



Programme and Abstracts

PIMES

**PLANTATION MANAGEMENT
EXHIBITION & SEMINAR**

15th December 2018

Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA
Melaka Branch, Jasin Campus
77300 Merlimau, Melaka, Malaysia

PLANTATION MANAGEMENT EXHIBITION AND SEMINAR 2018 (PiMES)

Melaka, Malaysia

December 15, 2018

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DEAN PREFACE



Assalamualaikum Warahmatullahi Wabarakatuh

My heartiest congratulations go to the Committees for successfully organized PIMES September 2018. PIMES September 2018 enables lecturers and panels from strong industrial background to reflect and share significant ideas, experiences and research findings in the workplace and in partnerships. It is also hoped to encourage collaboration among the lecturers and enhance the quality and performance of the faculty. The research findings derived from this substantial event shall indicate the commitment of lecturers not only in teaching, but also in striving to unfold new knowledge and processes that will benefit the nation. The efforts of our lecturers need to be further extended to a wider audience so that the nation will benefit from the research findings. It is also hoped that, the proceedings will trigger serious thought and more robust research in the field of education as well as plantation and technology so as to help Malaysia achieve Vision 2020.

As we know, agriculture production has increased tremendously today because of the demand from various sectors in the world. To meet the challenges of increasing food demand, techniques and ways should be created to improve productivity, profitability and sustainability of the agricultural system. Industrial agricultural system has led to irretrievably changes in the landscape diversity, soil quality, environment integrity, and natural resource base. This has resulted major questions and curiosity worldwide in relation to the sustainability of agricultural production system. The most significant damage to natural ecosystems and the environment was caused by habitat conversion and corresponding climate change, loss of biodiversity and ecosystem functions, soil erosion and degradation, and pollution from fertilizers and pesticides. Concepts in plant protection have changed in past decades from exclusion or destruction of pest to pest management. Serious problems with pesticides, rapid development of pest resistance, environmental effects of pesticides, and high costs led to development of new approaches and techniques in pest management based on improved knowledge of pest dynamics and their natural enemies, and the interaction between the pest and the crop.

It remains only for me to thank all those who have helped to make this events such a great and wonderful success. Much appreciation is due to the board editor, and reviewers of all papers submitted as well as to all authors whose ideas and contributions ensured rich and lively discussion during the various sessions.

DEAN,

Assoc Prof Dr Asmah Awal

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INTRODUCTION

The PiMES committee and UiTM (Melaka), Jasin Campus residents are very pleased to welcome all participants in the Plantation and Management Seminar (PiMES) which is organized by Faculty and Agrotechnology.

PiMES aims to give an exposure to the students about the procedure to make a poster by extracting information from their final year project. This seminar will sharpen their communication skill as well as they can exchange and share their research result, projects, experiences and new ideas related to all aspects of studies in plantation management and agribusiness, plant sciences, soil sciences, plant protection, plant biotechnology and agricultural engineering. We sincerely hope that you will enjoy and return home with plenty of inspiration to improve agro-industry plantation practices and research activities.

A REVIEW ON GENETIC TRANSFORMATION OF RICE

Nur Amalina Binti Ghazali, Yusof Chong Yu Lok *

Faculty of Plantation and Agrotechnology, UiTM (Malacca) Jasin Campus, 77300, Malacca.

*Corresponding Author:
yusufchong@uitm.edu.my*

ABSTRACT

Rice or its scientific name, *Oryza sativa* L. is one of the world's valuable crops. It is cultivated worldwide on 8.2 million hectares in 58 countries annually. Rice is a dietary staple food and one of the most import and cereal crops, especially for people in Asia. A switch in production and consumption patterns would improve food security where food grains are scarce, and provide more health beneficial food components, may prevent some diseases and ease the burden on the Earth. Modern applications of agricultural biotechnology involves the development of gene transfer methods for the genetic transformation to increase number of important crops in daily life especially rice. The establishment of an efficient genetic transformation protocol for rice is important in improvement of traits. Despite a variety of available DNA delivery methods, *Agrobacterium* and biolistic mediated transformation remain two predominantly applied approaches. Most of the studies suggested that the transformation efficiency of the *indica* rice varieties is unsatisfactory in comparison to *japonica* cultivars as majority of the *indica* rice varieties are recalcitrant to *in vitro* responses. For efficient plant transformation, the selection of actively growing regenerable calli and the optimization of the culture conditions for the co-cultivation of rice calli with *Agrobacterium* are the most important factors. Maximum rice transformation efficiency at 200 μM concentration is very suitable used for rice transformation. In addition, acetosyringone was found as an essential key factor in achieving the rice transformation. In conclusion, the factors that affecting the transformation efficiency of rice have been determined in this review.

Keywords: Genetic transformation rice, Agrobacterium, biolistic transformation, transformation protocol