

SCREENING OF INSECTICIDE (CARBOFURATHI)
DEGRADING BACTERIA FROM SOIL

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

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PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **SCREENING OF INSECTICIDE (CARBOFURAN) DEGRADING BACTERIA FROM SOIL** oleh: **NIK YUSZRIN BIN YUSOF** no. matrik: **UK12867** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh 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 (CARBOFURAN) DEGRADING BACTERIA FROM SOIL** is the result of my own research except as cited in the references.

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ABSTRACT

Biodegradation by microflora in soil was very important since intensive pollutions occurred such as pesticide residues in soil and other pollutants. The aims of this study were to isolate the bacteria from the soil samples and to identify bacteria degrading carbofuran in soil. Soil collection was done at tobacco farms that had been investigated for the histories of carbofuran treatments situated in Merang, Terengganu. Soil pH and temperature were determined at the collection sites which are 30 °C and pH 5.75. Serial dilution and pour plate method in order to isolate bacteria from soil were conducted. Sum of three isolates finally being selected for treatment with carbofuran in enrichment cultures. Two controls were prepared which were Control A (trace element + carbofuran, no bacteria inserted) and Control B (bacteria + trace element, without carbofuran) in order to monitor and compare the growth of the tested bacteria. The growths of isolated bacteria were monitored by Optical Density (OD) 600 nm reading and plate count method in 2-days interval for 12 days. The graphs showed negative result of carbofuran degrading growth curves for all of the three isolates tested. Isolate 1, 2 and 3 showed decreasing growth of bacteria number in 12 days compared to bacteria number in control medium cultures and most of the growth graphs of isolates almost imitated the pattern of control graphs.

ABSTRAK

Penguraian biologi oleh mikroorganisma sangat penting kerana banyak pencemaran berlaku terutamanya dalam tanah seperti baki racun dalam tanah dan lain-lain. Tujuan kajian ini adalah untuk mengasingkan bakteria daripada tanah dan mengenalpasti bakteria yang boleh mengurai karbofuran dalam tanah. Sampel tanah telah diambil dari ladang yang diketahui sejarah penggunaan karbofuran oleh peladang yang terletak di Merang, Terengganu. Suhu dan kepekatan hidrogen (pH) tanah di tapak kajian telah dikenalpasti iaitu 30 °C and 5.75. Siri pencairan dan kaedah plat curahan (pour plate method) digunakan untuk pengasingan bakteria daripada tanah. Sejumlah 3 isolat dipilih untuk dirawat dengan karbofuran dengan menggunakan kultur pengkayaan (enrichment culture). Dua media kawalan telah digunakan semasa kajian iaitu Kawalan A (unsur surih + karbofuran, tiada bakteria dimasukkan) dan Kawalan B (bakteria + unsur surih, tiada karbofuran) di mana media kawalan ini bertindak sebagai kawalan pertumbuhan bakteria yang dikaji. Pertumbuhan bakteria yang terasing telah dikenalpasti melalui bacaan Ketumpatan Optik (Optical Denstiy) 600 nm dan kaedah kiraan media (plate count method) selang 2 hari selama 12 hari. Graf menunjukkan lengkung keputusan bakteria yang mengurai karbofuran yang negatif untuk semua isolat yang dikaji. Isolat 1, 2 dan 3 menunjukkan pengurangan pertumbuhan bilangan bakteria dalam 12 hari berbanding bilangan bakteria dalam media kawalan dan kebanyakan graf pertumbuhan isolat hampir menyamai bentuk graf kawalan.