UNIVERSITI TEKNOLOGI MARA

# WATER QUALITY, CLIMATIC FACTORS AND PLANT TRAITS AS PREDICTORS TO THE INSECT'S ABUNDANCE IN THE PADDY FIELD

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Thesis submitted in fulfillment
of the requirementsfor the degree of
**Master of Science**

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## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. The thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

Paddy (*Oryza sativa* L.) was cultivated in many countries. The major problem in paddy field is insect pests. Due to that, pesticides were widely used. However, heavily usage can cause environmental pollution, loss of non-target pests, insecticides resistance and residual toxicity. Therefore, beneficial insects should be used as an alternative method. Understanding habitat preferences and factors that can reflect populations of beneficial insects are urgently needed. Following that, the intention of this study is to assess the environmental factors that reflect the abundance of beneficial insects in the paddy field at Sungai Burong, Tanjung Karang, Selangor. A total of 1,257 individuals of insects consisted of five orders (Odonata, Hemiptera, Coleoptera, Lepidoptera and Diptera), two sub-orders (Anisoptera and Zygoptera) and six families (Gerridae, Coccinellidae, Staphylinidae, Pyralidae, Cicadellidae and Chironomidae) found throughout two cropping periods. The compositions and diversity of the insects varied throughout the sampling period. The species richness and evenness was highest during vegetative phase. Besides, according to Mann-U Whitney and Kruskal-Wallis Tests, most of insects were influenced by localities of sampling areas. There were significance indirect relationship of insects with water temperature, Biochemical Oxygen Demand and Chemical Oxygen Demand. The plant height, insect pests, temperature, rainfall and humidity were good predictors on abundance of beneficial insects however, the $R^2$ values were relatively low due to significance indirectly relationship between water parameters with insects. Consideration of all factors, the total variance showed more than 78%, which indicate a strong correlation between those parameters insects in the paddy field.

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