

# CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam  
Ahmed Tariq Jameel  
Azura Amid



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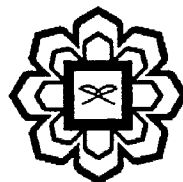
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**Department of Biotechnology Engineering  
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International Islamic University Malaysia**



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## CHAPTER 0

# AEROBIC BIODEGRADATION OF OIL AND GREASE IN PALM OIL MILL EFFLUENT USING CONSORTIUM OF MICROORGANISMS

Ahmad Tariq Jameel and Alade Abass Olanrewaju

Department of Biotechnology Engineering, Faculty of Engineering, International Islamic University Malaysia, P.O. Box 10, 50728 Kuala Lumpur, Malaysia

## ABSTRACT

The current methods adapted for the treatment of Palm Oil Mill Effluent (POME) in most of the palm oil mills are not very effective in treating the pollutants in the POME to the stringent standards required. Furthermore the status and concentration of oil and grease after the treatment processes is given less attention and this suggests that these approaches employed are not sustainable to minimize the environmental impact of oil and grease in POME. Moreover, the range of concentration of oil and grease in POME is relatively higher than those obtained in toxic wastewaters, thus, the need for affective treatment process for POME. Treating POME through aerobic biodegradation process with consortia of microorganisms will facilitate effective conversion of the oil and grease present in POME to environmentally safe biomass thereby rendering the wastewater safe for effective reuse in the oil palm mills and eventual safe discharge.

**Keywords:** aerobic biodegradation, consortia of microorganisms, oil and grease, POME,

## INTRODUCTION

The rapid growth in the Malaysian palm oil industry has ranked the nation as one of the leading world producer of palm oil and its allied products. The palm oil plantation in the country, as recorded in the year 2003, occupy more than more than 3.79 million hectares of land , which is equivalent to more than one-third of the total cultivated area in Malaysia and 11% of the total land area (Yusoff and Hansen, 2007). More lands are still opened for the palm oil plantation in Malaysia, Indonesia and Thailand, to form the largest palm oil producing region in the world.

## LITERATURE REVIEW

### Waste Generation in Palm Oil Mills

Oil palm industry produces a wide variety of wastes in large quantities, which form of the important source of pollution in most palm oil producing countries like Malaysia (Sridhar and AdeOluwa, 2009). These wastes can be divided into liquid and