



*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.

**COMPARISON PROPERTIES AND ADSORPTION CAPABILITIES OF  
DIFFERENT PYROLYSIS TEMPERATURE BIOCHAR AND STEAM  
ACTIVATED BIOCHAR DERIVED FROM EMPTY FRUIT BUNCH (EFB)**

**Muhammad Safuan Abu Bakar**

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

*Corresponding Author:*

**ABSTRACT**

Biochar is a valuable soil amendment which it have potential in improving the soil fertility, can hold carbon in soil and helps soils in retaining nutrients and water. This case study was conducted at soil laboratory, Universiti Teknologi MARA (Malacca), Jasin Campus. Objectives of this research are to determine the chemical properties of empty fruit bunch (EFB) biochar at different pyrolysis temperature and steam activated biochar, to determine the adsorption study on these biochars, and to compare which the best types of these biochar. Biochars were produced from empty fruit bunch (EFB) by slow pyrolysis process with different level of pyrolysis temperatures (300-400, 400-500, and 500-600°C). Slight amount of biochar from optimum temperature, 400-500 was activated by steam method. Their chemical properties such as pH, electricity conductivity (EC), total nutrients (P, K, Ca and Mg) were determined were analyzed by conducted dry ashing method. The results show that, the pH value, electricity conductivity (EC) and total nutrients such as P, K, Ca and Mg for EFB biochar were increased when temperature was increased. Cadmium chloride (CdCl<sub>2</sub>) and Calcium chloride (CaCl<sub>2</sub>) was used in conduct adsorption test of these biochars. Overall, steam activated biochar is more preferred to apply during planting a crop because it has larger size of pore space, thus has higher rate of adsorption of heavy metal such as Cadmium in the soil.