



VOYAGES OF DISCOVERY

Exploring the Sunda Shelf with Universiti Malaysia Terengganu

Volume 12 | 2024 | www.umat.edu.my

Innovation to the Rescue

A new breed of innovative fishing boats is being built to help improve nation's fisheries sector

Never Mind the Distance

UMT-UTAS collaboration proves distance is not a barrier for working together

Eyes in the Sky

A team of researchers developed an app for paddy rice field mapping and monitoring from space

Securing Enough Food for the Nation

A faculty at UMT aims to help resolve the country's food security issues

ISSN 2289-4772



9 772289 477002



Contents

2

FROM THE
Vice Chancellor

4 **SPECIAL FEATURE**
Innovation to the Rescue

7 **ABOUT UMT**
Securing Enough Food
for the Nation

10 **ICON OF ACADEMIA**
Born To Be Scientist

14 **ACADEMIC COLLABORATION**
Never Mind the Distance

17 **INDUSTRY COLLABORATION**
Sharing the Same Goal

21 **RESEARCH & DEVELOPMENT**
Eyes in the Sky

24 **YOUNG ACADEMICIAN**
Her Destiny All Along

27 **PhD THESIS**
More Than Just Food

36 **EXCELLENT STUDENT**
Example Setter

40 **INTERNATIONALIZATION**
Enthusiastic Visitors

44 **ABOUT TERENGGANU**
All-time Favourite



VOYAGES OF
DISCOVERY

Volume 12 / 2024

Patron

Professor Ts. Dr. Mohd Zamri Ibrahim

Advisor

Professor Dr. Fauziah Abu Hassan

Executive Editor

Zukifree Ibrahim

Editor

Wan Zulkifli Wan Kassim

Coordinators

Rozita Alias@Abdul Latiff
Amirul Salam Hasan

Designer

Muhammad Adli Hashim

Photographers

Tengku Iskandar Zulfahmie Tengku Mohamad
Mohd Shukry Tahar
Muhammad Sharwan Abdul Ghani
Nur Hafiza Ellias

Corporate Communication Office
Universiti Malaysia Terengganu
21030 Kuala Nerus, Terengganu, MALAYSIA
email: pro@umt.edu.my

From The Vice Chancellor

Dear readers,

With great delight and excitement, I introduce to you another edition of our Voyages of Discovery (VOD) magazine. This publication is one of our ways through which we communicate with others outside of the university. Here we share information about our university, highlighting events and activities that define our role in helping the nation improve, in our capacity as a university that focuses on marine science and aquatic resources.

This time we have decided to highlight one of our biggest faculties, the Faculty of Fisheries and Food Science (FPSM). For a long time, the faculty has been instrumental in assisting the country resolve its food security issues.

It is clear that many countries are currently facing food security issues. When a country does not have the capacity to produce its own food, its food security will be at risk. It will become worse as its population grows. Many will be deprived of basic necessities.

Feeling concerned, FPSM has been carrying out initiatives to produce affordable, accessible, safe, nutritious, and enough food for the nation, aligning its aims with those of the Sustainable Development Goal 2 (Zero Poverty) and 4 (Life Below Water).

Researchers in various expertise at the faculty occupy their time conducting impactful studies, embarking on projects to harness useful knowledge related to the country's main food sources. Studies cover a wide variety of areas, including pest management, crop and seed protection, rice disease management, fish meal alternatives, remote aquaculture monitoring, and aquaculture production and management improvement.

A team of researchers from the faculty has partnered with their international counterparts and developed an app for paddy rice mapping and monitoring from space. The app provides high-resolution images in real-time, giving farmers accurate and up-to-date information on planted and harvested paddy rice, enabling better management of rice production. An article on this has been written and included in this edition of Voyages of Discovery.

Another group of researchers has started working on a project involving the construction of a new innovative vessel equipped with the latest technology. An upgrade over the traditional fishing boats, the new innovation will help solve

the current fisheries-related issues in the country, including helping to prevent the fisheries resources from being quickly depleted. This story too is included in this edition.

Even the faculty Dean himself is also heavily involved in research and has produced a series of innovations. He has successfully created a vaccine to treat diseases in sheep and goats. The innovation has won several national and international awards. Read more about him in the included article.

More often than not, two heads are better than one. To increase the likelihood of achieving success, the faculty collaborates with willing partners sharing the same goals. One of the successful joint partnerships is with the Department of Fisheries of Malaysia. Both have worked together to ensure the country's fisheries resources are successfully conserved. In addition to collaborating with the industry, FPSM also establishes a strategic partnership with overseas universities. For instance, the faculty has been in collaboration with the University of Tasmania for more than a decade already. Till today the alliance is still intact. Both of these stories are highlighted as well.

The faculty is also solving the country's food security issues through its education, by way of offering relevant and fine-tuned academic programmes. These programmes train students so that they will be able to have a career in the fields of fisheries, aquaculture, crop science, food technology, food service, and food nutrition, thus contributing towards achieving the nation's food security.

The certified undergraduate and postgraduate programmes offered at the faculty have produced excellent students time and again. There is an article about one of the exemplary undergraduate students and another that shares about a postgraduate student's PhD research.

I invite you to delve into the pages of this edition of the Voyages of Discovery and experience the journey of FPSM and its community as they play their role in ensuring the security of the country's variable food resources.

I extend a sincere gratitude to all those who have contributed in the production of this magazine.

Happy reading!

PROFESSOR TS. DR. MOHD ZAMRI IBRAHIM
Vice Chancellor, Universiti Malaysia Terengganu



SPECIAL
FEATUREInnovation
to the
Rescue

A new breed of innovative fishing boats is being built to help improve nation's fisheries sector

By Mohd Fazrul Hisam Abd Aziz, Ahmad Fitriadhy, Aiman Mas'ud

It measures 17 metres long and fits nine people. It has a toilet, a praying room, and a bedroom. It is equipped with the latest acoustic instrument, Global Positioning System, and telecommunication devices.

A prototype of a new breed of innovative boats, bigger, more convenient, and more technologically advanced than traditional boats, is being built at UMT to help solve current fisheries-related problems in the country.

Fitted with modern fishing gears, these boats will not only help sustain the country's fisheries resources, but also help protect the environment and increase the fishermen's income. These boats will surely change the landscape of Malaysia's fisheries for the better.

For decades, the fisheries sector has played an important role in stimulating the total economic growth of Malaysia, a maritime country surrounded by the South China Sea on the east and the Straits of Malacca on the west. However, many fishermen in the country, especially the small-scale ones, are still practicing artisanal fishing, a form of traditional fishing that uses relatively small, low-powered boats fitted with outdated technology.

Issues with Artisanal Fishing

Artisanal fishing if improperly carried out will lead to several issues.

Fishing activities using traditional boats will affect the fish stock. In fact, for the past few years troubling signs have kept emerging from the Malaysian coastal waters. The fish stock has indeed been gradually depleted. Fishes have become smaller every year, and fishermen have been having trouble finding potential fishing grounds.

If the practice of artisanal fishing is continued, Malaysia's fish stock is in danger of being completely depleted within the next 10 to 20 years, fisheries authorities have alerted. If that really happens, the country will be facing a great problem in fish-based food security.

Artisanal fishing has contributed to the decreasing fish stock due to its two limitations: the use of traditional fishing gears and the inaccurate techniques of searching for fishing grounds.

The use of traditional fishing gears, such as bottom trawl nets, has led to more than 80 percent bycatch, including small-size juvenile fish with low commercial value.

When searching for potential fishing grounds, artisanal fishermen normally use the techniques they inherited from the older generation in their family. These techniques include hearing fishes' voice underwater and using the water current to determine the location of fishes and squids in the open seas. But with these techniques, fishermen have often been unable to determine the correct sizes and species of the fish, and high percentage of bycatch has been caught as well.



Artisanal fishing has contributed to the decreasing fish stock.



Fishing activities using traditional boats have negatively affected the environment. Due to the old equipment and technology they are fitted with, artisanal boats are not environmentally friendly. They consume excessive fuel, usually petrol. Their tendency to break down more often means that more parts need to be replaced, with the old parts having to be discarded.

The boats' shortcomings have also not allowed the fishermen to gain more income. Artisanal boats are not equipped with advanced technology, so fishermen using these boats are restricted in terms of where they can fish. They can only engage in fishing activities at the river mouths instead of at the open seas. As a result, the fishermen constantly end up with a low catch rate.

These fishermen are not willing to engage in sea fishing, as lack of modern fishing gears and non-availability of timely weather forecast may endanger the boats, the gears, and most importantly the fishermen's lives.

Innovative Boats to the Rescue

Aware of the issues and challenges facing the country's fisheries sector, a team of UMT researchers have decided to work on a project that will provide the solutions. The team applied for a research grant from the Ministry of Science, Technology, and Innovation (MOSTI), which offers a special financing scheme through its Strategic Research Fund for innovative research that provides a high impact to the country.

Fitting the research scope requirements, the application was approved by the ministry. The team was then awarded RM3.1 million to carry out the project titled "Transforming Coastal Fisheries through Model Prototype Design and Development of an Innovative Fishing Vessel."

The new innovative vessels will have several advantages over the artisanal boats commonly used by the small-scale fishermen in the country.

The modern fishing gears the boats will be fitted with will minimize bycatch, thereby helping to sustain the country's fisheries resources. Bycatch may be reduced by as much as 90 percent.

In addition, the latest fish acoustic technology will enable fish image analysis to be conducted real-time, thus helping fishermen more accurately predict and locate potential fishing grounds. This will minimize the capture of non-target species as the strata, size, and species can be detected more precisely.

Built with ceramic instead wood and equipped with modern technology, the vessels will also be more environmentally friendly. They will have less parts needing to be discarded as the boats will be easily repairable when there is a damage, and the cost will be low. Also, the boats will not contribute to environmental damage since their use of fuel will be efficient.

Fishermen will also benefit from the new boats in that they will be able to earn higher income.

Unlike the traditional boats that have only one type of fishing gears, the new boats will be equipped with several types, including traps, gill nets, and long-line fishing, that will allow fishermen to capture only full-grown fish with higher market value.

The boats will have the ability to remain at sea for a longer period, as long as a week, thus giving fishermen extended catching time. This will enable them to catch more fish for sale.

Project on Schedule

The project is progressing as scheduled. The team has carried out detailed analysis of the prototype's hydrostatic and intact ability, seakeeping performance, resistance, and powering.

The prototype is currently being built, but the fishing gears are ready. They are currently being used by the fishermen at Tok Jembal Beach and Batu Rakit Beach. These gears include fish traps, squid traps, and demersal traps. The new gears offer several advantages. The new traps have been designed to catch mature fishes. They can stay in the open sea all year long without getting broken as they are made of stainless steel. By comparison, the old traps are made of wood and need to be replaced every four months.

Fishermen who have been using the new traps have given positive feedback. They said the new gears are more durable in salty waters and have allowed them to catch bigger fishes. Their income has also increased after using the gears.

As the new gears continue to be tested by the fishermen, the team will complete the construction of the prototype of the new innovative boats. These boats will offer features that will help protect the environment, improve the fishermen's income, and most importantly sustain the country's fisheries resources.

With the boats arriving on its waters soon, Malaysia will not have to worry about its fish-based food security.

The country's fish stock will be sustained for the next 20 years and possibly beyond. ♦



Dr Mohd Fazrul Hisham, one of the project members



The model of the modern boat

ABOUT UMT

Securing Enough Food for the Nation

A faculty at UMT aims to help resolve the country's food security issues

By Prof. Ts. Dr. Mohd Effendy Abdul Wahid

Food security has been an inevitable matter worldwide and can be a threatening challenge when a country is not able to produce its own food as the population grows. The impacts can be seen in the limiting supply and increasing price of important and basic food commodities, deliberately degrading the livelihood of low-income households.

To one faculty at UMT, this is a cause for concern.

Worried about the diminishing food supply occurring all over the world, the Faculty of Fisheries and Food Science is taking the initiative to lead the way in producing affordable, accessible, safe, nutritious, and sufficient food for the nation, by way of its education, research, innovation, and knowledge transfer.

Its aims are consistent with the Sustainable Development Goal 2, Zero Poverty, and 14, Life Below Water.

The initiatives of the faculty also go hand in hand with UMT's Vision of Becoming the Country's Leading and Globally Respected Marine-Focused University and its mission of Generating Knowledge for the Community's Affluence and Environmental Sustainability.

The Faculty of Fisheries and Food Science first came into existence in 2019, as a result of a merger between two existing schools following UMT's major restructure. Previously, the School of Fisheries and Aquaculture and the School of Food Science and Technology operated independently of each other.

The merger make it easier to contribute knowledge and expertise in various aspects of food production from both land and water resources. These include production of seafood in fisheries and aquaculture industries, production of crops through agricultural activities, application of technology to produce value-added food, and provision of nutritious food for the people.

Achieving the Goal through Education

Once up and running, the faculty wasted no time in charting the paths to achieving its noble goal.

To help resolve the country's food security issues, the faculty has constantly fine-tuned the academic programmes it offers to prospective students at undergraduate and postgraduate levels to make the programmes relevant. These programmes prepare the students to become skilled and competitive graduates in the fields of fisheries, aquaculture, crop science, postharvest technology, food technology, food service and nutrition. Once fully prepared, these graduates will venture into the industries and contribute towards ensuring the country's food security.

The faculty currently offers six undergraduate programmes, 22 master's programmes by research, two master's programmes by coursework, and 22 PhD programmes. In addition, the faculty also offers a Diploma of Fisheries programme.



The faculty is currently upgrading its postgraduate programmes by coursework with the Open and Distance Learning (ODL) mode to cater more students offering flexible time, easy access, and self-directed learning materials. Masters in Tropical Fisheries in particular involves international linkages with seven international universities, including Kagoshima University, Japan; Kasetsart University, Thailand; Sam Ratulangi University, Indonesia; University of Philippines Visayas, Philippines; Nha Trang University, Vietnam; Bogor Agricultural University, Indonesia and National Chiayi University, Taiwan. The faculty believes that a brief study in foreign universities will provide students with opportunities to learn the knowledge, technology, and culture of other countries, shaping them to become more holistic, mature, independent, and wiser.

Counting on Research and Innovation

Apart from its education, the faculty is relying on its research to help contribute towards ensuring the nation's food security issues. Researchers at the faculty embark on projects to generate knowledge and innovation related to the country's main food sources.

One researcher, Professor Ts. Dr. Mohd Effendy Abdul Wahid, has successfully created an innovation called Mannheimia Haemolytica Intranasal Spray Vaccine (SINAVAC). The vaccine is used to treat manheimiosis, a devastating pneumonic

disease in small ruminants such as sheep and goats. To commercialize his innovation, Professor Mohd Effendy has established a start-up company, Sinavax Sdn. Bhd.

Two other researchers are collaborating with Corteva Agriscience, a company offering crop and seed protection solutions. Associate Professor Dr. Nur Aida Hashim is cooperating with the company on on food crop pest management that will help farmers deal with pest problems. The other researcher, Associate Professor Dr. Siti Nordahlia Wate, is collaborating with the company to improve rice disease management in Malaysia.

Assoc. Prof. Ts. Dr. Wan Nurul Nadiah Wan Rasdi has dedicated her research to producing an efficient modified batch culture system as 'ZooNutri Pre-feed System' by leading the Prototype Research Grant Scheme (PRGS). In sustaining hatchery production, continuous live feed supply with pre-feed manipulation is necessary to connect the nutritional mechanism between live feed and larvae for an efficient nutrient transfer.

Dr. Sharifah Rahmah is committed to exploring alternative solutions for the costly and unsustainable fishmeal and fish oil, the key components in aquafeed. The Fundamental Research Grant Scheme (FRGS) and Private Partnership Research Grant (PPRG) she received have empowered her to investigate the potential use of black soldier fly larvae (BSFL) as a viable substitute for sustainable aquafeed production.



Aquaculture researcher Ts. Dr. Rasina Rasid has developed Smart Fish Alarm, an IoT system that enables remote monitoring to prevent massive mortality of aquatic animals and huge profit loss. The innovation was awarded Gold Medal at the Defence, Security and Sustainability Exhibition 2022..

The concept of waste to wealth has again been successfully practised in the nutraceutical industry. Associate Professor Dr Norizah Mhd Sarbon has invented the PeptACE Fish Peptide, a natural bioactive peptide from enzymatically hydrolyzed rich fish protein sources. The invention received a Gold Medal in the Minggu Penyelidikan dan Inovasi (MPI) 2020 and was patented for commercialization.

Dr. Nur Suaidah Mohd Isa successfully secured the FRGS 2022 to reduce salt by elevating the saltiness perception of foods through a compartmentalization approach by using water-in-oil-in-water emulsion. Her research will benefit food manufacturers in formulating low-salt foods for a healthier lifestyle.

Fisheries products are not only crucial for food but also beneficial in cosmetics. Associate Professor Dr. ChM. Mohd Zul Helmi Rozaini discovered the new nanostructure modified biomaterials through the awarded International Centre for Genetic Engineering and Biotechnology grant and commercializes his demand-driven research product innovation of green cosmetic products.

Knowledge Transfer

Researchers at the faculty are always keen to be involved in community projects, where they can disseminate the knowledge generated through their research activities to the people for their benefits. This is another way for the researchers to help the faculty accomplish its goal.

One such researcher is Professor Dr. Shamsul Bahri Abd Razak, an expert on stingless bees is actively providing training to local communities to boost their income through UMT's Special Interest Group. He received UMT Translational Grant, Corporate Social Responsibility (CSR) Pharamianga Grant, and Yayasan Inovasi Malaysia (YIM) Social Innovation Grant to fund the project.

Another researcher, Associate Professor Ts. Dr. Wan Zaliha Wan Sembok, has developed the Silent Planters programme and received a Bronze Award in the International Conference

and Exposition on Inventions (PECIPTA 2022) to boost the socio-economic condition of the deaf community at Batu Buruk, Kuala Terengganu. The programme integrates a fertigation cultivation system, newly developed bio fertilizer, and a new stingless bee pollination technique to enhance crop production.

Sustaining the fisheries resources should also be looked at from ecotourism activities. Dr. Roslizawati Ab Lah collaborated with Australia, Malaysia, Indonesia, Vietnam and Japan counterparts under the Asia Pacific Network for Global Change Research Grant towards effective management of healthy coral reefs.

Talking about ecological sustainability, Dr. Lokman Nor Hakim Norazmi won third place and People's Choice Award in the 2021 Australia Falling Walls Lab science pitching competition on an ecological safe strategy to eradicate pest fish. He was given the 'Individual of the Year 2022' award by the Tasmanian Malay Community during the Australia Day Celebration in Hobart, Tasmania.

At FPSM, we put our best effort to provide the finest teaching and learning experience for our students. As such, Dr Shahreza Md Sheriff received astounding recognition from the Anugerah Akademik Negara (AAN) in Teaching Category in 2020. Dr. Shahreza has been a role model to us related to teaching innovations and excellence.

Realizing that it will not be able to address food security issues alone, the faculty has built linkages and networking with national and international universities, industries, and communities. To date, the faculty has signed 20 international Memorandum of Understanding with various parties. The faculty has also established other forms of linkages with various organizations from the UK, USA, Korea, Belgium, Japan, Yemen, Germany, New Zealand, Italy, Norway, China, Australia, Hungary, Portugal, Africa, Bangladesh, and Canada. It is looking to develop more networking.

Since it came into existence in 2019, the Faculty of Fisheries and Food Science has set out to be an entity that helps resolve the country's food security issues and has worked hard at achieving its goal. The extra effort was evident when the faculty was handed the best faculty management award for academics and research in 2020.

To the faculty, insufficient food supply is always a cause for concern. ⬆



ICON OF
ACADEMIABorn
To Be
Scientist

Biology professor is enjoying a
successful career at UMT

By Dr. Sharifah Rahmah



He preferred visiting the clinic to kindergarten as a toddler since the nurses there could give him vitamins and supplements.

In his youth, he had a wide variety of pets, including white mice, rabbits, squirrels, tortoises, doves, fish, cats, chickens, and even a scorpion, all to understand their habits, diets, and ways of survival.

These were the beginnings of his career path, but he didn't realize it until later.

Currently, UMT's Professor Ts. Dr. Mohd Effendy Abdul Wahid FASc is a very accomplished scientist. Throughout his 26 years of service to the institution, he has accomplished much in research and beyond.

The path that led to Professor Mohd Effendy's present level of achievement started in 1984. He began studying at Universiti Putra Malaysia when he was 18 and earned a Diploma in Animal Health and Production three and a half years later.

At the same institution, he enrolled in the veterinary medicine degree program. Before joining the programme, he actually had to make a difficult choice; to receive or decline a scholarship offered by the Canadian government for him to study microbiology.

"I decided to stay in a familiar place after talking to some people in my circle," he explained. Five years later, he earned his Doctor of Veterinary Medicine degree.

His leadership skills also started to show at this period. He served as an elected member of the college's executive committee for four consecutive years.

On top of it, he was named as one of UPM volleyball team member for three years.

Another difficult choice was his immediately following graduation. He had the choice between two jobs in Tanjung Bungah, Penang, but he decided to go back to university instead. Therefore, he had to say no to the veterinary position.

He then remained and enrolled at the same university for his master's degree.

Halfway through his master's degree program in 1996, he received an offer to convert to a doctorate program. Upon the successful defense, he got a doctorate in veterinary immunopathology in 1998.

Prof. Mohd Effendy began his teaching career at UMT (formerly called UPM Terengganu Branch) that same year, just before his convocation ceremony in UPM Serdang.

He remarked that among the few, he witnessed UMT's transformation from its original state to its current one. Prof Emeritus Dato' Dr Sulaiman Yassin was the of the faculty at that time. "He sent me to join a World Bank Workshop in Singapore during my first year in UPMT", he recalled.

At the end of year 2002, the Korean Institute of Science and Technology Partnering (KISTEP) offered him a nine-month post-doctoral fellowship at a South Korean institution in 2003, and he accepted. At Chonnam National University, Gwangju,

he affiliated with the Veterinary Pathology and Microbiology Department at the School of Veterinary Medicine. He was fascinated with the way the Korean professor works, conducting research and meetings, and collaborating with other scientist.

Engaged in Research

Professor Mohd Effendy has been an active researcher during his 26 years at UMT. His groundbreaking work in animal health and disease has catapulted him to national and worldwide fame.

Throughout his career as a scientist, he has competed in innovation competitions on both national and international levels, earning more than 53 research medals.

The university has protected some of its innovations and findings through patents. The SINavax intranasal vaccine, Seagold Liquid, a nutritious drink made from *Sticophus horrens*'s extract, a chitosan hydrogel derived from fish scales called Scalogel, and Heme-1, a medium for marine bacterial cultures, are all examples of these.

The opportunist bacterium *Mannheimia haemolytica* A2 causes manheimiosis, a respiratory illness in ruminants such as cattle, sheep, and goats. He became famous as a pioneering specialist in preventive veterinary medicine after inventing an intranasal spray vaccination to contain the disease.

The intranasal spray vaccine was awarded a patent (MY 152223) in 2014. On top of that, he won the inaugural National Intellectual Property Award in 2006, the Excellent Scientist Award in 2005 from Malaysia's Ministry of Higher Education (MOHE), and the Jury Gold Medal Award at INPEX in the US for his innovation. He also won a Special Award at the SIIF, South Korea on the invention of dust spray vaccine for haemorrhagic septicaemia in cattle and buffaloes. The research initiative resulted in the production of 12 publications, four master's and two PhD students.

In addition, he participated in a seahorse research project that aimed to learn more about the conservation of these rare marine animals in a hatchery setting and their possible use as traditional medicines. A monograph, two master's theses, and a coffee table book were the results of the effort by JBiotech Corporation.

Professor Mohd Effendy has also made significant contributions to the field throughout his tenure as an academic.

More than 150 of his works have appeared in print, including books, book chapters, journal articles, and conference proceedings worldwide.

He has supervised around fifty graduate students in the field of animal health and diseases, natural product bioprospecting effects and side effects of natural product on liver and kidney of lab animals.



He has over 26 years of teaching experience, having worked with 32 different batches of students at the undergraduate, graduate, and diploma levels.

He has been an independent examiner for twelve doctoral and twenty one master's theses written by graduate students at various institutions.



Top-level Posts

Throughout his twenty-six-year career, he has held several top-level managerial posts.

In 2004, he took on the responsibility as Head of the Centre for Student Development and Welfare, under the Office of the Deputy Vice-Chancellor (Student and Alumni Affairs).

From 2005 to 2013, he was the founding director of the Institute of Marine Biotechnology, which is now known to local and foreign researchers in marine biotechnology research.

"IMB has a special place in my heart," he said. "I helped develop the center from scratch. I instill the spirit of IMBig Family to make my staff share the same value and assist each other in completing every task."

In 2014, he was appointed as the first Assistant Vice-

Chancellor (Research and Innovation) and later in the same year as first Deputy Vice-Chancellor (Research and Innovation).

Professor Mohd Effendy is currently the founding Dean of the Faculty of Fisheries and Food Science, a post he has occupied since the faculty was first established.

The most notable was as a Visiting Professor under ASEM-DUO Exchange Programme at South Brittany University.

He has been elected as a Fellow of the Academy of Sciences Malaysia under the Biological, Agricultural, and Environmental Sciences disciplines, appointed as a Life Member of Fellow of Academy Professor Malaysia, and is also serving as the Chairman of Asian Fisheries Education Network (Asian-FEN) for three consecutive years beginning 2022.

Current Project

Professor Mohd Effendy was leading a research project on microalgae for sustainable aquaculture waste management. The project was carried out in 2017 when he secured a grant of RM2 million from the Japan International Cooperation Agency under its Science and Technology Research Partnership for Sustainable Development program (JICA-SATREPS). JICA also provided a few pieces of scientific equipment for the team to use in conducting the experiments at UMT.

"The project aims to search for indigenous microalgae in Malaysia as potential sources of carotenoids and flavonoids for nutraceutical and pharmaceutical applications," he said.

The team has successfully screened about 209 isolates and identified two species, *I. galbana* and *T. weissfloggi*, as high-value microalgae. The project has recruited five PhD and four master's candidates and produced 13 publications.

"There are more publications in the pipeline," he said.

Having served UMT for almost a decade, Professor Mohd Effendy has done much for the university. He has been instrumental in making UMT more visible in the international arena with his ground-breaking research innovations. His expertise has helped the university to ascend to greater heights. With a few years left before his retirement, he still has plenty to give.

Signs of him becoming what he is today were evident in his childhood. It is easy to see now why, as a toddler, he fell in love with those vitamins and the supplements or kept and observed and learnt those animals behaviour. The reason was simple. Professor Mohd Effendy was born to be a scientist. ♦



ACADEMIC
COLLABORATIONNever
Mind the
Distance

*UMT-UTAS collaboration
proves distance is not a barrier
for working together*

By Ts. Dr. Lokman Nor Hakim Norazmi

Terengganu and Tasmania may be spelled starting with the same letter, but both states are 69,000 kilometres apart from each other.

Each is home to a university, Terengganu to UMT and Tasmania to University of Tasmania (UTAS).

But the huge geographical distance between the states they are located in does not prevent the two universities from becoming strategic partners.

Despite being far apart, UMT and UTAS have been able to collaborate with each for over a decade, with their alliance still going on strong today.

Terengganu and Tasmania have different climates and aquatic systems. Terengganu, located in Malaysia, is well-known for its fishing industry and pristine sandy beaches and beautiful islands.

Tasmania, located in Australia, is an island state with amazing and unique aquatic ecosystem.

Despite these differences, both states share a common feature: they each have a university renowned in similar field. UMT and UTAS both focus on aquatic and marine sciences as well as maritime training.

Sharing the same niche area has opened the door for both universities to establish a collaboration with each other.

The relationship between the two universities started in the late 2000's. UMT began sending its academics to UTAS for their PhD studies, as the university down under has a similar focus with that of UMT, thus making it the perfect choice. Most of these academics who have successfully completed their PhD's at UTAS are from the Faculty of Fisheries and Food Science, Faculty and Science and Marine Environment, and Faculty of Maritime Studies.

Even after these UMT academics had left UTAS following the completion of their PhD, their relationships with former supervisors at UTAS are still intact. But instead of those of PhD students and their supervisors, the relationships have now evolved to those of research partners who have been collaborating with each other on research projects.

A series of successful collaborations over the years between UMT and UTAS had led to the idea of formalizing the partnerships. In 2015, the two institutions made their collaboration official when they signed a Memorandum of Understanding (MOU). The signing took place during a visit by UMT's delegates, led by the then Vice Chancellor Professor Dato' Dr. Noraieni Mokhtar, to UTAS campuses in Hobart and Launceston.

The MOU has led to more activities and collaborations between UMT and UTAS over the next few years.

In the MOU's first year, a group of UTAS delegates visited UMT, and one of UTAS students from the Australian Maritime College did her summer internship at UMT.



In 2017, two of UTAS professors from the Faculty of Education became keynote speakers at the Conference in Higher Education Teaching and Learning, organized by UMT and held in Terengganu.

Recently, in October 2023, Prof. Dr. Andrew McMinn of UTAS's Institute of Marine and Antarctic Studies flew all the way up from Hobart to Kula Terengganu for a scholarly visit where he delivered a seminar entitled 'The Role of Viruses in Marine Polar Environments and Their Response to Change'. He was hosted by UMT's Institute of Climate Adaptation and Marine Biotechnology (ICAMB).

In terms of joint publication, researchers from both universities have produced more than 30 journal articles, book chapters, magazine articles, and newspaper articles.

To date, UMT and UTAS researchers have carried out six joint research projects in the areas of aquaculture, marine sciences, and port management. They have also been actively submitting joint grant applications and co-supervising research students.

One of UMT academics, Ts. Dr. Lokman Nor Hakim Norazmi, has been appointed as an adjunct senior researcher at UTAS's Institute of Marine and Antarctic Studies.



His research work on alien pest fish management has not only resulted in several publications but led to his winning third place and the people's choice award at the Australian National Falling Walls Competition, held virtually in September 2021.

He then represented Australia at the 2021 Global Falling Walls Conference in Berlin under the Emerging Talent Category, bringing together UTAS's and UMT's names. UMT and UTAS will keep on moving forward, exploring more potential areas of research, and discovering opportunities that can propel both universities to greater heights.

Based on what UMT and UTAS have been able to accomplish so far, it can clearly be seen that distance is not a barrier for the two to work together.

In forming the strategic partnership, the huge geographical distance between the states they are located in is a secondary matter when both universities share the same values and goals.

UMT and UTAS will still be collaborating together even if Terengganu and Tasmania were to be four times the current distance from each other. ♦

INDUSTRY COLLABORATION

When one party has something in common with another, especially relating to the goals and objectives, it becomes easier for both to work together. They can combine their efforts to help each other in order to increase the chances of achieving success.

That is exactly what has happened to one of the faculties at UMT.

The Faculty of Fisheries and Food Science shares the same goal with the Department of Fisheries of Malaysia (DoF), with the goal being to conserve the country's fisheries resources. Thus, the two have been able to collaborate together for a long time, holding many joint activities ranging from research, academic, and volunteer programmes, and each has benefitted from the partnership.

Many successes have been achieved through collaborations between UMT and DoF. One of them is the Marine Park research grant which has been awarded to several lecturers from UMT to conduct research in various scopes of research since 2013.

In 2016, the faculty and DoF jointly held a scientific expedition to conduct a demersal fishery resource survey in the Exclusive Economic Zone (EEZ) of Malaysia's east coast waters. Lecturers and postgraduate students from the faculty and researchers from DoF jointly conducted the sampling activities and carried out research on various biological aspects of economically important fish species. The expedition was one of the components of the Fishery Resource Assessment in Malaysian Waters by DoF. speakers for the courses the faculty offers. In almost every semester thus far, they have given talks, sharing their insight of the industry in the classrooms to enable UMT students to have a better understanding of the real situation regarding the national fisheries industry.

After having collaborated for more than a decade, the faculty, through the university, and DoF finally signed a Memorandum of Understanding (MOU) in July 2020 to formalise the partnership. The signing ceremony was witnessed by Datuk Seri Dr. Ronald Kiandee, the then Minister of Agriculture and Food Industries.

The MOU is meant to further strengthen the academic and research collaborations between the two parties in various fields of expertise. As part of the agreement, the faculty and DoF have agreed to develop joint programmes including research, training and capacity building of staff and students, product development and commercialization, knowledge sharing through joint publication, and staff exchange between the two institutions.

Under the MOU platform, both partners have established the Centre of Excellence (CoE) for Marine Park and Fishery Resource Management. The plan to set up the CoE was conceived in 2019, and a series of meetings and workshops were conducted to discuss the centre's objectives, scopes, and methods of implementation. The faculty dean Professor Ts. Dr. Mohd Effendy Abd Wahid attended these meetings and workshops.

Sharing the Same Goal

*UMT and Department of Fisheries
work towards resource conservation*

*By Dr. Tun Nurul Aimi Mat Jaafar &
Assoc. Prof. Dr. Rumeida Mat Piah*



Scientific expedition on assessment of the spillover effect marine protected area in Pulau Payar, Kedah

The centre is responsible for managing the research and development activities of the researchers, as they attempt to strengthen the management of the national fisheries sector and increase the knowledge and competencies through education and extension activities. The centre also serves as a platform for sharing the expertise between the two parties for the purpose of capacity building and transfer of technology to benefit the staff.

The centre will provide short-term trainings to enhance the knowledge of the researchers in the field of fisheries and aquaculture, especially in fishery resources management. Also, opportunities will be available for DoF staff to further their studies at UMT. Researchers and officers from DoF will also be invited to jointly supervise the faculty's undergraduate and postgraduate students who conduct studies related to the centre's scope.



UMT and DoF researchers on MV SEAFDEC 2 research vessel during scientific expedition on Demersal Fishery Resources Survey of EEZ East Coast of Peninsular Malaysia organized by DoF. (Photo credit: Tun Nurul Aimi)



Memorandum of Understanding signing between UMT and DoF in July 2020 witnessed by Datuk Seri Dr. Ronald Kiandee, Minister of Agriculture and Food Industries (Photo credit: Media Kreatif UMT)

Since the centre's setup, both parties have engaged in several activities. Many of the planned ones however were not able to be carried out as scheduled, hindered by the COVID-19 pandemic. Among the activities successfully conducted

were virtual Industry in the Classroom, fundamental science and socio-economic research activities, consultations, and several workshops.



Memorandum of Understanding signing between UMT and DoF in July 2020 witnessed by Datuk Seri Dr. Ronald Kiandee, Minister of Agriculture and Food Industries (Photo credit: Media Kreatif UMT)

A joint collaboration workshop on fish product processing between Faculty of Fisheries and Food Science, UMT and Fisheries Academy Malaysia attended by 20 participants from DoF. (Photo credit: Nurul Ulfah)



Industry in Classroom knowledge transfer program for Diploma of Fisheries students by Pn. Wahidah bt. Mohd Arshaad from Marine Fishery Resources Development and Management Department, DoF. (Photo credit: Tun Nurul Aimi)



A workshop on Taxonomy, Creel and Genetic of Sharks and Rays organized by Marine Fishery Resources Development and Management Department attended by participants from UMT and WWF Malaysia. (Photo credit: SEAFDEC/MFRDMD)



Now that COVID-19 has become endemic, DoF and UMT have resumed a few active joint research projects. Several grants have been obtained by UMT researchers since 2023, among which is a project on critical and resilient habitat data collection in the west coasts of Selangor, Perak and Johor, amounting to RM650k. The project is led by Assoc. Prof. Dr. Lee Jen Nie from the Faculty of Science and Marine Environment. In 2024, several grants were also obtained by the lecturers of the Faculty of Fisheries and Food Science. These include a preliminary assessment of the spillover effect marine protected area in marine park of the West Coast Peninsular Malaysia, led by Assoc. Prof. Dr. Rumeaida. Another project

is led by Assoc. Prof. Dr. Seah Ying Giat with project on data collection and verification of fishing aids (Unjam) in Peninsular Malaysia, Sarawak and Labuan. Both grants amounting to RM250k each.

It appears that both parties have benefitted from the partnership that has existed for quite some time. There are plenty of reasons for the faculty and DoF to continue working together for the foreseeable future. The most important one is that both share the same goal, which is to conserve the nation's fisheries resources. ♦

RESEARCH & DEVELOPMENT

A team of researchers began their incredible journey with one challenging goal: to map and monitor paddy rice fields across the globe using advanced remote sensing technology.

Through the power of collaboration and innovation and a shared commitment to creating positive global improvements, the team found success in the end.

The team, consisting of researchers from Universiti Malaysia Terengganu (UMT) and the University of Sydney, successfully developed an app for accurately mapping and monitoring paddy fields globally in high-resolution and in real-time.

Accurate and up-to-date information on planted and harvested paddy rice can help facilitate better management of rice production.

Rice plays an important part in people's lives. It is the most strategic commodity in the world, and it is closely connected with food security, economic growth, employment, culture, and regional peace.

This cereal grain is a fundamental staple for over half of the world's population, and it accounts for a significant 10 percent of global arable land. In 2021, 787 million tons of rice were produced, placing it fourth after sugarcane, maize, and wheat. China and India combined for 52 percent of the total, which is not surprising considering the two countries are the largest consumers of rice.

Surprisingly, despite the vital role of rice in sustaining communities worldwide, accurate and consistent mapping of paddy rice extent, as well as cropping intensity, was sorely lacking.

The existing method of rice field estimation, which was based on field surveys, was inefficient, not to mention time-consuming.

That means there was no accurate way of knowing how much rice had been grown and how many tonnes could be harvested.

Thankfully, rice has been the subject of research at UMT. Its researchers carry out studies on the cereal grain as part of their activities under the crop science field. One of the researchers is Dr. Rudiyanto, whose expertise is agricultural engineering. Dr. Rudiyanto specializes in environmental soil physics, digital soil mapping, and remote sensing.

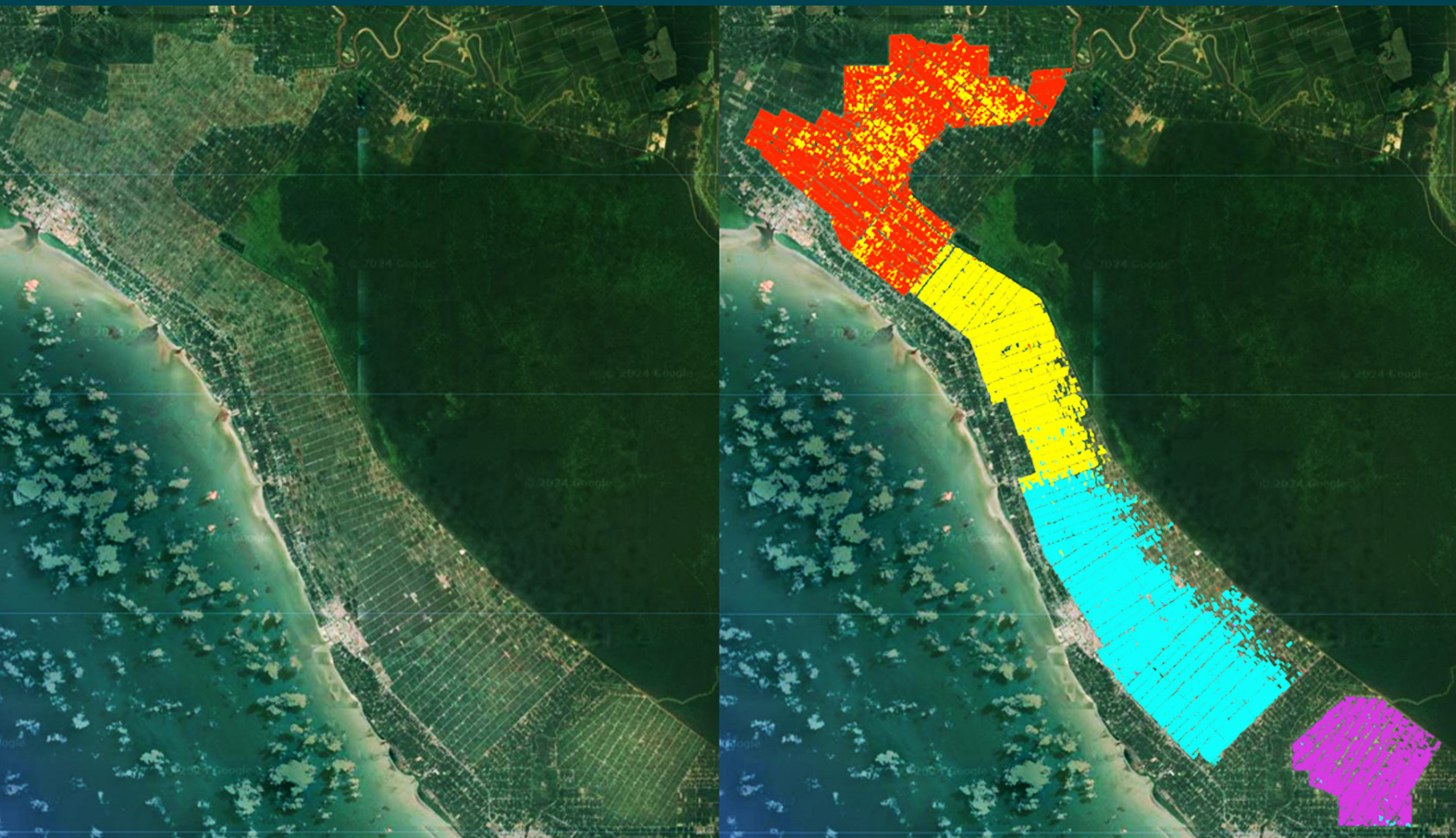
Paddy Watch team Set up

To kickstart the development of an app for accurate mapping of paddy rice extent, Dr. Rudiyanto set up the Paddy Watch team. Members include Dr. Ramisah Mohd Shah, Dr. Norhidayah Che Soh (Faculty of Fisheries and Food Science, UMT), Prof. Budiman Minasny, Dr. Jose Padarian (The University of Sydney), and Mr. Shukran Abdul Rahman, Mr. Mohd Rosmaini Mat Nawi (IADA Ketara, Malaysia).

Eyes in the Sky

A team of researchers developed an app for paddy rice field mapping and monitoring from space

By Dr. Rudiyanto



As an initial option, the team tried a survey method using MODIS satellite data to estimate rice-growing areas at a regional and national scale. However, the imagery provided by the satellite was in coarse resolution, not high resolution. Furthermore, the satellite was always affected by cloud cover in many regions of the world. Using MODIS satellite data did save time in comparison to field surveys, but it was inaccurate and, in some regions, unusable for monitoring rice fields.

The team then decided to use the Google Earth Engine (GEE) platform to build the first real-time mobile application for accurately mapping paddy rice extent.

GEE is a cloud-based geospatial analysis platform that enables users to visualize and analyze satellite images of the earth. GEE is widely used by scientists for many purposes, among them remote sensing research, disease outbreak prediction, and natural resource management. GEE is free for academic and research use.

The real-time land-use data generated using GEE is clearer and more reliable than other satellite data providers.

In 2019, Dr. Rudiyanto initiated a revolutionary approach with his groundbreaking paper titled 'Automated near-real-time mapping and monitoring of rice extent, cropping patterns,

and growth stages in Southeast Asia using Sentinel-1 time series on a Google Earth Engine platform.' This paper paved the way for a transformative dream — a dream to map paddy rice on a global scale.

Gaining International Recognition

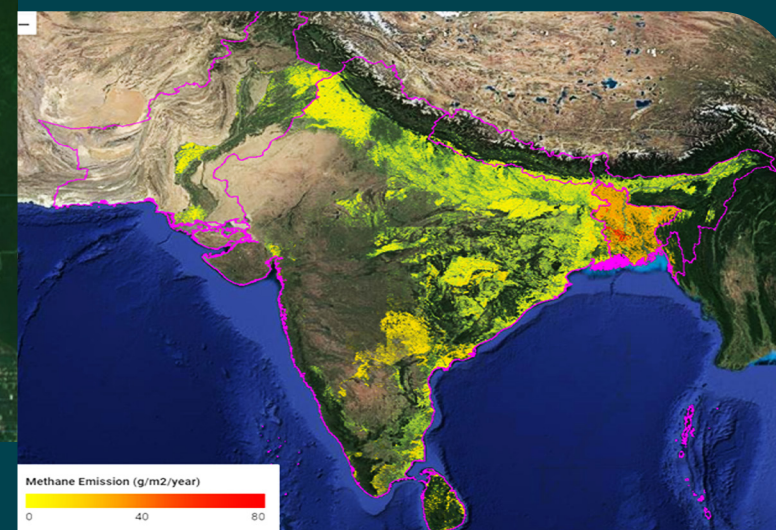
Fast forward to July 2020, and the Paddy Watch team embarked on a journey that would soon make their project gain international recognition. Paddy Watch was among the 32 projects supported by The Group on Earth Observations (GEO) and Google Earth Engine (GEE) programme.



GEO is an intergovernmental partnership of 111 countries. The partnership coordinates more than 60 global activities under the GEO Work Programme.

With the project being selected by the programme, the way was paved for Paddy Watch team to build an app in Malaysia using cutting-edge GEE and cloud computing technology. The app was ready to make its entrance onto the international stage.

The app uses Google Earth Engine (GEE) platform, which provides a powerful cloud computation engine, and Sentinel-1 and Sentinel-2 satellite imagery data, freely accessible in public domains. Dr. Rudiyanto's postgraduate students, Frisa Irawan Ginting and Fatchurrachman, made substantial contributions to the development of Paddy Watch.



Further Strategic Collaborations

Paddy Watch's success was further assisted by a couple of strategic collaborations.

In December 2020, Paddy Watch collaborated with the Japan Aerospace Exploration Agency (JAXA). The alliance opened the door for Paddy Watch to use ALOS-2/PALSAR-2 ScanSAR Data Products for the Global Agricultural Monitoring (GEOGLAM) initiative. This marked a significant step forward, expanding Paddy Watch's capabilities and reach.

The turning point arrived in March 2021, when Paddy Watch joined forces with the Climate TRACE programme, partnering with WattTime, a prominent environmental tech non-profit based in the USA. The Climate TRACE programme, supported by Former U.S. Vice President Al Gore, empowered Paddy Watch to take on the challenge of mapping harvested paddy rice fields globally. The team, led by Dr. Rudiyanto, embraced the challenge with unwavering determination and completed the task in a timely fashion.

Paddy Watch emerged as a groundbreaking technology, becoming the world's first platform for mapping harvested paddy rice fields globally in high-resolution. This Digital Agriculture application, powered by satellite imagery, cloud technology, and machine learning, now provides accurate and up-to-date information on planted and harvested paddy rice. This innovation is crucial in the pursuit of global food and water security. It is also in a seamless alignment with the United Nations Sustainable Development Goal of Zero Hunger.

The collaboration with Climate TRACE has also enabled Paddy Watch to calculate methane emissions from global paddy fields and emphasized the interconnectedness of food security and climate change.

Owing to the initiatives taken by the team of researchers from UMT and the University of Sydney, an app is now available for accurate mapping and monitoring of paddy rice fields globally.

Driven by this challenging goal, the team set out on a remarkable undertaking, and by pulling their resources together, the team found success in the end. ♦

YOUNG
ACADEMICIANHer
Destiny
All Along

A young fisheries lecturer is building her career at UMT

By Wan Zulkifli Wan Kassim

She was not born into a fisherman's family, or raised in the coastal side of the country. She actually grew up in Kuala Lumpur, a modern city far from the oceans and filled with steel-clad skyscrapers and mega shopping malls.

This fact about her background is somewhat surprising considering the post she is holding now. Assoc. Prof. Dr. Wan Nurul Nadiah Wan Rasdi is currently an associate professor in fisheries at UMT.

Dr. Nadiah has been with the university for the past eight years, relentlessly working to find ways to improve aquaculture production and management.

"My research aims to help maintain food security," she said.

Dr. Nadiah's research focus is plankton as a 'living capsule' that can deliver nutrients to larval fish and shrimp in the aquatic ecology and aquaculture. Plankton is a collection of tiny organisms that live at and beneath the surface of lakes, rivers, ponds, and oceans across the planet, and is a source of food for other animals.

She studies the effects of climate change on plankton biology, variety, abundance, growth, and reproduction. She hopes her research will help improve live food nutrition for larval fish and shrimp.

Impressive Journey

Dr. Nadiah's journey into the world of oceanic organisms began when she chose to study marine biology at UMT for her bachelor's degree. She graduated in 2009.

After her graduation, she chose to further her study to a master's level instead of starting her career right away. She registered as a postgraduate at UMT again, already feeling comfortable with the atmosphere. After successfully completing her research project on crustacean endocrinology, she graduated with a Master of Science in Aquaculture in 2010.

As if Dr. Nadiah was fated to remain at UMT, an offer then came from the university. She was hired as a tutor in 2011. She stayed until 2012, before she went for her PhD under UMT Academic Staff Training Scheme.

Dr. Nadiah registered as a PhD student at Flinders University, Australia. She worked on a project titled Aquaculture Nutrition: Planktonology Live Feed Culture. Her effort paid off when she graduated in 2016.

When she returned to UMT the same year, Dr. Nadiah was offered the post of University Lecturer at the Faculty of Fisheries and Food Science.

Since joining the faculty, courses Dr. Nadiah has frequently taught include Live Feed Culture, Plankton Culture, and Fisheries Biostatistics. Her students are mostly from the Bachelor of Fisheries and Aquaculture programme.

During her time as an academic at UMT, Dr. Nadiah has had some impressive achievements.

She was appointed as a visiting lecturer at Kagoshima University from April 2019 to March 2020. She became an associate editor for UMT's Journal of Sustainability Science and Management in July 2019 and is assuming the role until July 2025. She served as the programme chair for Aquatic Research at UMT's Institute of Tropical Biodiversity and Sustainable Development from September 2020 to August 2022.

Dr. Nadiah was the recipient of UMT's Excellent Service Award from 2017 to 2022. In 2019, she also won the Vice Chancellor Special Award. She won a national award in 2020 for her Pro-Nutricube, an innovative feed formula technology for zooplankton nutrition booster.

Dr. Nadiah was promoted to associate professor in 2022, having met the requirements set by UMT.

Expectations Fulfilled

In the eight years she has been with UMT, Dr. Nadiah has ably fulfilled the expectations placed on a university lecturer.

She has completed 6 grant-funded projects either as a main researcher or co-researcher. The total fund received for these projects was close to RM5 million. Dr. Nadiah secured her first research grant in 2019, as main researcher for the FRGS project titled Dietary mechanism of nutrient transfer from enriched *Moina macrocopa* to Nile tilapia, and the project was successfully completed in 2021.

From one of her projects' outcomes, Dr. Nadiah has produced an intellectual property which is entitled Planktonic Recirculation Aquaculture System (RAS) Prototype (Copyright No. 2019001755).

Currently, Dr. Nadiah is involved in a research project under the Long-term Research Grant Scheme as a co-researcher. The project is called Charting the effects of climate change and acidification through marine organisms' physiological responses, and the grant received is RM1,041,000. The project is scheduled to be completed by November 2024.

Dr. Nadiah has written 53 articles for publication in WoS and SCOPUS-indexed journals and as a book chapter. She is the corresponding author for more than 20 of these articles and co-author for the rest. Her first article, Effects of dietary microalgae on fatty acids and digestive enzymes in copepod *Cyclopina kasingneti*, a potential live food for fish larvae, was published in 2016 for Aquaculture Research journal, indexed in Q2, WoS and ScopUS.

A few articles bearing her name are in the pipeline, expected to be completed soon.

Dr. Nadiah has been quite active in postgraduate supervision. Two students she oversaw as main supervisor and one as co-supervisor have graduated. Her student, Wan Nur Amirah Wan Yuslan, for whom she oversaw as main supervisor,





graduated in 2021 after having completed her research titled Feed nutritional value of enriched cyclopoid copepods (*Oithona* sp.) as a potential live feed in larval rearing of the mud crab (*Scylla olivacea*).

She is currently supervising seven postgraduate students.

Dr. Nadiah has given talks as an invited speaker at more than 20 seminars and conferences at national and international levels. She spoke on a topic titled Environmental Science: The Power of Plankton, during the Fisheries and Aquaculture Session at the International Joint Seminar between Nagasaki University and UMT in June 2021.

She was an invited speaker at the Joint Seminar on CREPSUM (Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems) held in March 2023 at the University of Tokyo, Japan. A few months later, in October, she was invited by PICES to give a talk on Sustainability Management of Plankton Fishery Resources of Asian Waters in Preserving the Marine Environment at the Westin Seattle, USA.

Given her extensive research experience on live feeds, Dr. Nadiah was invited as a keynote speaker to GIANT PRAWN 2023 conference in Bangkok, Thailand.

In addition to having been invited as a speaker, Dr. Nadiah has also been appointed as an editor and a reviewer for 25 articles for scholarly publications including journals and books. Some of the journals are *Asm Science Journal*, *Aquaculture Research*, and *Malaysian Fisheries Journal*.

As she progresses into her career at UMT, Dr. Nadiah hopes she will be able to contribute more towards the university's growth and development. She also has a high goal in sight.

"I hope to provide a lasting contribution of my expertise to students, community and society as an academic leader in the field of planktonology live feed culture," she said.

Judging by what Dr. Nadiah has accomplished to date, it can safely be said that she will not be an associate professor for long at UMT. There is a high likelihood she will move up her career ladder in the not-so-distant future.

Considering her present success in the field of fisheries, it is quite astonishing that she had a different background growing up.

She was not raised among the fishermen. She was brought up in a city. But it was her destiny all along! ♦

PhD THESIS

Consuming these drugs may trigger coughing and skin rashes, disturb the sense of taste, and cause angioedema, swelling of the deeper layers of the skin due to fluid build-up.

The drugs in question are antihypertensive drugs made from synthetic compounds, and they are known to cause undesirable side effects.

But now a natural remedy for hypertension, derived from marine proteins, and one that is safer, has been discovered.

A PhD study conducted by Dr Zaliha Harun when she was a postgraduate student at UMT found that mud crab meat contains protein that can lower hypertension, or high blood pressure, while protecting the body from oxidative stress-related diseases.

Hypertension occurs when the force of blood pushing against the artery walls is consistently too high. This forces the heart to work harder to pump blood. When this is the case, a blood pressure reading taken by a monitor may show 140/90 mmHg or higher.

Since 2000, the number of people with hypertension has rapidly increased. Globally, hypertension affects 40% of adults aged 25 years and above.

If untreated, hypertension may lead to serious health problems. It may contribute to cardiovascular diseases, such as heart disease, heart attack, or stroke.

At present, commonly available treatments for hypertension are antihypertensive drugs made from synthetic compounds. These drugs include captopril and enalapril.

However, these drugs have been reported to be unsafe as they cause undesirable side effects. These antihypertensive drugs also contain N-nitrosodimethylamine (NDMA), a dangerous chemical compound that may cause liver, stomach, bladder, and prostate cancer.

The high prevalence of hypertension and unsafe synthetic antihypertensive drugs have drawn researchers to find natural remedies as alternatives.

Peptides from Food Protein

One that has been extensively studied as a promising treatment for hypertension is peptides from food protein. Peptides, smaller versions of protein, can lower the blood pressure by inhibiting angiotensin converting enzyme (ACE). ACE is an enzyme that increases the blood pressure by converting angiotensin I, an inactive hormone flowing in the bloodstream, into angiotensin II, an active hormone that causes the muscular walls of small arteries to narrow, thus increasing blood pressure. ACE also degrades bradykinin, a molecule that helps lower the blood pressure.

ACE-inhibitory peptides have been isolated from several food proteins, including milk protein, egg protein, and soy protein. They have also been isolated from fish, squid, jellyfish, and shellfish.

More Than Just Food

Mud crab meat contains protein that can lower hypertension without undesirable side effects

By Wan Zulkifli Wan Kassim

Also having been isolated from these marine proteins are antioxidant peptides. These peptides can help improve health by protecting the body from oxidative stress-related diseases that include cardiovascular diseases.

Another source of marine proteins is the mud crabs.

Mud crabs of the genus *Scylla* are distributed in many tropical countries throughout the Indo-Pacific region including the Philippines, Indonesia, Vietnam, India, Sri Lanka, and Malaysia. Mud crabs have become important seafood that is widely consumed for their unique taste and farmed on a commercial scale in increasing density in Southeast Asia. In Malaysia, mud crab catches are restricted at estuaries and coastal areas that contain mangroves.

Mud crab meat accounts for 30 percent of the total body weight, with male crabs showing higher meat yield than female crabs. Mud crab meat is reported to have high protein content, so it is among the best sources of dietary protein, and with unique taste.

Besides being a good source of dietary protein, mud crabs might also become a potential source of peptides with bioactive properties, which means they have an effect on living tissues. The presence of water-repellent amino acids in mud crab meat may mean it is a potential source of ACE-inhibitory and antioxidant peptides.

No Reported Studies

To date, studies on bioactive peptides from mud crab meat protein have not been reported, especially on ACE inhibitory and antioxidant activities.

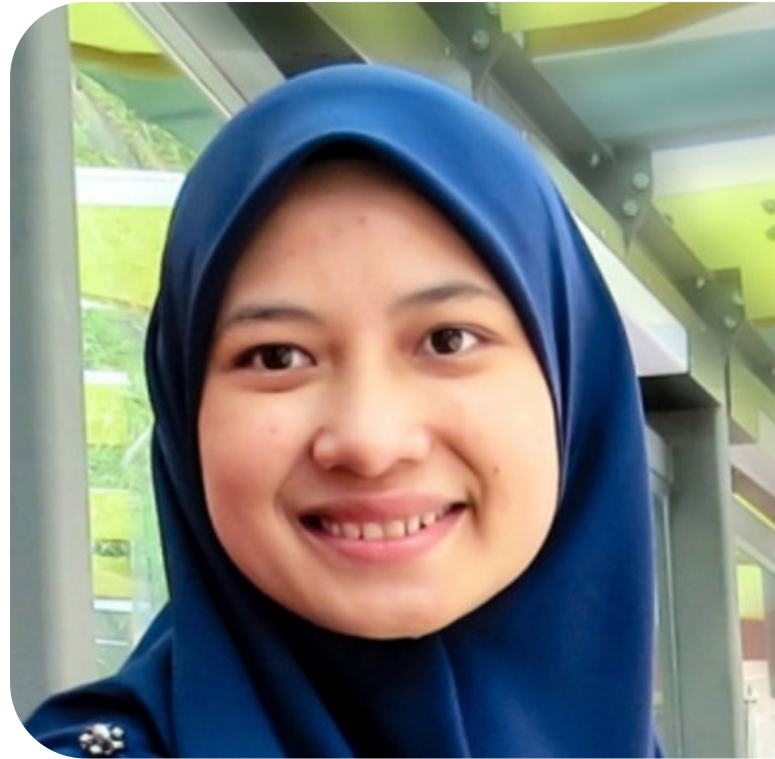
Thus, a study was carried out by Dr Zaliha when she was a PhD student at UMT to investigate the potential production of ACE inhibitory and antioxidant peptides from mud crab meat protein hydrolysis. This would provide an option for a safe and natural alternative to synthetic drugs to control blood pressure as well as protect the body from oxidative stress-related diseases.

This study may add more value to mud crabs as raw materials for nutraceutical products, which in turn will raise the market value of mud crabs and increase the economic value of the local people that are involved with mud crab fishery.

To begin the study, one hundred kilograms of whole live mud crabs from wild catches (both male and female) were purchased from a wholesaler and transported to the laboratory.

The mud crabs were then cleaned. Their alimentary canals and gills were discarded, and the crabs were washed to remove dirt. They were cut into two and all their legs were removed except for the chelipeds, or claws, because there is also meat in them.

The mud crabs were steamed for 5 minutes in a steamer, then left to cool at room temperature.



Finally, the mud crab meat was separated from the carapaces, or the hard shells. The meat was then homogenized using a food processor.



Obtaining Bioactive Peptides

To obtain bioactive peptides from the mud crab meat, the meat underwent hydrolysis, a chemical process where water is used to break down the chemical bonds that exist between a substance. For this study, homogenized mud crab meat was first heated for 10 minutes to destroy the endogenous enzyme, an enzyme that exists within the meat itself. Distilled water was added to meat and the mixture was adjusted to pH 6.5. Next, a specific enzyme was added to the mixture to initiate the hydrolysis.

After a series of scientific processes, protein hydrolysate, which is the product of hydrolysis, was collected. These peptides were then subjected to several sets of experiments to determine their ACE-inhibitory and antioxidant activities. The ACE-inhibitory activity was determined by measuring the extent of ACE inhibiting the hydrolysis. The ACE-inhibitory activity was calculated using a specified formula. The antioxidant activity was determined using several assays, which are procedures used to measure the antioxidant capacity of peptides.

Following a comprehensive process, the study was able to identify the enzymatic hydrolysis condition of mud crab meat to obtain maximum ACE-inhibitory and antioxidant activities. The optimum condition for producing maximum ACE-inhibitory activity was 65 °C, pH 5.4, 4 hours of hydrolysis time, and 1% of E/S ratio. The optimum condition for producing maximum antioxidant activity was 45 °C, pH 5.6, 1 hour of hydrolysis time, and 1% of E/S ratio.

Based on the study's findings, it can be concluded that

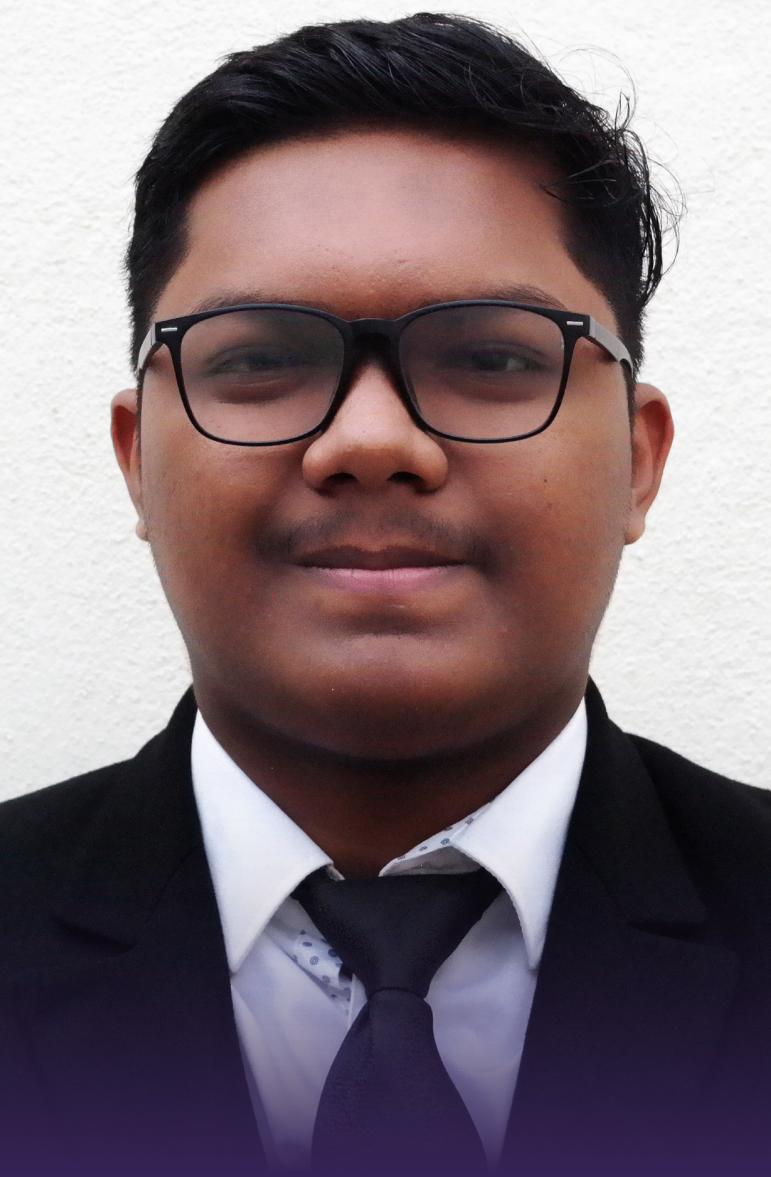


mud crab protein is a potential source of ACE-inhibitory and antioxidant peptides.

The PhD study has confirmed that mud crab meat protein can help regulate blood pressure and protect the body from oxidative stress-related diseases.

A natural remedy is now available for treating hypertension, without triggering the undesirable side effects.

Once the protein is mass-produced for public consumption, people with hypertension will have a safer treatment option. No more coughing, skin rashes, loss of sense of taste, and angioedema, thanks to mud crabs. ♦

EXCELLENT
STUDENTExample
Setter

*A food science student has proven
he is a role model for others*

By Wan Zulkifli Wan Kassim

Those close to him questioned his choice when he selected a field of study he has been passionate about and did not even consider the one they expected him to.

In the end, his decision to learn more about food science at UMT has worked out for him.

In the four years that he has been at the university, Muhammad Afiq Akasyah Ismail has managed to become an exemplary student. And befittingly, he has been chosen to give a graduation speech at the coming convocation.

“One of my life’s mottos is ‘Follow your heart and instincts’,” he said. “It is a motto I hold dearly to my heart, and it has influenced lots of my life-changing decisions.”

Even at a young age, Afiq, as he would like to be called, already knew what he wanted to be. Because of his deep interest in food, his ambition was to have a food-related career.

His fascination with food developed from watching his late grandmother, his first cooking idol, prepare and cook the food. The interest was also influenced by his living in Klang, a city where various types of food from different cultures and places can be found.

His interest in food rose further when he saw Chef Wan, a popular celebrity chef, on various television programmes. The famous chef quickly became his role model.

As time passed, he developed his cooking skills even further. He slowly took over the role of his mother, preparing food for the family. He said he felt the need to help his mother out, and he felt the excitement when cooking for other people.

When it came time to decide the field of study for his degree, Afiq had an obvious choice. He opted for food science, much to the bewilderment of his parents. They thought his choice was rather unusual. They became more accepting of his decision when he told them food is his passion, and he did not want to let go of the opportunity to learn more about it.

His decision also made the people in his circle raise their eyebrows. He assured them things would be fine.

It was not that he failed to receive offers for other fields of study. As a matter of fact, he turned down a few engineering degree offers from other institutions.

Registered as UMT Student

When the day came in 2017, Afiq registered at UMT as a student of Bachelor of Food Science (Food Service and Nutrition) with Honours, ready to pursue a unique journey and face all the challenges.

During his four years at the Faculty of Fisheries and Food Science, he has always been an excellent student academically. He has obtained excellent grades in each semester and has always been on the dean’s list. By graduation time, his cumulative grade point average shall be 3.72, entitling him to graduate with a first-class distinction. Afiq’s recipe for success is quite simple.



“Studying and completing assignments come first. Other things come later,” he said. “I seek to give my best in every assignment or task given by the lecturers.”

His excellent academic achievements have been acknowledged with several awards. In 2020, he received the Best Student Award from the Malaysia Institute of Food Technologist, being the sole representative from UMT. In 2021, he received his second Best Student Award, this time from the Faculty of Fisheries and Food Science for being the best student of the food science programme. In the same year, he also received the Best Student Award from the Food Science Club of which he is a member.

“I dedicate these awards to my parents, lecturers, and friends. Without them, I am nothing,” he said.

Another proof of Afiq’s academic excellence is his successful final-year project. UMT students are normally required to write a research paper for their final-year project, but during Afiq’s time, they were asked to write a review paper instead because of the lockdowns brought about by the Covid-19 pandemic.

His work titled “Meat Products: A Review on Potential of Agro-Industrial Plant Extracts and By-Products as a Suitable Source Of High Added Nutrient Values And Improved Product

Qualities” was acknowledged as the best review paper by the panels and his supervisor. He wrote the review paper without any physical supervision from his supervisor and was able to complete it within six months, a time frame considered too short by all the students, and himself as well initially.

“Brain crunching,” he said, describing his thesis-writing days. “It was arduous, but I took it as a challenge.”

Leadership Skills

Apart from being a brainy student, Afiq has also demonstrated he possesses leadership skills. He used to hold the post of president of the Food Science Club (FSC), one of the biggest clubs at UMT, with close to 800 members. As president, he fulfilled his manifesto promises one by one, starting with rejuvenating the club.

Under his leadership, the club organized more than 50 programmes in one year, a record-breaking achievement. There were volunteering, competition, awareness-spreading, and soft-skill enhancement programmes. Afiq himself joined many of the volunteer programmes, being inspired by Oprah Winfrey’s quote that says “In order to move forward, you have to give back.”



He also managed to generate sponsorships and increase the club's cash reserve. When he left the club, it had a surplus of more than RM5000.

"The post shaped me the most," he said. "It taught me how to be a proactive leader and how to plan for the future."

His next post was with the student council, where he chose to become a member of the secretariat, working as part of the team that carried out directives from top management, instead of being a leader. He wanted the change of scenery for his own learning experience.

He said both posts taught him valuable skills, with one teaching him how to be a good leader and organize well while the other training him how to follow orders and carry out instruction correctly.

Afiq does not wish to be a type of student who buries his head forever into textbooks, so he allocates some time between his studies to take part in other activities.

Armed with a good singing voice, he joined a singing group called Ilhaam, becoming one of the soloists. The group represented UMT at an international competition, with groups from Singapore, Indonesia, and Brunei also participating. He said the experience was such an eye opening for him.

He led a team of seven members and completed a project that created vegan floss that tasted exactly the same as meat floss. The project will be featured at an upcoming international product development competition.

"It is such an honour that our idea was acknowledged," he said.

Also an Athlete

When an opportunity came, Afiq displayed the athlete side of him by joining the Woodball club and becoming one of the main woodball players for UMT. However, the planned tournament was halted because of the Covid-19 pandemic, and Afiq could not show off his woodball talent.

Afiq was the head editor of the student magazine for the 2017-2021 cohort. He coordinated a team of 15 people from afar and they managed to complete the magazine within three months. The magazine received positive feedback from the lecturers and students, proving it to be a success.

Not wanting to burden his family, Afiq has done part-time work during his free time so he could gain some pocket money. He has worked as a driver and runner for UMT students. Being a kind person, he sometimes charged at a discount when

cash-strapped students were his customers. He said the job taught him a lot of social skills as he had to communicate with various types of student customers.

Because of what he has achieved in his four years at UMT, Afiq typifies an excellent student. It is easy to see why he has been chosen as the student representative to deliver a graduation speech on the day he will be conferred his degree.

It will never be known what would have happened to him if he had chosen another field of study at another university. What is already known though is he made the right decision by studying food science at UMT.

Those close to him will no longer question his choice. ♦



INTERNATIONALIZATION

Enthusiastic
Visitors

International students visit a faculty at UMT for a yearly training programme

By Assoc. Prof. Dr. Mohd Hanafi Idris

Between October and November last year, some lecturers at the Faculty of Fisheries and Food Science (FPSM) were a little busier than usual. They had additional students to teach, 51 of them to be exact, but they were not UMT undergraduates.

These were actually students from the Chattogram Veterinary and Animal Sciences University (CVASU), Bangladesh, who came to UMT to learn more about various aspects of fisheries, a field the faculty has many experts on. So, for 25 days the lecturers at the faculty taught them about fish nutrition, fish health and diseases, and fish breeding.

But that was not the first time they have trained the students from CVASU.

For the past seven years, the faculty has been providing such training to students from the university in Chattogram, Bangladesh, and the training has been something they look forward to attending each year.

The programme has been successful so far. The faculty has the required expertise to make the training beneficial to these students.

It all started in 2016, when UMT and CVASU signed a Memorandum of Understanding (MOU) with each other. What made the partnership possible was that both UMT and CVASU have something in common, which is a focus on fisheries, despite being more than three thousand kilometres apart.

At UMT, FPSM is the faculty that mainly carries out the fisheries-related activities. The faculty came into existence in 2019 as a result of a merging of two schools, School of Fishery Science and Aquaculture and School of Food Science and Technology. The faculty's aim is to become a centre of academic excellence in the fields of fisheries, aquaculture, food science, and crop science.

To realize this aim, the faculty strives to provide quality academic programmes and establish research networks and collaboration, nationally and at the global level. One of the collaborations is with CVASU.

CVASU is a public university in Bangladesh, and it is the only specialized veterinary university in the country. The university has several faculties, including the Faculty of Fisheries, which is where fisheries activities are carried out.

Sharing a common trait, both universities decided to forge a strategic partnership to benefit from each other's strengths. Thus, on 30 September 2016, UMT and CVASU signed the MOU for academic and research exchanges, with Professor Dato' Dr. Nor Aieni Haji Mokhtar signing on behalf of UMT and Professor Dr. Goutam Buddha Das on behalf of CVASU.

Under the MOU, UMT and CVASU agreed to jointly develop cooperative educational and research programmes for the school or faculties and students at both universities. One of these is the academic exchange programme, where UMT and CVASU agreed to conduct industrial training or internship programmes for each other's students.

First Training

From 7 November to 5 December 2016, as per the agreement in the MOU, the faculty that was then known as the School of Fisheries and Aquaculture Sciences conducted the first training for 35 students from the Faculty of Fisheries, CVASU. The first programme was a huge success.

After the first session, the faculty had successfully conducted the training from 2017 to 2020 before the unexpected turn of events took its course.

Because of the Covid-19 pandemic, the faculty was not able to provide the training in 2020 and 2021. The outbreak made it impossible for the students to come to UMT, as inter-country travel was not allowed.

From 2016 to 2019, the faculty managed to train all together 345 students from CVASU.

In January 2021, in place of the training session, an international online seminar was held. The seminar featured guest speakers from both universities.



In the same year, the MOU between UMT and CVASU was renewed for another six years, and so the training will continue to be offered until 2026. Seeing how the training has been very beneficial, the dean of the Faculty of Fisheries, CVASU, Professor Dr. Mohammed Nurul Absar Khan, expressed his desire that the training be continued and students from his faculty can come to UMT.

The renewed MOU led to the faculty conducting another training session in 2022, the first since the Covid-19 pandemic.

With the training back in action last year, the students from CVASU had the opportunity to gain more knowledge of fish nutrition, fish diseases, and hatchery technology. And experts at the faculty were able to impart their knowledge to international participants.

Components Taught

The roughly month-long training programme consists of three main components: fish nutrition, fish health, and hatchery technology. These are taught by experts in the related fields. For fish nutrition, students learn about fish feed and fish nutrition aspects. The activities are conducted at the Fish Nutrition Management Laboratory at the faculty.

The fish health component introduces to students the health management aspects of aquaculture, parasitology, virology, and bacteriology. Students are exposed to the topics at the Aquatic Organisms Laboratory at the faculty.

To learn about hatchery technology, students visit the Institute of Tropical Aquaculture and Fisheries (AKUATROP), where they are exposed to hatchery management, crab seeding, and giant prawn seedlings.

As part of the programme, students are also taken on a tour to some of the interesting places around and involved in some of the activities UMT students normally participate in, such as sports and sea survival.

To join the training programme, the students must complete the registration process when they first arrive, like every other UMT student. They need to have their photos taken for student card preparation.

Before the training sessions, the faculty holds an orientation programme, usually in collaboration with UMT's International Centre. At the event, students are formally welcomed, and they are handed their student cards, which have their photos taken earlier. They are also briefed on the training programme and introduced to the lecturers.

For the duration of the training, the students stay at UMT's residential colleges. They are assigned student buddies, who would help them get acclimatized to the new atmosphere.

After completing the training, students are awarded 2 credit hours for credit transfer. When they return to their campus,



they should be able to apply the techniques, skills, experience, and knowledge gained during the training.

Thanks to the renewed MOU, the faculty will be welcoming students from CVASU to UMT for several more years.

The lecturers at the faculty will be a little busier again between October and November, the usual time the training is conducted, but they will happily accept that reality, knowing what they do has been recognized internationally. ♦

ABOUT TERENGGANU

It gives out a distinctive aroma when fully cooked through boiling in water. It has a soft rubbery texture and tends to be a little slippery when piping hot. Long, thin, and cylindrical in shape, it looks a lot like a sausage. Except that its length may be a bit longer, its colour is grey, and its main ingredient is fish.

The plain-looking food, but delectable as claimed by the locals, is known as *Kerepok Lekor* in Malay.

Kerepok Lekor is one of Terengganu's traditional foods, as attested by the National Department for Culture and Arts of Malaysia, and it has remained popular among the natives and visitors until today.

Terengganu, a coastal state located on the east coast of Peninsular Malaysia, is synonymous with the fishing industry, having an abundance of fish and ample landing places for fishermen's catches. Easy access to plenty of fish is one of the factors that has enticed the locals to venture into *Kerepok Lekor* industry.

Kerepok Lekor is said to have originated in Terengganu many years ago. According to this theory, the fishermen had caught an abundance of fish, but did not know what to do with such a large amount of catch. So they decided to create a new dish by mixing the fish flesh with sago, a type of starch obtained from tropical palm trees.

As for how the name *Kerepok* came to be, it is said that once the mixture was kneaded, it was lifted and thrown back on a wooden board repeatedly. This action of tossing the mixture onto the wooden board produced the sound *kelepok*. Since the dish had not had a name yet, it was referred to from then on as *Kelepok*. Over time, the name changed to *Kerepok* and the food has been called as such till today.

However, there are several other versions of its history making the rounds.

Invented during Wu Dynasty

In one version, the food is claimed to have been first invented by the people in China during the Wu Dynasty. They discovered that mixing fish with flour and frying the thinly sliced dough yielded crunchy food loved by many.

The theory goes on to say that when the Chinese travellers landed in Terengganu in the 6th Century AD, they tried mixing fish with sago. They found that the mixture became more elastic, tasted better, and turned out crunchier when fried.

They also tried boiling the dough and found that it was delicious too.

The practice of boiling *Kerepok Lekor* was continued by the locals then, and it is still widely carried out today.

As for the name, this version said it originated from the sound produced when the dough was being fried. *Kelepok*, the sound, was then used to refer to the food as it had not had a name. Over time, *Kelepok* changed to *Kerepok*, and the new name remains to this day.

All-time Favourite

*Plain looking but delectable
Kerepok Lekor is one of
Terengganu's popular foods*

By Wan Zulkifli Wan Kassim



In the Malay dictionary, *Kerepok* is defined as “food made from a mixture of sago and ground fish.” The word has no exact English translation, since it supposedly originated from a sound.

There is another version that ties the word *Kerepok* to a word of almost similar sounding from the neighbouring country Indonesia. According to this version that goes around the Internet, the name *Kerepok* is borrowed from the Javanese word *Krupuk*, referring to a fried side dish made from flour mixed with other ingredients.

As for *Lekor*, it is an existing word in Terengganu dialect, derived from the standard Malay word *lingkar*. Terengganu dialect mostly omits pronouncing the letter “n” when it is in the middle of a word and pronounces the letters “ar” as “or.” Thus, *lingkar* becomes *lekor*. The English equivalent of *lingkar* is to coil.

It is said that after the dough was kneaded back in those days, a small portion of it was taken and rolled into a cylindrical shape, resembling a sausage, maybe a bit longer. However, some fishermen took large portions of the dough and rolled them to be roughly three-foot long. These cylindrically shaped pieces were then coiled in circular shape and stored for later use. That was how the *Kerepok Lekor* came to be.

Although the length has been much shorter than three feet, the food has been called *Kerepok Lekor* still.

How Kerepok Lekor is Made

The first stage of making *Kerepok Lekor* involves selecting the fish. It is preferable to use fresh fish, those in the industry claim, as the fresher the fish the better.

“Using fresh fish will ensure *Kerepok Lekor* will last longer,” said Mohd Rizuan Samad, a Terengganu native and an entrepreneur who started making his own *Kerepok Lekor* in 2013.

Types of fish normally used for making *Kerepok Lekor* are Mackerel Scad (Selayang), Sardine Nella (Tamban), and Wolf Herring (Parang).

“*Kerepok Lekor* will taste best when the fish used is Selayang, or what the locals refer to as sardines,” Mohd Rizuan said. “Using Selayang will make *Kerepok Lekor* soft and sweet tasting.”

The selected fish are then cleaned, and the flesh is separated from the heads and guts.

The fish flesh is then ground using a special machine. Back in the old days, the process was done using a traditional equipment. The flesh was poured into a big wooden mortar and pounded repeatedly with a big wooden pestle.

Salt is added to the ground fish to improve the flavour.



The ground fish flesh is transferred to a kneading machine and sago is added.

“The recommended ratio of fish flesh and sago varies, but the rough calculation is between 1:2 and 1:3,” Mohd Rizuan said. The machine kneads the mixture to form a dough of the right consistency. Also added are ice cubes, which help maintain the dough’s elasticity by lowering the temperature during the mixing of the ingredients together.

The dough is put into another machine to produce cylindrical shaped pieces. In the old days, the process was done manually

by hand. Some small-scale *Kerepok Lekor* producers still roll the dough the traditional way. To prevent the pieces from sticking to each other, they are placed on a floured surface.

The rolled doughs are boiled for several minutes. When fully cooked, they will rise to the top. They are taken out with a strainer and left for a few minutes to drain the excess water.

The boiled *Kerepok Lekor* can be eaten right away, but the ‘fishy’ taste may not appeal to everyone. So it is sometimes deep fried to improve the flavour.

Another Way to Prepare

There is another way of preparing *Kerepok Lekor* that has only been popular recently, and that is deep frying the rolled doughs without first boiling them. This method of cooking is said to make *Kerepok Lekor* even tastier.

Kerepok Lekor is sometimes eaten just like that, or it is first dipped into a specially made chili sauce. Thanks to some creative minds, melted cheese or mayonnaise have been used lately in place of the traditional condiment.

Considered the food for all occasions, *Kerepok Lekor* is eaten during breakfast as a complement to fried noodles, served on its own during hi-tea, and munched during dinner as appetizers. Regardless of how often *Kerepok Lekor* is ingested during the day, the people of Terengganu never seem to be tired of it.

Kerepok Lekor is highly nutritious as the food is fish-based. “The high fish content makes it a protein-filled snack, and if fresh fish is used, it is rich in natural iodine,” said Assoc. Prof. Ts. Dr. Amir Izzwan Zamri, food science researcher at Universiti Malaysia Terengganu.

“Carbohydrates from the flour together with calcium and other mineral derivatives make for a healthy combination of nutritional elements,” he said.



Boiled *Kerepok Lekor* has less fat content than the fried version and is therefore healthier, he added.

Although now widely available in almost any place in Malaysia, *Kerepok Lekor* in Terengganu is worth the trip to the state for a truly authentic taste.

Officially recognized as one of Terengganu’s traditional foods, *Kerepok Lekor* has maintained its popularity among the natives and tourists.

It may be plain-looking, but *Kerepok Lekor* is known to be good-tasting. ♦



FAKULTI PERIKANAN
DAN SAINS MAKANAN
FACULTY OF FISHERIES AND FOOD SCIENCE

PROGRAMME OFFERED AT THE FACULTY OF FISHERIES AND FOOD SCIENCE

Programme

1. Diploma in Fisheries
2. Undergraduate Programmes
 - a. Bachelor of Food Science (Food Technology) with Honours
 - b. Bachelor of Food Science (Food Service and Nutrition) with Honours
 - c. Bachelor of Applied Science (Fisheries) with Honours
 - d. Bachelor of Science in Aquaculture with Honours
 - e. Bachelor of Science in Agrotechnology (Crop Science) with Honours
3. Postgraduate Programmes
 - a. By Coursework
 - i. Master of Science in Aquaculture
 - ii. Master of Science in Tropical Fisheries
 - b. By Research
 - i. Master of Science
 - ii. Doctor of Philosophy

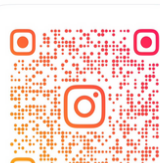
More Information



Facebook
FPSM



Laman Web
FPSM



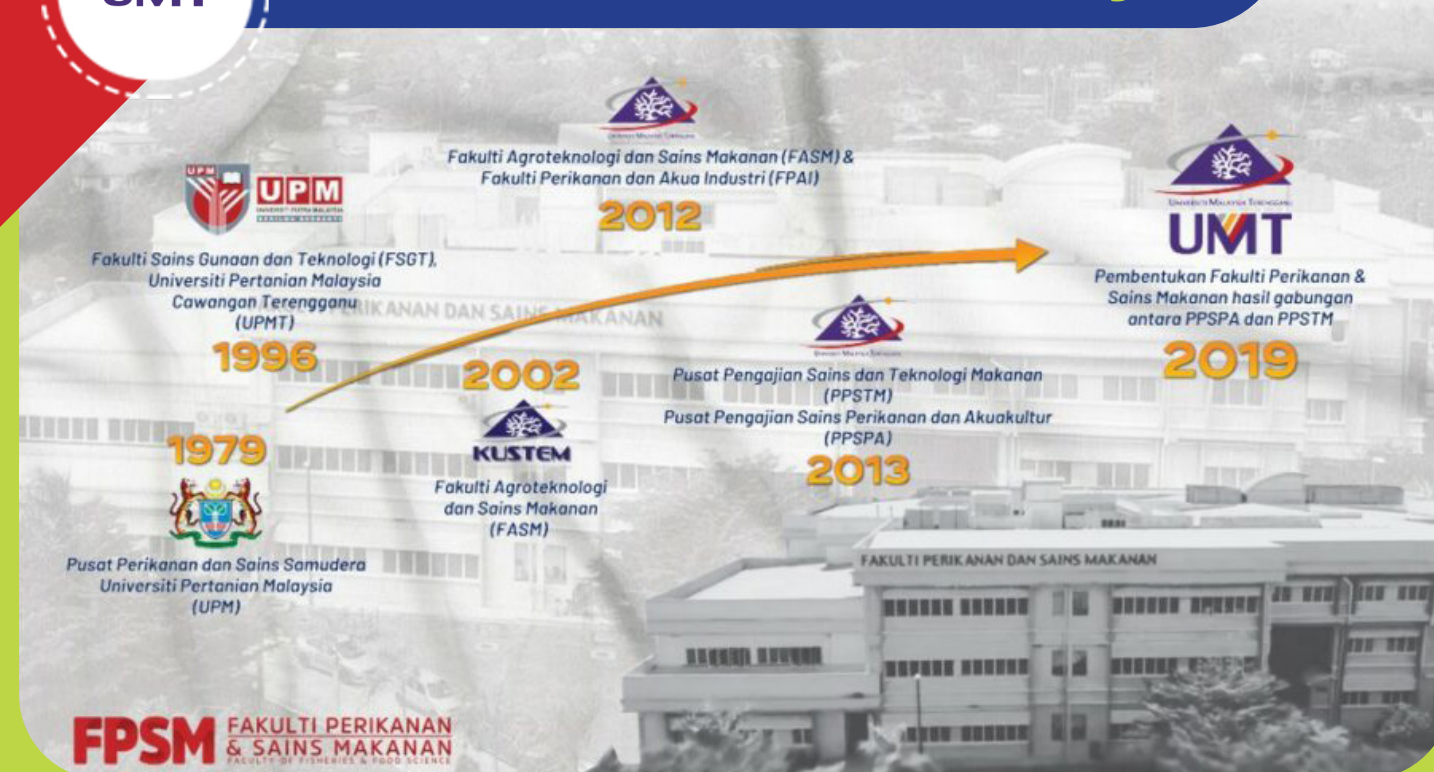
FPSM.OFFICIAL



@fpsmumt
FPSM OF FISHERIES
FOOD SCIENCE



FPSM History



INTRODUCTION

The Faculty of Fisheries and Food Science was officially established on September 1, 2019, aligning with the academic transformation of Universiti Malaysia Terengganu. This strategic move aimed to cater to the evolving demands of the academic landscape and the industry's needs. The faculty's inception marked a pivotal moment in the university's commitment to advancing education and research in the domains of fisheries and food science.

Historical Evolution:

1979: The roots of the faculty trace back to the establishment of the Pusat Sains Perikanan dan Sains Samudera (Center for Fisheries Science and Ocean Science) at Universiti Pertanian Malaysia.

1996: A significant development occurred when it evolved into the Fakulti Sains Gunaan dan Teknologi (Faculty of Applied Sciences and Technology) at Universiti Putra Malaysia (UPM).

2012: Further changes transpired as it transformed into the Fakulti Agroteknologi dan Sains Makanan (Faculty of Agrotechnology and Food Sciences, FASM) at Universiti Malaysia Terengganu (UMT).

2013: The faculty underwent restructuring, resulting in the establishment of two distinct entities: Pusat Pengajian Sains dan Teknologi Makanan (Center for Food Science and Technology Studies, PPSTM) and Pusat Pengajian Sains Perikanan dan Akuakultur (Center for Fisheries and Aquaculture Science Studies).

2019: A significant milestone was reached with the amalgamation of these centers into the cohesive entity known today as the Faculty of Fisheries and Food Science (FPSM), Universiti Malaysia Terengganu.

Academic Focus:

Throughout its evolution, the faculty has maintained a steadfast commitment to providing high-quality academic programs. These programs are meticulously designed to cultivate a cadre of skilled professionals in the fields of fisheries and food science, aligning with the dynamic requirements of the industry.

The establishment of the Faculty of Fisheries and Food Science stands as a testament to Universiti Malaysia Terengganu's dedication to academic excellence, research innovation, and addressing the challenges of the ever-evolving domains of fisheries and food science.

A PARTNER FOR OCEAN EDUCATION AND RESEARCH

INTERNATIONAL RESEARCH PROGRAMMES FOR MASTER AND DOCTORAL STUDENTS IN THE FOLLOWING FIELDS :

- Accounting and Taxation
- Crop and Livestock Production
- Business and Administration
- Computer Science
- Economics
- Environmental Science
- Fisheries
- Food Processing
- Humanities
- Biology and Biochemistry
- Earth Science
- Mathematics
- Transport Services
- Physical Science
- Social Work and Counselling
- Social and Behavioural Science
- Engineering and Engineering Trades
- Environmental Protection Technology

MASTER PROGRAMMES BY COURSEWORK :

- Master of Business Administration (MBA)
- Master of Science (Aquaculture)
- Master of Management (Integrated Coastal Zone)
- Master of Sciences In Tropical Fisheries
- Master of Counselling
- Master of Computer Science
- Master of Information Technology
- Master of Mathematics
- Master of Statistics in Marine Science
- Master of Science (Environmental Forensic)
- Master of Economics

Gain deeper understanding of the Sunda Shelf, while tapping into a universe of resources and research potential. UMT welcomes visitors, especially those in :

- Nautical Science
- Oceanography and Marine Science
- Marine Management and Technology
- Coastal and Island Socioeconomics and Development
- Marine Informatics and Applied Mathematics



CALLING ALL ACADEMICIANS, FELLOWS AND PROFESSORS... COLLABORATE WITH US!

Universiti Malaysia Terengganu (UMT)
21030 Kuala Nerus, Terengganu Darul Iman, Malaysia
Website : www.umat.edu.my
Email : pro@umat.edu.my
Facebook : Universiti Malaysia Terengganu Official

International Centre
Tel : +09-6685183
Fax : +09-6684325

Centre for Academic and Quality
Tel : +09-6684335
Fax : +09-6684143