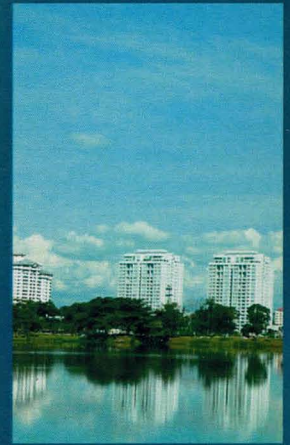
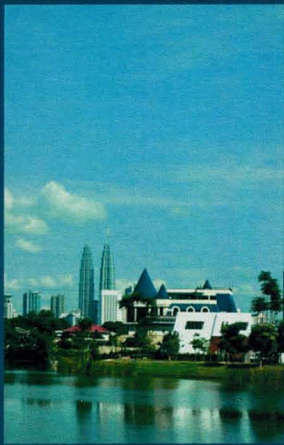


Visioning Malaysian Landscape



**Mazlina Mansor
Ismawi Hj. Zen
Jamilah Othman
Nor Zalina Harun**



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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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MACROPHYTES AS PHYTOINDICATOR FOR EUTROPHICATION

Rashidi Othman, Izawati Tukiman, Ruhul 'Izzati Shahrudin, Nurul Azlen Hanifah,
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ABSTRACT

Macrophytes are beneficial to fresh water bodies because they produce oxygen, increase productivity of aquatic ecosystem and thus help to maintain ecosystem balance, and provide food and shelter for aquatic living organisms. A lack of macrophytes in aquatic ecosystem may indicate a reduced population of fauna whereas the absence of macrophytes may indicate water quality problems as a result of excessive turbidity, herbicides, or salinization. An overabundance of macrophytes can result from high nutrient levels and may interfere with freshwater bodies processing, recreational activities and detract from the aesthetic appeal of the system. Therefore macrophytes are excellent indicators of unhealthy environment because they respond to nutrients, light, toxic contaminants, metals, herbicides, turbidity, water level change and salt. In this paper, the abundance of *Nelumbo nucifera*, *Eichhornia crassipes*, and *Hydrilla verticillata* were studied at six different places at Kampar, Perak to assess the potential of macrophytes as phytoindicator for eutrophication.

Keywords: eutrophication, landscape ecology, macrophytes, phytoindicator, phytotechnology

INTRODUCTION

According to Malaysia Environmental Quality Report 2002, the estimated number of water pollution sources in Malaysia for 2002 was 13,540 comprising especially of sewage treatment plants, agro-based industries, manufacturing industries and animal farms. About 53 percent of the total number of sources was domestic sewage facilities (7,126 sources), followed by manufacturing industries (5,137 or 38 percent), pig farms (807 sources or 6 percent) and agro based industries (470 sources or 3 percent). Of the total number of effluent sources identified, Johor had the highest number (1,675, 29.9 percent), followed by Selangor (1,485, 26.5 percent), Perak (573, 10.2 percent) and Perlis had the least number (14, 0.25 percent).

The green technology is a branch of sustainability development. Some emphasize the term of sustainability development as use of green technology and improvements in health care and education (World Resources Institute, 1992). The study of applications of plant in environmental protection strategies is called "Phytotechnologies". Phytotechnologies employ plants to remediate, stabilize or control toxic contaminants from the environment (COST