

SCREENING OF INSECTISIDE (MALATHION)  
DEGRADING BACTERIA FROM SOIL

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**SCREENING OF INSECTICIDE (MALATHION) DEGRADING BACTERIA  
FROM SOIL**

By

Muhammad Zuhilmi Bin Marsal

A thesis submitted in partial fulfillment of  
The requirements for the award of the degree of  
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**DEPARTMENT OF BIOLOGICAL SCIENCES  
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**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Screening of Insecticide (Malathion) Degrading Bacteria from Soil

Oleh: Muhammad Zulhilmi Bin Marsal

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telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Biologi), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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## DECLARATION

I hereby declare that this thesis entitled screening of insecticide (Malathion) degrading bacteria from soil is the result of my own research except as cited in the references.

Signature : .....  .....

Name : MUHAMMAD ZULHILMI BIN MARSAL .....

Matrix No : UK 11737 .....

Date : 5. May. 2008 .....

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## ABSTRACT

Excessive of the Malathion which is type of organophosphate in soil especially at the agriculture fields will contaminated the soil and gave harmful effect to lung, gastrointestinal tract, skin and nervous system of human and animals. One of the ways to control the contamination in soil was by using insecticide degrading bacteria obtained from the soil itself. So, the aims of this study were to isolate the bacteria from soil samples and to identify bacteria degrading Malathion from soil. The bacteria were isolated from soil samples that have been treated by Malathion. The rate of Malathion degradation was screened using enrichment culture mixed with isolated bacteria, trace element and Malathion for ten days. The result was monitored by using plate count method and optical density at 600nm which was used to measure the growth phase of bacteria. The result obtained from plate count method showed that there was no isolated bacteria successfully degraded the Malathion due to the changes in growth temperature and chemical properties of nutrients that made the bacteria unable to adapt in artificial condition of culture. This condition in laboratory can showed that many factor influence the degrading Malathion.



## ABSTRAK

Kandungan Malathion yang berlebihan dalam tanah di mana terdiri daripada kumpulan organophosphate terutamanya dalam bidang agrikultur akan mencemarkan tanah tersebut dan memberi kesan buruk kepada peparu, salur pencernaan, kulit dan sistem saraf pada manusia serta haiwan. Salah satu cara untuk mengawal pencemaran tanah dengan menggunakan bacteria pengurai racun serangga yang diperolahi dari tanah itu sendiri. Maka, tujuan kajian ini adalah untuk megasingkan bacteria daripada sampel tanah dan mengenalpasti bacteria yang boleh menguraikan malathion dari tanah. Bacteria telah diasingkan dari tanah yang telah didedahkan pada malathion. Kadar peguraian malathion telah disaringkan dengan menggunakan kultur pengkayaan yang di campurkan bacteria, unsur surih dan malathion untuk sepuluh hari. Keputusannya telah dipantau menggunakan kaedah pengiraan koloni dan optical density pada 600nm dimana untuk mengira kadar pertumbuhan bacteria. Keputusan yang diperolehi dari kaedah pengiraan koloni menunjukkan tiada bacteria yang mampu menguraikan malathion yang disebabkan perubahan suhu dan keadaan kimia untuk nutrien yang menyebabkan bacteria tersebut tidak dapat menyesuaikan pada keadaan media buatan tersebut. Keadaan makmal telah menunjukkan banyak faktor yang mempengaruhi penguraian Malathion.