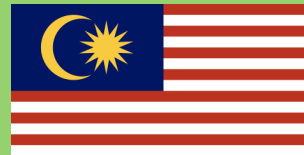


Regional Workshop for Research and Academic Institutions on: 'Establishing a Cooperation Mechanism for Human Resource Development on Sustainable Agricultural Mechanization'

13-15 April 2017, Nanjing, China



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

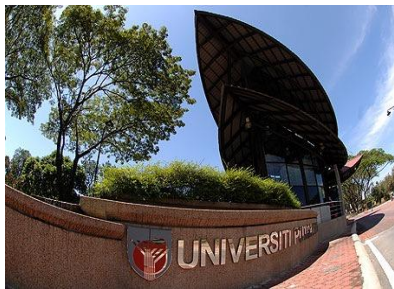
Institute (MARDI)

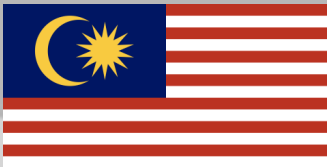
ybs@mardi.gov.my



<https://www.mardi.gov.my/>

<https://www.facebook.com/mardimalaysia/>





INTRODUCTION

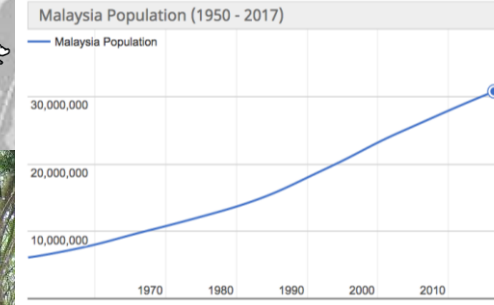
- ✓ Humid tropical climate with heavy rainfall (2540 mm p.a. and above), average daily temperatures of 21-32°C and humidity averaging about 85%.
- ✓ Rainfall is affected by the North - East (November - March) and South - West (June-August) monsoons which bring heavy rainfall. For the months April-May 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).



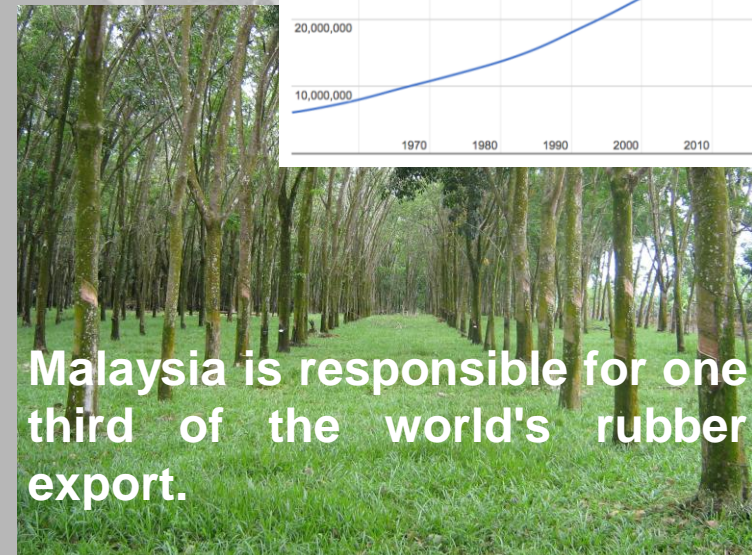
Malaysia is the world's second largest producer of palm oil.



Malaysia



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



Malaysia is responsible for one third of the world's rubber export.



Ministry of Higher Education



Ministry of Agriculture and Agro-based Industry



Universiti Putra Malaysia

Agriculture

3 Departments



Department of Agriculture



Department of Veterinary Services



Department of Fisheries

9 Agencies



Agro Bank



Malaysian Agricultural Research and Development Institute (MARDI)



Fisheries Development Authority of Malaysia (LKIM)



Farmers Organization Authority Malaysia (LPP)



Federal Agriculture Marketing Authority (FAMA)



Muda Agricultural Development Authority (MADA)



Kemubu Agriculture Development Authority (KADA)



Malaysia Pineapple Industry Board (LPIB)



Entrepreneurs Group Economic Fund (TEKUN)



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.



Agriculture and Forestry
51-100

The first to offer an **agriculture** program in Malaysia



UPM AT A GLANCE

140+
DEGREE
PROGRAMS

3000 HECTARE
MAIN CAMPUS
+ BRANCH CAMPUS

1700+
ACADEMIC
STAFFS

100+
STUDENT
ORGANIZATIONS

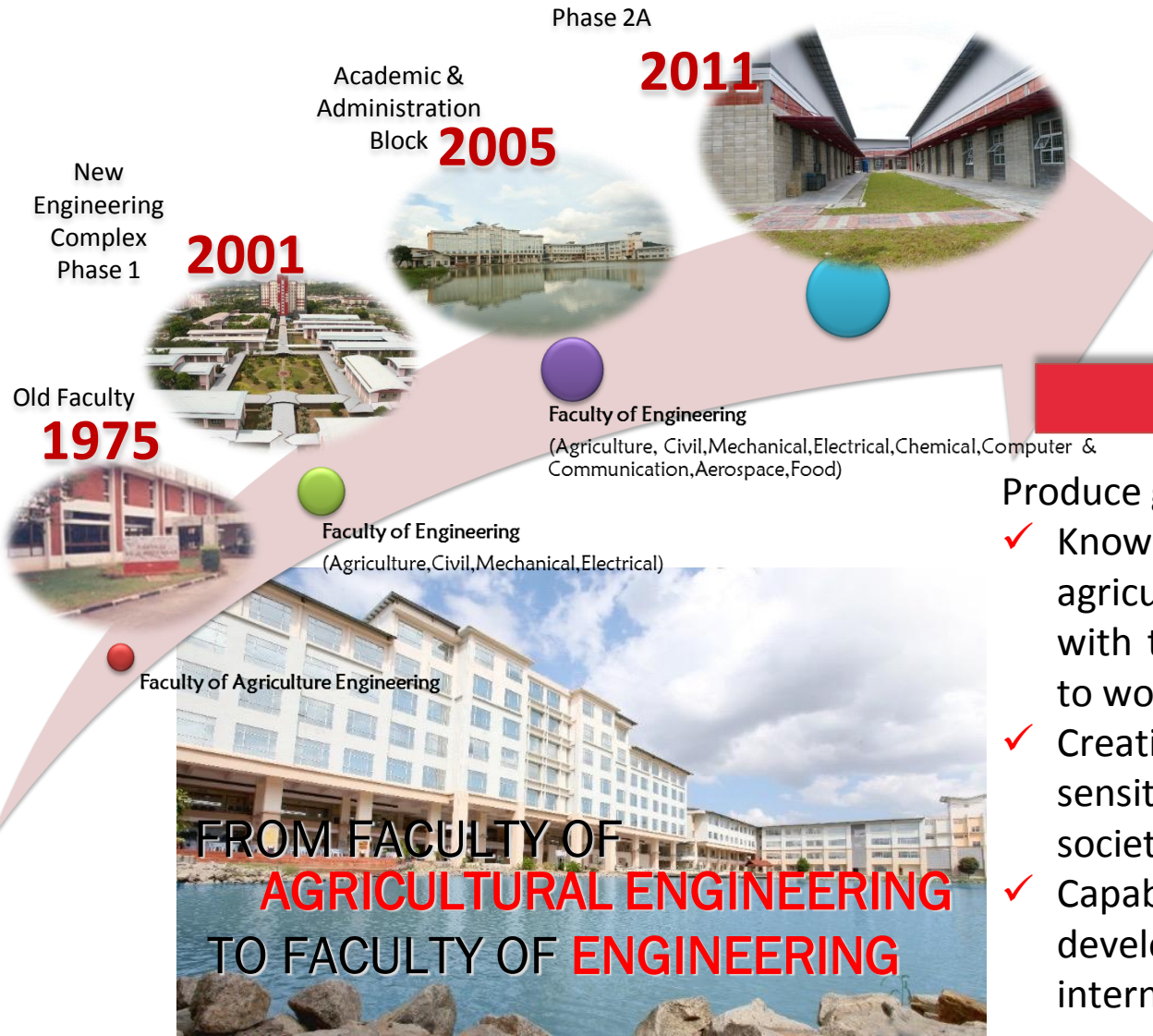
26,000 STUDENT FROM
60 COUNTRIES
40% POSTGRADUATE STUDENT
17% INTERNATIONAL STUDENTS

16 FACULTIES
10 INSTITUTES
1 SCHOOL
1 ACADEMY

120+
NATIONAL
ATHLETES

INTRODUCTION

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

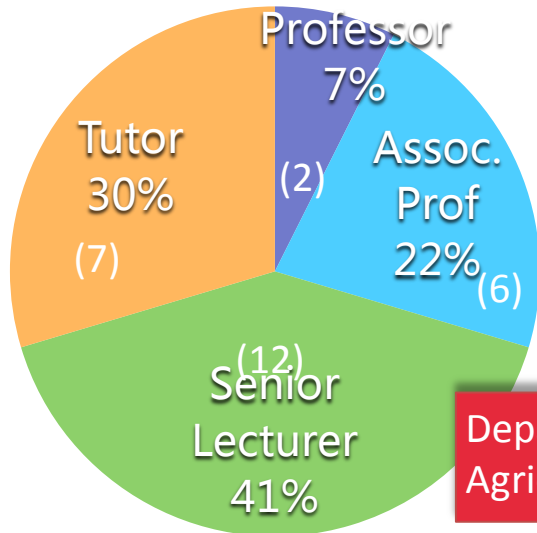
Produce graduates who are:

- ✓ 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.

FROM FACULTY OF
AGRICULTURAL ENGINEERING
TO FACULTY OF **ENGINEERING**

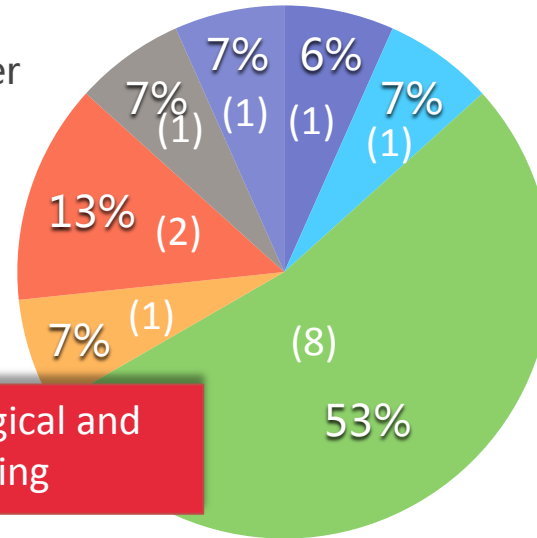
HUMAN RESOURCES

Academic Staff



- Professor
- Assoc. Prof
- Senior Lecturer
- Tutor

Support Staff

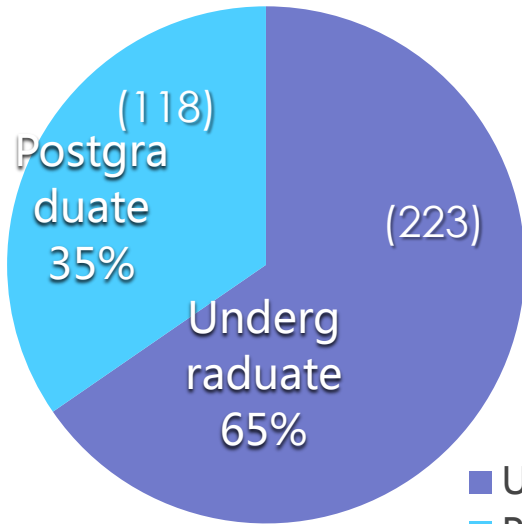


- Research Officer
- Science Officer
- Assistant Engineer
- Secretary
- Administrative staff
- General Office Assistance
- Driver

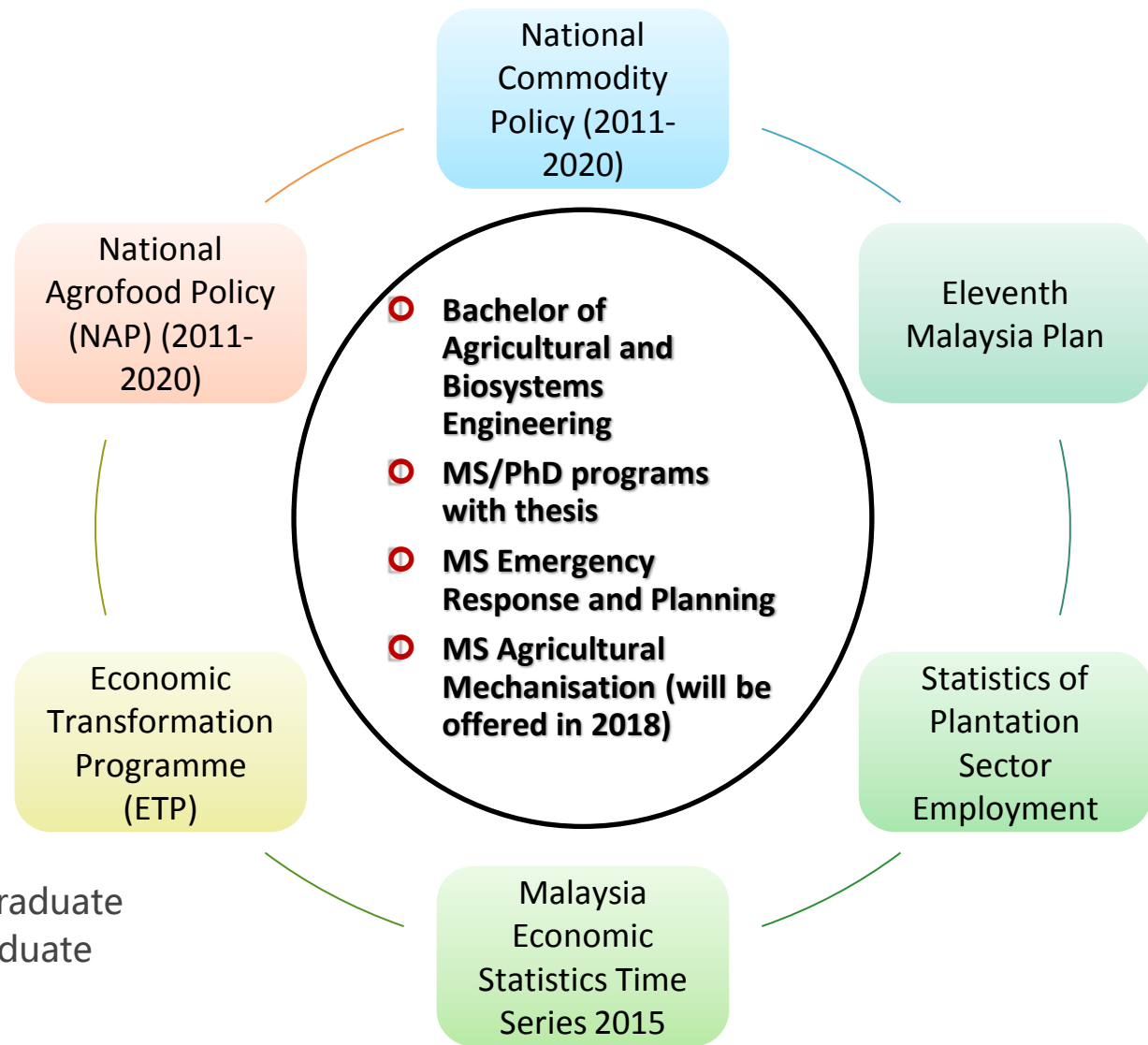
Department of Biological and Agricultural Engineering



PROGRAMS



■ Undergraduate
■ Postgraduate



LABORATORIES



Agricultural Machinery Laboratory



Irrigation, Drainage & Agricultural Infrastructural Engineering Laboratory



Spatial Information Systems Laboratory




Technical Workshop Laboratory



Biomaterials Processing Laboratory



Biosystems Environment Laboratory



Power & Energy Systems Laboratory



Soil & Water Conservation Laboratory



Machinery Design Laboratory



Control and Robotics Engineering Laboratory



Mechanization and Automation

R&D

- ✓ 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

Post Harvest and Environment

- ✓ 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

- ✓ 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

Soil and Water Resources

- ✓ 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



Plantation



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

Itali

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



UNIVERSIDADE
DE VIGO

Nigeria

1. University of Maiduguri

Oman

- 1.2 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





ACADEMIC
AND ALUMNI

MOBILITY

COMPETITION

STUDENT
DEVELOPMENT



AWARD

INNOVATION

SPORTS,
RECREATIONAL
AND WELFARE

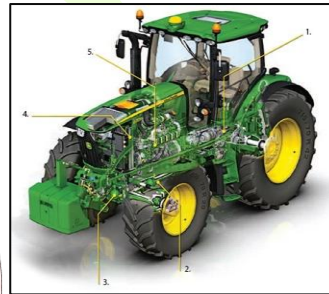


TRAINING 2017

Agricultural
Machines
Maintenance
(16th -18th May)

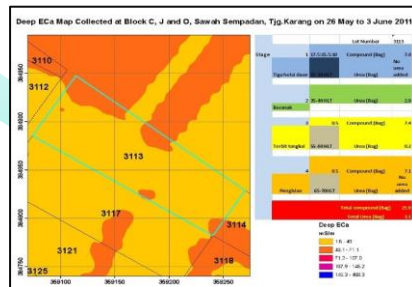


DRONES IN
AGRICULTURE
SEMINAR 2017
(25th April)



Agricultural
Precision
Technology
(20th -22th July)

Drones
Technology
(21th -24th
August)



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*

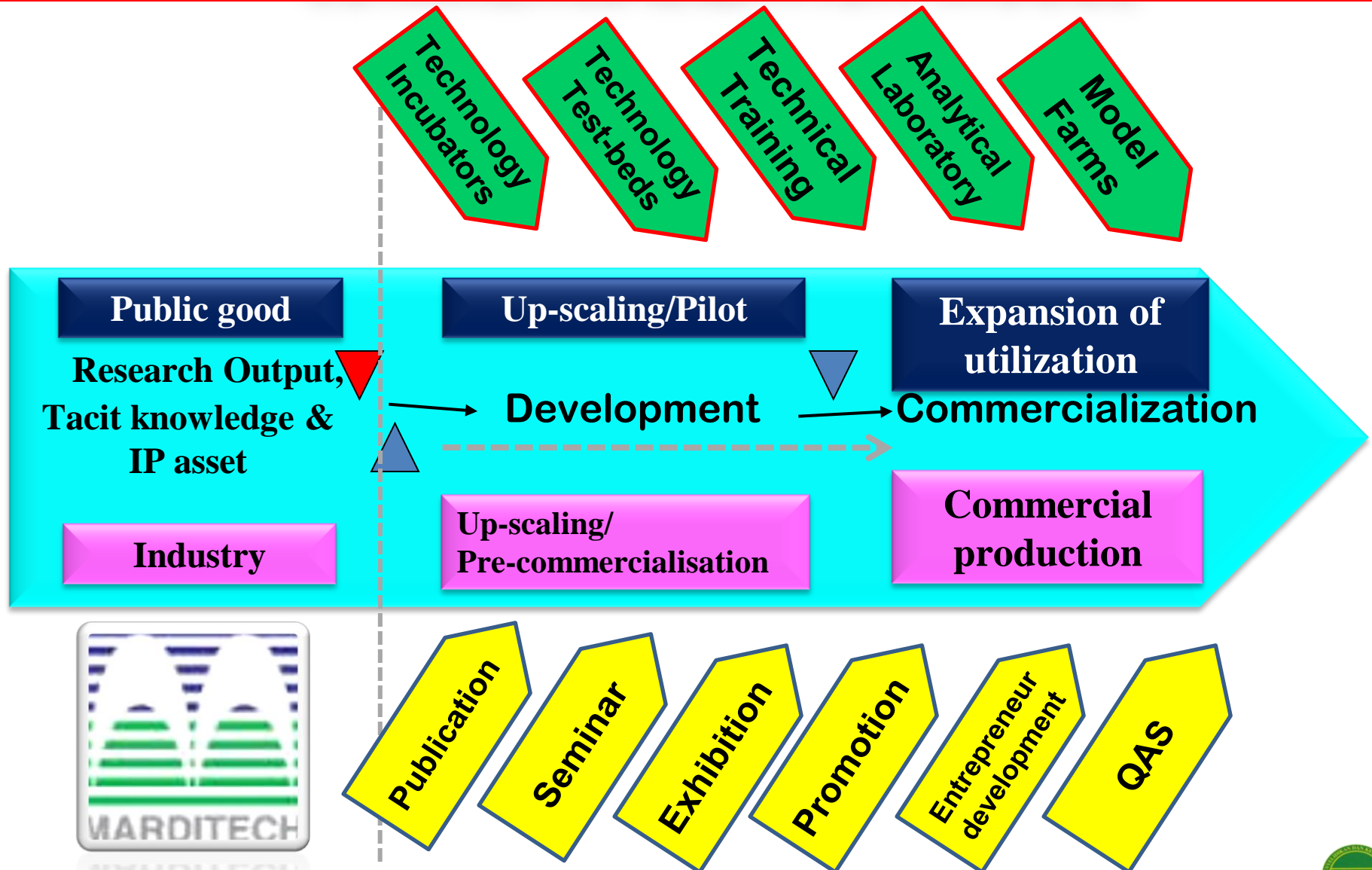
**MARDI
Holdings**
*Business
Arm*

- **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



R&D&C Focus

Wealth Creation

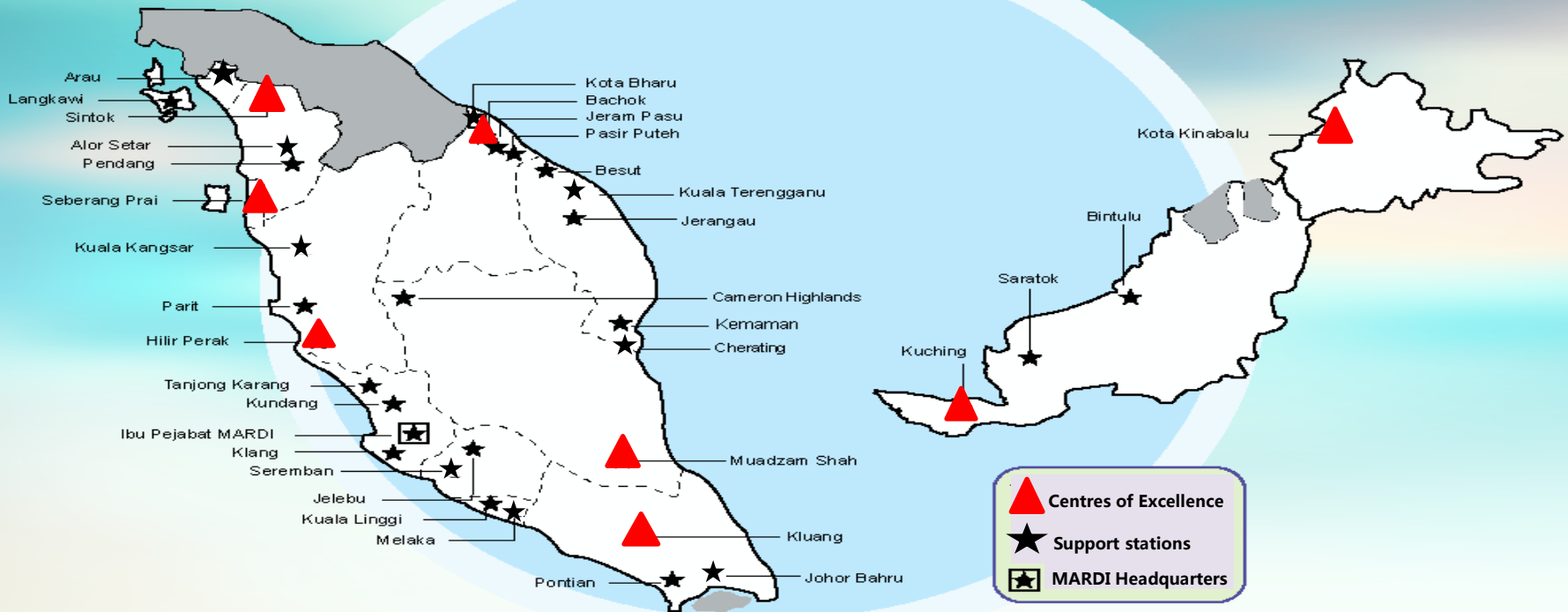
- **Agriculture for Exports**
- **Biotechnology & Nanotechnology**
- **Green Technology** (farm inputs, fertilizer)
- **High Value Products** (Herbs, Floriculture, Food Designing and Processing, New Products from Agrobiodiversity)
- **Quality Seeds**
- **Agriculture Services** (DIY-A, Packaging, Mapping)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

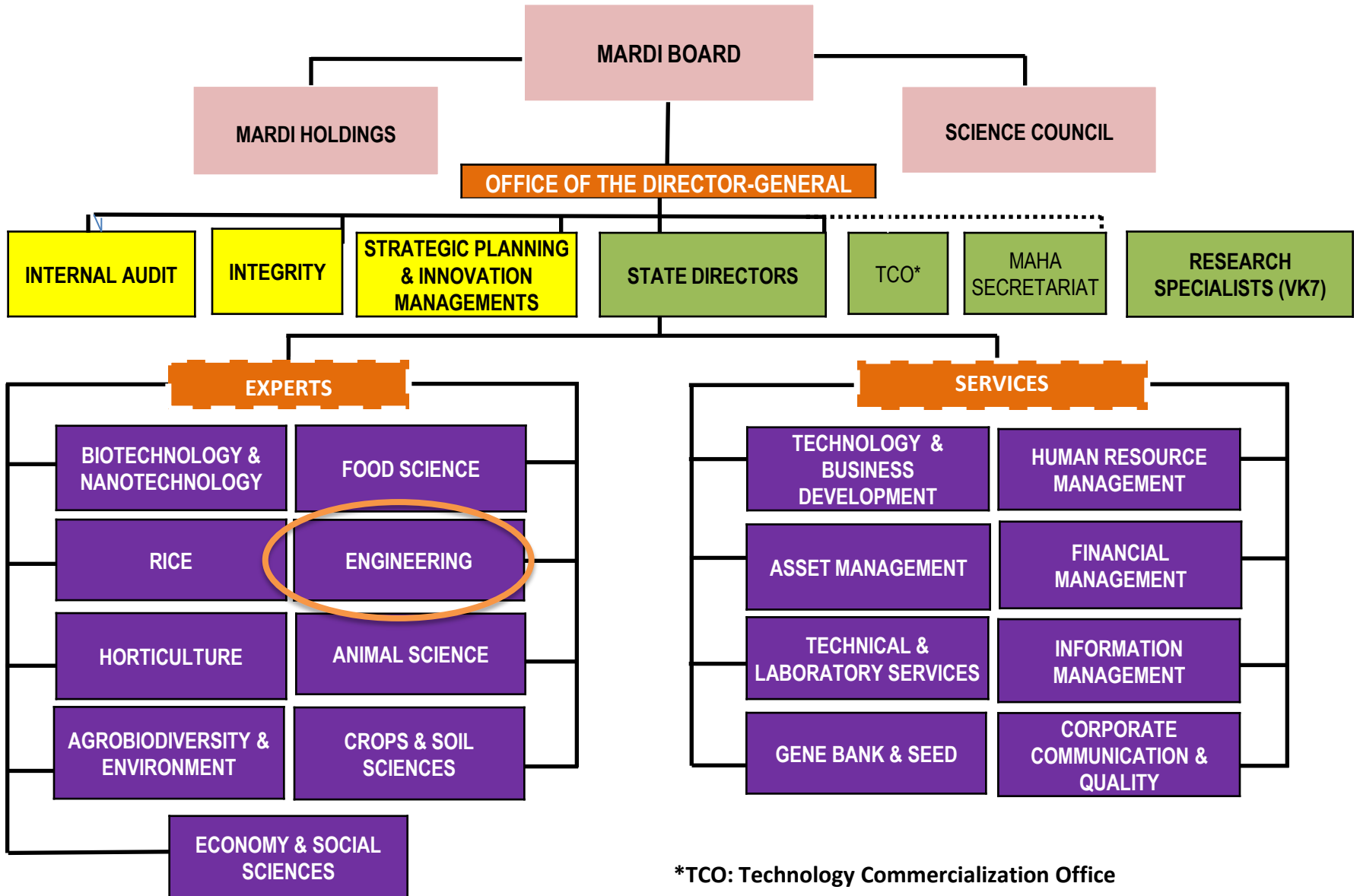
MARDI Stations In Malaysia

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



ENGINEERING RESEARCH CENTRE'S STRUCTURE

DIRECTOR OF
ENGINEERING CENTRE

POSTHARVEST AND FOOD PROCESSING MECHANIZATION PROGRAM

- ✓ 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.

FARM MECHANIZATION PROGRAM

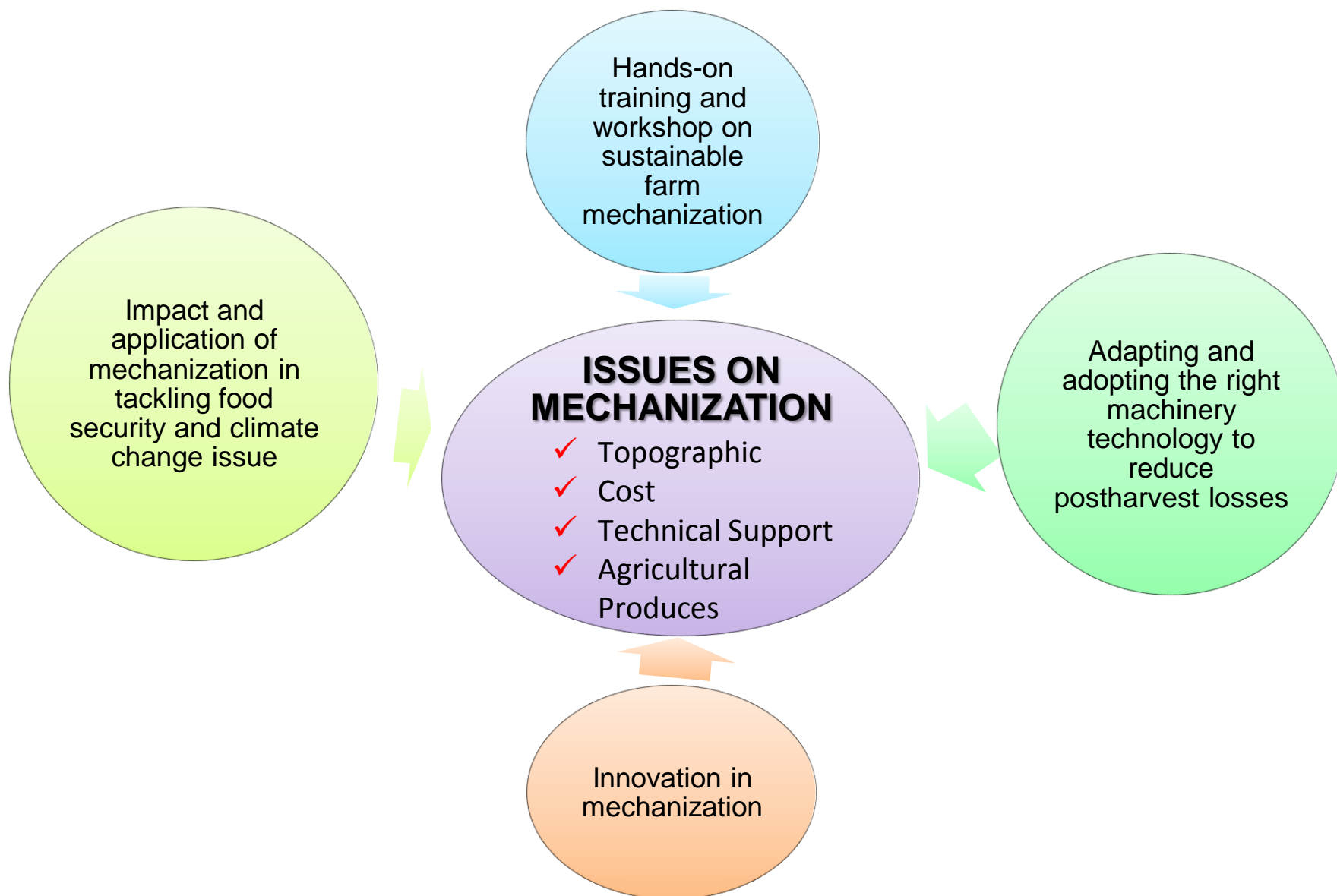
- ✓ Crop and livestock production
- ✓ Mechanization needs and related problems which includes mechanization and automation problems of crop production systems involving operation from land preparation, crop maintenance, harvesting and in-field collection handling
- ✓ Non-food processing mechanization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

PRECISION FARMING PROGRAM

- ✓ 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



COLLABORATIONS

1. MOU/MOA.
2. Staff/Student.
Exchange/Mobility Program
(Inbound And Outbound).
3. Co-supervision of MSc and PhD
Thesis.
4. Joint Research and Innovation/
Joint Development of Research
Proposal.
5. Co-organizer for International
and National Conference.
6. Workshop/Seminar/Hands-on
Training/Distinguished Lecture
Series.



AGRICULTURAL & BIOSYSTEMS ENGINEERING DISTINGUISHED LECTURE SERIES 1/2017

Date : 16 March 2017 Time : 3.00 pm
Place : Gallery Room, Faculty of Engineering, UPM

“ADVANCED TECHNOLOGY IN JAPAN’S AGRICULTURE”



Speaker :
Dr. Mikio UMEDA
Sec. General of CIGR. Corp. Exec. Advisor of YANMAR Co. Ltd,
& Prof. Emeritus at Kyoto University



Dept. of Biological &
Agricultural Engineering

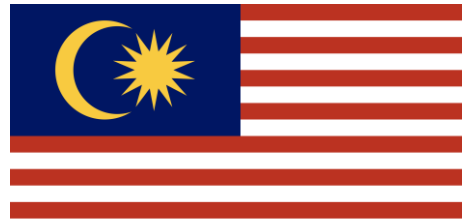
Jointly Organised By
DBAE-UPM & MSAE

For Further Information
Department of Biological and Agricultural
Engineering

Email : sharence@upm.edu.my



Malaysian Society of
Agricultural Engineers



Thank You

