying Operations in Wetland Rice Cultivation in Malaysia	E. Suha, Y. Azmi, Nawi, N.M., M. Muhammad Razif, M.S. Ahmad Suhaizi and M. Modather	AMA-Agricultural Mechanization in Asia Africa and Latin America
25	Geotagged Application for Durian Trees using Aerial Imagery and Vegetation Indices Algorithm	Mohidem, N.A., Jeya Kumaran, V., Ab Rahman, M.I., Che’Ya, N.N., Rosle, R., Fazlil Ilahi, W.F., Man, N., Hock, O.C., Mat Su, A.S., Ping, T.N. and Izan, S.	AMA-Agricultural Mechanization in Asia Africa and Latin America
26	Preliminary Study on Development of Autonomous Robot for Oil Palm Loose Fruits Collector	N. Misron, L.M. Saini, F.D. Azmi, A.L.C. Qiao and N.A. Ibrahim	AMA-Agricultural Mechanization in Asia Africa and Latin America
27	Health Monitoring of Oil Palm Trees from an Unmanned Aerial Vehicle Using Near-Infrared Sensor	Y. Mansor, S.O. Baki, I.S. Noor, E.Z. Tarmizi, N.A. Aziz, N.H.Z. Abidin and Z. Sahwee	AMA-Agricultural Mechanization in Asia Africa and Latin America
28	Industrial Palm Oil Mill Ashes and Coal Fly Ash as Potent Constituent and Reinforcer for Soil Bearing Capacity	M.N. Mohd Shaifuudin, C.M. Hasfalina, Y. Azmi, M.J. Fauzan and K.K. Kamil	AMA-Agricultural Mechanization in Asia Africa and Latin America
29	Effect of Different Scanning Distances on Estimation of Oil Content in Oil Palm Fruitlets using Visible Shortwave Near Infrared Spectroscopy	Lazim, S.M., Nawi, M.N., Lajis, A.G. and Abdullah, N.	AMA-Agricultural Mechanization in Asia Africa and Latin America
30	Comparison of Drying Performance between Large and Medium-Sized Mobile Dryers for In-field Drying of Grain Corn	M. E. S. Amin, N. M. Nawi, M. H. Masroon, M.F.M. Shukery, N. Hashim, G. Chen, M.I. Bomoï	AMA-Agricultural Mechanization in Asia Africa and Latin America
31	Classification of Pesticide Residues in Cabbages Based on Spectral Data	C.D.M. Iskandar, M.N. Nawi, R. Janius, N. Mazlan, T. Lin and L. Chen	AMA-Agricultural Mechanization in Asia Africa and Latin America
32	Portable Wireless Yield Monitoring System on Rice Combine	Putri, R. E., A. Yahya, O.Y. Ju, M.M. Isa and S.A. Aziz	ASABE Applied Agricultural Engineering Journal
33	The Effect of Maturity Stages on Calorific Values of Malayan Yellow Dwarf	C.D.M. El-Rahimin, S.N. Adam, R. Janius and N.M. Nawi	AMA-Agricultural Mechanization in Asia Africa and Latin America
34	Prediction of Soluble Solids Content of Jackfruit from Skin Surface Using Spectroscopic Method	N. Abdullah, N.M. Nawi, P. Ding, M. S.M. Kassim and S.S.R.M. Lazim	AMA-Agricultural Mechanization in Asia Africa and Latin America
35	Performance Improvement of Fruit Battery-based Sensor with Charging Technique	N. Misron, N.A. Ibrahim, N.S.K. Azhar, L. Mohd Saini, C.A. Vaithilingam, K. Tashiro and H. Nagata	AMA-Agricultural Mechanization in Asia Africa and Latin America
36	Study on The Mechanical and Control Aspect in the Design of a Robotic Harvesting System for Vertical Farm	Mohd Saleh, A. I., Mahadi, M.R., Mohd Kassim, M.S. and Wayayok, A.	AMA-Agricultural Mechanization in Asia Africa and Latin America
37	Soil Compaction Effects of Large and Mini Combine Harvesters in a Paddy Cultivation Area in MADA	Mat Nasir R., Mat Su A.S., Yahya A., Mat Nawi N. and Wagiman N.A.	AMA-Agricultural Mechanization in Asia Africa and Latin America
38	Evaluation of Optimal Wavelet De-noising Parameters to Predict Nutrient Content in Oil Palm Leaves using Spectroradiometer	J.J. Helena A., W. Ismail Wan I., Nawi, N.M., and M. Shariff, Abdul R.	European Journal of Engineering and Technology Research

MORE ACTIVITIES

BASIC BIOINFORMATICS WORKSHOP

Basic Bioinformatics Workshop was held on 5th to 6th October 2021, jointly organized by IKP and Faculty of Biotechnology and Molecular Sciences, UPM. The workshop was conducted by instructors and facilitators from Department of Cell and Molecular Biology, Faculty of Biotechnology and Molecular Sciences. Instructors and facilitators involved were Assoc. Prof. Dr. Nurulfiza Mat Isa, Assoc. Prof. Dr. Mas Jaffri Masarudin, Dr. Nur Fatimah Mohd Yusoff, Assoc. Prof. Dr. Mariatulqabiah Abdul Razak, Dr. Nadiya Akmal Baharum and Ms. Siti Nur Bahiyah Azli @ Mohd Azli.

Total number of participants were 27 including lecturers, research officers and students from UPM and other local universities.

LABORATORY SAFETY RULES AND ORIENTATION SESSION

On 21st October 2021, IKP organized a briefing session on laboratory safety rules and orientation for all registered students under IKP. The briefing was presented by Mrs. Nazlia Girun, Science Officer of IKP.

In this program, students were exposed to safety information including explanation on basic safety rules in the laboratory, booking procedures for laboratory and equipment, handling of chemicals and chemical waste, operating procedure of the fume hood, wearing an appropriate personal protective equipment as well as action to be taken in the case of an accident in the laboratory. There was also a video sharing on how to use the emergency shower and emergency eye wash, fire extinguishers and how to safely remove disposable gloves.



WORKSHOP ON WRITING GRANT PROPOSAL UNDER MOHE FOR 2022

A workshop on writing a research proposal for the grant under Ministry of Higher Education (MOHE) for the year of 2022 has been organized on 29th October 2021. Prof. Dr. Luqman Chuah Abdullah, from Department of Chemical and Environmental Engineering, Faculty of Engineering, UPM was invited to deliver a speech entitled "Writing a successful research proposal". Prof. Dr. Luqman is one of the evaluators for research proposal at MOHE. This workshop was held in a IKP's meeting room and attended by eight researchers. From the workshop, several research proposals were identified and they will be improved before submitting to MOHE once the call for grant proposal is opened.



MoU BETWEEN IKP AND PLANTO ENTERPRISE

On 27th January 2021, a discussion with Planto Enterprise and IKP were undertaken. IKP and Planto Enterprise intended to collaborate with UPM in line with its ambition to become an internationally reputable teaching and research hub, particularly in the field of agriculture.

As a result, both sides decided to work together to create biological disease control products and organic fertilisers. The MoU between UPM and Planto was signed on 18th October 2021.



STAFF DEPARTURE AND NEW MEMBER OF IKP

The institute would like to express appreciation and gratitude to Prof. Ir. Dr. Robiah Yunus and Assoc. Prof. Dr. Khairulmazmi Ahmad for their excellent contribution during their services at the institute.

We are also welcoming Assoc. Prof. Dr. Noliha Mohd Nawi as a new Head of the Laboratory of Sustainable Agronomy and Crop Protection (SACP) and Mr. Mohd Hazim Mohd Jamil, as assistant agricultural officer to IKP.

IKP would also like to congratulate Dr. Fariz Adzmi on the promotion to Q52. Congratulations from IKP.



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