



# MALAYSIAN SOCIETY OF SOIL SCIENCE (MSSS)

NEWSLETTER

Apr 2016 Issue 1

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## From the Presidents Desk



International  
Decade of Soils  
2015-2024



2016 marks another interesting year, beyond the International Year of Soils and MSSS celebrates its 45<sup>th</sup> year of existence. In December 2015, besides wrapping the celebration of International Year of Soils 2015 in Vienna, the 'Vienna Soil Declaration' was presented which now has been adopted by FAO and IAEA. With this Declaration, the vital roles of soils in tackling the primary environmental, health and social problems have been identified, thus each of us has a role. Following suit, the **International Decade of Soils 2015-2024** was announced by IUSS President to ensure initiatives for IYS 2015 kept going and awareness on soils reaching further.

At MSSS levels, we will actively support IUSS initiatives and we have already planned a few programmes in collaboration with the Department of Agriculture. The annual society event, **Soil Science Conference of Malaysia 2016** was successfully concluded in Kuala Terengganu with excellent contribution from Universiti Malaysia Terengganu (UMT) as the main organizer. Another major event planned is **Soil Familiarization Tour** as a refresher to the practicing soil scientists and new knowledge generation to the new comers in soil science. MSSS is also supporting the Malaysian Peat Society in organizing the **International Peat Congress** which will be held in Kuching, Sarawak in August 2016. It is my wish to see active involvement and participation from all members in support of our activities. I also welcome ideas from members and together we promote wise use of our soil resources. *Dr. Wan Rasidah Wan Abdul Kadir, MSSS President 2016/2017*



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Membership is open to all professionals and graduate students, within and outside Malaysia. Please visit our website <http://msss.com.my/apply.htm>. FEES : RM50.00 per year for ordinary membership, or RM400.00 for life membership

## Announcements!

- [Workshop Digital Soil Mapping](#), Denmark, 27 June to 1 July
- [Geoconference 2016](#), Bulgaria, July
- [Acid Sulphate Soil Conf](#), USA, 17-23 July 2016
- [Sust. For. Dev. in view of Climate Change](#) Kuala Lumpur, 8-11 Aug
- [Int. Peat Congress 2016](#), Kuching, 15-19 Aug
- [Int. Symposium on Soil Forming Factors](#), 16-18 Sept, Romania

## New publications!

- The nature & Properties of Soil (15th ed)
- Soil & Water Engineering: Principles & Applications in Modelling
- [Global Soil Biodiversity Atlas](#)

*"I cannot conceive of the time when knowledge of soils will be complete." - R.S. Smith*

## Rural farmers and their comprehension on agricultural farming



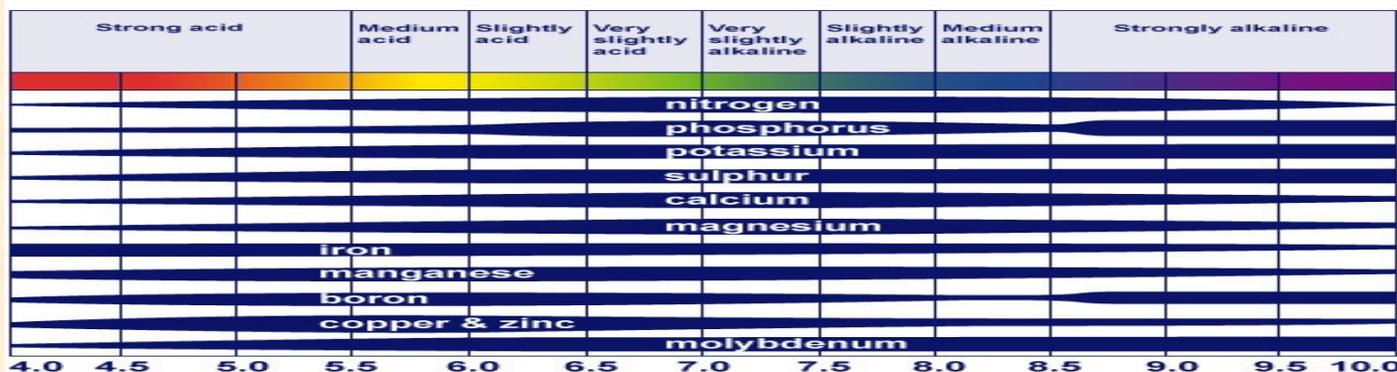
Mrs. Saloma & husband, Mr. Lim in Sri Aman

This brief report may explain the understanding and knowledge among rural farmers that we met during sampling activities in Sri Aman, Serian, Bintulu, and Kapit Division in Sarawak. They are involved in cocoa, paddy, black pepper, and vegetable cultivation since 5-15 years ago. Knowledge and skills related to agricultural practices were learned from field observation, shared knowledge between friends and parents, as well as training organized by government agencies. Some of these farmers are well acknowledged when being asked about soil fertility and its relation to crop growth, for example, Mr. Lim Ah Seng, a retired army officer from Sri Aman. was fully aware of the effect of soil texture towards cocoa and black pepper cultivation. He has selected to grow both crops since his land has a suitable amount of clay and sand. According to him, excessive sand in an area can elevate soil temperatures and reduce water availability to the plant roots. Clayey soil result in waterlogging and make the cocoa trees unproductive, affecting the pepper yield. From past experiences, inappropriate planting distance between cocoa and black pepper have created problems such as nutrient competition, hampering harvesting and pruning activities. Another farmer, Mr. Rendi A/K Busang from Bintulu, had the least information on the actual roles of N, P, and K in crop production. He was not aware on fertilizer grades timing of application in growing paddy and baby corn. He practiced slash and burn concept and left the crop residues on site for the next cropping season. Meanwhile, Mr. Ajeng A/K Wan and Nanga Luap had knowledge on agriculture practices from his late parents. A visit to his farm had indicated improper drainage and terrace was built to avoid waterlogging and surface run-off. Since he is new in agriculture production, he may not be able to differentiate between nutrient deficiency symptoms and diseases infection that has existed in his farm. After having short interviews with those



Mrs. Mayang & husband, Mr. Rendi in Bintulu

farmers, a brief explanation was given about agricultural practices and advantages of doing such practices to the crop. Recommendations on fertilizer grade and application time, pruning techniques, and ability to recognize nutrient deficiency symptoms were explained and demonstrated to help farmer's problems. *Photo and text by Izzah Abd Hamid & Dr. Wan Asrina W. Yahaya, UPM Bintulu Campus*





## CONGRESS SYMPOSIUM: THEMES

1. Inventory, Biodiversity, Conservation and Functions of Peatlands
2. Peatlands and Ecosystem Management
3. Peatlands After-use, Restoration and Rehabilitation of Ex-production Peatlands
4. Peat Use, Peatlands Technology and Agro-technology
5. Responsible Utilization and Management of Peatlands
6. Cultural, Educational, Medicinal and Socio-economic Aspects of Peatlands, Peat and Sapropel
7. Special Session:
  - i. Soft Soil Engineering
  - ii. Growing media and the future of horticulture
  - iii. Publically managed peatland carbon storage, ecosystem services, and management
  - iv. Tropical Peatland Biodiversity and Conservation in Borneo and Sumatra
  - v. Peatland Restoration
  - vi. Asiaflux

### *Plenary/ Keynote speakers*

- Sustainable Nutrient Management of Fen Grassland on Peat Soil-*Prof. Jurgen Pickert*  
Emissions of Methane and Nitrous Oxide from Peatlands-*Prof. Ryusuke Hatano*,  
Communicating Peat Science to Society-*Dr. Kalyana Sundram*  
History of Tropical Peatland in South-East Asia-*Prof. Emeritus Hisao Furukawa*  
Agro-Environmental Management of Tropical Peatland- *Dr. Lulie Melling*  
Carbon Balance of Tropical Peat Swamp Forest- *Prof. Takashi Hirano*  
Shifting Paradigms in SE Asian Peatland Management- *Dr. Marcel Silvius*  
The Ring of Fire: Tackling Indonesia's Peatland Fire Dynamic- *Prof. Susan Page*  
Is Plantation Agriculture Good For The Poor? Evidence From Indonesia's Palm Oil Expansion- *Dr. Ryan Edwards*

### **MSSS FELLOW**

Name: Professor Mohamed M. Hanafi

Current position : Professor, Soil Management Department, UPM Serdang since 1982

Education History: M Sc. at Univ. of Ghent, Belgium and PhD at Univ. of Newcastle, UK

Awards: National Service Award (faculty or university level) since 2000, Gold/Silver /Bronze medals for Innovations since 2003

Significant Publications: More than 160 journals from 1992-2015, 7 chapters in books, 75 proceedings

Research Interest: Soil chemistry, fertilizer and nutrient management

MSSS contributions: President 2008-2009, committee member since 2009, member since 1980

Outlook on soil science on the next 20 years: Soil science in the future should be progressing well with time. Soil science practitioners must look beyond the traditional of soil science. It must incorporate, the latest techniques in studying of soil. For example, the use of molecular technique to explain the soil artifact and biochemistry to explain the response of plant towards nutrient deficiency and/or toxicity.

Key to success as a soil scientist: One must be at the frontier at all the time. In order to achieve this position, one needs to have a basic knowledge, and apply this knowledge to solve the problem using the latest technology available at that time

Hobbies: Game of tennis; challenging the conventional of thinking



**SOILS 2016 REPORT***Photo and Text: Dr. Wan Zaliha Wan Sembok, UMT*

Science Conference of Malaysia 2016 (SOILS 2016) was successfully held from April 5 - 7, 2016 at TH Hotel & Convention Centre, Kuala Terengganu and was jointly organized by Universiti Malaysia Terengganu (UMT) and Malaysian Society of Soil Science (MSSS). The three days conference had attracted a total of 127 participants which include scientists from other countries namely Indonesia, India, Pakistan, and Nigeria. SOILS 2016 was officiated by the Vice Chancellor of Universiti Malaysia Terengganu (UMT), Profesor Dato' Dr. Nor Aieni Haji Mokhtar. During the opening ceremony, the welcoming remarks were delivered both by the MSSS President, Dr. Wan Rasidah Wan Abdul Kadir and Conference Organizing Chair, Assoc. Prof. Dr. Amiza Mat Amin, Dean of the School of Food Science and Technology, UMT. This exciting forum is entirely dedicated to recent developments in soil research with the theme **"Soil Improvement for Sustainable Crop Production"**. The theme selection is in line with global food security issue and recent government programmes of Malaysian National Agro-Food Policy (NAFP) and the Economic Transformation Programme (ETP). In this 3-day conference, 1 keynote paper, 3 plenary papers, 20 oral papers were delivered by the participants and 56 posters covering a wide range of topics including *Soil Fertility and Nutrient Management, Management of Problematic Soils, Soil Health and Microbes, and Plantation Soils Management*. A keynote paper entitled **'BRIS Soils Improvement for Sustainable Crop Production'** was delivered by Prof. Dr. H.M. Edi Armanto from Sriwijaya University, Indonesia. Meanwhile, the plenary speakers, Prof. Dr. Shamshuddin and Prof. Dr. Zulkifli H. Shamsuddin Jusop, both from UPM and Dr. Ghulam Mohd. Hashim (Scientia Sdn Bhd) presented their papers entitled **'Can Rice Production in Peninsular Malaysia Be Sustained in the Long Run?', 'Biofertilizer : A Credible Solution for Increased Soil Fertility and Sustainable Crop Production?'** and **'Enhancing Crop Performance through Good Soil Management Practices'** respectively. From all papers presented, it is well known that healthy soils and watersheds are critical to the productivity and profitability of agricultural systems. Thus, SOILS 2016 had been a worthy platform for the researchers and industry in sharing their discoveries. Together, SOILS 2016 also provide high-performance agricultural ecosystems to produce food, return profits, and conserve and enhance natural resources. To complement the conference, a soil tour was organized at Felda Belara and Taman Tropika Kenyir with the support by Department of Agriculture (DOA) and Malaysian Agricultural Research and Development Institute (MARDI). Tour on soil profiles (Padang Besar and Serdang series) was informative with briefing on soil profiles by Mr. Azeri Azami, Mr. Muhamad Zaihaini Ramli and Mr A. Rahim Ibrahim from DOA. Overall, the conference was a great success and sincere gratitude goes to all the committee members, organisers, contributors, sponsors, collaborators for their participation.

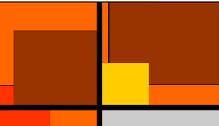
**SOILS 2016 GALLERY**

### Diversity of microbes in forest and oil palm cultivation, Belaga, Sarawak

Microorganisms are essential part of living soil and important as indicators of soil health. Biodiversity of microbes can be affected by the intensification of agriculture practices like the usage of fertilizers and pesticides, and tillage practices. Malaysia accounts for the world's second largest producer and a major exporter of oil palm. Currently, oil palm planted area accounts for 5.3 million hectares or 14.8 % of the total 32.8 million hectares of land area of Malaysia (MPOB, 2010). Oil palm in Malaysia is largely grown on highly weathered tropical soil with low fertility. Therefore, to ensure high oil palm production in such condition, an external input of agrochemicals such as fertilizer and pesticides are crucial. Several studies showed that cultivation activities temporarily decrease the microbial biodiversity and some microorganisms might be permanently reduced. Information on the growth of the microorganisms in such soil is important to predict the soil health in order to propose possible bioremediation strategies for improved soil productivity. Soil biological, chemical and physical properties serve as excellent indicators in soil quality assessment. Changes in microbial populations or activities can precede detectable changes in soil physical and chemical properties, thereby providing an early warning of soil degradation. Since microorganisms are involved in many soil processes, they may also provide an integrated assessment of soil health which cannot be obtained through physical or chemical evaluation.

This study is being conducted to determine the changes in the soil physical, chemical and biological properties of three different land use areas in Belaga, Sarawak. The sites consist of two forest areas, primary forest (BS1) and secondary forest (BS2) and a cultivated oil palm area (OP). Soil samples were randomly collected in the months of January and June 2012, and January 2013 at the depth of 0 - 15 cm and samples were analyzed for populations of bacteria, fungi, actinomycetes,  $N_2$ -fixing bacteria and phosphate-solubilizing bacteria (PSB). Enzymatic assays were conducted such as total microbial activity using Fluorescein Diacetate Assay (FDA) by Adam and Duncan (2001) method, phosphatase and urease by Tabatabai and Bremner (1969, 1972),  $\beta$ -glucosidase by Hayano (1972) and dehydrogenase by Mersi and Schinner (1990). Microbial biomass carbon was assessed by fumigation - extraction method (Vance et al., 1987). Findings showed that there were no significant differences in the populations of bacteria, fungi,  $N_2$ -fixing and PSB in the three areas and they were also not affected by sampling time. This indicates that the microbial diversity was not affected by cultivation practices. **On the other hand, the populations of actinomycetes in primary forest, secondary forest and oil palm cultivated area decreased with increasing time.** The populations of fungi were significantly highest in oil palm cultivated area compared to that in primary and secondary forests in the last sampling (January 2013). Soil biomass carbon, total microbial activity (FDA),  $\beta$ -glucosidase, urease and dehydrogenase enzymes were also not significantly different among the areas. However, phosphatase enzyme was observed to be significantly lower in oil palm cultivated area compared to that in primary and secondary forests areas. In general, **most of the enzymatic activities in the study areas decreased with time.** Significant correlation between biological properties with physico-chemical properties of the soils in three different areas was observed. Bacterial population was positively correlated with total sulphur and available phosphorus. Meanwhile, the fungal and actinomycetes populations were positively correlated with soil pH. There was a positive relationship between PSB and the total carbon, moisture content and CEC. In conclusion the microbial populations and diversity in Belaga, Sarawak was differed between the forest and the oil palm cultivated areas. *Photo and text by Ms. Nur Hanani Hanis Mohd Nawar*





## SOIL CROSSWORD PUZZLE *Compiled by Mr. Pupathy, Sime Darby Plantations*

1	2 M	3 M		4 N	5	6 K		
E		U	7 L	Y	U			
			A			8 L		
9 A	10				L	11	C	
				A		12 I		13 P
	K							
		14 B		N	T			G
15	E				A			
16	I		E			L		

### ACROSS

- A unit of distance (2)
- Listen to me, mangkok (7)
- Land ..... for sale? (3)
- A disturbed top soil (2)
- An example for 'A' transitional horizon (2)
- Suffixes for slightly decomposed organic horizon (1,1)
- 'Starry' series on a 'starry hill' (7)

### DOWN

- Another state or series (5)
- Abbreviation for moisture content (2)
- SOILS 2007 Conference location (5)
- Tongkat Ali growing naturally in this small 'sandy' town in Sarawak (6)
- Water worn ravine (5)
- 'Collapsed' at 31 km north of Johor Baru (5)
- Easy to build road with 'it' (8)
- A main contri 'MISTER' Bong (3)
- 'Morning' Series (4)

## ANSWERS FOR PREVIOUS ISSUE

1 S	2 U	3 L	4 P	H	A	5 T	6 E	
A	P	A	I		7 P	A	R	8 M
P		R	S	9 A	A	T	O	n
R		I	A	L	R	A	D	
I			U	F	I	U	E	
10 C	E	C	11 R	A	T	12 I	N	G
	13 S	E	L	A	N	G	O	14 R
15 R	U	D	U	A		A		H
1 N	A	N	G	K	A	N		U

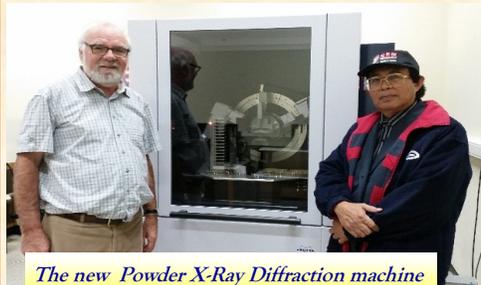
## INTERNATIONAL SOIL SCIENCE CONGRESS 2015

Soil Science Congress on “Soil Science in International Year of Soils 2015” was held in Sochi (Russia) on October 19-23, 2015 with the participation of 168 soil scientists from different countries (Russia, Turkey, Azerbaijan, Kazakhstan, Uzbekistan, Brazil, Croatia, Portugal, Malaysia and others) all over the world. The congress has been organized with the theme and declared by the UN General Assembly “The International Year of the Soil”.

The congress focused on multi-disciplinary approach to soil science, with special interest on basic research, latest technological developments for soil use and management. Total of 56 papers were presented orally and 60 papers presented through poster presentation. The host city, Sochi, promise not only it's preserved historical and tourism background with modern implications, but also the scenery of the lovely Black Sea, Russian traditional dance and delicious Russian cuisine as well. Field soil excursion has been held on the territory of All-Russian Research Institute of Floriculture and Subtropical Crops. Specific natural conditions of the region influenced the establishment of the Sochi agricultural and garden experimental station in 1894. The objective of the experimental station was to study the most important local plants and their distribution. Initially almost all the culture found on the coast (castor bean, cotton, tobacco, tea, barley, legumes, vegetables and fruit crops etc.) were studied. According to All-Russian natural-economic grouping of lands, the Black Sea region, including the Caucasus mountain land has specific use for growing fruit and tea, forestry and recreation. Agrotourism concept adopted widely here were at its best, these types of tourism combines the virtues of a slower pace of life, getting closer to nature and learning about agriculture, and experiencing authentic local cultures by living among local villagers for a short time. In Krasnodar area, the tea plantation is famous as the northernmost tea plantation in the world. The Black Sea coast of the Russian Federation from Anapa to the borders with Abkhazia lies within the Mediterranean climatic region with a subtropical climate. The main Caucasian ridge is characterized by elevations of 1800 to 3000 m above sea level. Pre quaternary parent materials are most often in Sochi. On the upper Paleogene deposits, thin schistose carbonate argillites interbedded with sandstone up to 25 cm. Lower parts of slopes and terrace surfaces are covered by a layer of clay up to 7 m. Field soil excursion included a visit to the Garden-Museum. This is a unique museum of nature and vivid symbol of friendship. There are collections of subtropical fruits, ornamental and flower crops, representative of 80 botanical families in the garden. Among this plant diversity grows the tree with the unusual history and fate - Friendship Tree. It was planted for a scientific experiment for breeding a new variety of tangerine-tree by scholar breeder, F.M. Zorin. It gathered in his crown the collection of citrus plants of 45 species and varieties, grafted by Museum visitors- representative of different countries, professions, nationalities and religions. Entire shoots were grafted in the crown of one tree. Another point of visit is the soil pedon. The soil profile has been classified as Luvisols Abruptic (WRB, 2006) or Albic Luvisols (FAO, 1988). In terms of scientific research, other soil scientists now are doing more research on fundamental issues. Most of their researches (paper presented during congress) focus on organic and carbon, either research in soil pollution, remediation or improvement of the soil properties. The sustainable management of the land through modelling and assessment also were emphasized. For analysis method improvements, laser diffractometry has been used for particle size distribution determination. Extraction method without using solvent, which is using supercritical fluid, has been widely used. A quick visit to Ghent University, Belgium was done to meet Emeritus Prof. Dr. Eric Van Ranst and we viewed the new research facilities available in his lab. He just received a new powder x-ray diffraction (PXRD) machine. It will be used in quantitative clay mineralogy study. Development of new techniques in clay separation is still in progress. In all places all over the world, soil scientists have determined and committed to do research which could be useful to industry, mankind and nature. New era of research will be more reliable with the evolution of new technology for sustainable development of the world. Photo and text by *Assoc. Prof. Dr Wan Mohamed Noordin Wan Daud & Mohd. Shafar Jefri Mokhtatar*



*The authors with the Congress President, Prof E. Shein*



*The new Powder X-Ray Diffraction machine*

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*The Friendship Tree in the Garden Museum*



*Albic Luvisols pedon*

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## CONTRIBUTE TO OUR NEWSLETTER!



We are a big group of almost 300+ soil enthusiasts and we like to hear from you! We are looking for article contributions on soil related issues, mainly

**GENERAL ARTICLES:** If you have a story/report about an activity related to soil, such as soil training/workshop/conference/meetings; please send it along. A one – two page article with color pictures are encouraged.

**YOUNG SCIENTIST:** If you are currently a young soil scientist (below 40 years of age) working on a research project related to soil dynamics, you may send in your research article about 500 to 600 words which states on the intro, justification, brief methods, results and conclusion. Please include a digital photo as well.

**SENIOR SCIENTIST:** If you are currently a senior soil scientist (above 40 years of age) working on a research project related to soil dynamics, you may send in your research article about 500 to 600 words which states on the intro, justification, brief methods, results and conclusion. Please include a digital photo as well.

**THE EASTERN CONNECTION:** Dedicated for any soil research endeavors and information from Sabah and Sarawak.

**ANNOUNCEMENTS:** Of trainings or educational opportunities, forthcoming meetings, conferences or other international announcement regarding soil, agriculture, forestry, etc.

**BOOK/PAPER REVIEW:** If you have come across a recently published article you think may be of interest to other MSSS members, please alert the Newsletter Editor and we will highlight it for our readers. We give priority to publications by MSSS members but anything on soil research is welcomed.

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Submission information: For text send a word document with Arial font (11) to [jeanny@frim.gov.my](mailto:jeanny@frim.gov.my) or [rosazlin@um.edu.my](mailto:rosazlin@um.edu.my) and for photos .jpg is preferred. All submission will be scrutinized by the Editorial Board for suitability before publishing. Once approval, the Editorial Board will inform you with further details.



## MJSS - CALL FOR PAPERS

The Malaysian Journal of Soil Science (MJSS) is a scientific journal published by the Malaysian Society of Soil Science. It contains research papers in English on matters related to soil and soil-plant interactions. The journal welcomes original research works not previously or simultaneously published in any other scientific or technical journal from MSSS members as well as other scientists in Malaysia and abroad. The aim of the journal is to promote the development of soil science in Malaysia, other tropical and subtropical regions. **MJSS is a peer-reviewed, fully open access journal, is now indexed by Scopus and published annually.** Instruction for authors and other details are available on our website <http://www.msss.com.my/journals/instruct.php>

## Contact us

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### *The IUSS song*

*It is our life! We call it soil  
It is the stuff, in which we toil  
From soil we've sprung, to soil we'll go  
Protect the soil of this earth so we can grow*

*IUSS has declared 2015 to 2024 as the International Decade of Soils*