Regional Workshop for Research and Academic Institutions on: ‘Establishing a Cooperation Mechanism for Human Resource Development on Sustainable Agricultural Mechanization’

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Assoc. Prof. Dr. Siti Khairunniza Bejo
Head of Department
Department of Biological and Agricultural Engineering
Faculty of Engineering
Universiti Putra Malaysia
skbejo@upm.edu.my
http://www.eng.upm.edu.my/
https://www.facebook.com/kbpupm/

Mr. Yahya Sahari
Senior Research Officer
Malaysian Agricultural Research and Development Institute (MARDI)
ybs@mardi.gov.my
https://www.mardi.gov.my/
https://www.facebook.com/mardimalaysia/
INTRODUCTION

✓ Humid tropical climate with heavy rainfall (2540 mm p.a. and above), average daily temperatures of 21-32°C and humidity averaging about 85%.
✓ Rainfall is affected by the North - East (November - March) and South - West (June-August) monsoons which bring heavy rainfall. For the months April-May and September-October, less rain is experienced because of changes in monsoonal winds.
✓ Nearly 24% of Malaysia's land area is for agriculture.
✓ Two farming sectors: Smallholders (farm sizes of about 0.3-1.5 ha) and large holdings (commercial plantations where production is well organised for both local and overseas markets).

Rice in Malaysia is planted as staple crop over one million hectares of cultivation areas.

Malaysia is the world's second largest producer of palm oil.

Malaysia is responsible for one third of the world’s rubber export.
Universiti Putra Malaysia (UPM) was founded in 1931 and known internationally as one of the distinguished universities in the region.

Accorded the status of “Research University” in 2006.

Awarded Autonomy University status in 2012.

Awarded Self-Accreditation status (Academic Programs Quality) in 2010.

<table>
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<tr>
<th>UPM AT A GLANCE</th>
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<tbody>
<tr>
<td>140+ DEGREE PROGRAMS</td>
<td>3000 HECTARE MAIN CAMPUS + BRANCH CAMPUS</td>
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<tr>
<td>3000+ ACADEMIC STAFFS</td>
<td>100+ STUDENT ORGANIZATIONS</td>
</tr>
<tr>
<td>26,000 STUDENT FROM 60 COUNTRIES</td>
<td>17% INTERNATIONAL STUDENTS</td>
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<tr>
<td>40% POSTGRADUATE STUDENT</td>
<td>120+ NATIONAL ATHLETES</td>
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<td>16 FACULTIES</td>
<td>1 SCHOOL</td>
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<td>10 INSTITUTES</td>
<td>1 ACADEMY</td>
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The Faculty of Engineering is playing its role in support of university vision by diversifying its programme from agriculture to other engineering programmes.

The Department of Biological and Agricultural Engineering was established in 1975.

Programme Objectives

Produce graduates who are:

- Knowledgeable in the field of agricultural and biosystems engineering with the appropriate skills and attitude to work in the industry.
- Creative and innovative, as well as, sensitive and responsible towards the society, cultures and environment.
- Capable to solve in advanced design and development problems at national and international levels.
PROGRAMS

- Bachelor of Agricultural and Biosystems Engineering
- MS/PhD programs with thesis
- MS Emergency Response and Planning
- MS Agricultural Mechanisation (will be offered in 2018)

National Agrofood Policy (NAP) (2011-2020)

Economic Transformation Programme (ETP)

National Commodity Policy (2011-2020)

Eleventh Malaysia Plan

Statistics of Plantation Sector Employment

Malaysia Economic Statistics Time Series 2015

Undergraduate 65%

Postgraduate 35%

(118) Undergraduate

(223) Postgraduate

Undergraduate

Postgraduate
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<th>R&amp;D</th>
<th>Post Harvest and Environment</th>
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| ✓ Development of agricultural mechanization systems and models  
✓ Mechanization and machine development for a modern, high-technology farm production structure  
✓ Design, development and adaptation of machines and dissemination of innovations capable of reducing labour, maximizing earnings and environmental friendly  
✓ Mechatronics in agricultural and plantation based industries | ✓ Design of agricultural waste handling and treatment systems  
✓ Managing and optimizing the utilization of natural and biological resources  
✓ Re-use and recycling of disposed materials and application to zero pollution technology  
✓ Importance of safety and health in agricultural production activities |
| Bioinformation Systems | Soil and Water Resources |
| ✓ Biological systems modelling to understand the mutual response between life and environment  
✓ Bio-sensing and instrumentation for agricultural and biological material, and on production technologies focusing on harvesting, grading, processing and storage of agricultural products and foods  
✓ Application of GIS technology for inventory, analysis and management of biological resources  
✓ Remote sensing technology for observation and examination of the landscape and its local forms and agricultural activities | ✓ Design of irrigation and drainage systems  
✓ Area development for settlement, agriculture and recreation  
✓ Design of a mutually beneficial ecosystem of life and environment  
✓ Study and analysis of agricultural system as an integrated component of landscape  
✓ Monitoring and conservation of natural resources  
✓ Sustainable development and exploitation of the agricultural ecosystem |
RESEARCH CENTRE

Smart Farming Technology Research Centre (SFTRC)

Produce a comprehensive solution in agricultural production system
STUDENT MOBILITY
MOU/MOA - INTERNATIONAL

Germany
1. Leibniz Institute For Agricultural Engineering Potsdam-Bornim
2. University of Applied Sciences Aachen

Iraq
1. University of Baghdad

Italy
1. Politecnico Di Milano
- Agreement for the Admission of Doctoral Candidates from UPM to POLIMI

Japan
1. University of Tsukuba
2. Mie University
   i. MoA on Academic Cooperation & Exchange
   ii. MoA for Student Exchange
3. The Graduate School of Agriculture, Kyoto University
   - General Memorandum for Academic Cooperation and Exchange
   - Student Exchange Agreement

Korea
1. Inha University
2. Dongseo University
3. Chonnam National University

Nigeria
1. University of Maiduguri

Oman
1. University of Nizwa

Pakistan
1. Comsats Institute of Information Technology

Philippines
1. Technological Institute of the Philippines

Poland
1. Lublin University of Technology

Spain
1. Universidade De Vigo

Taiwan
1. National Chung Hsing University
2. National Central University
3. National Cheng Kung University

Thailand
1. Silpakorn University
2. Katsetsart University
3. Maejo University

Turkey
1. Istanbul Technical University
2. Fatih University

United Kingdom
1. University of Dundee, Scotland
2. The University of Sheffield
   - MOU
   - MoA on The Jointly Awarded Research Degree Programme Between UPM and The University of Sheffield
   - Addendum to MoA

United States
1. Jacobs School of Engineering, University of California, San Diego
2. Global Lightning Network SM (GLN ®) Sensor Hosting Agreement Between 3. WSI Corporation and UPM
4. Safe Kids WorldWide
STUDENT DEVELOPMENT

MOBILITY

ACADEMIC AND ALUMNI

COMPETITION

AWARD

INNOVATION

SPORTS, RECREATIONAL AND WELFARE

ACADEMIC AND ALUMNI

STUDENT DEVELOPMENT

COMPETITION

AWARD

INNOVATION

SPORTS, RECREATIONAL AND WELFARE
TRAINING 2017

DRONES IN AGRICULTURE SEMINAR 2017
(25th April)

Agricultural Machines Maintenance
(16th - 18th May)

Drones Technology
(21st - 24th August)

Agricultural Precision Technology
(20th - 22nd July)

CAFEi 2018
http://www.cafei.upm.edu.my/
MARDI
Leading Agrofood Research and Innovation since 1971

VISION:
LEADING IN AGROFOOD RESEARCH AND INNOVATION

MISSION:
CREATING INCLUSIVE KNOWLEDGE AND TECHNOLOGIES FOR SUSTAINABLE AGROFOOD SECTOR
MARDI
Leading Agrofood Research and Innovation since 1971

MARDI Holdings Business Arm
- Commercialization of Technology
- Consultations
- Agro Services (Seed, Training, Laboratory, Landscape, Agro-ICT, Agro Events)
- Project Managements (MAEPS, Agrotourism, Agriculture Projects)
- Asset Development

MARDI Proper
- Core Business-
  (1) Research (2) Technology Transfer (3) Agropreneur Development (4) Competency Development
- 3071 staff, 680 officers and scientists (89 with PhD)
- 32 Research Stations (8 COE)
MARDI TECHNOLOGY TRANSFER & COMMERCIALIZATION MODEL

Public good
Research Output, Tacit knowledge & IP asset
Industry

Up-scaling/Pilot Development Commercialization
Up-scaling/Pre-commercialisation

Technology Incubators
technology Test-beds Technical Training Analytical Laboratory Model Farms

Expansion of utilization Commercial production

Publication Seminar Exhibition Promotion Entrepreneur development QAS

MARDITECH
R&D&C Focus

Wealth Creation
- Agriculture for Exports
- Biotechnology & Nanotechnology
- Green Technology (farm inputs, fertilizer)
- High Value Products (Herbs, Floriculture, Food Designing and Processing, New Products from Agrobiodiversity)
- Quality Seeds
- Agriculture Services (DIY-A, Packaging, Mapping)
- Agrotourism

Societal Well-Being
- Food Security & Nutrition (rice, fruits, vegetables, livestock, food forensics)
- Post Harvest Losses
- Early Warning Systems (EWS) & Disease Management
- Mechanization & Precision Farming
- Climate Change (adaptation & mitigation)
- ICT in Agriculture
- Agrobiodiversity
MARDI Stations In Malaysia

Spread throughout Malaysia, MARDI stations play a big role in MARDI’s R&D&C. Each station has its own focus and specialisation depending on the need and suitability of the region.

Major Stations: 8 | Support Stations: 24 | Land Area: 6975.1 ha
*TCO: Technology Commercialization Office
Providing solutions to the mechanization problems that beset the small and medium scale food processing industries (SMI) in mechanizing their production system.

Finding solutions to some on the mechanization problems that plaque the handling and storage of agricultural commodities after harvest that will eventually lead to more effective and efficient post-harvest systems.

Crop and livestock production
Mechanization needs and related problems which includes mechanization and automation problems of crop production systems involving operation from land preparation, crop maintenance, harvesting and in-field collection handling
Non-food processing mechanization of bio-materials into value-added industrial products.

Mechanization and automation problems of crop and livestock production under agricultural structures and building environment.
Productivity improvement and labour saving through automation and the use of sensors in agricultural and food production systems.
SUGGESTED PRIORITY AREAS FOR COOPERATION

ISSUES ON MECHANIZATION

- Topographic
- Cost
- Technical Support
- Agricultural Produces

Impact and application of mechanization in tackling food security and climate change issue

Hands-on training and workshop on sustainable farm mechanization

Adapting and adopting the right machinery technology to reduce postharvest losses

Innovation in mechanization
COLLABORATIONS

1. MOU/MOA.
2. Staff/Student.
   Exchange/Mobility Program (Inbound And Outbound).
Thank You