

PRIMARY PRODUCTIVITY AND CHLOROPHYLL a IN SETIU LAGOON,
TERTANGGAH, SOUTH CHINA SEA

LEE JIWEI CHUN

FACULTY OF SCIENCE AND TECHNOLOGY
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI
MALAYSIA

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**PRIMARY PRODUCTIVITY AND CHLOROPHYLL-*a* IN SETIU LAGOON,
TERENGGANU,
SOUTH CHINA SEA**

**BY
SEE HUEY CHUN**

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**JABATAN SAINS SAMUDERA
FAKULTI SAINS DAN TEKNOLOGI
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI
MALAYSIA**

**PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK
PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Primary Productivity and chlorophyll-*a* in Setiu Lagoon, Terengganu, South China Sea** oleh **See Huey Chun**, No. Matrik: **UK 8199** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains- Sains Samudera, Fakulti Sains Dan Teknologi, Kolej University Sains Dan Teknologi Malaysia.

Disahkan oleh:

Penyelidik Utama: 

Nama: **PROF. DR. LAW AH THEEM**
PENSYARAH

Cop Rasmi: **Jabatan Sains Samudera**
Fakulti Sains dan Teknologi
Kolej Universiti Sains dan Teknologi Malaysia
21030 Kuala Terengganu.

23/4/06

Tarikh:

Ketua Jabatan Sains Samudera



Nama: **PROF. MADYA DR. HJ. ROSNAN HJ. YAACOB**
Ketua

Cop Rasmi: **Jabatan Sains Samudera**
Fakulti Sains dan Teknologi
Kolej Universiti Sains dan Teknologi Malaysia
21030 Kuala Terengganu.

Tarikh:

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LIST OF ABBREVIATIONS

%	-	percentage
‰ @ ppt	-	part per thousand
°C	-	degree centigrade
APHA	-	American Public Health Association
BOD	-	biological oxygen demand
CO ₂	-	carbon dioxide
Conc.	-	concentrated
DO	-	dissolved oxygen
G	-	Gross photosynthetic rate
GFC	-	Glass micro fibre filters
GPS	-	Global Positioning System
<i>M</i>	-	Morality
mgL ⁻¹	-	milligram per litre
mgm ⁻³	-	milligram per cube
mgCm ⁻³ .hr ⁻¹	-	milligram carbon per metre cube per hour
N	-	Net photosynthetic rate
<i>N</i>	-	Normality
nm	-	nanometre
OD	-	optical density
pH	-	potential of hydrogen
R	-	Respiration rate
rpm	-	round per minute
stdev	-	standard deviation
TSS	-	Total suspended solids
µm	-	micrometer
µMol.m ⁻² .s ⁻¹	-	micromole per metre cube per second

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ABSTRACT

This study aims to measure photosynthetic rate, chlorophyll-*a* and total suspended solids in Setiu lagoon, Terengganu. Three samplings were conducted; 25th August 2005 (Southwest monsoon), 6th October 2005 (inter monsoon) and 14th December 2005 (northeast monsoon). Fourteen sampling stations around Setiu lagoon were set for this study. Northeast monsoon was found to be the most important factor that influent the water quality in Setiu lagoon. Low level of net photosynthetic rate in water was found during the Northeast monsoons season. The mean value of net photosynthetic rate for 1st sampling, 2nd sampling and 3rd sampling were 50.78mgCm⁻³hr⁻¹, 9.37mgCm⁻³hr⁻¹ dan 38.87mgCm⁻³hr⁻¹ respectively. Furthermore, the light intensity is the major limited factor. Besides this, the mean values of chlorophyll-*a* level during 1st, 2nd and 3rd sampling were 1.64mgm⁻³, 0.48mgm⁻³ dan 2.18mgm⁻³ respectively. Most probably the greater volume of fresh water input during the monsoon season was the primary factor that caused lower concentration of chlorophyll-*a*. During 1st sampling, the mean values for Total suspended solids level in Setiu lagoon were 46.7mgL⁻¹. The mean value of TSS level for 2nd and 3rd sampling were 38.7 mgL⁻¹ and 30.35mgL⁻¹ respectively. From here, the mean value for TSS level for the three samplings was at the safety level. On the other hand, Setiu lagoon is considered as contaminant by the domestic waste from human activities and aquaculture activities.

ABSTRAK

Kajian ini adalah bertujuan untuk mengira kadar fotosynthesis, klorofil-*a* dan jumlah pepejal terampai di lagun Setiu, Terengganu. Tiga kali penyampelan telah dilaksanakan iaitu ; 25 Ogos 2005 (monsun barat daya), 6 October 2005 (antara monsun) and 14 Disember 2005 (monsun Timur Laut). Bagi setiap penyampelan, empat belas stesen telah dipilihkan di lagun Setiu sebagai tapak kajian. Monsun Timur Laut merupakan faktor utama yang mempergaruhi kualiti air di Lagun Setiu. Berdasarkan pengiraan, kadar fotosintesis bersih yang rendah didapati. Nilai min bagi kadar fotosintesis bersih untuk penyampelan pertama adalah tinggi; $50.78\text{mgCm}^{-3}\text{hr}^{-1}$. Manakala, nilai min bagi kadar penyampelan kedua dan ketiga adalah $9.37\text{mgCm}^{-3}\text{hr}^{-1}$ dan $38.87\text{mgCm}^{-3}\text{hr}^{-1}$ masing-masing. Kadar keamatan cahaya merupakan faktor penghad yang utama. Selain itu, daripada keputusan yang terpapar, nilai min bagi klorofil-*a* semasa penyampelan pertama, kedua dan ketiga adalah 1.64mgm^{-3} , 0.48mgm^{-3} dan 2.18mg.m^{-3} masing-masing. Hal ini mungkin disebabkan oleh kemasukkan isipadu air masin yang banyak semasa musim monsun. Ini merupakan faktor primer yang menyebabkan kepekatan klorofil-*a* rendah. Semasa penyampelan pertama, nilai min bagi jumlah pepejal terampai di lagun Setiu adalah 46.7mgL^{-1} . Nilai min bagi jumlah pepejal terampai bagi penyampelan kedua dan ketiga adalah hanya 38.7mgL^{-1} dan 30.35mgL^{-1} masing-masing. Ketiga-tiga penyampelan menunjukkan jumlah pepejal terampai di Lagun Setiu adalah pada tahap keselamatan, iaitu tidak melebihi 50mgL^{-1} . Sebaliknya, Lagun Setiu dianggap tercemar disebabkan oleh kemasukkan kumbahan domestik dari aktiviti manusia dan aktiviti aquakultur.