



# NEWSLETTER

## Malaysian Society of Plant Physiology

(Inaugurated on 29 April 1989. Reg. No. 889 Wilayah Persekutuan)

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Website : <http://www.mspp.org.my>

**JANUARY 2007**

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Ms. Puteri Edaroyati Megat  
Wahab (UPM)

## Message from the President

As 2006 comes to an end and as I reflect on my past year in office, I realize that it may be easy to rationalize my inactiveness. Just like many of you, I have been very busy with my daily work in the office. This is more so because I am deprived of a research assistant, meaning that I have to do a lot of official and academic tasks on my own. I guess this is true with most MSSP members since we have no research fund to employ a research assistant, to whom we depend so much upon, to assist us in our daily activities. I realize that whatever reason I give to explain my silence all this while may not be acceptable. To that end, please accept my humble apologies.

But as I reflect on the past, I am also hopeful for the future. I know that 2007 will be different because most of us are fortunate for being awarded the eScience Fund from MOSTI. Additionally, some members who are working in the universities have also been lucky enough to receive the Fundamental Research Fund from the Ministry of Higher Education. To you all, I say congratulations!

As we enter a new MSPP year of 2007, my resolution is to work harder with the Executive Committee Members and with many of you to fulfill the following goals:

1. Ensure that MSPP will continue to provide excellent leadership in encouraging and promoting the development of plant physiology as pure and applied phase of botanical science. I expect that with the current leaders and active members, we will be able to build on our strengths and overcome some of our weaknesses.
2. Increase participation from a large and diverse group of members in the activities of MSPP. These will include seminars, lectures, workshops and the formation of working groups in tropical plants: horticulture, forestry, agronomic crops and plantation crops. The purpose of the working groups is to address issues pertaining to the increase in productivity of the above-mentioned tropical plants. This is in line with the 9<sup>th</sup> Malaysia Plan's proposal that productivity be increased through wider application of the latest technology and knowledge-based production system.
3. Reduce the time from submission of a manuscript to its publication in the Journal of Tropical Plant Physiology to 6 months. This can be achieved if editors, reviewers and authors resolve to expedite the review process.
4. Reduce the time of publication of the MSPP Transactions to 4 months after the conference.
5. Encourage members to introduce at least one graduate to become a new MSPP member. Such young and able-bodied members can provide the strength to invigorate and energize the society.
6. Encourage members to renew membership on time and to submit articles to the Journal of Tropical Plant Physiology.
7. Organize the MSPP Conference 2007 in September. The conference will be held in Kota Kinabalu, Sabah.
8. Activate and run the MSPP website as it can be made the main vehicle to provide information to members about the activities of the society.

The past leaders have already taken MSPP to great heights towards achieving several of the above-mentioned goals. However, the continued success of MSPP in providing services to its members depends on all of our participation and involvement in its activities. In the words of a former American president, don't ask what MSPP can do for you, but instead ask what you can do for MSPP. I welcome your suggestions for improvements so as to make MSPP better for all its members. My email address is [hajar@agri.upm.edu.my](mailto:hajar@agri.upm.edu.my).

*MSPP is a professional scientific body dedicated towards promoting research and development in tropical plant biology*

# NEWS

## HIGHLIGHTS of INTERNATIONAL AGROFORESTRY CONFERENCE (IAC) 2006.....

by  
**Elizabeth Philip**

The IAC 2006 was successfully organized between 1 – 2 August 2006. The conference was jointly organized by Forest Research Institute Malaysia (FRIM), MSPP, Asia Pacific Association of Forestry Research Institution (APAFRI), Universiti Putra Malaysia (UPM) and Malaysian Agricultural Research and Development Institute (MARDI) with support from UPM, Malaysian Rubber Board (MRB) and Forest Department of Peninsular Malaysia (FDPM). The conference attracted some 96 participants of which about 26 were from overseas. Y.B. Dato’ S. Sothinathan, Deputy Minister of Natural Resources and Environment officiated the conference.



Welcome speech by the Chairman of the IAC 2006 organizing committee



Poster session

The conference had four sub-themes: Agroforestry Systems and Practice; Policy, Socio-economic and Institutional issues; Land, Tree and Management of Agroforestry and Agroforestry Science and Education. A total of 15 oral and 12 poster papers were presented over the two-day conference. In addition four keynote papers were also presented. Two keynotes were from Malaysia while another two were from overseas.



Conference dinner.....

more on next page

### Post Conference Tour

The IAC 2006 ended with a post conference tour to Sg. Tekam Plantation, Pahang. Participants were exposed to the Agroforestry systems and practices in Malaysia. Participants were also feasted to the local fruits in season.



↑ Briefing



↑ Tongkat Ali and Oil Palm



↑ Cocoa and Sentang

← Teak planting



↓ Detaching the oil palm fruits as planting materials

↓ Sweet memory



# ANNUAL GENERAL MEETING

by

Puteri Edaroyati Megat Wahab

The 18<sup>th</sup> Malaysian Society of Plant Physiology (MSPP) annual general meeting (AGM) was held at 1500 hour on December 22, 2006, at Dewan Kenyalang, Kolej Kedua, Universiti Putra Malaysia (UPM). Dean of the Faculty of Agriculture, UPM, Prof. Dr. Ghizan Saleh officiated the meeting. In his opening address, he lauded the society for being an active association since its establishment in 1989. He hopes to see new faces, namely new lecturers and students, to join the society in future. After the opening ceremony, the invited guest cum the Principle of Kolej Kedua and lecturer of Faculty of Education, Dr. Rasid Jamian, delivered a talk on Motivation in Society.



*Opening ceremony by Prof. Dr. Ghizan Saleh*

During the AGM, MSSP's president Assoc. Prof. Dr. Siti Hajar Ahmad expressed her gratitude to the committee members for working hard to run the society. She said all the volunteering they have committed would be of useful testimony in their job resume. She pledged to work even harder this year and hoped to achieve some of the MSPP's planned goals which, among others, to increase new member participations and gain a large and diverse group of members so that special interest groups (SIGs) on tropical plants can be formed. Some suggested groupings are horticulture, forestry, agronomic crops and plantation crops. Last but not least, she also hopes to see more participants for the upcoming MSPP Conference 2007 in Kota Kinabalu, Sabah, which is scheduled to be held in September 2007.



*Talk delivered by Dr. Rasid Jamian*

*Exco member of  
MSPP (2005-  
2007)*



*18<sup>th</sup> AGM of MSPP*

## DETECTING PLANT STRESS VIA CHLOROPHYLL FLUORESCENCE

by

**Elizabeth Philip**

Environmental stress commonly encountered by plants is radiation, heat, water, soil and anthropogenic stress. The initial symptom is often not detectable but is indicated by the reduction of physiological performance. And, visible symptoms often displayed could be broad requiring a holistic diagnosis. Hence, a diagnostic tool was developed to detect environmental stresses on plants. The process is simple and rapid and involves non-destructive sampling and involves studying chlorophyll fluorescence.

Chlorophyll is a pigment within a leaf that makes it green. It is responsible for absorbing light energy and converting it to chemicals for various biochemical processes within the leaf. During the conversion process, a small amount of energy would be lost as heat and fluorescence. Changes in fluorescence ratios reflect environmental changes that affect tree growth and these can be detected. It offers a rapid, accurate method to identify superior, stress-tolerant trees especially for urban plantings. In addition, it may serve to limit expensive whole-plant experiments.

Chlorophyll fluorescence works on the principle that photosynthesis is the main activity within plant biosynthesis that provides an interactive link between the internal metabolism of a tree and the external environment. Accordingly, initial non-visible symptoms of environmental stresses are manifested by reductions in the rate of photosynthesis. The procedure is simple whereby, leaves are adapted to darkness for 20 minutes by attaching light-exclusion clips to the leaf surface. A red (peak at 650 nm) light of 600 W/m<sup>2</sup> intensity by an array of light-emitting diodes induces the fluorescence responses. Measurements are recorded up to 1 s with a data acquisition rate of 10 ms for the first 2 ms and of 1 ms thereafter (Figure 1). Fluorescence values recorded include Minimal fluorescence ( $F_o$ ), Maximal fluorescence ( $F_m$ ) and Variable fluorescence ( $F_v$ ).

Threshold values on the overall health of the trees have been established to detect the effects of air pollution, soil compaction, water stress injuries and even record recovery patterns of transplanted forest trees.



Figure 1: Worker carrying out experiment

For water stress study, experiments were conducted in greenhouse condition, 28°C and RH 70%. Control plants were watered everyday once while treated plants were not watered for 10 days. Plants subjected to water stress showed a decline in the  $F_m/ F_o$  value as shown in Figure 2. The control plants recorded  $F_m/ F_o$  between 5.0 – 5.25 throughout the experiments.  $F_m/ F_o$  ratios depend on the leaf water potential. It was noted that when values became lower than 3.0, wilting symptoms began to show and the plants could recover if water was given. However, when the  $F_m/ F_o$  ratios reached 1 and below, irreversible injury occurred.

Studies were also conducted in the urban areas to identify the poor performance of selected urban and recreational areas in Malaysia. Site conditions were noted and soil compaction was determined with penetrometer. Declines in fluorescence ratios were observed in plants planted in compacted soil

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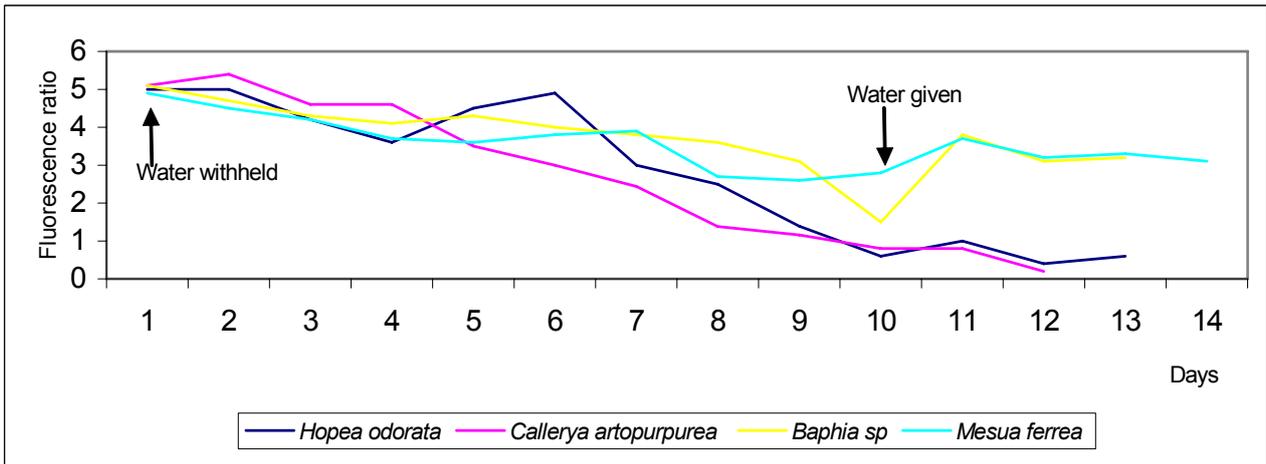


Figure 2: Changes in fluorescence parameters when plants subjected to water stress over a period of ten days.

and exposed to air pollution. Results from soil compaction tolerance of *Lagestromia speciosa* suggested that a soil compaction of 180 kPa and more, would reduce the photochemistry efficiency of the plant, soil compaction above 280 kPa would also affect the physical appearance of these trees. Exposure to low levels of SO<sub>2</sub> and NO<sub>x</sub> in field conditions also resulted in a decrease in Quantum Yield of Photosystem II (F<sub>v</sub>/F<sub>m</sub>).

Short-term water ponding in urban areas is a common feature especially after a heavy downpour. Chlorophyll fluorescence assessment was able to detect very short impediments within the physiology of the leaf. Figure 3 showed that the Quantum Yield of Photosystem II (F<sub>v</sub>/F<sub>m</sub>) could be affected even though the plants were exposed to less than 3 hours water ponding. However, recovery was rapid, i.e. after 24 hours.

Understorey plants in the forest are often priced ornamentals and introduced in planted forest and urban parks. Some of the plants, e.g. *Phyllagathis rotundifolia*, showed a reduction in Quantum Yield of Photosystem II (F<sub>v</sub>/F<sub>m</sub>) together with an increase in F<sub>0</sub> when planted in the open. Morphological characters like leaf area and colour were also affected. Analysis of this physiological performance indicated damage to leaf photosynthetic system due to heat stress.

The results obtained indicated that chlorophyll fluorescence measurements provided a rapid assessment of tree health and possible prognosis. The practical advantages of using chlorophyll fluorescence meters are portable and sampling is non-destructive and non-invasive. In addition, readings are obtained within 1s following a 20 minutes dark adaptation. When threshold are developed, park managers, arborists could use it easily.

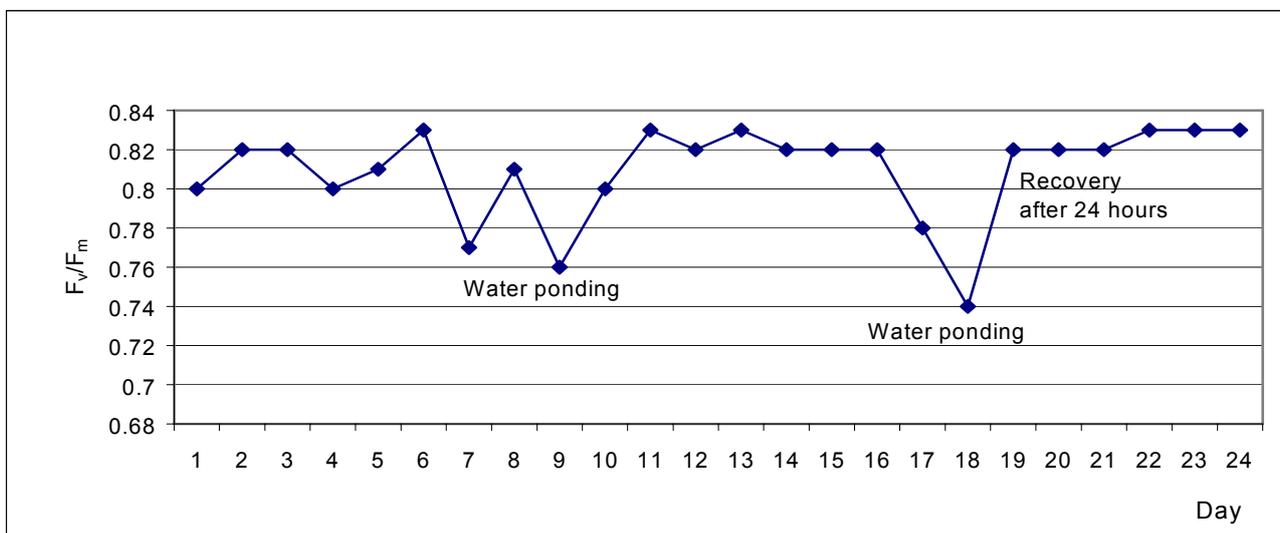


Figure 3: Effects of water ponding on plants.

## Master of Plantation Industry Management

Universiti Teknologi MARA (UiTM)

by

Tsan Fui Ying

The Master of Plantation Industry Management in UiTM is a professional postgraduate degree developed to fulfill the vision of transforming the agricultural sector into a modern and commercially viable sector that provides high returns. This programme consists of 30% technology courses and 70% management courses that are mostly specific to plantation and agricultural sector. The technology courses are Advanced Crop Production, Soil Fertility Management, Environmental Management and Food Safety and Management. The management courses include Advanced Agricultural Production Economics, Financial Management, Agricultural Trade and Policy, Agricultural Supply Chain Management, International Agricultural Commodity Marketing and Strategic Management. Each course carries 3 credit hours. Special topics and seminars (3 credit hours) as well as a research project (9 credit hours) are also part of the requirements for the acquisition of this postgraduate degree.

Fulltime students have to complete all the courses within the academic term of 3 semesters. Those who wish to pursue the programme on a part time basis may complete all the courses within the academic term of 6 semesters. There will be 2 intakes yearly; i.e. July intake and December intake. The first intake will start the courses in January 2007. The medium of instruction and examination for this programme is English. Students are, therefore, expected to have good command of the language.

Candidates applying this course should fulfill the following qualifications:

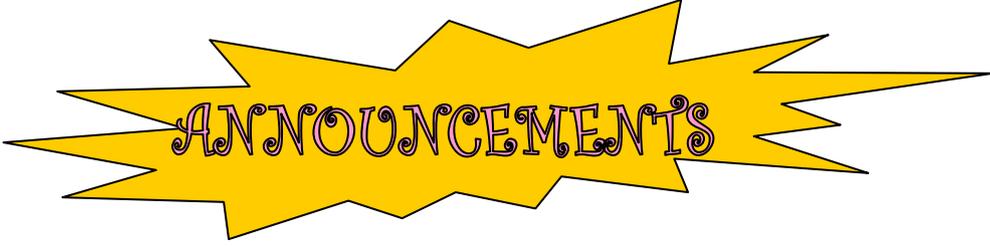
- A Bachelor's degree in plantation or its equivalent from any recognized institution with a CGPA of at least 2.75;
- A Bachelor's degree in plantation or its equivalent from any recognized institution with a CGPA of at least 2.50 and 2 years' working experience.



Plantation of *Hevea brasiliensis*

Application should be made to:  
**The Dean, Institute of Graduate Studies,  
INTEKMA Convention Centre,  
Persiaran Raja Muda, Seksyen 7,  
40000 Shah Alam,  
Selangor Darul Ehsan.**

Specific inquiries regarding the programme can be directed to:  
**The Programme Coordinator  
Master in Plantation Industry Management  
Faculty of Applied Science  
Universiti Teknologi MARA (UiTM)  
40450 Shah Alam  
Selangor Darul Ehsan.  
Tel.: 603 55444575; Faks: 603-55444562**



# ANNOUNCEMENTS

## UPCOMING Malaysian Society of Plant Physiology Conference 2007

Theme : Yield and Quality Enhancement of Plants

Date : 4-6 September 2007  
Venue : Kota Kinabalu, Sabah

See you there !!!

### Other forthcoming events :

13-15 March 2007

#### National Horticulture Conference 2007

Theme : Enhancement of Postharvest Technology for A  
Competitive Malaysian Horticulture  
Puteri Pacific Hotel, Johor Bahru  
Website: <http://www.mardi.my>

8-10 May 2007

#### International Conference on Biotechnology Engineering (ICBioE '07)

Theme : Harnessing Nature to Enhance Quality of Life  
Renaissance Kuala Lumpur Hotel  
Website: <http://www.iiu.edu.my>

26-30 August 2007

#### International Palm Oil Congress (PIPOC 2007)

Theme : Palm Oil : Empowering Change  
Kuala Lumpur Convention Centre  
Website: <http://www.mpob.gov.my>

9-13 September 2007

#### Seed Ecology II 2007

The 2nd International Society for Seed Science Meeting on Seeds  
and the Environment  
Perth, Australia  
<http://www.seedecology2007.com.au>

23-27 September 2007

#### International Society of Horticultural Science

Theme : Improving the Performance of Supply Chains in the  
Transitional Economies  
Sofitel Plaza Hotel  
Hanoi Vietnam  
Web: <http://www.muresk.curtin.edu.au>

## Journal of Tropical Plant Physiology

The first issue of Journal of Tropical Plant Physiology will be out in the beginning of Year 2007. It welcomes papers for the subsequent issues. Check it out for more details in the website of Malaysian Society of Plant Physiology, <http://www.mspp.org.my>

### SECONDMENT

Assoc. Prof. Dr. Mohd. Fauzi Ramlan, lecturer at the Department of Crop Science, Universiti Putra Malaysia (UPM), Serdang is seconded to the Ministry of Higher Education Malaysia for two years. He is appointed as the Director of the Development and Student Affairs Division starting June 19, 2006. He is in charge of the management of 18 IPTA and 11 National Student Departments (NSD). However, he is still conducting research and supervising students (research projects).

### ACHIEVEMENT

Dr. Umi Kalsom won the silver medal in the MARDI Science and Technology Exhibition 2006 for her project on "Ligninolytic Enzymes from *Pycnoporus cinnabarinus* for industrial effluents. Congratulations and keep up the good work!

"Many of life's failure are people who did not realize how close they were to success when they gave up" - St. Francis de Sales

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