



MSPP

Newsletter

Sept 2003

PERSATUAN FISILOGI TUMBUHAN MALAYSIA

Malaysian Society of Plant Physiology

(Inaugurated on 29 April 1989. reg. No. 889 Wilayah Persekutuan

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FROM THE PRESIDENT'S TO-

Assalamualaikum wm wb and
salam sejahtera

The Malaysian Society of Plant Physiology (MSPP) will soon celebrate her 15th anniversary! Along the fifteen years after her inauguration MSPP has evolved and matured with time and changes that took place with the sciences of biology. Throughout these years the MSPP has strived to keep up with changes by strengthening her approaches and strategies so as to remain relevant as a professional institution to the plant scientists particularly the physiologists; meanwhile also thrusting herself to be a relevant building block in the development of the nation. This is very much so in this millennium where agriculture sector in Malaysia has been proclaimed to be third engine of growth, and transformation and modernization of agro-industry are inevitable. Thus concerted efforts of multi-disciplines are very much needed to see this through and the Society has indeed an important mandate and a role to play in the promotion of research and development of tropical plant biology among the scientific community and those involved in the perusal.

Basically the purpose of the Society is to encourage and promote the development of plant physiology as pure and applied phase of botanical science. This can be accomplished firstly by the organization of meetings, lectures, symposia, seminars, workshops, conferences and related activities; and secondly by the publications of matters pertaining to plant physiology and related topics.

To date the society has organized 14 such meetings, two of which were at international level. Of late, the society has taken the initiative to provide a series of for a in addressing issues related to national food production and food security at her yearly Annual General Meetings. in view of the high food importation bill and the government's effort to turn this country into a leading exporter of tropical food products, the endless efforts by MSPP is sensitive to the government's need.

Progress in science and technology is vital for the transformation of agriculture from the conventional state of arts to an industrialized commercial sector, which can act as a backbone of the nation's economic growth and development. Despite remarkable achievements to date and the potential of new technologies, scientists and policy makers have tremendous challenges ahead. Science as a whole and research in particular are getting expensive to pursue.

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Therefore, the utilization of R&D findings and their conversion into innovative technologies are critical to ensure that the economic benefits from scientific research are realized and the nation gains from such conduct. In other words, R&D should be oriented to contribute towards productivity driven growth and competitiveness.

The role of plant biology research especially for production and utilization of tropical crop commodities, especially for those vast untapped materials, is unquestionably very timely and important in ensuring success of the Third National Agricultural Policy (NAP3): (i) increased production of major food products which are cost competitive and enable Malaysian to have better access to quality food at affordable prices; (ii) development of new agricultural-based industries which globally competitive; and finally (iii) the development of integrated and sustainable Agroforestry for ecological balanced environment. MSPP's continuous deliberation to enhance tropical plant biology research and development will further support and contribute towards meeting challenges for NAP3 and our goal to be exporter of tropical food products in the immediate future!

MSPP has all along been very proactive and sensitive in her function to create interest and awareness among plant biologists of their roles in contributions and supports towards national efforts to enhance tropical crop production, particularly food production and food security, as stipulated in the Third National Agricultural Policy (NAP3). With present concerns for the environment at both domestic and global levels, the effort for innovative and efficient agricultural and forestry practices for sustainable development becomes more demanding. New approaches and strategies have to be developed to increase productivity and competitiveness, depend linkages with other sectors, venture into new frontiers as well as conserve and utilize natural resources on a sustainable basis. Thus, the concept of Agroforestry, with its interactive approach in agriculture and natural resource management has become

one of the mainstay policy statements under NAP3, as a form of new strategy to address the issues of resources scarcity and increased food and agricultural production.

At this point MSPP takes the initiative and delight to present the theme at the *Malaysian Society of Plant Physiology Conference (MSPPC) 2002*.

Towards sustainable development in Agroforestry: New paradigm for plant physiologists for deliberation and discussion. The practice of Agroforestry becomes more prominent with the pressure to conserve natural forests and the environment due to growing commercial importance of forest species and limited natural resources, in particular availability of suitable land for both agriculture and forestry development. The integration of both agriculture and forestry development. The integration of both agricultural crops with forests species provides opportunities not only to protect, conserve, diversify and sustain vital economic, environmental, human and natural resources, but also to offer a better alternative to maximize returns from same piece of land. In order to accomplish the expectations on the role and potential of Agroforestry as a development vehicle to maximize land utilization and returns, it is imperative that R&D be focused accordingly to address the issues the challenges in developing technologies for large-scale Agroforestry activities. The integration of agricultural crops with the perennial in the pursue to elucidate the knowledge in crop-component interactions towards sustainable development in Agroforestry.

It is hoped that the conference has successfully served as a platform to review the status of R&D in the field of plant physiology relating to crop integration, a basis for sound sustainable Agroforestry development; to deliberate the current research findings and relate their relevance to Agroforestry development; and to provide direction for organized research in the field of plant physiology, and promote concerted efforts for inter-

disciplinary and inter-agency networking in this respects towards sustainable Agroforestry development in the country. This national forum has been jointly organized with other research institutions viz. the Malaysian Agricultural Research And Development Institute (MARDI), Malaysian Rubber Board (MRB) and Forestry Research Malaysia (FRIM) on 10-12 September 2002 in conjunction with the MSPP 14th AGM. In fact the Chief Minister of Melaka, YB Datuk Seri Mohd Ali Rustam, has also joined in to support the call that "appropriate knowledge and understanding in all aspects of agroforestry through research and development, including physiological aspects related to plant growth in a forest environment, are necessary to foster our belief that agroforestry has the potential for sustainable management of land use". The conference has managed to attract many researchers, policy makers and managers related to works in Agroforestry, and their deliberations have been recorded in the *Transactions of the Malaysian Society of Plant Physiology Volume II (2002)*.

Still on the issue of crop production and food security, the Society is yet embarking another lead to invoke interest among plant biologists of their role in the *Challenges in plant productivity and food security in a changing environment*: the theme for the upcoming *National Conference of the Malaysian Society of Plant Physiology Conference 2003 (MSPPC 2003)* to be held on 23-25 September 2003 at Awana Resort Genting Highlands.

As the population of the world doubles, food production must increase proportionately. Efforts to produce enough food will drive intensive cropping on to marginal environments, which are less favourable for growing crops such as drought, flooding, low fertility, adverse pH and salinity. Coupled with deforestation for arable farming, these endeavors exert adverse impacts on the physical, biological and human components of the environment. In addition, alterations in the atmospheric compositions have also

changed the climatic patterns with increased greenhouse gases, CO₂, temperatures, altered precipitation patterns and low irradiance. These unfavorable environments and climate change will impose stress on growth and development, limit crop yields and cause significant year-to-year variations. Thus challenges to continuously improve and increase productivity and quality of crop plants under adverse and varied environments become more demanding in an endeavor to increase productivity and stabilize the nation's food security.

The success of man to meet these challenges rests on his ability to develop more input-efficient and adaptable plants. Modern crop production has been primarily concerned with modification and control of the environmental factors to improve plant adaptation to the environment. Plant varieties have been deliberately selected and developed for resistant to the stresses encountered in less favorable and changing environments. A combination of genetic and cultural management as also essential for maintaining and improving world food levels. Therefore, knowledge in both plant stress and eco-physiological responses to adverse environments and climate variability, and genetics will play a significant role in this quest, especially in efforts to develop crop plants with improved environmental resiliency.

This conference is intended to bring together scientists to review current status and future need of research in the field of Plant Eco-Physiology and Environmental Stresses relating to plant productivity and production systems. The meeting also hopes to provide directions for and organized research in the field of Plant-Environmental Stress Physiology, and to promote interdisciplinary and inter-agency networking in this respects towards sustainable agricultural production systems and plant improvement. Deliberations from the two-days meeting will be documented in the *Transactions of the Malaysians Society of Plant Physiology Volume I2 (2002)*.

The Executive Council is also pleased to announce that the Society is soon to publish her first volume of the *Journal of Tropical Plant Physiology (JTTP)*, a formal journal of the Malaysian Society of Plant Physiology. Most of the contributions will come from selected suitable papers presented during the Society Annual Conference. Individual submissions from members and non-members are also welcome. With the inception of the journal publication, the Society is taking another serious step to become a respected Society of relevance, especially among the plant biologists. Besides, the JTTP serves another platform for formal scientific and technical writings of merits. With commitment and seriousness from both the Editorial Board and the members, it is envisioned that the Journal will be well referred to and internationally distinguished, Insyah-Allah.

DR HAWA JAAFAR

To All Members

The Executive Council is also pleased to announce that the Society is soon to publish her first volume of the *Journal of Tropical Plant Physiology (JTTP)*, a formal journal of the Malaysian Society of Plant Physiology. This is the list of the editorial board are as follow:

1. **DR HAWA JAAFAR** - (MARDI)
2. **DR YUSOF ABDULAH** - (MARDI)
3. **DR RADZALI MUSE** - (UPM)
4. **DR YEANG HOONG LIK** - (MRB)
5. **DR A.KARIM ABD. GHANI** - (UKM)
6. **DR MASRI MUHAMAD** - (MARDI)
7. **DR ELIZABETH PHILIP** - (FRIM)
8. **DR ARUMUGAM** - (UM)
9. **DR ROJI SARMIDI** - (UTM)
10. **DR ROFINA YASMIN** - (UM)

QUOTE

NEVER MIND WHAT OTHERS DO; DO BETTER THAN YOURSELF, BEAT YOUR OWN RECORD FROM DAY TO DAY AND YOU ARE A SUCCESS.

William J. H. Boetcker

REMINDER FOR THE MEMBERS

If you have anything to say or comment about the society or on any of the articles published in the newsletter, or if you think you have some views that you would like to share with others members, you are welcomed to direct it to me at umarani@agri.upm.edu.my. I will try to published your comments or articles or views in the next issue. It will be under a special column entitled "OUR MEMBER WRITES.....!"

ANNOUNCEMENT

➤ EX-PRESIDENT'S COLUMN

Until now, we had no comments or any contribution of any suggestion or idea. But we are very pleasant to receive any suggestion or comment from the ex-president to improved our Society from time to time. Any contribution can be send to this e-mail address:

HIGHLIGHT OF



Towards sustainable development in Agroforestry: new paradigm for plant physiologists

Malaysian Society of Plant Physiology Conference (MSPPC) 2002, was held on 10-12 September 2002, at Century Mahkota, Malacca. This conference was successfully co-organized by three institutions, namely; Malaysian Agricultural Research and Development Institute (MARDI), Malaysian Rubber Board (MRB) and Forestry Research Institute of Malaysia (FRIM).

There were 85 participants at this conference and a total of 50 papers were presented both as oral and posters. Papers were divided into six sessions, as follow:

- ▶ **Sessions 1** – *Agroforestry: new paradigm in agriculture*
- ▶ **Sessions 2** – *Agroforestry: crop integration and case studies*
- ▶ **Sessions 3** – *Agroforestry: resources competition and evaluation*
- ▶ **Sessions 4** – *Physiology of crop growth and development*
- ▶ **Sessions 5** – *Biotechnology and post harvest physiology*
- ▶ **Sessions 6** – *Agroforestry: potential species*

HIGHLIGHT OF UPCOMING



Challenges in plant productivity & food security in a changing environment

14th Malaysian Society of Plant Physiology Conference (MSPPC) 2003, will be held on 23-25 September 2003, at Awana Resort Genting Highlands, Pahang. This conference is co-organized by three institutions, namely; Malaysian Agricultural Research and Development Institute (MARDI), (MOA) and (MOSTE).

The programme includes addresses by invited speakers oral and poster presentations. Tentative areas of interest which will covered during the conference include:

- Sessions 1:** *Eco-Physiological Processes* (respiration, transpiration, photorespiration, photoinhibition, water relations, postharvest, biotechnology)
- Sessions 2:** *Assimilate Production* (photosynthesis, photorespiration, photoinhibition)
- Sessions 3:** *Critical Stages Of Plant Growth And Development*
- Sessions 4:** *Weather And Crop Production* (crop improvement, breeding, resource management, pests and diseases, ecosystem, biodiversity)
- Sessions 5:** *Modeling And Stimulation*



LOCAL

2-4 Sept. 2003: International Symposium On Greenhouses Environmental Controls and In House Mechanization For Crop Productions In The Tropics and Subtropics: controlled

environment technology for sustainable agriculture production. Cameron Highland, Pahang. Organized by MARDI (<http://www.mardi.my>)

8-10 Sept. 2003: International Conference Bioinformatics. Penang. Organised by UKM (<http://cgat.ukm.my/incob/>)

23-25 Sept. 2003: Malaysia Science And Technology Exhibition. MidValley Megamall, Kuala Lumpur. Organised by Confederation of Scientific and Technology Associations in Malaysia & MOSTE (www.costam.my)

22-27 Sept. 2003: Biennial Conference On Natural Resources, Environment And Development (NARED 2003); Strengthening The Knowledge Base In Management Of Natural Resources and The Environment. Kuching, Sarawak. Organised by UNIMAS (www.unimas.my/NARED)

6-8 Oct. 2003: Forestry And Forest Products Research (CFFPR). Kuala Lumpur. Organised by FRIM (<http://www.frim.gov.my/>)

13-16 Oct. 2003: International Rice Conference 2003: Modern Rice Farming. Alor Setar, Kedah. Organised by MARDI (<http://www.mardi.my>)

15-18 Oct. 2003: 3rd Federation of Asia Pacific Microbiology Societies International Conference. Kuala Lumpur. Organised by UM, UKM & UPM.

20-22 Oct. 2003: National Horticulture Conference 2003: Towards Achieving Malaysia's Best. Organised by MARDI (<http://www.mardi.my>)

11-13 Dec 2003: 14th National Biotechnology Symposium of DEAM Malaysia years and beyond. Penang. Organised by USM (isa@prn.usm.my)

15-17 Dec 2003: 12th Scientific Conference & 13th Annual General Meeting Of The Electron Microscopy Society Of Malaysia. Organised by SIRIM & Electron Microscopy Society Of Malaysia.

9-20 Feb. 2004: The Seventh Meeting Of The Conference Of Parties (COP 7) to The Convention On Biological Diversity (CBD). PWTC, Kuala Lumpur. Organised by (<http://www.biodiv.org>)

LOCAL WORKSHOP

30 Sept.-1 Oct. 2003: Workshop on Nature Education as an Approach To Resources Management In Recreation Areas. Kuala Lumpur. Organised by FRIM (<http://www.frim.gov.my/>)

OVERSEAS

2-6 Sept. 2003: 6th International Symposium On Structure And Function Of Roots: Plant Root Development and Adaptation To Stresses. Slovakia. Organised by Slovak Academy Of Sciences (<http://www.nic.savba.sk/inst/botu/osyposium.htm>)

5-10 Sept. 2003: Euro Conference On Structural Genomics: From Gene Tu Structure As Viewed by NMR. France (www.esf.org/esf_euresco_confere_nce.php?language=O&year=2003)

15-17 Sept. 2003: 5th International Conference: Ecophysiological Aspects Of Plant Responses To Stress Factors. Cracow (<http://www.2fr.pan.krakow.pl/ang/konf/konf.html>)

21-26 Sept. 2003: 2nd International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum. Australia (http://www.agric.uwa.edu.au/soil_sP_Symposium?phosphorus.html)

21-28 Sept. 2003: 12th World Forestry Congress. Canada (<http://www.wfc2003.org>)

22-24 Sept. 2003: Conference On Management Ant Technology Applications To Empower

Agriculture Ant Agro-Food Systems. Italy. Organised by CIOSTA (<http://www.agaria.unito.it/dip/dci/ata/ciosta.htm>)

1-3 Oct. 2003: 1st International Conference On Sustainable Planning And Development. Greece (http://www.wessex.ac.uk/confere_nces/2003/lanning03/index.html)

2 Oct 2003: The 1st Scientific Conference On Advanced Technologies In Agriculture & Biological Sciences. Baghdad, Iraq. Organised by Iraqi Atomic Energy Commission

6-8 Oct. 2003: 4th International Conference On: Life Cycle Assessment In The Agri-Food Sector. Denmark (http://www.Icafood.dk/Ica_conf/)

12-15 Oct. 2003: International Conference On Agricultural Science And Technology. Houston, Texas, USA (<http://www.2003icast.org/>)

12-13 Oct. 2003: The 6th Conference Of The African Crop Science Society. Nairobi, Kenya (http://www.africancrops.net/crop_9620science9620conferences.htm)

13-16 Oct. 2003: International Symposium On Plant Modeling, Stimulation, Visualization And Their Applications (PMA03'). Beijing, China. (<http://liama.ia.ac.cn/~PMA03>)

16-17 Oct.2003: Diversity Of Reproductive Systems In Plants: Ecology, Evolution And Conservation. Sapporo, Japan. (<http://sssb.ac.affrc.go.jp?NewFile/s/inerantionalsympo.html>)

20-21 Nov. 2003: 7th Annual Canadian Fall Outlook Conference. Alberta. Organised by SPARKS COMPANIES INC (www.sparkso.com/Canadian_Conf_2003.htm)

QUOTABLE QUOTES

NEVER MIND WHAT OTHERS DO; DO BETTER THAN YOURSELF, BEAT YOUR OWN RECORD FROM DAY TO DAY, AND YOU ARE A SUCCESS
William J.H Boetcker

SUCCESS DOESN'T COME TO YOU, YOU GO FOR IT!
Marve Collins

STANDARDS WILL DROP UNLESS YOU REFUSE TO ACCEPT ANYTHING BUT THE BEST
Geoffery Moss

DON'T BE AFRAID OF OPPOSITION. REMEMBER THE KITE RISES AGAINST NOT WITH THE WIND
Hamilton Mabie

HE THAT CANNOT OBEY, CANNOT COMAND
Benjamin Franklin

KIND WORDS DO NOT COST MMUCH, YET THEY ACCOMLISH MUCH
Blaise Pascal

THE TIME IS ALWAYS RIGHT TO DO WHAT IS RIGHT
Martin I. King, Jr

THE WINDS AND WAVES ARE ALWAYS ON THE SIDE OF THE ABLEST NAVIGATOR
Edward Gibbon

THINGS DO NOT HAPPEN, THINGS ARE MADE TO HAPPEN
John F. Kennedy



BILLBOARD

- * Source of funding bodies relation to plant physiology

TITLE OF PAPERS IN MSPPC 2002

Sessions 1 – Agroforestry: New Paradigm In Agriculture.

K1- “Intercropping under rubber: An option for the future” by *Abdul Hamid S.*

K2- “Forest species as an economic commodity under agroforestry” by *Abdul Razak M.A, Najib Lofty A. And Krishnapillary B.*

Sessions 2 – Agroforestry: Crop Integration And Case Studies

P1- Intercropping misai kucing, hempedu bumi, kacang fatima and mengkudu with rubber: A case in agroforestry by *Mohamed Senawi M.T., Mohd Yusoff A., Mohd Rani M.Y., Vimala P., Hassan S., Yuen P.M., Liew K.L, Abdul Ghani I., Zulkefly S., Ahmad Faiz M.A., Shamsuri M.H., Mohd Shukri M.A., Lo N.P., Norlia Y., Mohamed Zabawi A.G., Hawa J., Mahamud C.H., Nik Ab. Lah N.M., Indu Bala J., Tunku Mahmud T.Y., Nik Masadek N.H., Hussan A.K., Hasbullah M., Mohd. Norowi H., Mohd Shukor N., Ahmad Shokri O., Tosiah S. and Mega Arjuna.*

P2- Horticultural crops in agroforestry: A case study on the performance of melon under immature oil palm and rubber by *Norlia Y.*

Sessions 3 – Agroforestry: resources competition and evaluation

P3- Measuring the nitrogen contribution” by *Paraserianthes falcataria* to corn (*Zea mays*.L) by *Zaharah A.R and Chinru R.*

P4- Growth and yield of mangosteen (*Garcinia mangostana* L.) grown under natural shade trees by *Masri M.*

P5- Ground flora composition in an Agroforestry system by *Priscilla P., Ong K.H and Lim M.T.*

P6- Fertilizing trial on *Tetcona grandis* in Sabak Bernam by *Tsan F. Y., Ong T.H. And Ang L.H*

P7- cconservation of tropical fruits: back to basics by *Uma Rani S., Ong K.H and Ang L.H.*

P8- Radiant: a model for light partitioning in immature-rubber, banana and pineapple hedgrow-intercropping system By *Jalloh M.B, Jamal T.,Ramlan M.F., Wan Sulaiman W.H., The C.B.S. and Rajan A.*

Sessions 4 – Physiology of crop growth and development

P9- Stomatal conductance in relation to xylem sap abscisic acid concentration in *Hopea odorata* Roxb. and *Mimusops elengi* Linn. seedlings by *Siti Rubiah Z. and Kamis A.*

P10- effect of root damage by plant parasitic nematods on growth physiology of plant by *Abdul Rahman R., Zakaria W. And A. Ghani Y.*

P11- Nutritional stress management in agroforestry using banana as the model crop by *Zakaria W. and Abd. Rahman R.*

P12- Kajian tumbesaran dan fotosintesis bersih ke atas pertumbuhan awal pokok akasia (*Acacia mangium*) dan sentang (*Azadirachata exelsa*) by *Mohd Fauzi R., Hassan S.A., Mahmud T.M.M. and Jamal T.*

P13- Impact of water stress on early reproductive growth and development of *Morinda citrifolia* L. under rubber eco-system by *Hawa Z.J., Mohammad C.H., Mohd Zabawi A.G., Md Noh I. and Subahir S.*

P14- Effect of plant growth regulators on dormancy of zingiberaceae (*curcuma cordata*) by *Ridwan M., Mahmud T.M.M. Yahya A. And Mohamad Idris Z.A.*

P15- Drip chemigation system for tobacco on bris soil by *Mohammad C.H., Wan Zaki W.M., Kuan M., Lauhglin M. and Baker J.*

P16- The response of young durian (*Durio zibethenus*) seedlings to two different in-ground geo-textile membrane

volumes by *Zainudin M. and Izham A.*

P17- Growth of *Mesua ferreae* in mixed planting by *Elizabeht P. and Rizal M.K.M.*

P18- Salak: species diversity and understanding their growth performance as an under story crop plant by *Salma I., Mohd Yusoff A.. and Mohamed Senawi M.T.*

P19- A preliminary growth assessment of *Dendrocalamus asper* for shoot production by *Abd. Razak O.*

P20- Water shoots growth control using butralin in carambola (*Ayerrhoa carmbola* L) by *Omran H.*

Sessions 5 – Biotechnology and post harvest physiology

P21- Somatic Embryogenesis: An Alternative for Micropropagation of *Eurycoma longifolia* Jack by *Sobri. H and Marziah M.*

P22- Radiosensitivity of *Microsorium* sp., a fern species through *in vitro* propagation by *Azhar M., Amran A.H. and Rusli I.*

P23- Bioassay for chlorpyrifos residue on vegetables using fiber optic biosensor and spectrophotometer detection by *Maliawati A.L., Masnizar M., Anuar A., Jamaluddin S. and Zamri I.*

P24- Effect of surface coating on the quality of minimally processed red chillies (*Capsicum annum*) stored at low temperature by *Azizah O., Aziza Nur'ain N., Nazamid S., Aizah A.H. And Abdul Reezal A.L.*

P25- Effect of dipping into different anti-browning solutions on the storage quality of minimally processed bell pepper slices stored at low temperature by *Azizah O., Azlina Wati A., Azkzah A.H., Nazamid S., Abdul Reezal A.L., and Azairul Hasliza A.R.*

P26- The use of chitosan in extending the vase life of cut chrysanthemum (*Dendranthme morifolium* Ramat) by *Eddy A., Mahmud T.M.M., Siti Hajar A., Kamaruzaman S. and Mohd Zaki A.R.*

P27- Enzymatic inhibition for determination of dichlorvos using sol-gel encapsulated housefly acetylcholinesterase by *Salmah*

A.A., Musa A., Othman O., Abu Bakar S. and Zamri I.

P28- Propagation of threatened herbal species, ant plants by in vitro technique by Norzihan A. and Noranizam A.

P29- Changes in physical characteristics of 'pisang Berangan' (*Musa sapientum*. L var Berangan) following high temperature and calcium carbide treatments by Ratule O., Osman A., Saari N. and Ahmad A.S.

P30- Expression of glutathione-S-transferase in papaya (*carica papaya* L. cv. Eksotika) after heat shock and cold storage by Rohaaida O., Lawrence S., Zainon M.A And Hamid L.

P31- Effects of different packaging films on the degree of browning and chlorophyll degradation of shredded cabbage stored at chilled temperature by Roshita I., Azizah O., Nazamid S. and Russly A.R.

P32- Early field evaluation of tissue-culture and sees-derived mangosteen (*Garcinia mangostana* L) by Mohd Shaib J., Johari S., Sanimah S., Hapsah M.G. and Ali B.S.

P33- Determination of suitable packaging method and storage temperature for mung bean sprouts (*Vigna radiata* L. wilczek) by Norhelaliah I., Siti Hajar A. and Mahmud T.M.M.

P34- Colour and other related quality characteristics of canned pineapple (*Anana comosus* L. merr) as affected by storage period and canning media by Siti Hajar A., Jayashree K., Mahmud T.M.M and Azizah O.

P35- Effect of different cytokinins hormone benzylaminopurine (BAP) on *Draceana sanderiana* by Misril F., Mahmud T.M.M., Yahya A. And Mohd Fauzi R.

P36- Response of guava cv Kampuchea (*Psidium guajava* Linn.) to hydrocooling time, storage temperature and storage duration by Jupikely J.S., Siti Hajar A., Russly A.R. and Wan Mohammad W.M

P37- Cellular location of polyphenol oxidase in *Metroxylon sagu* by Galila H.O., Nazamid S., Shamsul Bahri A.R., Chan J.L., Jamilah B. and Jinap S.

Sessions 6 – Agroforestry: potential species

P38- Some potential clones of soursop (*Annona muricata* L.) by Mohd Khalid M.Z.

P39- Yield pattern of durian clone D24 in Jerangau condition by Rushidah W.Z., Hashim B. and Zalina E.

P40- The longan berlian- A potential commercial fruit species in Malaysia by Zabedah M.

P41- Performance of promising durian hybrids at MARDI Bukit Tangga by Zainal R.S., Zainal Abidin M. And Norzila M.G.

P42- The performance of Isau (*Dimocarpus longan* spp. Malesianus) from Sarawak in Trengganu by Hashim B.

P43- Performance of three promising carambola (*Averrhoa carambola* L.) Hybrids by Maimun T. and Abd Rahman M.

P44- Preliminary study on *Michelia alba* (cempaka putih) floral development by Sanimah S., Mohd Shaib J., Nor Afni Z and Siti Saleha T.

P45-The importance of pineapple (*Ananas comous* L. Merr) in the agroforestry system: The case of a crassulacean acid metabolism (CAM) plant by Mohamed Selamat M.

P46- The development of seed quality in soybean in two contrasting agro-ecological condition by Didik H, Uma Rani S., Mohd Khaniff Y. and Mohd Said S.

P48- Malaysian flue-cured tobacco response to fertilizer redistribution on bris soil by Wan Zaki W.M., Mohammad C.H., Kuan M., Laughlin M. and Baker J.



Transactions, **Volume 11** (2002): Towards sustainable development in Agroforestry: New paradigm for plant physiologists. **Editor** by Hawa Z.E.J. et al.

Transactions, **Volume 10** (2001): Tropical plant biology: Interfacing the basics and

applied aspects of research. **Editor** by Hamid L. et al.

Transactions, **Volume 9** (2000): Tropical plant biology research in Malaysia: Strategies and vegetables. **Editor** by Syed Mohd S.I et al.

Transactions, **Volume 8**(1999): Food crop production in Malaysia : Strategies and advancements. **Editor** by Abd Karim A.G. et al.

Transactions, **Volume 7**(1998): National food production and security: Issues, strategies and advancement. **Editor** by Abd Karim A.G. et al

Transactions, **Volume 7**(1998): National food production and security: Issues, strategies and advancement. **Editor** by Abd Karim A.G. et al. **Supplement**

Transactions, **Volume 6** (1997): Referred. **Editor** by Helen N & Tung H.F.

Transactions, **Volume 5**(1996): Improving productivity through plant physiology. **Editor** by Mohd. Ridzwan A.h. et al.

Transactions, **Volume 4**(1995): Techniques and instrumentation for plant physiology. **Editor** by Liew K.L

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Transactions (1991): Pembangunan fisiologi tanaman tropika: Kekangan-kekangan fisiologi dan persekitaran. **Editor** by Hamid. et al

Transactions, **Volume 1** (1990). **Editor** by Hamid L. et al