

ISOLATION AND IDENTIFICATION OF MICROORGANISMS
IN "NATURAL FARMING" PROCESS

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FAKULTI SAINS DAN TEKNOLOGI
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ISOLATION AND IDENTIFICATION OF MICROORGANISMS IN
“NATURAL FARMING”
PROCESS

by

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DECLARATION

I hereby declare that this thesis entitled ISOLATION AND IDENTIFICATION OF MICROORGANISMS IN “NATURAL FARMING” PROCESS is the result of my own research except as cited in the references.

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ABSTRACT

Indigenous Microorganisms Fertilizer is organic fertilizer containing microorganisms which contribute to the soil structure and humification. The IMO has great potential in supporting Natural Farming in Malaysia. This study was carried out to isolate and identify the types of microorganisms present in Malaysian IMO for natural farming processes. Isolation of the microorganisms were carried out at every step IMO fertilizer preparation and the identification of isolates were determined based on their morphological and biochemical characteristics. Results on the microbe(s) isolated from each step of IMO preparation are *Aspergillus niger* from IMO1; *Saccharomyces* sp. from IMO2; *Enterobacter cloacae*, *Pseudomonas putida*, *Klebsiella pneumonia* and *Serratia marcescens* from IMO3; *Weeksella virosa* and *Enterobacter aerogenes* from IMO4 and *Enterobacter sakazaki* and *Lactobacillus casei* from IMO5. The microorganisms identified can be grouped into four types: Photosynthetic bacteria, Lactic acid bacteria, yeast and fungus. From this study, it can be suggested that not the overall number of microorganisms in IMO that matters for Natural Farming processes but the interactive relationship between microorganisms is the most important aspect.

ABSTRAK

Baja mikroorganisma tempatan (IMO) adalah baja organik yang mengandungi mikroorganisma yang menyumbang kepada struktur tanah dan humusifikasi. IMO mempunyai potensi yang hebat untuk membangunkan pertanian semulajadi di Malaysia. Kajian ini dijalankan untuk memencilkan dan mengenalpasti jenis-jenis mikroorganisma yang hadir di dalam IMO Malaysia untuk proses pertanian semulajadi. Pemencilan mikroorganisma telah dijalankan melalui kaedah penyediaan IMO dan pengenalpastian pemencilan tersebut telah dilakukan berdasarkan ciri-ciri morfologi dan biokimia. Keputusan ke atas mikrob yang dipencilkan daripada setiap langkah-langkah penyediaan IMO adalah *Aspergillus niger* daripada IMO1; *Saccharomyces* sp. daripada IMO2; *Enterobacter cloacae*, *Pseudomonas putida*, *Klebsiella pneumonia* dan *Serratia marcescens* daripada IMO3; *Wecksella virosa* dan *Enterobacter aerogenes* daripada IMO4 serta *Enterobacter sakazaki* dan *Lactobacillus casei* daripada IMO5. Mikroorganisma yang dikenalpasti boleh dikategorikan kepada empat jenis iaitu Bakteria Fotosintetik, Bakteria Asid Laktik, Yis dan Fungus. Daripada kajian ini maka boleh dicadangkan bahawa bukannya bilangan keseluruhan mikroorganisma di dalam IMO yang penting untuk pertanian semulajadi malah perperhubungan interaktif di antara mikroorganisma adalah aspek yang paling penting.