



*Programme and Abstracts*

# PIMES

**PLANTATION MANAGEMENT  
EXHIBITION & SEMINAR**

*15th December 2018*

**Faculty of Plantation and Agrotechnology**  
Universiti Teknologi MARA  
Melaka Branch, Jasin Campus  
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**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.

**ROOT SYSTEM ARCHITECTURE OF PADDY IN NITROGEN  
ACQUISITION**

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**ABSTRACT**

The term root architecture has been used in various contexts to refer to specific aspects of the shape of the root systems. Understanding the development and architecture of roots holds potential for the exploitation and manipulation of root characteristics to both increase food plant yield and optimize agricultural land use. The root system architecture is shaped by the environmental signals and other external cues, which modulate root growth direction and kinetics, as well as its surface by affecting root hair growth and frequency of branching especially in paddy. Nitrogen (N) promotes rapid plant growth and improves grain yield and grain quality. Optimal N management strategies aim at matching fertilizer's N supply with actual crop demand, will increase crop N uptake and decrease N losses to the environment. The objective of this experiment is to identify the length of seminal root, number of lateral and crown root during nitrogen acquisition. In this study, all process in identifying root types and observing the root system architecture was done in laboratory. The results on different root architecture of paddy with different concentrations of N shows significant difference since all type of roots shows different reaction towards nitrogen acquisition. Seminal roots are of greatest importance during the early growth of the seedling before the crown roots of higher internodes become well established. In addition to that, crown roots make up most of the paddy root system and are primarily responsible for soil resource acquisition later in development. In particular, formation of lateral roots is one of the key determinants of the root architecture. As in paddy, many lateral roots formation shows that the paddy is getting enough nutrients as it is important for formation of phloem cells.

*Keywords: root system architecture, nitrogen, seminal roots, crown roots, lateral roots*