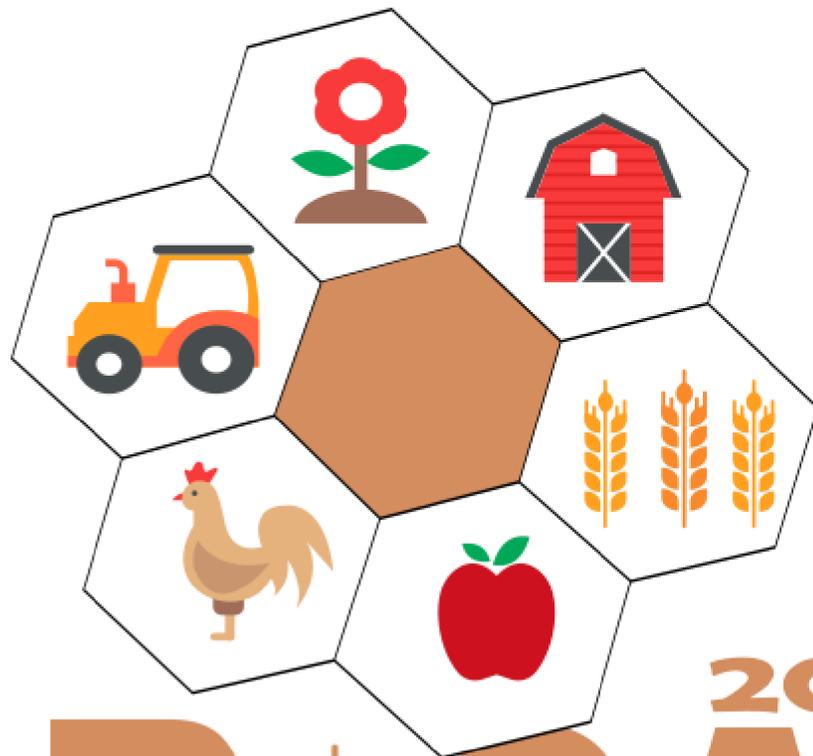


Organiser



BRUNEI
MID-YEAR CONFERENCE AND EXHIBITION
MYCE 2022



2022
BICAT

**Borneo International Conference on Agrotechnology
Universiti Teknologi Brunei
Brunei Darussalam**

"Technology for Agriculture 4.0"

2nd July 2022

**CONFERENCE
PROGRAMME**

Table of Contents

Foreword by Vice Chancellor	1
Welcoming Address by Conference Chair	2
Universiti Teknologi Brunei: An Overview	3
About BICAT 2022	4
Conference Topics / Tracks	5
Conference Schedule	6
Keynote Speakers	7
Technical Programme	10
Conference Abstracts	14
Conference Committees	36
International Advisor Committee	37

Foreword by Vice Chancellor

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
السَّلَامَةُ عَلَيْكُمْ وَرَحْمَةُ اللَّهِ وَبَرَكَاتُهُ



On behalf of Universiti Teknologi Brunei, I would like to welcome all of you to the Borneo International Conference on Agrotechnology (BICAT 2022), to be held on 2nd July 2022.

Agrotechnology and modern farming technologies advances continuously and rapidly in the modern societies. Active agri-food research engagement will be the driving force to motivate scientists worldwide to combat hunger and climate change. The main theme of BICAT 2022 “Technology for Agriculture 4.0” is appropriate since it focuses on cutting-edge disciplines in agri-food technology for food diversification and security.

The conference aims to bring researchers, scientists, and stakeholders together to discuss the latest technologies to be implemented in the modern farming, both in urban and rural areas, that have the largest impact on food safety and security. It is hoped that the discussion will lead to cross fertilisation of ideas and act as a catalyst for collaborations at both the national and international levels.

BICAT 2022 is proud to receive impactful papers with new insights and significant advancements especially those in emerging areas and spanning many disciplines. I am very pleased to inform you that there will be 22 papers presented during the conference and three plenary sessions are covered by international speakers to deliver the keynote lectures.

Lastly, I hope BICAT 2022 will bring an exciting new experience, provide a good platform to make collaborations between national bodies and an avenue to learn from each other.

Wabillahi Taufik Walhidayah Wassalamualaikum Warahmatullahi Wabarakatuh.

With best wishes,

A handwritten signature in blue ink, belonging to Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman.

Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman

Vice Chancellor,

Universiti Teknologi Brunei

Welcoming Address by Conference Chair



Dear BICAT2022 Participants,

We are very pleased to see that BICAT2022 have received immense responses from researchers around the world. Most of the research articles broadly covers the conference theme: "Technology for Agriculture 4.0". We have received 34 articles and all the articles have gone through vigorous reviewing process. Based on the independent peer reviewers feedback and significance of the results presented in their article, only 22 articles from cross-multidisciplinary themes are accepted for presentation during BICAT2022.

The conference aims to be an inclusive platform and we are happy to receive many high-quality submissions across disciplines. We hope that researchers and audience will enhance their knowledge and actively participate in discussions, which may further lead to fruitful collaboration.

It is our hope that BICAT2022 will provide opportunities for all participants, from graduate students to professors to develop collaborations and research networks.

We wish the best to the presenters and looking forward for great sessions.

Thank you.

A handwritten signature in blue ink, which appears to read "Beston Nore".

Professor Beston Nore

Director, Centre for Research of Agri Food Science and Technology (CrAFT)

Chair Organising Committee, BICAT 2022

Universiti Teknologi Brunei

Universiti Teknologi Brunei: *An Overview*



Universiti Teknologi Brunei (UTB) is an Engineering and Technology University in Brunei Darussalam that specialises in the niche areas of Engineering, Business, Computing, Applied Sciences & Mathematics, and Design. UTB was first established in 1986 as Institut Teknologi Brunei (ITB). In 2008, ITB was upgraded from a higher learning institution offering Higher National Diploma (HND) programmes in Engineering, Business and Computing to a university, and was then changed to Universiti Teknologi Brunei on 1 March 2016. UTB specialises in the area of Engineering, Business, Computing, Applied Sciences & Mathematics and Design.

UTB made its first appearance in the Quacquarelli Symonds World University Ranking (QSWUR) at 442 in 2018, evaluated against 4,763 institutions from 151 countries. The university rose by 102 places in 2023 and is ranked at 340. This has also ranked UTB at 40 for Young Global University under 50 years of age and this presents another great achievement since UTB is a very young university. In the 2022 edition of QS Asia University Rankings, UTB is ranked at 126, making UTB among the top 150 universities in Asia.

UTB is the only local university to receive a **QS five-star plus** ranking from the QS Stars rating in 2021, and the first university to have successfully acquired the ISO 9001:2015 Quality Management System Certification by the Bureau Veritas in July 2019. With its hands-on approach and industry-based programmes, UTB has produced graduates who are highly valued by local employers and readily accepted by top universities around the world.

In terms of research, UTB strives to become a university that contributes to the enrichment of knowledge and solving contemporary issues that focuses on energy, sustainable built environment, agri-food, digital and creativity, society and enterprise, and wellness. In 2018, the Centre for Research in Agri-food Science & Technology (CrAFT) was established to support the nation's aspiration to diversify its economy by strengthening the agri-food industry using science and technology.

UTB has developed its new five-year Strategic Plan 2019-2023, focusing on four strategic areas: Quality Education, Independent Learners, Translational Research and Quadruple Helix Engagement. Successful implementation of initiatives under these focus areas within the five-year period will see the University improving its global prominence while making a strong impact and contribution to the country's human resource, industrial and enterprising capabilities.

UTB's vision is to become a global university impacting society and its mission is to nurture socially-responsible talents that are deeply-rooted in MIB values and committed to building a global and entrepreneurial society in pursuit of innovation and industry-relevant capabilities, towards the fulfilment of Brunei Vision 2035.

About BICAT 2022

Background and Objective

Borneo International Conference on Agrotechnology (BICAT) creates a stage for exchanging the technology developments in agriculture. Universiti Teknologi Brunei (UTB) organises a conference in agrotechnology for the first time in conjunction with the Brunei Mid-year Conference and Exhibition 2022 (MYCE 2022) organised by the Ministry of Primary Resources and Tourism (MPRT) of Brunei Darussalam. BICAT 2022 is a one-day conference and is held on Saturday, 02 July 2022.

Three internationally-renowned experts are invited to exchange and share their experiences in recent and future development of technology for agriculture. The conference will provide opportunity for researchers, practitioners, educators and students to participate, and present and discuss their recent innovations and practical challenges encountered in the fields of agrotechnology. The participants will have a good networking and collaboration opportunity to find solutions for the challenges while attending the conference and sharing the technology need for future agriculture.

Theme of the Conference

Technology for Agriculture 4.0

“Future Agriculture” for growing global population should:

- Be Sustainable, Profitable, Efficient, Safe and Environmentally Friendly;
- Provide Food Security;
- Provide Cost Effective, Quality and Nutritious Food.

Conference Topics / Tracks

Advances in agrotechnology and applications

Agribusiness

Agriculture biotechnology

Agricultural mechanization and automation

Agriculture processing

Agricultural waste management

Agricultural entomology and pest management

Agroforestry and landscaping

Agronomy

Animal and plant environment

Apiculture

Aquaculture engineering

Bioinformation system

Bioprocess and environment

Crop production

Dairy technology

Digital Agriculture

Farm structure

Farm tools and machinery

Food and beverage processing

Food standard, safety and security

Greenhouse technology

Halal food safety and processing

Livestock farming and poultry

Packaging engineering

Particle and powder technology

Post-harvest technology

Precision agriculture

Process control and integration

Process modeling and simulation

Safety and health in agriculture

Soil and water engineering

Smart farming

Conference Schedule

Saturday, 2 Zulhijjah 1443 / 2 July 2022

Main Conference Hall, International Conference Centre

BICAT 2022	
Time	Event
7.30 am	Registration of Conference Participants and Arrival of Guests
8.00 am	Welcoming Remarks by the Vice-Chancellor, UTB Official opening by the Guest of Honour
8.30 am	Plenary Session: Keynote Speaker 1
8.45 am	Plenary Session: Keynote Speaker 2
9.15 am	Virtual Visit
9.45 am	Photo Session (Coffee Break)
10.00 am	Plenary Session: Keynote Speaker 3
10.30 am	Paper Presentations: Session #1
12.15 pm	Lunch Break
1.30 pm	Paper Presentations: Session #2
3.00 pm	Coffee Break
3.15 pm	Paper Presentations: Session #3
4.30 pm	Closing Ceremony

Keynote Speakers



Keynote Speaker #1

Professor Hidetoshi Nishimura

President, Economic Research Institute for ASEAN and East Asia

Title: Digital Pathways for improving productivity, profitability and sustainability of agrifood systems

Abstract: The digital technologies hold a promise to build an agri-food system that is efficient in production, sustainable, resilient, and equitable. Unlike past technological revolutions in agriculture, which began on farms, the digital transformation is being sparked at multiple points along the global food value chains. Global change is driven by the easy access to information and communication technologies, and the ability to collect, use, and analyse massive amounts of machine-readable data about practically every aspect of the agriculture value chain- production, processing, distribution, consumption, and by the emergence of digital platforms connecting the producers and consumers, disrupting existing business models. All this allows for drastically reduced transaction costs and pervasive information asymmetries that plague the agri-food system. The success of the digital transformation witnessed in advanced economies and niche markets, however, is not guaranteed in developing countries as the risks it brings are numerous, including those related to the digital divide, inadequate infrastructure, low literacy rate, and data governance. This presentation examines how digital technologies are accelerating the transformation of the agri-food system by increasing efficiency in the farm; improving farmers' access to output, input, and financial markets; strengthening traceability; and improving the design and delivery of appropriate agriculture policies. The digital pathways for transforming agri-food systems may be promising but may not be easy. For example, while Indonesia's transformation shows much potential, digital connectivity remains slow and limited in rural areas. Enhancing the capacity that enables small holding farmers to harness the complex inter-linkages between hard and software technologies needs to be championed in the global south. It would be helpful if ASEAN member states develop a multi-stakeholder road map for an inclusive digital transformation of agri-food systems, which can develop synergies that cut across agriculture, technology, trade, and finance policy domains. In the long-term, public-private partnerships can have a greater impact on maximizing the benefits of transformation and minimizing market risks, enabling an entrepreneurial ecosystem for equitable technology adoption.

Profile: Prof Hidetoshi Nishimura has led the Economic Research Institute for ASEAN and East Asia (ERIA) since 2008. He was the Executive Director from 2008 to 2015, then the title of his position was changed to President in 2015. Prof Nishimura's career started in 1976 when he joined Japan's Ministry of International Trade and Industry after graduating from the University of Tokyo with a degree in law. Shortly after joining the Ministry, he went back to school and received a Master of Arts degree from Yale University in 1982. That opened the way to work on European issues and trade matters for the Japanese government. Throughout his career, Prof Nishimura has assumed numerous positions, including Representative of the Asia-Pacific Region of the Japan Overseas Development Corporation, Director of the Southeast Asia and Pacific Division of the Trade Policy Bureau, Vice Governor for International Affairs of Ehime Prefecture, Director-General of the Business Support Department of the Small and Medium Enterprise Agency, Executive Managing Director of the Japan-China Economic Association, and President of the Japan-China Northeast Development Association. He was a visiting professor in several universities, including Waseda University and Darma Persada University. He was a Fellow of Meiji Institute for Global Affairs, Meiji University. Prof Nishimura has a passion for haiku, the Japanese short-form poetry, which he writes in his free time. He is also passionate about antique Chinese and East Asian ceramics.

Keynote Speakers



Keynote Speaker #2

Professor Heather Bruce

Chair, Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada

Title: Enhanced food security through controlled environment agriculture

Abstract: Controlled environment agriculture shows promise as a sustainable method for ensuring food security during a time of substantial climate change. Initial controlled environment agriculture in Canada has focused on greenhouse production of plants, which offers greater control of moisture/humidity, pests and diseases through irrigation/hydroponics and use of specific light wavelengths. Livestock production moved to controlled environments earlier than plant production, with production of swine and poultry routinely performed in barns that protect the animals from cold, rain, snow and predators. Beef production has not yet been applied in a controlled environment; instead technology associated with precision farming is now being adopted by the Canadian beef industry, so that the impact of cattle on their environment is minimized, thus contributing to the sustainability of this industry which has been called into account in recent years. Precision agriculture promises to improve animal health, forage use, animal feed efficiency, and cost of production in the beef industry through greater control of natural resources during extensive production.

Profile: *Professor Heather Bruce is a Professor and Chair of the Department of Agricultural, Food and Nutritional Science at the University of Alberta. She received her BSc in Agriculture with Honours and MSc in Animal and Poultry Science from the University of Guelph, and her PhD from the University of Alberta. She completed a postdoctoral fellowship at the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia, where she led the Muscle Food Quality Section until she joined Maple Leaf Foods in Woodstock, Ontario, as External Research Manager. She has over 60 scientific publications, and has garnered over \$14 million in research support. She is also the former president of the Canadian Meat Science Association.*

Keynote Speakers



Keynote Speaker #3

Dr. Kioumars Ghamkhar

Director, Margot Forde Forage Germplasm Centre, New Zealand

Title: Digital agri-technologies for forage improvement in New Zealand

Abstract: The use of digital Agritech for quantification of plant phenotype has surged dramatically in the past decade. The aggregate of these technologies and plant traits is called plant phenomics. Labor intensive activities from evaluation of plant genotypes for plant breeding to assessment of farm performance and yield can now be streamlined and digitized using sensors and cameras and refine these data using models and interpret these outputs using computer vision but all these elements are dependent on the right approach to data management. Throughput of data acquisition is one factor in the assessment of the success of these methods as much as the accuracy of these measurement and quantification methods. This will result in a rate or speed of data interpretation that was not possible a decade ago such as the observation of growth in real time. Other digital technologies help in process, consumables and equipment cost such as quality measurement technologies. Another highly valued impact these technologies could have, is the mitigation of environmental footprint by agricultural systems. In this paper, examples of technologies developed at AgResearch, New Zealand to address these matters will be presented and discussed.

Profile: Dr. Kioumars Ghamkhar received his Ph.D. in plant diversity and evolution at the University of New England, Australia. He worked at the University of Western Australia (2003-2010) before moving to the Department of Primary Industries and Environment, Victoria, Australia (2011-2014) as a Senior Scientist. He has 18 years research experience in using different technologies in the area of agriculture and plant genetic diversity. Since 2014, Kioumars is the Director of New Zealand's National Forage Genebank, Margot Forde Forage Germplasm Centre and the Phenomics lead of the Pastoral Genomics Programme leading a team of about 40 plant, computing, engineering, imaging scientists to develop novel approaches for plant trait measurement – from yield to quality. The project's phenomics team (jointly with the genomics team) won the Science NZ team award in 2020. At international level, Kioumars co-chairs the Phenomics Working Group at DivSeek International Network, which is focused on the use of imaging and sensor technologies to establish common standards and methods for collecting, analyzing and sharing phenomics data. He has been an associate editor with *Frontiers in Plant Science* since September 2020.

Technical Programme

PLENARY SESSIONS AND VIRTUAL VISIT

Session Chair: Professor Dr. Mohamed Hasnain Isa, Assistant Vice-Chancellor (Research)

Time: 9:00 am – 10:30 am

8:30 am **Keynote Speaker #1**

Professor Hidetoshi Nishimura

President, Economic Research Institute for ASEAN and East Asia

Title: Digital Pathways for improving productivity, profitability and sustainability of agrifood systems

8:45 am **Keynote Speaker #2**

Professor Heather Bruce

Chair, Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada

Title: Enhanced food security through controlled environment agriculture

9:15 am **Session on Digital Agriculture Eco Nursery Project between Brunei and Japan**

Virtual Visit to Project Site

Virtual Greetings from Mr. Ikeya Iwao

Director, Asia and Pacific Division, Ministry of Economy, Trade and Industry, Japan

9:45 am **PHOTO SESSION**

COFFEE BREAK

10:00 am **Keynote Speaker #3**

Dr. Kioumars Ghamkhar

Director, Margot Forde Forage Germplasm Centre, New Zealand

Title: Digital agri-technologies for forage improvement in New Zealand

10:30 am **PAPER PRESENTATION SESSION #1**

Technical Programme

PAPER PRESENTATIONS: SESSION #1

Session Chair: Dr Lim Tiong Hoo

Time: 10:30 am – 12:15 pm

10:30 am	BICAT_02 Conjugate heat transfer analysis of fast freezing process of Snapper fish using impinging slot-jet <i>Darren Lee Kang Hong, Naseem Uddin, Nawaf H. Saeid</i>
10:40 am	BICAT_03 Conjugate heat transfer analysis of frying process using hot air jet <i>Nawaf H. Saeid, Naseem Uddin, Wida Susanty Suhaili</i>
10:50 am	BICAT_30 Adsorptive removal of textile dye Direct Blue 86 from aqueous solution by rice husk-based adsorbent <i>M. Zulbahari M. Zu, Muhammad Raza Ul Mustafa, Mohamed Hasnain Isa, Shahriar Shams, Beston Faiek Nore</i>
11:00 am	BICAT_07 Non-Invasive Refractometer to Measure Total Soluble Solids of Climacteric Fruits <i>Jhoorhanah Abdul Halim, Denni Kurniawan, Dina Shona Laila, Allysa Norjemme, Nur Ain Lilian Nesseruddin, Mohd Asrarul Ariffin Noraidi, and Beston Faiek Nore</i>
11:10 am	BICAT_08 Development Of Halalan Tayibban Plant-Based Cheese Formulations <i>Hasna Basirah Mazalan, Syazana Lim, Mas Munira Rambli, and Beston Faiek Nore</i>
11:20 am	BICAT_09 Influence of Fermentation Time on the Nutritional and Antioxidant Properties of Black Garlic (<i>Allium sativum</i> L.) <i>Muhammad 'Akif Bin Shahrum, Eng-Tong Phuah</i>
11:30 am	BICAT_10 The effects of fertigation frequency on growth, yield and blossom-end rot incidence of <i>Capsicum annum</i> L. var. Ferrari grown in soil-less greenhouse system <i>Mohd Zamri Sabli and Jabaidah Bungsu</i>
11:40 am	BICAT_11 Comparative Studies on the DPPH Antioxidant Activities of <i>Keladi</i> And <i>Sembada 188</i> Rice Variant <i>Syakirah Airwan, Mas Munira Rambli</i>
11:50 am	Question and Answer Session
12:15 pm	LUNCH BREAK

Technical Programme

PAPER PRESENTATIONS: SESSION #2

Session Chair: Dr Wida Susanty binti Haji Suhaili

Time: 1:30 pm – 3:00 pm

1:30 pm	BICAT_05 Removal of Ammonia in Aquaculture: A technical review <i>Syahmi Shamri, Shahriar Shams, Beston F. Nore, Mohamed Hasnain Isa, Wida Susanty binti Haji Suhaili, Guo Zhenren</i>
1:40 pm	BICAT_06 Feasibility of <i>Melastoma malabathricum</i> and <i>Dicranopteris linearis</i> in altering pH and available P of acid sulfate soil in a laboratory incubation: a preliminary study <i>Syazwan Sulaiman, Namasivayam Navaranjan, Zohrah Sulaiman, Kathereen Liew</i>
1:50 pm	BICAT_13 Shelf-Life and Quality Assessment of Brunei Traditional Kuih <i>Nurin Jafry, Najeebah Az-Zahra Tashim and Aida Maryam Basri</i>
2:00 pm	BICAT_14 Distinguish Agriculture Waste Management Constraints in Brunei Darussalam <i>Firdaus Mujibuddin Syah Mustafa, Mas Munira Rambli, Navaranjan Namasivayam, Amer Demirovic</i>
2:10 pm	BICAT_16 Developing Herbal-Based Beverage Fermentation Using <i>Saccharomyces Cerevisiae</i> : The Physico-Chemical Properties <i>Siti Madihah Mohd-Don, Mas Munira Rambli, and Beston Faiek Nore</i>
2:20 pm	BICAT_17 Effect of sesame seeds, whey protein isolate and guar gum on physicochemical and microbiological properties of chicken sausages <i>Nur Hamizah Hamid, Namasivayam Navaranjan, Syazana Abdullah Lim</i>
2:30 pm	Question and Answer Session
3:00 pm	COFFEE BREAK

Technical Programme

PAPER PRESENTATIONS: SESSION #3

Session Chair: Dr Aida Maryam binti Haji Basri

Time: 3:15 pm – 4:30 pm

3:15 pm	BICAT_18 Investigation on efficacy of <i>Swietenia macrophylla</i> endocarp in lowering blood glucose level using animal model. <i>Faiq Bungsu, Faiz Bungsu, Nur Atiqah Suhaili, Zheng JiaHui, Md Monowarul Mobin Siddique</i>
3:25 pm	BICAT_19 Analyses of Anti-oxidative Properties, α -amylase Inhibitory Activities and Thin Layer Chromatography Profiling of Crude Extracts from <i>Z. jujuba</i> Fruits <i>Nur Atiqah Suhaili, Afifah Ja'afar, Hazirah Sarkawi, Nurlina Munirah Ali, Yusnida Bazilah Yussof, Faiq Bungsu, Faten Su'aidah Sambri and Monowarul Mobin Siddique</i>
3:35 pm	BICAT_20 Development of gluten-free flour from local rice (<i>Oryza sativa</i> L.) and okra (<i>Abelmoschus esculentus</i> L. Moench) waste <i>Nurafiqahatul Hikmah Seribini, Namasivayam Navaranjan, Zohrah Sulaiman, Aida Maryam Basri</i>
3:45 pm	BICAT_33 Rice Farmer's Perception and Factors Influencing Intention and Attitude on Adoption of Hybrid Rice-A comparison between grouped and individual rice farmers in Brunei <i>Ahmad Mas'oud Muhd Halimi, Ulaganathan Subramanian</i>
3:55 pm	BICAT_34 Management of Agriculture in Brunei <i>Nuramalina Manshor, Ulaganathan Subramanian</i>
4:05 pm	Question and Answer Session
4:30 pm	CLOSING CEREMONY

Conference Abstracts

BICAT_02

Conjugate heat transfer analysis of fast freezing process of Snapper fish using impinging slot-jet

Darren Lee Kang Hong, Naseem Uddin, Nawaf H. Saeid

Centre for Innovative Engineering, Universiti Teknologi Brunei

Jalan Tugku Link Gadong, BE 1410, Brunei Darussalam

Corresponding author: Naseem Uddin; Naseem.uddin@utb.edu.bn

Abstract: The impingement freezing technique is investigated numerically for the snapper fish. The problem is modelled as case of a jet impingement with conjugate heat transfer in the target wall. Two types of slot jet are analyzed: the cold air jet and the liquid nitrogen jet. The effectiveness of the slot jet is investigated to freeze the snapper fish until the center of the fish reaches the freezing temperature of 253.15K (-20oC). The investigation of the frozen crust formation on the surface is also carried out. The results of the present investigation show that the maximum formation of crust occurs at the jet stagnation point. The influence of jet inlet velocities and jet's width are also investigated. The present study shows that the freezing time can be reduced by increasing the jet velocity and increasing the jet width. It is found that cold air jet can bring same level of temperature reduction as expected from the liquid nitrogen jet.

Conference Abstracts

BICAT_03

Conjugate heat transfer analysis of frying process using hot air jet

Nawaf H. Saeid, Naseem Uddin, Wida Susanty Suhaili

Centre for Innovative Engineering, Universiti Teknologi Brunei

Jalan Tugku Link Gadong, BE 1410, Brunei Darussalam

Corresponding author: Nawaf H. Saeid; nawaf.saeid@utb.edu.bn

Abstract: The transient conjugate (conduction and convection) heat transfer for frying a slice of meat using hot air jet impingement is considered for numerical investigation. A parametric study is carried out to find the effects of the governing parameters on the frying process of a slice of beef. The parameters considered in the present study are the strength of the air flow, measured by jet Reynolds number in turbulent flow conditions, jet temperature, and thickness of the beef slice. The numerical simulation results are presented to show the streamlines and isotherms in the solution domain together with the Nusselt number variation along the upper and side surfaces in addition to the average temperature and minimum temperature in the slice of beef of various thicknesses. It is found that a high Reynolds number and high jet temperature will speed up the frying process, however, the isotherms in the slice show a considerable difference in the temperatures on the upper surface and lower surface, which leads to a non-uniform cooking. This effect is more obvious in the thick slice compared with the thin slice of the beef.

Conference Abstracts

BICAT_05

Removal of Ammonia in Aquaculture: A technical review

Syahmi Shamri^{1,*}, Shahriar Shams^{1,5} Beston F. Nore^{2,5}

Mohamed Hasnain Isa^{1,5}, Wida Susanty binti Haji Suhaili^{3,5}, Guo Zhenren⁴

¹Civil Engineering Programme Area, ²Food Science and Technology, ³School of Computing, Universiti Teknologi Brunei, Jalan Tungku Link Gadong, BE 1410, Brunei Darussalam,

⁴Department of Hydraulic Engineering, School of Civil Engineering and Transportation, South China University of Technology (SCUT), 381 Wushan Road, Tianhe District, Guangzhou, 510641, China, ⁵Centre for Research on Agri-Food Science and Technology (CrAFT), Universiti Teknologi Brunei, Jalan Tungku Link Gadong, BE 1410, Brunei Darussalam.

*Corresponding author: syhmishmri85@gmail.com

Abstract: Brunei Darussalam is currently eyeing to diversify its economy for the past few years to achieve 'Wawasan 2035'. One of their initiatives is by improving the agriculture sector. Since aquaculture can be considered as agriculture due to its similar characteristics, emphasis is given on the expansion of aquaculture. In fact, aquaculture is among the fastest growing food sectors in the world. One of the keys to improve the product quality of the aquaculture system is by growing the aquatic species in optimum conditions. Higher ammonia level in aquacultures is toxic and threaten healthy aquatic life and growth. Thus, elimination of ammonia is one of the priorities to keep aquaculture condition optimum. Therefore, this review aims to present strategies on ammonia regulation to enhance water quality for aquaculture. A thorough review on mechanical filtration, biofilter, aquatic plants and performance of algae in removing ammonia has been introduced.

Conference Abstracts

BICAT_06

Feasibility of *Melastoma malabathricum* and *Dicranopteris linearis* in altering pH and available P of acid sulfate soil in a laboratory incubation: a preliminary study

Syazwan Sulaiman¹, Namasivayam Navaranjan^{1*}, Zohrah Sulaiman¹, Kathereen Liew²

¹ School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Jalan Tungku Link, Mukim Gadong A, BE1410, Brunei Darussalam

² Soil Science and Plant Nutrient Unit, Department of Agriculture and Agrifood, Ministry of Primary Resources and Tourism, Brunei Darussalam

*Corresponding author: Dr. Namasivayam Navaranjan E-mail: nava.navaranjan@utb.edu.bn

Abstract: The experiment was carried out to assess the potential of *Melastoma malabathricum* (MM) and *Dicranopteris linearis* (DL) as organic amendments for acid sulfate soil. The soil was thoroughly mixed with the organic amendments at three particle sieve mesh sizes of <1, <0.15 and <0.1 mm and incubated in a vial under water-logged condition for 26 days. The application of the organic amendments of all mesh sizes significantly increased soil pH by 1.00-1.22 units after the 26-day incubation timeframe. There was no significant difference between particle mesh size in altering soil pH apart from a 0.21 pH units higher in DL<1-mm than MM<0.1 mm. In contrast, no change in available P was observed except for treatment with MM <1 mm. It can be concluded that MM and DL is a viable organic amendments for remediation of acid sulfate soil by stimulate pH increase under water-logged condition. Further studies should explore a wider range of soil chemical profile to better understand the interactions between plant material and soil environment to inform management options of agricultural acid sulfate soil.

Conference Abstracts

BICAT_07

Non-Invasive Refractometer to Measure Total Soluble Solids of Climacteric Fruits

Jhoorhanah Abdul Halim¹, Denni Kurniawan^{2,3}, Dina Shona Laila³, Allysa Norjemme¹, Nur Ain Lilian Nesseruddin¹, Mohd Asrarul Ariffin Noraidi¹, and Beston Faiek Nore^{1,4*}

¹ Food Science and Technology Programme Area, School of Applied Sciences and Mathematics,

² Mechanical Engineering Programme Area, Faculty of Engineering,

³ Electrical and Electronic Engineering Programme Area, Faculty of Engineering,

⁴ Centre for Research on Agri-Food Science and Technology, Universiti Teknologi Brunei, Gadong, Brunei Darussalam

*Corresponding author: nore.beston@utb.edu.bn

Abstract: Sugar content is a superior quality indicator for the post-harvesting and ripening status of climacteric fruits. Total soluble solids (TSS) represented by °Brix index is a measure of the sugar content. The conventional way to measure TSS is by invasive (IN) technique using a refractometer. While non-invasive (NIN) infrared refractometer is available, its accuracy to measure fruit TSS directly is not straightforward, as the device is only dedicated to uses for apples. This study aims to investigate the suitability of the use of a non-invasive refractometer for to measure TSS directly for some post harvested fruits. For comparison, a conventional digital refractometer was also used. Red apples and green apples were used as a reference, while tests were done on bananas, mangos, sapodillas, golden pears, and red pears. Among the fruit samples, red pear is the only fruit whose TSS can be measured using the non-invasive refractometer, whereas the device is not suitable for the other fruits due to the significant percentage error and inapplicable corrective calibration value which may lead to a limited prediction of TSS content values.

Conference Abstracts

BICAT_08

Development Of Halalan Tayibban Plant-Based Cheese Formulations

Hasna Basirah Mazalan^{1,*}, Syazana Lim^{1,2}, Mas Munira Rambli^{1,2}, and Beston Faiek Nore^{1,2*}

¹ Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

² Centre for Research on Agri-Food Science and Technology, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding author: basirah.maza@gmail.com and nore.beston@utb.edu.bn

Abstract: The worldwide cheese production is dominated by animal milk sources with various industrial procedures, including animal rennet. There is a need to diversify the animal-based dairy products into plant-based one, not only to nurture the halalan tayibban concept for Muslims, but also to boost healthy nutraceutical choices. The objective of this work is to formulate a cheese type derived from plant-based milk with permissible ingredients to create a healthy product for Muslim and non-Muslim consumers. In this study, we explored the use of conventional and non-conventional cheese-making procedures. A total of four experimental formulations (EF1-4) combinations were conducted to optimize the favourable characteristics of the cheese samples (CS). The research findings indicated that the experimental formulation 4 (EF4), using non-conventional cheese-making generated a satisfactory solid and stable structured cheese. The physio-chemical evaluation of cheese samples was assessed and used for the classification of cheese type. All samples had a low range of melting points between 43 to 50 °C, which is crucial for the proper storage ability and marketability. While the result shows that the moisture and fat content of samples ranged from 76.3 - 82.6% and 19.1 to 26.3% respectively, this indicates that soft medium to full fat-cheese type samples has been stably produced. Random sensory panellist assessment (n=20) was also conducted for EF4 samples that were successfully evaluated. The sensory data findings revealed that sample CS21 had the highest consumer acceptability with a slightly more satisfactory texture. The research concludes that for future studies further optimisation of the formulation is needed to create a viable prototype for the Brunei market.

Conference Abstracts

BICAT_09

Influence of Fermentation Time on the Nutritional and Antioxidant Properties of Black Garlic (*Allium sativum* L.)

Muhammad 'Akif Bin Shahrum¹, Eng-Tong Phuah^{1*}

¹Department of Food Science and Technology, School of Applied Sciences and Mathematics,
Universiti Teknologi Brunei, Bandar Seri Begawan, BE1410, Brunei Darussalam.

*Corresponding author: engtong.phuah@utb.edu.bn

Abstract: Black garlic (BG) is a nutritive food produced by subjecting fresh garlic (FG) to controlled thermal processing and humidity conditions for at least 4 weeks. To date, the effect of the fermentation period on the nutritional values of black garlic remains vague in Brunei Darussalam. Therefore, this study aimed to evaluate the nutritional compositions of BG fermented for 4, 6 and 8 weeks at 65°C and relative humidity of around 70%. The salt, sugar, alcohol, protein, lipid content and antioxidant activity of BG were examined and compared with FG. The study showed that different fermentation periods demonstrated a significant effect ($p < 0.05$) on the salt, sugar, protein and lipid content of the garlic samples. No alcohol content was detected in all garlic samples. The present study also revealed that BGs exhibited higher antioxidant properties, about 5 – 7 times higher as compared to FG. Our study indicated that the best treatment is black garlic fermented for 4 weeks (BG4) owing to its high protein content and antioxidant properties. Overall, BG is a promising high-value product that can be exploited by the food or nutraceutical industries.

Conference Abstracts

BICAT_10

The effects of fertigation frequency on growth, yield and blossom-end rot incidence of *Capsicum annuum L. var. Ferrari* grown in soil-less greenhouse system

Mohd Zamri Sabli¹ and Jabaidah Bungsu²

¹Institute of Brunei Technical Education, Simpang 347, Jalan Pasar Baharu, Gadong, Bandar Seri Begawan BE1310, Negara Brunei Darussalam

²Universiti Brunei Darussalam, Tungku Link Road, BE1410, Brunei Darussalam

Abstract: An investigation on the effects of fertigation with different irrigation frequency on growth and yield parameters and its consequence on the incidence of blossom-end rot (BER) of bell pepper (*Capsicum annuum L.*) cultivar 'Ferrari' plants grown in rockwool greenhouse system were conducted. Fertigation regimes were applied according to plant physiological stage: (S1) vegetative stage, (S2) flowering stage, and (S3) fruiting stage. The experiment comprised of five treatments replicated three times in a completely randomised design. Water and fertilizer solution were supplied automatically to the roots with three irrigation schedules per day (5, 10 and 20 times daily) and given similar volumes of nutrient solutions per irrigation event in each stage: 800 ml plant⁻¹ day⁻¹ (S1), 1000 ml plant⁻¹ day⁻¹ (S2) and 1500 ml plant⁻¹ day⁻¹ (S3). This study showed that fertigation with high irrigation frequency (20-irrigation events daily throughout the season) increased yield of bell pepper significantly over low fertigation frequency (5-irrigation events daily throughout the season) by 22%. Increasing fertigation frequency could serve as an effective means of enhancing crop growth and yield as well as reducing the incidence of blossom-end rot, by improving the nutrient uptake by plants.

Conference Abstracts

BICAT_11

Comparative Studies on the DPPH Antioxidant Activities of *Keladi* and *Sembada 188* Rice Variant

Syakirah Airwan^{1*}, Mas Munira Rambli^{1,2}

¹ Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

² Centre for Research on Agri-Food Science and Technology, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding author: amirah.airwan@gmail.com

Abstract: Rice (*Oryza sativa* L.) is an important crop considered a dietary staple food for over half of the population in the world. There is currently a shift in consumer behaviour toward healthy food, which results in the growing interest in functional diets such as pigmented rice. In Brunei, *Sembada 188* and *Keladi* rice are underutilized and expected to have functional properties. In this study, a comparative analysis of antioxidant activities was done between *Sembada 188* and *Keladi* rice. This research produced puffed rice treats prepared by steaming rice, washing, drying for 6-8 hours at 60°C, deep frying for 25 seconds at 180°C, then mixing with *Nypa fruticans* Wurmb sugar. The result showed that *Keladi* rice has high anti-radical activity with 92.62% RSA detected, which has the potential to be a functional ingredient. Due to high-temperature treatment, the production process has decreased in % RSA in *Keladi* rice by 6.83%. Addition of *Nypa fruticans* Wurmb sugar has increased the cumulative antioxidants value in *Sembada 188* rice significantly ($p < 0.05$) by 43.9% whilst significantly ($p < 0.05$) decreased in *Keladi* from 92.62% to 85.79%. These project findings indicate that underutilised *Keladi* and *Sembada 188* rice can contribute to antioxidant properties in novel food production.

Conference Abstracts

BICAT_13

Shelf-Life and Quality Assessment of Brunei Traditional Kuih

Nurin Jafry, Najeebah Az-Zahra Tashim and Aida Maryam Basri*

Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Gadong, BE1410, Brunei Darussalam

*Corresponding Author: aida.basri@utb.edu.bn

Abstract: In this study, the effects of storage time and temperature on the quality and shelf-life of *Bahulu*, *Jelurut* and *Putu Mayam* were investigated. The samples were analysed based on the moisture content, pH, total titratable acidity (TTA) and total plate count (TPC), at different storage conditions; room temperature (25 °C) and refrigeration temperature (4 °C) from Day 0 until Day 7. Results showed that TPC of *Jelurut* and *Putu Mayam* can be largely reduced under refrigerated condition throughout the storage period, as it also managed to maintain comparable pH and TTA from the initial to the final day of observation. On Day 7 under refrigeration, *Jelurut* was observed with pH and TTA values of 6.70 and 0.01 g/100g, respectively, while *Putu Mayam* was recorded with 5.40 and 0.01 g/100g. Interestingly, *Bahulu* was more suitable stored at room temperature. On Day 7 (25 °C), it managed to maintain comparable moisture, TTA and pH value of 9.46%, 0.02 g/100g and 7.3, respectively. And during these conditions, no microbiological count was observed with TPC.

Conference Abstracts

BICAT_14

Distinguish Agriculture Waste Management Constraints in Brunei Darussalam

Firdaus Mujibuddin Syah Mustafa^{1,*}, Mas Munira Rambli², Navaranjan Namasivayam², Amer Demirovic¹

¹ Applied Mathematics and Economics, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

² Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding author: P20220002@student.utb.edu.bn

Abstract: Despite the steady development of the agriculture sector and the importance of reducing waste generation has actively educated the citizens, management and research on Agriculture waste systems remain limited, especially in Brunei Darussalam. It has identified four fundamental issues that became challenges in managing agriculture waste. Hence, this paper aims to understand and emphasize the current side of the knowledge by distinguishing the agriculture waste management challenges in Brunei Darussalam. This conceptual paper is limited to qualitative methods using constraints theory, bottom-up reasoning and literature reviews from the academic journal, to investigate the underlying elements in the scope of agriculture waste management. This preliminary investigation is an introductory to scrutinize agriculture waste management in Brunei, and, therefore, has conclusively contribute to the growing perception of agriculture waste management constraints in Brunei and enrich the waste management research discipline.

Conference Abstracts

BICAT_16

Developing Herbal-Based Beverage Fermentation Using *Saccharomyces Cerevisiae*: The Physico-Chemical Properties

Siti Madihah Mohd-Don^{1,*}, Mas Munira Rambli¹, and Beston Faiek Nore^{1,2,*}

¹ Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

² Centre for Research on Agri-Food Science and Technology, Universiti Teknologi Brunei, Tungku Link Road, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding author: sitimadihahdon@gmail.com and nore.beston@utb.edu.bn

Abstract: Plant-based fermented beverages are popular non-dairy products among consumers who seek healthy and immunity-supporting products. Amongst commonly used health supplements that are added to food and beverage would be probiotics, commonly *Saccharomyces cerevisiae* or yeast. This study aims to determine the Physico-chemical properties of fermented beverages at different fermentation periods using lemongrass (*Cymbopogon citratus* DC. Stapf), ginger (*Zingiber officinale* Rosc.), turmeric (*Curcuma longa* L.), mint (*Mentha*) and moringa (*Moringa oleifera* Lam.). This study revealed a significant decrease ($p \leq 0.05$) in pH, total soluble solids, and density in most fermented beverages after 24, 36 and 48 hours of fermentation. The reduction in pH, total soluble solids, and density showed yeast actively fermenting and metabolising sugars to produce carbon dioxide and organic acids. No alcohol was detected after 48 hours of fermentation in all beverages. Based on the results obtained, the combination of plant-based components and probiotics in beverages can be encouraged to develop ready-to-drink beverages that can positively affect consumers' health and well-being.

Conference Abstracts

BICAT_17

Effect of sesame seeds, whey protein isolate and guar gum on physicochemical and microbiological properties of chicken sausages

Nur Hamizah Hamid, Namasivayam Navaranjan, Syazana Abdullah Lim

Food Science and Technology, School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Jalan Tungku Link, Gadong, BE1410, Brunei Darussalam.

Abstract: This study aimed to investigate the physio-chemical and microbiological features of cooked chicken sausage incorporated with sesame seed as well as Whey Protein Isolate (WPI) and Guar Gum (GG) as non-meat replacers in chicken sausages. The control and sausage samples were stored under refrigeration in packaged conditions. The pH of the chicken sausages did not differ significantly ($p > 0.05$) during the 7 days of storage. The formulated sausages were shown to have high water holding capacity and cooking losses. The results were found that the addition of Whey Protein Isolate and Guar Gum increased %WHC but the values were lower than the control chicken sausages. The total viable count was not influenced by the addition of the fat replacers used. Therefore, the cooked chicken sausages could be stored safely for 60 days under refrigeration (4 ± 1 °C).

Conference Abstracts

BICAT_18

Investigation on efficacy of *Swietenia macrophylla* endocarp in lowering blood glucose level using animal model

Faiq Bungsu*, Faiz Bungsu, Nur Atiqah Suhaili, Zheng JiaHui, Md Monowarul Mobin Siddique*
Environmental Life Sciences Programme, Faculty of Science, Universiti Brunei Darussalam, Jalan
Tungku Link, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding author: mobin.siddique@ubd.edu.bn; 20m2031@ubd.edu.bn

Abstract: Diabetes mellitus is one of the most chronic non-communicable diseases and is one of the four targeted priorities of non-communicable diseases by WHO. *Swietenia macrophylla* pharmacological properties are well documented, particularly its antioxidative and antidiabetic effects which have been demonstrated in both in vivo and in vitro model systems. This study aims to observe the effect of *S. macrophylla* endocarp on C57BL/6 female mice glucose response. Three different method of extraction and three different dissolving solvents were done to obtain the extract with the highest total phenolic content, total flavonoid content and antioxidant capacity. Sample that had been extracted with conventional extraction method using ethanol solvent consistently showed high yield for phenolic content ($53.73 \pm 0.017 \mu\text{g GAE/g DW}$) and the antioxidant test % inhibition of DPPH free radical ($84.1 \pm 6.35; 200 \mu\text{g/mL}$). Female mice ($n=5$) were then treated with the conventional ethanolic extract (250 mg/ml) as drinking water for 30 day period ad libitum and showed improved glucose clearance ability in comparison to the control group.

Conference Abstracts

BICAT_19

Analyses of Anti-oxidative Properties, α -amylase Inhibitory Activities and Thin Layer Chromatography Profiling of Crude Extracts from *Z. jujuba* Fruits

Nur Atiqah Suhaili*, Afifah Ja'afar, Hazirah Sarkawi, Nurlina Munirah Ali, Yusnida Bazilah Yussof, Faiq Bungsu, Faten Su'aidah Sambri and Monowarul Mobin Siddique*

Environmental and Life Sciences Programme, Faculty of Science, Universiti Brunei Darussalam, Jalan Tungku Link, Mukim Gadong A, BE1410, Brunei Darussalam

*Corresponding authors: mobin.siddique@ubd.edu.bn, 20h8501@ubd.edu.bn

Abstract: *Ziziphus jujuba* fruit, commonly known as 'red date' or 'jujube', has a long history of usage in food and medication due to its nutraceutical and pharmaceutical values. Oxidative stresses are believed to be the prime causative factors for most of the common chronic illness. With the increased prevalence of such chronic diseases, natural products that are able to reduce oxidative stress are receiving attention to prevent the onset of several common diseases. Thus, this study aims to screen biological activities of *Z. jujuba* to assess its antioxidant properties, anti-diabetic properties, phenolic and flavonoid contents and screening of compound profiling by employing different extraction methods and solvents in order to determine the most effective solvent and extraction technique in exhibiting the maximum yield in the respective assays. Polyphenolic contents were higher in ethyl acetate extracts from all the employed techniques ($P < 0.05$). DPPH (2, 2-diphenyl-1-picrylhydrazyl) radical scavenging activity was expressed as IC₅₀ whereby the range was in between 12.8-22.2 $\mu\text{g/mL}$ for all extracts. Methanolic extract from maceration method exhibited highest antioxidant property as measured by FRAP assay (854.18 $\mu\text{mol FE/g DW}$, $P < 0.05$). All the extracts of *Z. jujuba* exhibited reasonable α -amylase inhibitory activity. Finally, Thin-layer chromatographic profiling using methanol/chloroform/ethanol (7:2:1, v/v/v) and methanol/hexane/ethyl (1:3:1, v/v/v) were used to further confirm the presence of flavonoid R_f (0.94).

Conference Abstracts

BICAT_20

Development of gluten-free flour from local rice (*Oryza sativa L.*) and okra (*Abelmoschus esculentus L. Moench*) waste

Nurafiqahatul Hikmah Seribini, Namasivayam Navaranjan, Zohrah Sulaiman, Aida Maryam Basri
Universiti Teknologi Brunei, Tungku Link Road, Gadong BE1410 Brunei Darussalam

Abstract: The objective of this investigation was to examine the use of rice and okra waste in the development of a novel gluten-free formulation. Flour from the Bruneian Laila rice variety was substituted with 2.5, 5.0, and 7.5% of okra pod fibre (OPF). The techno-functional characteristics of rice flour-OPF blends were measured, and sample loaves of bread were prepared. Increasing OPF content had a very strong positive effect on the hydration properties and surface activity ($r = 0.9$; $p < 0.05$). OPF also contribute nutritionally as analysis of the bread samples revealed that the protein composition of the samples notably increases with more OPF content ($r = 0.9$; $p < 0.05$). The baking quality was measured from the properties of the bread samples. Bread containing 2.5% OPF substitution was found to generate the loaf with the best specific volume, and bread loaves containing any amount of OPF had extended shelf life with delayed staling and mould growth when compared to the control. Importantly, OPF2.5 bread scored high acceptance among consumers in aroma, colour, flavour, and texture. Overall these results suggest the potential of okra powder as an additive in gluten-free rice flour.

Conference Abstracts

BICAT_30

Adsorptive removal of textile dye Direct Blue 86 from aqueous solution by rice husk-based adsorbent

M. Zulbahari M. Zu¹, Muhammad Raza UI Mustafa^{2, 3,*}, Mohamed Hasnain Isa^{4,*},
Shahriar Shams⁴, Beston Faiek Nore⁵

¹Former student, Department of Civil and Environmental Engineering, Universiti Teknologi PETRONAS 32610 Seri Iskandar, Perak Darul Ridzuan, Malaysia, ²Department of Civil and Environmental Engineering, Universiti Teknologi PETRONAS 32610 Seri Iskandar, Perak Darul Ridzuan, Malaysia, ³Centre for Urban Resource Sustainability, Institute of Self-Sustainable Building, Universiti Teknologi PETRONAS, Seri Iskandar, 32610, Perak, Malaysia,

⁴Civil Engineering Programme, Universiti Teknologi Brunei, Tungku Highway, Gadong BE1410, Brunei Darussalam,

⁵School of Applied Sciences and Mathematics, Universiti Teknologi Brunei, Tungku Highway, Gadong BE1410,

Brunei Darussalam

*Corresponding authors: raza.mustafa@utp.edu; mohamed.isa@utb.edu.bn

Abstract: Adsorption by activated carbon is one of the most effective methods of dye removal. However, due to high production and regeneration costs of activated carbon, various studies on low-cost adsorbent have been carried out to search for an alternative. Agricultural waste such as rice husk (RH) is seen to be a good adsorbent for dye removal. Moreover, rice husk is readily available. In this study, rice husk-based adsorbents were prepared by chemical and thermal treatments. Standard curve (colour vs absorbance) for Direct Blue 86 (DB 86) was prepared to determine the concentration of dye before and after adsorption. The adsorption potential of the adsorbent for textile dye DB 86 was evaluated by batch adsorption tests. The most effective adsorbent, RH6, was selected and its DB 86 adsorption capacity was determined and compared with that of commercial powdered activated carbon (PAC). The optimum pH for DB 86 removal was pH 2 for both adsorbents. The optimum contact time was observed to be 180 min for both RH6 and PAC. The optimum adsorbent dosage was 4 g/L for RH6 and 3 g/L for PAC. Both Langmuir and Freundlich isotherm models provided high correlation coefficients R^2 (>0.97); with Langmuir isotherm $R^2 >0.99$. The adsorption capacity obtained was 34.4828 mg/g and 47.6190 mg/g for RH6 and PAC, respectively. Pseudo second order kinetic model yielded high R^2 values (>0.99) and much closer values of $q_{e,exp}$ and $q_{e,cal}$ (amounts of solute adsorbed determined experimentally and using the model equation) to show that the model describes the adsorption mechanism better than the pseudo first order kinetic model. RH6 has potential to be used as adsorbent for dye removal from wastewater.

Conference Abstracts

BICAT_33

Rice Farmer's Perception and Factors Influencing Intention and Attitude on Adoption of Hybrid Rice-A comparison between grouped and individual rice farmers in Brunei

Ahmad Mas'Oud Muhd Halimi, Ulaganathan Subramanian

Universiti Teknologi Brunei, Tungku Link Road, Gadong BE1410 Brunei Darussalam

Abstract: Rice is considered the staple food of Brunei Darussalam, where most rice is imported from different countries. This poses a risk regarding food security wherein an unwanted event of restricted importation of rice, Brunei may experience difficulties. For attitude, perceived ease of use positively impact attitude significantly for member rice farmers, while perceived usefulness positively impacts attitude for non-member rice farmers. Thus, for proper implementation of hybrid rice for rice farmers, boosting attitude, usefulness, and ease of implementing the system would make the adoption of hybrid rice more prevalent.

Conference Abstracts

BICAT_34

Management of Agriculture in Brunei

Nuramalina Manshor, Ulaganathan Subramanian

Universiti Teknologi Brunei, Tungku Link Road, Gadong BE1410 Brunei Darussalam

Abstract: The management and development in agriculture attract agricultural economic science for the pricing, business, farm policy, and financial knowledge. It conjointly draws on plant and animal sciences for soil, seed and fertilizer information, weed control, insect management, and rationing and breeding; agricultural engineering knowledge for farm houses, vehicles, irrigation, field drying, drainage, and management of erosions; and data on human behavior in Science and Social Science.

Conference Committees

ADVISOR

Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman, Vice-Chancellor, UTB

STEERING COMMITTEE

Chair: Professor Dr. Mohamed Hasnain Isa, Assistant Vice-Chancellor (Research), UTB

Secretary: Dr. Namasivayam Navaranjan

Members:

Dr. Hjh Ena Kartina binti Hj Abd Rahman, Assistant Vice-Chancellor (Academic), UTB

Dr. Mohammad Saiful bin Hj Omar, Assistant Vice-Chancellor (Industry & Services), UTB

Mr. Lim Chui Hua, Registrar and Secretary, UTB

Mr. Hamdani bin Hj Ibrahim, Bursar, UTB

CONFERENCE ORGANISING COMMITTEE

Chairperson: Professor Dr. Beston Nore

Deputy Chairperson: Dr. Syazana binti Abdullah Lim

Secretary: Dr. Mas Munira binti Rambli

Members:

Dr. Rama Rao Karri

Professor Dr. Mohammad Yeakub Ali

Pg. Dr. Rafidah binti Pg Hj Petra

Dr. Murhamdilah bin Morni

Dr. Lim Tiong Hoo

Dr. Phuah Eng Tong

Dr. Denni Kurniawan

Professor Dr. Mohammad Ali Basunia

Dr. Aida Maryam binti Hj Basri

Dr. Wida Susanty binti Hj Suhaili

SECRETARIAT

Chairperson: Dr. Namasivayam Navaranjan

Deputy Chairperson: Dr. Phuah Eng Tong

Members:

Dr. Aida Maryam binti Hj Basri

Ms. Dk Siti Nur Khadijah binti Pengiran Haji Bakar

Ms. Dk Norchaya @ Dk Afidah binti Pengiran Haji Bakar

Conference Committees

TECHNICAL AND PUBLICATION COMMITTEE

Chairperson: Professor Dr. Nawaf Hazim Saeid

Deputy Chairperson: Professor Dr. Duraisamy Sambasivam Sankar

Secretary: Dr. Syazana binti Abdullah Lim

Members:

Prof. Dr. Somnuk Phon-Amnuaisuk, Universiti Teknologi Brunei

Dr. Wida Susanty binti Haji Suhaili, Universiti Teknologi Brunei

Dr. Mohammad Ali Basunia, Universiti Teknologi Brunei

Dr. Rama Rao Karri, Universiti Teknologi Brunei

Dr. Shahriar Shams Universiti Teknologi Brunei

Dr. Dina Shona Laila, Universiti Teknologi Brunei

Dr. Shahid Anjum, Universiti Teknologi Brunei

Dr. Hjh Mas Ayu Kartika Dewi Binti Haji Mumin, Universiti Teknologi Brunei

Dr. Zeiad Amjad Aghwan, Sultan Sharif Ali Islamic University, Brunei Darussalam

Dr. Nur Rahman, Ghanim International Corporation, Brunei Darussalam

FINANCIAL COMMITTEE

Chairperson: Mr. Hamdani bin Haji Ibrahim

Deputy Chairperson: Ms. Siti Nur Hidayah binti Rosli

Members:

Ms. Rozeana binti Haj Mohd Juani

Ms. Suzilawati binti Haji Hanafiah

PUBLICITY AND MEDIA COMMITTEE

Chairperson: Mr. Muhammad Fakhri bin Haji Badar

Deputy Chairperson: Ms. Nur Farah Hana binti Muhammad Nawawi

Members:

Ms. Nur Hidayati binti Ghador

Mr. Awang Mohammad Nadzri bin Haji Tuneh

SPONSORSHIP COMMITTEE

Chairperson: Dr. Muhaimin Ismoen

Deputy Chairperson: Dr. Phuah Eng Tong

Members:

Dr. Namasivayam Navaranjan

Dr. Syazana binti Abdullah Lim

Conference Committees

LOGISTIC, TRANSPORT AND ICT (MULTIMEDIA) COMMITTEE

Chairperson: Dr. Amer Demirovic

Deputy Chairperson: Ms. Siti Mazulianawati binti Hj Majid

Members:

Dr. Wida Susanty binti Hj Suhaili

Ms. Rahizah binti Hj Abdul Rahman

Ms. Rafidah binti Awg Hj Tengah

Ms. Dk Siti Nur Khadijah binti Pengiran Haji Bakar

Ms. Dk Norchaya @ Dk Afidah binti Pengiran Haji Bakar

Mr. Hj Md Zulfikri bin Hj Md Ali

Mr. Amirnuddin bin haji Gillen

Mr. Eddy bin Haji Mohammed

Mr. Mohamed Hasree bin Haji Tamin

Mr. Zailani bin Haji Lias

Mr. Muhamad Nizam bin Hj Mahali

Mr. Hj Mohammad Abu Yazid bin Hj Awg Damit

Mr. Maziri bin Dr Hj Morsidi

Mr. Ahmad Shamil bin Hj Abd Rahman

Ms. Dk Nur Fathiyah binti Pg Hj Abu Bakar

Mr. Khairul Anwar bin Anewi

Student members:

Mohammad Khairul Nashran Bin Haji Sharin

Ahmad Syafiq Bin Dr. Haji Roslan

Ahmad Faadzil bin Abu Juhan

Muhammad Nur Hazim Wafiuddin bin Haji Kamaruzaman

INVITATION AND ACCOMMODATION COMMITTEE

Chairperson: Ms. Hasnanizan Binti Hj Md. Taib

Deputy Chairperson: Ms. Dk Siti Nur Khadijah binti Pengiran Haji Bakar

Members:

Dayangku Hajah Rina binti Pg Rumbli

Dayang Nur Izzah Munirah binti Hamzih

Dayang Hirnywati@Nadira binti Mohd Ade Hirny

Awangku Mohammad Alimin bin Pengiran Haji Ibrahim

Dayang Hajah Siti Mariam binti Hj Amit

Awang Muhamad Zaidin bin Abdul Qayyum Sirul

Awang Nordin bin Md Din

Dayangku Norchaya @ Dk Afidah binti Pengiran Haji Bakar

Conference Committees

INVITATION AND ACCOMMODATION COMMITTEE

Student members:

Awang Mohammad Ainul Faizin bin Haji Misli
Awang Md Amiruddin Fithri bin Abdullah
Dayang Nuramirah binti Akbar
Dayang Nur Adila Puteri binti Irwan
Dayangku Siti Salihah binti Pg Hj Mohd Yani
Dayang Khairina Umairah binti Takiyudin
Dayangku Ainin Sofiya binti Pg Yusof
Dayang Fatnin Farhanah binti Haji Alihan
Dayang Nurrifhan Hanisah binti Haji Abdul Latip
Dayang Muzfirah Ridwana binti Madani
Dayang Mary Chong Yii Qin

REFRESHMENT AND CERTIFICATES COMMITTEE

Chairperson: Ms. Dk Siti Nur Khadijah binti Pengiran Haji Bakar

Deputy Chairperson: Ms. Dk Norchaya @ Dk Afidah binti Pengiran Haji Bakar

Members:

Dr. Namasivayam Navaranjan
Dr. Mas Munira binti Rambli
Nurul Fairuz binti Awang Haji Ali

Student members:

Md Firdaus Mujibuddin Syah Bin Hj Mustafa
Awangku Syazwan Bin Pengiran Sulaiman
Siti Madihah Binti Haji Mohd Don
Fatnin Farhanah Binti Hj Alihan
Muzfirah Ridwana Binti Madani
Khairina Umairah Binti Takiyudin
Ummi Faridah binti Haji Mohd Ishak
Amni Sahilah Binti Sahrullamzah
Siti Maisarah Binti Ma'mor

International Advisory Committee

Prof. Dr. Abdalla Mohamed Jama, Stockholm University, Sweden
Prof. Dr. Kirill S. Golokhvast, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, Russia
Prof. Dr. Toshimichi Fujiwara, Osaka University, Japan
Prof. Dr. Kazufumi Takano, Kyoto Prefectural University, Japan
Prof. Dr. Fushuan Wen, Zhejiang University, Hangzhou, China
Prof. Dr. Guo Zhenren, South China University of Technology, China
Prof. Dr. Izharul Haq Farooqi, Aligarh Muslim University, Aligarh, India
Prof. Dr. Muhammad Zia ur Rehman, University of Agriculture, Pakistan
Prof. Dr. Bassim H. Hameed, Qatar University, Qatar
Prof. Dr. Hakan F. Oztop, Firat University, Turkey
Prof. Dr. Basima Albadrani, University of Mosul, Iraq
Prof. Dr. Vijay Kumar, Universiti Malaysia Sabah, Malaysia
Prof. Dr. Yousif A. Abakr, The University of Nottingham in Malaysia
Prof. Dr. Md. Sazzat Hossain Sarker, Hajee Mohammad Danesh Science & Technology University, Bangladesh.
Prof. Dr. Ali Ashraf, Bangladesh Agricultural University (BAU), Bangladesh
Dr. Ashraf Khalil, Technical University of Denmark, Denmark
Dr. Nurul Huda, Universiti Malaysia Sabah, Malaysia
Dr. Solehuddin Shuib, Universiti Teknologi MARA, Malaysia
Dr. Muhammad Raza UI Mustafa, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Malaysia
Dr. Muhammad Shahbaz, MNS-University of Agriculture, Multan, Pakistan
Dr. Shaukat Mazari, Dawood University of Engineering and Technology, Pakistan
Dr. Hemanatha Jayasuriya, Sultan Qaboos University, Oman
Dr. Paul Awoyera, Covenant University, Nigeria
Dr. Manoj Tripathi, Jaypee Institute of Information Technology, India
Dr. Lee Yee Ying, Monarch University Malaysia, Malaysia
Dr. Md Rowshon Kamal, Universiti Putra Malaysia, Malaysia
Dr. Innaka ageng rineksane, Universitas Muhammadiyah Yogyakarta, Indonesia
Dr. Ghulam Hussain Jatoi, Mir Chakar Khan Rind University, Pakistan
Dr. R.M. Shukla, Sher-e-Kashmir University of Agricultural Sciences and Technology, India.
Dr. Congcong Sun, Wageningen University, The Netherlands
Dr. Simon van Mourik, Wageningen University, The Netherlands
Dr. Haris Khan, Wageningen University, The Netherlands
Dr. Marjolein Derks, Wageningen University, The Netherlands



OUTSTANDING



www.utb.edu.bn



BRUNEI2
MID-YEAR CONFERENCE AND EXHIBITION
MYC 2022