NEWSLETTER
Malaysian Society of Plant Physiology
(Inaugurated on 29 April 1989. Reg. No. 889 Wilayah Persekutuan)
Locked Bag No. 282, UPM Post Office, 43409 UPM, Serdang, Selangor D. E.
Website : http://www.mspp.org.my
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a new look of MSPP website.....

by
Tsan Fui Ying

In line with the widely use of e-application in the current daily life, MSPP Exco has decided to transform the existing MSPP website into an efficient channel among the members for numerous purposes since the new Exco members took over the mandate to keep up the society last year.

The traditional functions of the website of conveying information and important announcements are enhanced with the increased capacity and new setup of the website. All members are invited to make use of this facility. All information and announcements to be shared or passed on are welcomed. Members are required to fill in the enquiry form on the website for this purpose. The Exco members in-charge will attend to the matters and publish the message accordingly. List of publications and transactions of MSPP Conferences is available and the newsletters of the society are also put up on the website and free for access for all. Membership application form and data update form for existing members can also be downloaded from the website.

The increased capacity of the website can now be aimed for online applications also. It is designed to allow hustle free online registration for the society's annual conference, i.e. the Malaysian Society of Plant Physiology Conference (MSPPC). Participants of MSPPC can also submit the abstracts of their papers as well as the full papers for the conference at the website. The database is then important to keep the organizing committee with the up-to-date information and allows more efficient coordination in the preparation for the conference.

The website is also designed for the online submission of papers for Journal of Tropical Plant Physiology, the official journal of MSPP, in the near future. The guidelines for the submission of papers will be available on the website. The first few online issues will be free for access for all in attempts to gain more awareness and submission of good quality papers.

Last but not least, the application form for the MSPP Fund for international conferences can be downloaded from the website. It is aimed to be additional allowance for the active members of MSPP to attend conferences or seminars overseas. The form for reporting the conferences/seminars supported by the MSPP Fund is also available at the website.

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

NEWS

Malaysian Society of Plant Physiology Corporate Membership

by

Che Radziah Che Mohd. Zain

About MSPP

The Malaysian Society of Plant physiology (MSPP) was founded in 1989 to foster exchange of knowledge of plant physiology and its role in the development and improvement of Malaysian agriculture in tandem with the global food crop production. The focus is on research, development, and applications of significance to plant science, economy, national policy and society.

The mission is accomplished through the society's publications; national and international conferences, meetings and workshops; and through support of teaching initiatives in cooperation with educational institutions.

Over the years, MSPP has expanded to create an environment of scientific exchange and interdisciplinary synergy with the goal of advancing current and future systems for plant physiology and Malaysian agriculture. Currently the society consists of ordinary members, life members, honorary members, student members and associate members. The disciplines of members include areas of plant nutrition and ecophysiology, plant biochemisry, plant growth and development, plant tissue culture, postharvest physiology and technology, plant diversity, precision agriculture and novel crop production systems, plant modeling and crop productivity, plant molecular physiology, robotics and mechanization and also policy in crop production and socio-economic aspects of crop production. The Society will hold appropriate scientific meetings either on its own or with others. The Society will seek close co-operation with related societies to enhance its effectiveness in scientific and cost terms.

Corporate Membership

MSPP now expands its community to any commercial or organization interested in supporting the objectives of the society and who have been duly elected by majority vote of the Executive Committee to become **Corporate Members** of the Society.

Advantages of becoming a Corporate member of MSPP

Corporate membership in MSPP will benefit the professional development of the company and its employees, especially those in the field of agriculture. MSPP Corporate Membership will also support the professional development of its employees by means of peer-reviewed scientific publications and continuing educational programs. Each Corporate Member shall;

(1) receive MSPP official scientific publications/ newsletters and other publications
(2) enjoy special price for advertisement in MSPP webpage and other MSPP publications
(3) enjoy member rates to attend the MSPP conferences/seminars/workshops

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)

Natural ability without education has more often raised a man to glory and virtue than education without natural ability (Marcus T. Cicero)

You can live to be a hundred if you give up all the things that make you want to live to be a hundred (Woody Allen)

NEWS

Congratulations to Dr. Phebe Ding, lecturer of Universiti Putra Malaysia, Serdang. She was promoted to DS52 recently. She was also the first recipient of the MSPP Fund that was open for application at the beginning of this year.

MSPP Fund

MSPP introduced the MSPP Fund of RM1,000 each for supporting members to attend conferences or seminars overseas. The application form is available online at www.mspp.org.my.

The fund is open to MSPP members only. Applicant must be an active member for not less than 3 years. Application must be submitted to the Executive Committee at least 2 months before the conference/seminar, together with the approval letter to attend conference/seminar from the respective organization. Applicant must be accepted as an oral presenter on plant science in the conference/seminar. The full paper must be attached to the application form for evaluation purpose. The applicant must also declare the status of any application for other sponsorship for attending the mentioned conference/seminar.

Only RM1,000 will be given away per annum. A recipient will only be eligible to apply for the MSPP Fund again after a lapse of 3 years. Applicant must submit a report within a week after attending the conference/seminar. The report form is also available online at www.mspp.org.my.

Recipient of MSPP Travel Fund

Dr. Phebe Ding from Department of Crop Science, Faculty of Agriculture, UPM, received the MSPP Fund to attend the 4th European Plant Science Organisation Conference at Toulon (Côte d'Azur), France, in 22 – 26 June 2008. The theme of the conference was "Plants for Life". She presented a paper entitled "Harvesting Maturity and Ripening Temperature to Degreen Harumanis Mango" in the conference session "Improving Plant Product Quantity and Quality : Food and Feed". The paper was co-authored by Mr. Hairul Azhar Sulaiman from UPM also. Below is the abstract of the paper.

ABSTRACT

A study was conducted to determine the effect of harvesting maturity and ripening temperature to degreen Harumanis mango (*Mangifera indica* cv Harumanis). The fruits were harvested at 10, 11 and 12 weeks after flower anthesis. The mangoes were divided into four lots with each lot containing six fruits of mangoes. The fruits were packed in 35.5 cm x 29 cm x 15 cm of fibre board cartons and induced for ripening using 50 mL/L of ethylene gas. The fruits were then kept in the chamber of 15, 20, 25 and 30°C temperatures with 75% relative humidity for 24 h. After 24 h, the fruits were removed from the chamber and allowed to ripen at 25°C of 75% relative humidity. The fruits were analyzed for its quality characteristics at day 0, 1, 3 and 5. The quality characteristics were determined for peel and pulp colour, flesh firmness, soluble solids concentration (SSC), titratable acidity (TA), pH, vitamin C, water loss and chlorophyll content. The experimental design was a randomized complete block design with factorial arrangement. The experiment was repeated three times. All the data was subjected to analysis of variance while the mean separation was separated by least significant different. From the study conducted, the chromaticity (C*) and hue (h°) of peel, pulp lightness (L*), flesh firmness, TA and SSC were not affected by the different harvesting maturity. However, the L* values of peel, C* and h° values of pulp, pH, vitamin C content, water loss and chlorophyll content were affected by the different harvesting maturity. The ripening temperatures have a significant effect on the pulp colour (L*, C* and h°), flesh firmness, pH and water loss but not affecting the peel colour (L*, C* and h°), TA, SSC, vitamin C and chlorophyll content. The ripening days shown a significant effect on L* values of peel, pulp colour (L*, C* and h°), flesh firmness, SSC, pH, vitamin C content, water loss and chlorophyll content but did not have a significant effects on C* and h^o values of peel and yet TA. There was no significant interaction effects between harvesting maturity and ripening temperatures on peel colour (L*, C* and h°), pulp colour (L*, C* and h°), flesh firmness, TA, SCC, pH, vitamin C content, water loss and chlorophyll content. The interaction between the harvesting maturity and ripening days have significant effect on the L* and C* values of peel colour, flesh firmness, TA, water loss and chlorophyll content of the fruits but not the h^o values of peel colour, pulp colour (L*, C* and h°), SSC, pH and vitamin C content. The interactions between ripening temperatures and ripening days have significant effects on h° values of pulp colour, flesh firmness, pH and water loss. However, there were no significant effects on peel colour (L*, C* and h°), pulp lightness and chromaticity, TA, SSC, vitamin C and chlorophyll content. The interaction between harvesting maturity, ripening temperatures and ripening days were not significant on peel colour (L*, C* and h°), pulp colour (L*, C* and h°), flesh firmness, TA, SSC, pH, vitamin C content, water loss and chlorophyll content. The result indicated that different harvesting maturity and ripening temperatures failed to degreen Harumanis mango. The peel colour of Harumanis mango remains green even at the end of the ripening day 5.

NOTES FROM MEMBER - 1

Seed Quality Development in *Jatropha curcas* (L.)

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Introduction

Jatropha curcas is a perennial oil yielding plant belonging to the family Euphorbiaceae. Today, *Jatropha* is being projected as the bio-diesel crop for the future as it contains 30 – 40% oil. With the increased interest in *Jatropha*, availability of good quality planting material is an issue. Jatropha can be grown both from seeds and cuttings. However, seeds are the most commonly used source of planting material as seeds are easy to handle and transported. Therefore the quality of seeds to be used as planting material is an important criteria.

Ideally, seed crops ought to be harvested when seed quality is at a maximum, but in most cases it is not clear when this occurs. According to Harrington (1972), seeds achieve maximum viability and vigor at physiological maturity, after which seed ageing occurs. If this hypothesis is true in *Jatropha*, it would be very important to determine the time when physiological maturity is attained in relation to the fruit colour. Furthermore, the terminally borne inflorescence yields a bunch of approximately 10 fruit which does not ripen simultaneously. The uneven ripening between fruits within the same bunch complicates the harvesting process especially if the seeds are to be used as planting material. The aim of this study was to determine the quality of seeds harvested on different stages during seed development in order to identify the best stage for maximum quality.

Materials and Methods

Female flowers were tagged at anthesis. Upon fertilization the developing fruits were collected randomly from the tagged flowers at weekly intervals for eight weeks to study the progress of seed development. The fresh weight and size of the fruits were measured. Thereafter, the capsule was slowly dehisced using a sharp knife and the seeds were extracted to determine seed fresh weight, seed moisture content, seed size, germination and embryo culture (Sinniah *et al*., 2008).

Results and Discussion

Changes during fruit development in relation to size and the relative development of the seed within the fruit are shown in Figure 1. Young fruits were green in color and they maintained the greenness until the sixth week. The color of fruits changed from green to yellow on the seventh week after anthesis followed by softening of the pericarp on the seventh week after anthesis.

Rapid increase in seed growth measured as length and diameter occurred between week two and four with no significant differences thereafter in seed size (Figure 1). Dry weight of seed increased after the second week and was highest at six weeks after anthesis (Figure 1). Seed moisture content gradually decreased and this decrease in moisture was followed by a concomitant increase in seed dry matter during the seed development of *Jatropha curcas*. Based on Figure 1, physiological maturity or the end of seed filling phase for *Jatropha* is around 45 days after anthesis. Seed moisture content at physiological maturity was reduced to approximately 39.9% followed by a rapid net loss in moisture to 13% within a week. Mean seed dry weight at physiological maturity was approximately 0.81 g/seed.

Table 1. Seed viability at different growth stages

Period (week after anthesis)	Viability (%)	
	Embryo culture	Germination test
4	53^{d}	0^{b}
5	70^{bc}	0^{b}
6	89^{ab}	80^{b}
7	100^{a}	98^{a}
8	95^{a}	95^{a}

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The embryo of *Jatropha* seed could only be seen clearly with naked eye and excised at the 4th week after anthesis. During this stage the embryo had not attained its maximum size. It only measured around 1.5mm while embryo at six weeks after anthesis measured 4.5mm. The seeds were able to germinate on sand medium at six weeks after anthesis with seeds harvested at physiological maturity having the highest germination. Maximum germination of 98% was obtained when seeds were harvested at 49 days after anthesis corresponding to fruit in yellow color (Table 1). The embryo culture also showed that seeds at the 4th week after anthesis had embryos which were able to germinate on medium with more than 50% survival, but was unable to germinate in the sand.

Conclusion

Jatropha seeds mature at around 49 days after anthesis corresponding with yellow color of the fruit. For best germination, seeds should be harvested at this stage; however, seeds within a bunch can be harvested together as their maturity stages differ only by a few days and this study showed that seeds harvested between 6 to 8 weeks after anthesis were able to germinate well.

References

Harrington, J.K. (1972). Seed Storage and longevity. Pp 145 – 245 *in* Kozlowski, T.T. (*Ed*) *Seed Biology Volume 111*. New York-London, Academic Press.

Sinniah U.R., Yap S.Y., Lim M.and Siti Aishah H. (2008). Proceeding of the 5th National Seed Symposium. Palm Garden Resort, 11 – 12 March 2008.

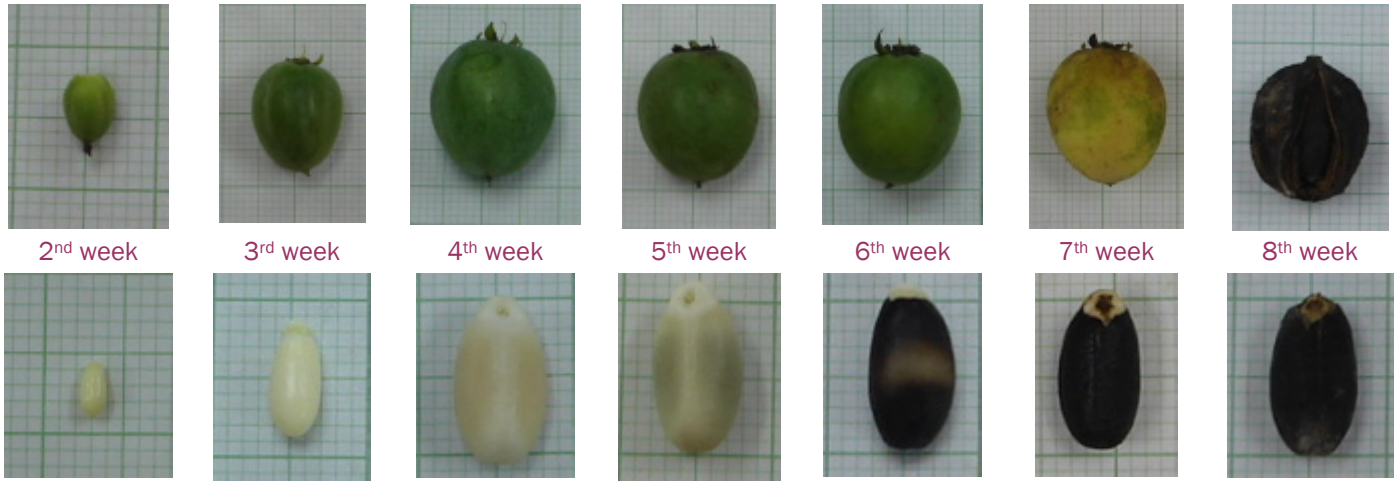

Figure 1. The development stages of fruit and seed of *J. curcas* after anthesis

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Do you know that.....

Carnivorous plants are also generally called *insectivorous plants*, any plants especially adapted for capturing insects and other tiny animals by means of ingenious pitfalls and traps and then subjecting them to the decomposing action of digestive enzymes, bacteria, or both. There are approximately 400 known species of carnivorous plants. They constitute a very diverse group, in some cases having little more in common than their carnivorous habit. Commonly known carnivorous plants include *Dionaea* spp. (Venus's-flytraps), *Drosera* sp. (sundew), *Nepenthes* spp. (pitcher plants) and *Utricularia* spp. (bladderworts). These plants generally digest their prey through a process of chemical breakdown analogous to digestion in animals. The end products, particularly nitrogenous compounds and salts, are absorbed by the plants. Most carnivorous species are also green plants that manufacture food by photosynthesis from the raw materials of sunlight, water, and carbon dioxide in the presence of chlorophyll.

(source: Encyclopaedia Britannica Library, 2006)

NOTES FROM MEMBER - 2

The Commersial Production of Bean Sprout : A Closely Guarded Secret

by:

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The widely consumed bean sprouts or taugeh are produced from the black gram (*Vigna mungo)* although mung bean or kacang hijau (*Vigna radiata*) can also be used for sprouting (Figure 1). It is estimated that more than 2,000,000 tons of seeds are imported yearly. The *V. mungo* seeds are imported from Myanmar, India, and Thailand. The total amount of bean sprouts produced are estimated to be nearly 12,000,000 tons a year and with an annual value of RM 144,000,000. Among the main constraints faced by the bean sprout producers are the availability and rising cost of imported seeds. Due to the short supply of seeds, the cost of a 25 kg bag of seeds has increased to more than 35% from the initial cost of RM80.

Figure 1. The black gram (*V. mungo*) (left) and mung bean (*Vigna radiata*) (right) seeds used for production of bean sprout

For sprouting, selected and cleaned seeds are placed in plastic or metal bins and trough without any soil or exposure to sunlight (Figure 2). The sprouting process requires watering of the germinating seeds every 3-4 hours and the duration of sprouting is between 4-5 days. Most of the watering is done manually although a few advanced bean sprout producers use the automatic irrigation system.

Figure 2. The plastic drum (top, left), fiber glass tank (top, right), stainless steel drum (bottom, left) and plastic garbage bin (bottom, right) used for sprouting of bean sprout

The marketable bean sprouts have hypocotyls and roots that are between 5-10 cm and 1-8 cm long, respectively. The bean sprouts have diameter of 2-5 mm (Table 1). Usually 1 kg of bean seeds could produce 6-8 kg of bean sprouts.

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In Malaysia, the consumers put much emphasis on the appearance of the bean sprouts. Most popular bean sprouts among consumers are the so-called 'Ipoh bean sprouts', named after the town it is produced (Figure 3). Such sprouts are crispy, rootless, short and thick. Bean sprout producers are using *seko* (calcium sulphate) and other unknown chemicals (*Yanzisu* and *Santoso*) to produce the preferred sprouts (Figure 4). *Seko* provided the calcium needed to strengthen cell walls of the actively growing sprouts. *Yanzisu* and *Santoso*, both are unregistered chemicals, contain plant growth regulators that stimulate hypocotyl radial swelling and inhibit root growth. Unlike in the United States, Malaysian consumers are also not concerned about microbial contamination of the bean sprouts even though sprouts are often consumed fresh when used in the preparation of certain dishes and salads. (Figures 5 and 6)

Figure 3. The varying bean sprout produced in Ipoh (top, left), Kota Bahru (top, right), Pasar Tani (bottom, left), Terengganu (bottom, centre) and Malacca (bottom, right)

Table 1. Hypocotyl length, root length and hypocotyls diameter of sprouts from several production areas

Production area	Hypocotyl length (cm)	Root length (cm)	Hypocotyl diameter (mm)
Ipoh	4.0-5.0	1.5-2.5	3.4-5.0
Kota Bharu	8.0-10.0	6.0-8.0	1.5-2.0
Melaka	6.0-7.5	1.5-2.5	3.3-3.7
Terengganu	6.0-7.5	1.5-2.5	3.2-3.4
Pasar Tani	3.0-3.5	1.0-2.0	2.8-3.2

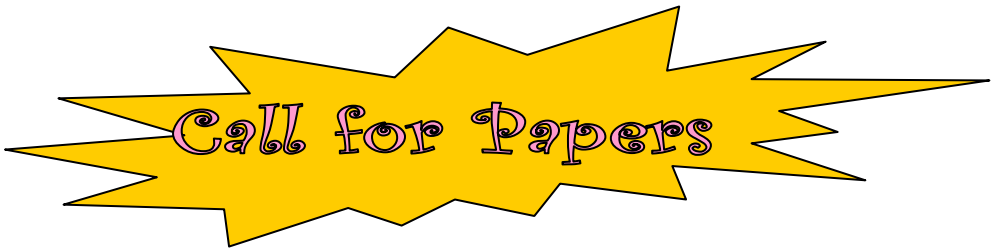
Figure 4. Chemicals used for sprouting, Yanzisu (left), Santoso clear (centre) and Santoso blue (right)

Figure 5. The unhygienic conditions of production of bean sprout

Figure 6. Removal of seed coat of bean sprout by using a shaker (left) or manually (centre) followed by sifting (right)

Plant Science Gallery.....

Plants clean indoor air in two ways, he says. They absorb pollutants into their leaves and transmit the toxins to their roots. There the toxins are transformed into a food source for the plant. Plants also emit water vapors that create a pumping action that pulls dirty air down around the plant's roots, where it is also converted into food for the plant. Boston fern, for instance, does the best job of removing formaldehyde, which is found in many synthetic products, such as particle-board furniture, paints, carpeting, cleaning solutions and pesticides. The peace lily does an especially good job of removing acetone, found in fingernail polish remover and various solvents. (Source : NASA, 1998)



Malaysian Society of Plant Physiology Conference2008

Date : 18th – 20th August 2008
Venue : Penang

Tentative Scientific sessions:

Cultural Practices and Current Techniques in Production Technology
Effects of Climate Change
Developmental Physiology and Assimilate Production
Post Harvest Technology and Quality Control
Crop Production in Controlled Environment
Biotechnology
Plant Growth and Development
Ecophysiology and Stress Biology
Pest and Disease
Modeling and Simulation

Deadline for submission of abstract : 15 August 2008

Registration : RM700 (for members), RM800 (for non-members), RM350 (for students)

Contact : Ms. Dang Lelamurni Abd. Razak (*danglela@mardi.gov.my*)

Other forthcoming events :

17 July 2008
Transfer of Technology Seminar 2008
Malaysian Palm Oil Board, Bangi, Selangor
Web : http://www.mpob.gov.my

22 July 2008
Post Harvest Colloquium 2008
Theme : Quality Assurance : The Key to a Successful Fresh Horticulture Industry
Dewan Persidangan, Pusat Pendidikan Luar, Universiti Putra Malaysia
Email: phebe@agri.upm.edu.my

5-6 August 2008
3rd Regional Symposium on Environment and Natural Resources: *"Conservation for a Green Future"*
Prince Hotel & Residence, Kuala Lumpur
Web: http://pkukmweb.ukm.my/~rsenr3/

13-14th September 2008.
Bengkel Pendekatan Mudah Kultur Tisu Tumbuhan
Centre for Research in Biotechnology for Agriculture (CEBAR), Universiti Malaya.
Web: http://www.um.edu.my

20-23 October 2008
International Rubber Conference and Exhibition 2008
Theme : Meeting Challenges and New Frontiers
Kuala Lumpur Convention Centre, Kuala Lumpur
Email: irc2008@lgm.gov.my

21-22 October 2008
Seminar on Medicinal and Aromatic Plants 2008
The Legend Hotel, Kuala Lumpur
Web : http://www.frim.gov.my

29-31 October 2008
National Conference on Forest Products 2008 (NCFP 2008)
Theme : Towards Competitiveness and Sustainability
Kuala Lumpur, Malaysia.
Web : http://www.frim.gov.my

18-21 November 2008
2nd International Plantation Industry Conference and Exhibition (IPICEX 2008)
Theme : Reinventing the Plantation Sector : Globalization, Diversification and Environmental Issues
Grand Blue Wave Hotel, Shah Alam
Web : http://www.ipicex.com

16-17 December 2008
Malaysian Science and Technology Congress 2008
Theme : Towards Excellence in Science and Technology
Kuala Lumpur Convention Centre, Kuala Lumpur, Malaysia.
Web : http://www.costam.org.my

17-19 January 2009
CNPS 2009 Conservation Conference : Strategies and Solutions
Sacramento, Canada
Web : http://www.ipmb2009.org