NEWSLETTER
Malaysian Society of Plant Physiology

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Editor : Dr. Tsan Fui Ying
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20th Malaysian Society of Plant Physiology Conference (MSPPC 2009)

by

Tsan F.Y.

20th Malaysian Society of Plant Physiology Conference (MSPPC2009) was held successfully on 24-26 July 2009. About 80 participants from local universities and research institutions gathered at Port Dickson, Negeri Sembilan, to discuss updates on plant productivity, in accordance to the theme of the conference "Enhancing Plant Productivity and Ecosystem Services in a Challenging Environment". This meeting was timely as climate extremes have been affecting plant growth and productivity for the past 2 decades. It was officially opened by the MSPP President, Dr. Elizabeth Philip.

Delegates of MSPPC2009, 24-26 July, Port Dickson, Negeri Sembilan

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

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The plenary paper was delivered by Dr. Yap Kok Seng, the Director General of Malaysian Meteorology Department. He elaborated on the change of environment in this region, especially that in Malaysia. Such changes are indeed affecting crop production besides giving significant impact on social and economic aspects of the country.

A total of 14 oral papers and 48 posters were presented during the conference. The conference covered various topics of cultural practices and current techniques in production technology; effects of climate change on plant growth and development; ecophysiology and stress biology; development physiology and assimilate production; postharvest technology and quality control; pest and disease; crop production in controlled environment; biotechnology as well as papers on modeling and simulation. A total of six best poster awards for researcher and student categories, each with three awards, were also presented. Exhibition of scientific equipment on plant physiology and climate monitoring was presented by Elite Scientific.

The Annual General Meeting was held on 25 July 2009. The new executive committee members for the term 2009/2011 were elected.

BEST POSTER AWARD

Researcher category:

- Dr. Zamri Ishak

  Title of poster: comparison on the effect of different variety of watermoelon on MARDI's watermelon ripeness sensor
- Ms. Shahida Hashim

  Title of poster: Agronomic practices to reduce arsenic content in red rice
- Ms. Noor Azlina Masdor

  Title of poster: Polyclonal antibody purification using protein A affinity chromatography for detecting *Ganoderma* BSR

Student category:

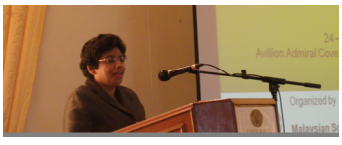
- Ms. Nuraziyan Azimi

  Title of poster: Fruit-specific expression of A subtilase gene from papaya
- Mr. Abolfath Moradidalini

  Title of poster: Effects of different soil conservation practices on soil chemical properties in a sloping land oil palm plantation
- Mr. Mohd Ridzuan Rosli

  Title of poster: Surface sterilization of *Aqualaria malaccensis* young leaf and nodal segment explants

Congratulations to all the winners!!!






MSPPC 2009 opening ceremony by the MSPP President (top left), delegates of MSPPC 2009 (bottom left), plenary paper delivered by Dr. Yap (centre left), secretariat on duty (top centre right), oral presentation (bottom centre right) and exhibition of scientific equipment on plant physiology and climate monitoring (right)

NEWS

MSPPC 2009 Field Excursion

by:

Mohd. Firdaus Ab. Latif

On 24 July 2009, a pre-conference tour was held in accordance to the 20th MSPP Conference. Approximately 20 participants joined the tour and the destination was MARDI Kuala Linggi Station, Melaka. The group departed at 3.30 p.m. from the conference venue, Admiral Avillion Cove, Port Dickson and reached the station around 4.15 p.m. Upon arrival, the delegates were welcomed by the station manager, Tuan Hj. Ahmad Safie and research officer, Tuan Hj. Ahmad.

Essential oil incubator technology is one of the important programs at the station. It involves a whole range of new technology development from crop production, drying, essential oil extraction, product development, sullage and composting. Crop production technology has allowed yield of 30, 40 and 55 tonnes per hectare per year of "nilam" (*Pogostemon cablin* (Blanco) Benth), "serai makan" *(Cymbopogen citratus)* and "serai wangi" (*Cymbopogon nardus*), which are extensively used in the essential oil production. Essential oil extraction here involves 2 processes, namely distillation and fractionation process. Distillation process can produce 16,000ml essential oil per day. Fractionation process further breaks down the raw essential oils to various grades of pure essential oils that are usually requested by customers for specific uses such as for the food and perfumery industries.

The delegates visited the essential oils gallery. Various samples of products were displayed. Hygienic products such as soaps, bath gel and shampoo were produced by using the essential oils. Natural essential oils have very distinct odour and are rich in medicinal values. The essential oils can, hence, also be used as therapeutic ointments in aromatherapy, medical applications as in balms and massage ointments and in cosmetics for lotions and moisturizers. The delegates also visited the incubator factory, fractionation laboratory and production field. The delegates enjoyed the visit and would surely have gained benefits from the tour.

↑ Briefing by Tn. Hj. Ahmad

↑ Visit to the farm of *Pogostemon cablin* (Blanco) Benth

↑ Products made from essential oils

↑ Thank you Tn. Hj. Ahamad…

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NOTES FROM MEMBER 1

An Innovative Alternative for Measurement of Height of Tall Trees by using Clinometer

by:

Tsan F.Y., Adzmi Y. and Mohd. Nazip S.

Clinometer is an instrument used to measure the angle of elevation or inclination with respect to gravity. It is used to measure the slopes and height of tall objects by using the angle scale in degree (left hand scale) and the height scale in percent of the horizontal distance (right hand scale) respectively. However, measurement of horizontal distance may be difficult if there are obstacles between the object to be measured and the observer, e.g. measurement of a tree in the forest.

The innovative use of clinometer presented below can be applied for the measurement of height of a tall object by omitting the measurement of horizontal distance between the object and the observer. A pole with known height is used adjacent to the mentioned tall object in this innovative procedure. Then, the height of the tall object, height of the pole with known height and base of the tree (also base of the pole with known height) will be taken by using the height scale in percent of the horizontal distance (right hand scale) of the clinometer.

Height of tall object (H) is calculated as :

$$H = \frac{\text{(top reading of object – base reading)}}{\text{(top reading of pole with known height – base reading)}} \times \text{height of pole with known height}$$

Proof by using example in Figure 1:

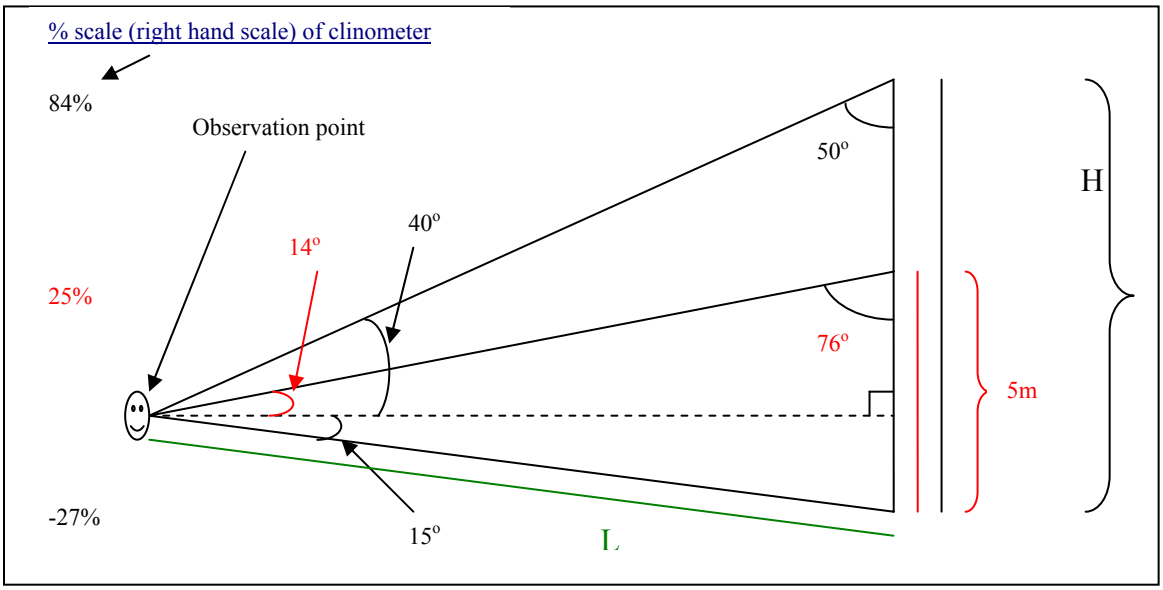

Figure 1. Measurement of height of a tall tree (H) by using clinometer (without the horizontal distance between the observer and object)

According to the user manual by using the scale in percent of the horizontal distance (right hand scale) :

H = (top reading of object – base reading) x horizontal distance
= 84%-(-27%) x horizontal distance

$$\text{horizontal distance} = \frac{H}{84\%-(-27\%)} \quad \text{---------- (1)}$$

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With the pole of 5m,

5m = (top reading of object – base reading) x horizontal distance
= 25%-(-27%) x horizontal distance

$$\text{horizontal distance} = \frac{5\text{m}}{25\%-(-27\%)} \quad \text{(2)}$$

From (1) and (2) :

$$\frac{H}{84\%-(-27\%)} = \frac{5\text{m}}{25\%-(-27\%)}$$

$$H = \frac{5\text{m} \times 111\%}{52\%} = 10.7\text{m}$$

Height of tree in Figure 1 (H) can alternatively be calculated based on the innovative method as:

$$H = \frac{\text{(top reading of object – base reading)}}{\text{(top reading of pole with known height – base reading)}} \times \text{height of pole with known height}$$

$$H = \frac{84\% - (-27\%)}{25\% - (-27\%)} \times 5\text{m} = \frac{111\%}{52\%} \times 5\text{m} = 10.7\text{m}$$

This innovative method can also be proven true based on trigonometry as in Figure 2.

$$\frac{A}{\sin a} = \frac{B}{\sin b} = \frac{C}{\sin c}$$

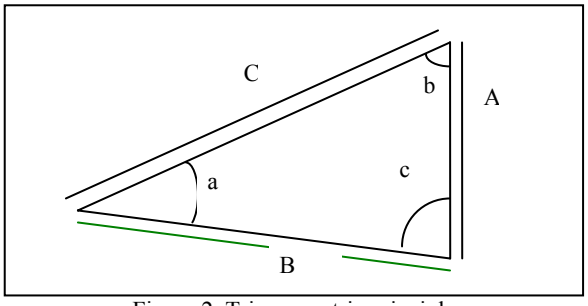

Figure 2. Trigonometric principle

Table 1. Base pairing of readings of tree and pole of 5m in percent of the horizontal distance (right hand scale) and angle in degree (left hand scale)

Reading of the scale in percent of the horizontal distance (right hand scale)	Reading of the angle scale in degree (left hand scale)
84	40
25	14
-27	-15

The readings of percent of the horizontal distance (right hand scale) of the tree and pole of 5m are first base-paired with the readings of angle in degree (left hand scale) as shown in Table 1.

Therefore,

$$\frac{L}{\sin 76^\circ} = \frac{5}{\sin (14+15)^\circ}$$

$$L = \frac{5}{\sin 29^\circ} \times \sin 76^\circ \quad \text{(3)}$$

Also,

$$\frac{L}{\sin 50^\circ} = \frac{H}{\sin (40+15)^\circ}$$

$$L = \frac{H}{\sin 55^\circ} \times \sin 50^\circ \quad \text{(4)}$$

From 3 and 4:

$$\frac{5}{\sin 29^\circ} \times \sin 76^\circ = \frac{H}{\sin 55^\circ} \times \sin 50^\circ$$

$$H = \frac{5 \times \sin 76^\circ \times \sin 55^\circ}{\sin 29^\circ \times \sin 50^\circ} = 10.7\text{m}$$

Acknowledgements: The authors would like to thank Mr. Ong Tai Hock for technical assistance.

NOTES FROM MEMBER 2

Coloured Rice for Natural Colour and Health

by:

Asfaliza, R., Othman, O., Shahida, H., Hanisa, H. and Saad, A.

BACKGROUND

Coloured rice has been widely consumed due to its health benefit. The major compound in coloured rice, especially the red rice and purple varieties, which have been quantified by many researchers, is the anthocyanins. The biological activities of anthocyanin such as antioxidant and anticarcinogenic activities have been studied and many health enhancing products were developed. At present, the food industry depends fully on imported padi merah for the mentioned purposes (Figure 1). MARDI has, hence, emphasized on breeding and selections of padi merah varieties for the past few years as import of coloured rice has consistently increased.

Figure 1. Padi merah sold in local market

Figure 2. Padi merah grain

BREEDING AND AGRONOMIC CHARACTERISTICS

Padi merah YTM 16 was derived from crossing involving Q72 and ER 6275 (Figure 2). Selection of the progeny in bulk population was focusing on the colour of the pericarp and filled grain of the red pericarp within a panicle. In addition, yield component traits and resistance to pest and disease were also included in the breeding programme.

YTM 16 is a semidwarf variety with culm height ranges from 75 to 80 cm. The plant is an erect plant with semi erect flag leaves. The average tiller number per hill is between 18 and 21. The

more on next page

maturation period is between 105 and 115 days depending on the planting season (Figure 3).

Figure 3. Padi merah plant

PEST AND DISEASE RESISTANCE

YTM 16 shows moderate resistance to major pests and diseases, especially blast, bacteria leaf blight and shealth blight diseases.

YIELD POTENTIAL AND QUALITY TRAITS

The yield for YTM 16 is 4.5 tonne per hectare. As for quality traits, the amylase content of this variety is around 17%, which makes it fall into low amylose group padi. However, the gel consistency and alkali spreading value are that of the hard and high group respectively. The antioxidant property of YTM 16 was determined by their DPPH radical scavenging activity, and was shown to be much higher as compared to purple and brown rice (Table 1).

Table 1. Antioxidant property of YTM 16 as compared to purple and brown rice

Line	DPPH radical scavenging (%)
YTM 16	96.9
Hybough (purple)	42.0
Brown rice	41.1

CONCLUSION

Apart from its superior antioxidant property, the natural red colour of this red rice line is another novelty. A local rice-based food company uses red rice as a major ingredient for its baby food products, hence, YTM 16 is expected to reduce the current dependence on fully imported red rice when it is produced locally in non-granary areas.

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Prof. Dr. Mohd. Fauzi Ramlan was promoted as full professor of Universiti Putra Malaysia recently.

Dr. Tsan Fui Ying, Dr. Phebe Ding and Mr. Ahmad Nazarudin Mohd. Roseli obtained Excellent Service Award at Universiti Teknologi MARA and Forest Research Institute Malaysia respectively for the year 2008.

The search for truth is more precious than its possession -- Albert Einstein

Wisdom is not a product of schooling but of the life-long attempt to acquire it -- Albert Einstein

MSPP Worshop

Workshop on Portable Photosynthesis System

Tentative Date : March 2010
Venue : Universiti Putra Malaysia, Serdang, Selangor

Registration fee : RM500

Contact : Mr. Hassim Mohd. Isa
Elite Scientific Instriments Sdn. Bhd.
019-2416031

Other forthcoming events :

5-8 October 2009
International Forest Genetic Resources Symposium
Theme : Conservation and Sustainable Utilization towards Climate Change Mitigation and Adaptation
Kuala Lumpur, Malaysia.
E-mail: simhc@frim.gov.my

27-29 October 2009
Agriculture Congress 2009
Theme : Tropical Agriculture in a Changing Climate and Energy Scenario
Universiti Putra Malaysia, Serdang, Malaysia.
E-mail: agcongress09@gmail.com

2-9 November 2009
TWAS Regional Young Scientists Conference
Theme : Food, Health and Fuel: Plants for the Future
Kuala Lumpur, Malaysia.
E-mail: twas09@utar.edu.my

8-12 November 2009
Asian Seed Congress 2009
Theme : Seed for Global Food
Bangkok, Thailand.
website: www.apsaseed.org

9-12 November 2009
International Palm Oil Congress 2009
Theme : Palm Oil – Balancing Ecologics and Economics
Kuala Lumpur Convention Centre, Malaysia.
website: www.mpob.gov.my

16-20 November 2009
International Cocoa Research Conference 2009
Theme : Towards Rational Cocoa Production And Efficient Use For A Sustainable World Cocoa Economy
Bali, Indonesia.
Email: 16icrc@copal-cpa.org

17-19 November 2009
Bio-Malaysia Conference and Exhibition
Theme : Accelerating Commercialization in Biotechnology
Kuala Lumpur Convention Centre, Malaysia.
Email: karendass@protempgroup.com

17-20 November 2009
23rd New Phytologist Symposium
Theme : Carbon Cycling in Tropical Ecosystem
Guangzhou, China.
website: www.newphytologist.org

30 November-5 December 2009
International Congress on Tropical Agriculture
Theme : Overcoming Challenges to Developing Sustainable Agri-food systems in the Tropics
Port-of-Spain, Trinidad.
Email: tacongress.uwi60@sta.uwi.edu

15-17 December 2009
Persidangan Kebangsaan Tanaman dan Bio-sumber 2009
Theme : Membuka Peluang, Meluaskan Lingkungan Ekonomi
Negeri Sembilan, Malaysia.
Website: www.mardi.gov.my

Coming together is a beginning, keeping together is a progress, working together is success. -- Henry Ford

You can fool some of the people all the time, and all of the people some of the time, but you cannot fool all of the people all the time. - Abraham Lincoln

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