PRIMARY PRODUCTIVITY IN SETIU LAGOON, TERENGGANU,
SOUTH CHINA SEA

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FACULTY OF SCIENCE AND TECHNOLOGY
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Lihat sebelah

PRIMARY PRODUCTIVITY IN SETIU LAGOON, TERENGGANU, SOUTH CHINA SEA

By

LIM SOO KIAN

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BORANG PENGESAHAN DAN KELULUSAN LAPORAN AKHIR PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Primary Productivity In Setiu Lagoon, Terengganu, South China Sea oleh **Lim Soo Kian UK7587** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukan kepada jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda sains (Biologi Marin), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATION

%	-	percentage
‰ @ ppt	-	part per thousand
°C	-	degree centigrade
APHA	-	America Public Health Association
BOD	-	biological oxygen demand
C	-	carbon
$C.m^{-3}.hr^{-1}$	-	carbon per meter cube per hour
CO^2	-	carbon dioxide
Conc	-	concentration
DO	-	dissolved oxygen
DOE	-	Department of Environment
g	-	gross photosynthetic rate
g	-	gram
gC.m-2.yr	-	gram carbon per meter square per year
GFC	-	glass microfibre filters
GPS	-	Global Positioning System
L	-	liter
M	-	morlarity
m	-	meter
$mg.L^{-1}$	-	milligram per liter

$mg.m^{-3}$	-	milligram per cube
$mgC.m^{-3}.hr^{-1}$	-	milligram carbon per meter cube per hour
mL	-	milliliter
N	-	net photosynthetic rate
N	-	Normality
nm	-	nanometer
O	-	oxygen
OD	-	optical density
pH	-	potential of hydrogen
R	-	respiration rate
rpm	-	round per minute
Stdev	-	standard division
$\mu g.L^{-1}$	-	microgram per liter
μM	-	micrometer
$\mu Mol.m^{-2}.s^{-1}$	-	micromole per meter cube per second

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ABSTRACT

This study aims to determine the effect of monsoon on primary productivity and chlorophyll-*a* in Setiu Lagoon, Terengganu. Three sampling were conducted on 21st August 2004 (Southwest Monsoon), 23rd October 2004 (intermonsoon) and 27th November 2004 (Northeast Monsoon). Fifteen sampling stations were established for chlorophyll-*a* determination and nine stations were chosen for measurement of primary productivity. The monsoon season is the main factor that affects the criteria of the water quality in Setiu Lagoon. The mean value of net photosynthetic rate for the 1st 2nd and 3rd sampling were 27.21 mg.C.m^{-3}.hr^{-1}, 12.91 mg.C.m^{-3}.hr^{-1} and 15.55 mg.C.m^{-3}.hr^{-1} respectively. Light intensity also had a strong effect on photosynthetic rates in the water. Moreover, the mean value of chlorophyll-*a* for 1st sampling, 2nd sampling and 3rd sampling were 25.07 mg.m^{-3}, 1.62 mg.m^{-3} 2nd and 2.01 mg.m^{-3} respectively. The trend of the chlorophyll-*a* demonstrates a decreasing trend from Southwest to Northeast Monsoon. This was probably due to the effect of heavy rain water while dilute the nutrients and biomass of phytoplankton dilution in water.

ABSTRAK

Kajian in bertujuan untuk menentukan kadar fotosintesis dan klorofil a yang terdapat di lagun Setiu semasa musim tengkujuh. Tiga kali penyampelan telah dijalankan; 21 Ogos 2004 (Monsun Barat Daya), 23 Oktober 2004 (pra-monsun) and 27 November 2004 (Monsun Timur Laut). Lima belas stesen penyempelan telah dipilih untuk kajian klorofil a dan sembilan stesen penyempelan untuk kajian kadar fotosintesis di lagun Setiu. Musim tengkujuh merupakan factor utama yang mempengaruhi cirri-ciri kualiti air di lagun Setiu. Berdasarkan pengiraan di kawasan kajian; nilai min untuk kadar fotosintesis untuk penyempelan pertama adalah lehih tinggi berbanding dengan penyempelan kedua dan ketiga adalah 18.56 $mg.C.m^{-3}.hr^{-1}$, 12.91 $mg.C.m^{-3}.hr^{-1}$ dan 15.55 $mg.C.m^{-3}.hr^{-1}$ masing-masing. Keamatan cahaya telah merupakan faktor utama yang mengehad proses fotosintesis dalam air. Tambahan, nilai min untuk klorofil a dalam penyempelan pertama, kedua dan ketiga adalah 25.07 $mg.m^{-3}$, 1.62 $mg.m^{-3}$ dan 2.01 $mg.m^{-3}$ masing-masing. Corak yang ditunjukkan oleh nilai min klorofil a adalah semakin berkurangan dari penyempelan pertama ke penyempelan kedua dan penyempelan ketiga. Ini disebabkan oleh perubahan monsun mana terdapat isipadu air hujan yang tinggi telah mencairkan nutrient dan biomass yang terkandung dalam air.