UNIVERSITI TEKNOLOGI MARA

Programme and Abstracts

PIMES

PLANTATION MANAGEMENT EXHIBITION & SEMINAR

15th December 2018

Faculty of Plantation and Agrotechnology
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DEAN PREFACE

Assalamualaikum Warahmatulllahi 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

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 agribussiness, 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.

PLANTATION AND MANAGEMENT SEMINAR 2018 (PiMES)
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TOXICITY OF SELECTED ESSENTIAL OIL AGAINTS RED FLOUR BEETLE (*Tribolium castaneum*) BY USING FUMIGANT BIOASSAY

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ABSTRACT

The storage of rice is part of the post-harvest system where the food passes from field to consumer. Insects that associated with the stored product is the spoilage in term of the quality, appearance and consequently lead to economic loss. In Malaysia, the usage of insecticide to control the infestation pest storage can give the effect to the human health and environment because of chemical substance contains. Since the insecticides already resistance to stored product beetles, the main objectives of this research are to determine the effectiveness *Citrus sinensis* essential oil against red flour beetle (*Tribolium castaneum*) and to review the mortality of insects at different time. This beetle was chosen because this beetle is the main storage beetle that attacks the storage product. Fumigant toxicity of the EO was tested at different concentration and mortality was recorded every 3, 6, 12 and 24 hours. The highest mortality 100% had *C. sinensis* at the concentration 10µL. Since the p-Value for mortality of *T. castaneum* is 0.00 which is less than 0.05, there was a significant difference on the mortality rate of *T. castaneum* against the concentrations (µL) of *C. sinensis*. At 95% of confidence interval, there is enough evidence to support the claim. The EO that been generated from *C. sinensis* contains d-limonene which is effective in reducing the amount of red flour beetle (*Tribolium castaneum*) in storage or mill and orange peel has strong fumigant toxicity effect against *Z. subfasciatus*. Monoterpenoids are the most terpenes and represented by 90% of essential oils. This application is safe and guaranteed to be used as control of insect's infestation during storage phase milling process. The higher dose of EO to the insects, the higher the chance for insect to reach their mortality level. These results provide important tools for the development of an Integrated Pest Management (IPM) program.

Keywords: stored product, Tribolium castaneum, effectiveness, mortality, Citrus sinensis