



UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

IKP NEWSLETTER

IN THIS ISSUE

HOODING CEREMONY FOR IKP FIRST BATCH POST-GRADUATE STUDENTS

ABOUT US

INSTITUTE OF PLANTATION STUDIES (IKP)

The establishment of the Institute of Plantation Studies (IKP) was approved by the Department of Higher Education, Malaysia in 2004 to become a Centre of Excellence for the advancement of plantation and agricultural agrotechnology and problem solving to commodity crops issues. Currently, IKP has three research laboratories; Laboratory of Sustainable Agronomy and Crop Protection (SACP), Laboratory of Plantation System Technology and Mechanization (PSTM) and Laboratory of Processing and Product Development (PPD) to cover the upstream, midstream and downstream activities of plantation crops.

To date, IKP is actively involved in research and consultancy projects covering plantation crops such as palm oil, rubber, cocoa, tea, pepper, coconut, pineapple, and durian. IKP activities mainly support the National AgriCommodity Policy 2021-2030 (DAKN2030) to tackle issues and challenges faced by the plantation industry such as sustainability demand (to meet global export demand), stagnant productivity (soil infertility, pest and diseases, and overdependence on foreign labour), and lack of value-creation (limited value added products and limited development of downstream product/technology). With various backgrounds of researchers in IKP and strong collaborations with government agencies, plantation companies and technology providers, IKP would dedicate its experience and expertise to agricultural and plantation research areas.

For more information on IKP,
please visit us at:

 ikp.upm.edu.my

 Institut Kajian Perladangan,
Universiti Putra Malaysia

 KajianUpm

FOREWORD FROM THE DIRECTOR PROF. DR. SHAUFIQUE FAHMI AHMAD SIDIQUE



Food prices all around the globe have been increasing since the beginning of 2020. According to the FAO, although there has been a steady decline in the FAO Food Price Index (FFPI) since March 2020, the average FFPI for 2022 was approximately 14 percent higher than the previous year. Food inflation was reported to have reached almost 100 percent in countries such as Turkey and Argentina last year. In 2022, almost all countries in Europe will have experienced food inflation of more than 10 percent, with high-income nations such as Germany, the United Kingdom, Belgium, the Netherlands, Austria, and Sweden reporting

inflation of 15 percent or higher. High food prices could generally be attributed to escalating commodity and energy prices during the recovery of the COVID-19 pandemic, which was also exacerbated by the Russia-Ukraine war. The worrying trend in food prices reduces its affordability and threatens food security, particularly in lower-income countries.

The current scenario presents an opportunity for the plantation sector to step up and help to strengthen the nation's food security agenda. The Malaysian plantation sector is often associated with oil palm, but there are ample opportunities to grow food via intercropping or even crop diversification. Studies have shown that it would be possible to herd cattle in oil palm plantations, and with the optimal cattle size per acre ratio, this activity could provide good financial returns. Cattle herding could help oil palm smallholders diversify, increase their farm income, and protect them at times of low FFB yield or prices. Oil palm plantations occupy more than 90 percent of the agricultural land in this country, so it is timely for us to re-examine our land use decisions and seriously consider diversifying into potential high-value food crops.

Apart from FFBs, byproducts from the milling process such as EFBs could be used as livestock feed, and due to their high value, EFBs are mainly exported to Europe as feedstock for the ruminant industry. The EFBs could also be used domestically if our ruminant industry is large and competitive enough to economically utilise EFBs as part of its feed ingredients. There is also a huge prospect for EFBs to be used as feed in the poultry industry. While it may not be able to completely replace corn, EFBs, if properly treated to remove their fibers, could be used to partly substitute for corn in the poultry feed mixture by as much as 20 percent.

All the above potentials require constant innovation that can only be fully realised through serious investments and intensified efforts in R&D. At the Institute of Plantation Studies, we strive to conduct cutting-edge research to solve real-world problems in agriculture. In this newsletter, we share with you some of our latest research and collaborations with industry players. We hope that this communication piece will benefit all of you. Happy reading.

AGRICULTURE • INNOVATION • LIFE

BERILMU BERBAKTI
WITH KNOWLEDGE WE SERVE

MAIN HIGHLIGHT | RESEARCHERS OF THE LABORATORY OF PROCESSING AND PRODUCT DEVELOPMENT (PPD)

GET TO KNOW ABOUT PPD

PPD has been actively exploring the untapped potential of utilising and converting natural resources from agricultural biomass into higher-value products with prospects to contribute in improving the existing industrial process and simultaneously reduce the carbon and energy footprint release to the environment. The PPD laboratory is committed to providing transformative solutions by conducting basic and applied research on downstream plantation crop products, developing, applying and transferring relevant knowledge, findings and technology and customized downstream product development in transitioning to the sustainable development of the plantation sector. As Malaysia is rising to the occasion in positioning its status as a global and regional biomass hub, we optimist the introduction of new green products in the market such as biodiesel, bio-lubricants, bio-jet oils, biosurfactants, biofertilizers, green chemicals, biocomposite, etc. from the plantation processing technology would be able to reduce the dependencies of the fossil fuels and at the same time serves as a new platform for the biomass industry to grow.

HEAD OF LABORATORY



Assoc. Prof. Dr. Mohd Rafein Zakaria is a lecturer of environmental biotechnology at Faculty of Biotechnology and Biomolecular Sciences, UPM. He obtained his BSc, Master and PhD in Environmental Biotechnology from Universiti Putra Malaysia. His research areas include biomass hydrothermal treatment and utilization, wastewater treatment for biogas generation, polyhydroxyalkanoates and biosurfactants.

RESEARCH ASSOCIATES



Assoc. Prof. Dr. Irmawati Ramli is a lecturer and researcher at Faculty of Science, UPM. She received her BSc (Hons.) in Chemistry from UPM and PhD in Heterogeneous Catalysis from UMIST, UK. His research areas include catalysis, advanced materials and nanotechnology, design and synthesis of catalysts, gas into liquid catalytic process, biomass transformation to fuels, fuel additives and fine chemicals and CNT and graphenated CNT.



Assoc. Prof. Dr.-Ing. Mohd Noriznan Mokhtar is an lecturer at Faculty of Engineering, UPM specializing in process engineering of biological/ agricultural products. He received his Bachelor of Engineering in Chem. and Process from Universiti Kebangsaan Malaysia and Dr.-Ing. (Magna Cum Laude) in Chemical Process Engineering from Fakultät für Maschinenbau, Technische Universität Chemnitz, Germany. His research areas include enzyme immobilization technology (reaction kinetics, mass and heat transfers in biological/ agricultural processing) and process plant design of biological/ agricultural-based products.

RESEARCH INTERIMS



Dr. Mohd Nazren Radzuan is a lecturer of Post-Harvest Engineering at Faculty of Engineering, UPM. He obtained his BEng. in Biological and Agricultural from UPM and PhD in Chemical Engineering from University of Manchester, United Kingdom. His research areas include agricultural bioprocess engineering, postharvest engineering, biochemical production from agricultural waste and biosurfactant and fermentation.



Dr. Ezyana Kamal Bahrin is a lecturer of Biomass and Bioenergy at the Centre of Foundation Studies for Agricultural Science, UPM. She received her BSc in Biotechnology and PhD in Industrial Biotechnology from Universiti Putra Malaysia. Her research areas include biomass and bioenergy, bioconversion lignocellulosic biomass, fermentation technology and enzymatic hydrolysis.



Dr. Ernee Noryana Muhamad is a lecturer at Faculty of Science, UPM specializing in Catalysis. She received her BSc (Hons.) in Industrial Chemistry from UPM and PhD in Chemical Process Engineering from Hokkaido University, Japan. Her research areas include catalysis, materials chemistry, chemical kinetics and fuel cells.



Dr. Mohamad Firdza Mohamad Shukery is a senior lecturer at Faculty of Engineering, UPM. He graduated from Universiti Teknologi Malaysia with a PhD in Environmental Engineering, after completing his M.S. in Biomechanical Engineering and BEng. (Biological and Agricultural) at UPM. His current research areas include agricultural mechanization biomass-energy modeling, agricultural waste management and sustainable agricultural production.



Dr. Mohamad Faiz Mukhtar Gunam Resul obtained his PhD from Newcastle University after completing his BEng and MSc. in UPM. Now he is serving as a senior lecturer in the Faculty of Engineering, UPM. His current research areas include environmental engineering & chemical engineering.

RESEARCH OFFICERS



Dr. Fariz Adzmi is a Research Officer received his PhD in Pest and Disease Management, MSc. in Materials Science and BSc. (Hons.) in Industrial Chemistry from Universiti Putra Malaysia.



Farah Zeehan Mohd Nadzri graduated in the field of Science (Biotechnology) from Universiti Putra Malaysia. As a research officer, she was assigned to manage and conduct research work, generally in the social sciences field.

Dr. Halimatus Saadiah Hafid received her PhD in Industrial Biotechnology from Universiti Putra Malaysia. Her current research interest is focused on the conversion of agricultural biomass into valuable products particularly for the application in the agriculture sector.



HIGHLIGHTS

EFFECTIVE AND PROFITABLE SMALL FARMING OPERATION TRAINING PROGRAMME

9th - 13th November - Visi Academy Sdn. Bhd in collaboration with IKP had successfully organised the Effective and Profitable Small Farming Operation Training Programme at Mini Auditorium 1, Office of the Deputy Vice Chancellor (Research & Innovation), UPM, and Tapak Kekal Pengeluaran Makanan (TKPM), Serdang. This programme was supported by the Human Resource Development Corporation (HRDCorp), which aimed to introduce the agricultural sector and its potential in generating income for the lower-income groups in Malaysia. There were 48 participants registered in this program, which consisted of university students, pensioners, and unemployed individuals within the B40 category.

This programme highlighted the theory and practise of small farming operations, including cultivation technique, pest and disease management, fertiliser management, marketing and financial management, and the potential for income generation through agriculture. The sharing session was given by an experienced UPM staff member and industrial agricultural practitioner to provide insight into the agricultural scenario. The programme also served as a platform for IKP to establish and engage with the target community and emphasise the role of IKP and UPM as knowledge transfer centres that can benefit the community.

INSTITUTE OF PLANTATION STUDIES HOODING CEREMONY



29th November - Hooding ceremony for the first batch of post-graduate students of the IKP, Miss Daarshini Ganapathy and Mr. Rozi Fernanda were celebrated during the event. The celebration ceremony was attended by all IKP staff as well as graduate family members. Miss Daarshini Ganapathy graduated with a Master of Science (Pest Management) under the supervision of Assoc Prof. Dr. Khairulmazmi Ahmad (main supervisor), Dr. Yasmeen Siddiqui and Dr. Fariz Adzmi as the co-supervisors with the research entitled "Phenolic Compounds in Enhancing Physical Barrier and Suppressing the Growth of *Ganoderma boninense* PER71". While Mr. Rozi Fernanda graduated with a Master of Science (Plant Pathology) under the supervision of Assoc Prof. Dr. Khairulmazmi Ahmad (main supervisor), Dr. Yasmeen Siddiqui and Dr. Yuvarani Naidu as the co-supervisors with the research entitled "Suppression of Lignohemicellulosic Degradation caused by *Ganoderma boninense* in Oil Palm during Basal Stem Rot Establishment using Benzoic Acid". Congratulations to IKP graduates!



RECOGNITIONS

THE APPOINTMENT OF CEO@IKP, 2022-2024



17th June - Institute of Plantation Studies officially handed over the letter of appointment as CEO@IKP to Tuan Haji Romzi Ishak, the Chief of Executive Officers (CEO) of FGV Agri Services Sdn. Bhd. The CEO@PTJ program is a program that brings together CEOs of private companies to share knowledge and experiences with UPM students and staff.

This program is an initiative implemented by the Ministry of Higher Education in line with the Malaysia Education Blueprint 2015-2025 (Higher Education). This appointment is effective from 18 May 2022 to 17 May 2024. All IKP members would like to wish congratulations and we look forward to more exciting plantation industry-relevance activities and programs with CEO@IKP!

Congratulations



OMNIPRENEURSHIP
AWARDS 2021
SUSTAINABILITY BRANCH



Research
Group

YBhg. Prof. Ir. Dr. Robiah Yunus
Assoc. Prof. Dr. Mohd Rafein Zakaria
Dr. Mohamad Faiz Mukhtar Gunam Resul
YBhg. Prof. Dato' Dr. Mohd Ali Hassan
Dr. Dina Kania
Dr. Nurliana Abdul Raof

CONGRATULATIONS! OMNIPRENEURSHIP AWARD 2021: SUSTAINABILITY BRANCH FINALIST

28th June - Research Associate from Laboratory of Process and Product Development, Institute of Plantation Studies (IKP), Prof. Ir. Dr. Robiah Yunus has led her research team as the finalist in the Omnipreneurship Awards 2021: Sustainability Branch organized by Petromin Corporation (Petromin). Petromin is an Al-Dabbagh Group (ADG) which is the leading lubricants and automotive services company in the Kingdom of Saudi Arabia and the main sponsor seeking a partner to solve the issues of the used vegetable cooking oil. The main goal of this award is to identify the "Next Big Thing" in technological solutions and create a circular ecosystem in the mobility solutions industry.

Prof. Ir. Dr. Robiah Yunus and her team must compete with another finalist from King Abdullah University of Science and Technology (KAUST), Jeddah in the Final Grand Challenge to win the prize of US\$1 million. Both finalists were initially awarded US\$20,000 each as the winning prize in the Phase 1 stage to help them prepare for the final presentation stage.

The criteria of the proposed technology should be scalable, sustainable, impactful, cost-effective, and game-changing to the ecosystem which may provide potential business opportunities that exist in the sector. The grand prize for winning is a million dollars.

Congratulations

DR. YASMEEN SIDDIQUI

on your appointment as

FELLOW RESEARCHER
Institute of Plantation Studies
Universiti Putra Malaysia



APPOINTMENT OF A NEW RESEARCH FELLOW

19th August - Dr. Yasmeen Siddiqui was appointed as a Fellow Researcher at the Institute of Plantation Studies (IKP) starting from 19th August 2022 for 2 years. The whole members of IKP would like to wish congratulations to Dr. Yasmeen Siddiqui on this appointment. It is hoped that this appointment will help IKP to bring more benefits to the plantation industry and research community.

FRGS GRANT RECIPIENT

1st September - Assoc. Prof. Dr. Nolila Mohd Nawli, Head of the Laboratory of Sustainable Agronomy and Crop Protection, IKP, was awarded a research grant under the Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education (MOHE), with the amount of RM90,500.00. The title of her research is "Understanding the Value-Added Structure along the Coconut Industry Supply Chain". Members of the project are Prof. Dr. Norsida Man (IKP/Faculty of Agriculture), Assoc. Prof. Dr. Nitty Hirawaty Kamarulzaman (Faculty of Agriculture), Dr. Nurul Nadia Ramli (Faculty of Agriculture) and Dr. Mark Buda (Faculty of Agriculture). The research project was effective from the 1st September 2022.

ASSOC. PROF. DR. NOLILA MOHD NAWLI

Head
Laboratory of Sustainable Agronomy
and Crop Protection (SACP)
Institute of Plantation Studies, UPM

for successfully securing

Fundamental Research Grant Scheme

FRGS Phase I 2022

RESEARCH TITLE: Understanding the Value
Added Structure along the Coconut Industry
Supply Chain

with amount of RM90,500



RECOGNITIONS

MEDIA APPEARANCES



IKP Director, Prof. Dr. Shaufique Fahmi Ahmad Sidiq, has been invited to attend several programme slots on television to give his expert view as an agriculture economist considering the challenging Malaysian economic landscape in 2022.

On 15th June, Prof. Dr. Shaufique was also one of the panellists in the AWANI programme slot on "Food Security: Pricing as a Policy Tool," in which he highlighted the importance of using local resources to increase production and efficiency by employing the right technology and practising smart agriculture in combating the food security challenges.

On 6th October, Radio Television Malaysia (RTM) invited him to give insight regarding the Malaysia Budget 2023 that will be announced by the government, with a focus on the benefits that could be obtained by the citizens from the budget. Apart from improving the economic sector, Malaysia is also committed to handling the food security issue in the future, and it is becoming one of the items on its development agenda.



MECHANIZATION AND ROBOTIC TECHNOLOGIES FOR COCOA PLANTATION

23rd June - Malaysian Cocoa Board (MCB) organized National Cocoa Seminar 2022 in The Magellan Sutra Resort, Kota Kinabalu, Sabah from 22 to 23 June 2022. The event was officiated by Datuk Willie Anak Mongin, Deputy Minister at the Ministry of Plantation Industries and Commodities. The event was attended by MCB staff, cocoa-related industry players, cocoa farmers, and entrepreneurs. During the event, the head of the Laboratory for Plantation System Technology and Mechanization, IKP, Assoc. Prof. Dr. Nazmi Mat Nawi was invited to present a paperwork entitled "Future Technology with Robotic and Mechanization Application in Plantation Management, Processing and Production of Cocoa Product".

During his talk, Dr. Nazmi presented the current and future technologies related to mechanization and robotics which could potentially be applied in the cocoa plantation. He also presented local machinery and robotic design which could be modified to meet the requirement of a cocoa plantation. The advantages of these technologies over current manual methods were also highlighted. However, to modernise the cocoa plantation with the technologies, the hectareage of the cocoa plantation should first be increased. A cooperative farming system may also be established among smallholders to justify the use of modern and large farming technologies. Alternatively, an independent service provider may be employed to run the machine in the cocoa farm belongs to smallholders.



7th ASIAN PGPR INTERNATIONAL CONFERENCE FOR SUSTAINABLE AGRICULTURE

24th August - Malaysian Plant growth-promoting rhizobacteria (PGPR) Society together with the Asian PGPR Society and UPM successfully organized the 7th Asian PGPR International Conference for Sustainable Agriculture in Auditorium Rashdan Baba, UPM with the theme "Regenerating Agriculture through Beneficial Microbes for Improving Crop Productivity and Safety". The Deputy Director of IKP, Prof. Dr. Wong Mui Yun was appointed as the Organizing Chairperson for this conference which was participated by 121 participants from various countries including the USA, Spain, the Netherlands, Saudi Arabia, India, Pakistan, Bangladesh, Nepal, Vietnam, Indonesia, Taiwan, Korea, Australia, and Malaysia.



The conference was officiated by YB Datuk Dr. Nik Muhammad Zawawi, Deputy Minister of Agriculture and Food Industries II. The opening ceremony was attended by Prof. M. S. Reddy (Founder & Chairman of the Asian PGPR Society for Sustainable Agriculture), YH. Dato' Prof. Dr. Mohd Roslan Sulaiman (UPM Vice-Chancellor & Assoc. Prof. Dr. Nur Azura Adam (Dean, Faculty of Agriculture). The conference met its objectives by providing a platform for academia and industry to access and connect to emerging technologies and new ideas, especially on microbial and PGPR technologies in agriculture.

RECOGNITIONS

IKP APPOINTED AS A STRATEGIC PARTNER FOR PACEIT2022

Paceit'22
PAHANG COMMODITIES EXHIBITION OF INNOVATION & TECHNOLOGY 2022

12 & 13 Disember 2022 (Isnin & Selasa)
8.30 Pagi
Dewan & Lobi Yayasan Pahang,
Kompleks Yayasan Pahang, Tanjung Lumpur

KATEGORI

PELAJAR
(INDIVIDU/BERKUMPULAN)

TERBUKA
(INDIVIDU/BERKUMPULAN)

ANUGERAH PERAK
Pingat Perak Wang Tunai
RM1,000

ANUGERAH EMAS
Pingat Emas Wang Tunai
RM1,500

ANUGERAH GANGSA
Pingat Gangsa Wang Tunai
RM500

Selain hadiah PREMIER
30 Medali EMAS, PERAK dan GANGSA layak dimenangi!!

Tarikh tutup penyertaan
5 Disember 2022

Penyertaan dan borang yang dihantar selepas tarikh tutup
penyertaan TIDAK AKAN DITERIMA

Hubungi:
Farid +6019 986 2856 | Syafina +6017 326 3169 | Suhanah +6016 584 3179
ppcfest@ucyp.edu.my | <https://ppcfest.ucyp.edu.my/>

University College of Yayasan Pahang | UCYP official | UCYP Malaysia | UCYP TV | www.ucyp.edu.my

12th-13th December - The University College of Yayasan Pahang, Kolej Yayasan Pahang, and the state government of Pahang had co-organized the Pahang Commodities Exhibition of Innovation and Technology 2022 (PACEIT2022) in Kompleks Yayasan Pahang, Tanjung Lumpur, and Kuantan, Pahang. IKP, Malaysian Palm Oil Board (MPOB) and Yayasan Pahang Plantation Holding were appointed as strategic partners for the event. The event was officiated by Pahang Menteri Besar, YAB Dato' Sri Haji Wan Rosdy Wan Ismail.

Several higher learning institutions such as UPM, Universiti Teknologi MARA (UiTM), International Islamic University Malaysia (IIUM) and Universiti Malaysia Pahang (UMP) took part in the competition. In addition to private companies, several government agencies such as MPOB, Malaysian Cocoa Board and the Department of Veterinary Services, Malaysia also took part in the event. At the end of the event, 32 winners were announced and the awards were presented to the winners by the Menteri Besar.

ANUGERAH INOVATIF PERDANA (PERAK)

Penghasilan Racun Kulat Organik PASELIS Berasaskan Sisa Industri Sawit

UPM

Prof Madya Dr Mohd Rafein Bin Zakaria
Siti Syazwani Mahamad
Zee Kar Mun

Penghasilan Racun Kulat Organik PASELIS Berasaskan Sisa Industri Sawit

UPM

Prof Madya Dr Mohd Rafein Bin Zakaria
Siti Syazwani Mahamad
Zee Kar Mun

Fostering a circular bioeconomy in palm oil industry biomass management and utilization

UPM

Prof Madya Dr Mohd Rafein Bin Zakaria
Siti Syazwani Mahamad
Zee Kar Mun

TAHNIAH
PARA ATLET INSTITUT KAJIAN PERLADANGAN
atas pencapaian dalam SUKUM 2022

Pn. Norafidah Abu Hassan
GANGSA
Bola Jaring Futsal

YM Raja Izzah Nadzirah Raja Othman
PERAK
Lempar Cakera
GANGSA
Lontar Peluru

Dr. Fariz Adzmi
EMAS
Golf
(Berpasukan Nett)

Dr. Zailani Khuzaimah
EMAS
Golf (Berpasukan Gross)
GANGSA
Golf (Individu Gross)

CONGRATULATIONS TO IKP'S ATHLETES FOR THEIR ACHIEVEMENTS IN SUKUM 2022

17th-24th September - Congratulations to the athletes of the IKP who participated in the 44th Malaysian Public University Staff Games (SUKUM) in 2022. Universiti Putra Malaysia (UPM), as the host, was announced as the overall champion by securing 18 gold, 19 silver, and 15 bronze medals. In these games, IKP's athletes, Dr. Zailani Khuzaimah, Dr. Fariz Adzmi, Mrs. Norafidah Abu Hassan and YM Raja Izzah Nadzirah Raja Othman, have each successfully made UPM proud of their achievements by winning medals in SUKUM 2022. All staff at IKP are very proud of their achievements and wish them congratulations on their successes.



ASSOC. PROF. DR. MOHD RAFEIN ZAKARIA RECEIVED THREE AWARDS IN PACEIT 2022

13th December - The head of the Laboratory of Processing and Product Development, IKP, Assoc. Prof. Dr. Mohd Rafein Zakaria, has won three awards in the Pahang Commodities Exhibition of Innovation and Technology 2022 (PACEIT2022). He received one gold medal for his paper and innovations entitled "Penghasilan Racun Kulat Organik PASELIS Berasaskan Sisa Industri Sawit" and one silver for his paper entitled "Fostering a Circular Bioeconomy in Palm Oil Industry Biomass Management and Utilization." Dr. Mohd Rafein also received one of the premier awards called the Anugerah Inovatif Perdana for his innovation in producing organic pesticides, PASELIS.

QUALITY & MANAGEMENT

ORGANIZATIONAL EMPOWERMENT WORKSHOP AND ECO-HIKING GREENMETRIC PROGRAM



5th August - IKP hosted an organisational empowerment workshop with the objective to scrutinise the strategic plans for IKP to achieve its key performance indicators (KPIs) in 2022, particularly for each of its laboratories. All laboratories were given a slot to discuss their plan for achieving the KPI for 2022. At the end of the session, each laboratory presented its plans and strategies to achieve the KPI for this year in front of the director and all the staff of IKP. SWOT (strengths, weaknesses, opportunities, and threats) analyses for each laboratory, including the administrative unit, were also presented.

The workshop was followed by the Eco-Hiking Greenmetric programme on August 6, 2022, at the Sultan Idris Shah Forestry Education Centre (SISFEC), Puchong. This programme consisted of leisure activity, community service (picking up trash and garbage along the hiking track in SISFEC), and an awareness talk on environmental preservation presented by Mr. Mohd Farhan Shahrin (Head of Natural Resources Section, Faculty of Forestry and Environment). This programme was conducted to support UPM's commitment to environmental conservation and preservation. Well done to all IKP members for their full cooperation in making this programme a success.



IKP EKSA 2022 AUDIT



8th September - The Public Sector Conductive Ecosystem (EKSA) Audit was carried out in IKP. Mr. Muhamad Asyraf Arshad from the Mathematics Research Institute (INSPM) and Mrs. Rosiha Abdul Razak from the Nuclear Diagnostic Imaging Center (PPDN) are the two auditors appointed for the audit. The audit was held in two sessions, at the IKP Main Building in the morning and the Transgenic Green House (TGH) in the afternoon. Overall, the audit went smoothly as a result of the solid support of all IKP staff from the preparation of the audit until the day of the audit.



UPM SURVEILLANCE AUDIT 1 FOR QMS AT IKP

21st October – Universiti Putra Malaysia has carried out the Surveillance Audit 1 for the Quality Management System (QMS) MS ISO 9001:2015 by SIRIM QAS International Sdn. Bhd. This audit aims to assess UPM's continued compliance with the requirements of the standards set by the certification body. This audit, which lasted for 5 days from 17 to 21 October 2022, involved 40 PTJ as an audit sample including IKP. A total of 10 QMS auditors led by Mrs. Maznah Mat Isa have audited in this session. IKP has been audited by Dr. Roslina Sailan.

UPM has successfully passed the audit and the audit findings report has been presented by the Head of the SIRIM QMS audit team as follows: 0 Non-Conformity Report (NCR), 16 Opportunity for Improvement (OFI). There are no findings reported from IKP. Overall, the auditor team was satisfied with the implementation of QMS at UPM without finding on non-conformity report (NCR). Congratulations to all IKP staff for ensuring that the Quality Management System complies with the requirements set out in MS ISO 9001:2015 and MS ISO/IEC 27001:2013 Standards.



IKP LABORATORY SAFETY RULES BRIEFING

27th October – IKP organised a briefing session on laboratory safety rules for all registered students under the institute. The programme started with an introduction by the Deputy Director, Prof. Dr. Wong Mui Yun. The next session was delivered by Mdm. Nazlia. She talked about laboratory safety. Students were exposed to safety information, including an explanation of basic safety rules in the laboratory, booking procedures for the laboratory and equipment, handling of chemicals and chemical waste, operating procedures for the fume hood, wearing appropriate personal protective equipment, and taking action in the case of an accident in the laboratory.

There was also a video showing how to use the emergency shower and eye wash, as well as fire extinguishers and safely remove disposable gloves. At the end of the program, students were taken to visit all the laboratories in IKP.

QUALITY & MANAGEMENT

65th INDEPENDENCE DAY RUN



30th August – IKP has organized the 65th Independence Day Run, starting from 5:00 p.m. until 6:00 p.m. During this program, the staff was required to run for about 2 kilometres within the campus compound. This activity aimed to enliven the spirit of patriotism during the celebration of the 65th anniversary of Independence Day. In addition, this activity also aimed to achieve one of the KPIs under "patriotic enhancements" in the UPM strategic plan for postgraduate students. This activity was attended by most of the staff and students of IKP. This activity gave the students in IKP a chance to comprehend patriotic spirit, unity, and good values.

FIRE EXTINGUISHER TRAINING



20th December – IKP had successfully organized fire extinguisher training for all IKP staff. The main objective of this program was to ensure all IKP staff are well aware of the basic and correct handling techniques of fire extinguishers in case minor fire incidents, if any, occur at the office. The program started with an introductory briefing on the basic theoretical knowledge and an introduction to different types of fire extinguishers, which was delivered by Mr. Sharizan Saian from the First Aid Unit (UBM), Safety and Health Management Office (PPKKP), UPM. Mr. Shahrizan elaborated on the safety features that should be available in each fire extinguisher unit. Practical training for all IKP staff was also held in the presence of three facilitators from UBM, UPM. All staff had a chance to observe the differences and advantages of using two types of fire extinguishers, the ABC and CO₂ types. A brief explanation of the use of a fire blanket in a fire incident was also shared by the facilitator. We greatly appreciate the tips and knowledge given and shared by the speaker and facilitators from UBM, UPM.

INDUSTRIAL AND COMMUNITY ENGAGEMENT

COORDINATION MEETING FOR RESEARCH STUDY

14th May – Professor Dr. Shaufique Fahmi Ahmad Siddique, IKP Director, attended the coordination meeting for the research study on Oil Palm Smallholders' Profile, Wellbeing, Business Model, and Sustainable Development Growth (SDG) Achievement in Malaysia-Indonesia which was held in Novotel Jakarta Cikini, Indonesia. The main activities of this program were a discussion of the final report and also a visit to the Council of Palm Oil Producing Countries (CPOPC) headquarters in Jakarta. The project is conducted in collaboration between Universitas Sumatera Utara, Universitas Jambi, Universitas Lambung Mangkurat, Universiti Putra Malaysia, Universiti Utara Malaysia, and the Indonesian Oil Palm Research Institute. This project was fully sponsored by CPOPC and successfully drafted baseline data on oil palm plantations' practises and their impact on smallholders' welfare.



TECHNICAL VISIT TO INTEGRATED RECYCLING FACILITY (IRF)

13th July – A group of researchers from the Laboratory of Processing and Product Development paid a technical visit to the Integrated Recycling Facility (IRF) at Alam Flora Environmental Solutions Sdn Bhd in Putrajaya. This visit was led by Assoc. Prof. Dr. Mohd Rafein Zakaria together with Assoc. Prof. Dr. Mohd Noriznan Mokhtar and Dr. Halimatun Saadiah Hafid to visualise the pilot-scale anaerobic digester facility, including the operational part and technology process of biogas production using domestic waste collected from Putrajaya municipality. During the visit, a briefing on the overall process flow, starting from waste collection, sorting, and processing, was given by the IRF Executive Officer, Mr. Muhammad Amin Asyraf. In summary, the IRF anaerobic digester facility was operated at 500 kg of waste/day capacity and can produce 35 m³ of biogas with a 55% methane content. This facility generated 40 kW/h of electricity, which could be used to operate the internal facility (conveyor belts) for 4 hours of consumption. Waste that has been digested exits the biogas system in the form of organic fertiliser. The discussion has concluded with a potential collaboration on research involving the integrated biogas production and composting system. The integrated system will generate electricity, and this strategy will simultaneously reduce greenhouse gas emissions and the potential for river water pollution attributed to the leachate generation from the organic waste.



INDUSTRIAL AND COMMUNITY ENGAGEMENT

COURTESY VISIT TO FGV HOLDINGS BERHAD



9th August – The management members of the IKP, UPM paid a courtesy visit to FGV Holdings Berhad in Wisma FGV, Kuala Lumpur. Prof. Dr. Shaufique Fahmi Ahmad Siddique, Director of IKP, led the visit, which was accompanied by Prof. Dr. Wong Mui Yun (Deputy Director), Assoc. Prof. Dr. Nazmi Mat Nawi (Head, Laboratory of PSTM), Assoc. Prof. Dr. Mohd Rafein Zakaria (Head, Laboratory of PPD), and Assoc. Prof. Dr. Noli. The delegation was well received by the top management of FGV Holdings Berhad, led by the Head of the Research Division, Tuan Haji Romzi Ishak. This visit was one of the IKP roadshow programs to promote IKP and build collaboration with the relevant government agencies and key players in the plantation industry. During the visit, Prof. Dr. Shaufique shared the mission and vision of the institute and highlighted the niche research areas and expertise in IKP. Tuan Haji Romzi Ishak has previously been appointed as CEO@IKP, a program that brings together the CEOs of private companies to share knowledge and experience with UPM students and staff. This visit identified common ground for future collaborations in terms of research engagement and collaborative programs between IKP and FGV Holdings Berhad.

IKP-UCTC-TKPM COMMUNITY PROGRAM



5th October – Production of Compost Fertilizer from Organic Waste program was held at the Biorefinery Complex on 5 October 2022 at 8.30 am - 1.00 pm. This workshop was attended by 22 participants consisting of garden operators from TKPM Serdang. The workshop was conducted by Dr. Mohd Huzairi Mohd Zainudin, Dr. Faridz Adzmi and facilitator Mr. Mohd Hafif Samsudin and assisted by project members Ms. Farah Zeihan Mohd Nadzri and Dr. Halimatun Saadiah Hafid. Among the activities in this workshop is a briefing on compost, followed by a demonstration and practical production of compost fertilizer. Participants were exposed in general about the production of compost for agricultural use. This workshop is also expected to help entrepreneurs learn and apply compost production techniques in the field.

RAISED AGRICULTURAL COMMUNITY DEVELOPMENT PROGRAM

6th and 1st October – The Central Zone Adoption Community Development Program jointly organized by IKP and the University Community Transformation Center (UCTC), UPM has several project components related to agriculture, specifically for the group of plant operators in TKPM Serdang. The Raised Agriculture Program is an important program in the transfer of university expertise for the benefit of the community, in line with UPM's motto, "With Knowledge We Serve." The Disease and Pest Management Program under the Adoption Development Program was designed to help gardeners and plant operators deal with pest and disease problems faced at TKPM Serdang. To meet this need, several phases of the program have been developed to ensure that TKPM entrepreneurs receive benefits from the transfer of knowledge from UPM experts. The focus of this program is also to give exposure to integrated pest management (IPM). Apart from that, the goal of this program is also to improve the knowledge of the participants and expose them to environmentally friendly control methods as an alternative to chemical treatment methods. This program gives exposure to the dangers of poisons and how to properly handle them.



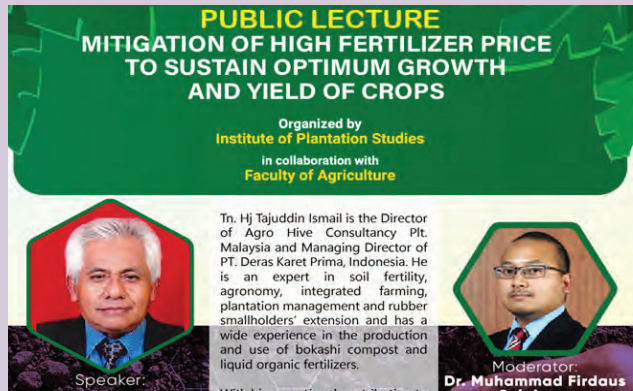
IRRDB SPECIAL MEETING OF THE EXPERTS ON THE *Pestalotiopsis* LEAF DISEASE

15th December – The Deputy Director of the IKP, Prof. Dr. Wong Mui Yun, was invited as an expert panellist to attend the "IRRDB Special Meeting of the Experts on the *Pestalotiopsis* Leaf Disease," organized by the International Rubber Research and Development Board (IRRDB), which took place at the Conference Room, Level 1, Natural Rubber Building, Kuala Lumpur. A total of six IRRDB member countries, which are also the main rubber-producing countries, including Malaysia, Indonesia, Vietnam, India, Thailand, and Sri Lanka, presented their findings related to the major leaf fall disease in rubber, which is caused by the fungal pathogen *Pestalotiopsis*. *Pestalotiopsis* is infecting the leaves, stalks, and fruit of rubber trees. However, the infection is more serious on the leaves, where severe infection results in continuous defoliation of up to 90 percent. Aside from that, this infection has the potential to affect and reduce latex production by up to 60%. In this special meeting, Prof. Dr. Wong actively participated in the presentation and open discussion session related to the latest findings of related research as well as preventive measures to control the spread of this disease.



INDUSTRIAL AND COMMUNITY ENGAGEMENT

IKP PUBLIC LECTURE



13th October – IKP in collaboration with the Faculty of Agriculture, UPM had successfully organized the IKP Public Lecture: Mitigation of High Fertilizer Price to Sustain Optimum Growth and Yield of Crops, which was conducted online through the Zoom platform. The invited speaker was Tuan Haji Tajuddin Ismail (Director of Agro Hive Consultancy Pte. Malaysia), and this program was moderated by Dr. Muhammad Firdaus Sulaiman from the Department of Land Management, Faculty of Agriculture, UPM. This public lecture highlighted the current challenge faced by the agricultural sector due to the soaring prices of fertilizers. Farmers are facing difficulties continuing to give adequate fertiliser to their crops to sustain optimum yield, which has consequently affected farmers' income. Tuan Haji Tajuddin shared his experience in the production and utilization of bokashi compost and liquid organic fertilisers to mitigate this issue. He emphasised the significance of implementing regenerative farming practises and urged us to choose better, more practical, less expensive, and more sustainable agriculture practices. Several hundred people from various government and private organizations, including UPM, UMS, Lampung Polytechnic, Malaysian Rubber Board, Sime Darby, Malaysian Pepper Board, Sarawak Land Consolidation and Rehabilitation Authority, National Kenaf and Tobacco Board, Maybank, Sam Wah Development Enterprise Sdn. Bhd., Farmcochem Sdn. Bhd., and JAPFA Comfeed Ind. from Indonesia, benefited from this knowledge.

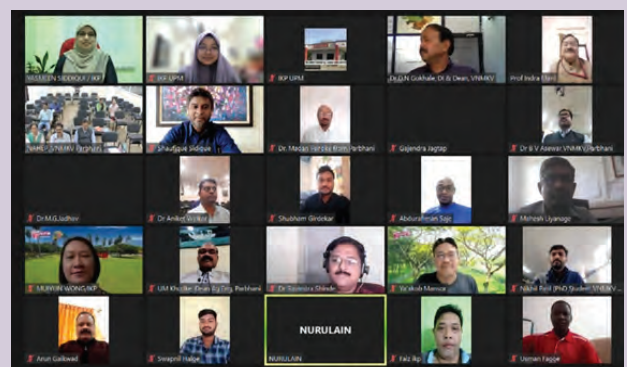
WORKING VISIT OF IKP TO RPN AND BRIN, BOGOR, INDONESIA



7th November – In line with the requirements of IKP and UPM to maintain visibility at the international level, a working visit by the top management members of IKP was made to Riset Perkebunan Nusantara (RPN) and Badan Riset dan Inovasi (BRIN), Bogor, Indonesia. The working visit was led by IKP Director, YBhg. Prof. Dr. Shaufique Fahmi Ahmad Siddique, together with Deputy Director of IKP, YBhg. Prof. Dr. Wong Mui Yun, and three heads of laboratories. The visit was part of IKP's 2022 roadshow to promote IKP and establish IKP's networking and linkage activities at the international level. In addition, this visit provides a platform to discuss bilateral cooperation related to the commodities and plantations industries, which focus on the development of human resources and research technology at the upstream, processing, and downstream levels. Other aspects, such as student and staff mobility and the joint organization of international conferences, were also discussed. Apart from that, the IKP delegation also had the opportunity to visit some of the main research laboratories in RPN and had a chance to meet with Dr. Ahmad Fathoni, the Head of the Applied Microbiology Research Center, and Dr. Sarjiya Antonius, a senior researcher in BRIN. It is hoped that this visit will have an impact on bilateral cooperation in the development of human capital and technology development related to plantations in the Southeast Asian region.

IKP STUDENT MOBILITY PROGRAM WITH VASANTRAO NAIK MARATHWADA KRISHI VIDYAPEETH (VNMKV)

28th November – A webinar jointly organized by IKP and the Center of Excellence: Digital Farming Solutions for Robot Drones and AGVs, Vasant Rao Naik Marathwada Krishi Vidyapeeth, India, on the theme of Digital Agriculture online using the Zoom Meeting application. Vasant Rao Naik Marathwada Krishi Vidyapeeth (VNMKV) is an agricultural university in Maharashtra, India. VNMKV focuses on education in agriculture and allied sciences, research based on regional needs, and technology transfer. VNMKV is an agricultural university in India that teaches all branches of agricultural science. This webinar is one of the mobility activities involving the involvement of students and academics from both institutions. The organization of this webinar is seen as an initial step in the collaboration between IKP and VNMKV towards implementing more short- and long-term mobility programs in the future. This webinar focuses on the latest developments in farming and agricultural technology, in addition to highlighting innovations in mechanization and digitalization in the farming industry.



WORKSHOP AND TRAINING

WORKSHOP ON INTRODUCTION AND APPLICATION OF DRONES FOR AGRICULTURE MODULE 1



16th - 17th August – The workshop, organized by PSTM Laboratory, was held for the purpose of providing an initial introduction and exposure to the use of drone technology in the agricultural sector, related regulations, data collection, and data processing according to user needs. In addition to theoretical exposures, participants also have the opportunity to learn to control the basics of drone movement. This workshop was successfully organized for two days and attended by 26 participants from the Lembaga Pertubuhan Perladangan throughout Malaysia.

COURSE ON SOIL IDENTIFICATION AND CLASSIFICATION (SERIES 1&2)



13-14th and 26-27th Sept. - IKP has successfully organised a Soil Identification and Classification Course. Due to overwhelming participation, the course was conducted in two series: the first series was conducted on September 13 and 14, while the second series was conducted on September 26 and 27, 2022. Trainers for this course were Dr. Wan Noordin Wan Daud, assisted by Dr. Mohd Shafar Jefri Mokhtar (Department of Crop Science, Faculty of Agriculture, UPM) and Dr. Khairul Hafiz Mohd Yusoff (Department of Land Management, Faculty of Agriculture, UPM). The course was attended by UPM postgraduate

LABORATORY EQUIPMENT TRAININGS

INFORS HT BIOREAKTOR
TRAINING COURSE

PPD LABORATORY

14th June 2022
9.00 AM – 1.00 PM
IKP MEETING ROOM & PPD LABORATORY

LIMITED TO 15 PARTICIPANTS
REGISTER TO: DR FARIZ ADZMI
(019-2720508)

TRAINING COURSE

OLYMPUS Digital Microscope
Binocular LED Microscope
Olympus CX23 with Dino-eye

SACP LABORATORY

18 July 2022
2.30 pm – 3.30 pm
SACP LABORATORY

LIMITED TO 10 PARTICIPANTS
REGISTER TO: DR KONG LIH LING (012-6659987)

TRAINING COURSE

ThermoFisher Scientific CENTRIFUGE
Sorvall™ ST8

SACP LABORATORY

18 October 2022
10.00 am – 11.00 am
SACP LABORATORY

ALL ARE INVITED

20 September 2022
10.00 – 11.00 am
SACP LABORATORY

ThermoFisher Scientific UV-VIS
SPECTROPHOTOMETER
GENESYS 150
TRAINING COURSE

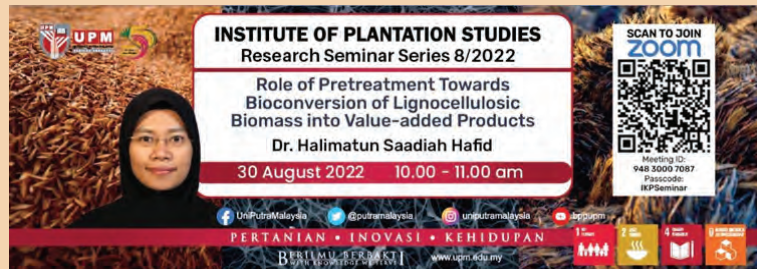
LIMITED TO 15 PARTICIPANTS
REGISTER TO: DR HALIMATUN
(019-6911879)

students, staff, and delegates from various agencies (FELDA, MARDI, SALCRA, Sime Darby, Felda Plantation Management, Maybank, the National Kenaf and Tobacco Board, and the Department of Agriculture and Agri Food, Brunei). The course focused on knowledge of soil description, identification, and classification principles. The course enabled participants to understand the basics of soil sciences, soil formation processes, and their impact on crop suitability, as well as the differences in the properties, characteristics, and classifications of different soil types. This course also provided a platform for participants to familiarise themselves with the classification and description of soil profiles through hands-on practical sessions at three different locations of soil pedons.

LIST OF PUBLICATIONS FROM IKP IN CIJ FOR JULY- DECEMBER 2022

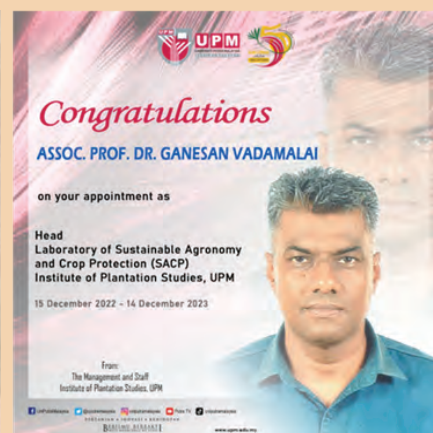
No	Publications	Rank
1	Abd Wafti N.S., Yunus R. , Lau H.L.N., Choong T.S.Y., Abd Aziz S. (2022). Enzymatic synthesis of palm oil-based trimethylolpropane ester as biolubricant base stock catalyzed by Lipozyme 435. <i>Energy</i> 260: 125061	IF 8.857 (Q1)
2	Razali S.Z., Yunus R. , Kania D., Abdul Rashid S., Lim H.N., Abdulkareem Alsultan G., Mohamed Jan B. (2022). Effects of morphology and graphitization of carbon nanomaterials on the rheology, emulsion stability, and filtration control ability of drilling fluids. <i>Journal of Materials Research and Technology</i> 21: 2891-2905	IF 6.267 (Q1)
3	Mahmad-Toher A S., Govender N., Dorairaj D., Wong M.Y. (2022). Effects of silica soil amendment against <i>Exserohilum rostratum</i> , the fungal pathogen of rice brown spot disease in Peninsular Malaysia. <i>Scientific Reports</i> 12: 15690	IF 4.997 (Q2)
4	Gunasena M.T., Rafi A., Mohd Zobir S.A., Hussein M.Z., Ali A., Kutawa A.B., Abdul Wahab M.A., Sulaiman M.R., Adzmi F., Ahmad K. (2022). Phytochemicals Profiling, Antimicrobial Activity and Mechanism of Action of Essential Oil Extracted from Ginger (<i>Zingiber officinale</i> Roscoe cv. Bentong) against Burkholderia glumae Causative Agent of Bacterial Panicle Blight Disease of Rice. <i>Plants</i> 11(11): 1466	IF 4.658 (Q1)
5	Ghose A.K., Abdullah S.N.A. , Md. Hatta M.A., Wahab P.E.M (2022). DNA Free CRISPR/DCAS9 Based Transcriptional Activation System for UGT76G1 Gene in <i>Stevia rebaudiana</i> Bertoni Protoplasts. <i>Plants</i> 11(18)	IF 4.658 (Q1)
6	Samsudin M.F., Hassan M.A. , Mohd Yusoff M.Z., Ideris J., Ahmad Farid MA., Lawal A.B.A., Norrahim M.F.N., Shirai Y. (2022). Production of nanopore structure bio-adsorbent from wood waste through a self-sustained carbonization process for landfill leachate treatment. <i>Biochemical Engineering Journal</i> 189: 108780	IF 4.446 (Q2)
7	Tan G.H., Ali A., Siddique Y. (2022). Current strategies, perspectives and challenges in management and control of postharvest diseases of papaya. <i>Scientia Horticulturae</i> 301: 111109	IF 4.342 (Q1)
8	Ghose A.K., Abdullah S.N.A. , Md. Hatta M.A., Wahab P.E.M (2022). In Vitro Regeneration of Stevia (<i>Stevia rebaudiana</i> Bertoni) and Evaluation of the Impacts of Growth Media Nutrients on the Biosynthesis of Steviol Glycosides (SGs). <i>Agronomy</i> 12(8)	IF 3.949 (Q1)
9	Muhamad M.Z., Shamsudin M.N., Kamarulzaman N.H., Nawi N.M. , Laham J. (2022). Investigating Yield Variability and Technical Efficiency of Smallholders Pineapple Production in Johor. <i>Sustainability</i> 14(22).	IF 3.889 (Q2)
10	Mahmood O.T., Hasan W.Z.W. , Ismail L.I., Shafie S., Azis N., Norsahperi N.M.H. (2022). Optimization Approaches and Techniques for Automotive Alternators: Review Study. <i>Machines</i> 10(6): 478	IF 2.899 (Q2)
11	Fariman A.B., Abbasiliasi S., Abdullah S.N.A. , Mohd Saud H., Wong M.Y. (2022). <i>Stenotrophomonas maltophilia</i> isolate UPMKH2 with the abilities to suppress rice blast disease and increase yield a promising biocontrol agent. <i>Physiological and Molecular Plant Pathology</i> 121: 101872	IF 2.741 (Q2)
12	Hossain M.I., Vadamalai G., Saad N., Hata E.M., Khaiyam M.O., Rahman M.Z., Kutawa A.B., Zobir S.A.M., Ahmad K. (2022). Assessment of virulence patterns and pathogenicity-related genes of <i>Colletotrichum falcatum</i> Went in Bangladesh. <i>Tropical Plant Pathology</i> 47: 737–753	IF 2.404 (Q2)

IKP Research Seminar Series 7-10/2022



STAFF DEPARTURE AND NEW MEMBER OF IKP

The institute would like to express appreciation and gratitude to Assoc. Prof. Dr. Noliha Mohd Nawi for her excellent contribution during her services at the institute from 1st December 2021 until 30th November 2022. We are also welcoming Assoc. Prof. Dr. Ganesan Vadamalai as the new Head of the Laboratory of Sustainable Agronomy and Crop Protection (SACP) effective from 15th December 2022 until 14th December 2023.



INCOMING EVENTS



EDITORIAL BOARD FOR DECEMBER ISSUE 2022

Advisor | Prof. Dr. Shaufique Fahmi Ahmad Sidique and Prof. Dr. Wong Mui Yun

Editor-in-Chief | Assoc. Prof. Dr. Mohd Rafein Zakaria

Editors | Assoc. Prof. Dr. Noliha Mohd Nawi and Assoc. Prof. Dr. Nazmi Mat Nawi

Editorial Unit | Dr. Halimatun Saadiah Hafid, Mrs. Farah Zeehan Mohd Nadzri, Dr. Fariz Adzmi, Dr. Erneeza Mohd Hata, Dr. Kong Lih Ling, Dr. Zailani Khuzaimah and Mr. Ahmad Faiz Mokhtar

Creative Unit | Mrs. Siti Nooradzah Adam