



THE ASIAN NETWORK FOR USING ALGAE AS A CO₂ SINK THE ASIAN PACIFIC PHYCOLOGICAL ASSOCIATION



Newsletter

Issue No. 3 December 1, 2008

The 4th Workshop of the Working Group for the Asian Network for Using Algae as a CO₂ Sink

The 4th Workshop of the Working Group for the Asian Network for Using Algae as a CO₂ Sink was convened as a satellite meeting of the 5th Asian Pacific Phycological Forum, November 10-14, 2008 at the Rutherford House, Victoria University, Wellington, New Zealand. The program included the hands on CO₂ workshop, "Measurement of primary productivity of marine macroalgae and seagrass".

A total of 12 members from 10 countries were in attendance: John Beardall (Australia), Zhengyu Hu (China), Put O. Ang Jr. (Hong Kong), Dinabandhu Sahoo (India), Grevo S. Gerung (Indonesia), Sung Min Boo (Korea), Ik Kyo Chung (Korea), Jin Ae Lee (Korea), Hiroshi Kawai (Japan), Siew Moi Phang (Malaysia), Wendy Nelson (New Zealand) and Yuwadee Peerapornpisal (Thailand). Four new observers, Prof. Jana Tjahjana Anggadiredja, Agency for Assessment & Application of Technology, Indonesia, Mr. You Hack Churl, C.E.O., Pegasus International, Korea, Prof. Catriona Hurd, University of Otago, New Zealand and Prof. Khanjanapaj Lewmanomont, Kasetsart University, Thailand, participated in the workshop.


The workshop agenda was as follows: 1) to review and endorse the Meeting Report of the 3rd Workshop of the working group, 2) to present the interim report of the Network on publication, R&D, and Network activities, 3) to discuss the

membership of the Working Group of the Asian Network for Using Algae as a CO₂ Sink, APPA, 4) to discuss the convening of follow-up meetings.

Prof. John Beardall informed the group of the progress of a review paper on the using marine algae for carbon sequestration, which will be published in the Journal of Applied Phycology. The research proposal of Charles Vairappon, the University of Malaysia Sabah, for a photosynthesis monitoring system would involve the collaboration of the network members, John Beardall and Jin Ae Lee. The Network activities at the 4th Global Conference on Oceans, Coasts, and Islands, "Advancing Ecosystem Management and Integrated Coastal and Ocean Management in the Context of Climate Change", Hanoi, Vietnam, 7-11 April 2008, and at the 11th International Conference on Applied Phycology, Galway, Ireland, 21-27 June 2008 were reported in detail. It was agreed that the present membership system entailing a single representative from each country will be basically maintained, and that others will be invited as observers for specific future meetings.

As a part of their Network activities, Working Group members will participate and present the work at South China Sea 2008, Kuantan, Malaysia, 25-29 November 2008, United Nations Climate Change Conference, Poznan, Poland, 1-12 December 2008, and at the World Ocean

Conference, Manado, Indonesia, 11-15 May 2009. The meeting ended with the announcement that the 5th Working Group workshop will be held during the 9th International Phycological Congress, August 2-8, 2009, Tokyo, Japan, and

that Prof. Hiroshi Kawai will provide prior to the conference, lab facilities at the Kobe Marine Station for a one-week hands-on training programme in CO₂ measurement. 



1. The 4th Workshop of the Asian Network for Using Algae as a CO₂ Sink was convened at Rutherford House, Victoria University, Wellington, New Zealand, during the 5th APPF, November 10-14, 2008.



2. APPA president Prof. SM Phang and the secretary, Prof. JA Lee, preside over the APPA working group meeting of the Network at the 4th workshop in Wellington.



3. The participants having a discussion on the membership of the Working Group of the Asian Network for Using Algae as a CO₂ Sink, APPA.



4. The participants having a discussion on the convening of follow-up meetings.




5. APPA working group members of the Network having a working lunch at the workshop.



6. Group photograph of the members of the Network at the 4th workshop at Rutherford House, Victoria University, Wellington, New Zealand.

The 5th Asian Pacific Phycological Forum, November 10-14, 2008, Wellington, New Zealand

The 5th Asian Pacific Phycological Forum was successfully held at Rutherford House, Victoria University, Wellington, New Zealand, November 10-14, 2008. The forum was hosted and sponsored by Victoria University of Wellington, the National Institute of Water and Atmospheric Research (NIWA) and the Australian Society for Phycology and Aquatic Botany (ASPAB) under the auspices of the Asian Pacific Phycological Association. More than 230 delegates from over 20 countries of the Asia-Pacific region participated in the forum. In the era of unprecedented global climate change, the major theme of the forum was

determined to be "Algae in a changing world". There were 9 mini-symposia deliberating various topics in phycology including the "Acidification / Climate change". President Siew Moi Phang of the Asian Pacific Phycological Association expressed deep respect for the activities of the Asian Network for Using Algae as a CO₂ Sink in her opening address. Prof. Ik Kyo Chung, Pusan National University, Korea gave the plenary address to the forum on "Seaweed solution: Coastal adaptation and mitigation measures in the context of climate change." 




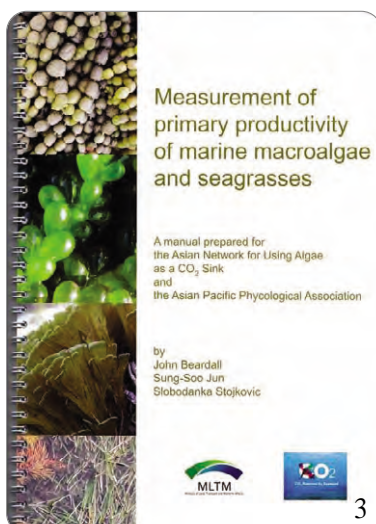
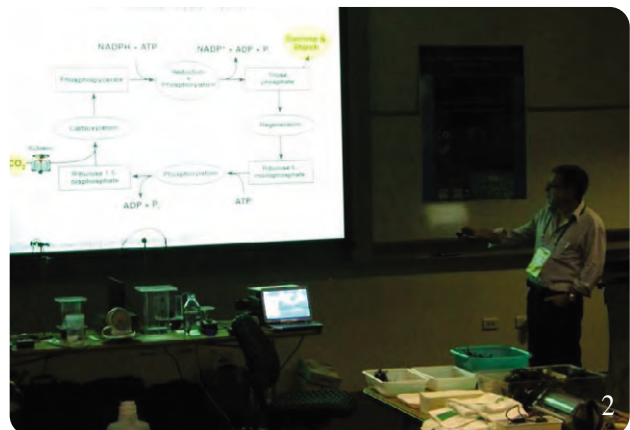
1. The major theme of the 5th Asian Pacific Phycological Forum (APPF), which was deemed appropriate in an era of unprecedented global climate disruption, was "Algae in a changing world."
2. APPA president Prof. SM Phang giving the opening remarks of the 5th APPF, emphasizing the activities of the Asian Network for Using Algae as a CO₂ Sink.
3. Prof. IK Chung giving the plenary address to the 5th APPF on "Seaweed solution: Coastal adaptation and mitigation measures in the context of climate change."
4. Group photograph of the participants at the 5th Asian Pacific Phycological Forum, Victoria University, Wellington, New Zealand, November 10-14, 2008.

The CO₂ Workshop on the Measurement of Primary Productivity

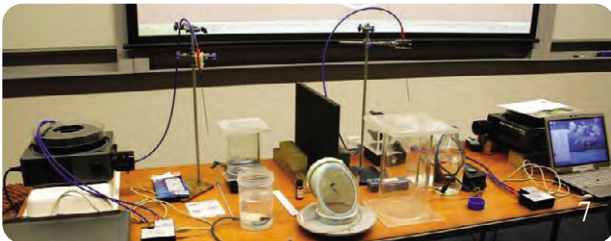
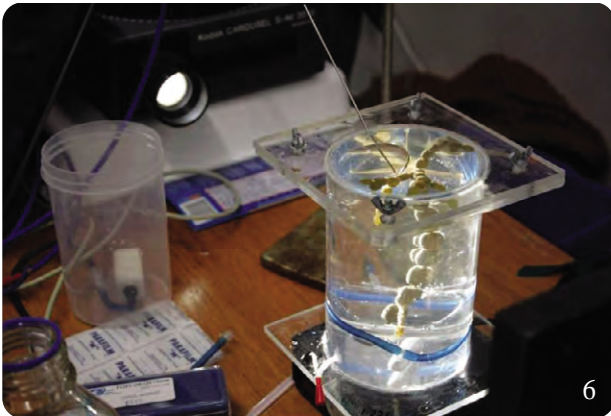
The 1st hands on workshop on the measurement of the primary productivity of marine macroalgae and seagrass under the auspices of the Asian Network for Using Algae as a CO₂ Sink and APPA was held at Rutherford House, Victoria University, Wellington, New Zealand during the 5th APPF, November 10-14, 2008. The workshop was prepared by Prof. John Beardall and Dr. Slobodanka Stojkovic, Monash University, Australia, and Prof. Sung-Soo Jun, Kyungwon Univesity, Korea with the assistance from Prof. Catriona Hurd, Dr. Chris Hepburn and research assistants from Otago University, New Zealand. The workshop was financially supported by the Project "CO₂ removal by seaweeds", the Ministry of Land, Transport and Marine Affairs, Korea, the manual for the workshop having been provided to all of the

registrants of the 5th APPF. More than 40 phycologists from the Asia-Pacific region joined in the fruitful hands-on workshop.

The workshop was carried out with an introduction on photosynthesis and carbon assimilation, biomass changes as estimates of primary productivity, measurements based on uptakes of inorganic carbon, measurements based on the evolution of oxygen, measurements based on chlorophyll fluorescence and application of techniques to field situations. Prof. John Beardall strongly recommended that all productivity data, in order to facilitate useful comparison with other values in the literature, be expressed on a number of bases, including per gram dry weight, per gram chlorophyll a, per gram wet weight and per unit surface area. 



1. The 1st hands-on workshop on the measurement of primary productivity of marine macroalgae and seagrasses for the Asian Network for Using Algae as a CO₂ Sink and APPA was held at Rutherford House, Victoria University, Wellington, New Zealand, during the 5th APPF, November 10-14, 2008
2. The workshop was run by Prof. John Beardall (Monash University) with assistance from Prof. Catriona Hurd, Dr. Chris Hepburn, and research assistants from Otago University.
3. The workshop was financially supported by the Project "CO₂ removal by seaweeds", the Ministry of Land, Transport and Marine Affairs, Korea; the workshop manual was provided to all registrants of the 5th APPF.



4-5. More than 40 phycologists from the Asia-Pacific region joined in the fruitful hands-on workshop.

6-7. The workshop introduced the major techniques of oxygen exchange, carbon assimilation and chlorophyll fluorescence with a demonstration of optodes and fluorometry.

8. Group photograph of the participants of the workshop on the measurement of primary productivity of marine macroalgae and seagrasses in Wellington, New Zealand.



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Can Algae Biofuels Satisfy the World's Growing Biofuel Needs? Upcoming Webinar Shares the Latest Commercialization Strategies and Challenges

October 21st, 2008

The leading Algae experts are sharing their views on the commercialization prospects of Algae biofuels at the upcoming Algae Webinar. The REAAL "webinar" will address the issues facing those from Silicon and Wall Street who are looking to commercialize Algae for the long term.

Speakers: October 21st, 2008. All speakers will address their energy portfolio, what role Algae play? A harvest of research industry activity, including a review of Algae biofuels, Algae as a source of a source of renewable energy. Participants as one of the first promising biofuels. Algae Webinar. Algae in energy are commercialized.

However: Algae biofuels may not be quite ready to replace fossil petroleum products. In fact, according to one industry expert, future developments may have negative impacts on the environment.

1. The relatively high costs of production.

2. The current market for Algae production for the health food sector.

3. The cost of producing large-scale Algae for commercial use. Algae biofuels production.

So, what are the current and commercial Algae biofuels? The REAAL "webinar" will address the issues facing those from Silicon and Wall Street who are looking to commercialize Algae for the long term.

Webinar on Wednesday, 20 October 2008, 10:00 AM EST. Sign up now! www.qlt.com.sg

Host: Singapore Hong Kong. The webinar is part of the upcoming Algae Webinar 2008 meeting in Singapore on September 17 and 18.

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Growthcell
 Green Algae
 Biofuels

Algae Biofuel Summit 2008
 17th - 19th September, 2008, New Delhi, India

Agenda 17-19th

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Algae Caring for the carbon-alternatives energy performance & commercial development



For more information visit www.algae-biofuel-summit.com
 or <http://www.growthcell.com>

GROWTHCELL

India

**Kertas dari Rumpun Laut,
Mengapa Tidak?**

Title : Paper from Seaweed, Why not?

Publisher : Kompas News Paper
23 July 2007

Brief of Content : No more cutting trees in the future. If we can produce pulp from seaweed, we may save forest to again global warming. *Platophora* sp from Indonesia was the one of the red algae producing Pulp. South Korea company in collaboration with Sam Ratulangi University in Indonesia try to establish large scale cultivation in Indonesia.

Indonesian

Title : Pegaspas Inc. Invest in Indonesia
Indonesia
Publisher : Mantanio Post, 3 September 2009
Briest of Content : Pegaspas Inc. will invest in Indonesia to develop seaweed as thraw material for pulp and paper. When we cultivate seaweed in the coastal area for raw material of pulp industry, it means that we save forest and support seaweed as a CO2 sink as well as Clean Development (CDM) program.

Indonesia

Research for JP-8 (jet fuel) from biofuel of algae

Japan

The screenshot shows a web page titled "Bioethanol production (4 million ton/yr) research" with the URL "http://www.meti.go.jp/press/2007/06/200706040013.html". The page is in Japanese and features a red header with the text "新エネルギー・資源庁 (NEDO)". The main content area includes a section titled "バイオエタノール生産技術の開発" (Development of Bioethanol Production Technology) and a section titled "バイオエタノール生産技術の開発" (Development of Bioethanol Production Technology). The page also includes a sidebar with a "目次" (Table of Contents) and a "お問い合わせ" (Contact Us) section. The footer contains the URL "http://www.meti.go.jp/press/2007/06/200706040013.html" and the text "Japan".

Japan

Bioethanol production from green seaweed (*Ulva pertusa*)

주제 **해양생물소재 바이오에탄올 제조공정 연구개발**

연구자 **김영환**
 *연세대학교 생명과학부 교수
 *연세대학교 생명과학부 교수



연구의 필요성 **해양 생물 자원 활용을 통한 바이오 에탄올 생산**

해양 생물 자원은 육상 농작물 자원에 비해 광범위한 지역에서 생산 가능하며, 기후 변화에 따른 농작물 생산량 감소에 따른 대체 원료로 주목받고 있다.

연구의 내용 **해양 생물 자원 활용을 통한 바이오 에탄올 생산**

해양 생물 자원을 바이오 에탄올 생산에 활용하기 위한 연구는 다음과 같다.

1. 해양 생물 자원의 수집 및 분리

2. 해양 생물 자원의 전처리

3. 바이오 에탄올 생산을 위한 효소 처리

4. 바이오 에탄올 생산을 위한 발효

5. 바이오 에탄올 생산을 위한 증류

6. 바이오 에탄올 생산을 위한 정제

<http://news.chosun.com/contents/tech/02/00000001801505.html>

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Seaweeds reduce greenhouse gases

Rumpai laut kurangkan gas rumah hijau

Seaweeds are a sustainable source of food and bio-fuel, and can help reduce greenhouse gas emissions, according to a study by scientists from the Malaysian Ministry of Science, Technology and Innovation.

The study, which was published in the journal *Journal of Applied Phycology*, found that seaweeds can absorb carbon dioxide from the atmosphere and release oxygen, making them a natural carbon sink.

The scientists also found that seaweeds can be used to produce bio-fuel, which is a renewable source of energy that can help reduce greenhouse gas emissions.

The study was conducted by a team of scientists from the Malaysian Ministry of Science, Technology and Innovation, and the University of Malaya.

The team found that seaweeds can be grown in large quantities and can be used in a variety of ways, including as a source of food, as a bio-fuel, and as a natural carbon sink.

The scientists believe that seaweeds have the potential to become a major source of sustainable food and bio-fuel, and that they can help reduce greenhouse gas emissions and combat climate change.

The study was funded by the Malaysian Ministry of Science, Technology and Innovation, and the University of Malaya.

Special report, Friday 4 January 2008, Mega page 5, Utusan Malaysia

One Tasty Seaweed Scientific Mission

MONROVIA, Liberia (AP) — A team of scientists from the United States and Liberia are working to identify and cultivate seaweed that can be used as a sustainable source of food and income for the people of Liberia.

The team, led by Dr. David R. Bell, a marine biologist at the University of Maryland, is currently working in the coastal waters of Liberia. They are looking for seaweed species that are both nutritious and easy to grow.

Seaweed is a rich source of vitamins and minerals, and it can be used in a variety of ways. It can be eaten raw, cooked, or used as a natural fertilizer. In some parts of the world, seaweed is also used to make biodegradable plastics and other products.

The scientists hope that their work will help to improve the lives of the people of Liberia by providing them with a sustainable source of food and income. They are also working to educate the local population about the benefits of seaweed and how to grow it.

The team is currently working on a number of projects, including identifying seaweed species, testing different cultivation methods, and conducting surveys of the local population. They are also working to develop a seaweed value chain that will help to improve the lives of the people of Liberia.

The scientists are optimistic about the future of seaweed in Liberia. They believe that it has the potential to become a major source of food and income for the people of the country. They are working hard to make this vision a reality.

One tasty seaweed scientific mission

MONROVIA, Liberia (AP) — A team of scientists from the United States and Liberia are working to identify and cultivate seaweed that can be used as a sustainable source of food and income for the people of Liberia.

The team, led by Dr. David R. Bell, a marine biologist at the University of Maryland, is currently working in the coastal waters of Liberia. They are looking for seaweed species that are both nutritious and easy to grow.

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Friday, 24 August 2007, New Street Times, page 17.
(Fieldtrip of the Training Workshop on Toxicology of Marine Algae)

Malaysia

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Using algae to absorb emissions



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ENVIRONMENT

Important: Major industry could study using algae to absorb emissions

TOWNS: Major Japanese auto parts maker Denso Corp. has begun investigating if it can use algae to absorb carbon dioxide emissions from its factories, a company spokesman said on July 6.

A key supplier to the Toyota group, its history of recent green algae called "microalgae" has been well known in the auto sphere, among other places.

The main purpose of the study is to make the algae absorb CO2 emissions from its factories and facilities, the spokesman said, referring to carbon dioxide. He said the algae can produce "high oil" biomass but that Denso does not plan to mass-produce algae at all the moment.

The algae absorb carbon and carbon dioxide for photosynthesis and makes fuel and light oil.

Bio diesel from algae introduced

Bio diesel from algae introduced next year

The Philippine National Oil Company Alternative Fuels Corp. (PNOC-ALF) is helping with a pilot-based research in algae-based bio diesel. The company is planning to introduce this kind of bio diesel to the market next year.

PNOC-ALF president and CEO Peter Antonio said, "We are excited to see the company's progress in this field. We are looking forward to seeing the 10,000-ton pilot plant in operation by the end of 2010. This will be a significant milestone for the company and the industry."

PNOC-ALF is currently in the process of securing a site for the pilot plant. The company is also looking for investors and partners to help fund the project. The company is currently in the process of securing a site for the pilot plant. The company is also looking for investors and partners to help fund the project.

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Bangkok to host green forum

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Bangkok to host green forum

Participants set to sign environmental declaration

Bangkok is holding an international forum on **climate change** next week.

Participants from more than 110 countries are expected to attend the two-day forum and sign the Bangkok Declaration at the end of the event.

You're spending it on transportation and environmental issues are costly. Bangkok's climate action initiatives.

Increasing the number of sustainable and environmentally friendly cars, bicycles, and other vehicles.

Learn more about Bangkok's climate action initiatives. The agenda includes a presentation of a joint...

...an interesting meeting about Bangkok and other cities' green goals. "It's rich."

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UPCOMING EVENTS

United Nations Climate Change Conference

- COP 14 (The 14th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC))
 - The 4th Session of the Meeting of the Parties to the Kyoto Protocol
- 1-12 December, 2008
Poznan, Republic of Poland

Proposed Side Event & Exhibition

- Greenhouse gas emissions reduction using seaweeds Marine Research Institute, Pusan National University & Pegasus International Inc (Organizer: Ik Kyo Chung, Pusan National University, Korea)
- http://www.woc2009.org/woc_toward.php

World Ocean Conference

11-15 May, 2009
Manado, Indonesia

- International Ocean Science, Technology, and Policy Symposium 2009
- Sessions 32. Asian Network for Using Algae as a CO₂ Sink
: Seaweed Industry in the Context of Climate Change
Ik Kyo Chung (Chairman) & Grevo Gerung (Local organizer)
- http://www.woc2009.org/woc_toward.php

IXth International Phycological Congress

2-8 August, 2009
the National Olympic Memorial Youth Center
Tokyo, Japan

Symposium "Algae, biofuel and CO₂ sequestration", (Organizer: Ik Kyo Chung, Pusan National University, Korea)

<http://www.ec-japan.jp/ipc9>

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