

Handwritten signature or name in blue ink at the top right of the page.

# 17 การประชุมวิทยาศาสตร์ทางดินของโลก World Congress of Soil Science



Queen Sirikit National Convention Center  
14-21 August 2002, Thailand

Soil Science : Confronting New Realities in the 21<sup>st</sup> Century

# PROGRAMME





# 17

การประชุมวิทยาศาสตร์ดินของโลก  
World Congress of Soil Science



Queen Sirikit National Convention Center  
14-21 August 2002, Thailand

Soil Science : Confronting New Realities in the 21<sup>st</sup> Century



# PROGRAMME

## **Supporting Organizations for the 17<sup>th</sup> World Congress of Soil Science**

**Organizers** Land Development Department, Ministry of Agriculture and Cooperatives (LDD)  
The Soil and Fertilizer Society of Thailand (SFST)  
The International Union of Soil Sciences (IUSS)

**Co-organizers** Food and Fertilizer Technology Center for the Asian and Pacific Region (FFTC)  
World Association of Soil and Water Conservation (WASWC)

### **Supporting Agencies**

#### **Thai Government Agencies**

Office of the Permanent Secretary, Ministry of Agriculture and Cooperative (MOAC)

Office of the National Economic and Social Development Board

The Bureau of Budget

The Comptroller-General's Department

Department of Agriculture

Department of Agricultural Extension

The Royal Forest Department

Office of Environment Policy and Planning

Royal Thai Police

The Tourism Authority of Thailand

The Communications Authority of Thailand

Thai Airway International Public Company Limited

Kasetsart University

Khon Kaen University

Chiang Mai University

Prince of Songkhla University

King Mongkut's Institute of Technology Ladkrabang

The Public Relations Department

The Airports Authority of Thailand

The Customs Department

Office of the 17<sup>th</sup> World Congress of Soil Science

#### **International Agencies**

International Atomic Energy Agency (IAEA)

Food and Agriculture Organization of the United Nations (FAO)

Swiss Agency for Development and Co-operation (SDC)

The Technical Centre for Agricultural and Rural Cooperation (CTA)

## **Preface**

Activities of the 17<sup>th</sup> World Congress of Soil Science during 14-21 August 2002 include Registration, IUSS Council Meetings, Scientific Presentation (including plenary keynote lectures, oral presentations and poster session of each individual Symposium), the opening and closing events, welcome party, gala dinner and the Congress Tours. The focal point is the scientific programme of 65 Symposia encompassing diverse topics and the plenary keynote lectures under the Congress Theme of

### **Soil Science: Confronting New Realities in the 21<sup>st</sup> Century**

In creating of the Congress Scientific Programme, we tried to avoid repetition of Symposia Themes for the same period as much as possible. This was done in hopes that participants would be able to choose each session to attend more easily. Most of the Symposium Topics were proposed and selected under the present IUSS Structure of Commissions, Subcommissions and Working Groups. It is quite apparent that Soil Fertility is still the most popular theme soil scientists work on nowadays.

Aside from the Scientific Programme, the Congress offers other activities such as a Gala Dinner and Tours, both of which should be quite enjoyable. Another important aspect of the Congress Programme is the Council Meetings. The goal of these meetings is to improve the role and functioning of the Union on the world stage. All participants are encouraged to attend and contribute.

Irb Kheoruenromne

15 July 2002

## Content

	<b>Page</b>
Preface	1
Content	2
General Programme	3
IUSS Council Meetings	4
<i>Opening Ceremony</i>	6
<i>Closing Ceremony</i>	7
Plenary Keynote Lectures	8
Symposia of the 17 <sup>th</sup> WCSS	9
Scientific Programme	11
Floor Plan	12
Oral Session Programme (Symposia 01-65)	13

## General Programme

The 17<sup>th</sup> World Congress of Soil Science consists of the following activities:

1. **Scientific Programme** includes Plenary Keynote Lectures in the afternoon of Wednesday 14 August 2002, oral presentation and poster session of scientific papers accepted in 65 Symposia of the Congress. The oral presentation takes place in six parallel rooms everyday during 15-21 August 2002 except on 18 August 2002, which has been reserved for all Congress day tours. Poster session of each Symposium takes place on the same day as the corresponding of the oral presentation and runs all day from 0700 hrs to 1800 hrs. Details are in the Scientific Programme section.

2. **International Union of Soil Sciences Council Meetings** have been scheduled in the afternoon and evening of most days during the Congress period (13-20 August 2002). Details are in the IUSS Council Meeting section.

3. **Opening Ceremony** takes place on Wednesday 14 August 2002 starting from 0900 hrs and continuing until noon. Details are in the Opening Ceremony section.

4. **Welcome Party** has been scheduled to take place during 1830-2130 hrs on Wednesday 14 August 2002 in the Plenary Hall of the Queen Sirikit National Convention Center. The Welcome Party will be hosted by the Minister of Agriculture and Cooperatives.

5. **Gala Dinner** has been scheduled to take place on Monday 19 August 2002 during 1800-2130 hrs, in Plenary Hall 2 of the Queen Sirikit National Convention Center.

6. **Closing Ceremony** will take place in the afternoon of Wednesday 21 August 2002. Details are in the Closing Ceremony section.

7. **The King and Soil Exhibition** has been scheduled to take place in front of the Plenary Hall. The exhibition is open to public everyday during the Congress period.

8. **Exhibition** will take place at Zone C in front of the Poster Session area. The exhibition includes;

8.1 Soil Education Exhibition

8.2 Scientific and Commercial Exhibition

The exhibition is open to the public everyday during the Congress period.

9. **Tour Programme** is handled by the Congress Tour Committee at the Stand associated with the Registration Counter. The Mid-Congress Tours take place on Sunday 18 August 2002. The Tours leave the Hotels at 0730 hrs and return at 1800 hrs.

## IUSS Council Meetings

### I. Time Schedule

Tuesday, 13 August 02	1600–2000 hrs	Board Room 1
Thursday, 15 August 02	1800–2100 hrs	Board Room 1
Friday, 16 August 02	1800–2100 hrs	Board Room 1
Saturday, 17 August 02	1800–2100 hrs	Board Room 1
Tuesday, 20 August 02	1800–2100 hrs	Board Room 1

### II. Provisional Annotated Agenda

1. Welcome by the President
2. Short presentation of Council Members
3. Adoption of the agenda
4. Information about the 17<sup>th</sup> WCSS (Vice-President)
5. Information about the programme of the Council Meetings (Secretary-General)
6. Elections/Appointments of chairpersons and members of ad-hoc committees, acting during the 17<sup>th</sup> WCSS
  - Electoral Committee (see rules K1 and K2) for the elections of officers of Divisions and Commissions
  - Committee for Motions and Resolutions
  - Committee for Poster Evaluation
  - Committee for (others)
7. Changes in the scientific structure – re-definition of Commissions and new Commissions
  - Commission 1.1 "Soil macro- and micro-morphology" (see IUSS Bulletin 101, 76-77)
  - Commission 1.5 "Paleopedology" (see IUSS Bulletin 100, 46-47).
  - Commission 2.5 "Soil physical/chemical/biological (interfacial) interactions" (see IUSS Bulletin 101, 77-78)
  - Commission 2.6 "Pedometrics" (see IUSS Bulletin 100, 47-49)
8. Voting procedure for the elections of new IUSS Officers (Chairpersons of Divisions and Commissions)
9. Report of the Secretary-General and Treasurer (membership status, special accomplishments during the last 4 years, finances of the IUSS)
10. Elections of new Bureau Members (Secretary-General, Deputy Secretary-General <and Treasurer>) - Candidates will be named in time
11. Elections of Honorary Members

According to the unanimous vote during the 1<sup>st</sup> Council Meeting on August 19, 1998, at the 16<sup>th</sup> WCSS in Montpellier, the candidates not elected at that time are still eligible at the 17<sup>th</sup> WCSS in Bangkok. Therefore there are 6 candidates from 1998 and 6 new candidates from 2002.

It is proposed that 10 candidates are elected.

12. **New IUSS Awards**
  - IUSS Dokuchaev Award for Basic Soil Science (see IUSS Bulletin 98, 39-40)
  - IUSS Liebig Award for Applied Soil Science (see IUSS Bulletin 99, 44-45)
13. **Standing Committees:**
  - Maintenance of existing Committees or establishment of new Committees
  - Appointments/elections of Chairpersons and Members of Standing Committees by the Council
14. **Working Groups**
  - Evaluation of WG activities (1998 -- 2002) and decisions about their continuation (see Rules I)
  - Installation of new WGs (see Rules I)
15. **Membership in IUSS**
  - Actual state, subscriptions (decisions to be taken by the Council, see Rules L3)
16. **Co-operation with ICSS – IUSS liaison officer(s) and representatives in ICSS Bodies**
  - General Assembly
  - SCOPE (so far Christian De Kimpe)
  - CODATA (so far Marc Van Meirvenne)
17. **Changes to the Statutes (only discussion possible, postal voting required according to Rules M1):**
  - Honorary Members (Rules B6)  
"up to 10 (instead of 5 so far) Honorary Members may be elected at any one IUSS World Congress".
  - Working Group elections (see Rules I2 / K1).
  - Other items
18. **Publications of IUSS**
  - Bulletin
  - Web-Site
  - Co-operating Journals
  - Others
19. **Venue of the 19<sup>th</sup> WCSS 2010. There are two proposals:**
  - Brisbane/Australia by the Australian Soil Science Society Inc.;
  - Beijing/China by the Chinese Soil Science Society
20. **Results of the elections of new officers**  
(Council takes notice)
21. **Motions/resolutions at the Closing Ceremony**  
(Council decides)
22. **Any other business**

## Opening Ceremony

Wednesday 14 August 2002

- 0845 hrs Audience takes seat in the room
- 0900 hrs Her Royal Highness Princess Maha Chakri Sirindhorn arrives
- 0900-1000 hrs
- Report on the purpose of the 17th WCSS to Her Royal Highness Princess Maha Chakri Sirindhorn by Minister of Agriculture and Cooperatives
  - Her Royal Highness Princess Maha Chakri Sirindhorn formally open the 17<sup>th</sup> WCSS
  - A video presentation on *The Prosperity of Earth*
  - Her Royal Highness Princess Maha Chakri Sirindhorn proceeds to formally open the Exhibition
- 1000 hrs Her Royal Highness Princess Maha Chakri Sirindhorn departs
- 1000-1030 hrs Break
- 1030-1130 hrs Welcome and Information
- Mr. Samak Sundaravej  
*Governor of Bangkok*
  - Mr. Sima Morakul  
*Director General, Land Development Department, Chair of the Organizing Committee, 17<sup>th</sup> World Congress of Soil Science*
  - Mr. Sompong Theerawong  
*President of International Union of Soil Sciences, President of the 17th World Congress of Soil Science*
  - Professor Dr. Winfried E.H. Blum  
*Secretary General, International Union of Soil Sciences*
  - Professor Dr. Irb Kheoruenromne  
*Vice-President, International Union of Soil Sciences, Chair of Secretariat 17<sup>th</sup> World Congress of Soil Science*

## **Closing Ceremony**

**Wednesday 21 August 2002**

- 1330 hrs Audience takes seat in the Room
- 1340 hrs Arrival of Mr. Sompong Theerawong,  
President of the International Union of Soil Sciences (IUSS)
- Report of the Vice President of IUSS
  - Report of the Director-General of Land Development  
Department, Chairman of the Organizing Committee
  - Vote of thanks, Secretary General of IUSS
  - Vote of thanks, President of IUSS
  - Delivery of IUSS flag to Professor Dr. Donald L. Sparks
  - Speech of Professor Dr. Donald L. Sparks
  - Delivery of the 18<sup>th</sup> WCSS flag to Professor Dr. Gary Peterson
- 1500 hrs Closing address, President of IUSS

## Plenary Keynote Lectures

Wednesday 14 August 2002

- 1330-1400 hrs Soils in space and time: realities and challenges for the 21<sup>st</sup> Century  
- Professor Dr. Tengiz F. Urushadze  
*Present, Georgian Society of Soil Science, Georgia*
- 1400-1430 hrs Its about scale and interfaces: frontiers in basic soil science research  
- Professor Dr. Donald L. Sparks  
*President Elect IUSS, S. Hallock Du Pont Chair of Soil and Environmental Chemistry, Department of Plant and Soil Sciences, University of Delaware, USA*
- 1430-1500 hrs Soil science as a major player in world development  
- Prof. Dr. Pedro A. Sanchez  
*University of California, Berkeley, USA*
- 1500-1520 hrs Break
- 1520-1550 hrs The role of soils in sustaining society and the environment-realities and challenges for the 21<sup>st</sup> century  
- Professor Dr. Winfried E.H. Blum  
*Secretary-General of IUSS, Institute of Soil Research, University of Agricultural Sciences, Vienna, Austria*
- 1550-1620 hrs Tropical soil science: realities and challenges  
- Dr. Santhad Rojanasoonthon  
*Fellow of the Royal Institute, Royal Project Foundation, Thailand*
- 1620-1640 hrs General Comments
- 1830-2130 hrs Welcome Party  
*Hosted by Minister of Agriculture and Cooperatives, Thailand*

## SYMPOSIA OF THE 17<sup>th</sup> WORLD CONGRESS OF SOIL SCIENCE

### Commission I: Soil Physics

- 01 Effect of soil structure and properties on preferential flow dynamics and pollutant transport in soils
- 02 Landscape scale research: methodology, concepts and consequences for soil and water quality
- 03 Influence of biological activity on soil physical properties
- 04 Use of soil data in predicting soil physical properties: importance, limitations and conditions of validation

### Commission II: Soil Chemistry

- 05 Properties, functions, and dynamics of organic matter in tropical soils
- 06 Frontiers in the chemistry and biochemistry of the soil rhizosphere
- 07 Effects of soil chemical and biochemical processes on soil global climate change
- 08 Use of molecular scale techniques in determining contaminant speciation and soil remediation

### Commission III: Soil Biology

- 09 Composition of soil microbial and fauna communities: new insight from new technologies
- 10 Research to enhance carbon sequestration in soils
- 11 Microbial processes and populations in sub-merged soils
- 12 Manipulating soil microbial and enzymic activities

### Commission IV: Soil Fertility and Plant Nutrition

- 13 Management of organic matter for soil fertility improvement in humid tropical environments
- 14 Soil fertility as an ecosystem concept
- 15 Perceptions of soil management: matching indigenous and scientific knowledge systems
- 16 Mechanisms and indicators for efficient nutrient use through integrated soil management
- 17 Use of natural nutrient sources and amendments: which, where, when and how?

### Commission V: Soil Genesis, Classification and Cartography

- 18 Anthropogenic factor of soil formation
- 19 Soil system and land use
- 20 Arid and semi-arid soils: records of past climates, carbon sequestration, genesis and management
- 21 Soil classification, accomplishments and future

### Commission VI: Soil Technology

- 22 Technologies to overcome rootzone soil constraints
- 23 Models and parametric methods for predicting soil degradation
- 24 Use and abuse of industrial and urban wastes in agricultural soils

### Commission VII: Soil Mineralogy

- 25 Mineralogy and geochemistry of regolith
- 26 Reaction of soil minerals on changes of climate and land management
- 27 Mineralogy and micromorphology of pedogenesis including isotope methods and dating of soil processes
- 28 Soil mineralogy in relation to soil fertility and toxicity

### Commission VIII: Soil and the Environment

- 29 Urban and sub-urban soils: specific risks for human health (Urban agriculture)
- 30 Food security and land use
- 31 Attitudes towards soil and land use: past and present
- 32 Soil indicators for sustainable land use

#### Subcommission A: Salt Affected Soils

- 33 Salt affected soils and the environment
- 34 Salinization, water management and policy

#### Subcommission B: Soil Micromorphology

- 35 Soil micromorphology to quantify soil structure qualities
- 36 Soil micromorphology and submicroscopy for interpretation of soil qualities

#### Subcommission C: Soil and Water Conservation

- 37 Identification and determination of soil quality parameters to evaluate the sustainability and socioeconomic impacts
- 38 Advances integral modeling to make decision in soil conservation

**Subcommission E: Forest Soils**

- 39 Amelioration of degraded soils through afforestation
- 40 New developments in the evaluation and management of forest soils

**Subcommission G: Soil Remediation**

- 41 Techniques for remediation of contaminated soils: physicochemical techniques
- 42 Techniques for remediation of contaminated soils: biological techniques

**Working Groups & Standing Committees****CR: Cryosols**

- 43 Cryosols and cryogenic environments in the 21<sup>st</sup> Century

**DM: World Soils and Terrain Digital Data Base**

- 44 Global and national digital data bases on soil and terrain conditions, their compilation and uses

**GC: Soils and Global Change**

- 45 Soil carbon dynamics and the greenhouse effect

**LD: Land Degradation and Desertification**

- 46 Land degradation and desertification: confronting the realities of the 21<sup>st</sup> Century

**MO: Interactions of Soil Minerals with Organic Components and Microorganisms**

- 47 Soil mineral - organic component - microorganism interactions and the impact on the ecosystem and human welfare

**PM: Pedometrics**

- 48 Development in soil data processing

**PP: Paleopedology**

- 49 Paleosols as a memory for understanding landscape history and environmental problems

**PS: Paddy Soils Fertility**

- 50 Sustainable paddy soil ecosystem: a global challenge

**PT: Pedotechnique**

- 51 Manufactured, amended, and intensively tilled soils and substrates

**RS: Remote Sensing for Soil Survey**

- 52 Remote sensing for data fusion and GIS as tools in land evaluation and degradation studies

**SM: Environmental Soil Mechanics**

- 53 Coupled hydraulic and mechanical processes in structured soils: a challenge to define sustainability

**SP: Soil and Groundwater Pollution**

- 54 Vadose zone management strategies to prevent groundwater pollution

**SU: Soil of Urban, Industrial, Traffic and Mining Areas**

- 55 Improving knowledge about soils and their functions in urban, industrial and mining areas for a better life

**CES: Education in Soil Science**

- 56 Soil education and public awareness

**FA: Soil Organic Fertilizers and Amendments**

- 57 Soil properties as influenced by the addition of organic fertilizers and amendments
- 58 Soil organic fertilizers and amendments: an outlook on key environmental and sanitary issues

**Special Symposium**

- 59 Towards integrated soil, water and nutrient management in cropping systems: the role of nuclear techniques

**SG: Soils and Geomedicine**

- 60 Comparison of bedrocks, soils, chemical climate and pollution as geomedi- cal factors

**IC: International Soil Convention**

- 61 Soil convention
- 62 WOCAT: World overview of conservation approaches and technologies

**AS: Acid Sulphate Soils**

- 63 Acid sulphate soil management in tropical environments

**RZ: Rhizosphere**

- 64 Rhizosphere research: new challenges for soil scientists in the 21<sup>st</sup> Century
- 65 *Soil functions in the biosphere*

<b>Scientific Programme</b>											
<b>Symposia and Date</b>											
<b>Rooms</b>	<b>Thu 15</b>		<b>Fri 16</b>		<b>Sat 17</b>		<b>Mon 19</b>		<b>Tue 20</b>		<b>Wed 21</b>
	<b>M</b>	<b>A</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>A</b>	<b>M</b>
Ballroom	01	07	10	09	21	06	04	15	05	20	02
Plenary Hall 1	14(1)	14(2)	14(3)	19	12	33	59(1)	59(2)	17	16	13
Meeting Room 1	18	22	43	39	31	35 36	08	03	28	23	11
Meeting Room 2	25	29	46	48	34	38	24	32	30	26 27	42
Meeting Room 3	37	44	55	51	50	41	40	53	45	57	63
Meeting Room 4	49	65	56	64	52	58 60	47	62	54	61	-
Poster Session	01, 07, 14(1,2), 18, 22, 25, 29, 37, 44, 49, 65		09, 10, 14(3), 19, 39, 43, 46, 48, 51, 55, 56, 64		06, 12, 21, 31, 33, 34, 35, 36, 38, 41, 50, 52, 58, 60		03, 04, 08, 15, 24, 32, 40, 47, 53, 59, 62		02, 05, 11, 13, 16, 17, 20, 23, 26, 27, 28, 30, 42, 45, 54, 57, 61, 63		-
	<b>All Day</b>										

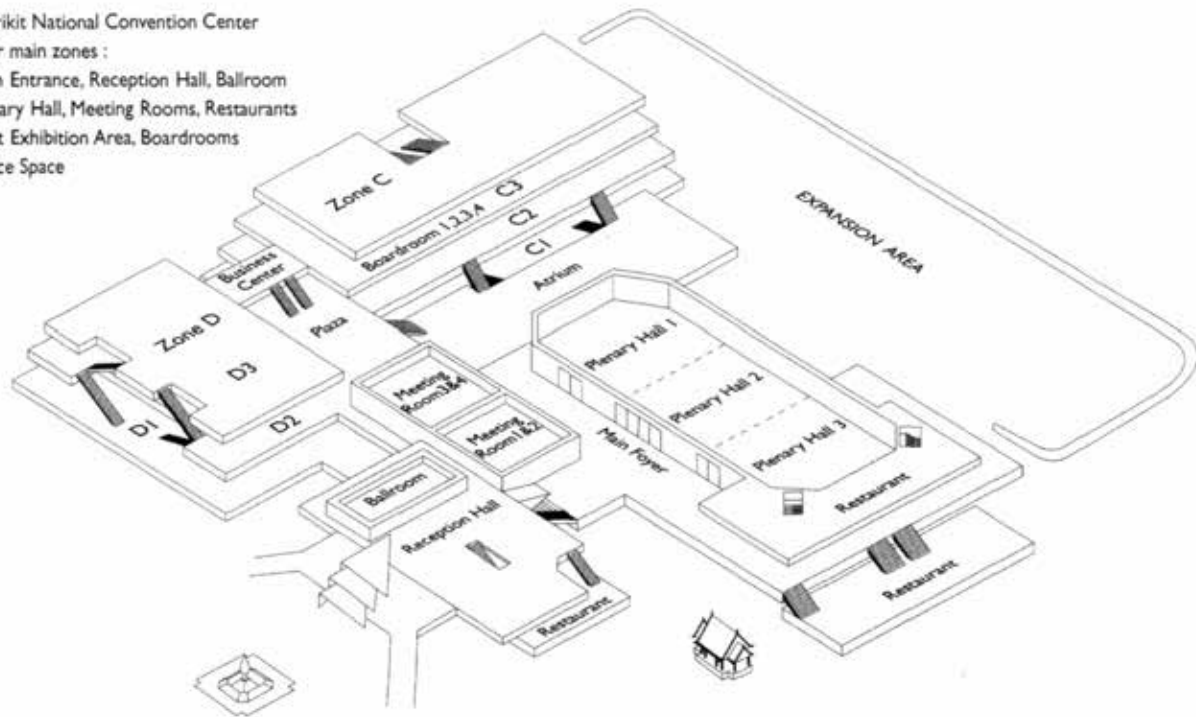
M= Morning

A = Afternoon

## Floor Plan

The Queen Sirikit National Convention Center comprises four main zones :

- Zone A : Main Entrance, Reception Hall, Ballroom
- Zone B : Plenary Hall, Meeting Rooms, Restaurants
- Zone C : Light Exhibition Area, Boardrooms
- Zone D : Office Space





**Oral Session**  
**PROGRAMME**



## Symposium 01

### Effect of soil structure and properties on preferential flow dynamics and pollutant transport in soils

Thursday 15 August 2002

Room: Ballroom

Morning Session

Chairs : VOGEL Hans-Joerg, JONGRUAYSUP Somphob

Secretary: TRELO-GES Vidhada

- 0830 - 0850 Introduction
- 0850 - 0910 Measurement and simulation of solute transport in structured soil integrated over pore and core scales  
*DEEKS Lynda K., ZHANG Naixun, BENGDOUGH A. Glyn, STUTTER Marc, WATSON Helen, YOUNG Iain M., CRAWFORD John W., CHESSELL Joanna M., EDWARDS Anthony and BILLETT Mike F.*
- 0910 - 0930 Preferential flow and field-scale transport of water and chemicals in different type of soils  
*ZHANG Jiabao, CHENG Zhuohui and NU Shaohui*
- 0930 - 0950 Effect of dissolved and colloidal phase organic carbon on water flow in soils  
*TOISCHE Kai U.*
- 0950 - 1010 Principles and modeling of preferential flow dynamics in water repellent porous media  
*RITSEMA Coen J., VAN DAM Jos C., DEKKER Louis W. and OOSTINDIE K.*
- 1010 - 1030 Break
- 1030 - 1050 Earthworm species and residue placement effects on macropore characteristics and preferential transport  
*GUPTA S.C., BHATTACHARJEE A., MONCRIEFF J.F. and BERRY E.C.*
- 1050 - 1110 What measurable properties can predict preferential flow?  
*NIMMO J.R.*
- 1110 - 1130 Preferential flow in structured soils: hydraulic functions derived from pore-scale processes  
*TULLER Markus and OR Duni*
- 1130 - 1150 General discussion and conclusions

## Symposium 02

### Landscape scale research: methodology, concepts and consequences for soil and water quality

Wednesday 21 August 2002

Room: Ballroom

#### Morning Session

Chairs : MORAN Chris, PANICHKUL Monkol

Secretary : TANAVUD Charlchai

- 0830 - 0850 Introduction
- 0850 - 0910 The role of pedogenesis in modelling geo-ecological evolution  
*KÖNIGEL C.J., HEUVELINK G.B.M., KOOLJMAN A.M. and SEIJMONSBERGEN A.C.*
- 0910 - 0930 A method for determination of rate of soil formation in various watersheds  
*KIMURA Ai and WAKATSUKI Toshiyuki*
- 0930 - 0950 Modelling hydrological processes in farmed landscapes  
*VOLTZ Marc, MOUSSA Roger, ANDRIEUX Patrick, LAGACHERIE Philippe and LOUCHART Xavier*
- 0950 - 1010 Regional estimation of nitrogen transport in streamwater within the Chao Phraya River Basin  
*PARAMÉE Suparb and BASHKIN Vladimir*
- 1010 - 1030 Break
- 1030 - 1050 A spatio-temporal simulation approach of organic carbon at landscape scale  
*WALTER C., VISCARRA ROSSEL R.A. and McBRATNEY A.B.*
- 1050 - 1110 Plant and soil carbon, nitrogen and phosphorus on the Australian Continent  
*KIRBY Mac, RAUPACH Mike, BARRETT Damian and BRIGGS Peter*
- 1110 - 1130 An integrated modelling approach to sustainable land use concepts in a low mountain range area  
*FOHRER N. and FREDE H.G.*
- 1130 - 1150 General discussion and conclusions

## Symposium 03

### Influence of biological activity on soil physical properties

**Monday 19 August 2002**  
**Afternoon Session**

**Room: Meeting Room 1**

**Chairs : KAY Bev D., VIRAKORNPHANICH Prasop**  
**Secretary : CHONGPRADITNUN Praphasri**

- 1400 - 1420 Introduction
- 1420 - 1440 Physical processes affecting microbial habitats and activity in unsaturated porous media  
*OR Dani and FRIEDMAN Shmulik*
- 1440 - 1500 Can biological activity dictate soil wetting, stability and preferential flow?  
*HALLETT Paul D., FEENEY Debbie S., BAUMGARTL Thomas, RITZ Karl, WHEATLEY Ron E. and YOUNG Iain M.*
- 1500 - 1520 Interactions between gas transport and biogeochemical processes: the effect of the soil structure  
*RENAULT Pierre, KHALIL Karima, DASSONVILLE Fabrice, MOHRATH Dalila, LENSI Robert, CHADCEUF Joël, CHENU Claire, BIDEL Luc, LAFOLIE François*
- 1520 - 1540 Structural features induced by agricultural management and earthworm activity in relation to infiltration  
*LAMANDE M., HALLAIRE V., CURMI P., PERES G. and CLUZEAU D.*
- 1540 - 1600 Break
- 1600 - 1620 Characterization of soil structure using critical water contents for net N mineralization  
*KAY B.D., DRURY C.F. and ZHANG T.*
- 1620 - 1640 Managing termites and mulch for crusted soil rehabilitation in the Sahel  
*MANDO Abdoulaye, BRUSSAARD Lijbert and STROOSNIJDER Leo*
- 1640 - 1700 The effects of crop rotation and plant residues on soil structure  
*BLAIR Nelly, FAULKNER R.D., TILL A.R., CROCKER G.J. and PRINCE K.E.*
- 1700 - 1720 General discussion and conclusions

## Symposium 04

### Use of soil data in predicting soil physical properties: importance, limitations and conditions of validation

Monday 19 August 2002

Room: Ballroom

#### Morning Session

Chairs : TESSIER Daniel, NA NAGARA Tawachai

Secretary : CHONGPRADITNUN Praphasri

- 0830 - 0850 Introduction
- 0850 - 0910 Translating available basic soil data into missing soil hydraulic characteristics  
*WOSTEN Henk, NEMES Attila, PACHEPSKY Yakov, RAWLS Walter and ZEILIGUER Anatole*
- 0910 - 0930 Predicting soil evaporation with a revised Ritchie equation from simple input parameters  
*HOFFMAN J.E.*
- 0930 - 0950 The dynamic of water retention curves caused by soil deformation  
*BAUMGARTL Thomas*
- 0950 - 1010 Estimating soil water retention using soil component additivity model  
*ZEILIGUER Anatole M., NEMES Attila, PACHEPSKY Yakov A., RAWLS Walter, and WOSTEN J.H.M.*
- 1010 - 1030 Break
- 1030 - 1050 Compaction effects on least limiting water range and plant growth  
*REINERT Dalvan J., WOLKOWSKI Richard P., LOWERY Birl and ARRIAGA Francisco J.*
- 1050 - 1110 Predicting deep drainage using soil hydraulic properties and soil texture data  
*GEE G.W. and WARD A.L.*
- 1110 - 1130 Use of granular material theories to interpret structural changes in sandy soil  
*HARTMANN Christian, POSS Roland, JANEAU Jean-Louis, BOURDON Emmanuel, LESTURGEZ Gregory and RATANAANUPAP Santi*
- 1130 - 1150 General discussion and conclusions

## Symposium 05

### Properties, functions, and dynamics of organic matter in tropical soils

Tuesday 20 August 2002

Room: Ballroom

Morning Session

Chairs : MARTIN-NETO Ladislav, SUTHIPRADIT Sumalee

Secretary : EKKAJIT Seksan

- 0830 - 0850 Introduction
- 0850 - 0910 Land use and soil organic matter in Northeast Thailand: Microbial biomass, humic acid and mineral N  
*TANGTRAKARNPONG Somya and VITYAKON Patma*
- 0910 - 0930 Effect of land management on soil organic matter content and quality and on earthworm communities  
*HAYNES Richard J. and DLAMINI Thebesile C'*
- 0930 - 0950 Combining organic/inorganic fertilisers for sustainable rice and wheat cropping systems in Thailand and Australia  
*WHITBREAD Anthony, KONBOON Yuthin, BLAIR Graeme, LEFROY Rod and PROBERT Merv*
- 0950 - 1010 Relevance of organic matter forms associated to particle size fractions for studying efficiency of soil carbon sequestration: examples for tropical agroecosystems  
*FELLER Christon*
- 1010 - 1030 Break
- 1030 - 1050 Dynamics of labile organic matter under shifting cultivation in different bio-climatic conditions in humid Asia  
*FUNAKAWA Shinya, KAEWKHONGKHA Thamnoon and PULLUNGGONO Heru B.*
- 1050 - 1110 Role of the chemistry of soil organic carbon in pesticide sorption in soils  
*AHMAD Rizal and KUOKANA Raj*
- 1110 - 1130 Impact of residue quality and location in soil on the C and N mineralisation of residues from cropping systems from Cerrados, Brazil  
*ABIVEN Samuel, RECOUS Sylvie, REYES Victor and OLIVER Robert*
- 1130 - 1150 General discussion and conclusions

## Symposium 06

Frontiers in the chemistry and biochemistry of the soil rhizosphere

Saturday 17 August 2002

Room: Ballroom

Afternoon Session

Chairs : HUANG Pan Ming, PRABUDDHAM Paiboon

Secretary : BOONSOOK Pinetch

- 1400 - 1420 Introduction
- 1420 - 1440 Phosphorus mobilization by organic-acid exudation: processes governing benefits in rotational cropping  
*HENS Maarten and HOCKING Peter*
- 1440 - 1500 Studies of humic fractions from a Mollisol soil  
*CLAPP C. Edward and HAYES Michael H.B.*
- 1500 - 1520 Interaction between charge character and  $\text{Cu}^{2+}$  adsorption-desorption of soil with variable or permanent charge  
*LI Xue-Yuan, LING Wan-Ting and HE Ji-Zheng*
- 1520 - 1540 Phosphate-induced cadmium release from soils  
*ONYATTA J.O. and HUANG P.M.*
- 1540 - 1600 Break
- 1600 - 1620 Microbial interactions in the rhizosphere of bulbous rush colonizing acidic sediments  
*CHABBI Abad, KÜSEL Kirsten and TRINKWALTER Tanja*
- 1620 - 1640 Investigation of compounds causing water repellency in the rhizosphere of sandy soils from a wide range of locations  
*DOERR S.H., LLEWELLYN C.T., DOUGLAS P., MORLEY C.P., HASKINS C., JOHNSEY L., RITSEMA C.J., STAGNITTI F. and FERREIRA A.J.D.*
- 1640 - 1700 Does rhizosphere phytase activity limit mineralisation of phosphorus from phytate?  
*GEORGE Tim, RICHARDSON Alan and SIMPSON Richard*
- 1700 - 1720 General discussion and conclusions

## Symposium 07

### Effects of soil chemical and biochemical processes on soil global climate change

Thursday 15 August 2002  
Afternoon Session

Room: Ballroom

Chairs : PICCOLO Alessandro, KEERATIKASIKORN Pirmpoon

Secretary: SUVANNANG Nopmanee

- 1400 - 1420 Introduction
- 1420 - 1440 Identification and implication of amino acid enantiomers in prairie soils of North America along a climosequence  
*ZHANG Xudong, WANG Jingkuan, AMELUNG Wulf and ZECH Wolfgang*
- 1440 - 1500 Changes in soil organic matter in Podzols with lowered groundwater-pyrolysis-GC/MS and micromorphology  
*BUURMAN Peter, DURAN Barbara, JONGMANS Antoine G., VAN BERGEN Pim F. and VAN LAGEN Barend*
- 1500 - 1520 Sequestration of soil organic carbon by an "in situ" polymerization reaction  
*PICCOLO A., SPACCINI R., TAGLIATESTA P. and MOSCHETTI G.*
- 1520 - 1540 Water regime of model forest ecosystems under elevated carbon dioxide and nitrogen deposition  
*SCHULIN Rainer, BUCHER-WALLIN Inga K. and SONNLEITNER Marion A.*
- 1540 - 1600 Break
- 1600 - 1620 Reduction of methane emission from submerged paddy soils by water management in Thailand  
*SIRIRATPIRIYA Orawan and PRADUBSUK Suphasuk*
- 1620 - 1640 Nitrification-denitrification loss and N<sub>2</sub>O emission from urea applied to crop-soil systems in the North China Plain  
*HONG Ding, CAI Guixin, WANG Yuesi and CHEN Deli*
- 1640 - 1700 Straw management affecting methane emissions from different rice ecosystems  
*WASSMANN Reiner, BUENO Crisanta S., LANTIN Rhoda S., LU W.F., CHAREONSILP Niwat and OLK Daniel C.*
- 1700 - 1720 General discussion and conclusions

## Symposium 08

### Use of molecular scale techniques in determining contaminant speciation and soil remediation

Monday 19 August 2002

Room: Meeting Room 1

#### Morning Session

Chairs : SPARKS Donald L., ATTANANDANA Tasnee

Secretary : WONGMANEEROJ Audthasit

0830 - 0850 Introduction

0850 - 0910 Invited paper

Sequestration of radionuclides during clay mineral weathering at high pH

*CHOROVER Jon, CHOI Sunkyung, MUELLER Karl, CROSSON Garry and KARTHIKEYAN K.G.*

0910 - 0930 Association of radiocesium on different geobiochemical soil phases

*KRUSE-IRMER Sven, VON WALDHAUSEN Constanze and GIANI Luise*

0930 - 0950 Kinetics and mechanisms of nickel surface precipitation in multi-sorbent systems: a spectroscopic study

*NACHTEGAAL Maarten and SPARKS Donald L.*

0950 - 1010 Long-term kinetics of the disappearance of Al tridecamer from a solution in the presence of humic acid

*YAMAGUCHI Noriko U., HIRADATE Syuntaro and MIZOGUCHI Masaru*

1010 - 1030 Break

1030 - 1050 *In situ* Mössbauer spectroscopy and soil solution monitoring to follow spatial and temporal iron dynamics

*FEDERE Frédéric, KLINGELHÖFER Göstar, TROLARD Fabienne and BOURRIÉ Guilhem*

1050 - 1110 Hydrophobic sites in humic acids as detected by ESR of spin-label 5-SASL and <sup>13</sup>C NMR of labeled oleic acid

*FERREIRA Julieta A., MARTIN-NETO Ladislau, NASCIMENTO Otaciro R., COLNAGO Luiz. A., and FORATO Lucimara A.*

1110 - 1130 Real time and remote monitoring of soil and water pollutants by mid-IR fibreoptics

*SHAVIV Avraham, KENNY A., SHMULEVICH I., SINGHER L., REICHLIN Y. and KATZIR A.*

1130 - 1150 General discussion and conclusions

## Symposium 09

### Composition of soil microbial and fauna communities: new insight from new technologies

Friday 16 August 2002

Room: Ballroom

#### Afternoon Session

Chairs : BURNS Richard G., NOPAMORNBODI Omsub

Secretary : PITHUKDANTHAM Ruongroj

- 1400 - 1420 Introduction
- 1420 - 1440 Phylogenetic classification and activities of cellulolytic soil bacteria isolated from long-term field experiments  
*WIRTH Stephan and ULRICH Andreas*
- 1440 - 1500 Distribution and biodiversity of soybean rhizobia in the soils of Shennongjia forest reserve, China  
*CHEN Wench and HUANG Quoyan*
- 1500 - 1520 Ectomycorrhization of *Acacia* spp. by *Pisolithus*: effect on nodulation and on the rhizospheric bacteria  
*FLEURY-LAURENT E., DUPONNOIS R. and CHOTTE J.J.*
- 1520 - 1540 Significance of indigenous arbuscular mycorrhiza on phosphorus influx of maize grown on an Oxisol  
*RAKSHIT Amitava, BHADORIA P.B.S., SINGH Satnam and CLAASSEN Norbert*
- 1540 - 1600 Break
- 1600 - 1620 Composition of soil bacterial communities: new insight from old and new technologies  
*ZVYAGINTSEV Dmitri G., DOBROVOJSKAYA Tatiana G. and LYSAK Lidmila V*
- 1620 - 1640 Molecular bacterial ecology of Fe(III)-precipitates in a constructed wetland treating acid coal mine water  
*NICOMRAT Duongrutar, DICK Warren A. and TUOVINEN Olli H*
- 1640 - 1700 Protozoan diversity in soil and its influence on microbial functions that determine plant growth  
*GLUPTA V.E.S.R. and ROPER M.M.*
- 1700 - 1720 General discussion and conclusions

# Symposium 10

## Research to enhance carbon sequestration in soils

**Friday 16 August 2002**  
**Morning Session**

**Room: Ballroom**

**Chairs : METTING F. Blaine, BHROMSIRI Ampan**  
**Secretary : HOMHUAL Wipa**

- 0830 - 0850 Introduction
- 0850 - 0910 Terrestrial carbon sequestration potential  
*METTING F. Blaine, JACOBS Gary K., AMTHOR Jeffrey S. and DAHLMAN Roger*
- 0910 - 0930 Carbon sequestration and dynamics in boreal forest and arable soils  
*KÖLLI Raimo*
- 0930 - 0950 Carbon storage in Australian Vertisols  
*KNOWLES Thomas and SINGH Balwant*
- 0950 - 1010 Carbon sequestration in agroforestry systems  
*NAIR P.K. Ramachandran and NAIR Vimala D.*
- 1010 - 1030 Break
- 1030 - 1050 Spectroscopic calibrations for the determination of carbon in soils  
*REEVES III J.B., MCCARTY G.W., MIMMO T.V., REEVES V.B., FOLLET R.F., KIMBLE J.M. and GALLETTI G.C.*
- 1050 - 1110 Kinetics of organic inputs in soil carbon models  
*PANSU Marc, THURIES Laurent, LARR-LARROUY M. Christine and FELLER Christian*
- 1110 - 1130 Characterizing dynamics of soil organic matter content with eigenvalue and eigenvector  
*LIN Chenfang, SHIUE Huei W., CHANG Chia M. and TSENG Kuo-Jin*
- 1130 - 1150 General discussion and conclusions

## Symposium 11

### Microbial processes and populations in submerged soils

Wednesday 21 August 2002

Room: Meeting Room 1

Morning Session

Chairs : BURESH Roland, NUNTAGIJ Achara

Secretary : CHENGAKSORN Chatsuda

- 0830 - 0850 Introduction
- 0850 - 0910 Contrasting microbial populations and genes in flooded and non-flooded habitats  
*TIEDJE James M.*
- 0910 - 0930 Microbial processes regulating carbon cycling in subtropical wetlands  
*REDDY K. Ramesh, WRIGHT Alan, OGRAM Andy, DEBUSK William F. and NEWMAN Susan*
- 0930 - 0950 Microbial biodiversity and processes in submerged soils  
*CONRAD Rolf*
- 0950 - 1010 Nitrogen balances and biological N fixation in submerged rice soils  
*LADHA Jagdish Kumar and BURESH Roland*
- 1010 - 1030 Break
- 1030 - 1050 The fate of fertilizer N in microbial biomass and soil organic fractions in California rice  
*HORWATH William R., BIRD J.A. and VAN KESSEL C.*
- 1050 - 1110 Methane and nitrous oxide emissions from rice paddy fields  
*TSURUTA Haruo*
- 1110 - 1130 Elevated carbon dioxide effects on microbial processes in submerged soil  
*INUBUSHI K., HOQUE M.M., CHENG W., KOBAYASHI K., YAGI K., SAKAI H., KIM H.Y. and OKADA M.*
- 1130 - 1150 General discussion and conclusions

## Symposium 12

### Manipulating soil microbial and enzymic activities

Saturday 17 August 2002

Room: Plenary Hall I

#### Morning Session

Chairs : BURNS Richard G., BOONKERD Nantakorn

Secretary : THAMCHAIPINAT Arinthip

- 0830 - 0850 Introduction
- 0850 - 0910 Microbial biomass and its turnover: a potential diagnosing tool for soil fertility quality?  
*HE Z.L., CHEN G., YAO H., CALVERT D.V., LUO Y. and HUANG C.Y.*
- 0910 - 0930 Dynamic of organisms and activity of enzymes in agricultural soils of Korea  
*LEE S.B., NA Y.E., KOH M.H., KWON S.I., SEONG K.S. and EOM K.C.*
- 0930 - 0950 Substrate induced respiration in soils using <sup>14</sup>C-labelled substrate  
*MORRIS D.R. and SNYDER G.H.*
- 0950 - 1010 The use of 18S ribosomal DNA to assess the diversity of nematodes in European grasslands  
*WAITE I.S., COLVAN S.R., O'DONNELL A.G., EKSCHMITT K., BAKONYI G., BONGERS M., BONGERS T., BOSTROM S., DOGAN H., HARRISON A., KILLIMANIS A., NAGY P., SOHLENIUS B., STAMOU G.P., DAVIES J.T. and WOLTERS V.*
- 1010 - 1030 Break
- 1030 - 1050 Potential for non-symbiotic N<sub>2</sub>-fixation in different agroecological zones of Southern Australia  
*GUPTA V.V.S.R., ROPER M.M. and ROGET D.K.*
- 1050 - 1110 Influence of fungal inoculant type and water potential on degradation of pesticides  
*FRAGOEIRO Silvia and MAGAN Naresh*
- 1110 - 1130 Soil microhabitats: a new dimension of microbial diversity and activity  
*KANDELER E., WERMBTER N., TSCHERKO D., STEMMER M., KIRCHMANN H., GERZABEK M.H., SESSITSCH A.*
- 1130 - 1150 General discussion and conclusions

## Symposium 13

### Management of organic matter for soil fertility improvement in humid tropical environments

Wednesday 21 August 2002

Room: Plenary Hall 1

#### Morning Session

Chairs : VANLAUWE Bernard, SANMANEECHAI Manas

Secretary : ANONGRAK Niwat

- 0830 - 0850 Introduction
- 0850 - 0910 Improving fertilizer efficiency in the humid tropics through combination with organic amendments  
*DIELS Jan, AHIOU Kouessi, IWUAFOR Emmanuel, LYASSE Omar, SANGINGA Nteranya, VANLAUWE Bernard, DECKERS Jozef and MERCKX Roel*
- 0910 - 0930 Integrated use of inorganic and organic fertilizers in Wheat-Taus-Taman rice cropping pattern for sustained crop production  
*HAQJE M.Q., RAHMAN M.H., BEGUM Rokeya and ISLAM M.F.*
- 0930 - 0950 Dynamics of charge bearing soil organic matter fractions in highly weathered soils  
*OORTS Koen, MERCKX Roel, VANLAUWE Bernard, SANGINGA Nteranya and DIELS Jan*
- 0950 - 1010 Environmental impacts of tropical agricultural systems: N<sub>2</sub>O emissions and organic matter management  
*BAGGS E.M., CADISCH G., VERCHOT L.F., MILLAR N. and NDUFA J.K.*
- 1010 - 1030 Break
- 1030 - 1050 Long-term effects of organic and inorganic fertilizers use on N availability under intensive cropping system  
*BRAR H.S., CHHINA H.S., RANDHAWA P.S., DHILLON N.S. and BENIPAL D.S.*
- 1050 - 1110 Organic resource management in sub-Saharan Africa: validation of a residue quality-driven decision support system  
*VANLAUWE Bernard, PALM Cheryl A., MURWIRA Herbert K., MERCKX Roel and DELVE Rob*
- 1110 - 1130 Beneficial effects of organic amendment on improving phosphorus availability and decreasing aluminium toxicity in two upland soils of Vietnam  
*PHAN Thi Cong, ROEL Merckx, CONG Doan Sat and NGUYEN Quang Chon*
- 1130 - 1150 General discussion and conclusions

## Symposium 14(1)

### Soil fertility as an ecosystem concept

Thursday 15 August 2002

Room: Plenary Hall 1

Morning Session

Chairs : SWIFT Mike, SUWANARIT Annat

Secretary: PITHUKDANTHAM Roongroj

- 0830 - 0850 Introduction
- ✓ 0850 - 0910 Soil fertility as an ecosystem concept  
*PALM Cheryl and SWIFT Mike*
- ✓ 0910 - 0930 Litterfall and nutrient flux in tropical rain forest, West Sumatra, Indonesia  
*HERMANSAH, AFLIZAR Zakaria, TSUGIYUKI Masunaga and TOSHIYUKI Wakatsuki*
- ✓ 0930 - 0950 Biochemical dynamics under different types of tropical seasonal forests in Western Thailand  
*HIRAI Keizo, TAKAHASHI Masamichi, LIMTONG Pitayakon and SUKSAWANG Songtum*
- ✓ 0950 - 1010 Impact of short rotation forestry on soil fertility assessed by ecosystem input-output nutrient budgets  
*LACJAU Jean-Paul, RANGER Jacques, NZILA Jean de Dieu, BOUILLET Jean-Pierre and DELEPORTE Philippe*
- ✓ 1010 - 1030 Break
- ✓ 1030 - 1050 Soil N constraints on productivity of eucalypt plantations with different harvest management  
*CORBEELS Marc and McMURTRIE Ross E.*
- ✓ 1050 - 1110 Soil fertility and nutrient contamination of water in a hilly catena of Sri Lanka under intensive cropping  
*JAYAKODYA N.*
- 1110 - 1130 Efficiency of chelated zinc (Zn-EDTA) on the maintenance of Zn in soils in relation to yield and nutrition of rice (*Oryza sativa* L.)  
*DAŞ D.K., KARAK T. and KARMAKAR S.K.*
- 1130 - 1150 General discussion and conclusions

## Symposium 14(2)

### Soil fertility as an ecosystem concept

Thursday 15 August 2002


Room: Plenary Hall 1

Afternoon Session


Chairs : SWIFT Mike, SUWANARIT Amnat

Secretary : PINIPAITOON Sutisa

1400 - 1420 Introduction

1420 - 1440  Linking litter quality with decomposer functionality for a better understanding of plant litter mineralisation


*NEERGAARD Andreas de and MAGID Jakob*

1440 - 1500  Element cycling of Cambic Arenosols under beech forest and arable land with respect to ecosystem stability

*WETZEL H., SCHIMMING C.G. and HORN R.*


1500 - 1520 Agroforestry intervention on soil fertility management under the Nepalese hill farming systems

*NEUPANE Ranji Prasad*

1520 - 1540  Taking into account plant quality in models which simulate C and N transformations in soils

*NICOLARDOT Bernard, MARY Bruno and HADJI Kawtar*

1540 - 1600 Break

1600 - 1620  Sustainability of sugarcane production evaluated based on organic matter cycle and nitrogen fixation

*ANDO Shotaro, MEUNCHANG Sompong, THIPPAYARUGS Srisuda, PRASERTSAK Praphon, MATSUMOTO Naruo and YONEYAMA Tadakatstu*

1620 - 1640 Tillage, liming, and straw management effects on N cycling in an acid soil

*SOOY Y.K. and ARSHAD M.A.*

1640 - 1700 Does biodiversity matter soil microbial communities and microbial function?

*VERCHOT Louis E., BOSSIO Deborah, SWIFT Mike, PRETTY Jules and BORELLI Teresa*

1700 - 1720 General discussion and conclusions

## Symposium 14(3)

### Soil fertility as an ecosystem concept

Friday 16 August 2002  
Morning Session

Room: Plenary Hall 1

Chairs : SWIFT Mike, SUWANARIT Amnat  
Secretary : NA BHADALUNG Nidchaporn

- 0830 - 0850 Introduction
- 0850 - 0910 Ecological processes in eroded soils under conservation and conventional tillage  
*COLEMAN David C., ADL Sina, REED Frederick and LACHNIGHT Sharon*
- 0910 - 0930 Catch crops in organic farming systems without livestock husbandry: model simulations  
*MÜLLER Torsten, JENSEN Lars Stoumann, MAGID Jakob, NIELSEN Niels Erik, HANSEN Søren and THORUP-KRISTENSEN Kristian*
- 0930 - 0950 Potassium leaching under different nitrogen managements  
*ALFARO Marta, JARVIS Steve and GREGORY Peter*
- 1 ( 0950 - 1010 Irrigation water and fertiliser interaction under water deficit conditions in sugarcane in Northern Ivory Coast  
*PÉNÉ Crépin B. and ASSA Désiré A.*
- 1010 - 1030 Break
- 1030 - 1050 Assessment of the relative agronomic effectiveness of phosphate rock materials in a soybean-maize crop rotation using isotope techniques in field experiments  
*MAHISARAKUL J., SIRIPAIBOOL C., CLAIMON J. and PHANEE Pakkong*
- 1050 - 1110 Comparison of capsule resin data and kinetic parameters with some static soil tests to predict K uptake by rice  
*KAVOOSLI M., KALBASI M. and ALIAKBAR A.*
- 1110 - 1130 Integrated nutrient management for different cropping patterns in Bangladesh  
*ISLAM M.S., SATTER M.A. and RAHMAN Md. Anisur*
- 1130 - 1150 General discussion and conclusions

## Symposium 15

### Perceptions of soil management: matching indigenous and scientific knowledge systems

Monday 19 August 2002

Room: Ballroom

#### Afternoon Session

Chairs : ~~RHOADES Robert~~, ~~RUAYSOONGNERN Sawaeng~~  
Secretary : SOONTHORNPAT Chanchira

1400 - 1420 Introduction

1420 - 1440 ~~Indigenous and scientific conceptions of landuse management: a case study from Ecuador~~  
~~RHOADES Robert E. and NAZAREA Virginia~~

1440 - 1500 Traditional farmers utilization of the soil of south-eastern coastal zone of Ghana, West Africa  
~~AWADZI Theodore Wola~~

1500 - 1520 "Land moves and behaves": indigenous discourse on sustainable land management in Mexico  
~~ZINCK Joseph Alfred and BARRERA-BASSOLS Narciso~~

1520 - 1540 Soil fertility: from a natural heritage to a social construction; example of Gakoudi Village, Niger  
~~DOSSO Mireille~~

1540 - 1600 Break

1600 - 1620 Sustainable soil fertility management by indigenous and scientific knowledge in the Sahel zone of Niger  
~~HAYASHI Keiichi and WAKATSUKI Toshiyuki~~

1620 - 1640 Ethnopedological research: a worldwide review  
~~BARRERA-BASSOLS Narciso and ZINCK Alfred~~

1640 - 1700 Beyond stewardship: from conservation to intrinsic soil value  
~~WARKENTIN Benno P.~~

1700 - 1720 General discussion and conclusions

## Symposium 16

### Mechanisms and indicators for efficient nutrient use through integrated soil management

Tuesday 20 August 2002

Room: Plenary Hall 1

Afternoon Session

Chairs : THOMAS Richard J., OSOTSPA Yongyooth

Secretary : KONG-NGERN Rangsan

- 1400 - 1420 Introduction
- 1420 - 1440 Sustaining crop production in the developing world through "The Nutrient Buffer Power Concept"  
*NAIR Kodath Prabhakaran*
- 1440 - 1500 Integrated nutrient management for sustainable yield in rice-rice cropping system  
*ZAMANI S.K., JAHIRUDDIN M., PANAUULLAH G.M., MIAN M.H. and ISLAM M.R.*
- 1500 - 1520 Developing biophysical and socio-economic tools for assessing soil fertility  
*TRIPATHI B.P. and ELLIS-JONES Jim*
- 1520 - 1540 Integrated nutrient management strategies in Eastern Uganda  
*ESILABA A.O., BYAMBEBKA J.B., NAKIGANDA A., MUBIRU S., DELVE R.J., SSALIH and MBALULE M.*
- 1540 - 1600 Break
- 1600 - 1620 Bio indicators of land quality in the tropics : an attempt to integrate soil and vegetation approaches  
*MASSE Dominique, CHOITE Jacques-Luc, and PONTANIER Roger*
- 1620 - 1640 Nutrient budgets: sustainability assessment of rainfed rice systems in Northeast Thailand and variability along microtopographic catenae  
*KUNBOON Y., WUINHOUD J.D. and LEFRQYR J.P.*
- 1640 - 1700 Ecological models of fertility of soils suitable for tea planting with purpose of their management  
*MAMMEDOVA Sara*
- 1700 - 1720 General discussion and conclusions

## Symposium 17

Use of natural nutrient sources and amendments:  
which, where, when and how?

Tuesday 20 August 2002

Room: Plenary Hall 1

Morning Session

Chairs : JANSSEN Bert, BOONAMPOI Pradit

Secretary : CHATCHAISIRI Kanda

0830 - 0850 Introduction

---

- 1 0850 - 0910 Occurrence and properties of apatite in fresh tephras and its utilization by plants  
*NANZYO Masami* ✓
  - 2 0910 - 0930 Phosphatic guano combined with steel slag as effective way for direct application of phosphatic guano to acid soil  
*SUWARNO and GOTO Itsuo*
  - 3 0930 - 0950 Partial acidulation of phosphate rock: an approach to improve low grade and less reactive materials  
*NARAYANASAMY G. and D.R. BISWAS*
  - 4 0950 - 1010 Elemental sulfur as nutrient for crops in the Pampean Mollisols of Argentina  
*MELGAR Ricardo J., LAVANDERA Javier and CAMOZZI M. Elena*
- 
- 5 1010 - 1030 Break
- 
- 1 1030 - 1050 Using coal-derived substances to improve the fertility of some acidic soils  
*PATTL Antonio F., JACKSON W. Roy, ISSA Jason (G) and MARSHALL Marc*
  - 2 1050 - 1110 Amelioration of soil fertility in variable-charge dominated soils  
*BONIAO Renata D., SHAMSHUDDIN Jusop, VAN RANST Eric, ZAIYAH Siti D. and SYED Omar Syed R*
  - 3 1110 - 1130 Nutrient stocks and nutrient cycling of fallows in the humid lowlands of Papua New Guinea  
*HARTEMINK A.E.*
- 1130 - 1150 General discussion and conclusions
-

# Symposium 18

## Anthropogenic factor of soil formation

Thursday 15 August 2002  
Morning Session

Room: Meeting Room 1

Chairs : DUDAL Rudi, PRAMOJANEE Paiboon

Secretary : TAKASHIMA Tidarat Rieko

- 0830 - 0850 Introduction
- 0850 - 0910 The human factor of soil formation  
*DUDAL R., NACHTERGAELE F.O. and PURNELL M.F.*
- 0910 - 0930 Anthropogenic soils in the US: conclusions from an international workshop  
*AHRENS R.J., DITZLER C. and ENGEL R.J.*
- 0930 - 0950 Anthropogenic soils of China  
*ZITONG Gong, ZHANG Ganlin and ZHANG Xuelei*
- 0950 - 1010 Soils, human activities and landscape relation in Anai river watershed, West Sumatra, Indonesia  
*KAMIDOHZONO Akira, DARMAWAN, MASUNAGA Tsugiyuki and WAKATSUKI Toshiyuki*
- 1010 - 1030 Break
- 1030 - 1050 Terra Preta and Terra Mulata: pre-Columbian Amazon kitchen middens and agricultural fields, their sustainability and their replication  
*SOMBROEK Wim, KERN Dirse, RODRIGUES Tarcicio, CRAVO Manoel da Silva, JARBAS Tony Cunha, WOODS William and GLASER Bruno*
- 1050 - 1110 C-rich sandy Ap horizons of Northwest Europe contain a large fraction of very stable organic matter  
*KIRCHMANN Holger and SPRINGOB Günther*
- 1110 - 1130 Plagganthrepts in Northwest Russia? genesis, morphology and properties  
*GIANI Luise, CHERTOV Oleg, GEBHARDT Christine, KALININA Olga, NADPOROZHSKAYA Marina and TOLKDORF-LIENEMANN Eva*
- 1130 - 1150 General discussion and conclusions

# Symposium 19

## Soil system and land use

Friday 16 August 2002

Room: Plenary Hall I

Afternoon Session

Chairs : RUELLAN Alain, ALVA Ashok

Secretary : PANIKORN Vanida

- 1400 - 1420 Introduction
- 1420 - 1440 Invited paper  
Relations between soil system and cropping systems on a small watershed in Parana (Brazil)  
*PALMANS Bart, VAN HOUDT Els, DOSSO Mireille, RALISCH Ricardo, JOUVE Philippe and TAVARES FILHO Joao*
- 1440 - 1500 Toposequence as influenced by land use in the inland valley watershed of Ashanti region, Ghana  
*ANNAN AFFUL Ebenezer and WAKATSUKI Toshiyuki*
- 1500 - 1520 Sustainability of agrarian systems in relation to soils on Amazonian forest pioneer fronts (Marabá, Brazil)  
*GRIMALDI Catherine, CURMIL Pierre, DOSSO Mireille, JOUVE Philippe and SIMUES Aquiles*
- 1520 - 1540 Soil survey for sustainable farming of a major tropical highland zone in Kenya  
*D'COSTA V.P. and OMOTO W.*
- 1540 - 1600 Break
- 1600 - 1620 The derived savanna of SW-Nigeria: soil characterisation and use  
*OKUSAMI Temitope A.*
- 1620 - 1640 Use of rehabilitated quarry detritus for the study of forest-soil system development  
*REIXTAM Loit and KAAR Elmar*
- 1640 - 1700 Romanian soil resources and food security  
*L'ORENȚI S., Mihalache M., RADU Alexandra, ILIE I. and MUSAT M.*
- 1700 - 1720 General discussion and conclusions

## Symposium 20

### Arid and semi-arid soils: records of past climates, carbon sequestration, genesis and management

Tuesday 20 August 2002  
Afternoon Session

Room: Ballroom

Chairs : BUCK Brenda, WARAMIT Warapong  
Secretary : KANJANATHANASET Khaimechai

- 1400 - 1420 Introduction
- 1420 - 1440 Pedogenic carbonate: links between biotic and abiotic  $\text{CaCO}_3$   
*MONGER H Curtis*
- 1440 - 1500 Effect of soil humic substances on the sequestration of carbon in acid-affected soils of South-Eastern Australia  
*YAZAWAY, OHMORI H., HIRTH J., SLATTERY B. and YAMAGUCHI T.*
- 1500 - 1520 Morphology, SEM and stable isotopic analyses of pedogenic gypsum, USA and Jordan  
*BUCK Brenda J., VAN HOESEN John, KHRESAT Sa'ib and RAWAIFIH Zahir*
- 1520 - 1540 Contribution of termites to the formation of hardpans in soils of arid and semi-arid regions of South Africa  
*ELLIS F.*
- 1540 - 1600 Break
- 1600 - 1620 Salinity types of the soils related to climatic and lithogenic microzones in Central Iran  
*AKHAYAN GHALIBAF Mohammad*
- 1620 - 1640 Management of arid soils of the Badia region of Northeastern Jordan for sustainable agriculture  
*RAWAIFIH Zahir, KHRESAT S.A., BUCK B. and MONGER H.C.*
- 1640 - 1700 Organic matter accumulation in soils of the semiarid pampa of Argentina  
*BUSCHIAZZO D.E., HEVIA G.G., HEPPEL E.M., URIOSTE A.M. and ANTON E.L.*
- 1700 - 1720 General discussion and conclusions

## Symposium 21

### Soil classification, accomplishments and future

**Saturday 17 August 2002**  
**Morning Session**

**Room: Ballroom**

**Chairs : PAZOS Mabel Susana, VIJARNSORN Pisoot**

**Secretary : SRISUPHA-OLARN Tanapol**

- 0830 - 0850 Introduction
- 0850 - 0910 Classification of pedological systems: a challenge for the future of soil science  
*RUELLAN Alain*
- 0910 - 0930 Pedogenetic classification from soil-landscape modelling  
*McBRATNEY Alex. B. and MINASNY Budiman*
- 0930 - 0950 Reappraisal of the pedon concept for Vertisols: consociations or complexes?  
*WILDING L.P., KOVDA I.V., MORGUN E.G. and WILLIAMS D.*
- 0950 - 1010 Horizon identification  
*FITZPATRICK Ewart Adsil*
- 1010 - 1030 Break
- 1030 - 1050 Northern circumpolar soil database and derived soil maps in different classification systems  
*GORYACHKIN Sergey, STOLBOVOI Vladimir, TARNOCAI Charles, KIMBLE John, BROLL Gabriele, JAKOBSEN Bjarne, MONTANARELLA Luca, NAUMOV Evgeny and ARNOLDUSSEN Arnold*
- 1050 - 1110 An experience in correlating world reference base for soil resources with national soil classifications  
*KRASILNIKOV Pavel*
- 1110 - 1130 Towards a rationale in the world reference base for soil resources  
*DECKERS Jozef, DRIESSEN Paul, NACHTERGAELE Freddy, SPAARGAREN Otto and BERDING Frank*
- 1130 - 1150 General discussion and conclusions

## Symposium 22

### Technologies to overcome rootzone soil constraints

Thursday 15 August 2002

Room: Meeting Room 1

Afternoon Session

Chairs : RENGASAMY Pichu, POOVARODOM Sumitra

Secretary : CHOMSANTAE Naowarat

- 1400 - 1420 Introduction
- 1420 - 1440 Rootzone soil constraints: an overview  
*RENGASAMY Pichu and VADAKATTU Gupta*
- 1440 - 1500 Mechanical impedance to root growth and phosphorus uptake  
*NADIAN Habib*
- 1500 - 1520 Improving maize productivity and conserving soil on sloping land in Yunnan Province, P.R. China  
*HUANG Bizhi, WU Bozhi, LIU Liguang, HOCKING Trevor J., FULLEN Michael A. and MITCHELL David J.*
- 1520 - 1540 Alleviation of root zone constraints through foliar application of zinc and boron for grapes  
*PRABU P.C. and SINGARAM P.*
- 1540 - 1600 Break
- 1600 - 1620 Dry soil tillage tines RS8 and IR12: two efficient tools for *zai* technique mechanisation in the Sahel  
*BARRO Albert, ZOUGMORE Robert, TAONDA S. Jean Baptiste and ZIGANI-OUEDRAOGO Patricia*
- 1620 - 1640 Plinthite development in upland agriculture soils in Ghana  
*ASIAMAHA R.D.*
- 1640 - 1700 Subsoil constraints to cropping on the alkaline soils in the Mallee region of Southern Australia  
*O'LEARY Garry J., RENGASAMY Pichu and ROGET David*
- 1700 - 1720 General discussion and conclusions

## Symposium 23

### Models and parametric methods for predicting soil degradation

Tuesday 20 August 2002  
Afternoon Session

Room: Meeting Room 1

Chairs : ELLIOTT Edward T., YONCHALERMCHAI Chao

Secretary : KAEWMANO Chuthamard

- 1400 - 1420 Introduction
- 1420 - 1440 Behaviour of gully erosion in relation to catchment characteristics in foothills of lower Shivaliks  
*KUKAL S.S. and MATHARU G.S.*
- 1440 - 1500 Quantifying parameters for the maximum rubber production potential model in East Thailand  
*PRATUMMINTRA Somjate, VAN RANST Eric, VERPLANCKE Hubert, SHAMSHUDDIN Jusop, THEERAVATANASUK Kannikar and KESAWAPITAK Prasat*
- 1500 - 1520 Vertical distribution of wind-eroded sediment over a smooth, bare field in Central Iran  
*KARIMZADEH Hamid Reza and JALALIAN Ahmad*
- 1520 - 1540 General discussion and conclusions
- 1540 - 1600 Break

## Symposium 24

### Use and abuse of industrial and urban wastes in agricultural soils

Monday 19 August 2002

Room: Meeting Room 2

#### Morning Session

Chairs : HUGHES Jeffrey, NUNTAGI Ithisuntorn

Secretary : THAYMUANG Wipawan

- 0830 - 0850 Introduction
- 0850 - 0910 An improvement on soil fertility by municipal organic waste and *Panicum maximum* TD 58 grass  
*CHUASAVATHI Thammareed and TRELO GES Vidhaya*
- 0910 - 0930 Effect of flyash on the performance of wheat on Ustochrepts of sub-humid plains of India  
*TOTAWAT K.L., NAGAR G.L., JAT S.L. and JANGIR R.K.*
- 0930 - 0950 Effect of bauxite residue (red mud) on the availability of phosphorus in very sandy soils  
*SNARY Katherine, GILKES Robert and HUGHES Jeffrey*
- 0950 - 1010 Heavy metals in extracted soil solutions  
*DI BOMLIO M., BREWARD N., SMITH B.M., CROUT N.M.J. and YOUNG S.D.*
- 1010 - 1030 Break
- 1030 - 1050 Simultaneous sludge stabilization and metal removal by metal hyper-accumulator plants  
*WU Qi-Tong, SAMAKE Moussa, MO Cehui and MOREL Jean-Louis*
- 1050 - 1110 Alkaline stabilized biosolids as an organic amendment for continuous spring barley on two contrasting soils  
*CHRISTIE Peter, EASSON D. Lindsay and WASSON Elizabeth Anne*
- 1110 - 1130 Effect of irrigation by untreated sewage effluents on the micro and potentially toxic elements in soils and plants  
*BRAR M.S., KHURANA M.P.S. and KANSAL B.D.*
- 1130 - 1150 General discussion and conclusions

## Symposium 25

### Mineralogy and geochemistry of regolith

Thursday 15 August 2002

Room: Meeting Room 2

Morning Session

Chairs : FITZPATRICK Rob W., SUDDHIPRAKARN Anchalee

Secretary : LAOSUWAN Pornpana

- 0830 - 0850 Introduction
- 0850 - 0910 Chemical weathering in Australasia with emphasis on the humid tropics especially in Papua New Guinea  
*RUXTON Bryan P.*
- 0910 - 0930 Weathering sequences of contrasting mafic and felsic parent materials in the Georgia piedmont, US  
*HAMILTON-WOOD D.A., WEST L.T. and SCHROEDER P.A.*
- 0930 - 0950 Particle comminution and aeolian addition in young dune sand soils  
*NORNBERG Per*
- 0950 - 1010 Mineralogy and colour of concretions in Thai lateritic soils  
*WATANA S., KHEORUENROMNE I., SUDDHIPRAKARN A. and GILKES R.J.*
- 1010 - 1030 Break
- 1030 - 1050 Chemical and geological characterization of a mine site in Central Italy  
*DI RASCHIO Marco, GARIAZZO Claudio, GIULIANO Veronica, LA GIOIA Catullo, PASSARIELLO Bruno, RICCARDI Carmela and SPICAGLIA Sergio*
- 1050 - 1110 The intercalation behaviour of standard kaolins and soil kaolins from Australia, Indonesia and Thailand  
*HUGHES Jeffrey, GILKES Robert and HART Robert*
- 1110 - 1130 Origin of 2:1 mineral in Japanese Andosols and its role in agriculture  
*SAGUISA Masahiko and MATSUYAMA Nobuhiko*
- 1130 - 1150 General discussion and conclusions

## Symposium 26

### Reaction of soil minerals on changes of climate and land management

Tuesday 20 August 2002

Room: Meeting Room 2

Afternoon Session

Chairs : SINGH Balwant, YOOTHONG Kannica

Secretary: ANONGRAK Niwat

- 1400 - 1420 Introduction
- 1420 - 1440 Effects of land use change and land management on soil clays  
*BAIN Derek C*
- 1440 - 1500 Iron-rich precipitates in mine drainage environments: mineralogical characteristics and case studies  
*MURAD Enver*
- 1500 - 1520 Behavior of inherited minerals and climate-induced soil change: red-colored soils of European Russia  
*LESSOVAIA Safia and GAGARINA Elvira*
- 1520 - 1540 General discussion and conclusions
- 1540 - 1600 Break
- 1600 - 1610 Papers from Symposium 27

## Symposium 27

Mineralogy and micromorphology of pedogenesis  
including isotope methods and dating of soil processes

Tuesday 20 August 2002

Room: Meeting Room 2

Afternoon Session

Chairs : STAHR Karl, ROMSONTHI Chatchai

Secretary: ANONGRAK Niwat

- 1400 - 1540 Papers from Symposium 26
- 1540 - 1600 Break
- 1600 - 1610 Introduction
- 1610 - 1630 Methodological approaches analysing Paleosol sequence from early tertiary till Holocene in the carstic limestone area of the Swabian Alb - Southwest Germany  
*STAHR Karl, KALLIS Peter and ZAREI Mehdi*
- 1630 - 1650 Iron pan formation in burial mounds, Denmark  
*BRELLNING-MADSEN Henrik, HOLST Mads Kahler and RASMUSSEN Marianne*
- 1650 - 1710 Andic soil properties in non-volcanic areas: a variety of Andosols or a separate soil forming process?  
*BÄUMLER Rupert, TSHERING DORJI, CASPARI Thomas, NORBU Chencho and BAILLIE Ian*
- 1710 - 1720 General discussion and conclusions

## Symposium 28

### Soil mineralogy in relation to soil fertility and toxicity

Tuesday 20 August 2002

Room: Meeting Room 1

#### Morning Session

Chairs : GILKES Bob, WIRIYAKITNATTEKUL Wanphen

Secretary: HOMYAMYEN Kannika

- 0830 - 0850 Introduction
- 0850 - 0910 Pyrite in acid sulfate soils: transformation and inhibition of its oxidation by application of natural materials  
*SHAMSHUDDIN Jusop and SARWANI Muhrizal*
- 0910 - 0930 Distribution of trace elements and porosity in soil horizons at the aggregate scale  
*CORNU Sophie, COUSIN Isabelle, DESCHATRETTES Valérie, SALVADOR-BLANES Sébastien, SABY Nicolas and CLOZZEL Blainine*
- 0930 - 0950 Potassium release and fixation behavior of mineralogically different soils of India  
*MAJUMDAR Kavshik, SANYAL S.K. and DATTA Shivali*
- 0950 - 1010 Studies of synthetic copper containing goethite  
*HUYNH Trung, TONG Andrew R., SINGH Balwant and KENNEDY Brendan J*
- 1010 - 1030 Break
- 1030 - 1050 A solid solution model for Fe<sup>II</sup>-Fe<sup>III</sup>-Mg green rust "fougerite": structural and geochemical constraints  
*BOURRIE Guilhem, TROJARD Fabienne, REFAIT Philippe and FEDER Frédéric*
- 1050 - 1110 Clay mineralogy of some Thai Ultisols  
*KANKET Wimoloon, SUDHIPRAKARN A., KHEORUENROMNE J. and GILKES R.J*
- 1110 - 1130 Internal morphology and surface area of natural manganese oxides  
*DLAON Joe B. and KIM Jae Gon*
- 1130 - 1150 General discussion and conclusions

## Symposium 29

### Urban and sub-urban soils: specific risks for human health (Urban agriculture)

Thursday 15 August 2002

Room: Meeting Room 2

#### Afternoon Session

Chairs : MOREL Jean-Louis, PANICHSAKPATANA Supamard

Secretary : ROONGTANAKIAT Nualchavee

- 1400 - 1420 Introduction
- 1420 - 1440 100 years spreading of urban waste water on market-garden soils close to Paris (France); subsequent impacts and hazards  
*BAIZE Denis, LAMY Isabelle, OORT Folkert van, DERE Christelle, CHAUSSOD Rémi, SAPPIN-DIDIER Valérie, BERMOND Alain, BOURGEOIS Serge, SCHMITT Catherine and SCHWARTZ Christophe*
- 1440 - 1500 Data on soil pollution for urban planning  
*VRSCAJ Borut, ZUPAN Marko and LOBNIK Franc*
- 1500 - 1520 Transfer of heavy metals from sludge amended soil to vegetables and leachates  
*SUKREEYAPONGSE O, PANICHSAKPATANA S. and HANSEN H.C.B.*
- 1520 - 1540 Aqua regia extractable heavy metals in surface agricultural soils within an urban area  
*ROMIC Morya and ROMIC Davor*
- 1540 - 1600 Break
- 1600 - 1620 Simulation of nitrogen transport, transformation and uptake in soil-water-crop system  
*REN Li, MA Junhua, GONG Yuanshi and STAHR K*
- 1620 - 1640 General discussion and conclusions

## Symposium 30

### Food security and land use

Tuesday 20 August 2002

Room: Meeting Room 2

#### Morning Session

Chairs : ANDREUX Francis, TANCHIO Arnat

Secretary : THONGYON Rasiya

- 0830 - 0850 Introduction
- 0850 - 0910 Targetted yield approach for fertilizer requirements of onion in Vertisols  
*SONAR Kashinath and KADAM Bhagwan*
- 0910 - 0930 Improving the sustainability of cassava-based cropping systems in Asia: a farmer participatory approach to technology development and dissemination  
*IJOWELER Reinhard H., WATANANONTA Watana and TRAN Ngoc Ngoun*
- 0930 - 0950 Utilisation of distillery effluent in coastal sandy soil to improve soil fertility and yield of sugarcane  
*SUBASHI CHANDRA BOSE M., BASKAR M., GOPAL H., KAYALVIZHI C., SIVANANDHAM M. and RAVINDRAN K.*
- 0950 - 1010 Agrolandscape zones of wheat security production in Kazakhstan  
*TAZHIBAYEVA Tamara and ABUGALIYEVA Aigul*
- 1010 - 1030 Break
- 1030 - 1050 Water dynamics of ebb tide agriculture in Northeast Brazil  
*ANTUNINO Antonio C.D., HAMMECKER Claude, MONTENEGRO Suzana M.G.L., NETTO André Maciel, ANGULO-JARAMILLO R and LIRA C A B.O.*
- 1050 - 1110 Study of a peculiar type of manganese-rich Oxisols in the Haut-Ogooué, Gabon (West Africa): interest for the reclamation of the mining site of Bangombé  
*BOUPASSIA Christian, LEVEQUE Jean, EDOU MINKO Ambroise, ROULLIER James, NZIENGUI Pacôme and ANDREUX Francis*
- 1110 - 1130 Landfill restoration for sustainable waste management and land utilization  
*WONG Ming H.*
- 1130 - 1150 General discussion and conclusions

## Symposium 31

### Attitudes towards soil and land use: past and present

Saturday 17 August 2002

Room: Meeting Room 1

#### Morning Session

Chairs : WARKENTIN Benno P., TONMANEE Nitayaporn

Secretary : CHARUNWORAPAN Chanida

- 0830 - 0850 Introduction
- 0850 - 0910 Sustainable development of rice ecosystem with the balance of local wisdom and the reduction of greenhouse gases emission in Thailand  
*SIRIRATPIRIYA Chayong, PRADUBSUK Saphasak, KUPKANCHANAKUL Towee, ZUNGSONTIPORN Siriporn, IAMSUPASIT Sompoch and NANEYOD Boonmee*
- 0910 - 0930 Soil knowledge embodied in a Native American runoff agroecosystem  
*SANDOR J.A., NORTON J.B., PAWLUK R.R., HOMBURG J.A., MUENCHRATH D.A., WHITE C.S., WILLIAMS S.E., HAVENER C.I. and STAHL P.D.*
- 0930 - 0950 A history of perceiving the soil in the Amazon Basin  
*WINKLERPRINS Antoinette M.G.A.*
- 0950 - 1010 Tropical soil and land use management research and methodologies: changing trends and attitudes  
*LATHAM Marc*
- 1010 - 1030 Break
- 1030 - 1050 Soil science and land use in Canada  
*ANDERSON Darwin W. and JANZEN Henry H.*
- 1050 - 1110 Integration of local soil knowledge for improved soil management strategies  
*BARRIOS Edmundo, DELVE Robert J., TREJO Marco T. and THOMAS Richard J.*
- 1110 - 1130 Land use in Sri Lanka: past, present and future  
*MAPA R.B., KUMARAGAMAGE D., GUNARATHNE W.D.L. and DASSANAYAKE A.R.*
- 1130 - 1150 General discussion and conclusions

## Symposium 32

### Soil indicators for sustainable land use

Monday 19 August 2002

Room: Meeting Room 2

Afternoon Session

Chairs : DE KIMPE Christian, PRASITTIKETH Jirapong

Secretary : HANSAKDI Ekkant

- 1400 - 1420 Introduction  
Soil indicators for sustainable land use  
*DE KIMPE Christian R. and PRASITTIKETH Jirapong*
- 1420 - 1440 Chemical and biochemical indicators of managed agricultural soils  
*SANNINO Filomena, COLOMBO Claudio, PALUMBO Giuseppe and GIANFREDA Liliana*
- 1440 - 1500 Using power analysis to identify soil quality indicators  
*MILTON Nui, MURPHY Daniel, BRAIMBRIDGE Matthew, OSLER Graeme, JASPER David and ABBOTT Lynette*
- 1500 - 1520 Hot-water carbon is an integrated indicator of soil quality  
*GHANI Anwar, DEXTER Moira and PERROTT KEN W.*
- 1520 - 1540 Nutrient balance changes as an indicator of sustainable agriculture  
*SYERS Keith J., SHELDRIK William and LINGARD John*
- 1540 - 1600 Break
- 1600 - 1620 Soil quality indicators in a long term crop-pasture rotation experiment in Uruguay  
*MORÓN Alejandro and SAWCHIK Jorge*
- 1620 - 1640 Characteristic changes of cultivated soils in Japan for the 20 years  
*NAKAI Makoto and OBARA Hiroshi*
- 1640 - 1700 Development of indicators for soil quality at the European level  
*HUBER Sigbert and FREUDENSCHUSS Alexandra*
- 1700 - 1720 General discussion and conclusions

## Symposium 33

### Salt affected soils and the environment

**Saturday 17 August 2002**

**Room: Plenary Hall 1**

**Afternoon Session**

**Chairs : ARUNIN Somsri, DISSATAPORN Chaiyanam**

**Secretary : YAMCLEE Promote**

1400 - 1420 Introduction

1420 - 1440 Environmental stresses induced by salinity/alkalinity in the Carpathian Basin (Central Europe)

*VÁRALIYAY György*

1440 - 1500 Effect of wetland transformation on groundwater quality and soil salinization in neighbouring agricultural areas

*BATLLE-SALES Jorge, HURTADO Amparo and BATLLE-MONTERO Estrella*

1500 - 1520 Irrigation drainage water management options: San Joaquin valley case study

*TANJI Kenneth K., WALLENDER Wesley W. and ROLLINS Larry T.*

1520 - 1540 A simple empirical method to evaluate the electrical conductivity of soils and waters by TDR

*ARINGHERI Roberto*

1540 - 1600 Break

**Chairs : BATTLE-SALES Jorge, IM-ERB Rungson**

**Secretary : PONGWICHAN Pirat**

1600 - 1620 Use of native grass to minimise groundwater recharge in hill country of Southeastern Australia

*RAB A.M., JOHNSTON W.H. and HOLMBER G.M.*

1620 - 1640 Reclamation of saline bare soils by leaching and barley production

*KHOSHGOFTARMANESH A.H. and SHARIATMADARI H.*

1640 - 1700 Amelioration of saline alkali soils using peat and weathered coal

*NISHIZAKI Yasushi, KAWAKAMI Hirashi, WADA Hidenori, YAMADA Parida and YAMAGUCHI Tatsuki*

1700 - 1720 General discussion and conclusions

## Symposium 34

### Salinization, water management and policy

Saturday 17 August 2002

Room: Meeting Room 2

#### Morning Session

Chairs : SUAREZ Donald, TRIPETCHKUL Sudarat

Secretary : HARVEY Withers Narumon

- 0830 - 0850 Introduction
- 0850 - 0910 Spatio-temporal changes in soil salinity status in lowland areas with shallow groundwater  
*TÓTH Tibor and KUTI László*
- 0910 - 0930 Prognosis of salt water regime in the Changjiang River estuary under impacts of large water projects  
*YANG Jingsong, SHAO Aijun and LIU Guangming*
- 0930 - 0950 Measuring and mapping soil salinity in the Darling River Valley  
*TRIANAFILIS J., AHMED M.F., MALIK R. and GWILLEM O.*
- 0950 - 1010 Evaluation of management practices for use of low quality waters for irrigation: model simulations  
*SUAREZ Donald L.*
- 1010 - 1030 Break
- 1030 - 1050 Conjunctive use of fresh and salty water in cotton and wheat in South West Punjab  
*SINGH C.J., AUJLA M.S., SAINI K.S., BUTTAR G.S. and BRAR J.S.*
- 1050 - 1110 Using forages and livestock to manage drainage water in the San Joaquin Valley  
*KAFFKA S.R., OSTER J.D. and CORWIN D.L.*
- 1110 - 1130 Effect of swelling and overburden weight on hydraulic conductivity of a restructured saline sodic clay  
*NASER Abd Ali and RYCROFT David*
- 1130 - 1150 General discussion and conclusions

## Symposium 35

### Soil micromorphology to quantify soil structure qualities

Saturday 17 August 2002  
Afternoon Session

Room: Meeting Room 1

Chairs : TERRIBILE Fabio, SINDHUSEN Pramuanpong  
Secretary : CHENYAPANICH Somjai

- 1400 - 1410 Introduction
- 1410 - 1430 Determination of soil hydraulic conductivity with MRB signatures from X-ray CT scan images  
*ANDERSON Stephen H., GANTZER Clark J. and CHENG Zhanqi*
- 1430 - 1450 Simulation of spatial distribution of bacteria in relation to 3-D heterogeneous soil structure  
*WU Kejian, NUNAN Naoise, RITZ Karl, CRAWFORD John W. and YOUNG Iain M.*
- 1450 - 1510 Soil pore geometry changes in surface horizons under different irrigation regimes  
*TEDESCHI Anna, MELE Giacomo and TERRIBILE Fabio*
- 1510 - 1530 Conjugate microstructural and hydrodynamic evolution of a soil crust during its formation  
*COUSIN Isabelle, MALAM ISSA Oumarou and LE BISSONNAIS Yves*
- 1530 - 1540 General discussion and conclusions
- 1540 - 1600 Break
- 1600 - 1720 Papers from Symposium 36

## Symposium 36

### Soil micromorphology and submicroscopy for interpretation of soil qualities

Saturday 17 August 2002

Room: Meeting Room 1

#### Afternoon Session

Chairs : STOOPS Georges, IAMPORNKAT Kamolrat

Secretary : KHAMNUNGKIJ Jutharat

- 1400 - 1540 Papers from Symposium 35
- 1540 - 1600 Break
- 1600 - 1610 Introduction
- 1610 - 1630 Different factors impact on gypsum crust crystallization pattern and rate under experimental condition  
*JAFARZADEH AliAsghar*
- 1630 - 1650 Sequences of illuviation cutans' formation in Albeluvisols  
*BRONNIKOVA Maria and YARGULIAN Viktor*
- 1650 - 1710 Proposal for redefining and extension of concepts and terminology of the ISSS "handbook on soil thin section description"  
*STOOPS G.*
- 1710 - 1720 General discussion and conclusions

## Symposium 37

### Identification and determination of soil quality parameters to evaluate the sustainability and socioeconomic impacts

Thursday 15 August 2002

Room: Meeting Room 3

Morning Session

Chairs : GABRIELS Donald, BOONCHEE Sawatdee

Secretary : KANCHANADUL Vasuthep

- 0830 - 0850 Introduction
- 0850 - 0910 Soil conservation and crop productivity in Yunnan Province, P.R. China  
*MILNE Eleanor, FULLEN Michael A., HOCKING Trevor J., MITCHELL David J., WU Bozhi, LIU Liguang and ZHAO Yun*
- 0910 - 0930 Amelioration of compacted subsoil layer by tillage rotation and its effect on productivity  
*MALINDA David and DARLING Rick*
- 0930 - 0950 Soil resistance under different tillage methods  
*KISIC Ivica, BASIC Perdo, MESIC Milan and BUTORAC Anđjelko*
- 0950 - 1010 Crop residues and vegetative barriers: promising technologies for soil erosion control in Oaxaca, Mexico  
*RUIZ V.J., BRAVO E.M. and LOAEZA R.G.*
- 1010 - 1030 Break
- 1030 - 1050 Soil biochemical and structural characteristics in native and tilled Brazilian Cerrado soils  
*STOIT Diane E. and GREEN V. Steven*
- 1050 - 1110 Gully erosion monitoring in Sao Luis City, Maranhao State, Brazil  
*GUERRA Antonio Jose Teixeira, MENDONÇA Jane K.S., RÉGO Marcelo and ALVES Heana S.*
- 1110 - 1130 The phosphorus enrichment ratio of overfertilized soils  
*SCALENGHE Riccardo, BARBERIS Elisabetta and EDWARDS Anthony C*
- 1130 - 1150 General discussion and conclusions

## Symposium 38

### Advanced integral modeling to make decision in soil conservation

Saturday 17 August 2002

Room: Meeting Room 2

Afternoon Session

**Chairs** : DELGADO Fernando, PLA SENTIS Ildefonso

**Secretary** : TANTASIRIN Chatchai

- 1400 – 1410 Introduction
- 1410 - 1440 Keynote lecture  
Modelling for planning soil and water conservation: a critical review  
*PLA-SENTIS Ildefonso*
- 1440 - 1500 Application of USLE to the prediction of eutrophic components losses in soil erosion processes  
*MIHARA Machito, UENO Takashi and YAMAUCHI Yuichiro*
- 1500 - 1520 Watershed-scale terrain analysis for determining nutrient loss potential  
*BRYANT Ray B., GIASSON Elvio and DEGLORIA Stephen D.*
- 1520 - 1540 Towards soil detachability determination under Divergent Rain Induced Flow Transportation (DRIFT)  
*ALEXANDRE Carlos and FERREIRA Alfredo G.*
- 1540 - 1600 Break

**Chairs** : PLA SENTIS Ildefonso, DELGADO Fernando

**Secretary** : TANTASIRIN Chatchai

- 1600 - 1620 A framework to make decisions in soil conservation for tropical mountains  
*DELGADO Fernando*
- 1620 - 1640 Knowledge-based system for soil conservation and land resources management in agriculture  
*TA-OUN Mongkon, PRUANGKA Suttipong and DAUD Mohamed*
- 1640 - 1700 Soil indicator systems:  
the basis for soil conservation decisions  
*FRIELINGHAUS Monika, PIORR Hans-Peter and MÜLLER Lothar*
- 1700 - 1720 General discussion and conclusions

## Symposium 39

### Amelioration of degraded soils through afforestation

Friday 16 August 2002

Room: Meeting Room 1

Afternoon Session

Chairs : HUETTL Reinhard F., THAIUTSA Bunvong

Secretary : WACHRINRAT Chongrak

- 1400 - 1420 Introduction
- 1420 - 1440 Production of biomass in an alley cropping system  
*HÜTTL Reinhard F., GRÜNEWALD Holger and SCHNEIDER B. Uwe*
- 1440 - 1500 Secondary development stages of soils formed on inland dunes  
under pine woodlands  
*JANKOWSKI Michal and BEDNAREK Renata*
- 1500 - 1520 Significance of symbiotic microorganisms in re-vegetation process  
in Lahar area of Mt. Pinatubo  
*SAITO Masanori, MINAMISAWA Kiwamu and BARRAQUIO Wilfredo*
- 1520 - 1540 Soil nutrient status and root intensity in plantations of exotic tree  
species on highland soils in Northern Thailand  
*POOLSIRI Roongreang, GLATZEL Gerhard, SIEGHARDT Monika and  
THAIUTSA Bunvong*
- 1540 - 1600 Break
- 1600 - 1620 Assessment of techniques of rehabilitation on a logged-over lowland  
tropical forest  
*MOKHTARUDDIN A.M., MASWAR, MAJID N.M., KAMIL YUSOF M.M.,  
FARIDAH HANUM I., AZANI A.M. and KOBAYASHI S.*
- 1620 - 1640 Managing soil fertility in eucalypt plantations in China  
*XU Daping and DELL Bernie*
- 1640 - 1700 Trace metals in the forest floor, litterfall patterns and topography  
*MANNA Sylvie, COURCHESNE François, ROY André,  
TURMEL Marie-Claude and CÔTÉ Benoît*
- 1700 - 1720 General discussion and conclusions

## Symposium 40

### New developments in the evaluation and management of forest soils

**Monday 19 August 2002**  
**Morning Session**

**Room: Meeting Room 3**

**Chairs : KHANNA Partap K., WASUWANICH Pisal**  
**Secretary : WICHENNOPPARAT Wilawan**

- 0830 – 0850 Introduction
- 0850 – 0910 Composition and quality of forest soil nitrogen as revealed by  $^{14}\text{N}$ - and  $^{15}\text{N}$ -NMR spectroscopy  
*XU Zhi-hong, MAO Xi-an, MATHERS Nicole and LUO Ren-sheng*
- 0910 – 0930 Movement of  $^{15}\text{N}$ -labelled harvest residues in the first 2 years of hoop pine plantations  
*BLUMFIELD Tim and XU Zhi-hong*
- 0930 – 0950 Spatial variability and isotopic studies of the prairie-forest transition in Louisiana  
*BEKELE Asfaw, HUDNALL Wayne H. and TIARKS Allan*
- 0950 – 1010 Evaluation of site quality index for teak plantation in Thailand  
*SAKURAI Katsutoshi, YAMADA Yuhki, TULAPHITAK Thepparit, JUNTHOTAI Kriengsak, WACHARINTARAT Chongrak, TEEJUNTUK Sakhan and SAHUNALU Pongsak*
- 1010 – 1030 Break
- 1030 – 1050 A comparison of the carbon balance in the soil between a natural forest and a young teak plantation  
*TAKAHASHI Masamichi, LIMTONG Pitayakon, SUKSAWANG Songtam and HIRAI Keizo*
- 1050 – 1110 Clear-cutting effects on soil organic matter content and quality in a temperate maritime pine forest a spatial and temporal assessment  
*JOLIVET Claudy, ARROUAYS Dominique, BOURHIS Fabien, BOURENNANE Hocine, ANDREUX Francis, LÉVÊQUE Jean, RICHER DE FORGES Anne, CHAUSSOD Rémi, LOUSTAU Denis, TRICHET Pierre, BERT Didier, ANGERS Denis, CHANTIGNY Martin, CHADDOEUF Joël and CIESIELSKI Henri*
- 1110 – 1130 A pedo-geomorphic approach for predicting drought deaths in *Eucalyptus globulus* (Labill.) plantations  
*HARPER R.J., McGRATH J.F. and CARTER J.O.*
- 1130 – 1150 General discussion and conclusions

## Symposium 41

### Techniques for remediation of contaminated soils: physicochemical techniques

Saturday 17 August 2002  
Afternoon Session

Room: Meeting Room 3

Chairs : LEPP Nicholas W., PARKPIAN Preeda

Secretary : SANGTHONG Prapit

- 1400 - 1420 Introduction
- 1420 - 1440 *In situ* remediation of metal-contaminated soils: chemical, biological and isotopic assessments  
*McLAUGHLIN Mike, FERGUSON Verity, HAMON Rebecca, McGRATH Steve, LOMBI Enzo, BROWN Sally, CHRISTIANSEN Barbara, VANGRONSVELD Jaco and RUTTENS Ann*
- 1440 - 1500 *In situ* fixation of metals and metalloids using iron-rich co-products  
*LOMBI Enzo, ZHAO Fang-Jie and McGRATH Steve P.*
- 1500 - 1520 An electrokinetic removal of copper and chromium from wood preservation industry contaminated soil  
*RIBEIRO Alexandra, VELIZAROVA Emiliya, REFFEGA Antonio and CASTRO Adelia*
- 1520 - 1540 Pig manure as co-composting material for remediation of PAH contaminated soil  
*WONG J.W.C., WAN C.K. and FANG M.*
- 1540 - 1600 Break
- 1600 - 1620 Australian approaches to improving methods for the analysis of TPH contamination in soil  
*BUDDHADASA Saman C., BARONE Sebastian, BIGGER Stephen W. and ORBELL John D.*
- 1620 - 1640 The use of physical and biological methods to remediate soils at a former Tar Distillery  
*LEPP Nicholas W., EDWARDS Robert, COOK J.D., ROUTLEDGE Philip and ROUTLEDGE Robert*
- 1640 - 1700 General discussion and conclusions

## Symposium 42

### Techniques for remediation of contaminated soils: biological techniques

Wednesday 21 August 2002

Room: Meeting Room 2

#### Morning Session

Chairs : McGRATH Steve P., PONGSAKUL Pichit

Secretary : LIKHANANONT Bhavana

- 0830 - 0850 Introduction
- 0850 - 0910 Natural remediation processes: bioavailability interactions in contaminated soils  
*ADRIANO D. C., BOLAN N. S., KOO Bon Jun, NAIDU R., LELIE D. van der, VANGRONSVELD J. and WENZEL W. W.*
- 0910 - 0930 Phytoremediation of selenium and other trace elements in soil and water  
*FERRY Norman*
- 0930 - 0950 Biotransfer possibilities of selenium from plants used in phytoremediation  
*BANUELOS G. S., VICKERMAN D. B., TRUMBLE J. T., SHANNON M. C., DAVIS C. D. and FINLEY J. W.*
- 0950 - 1010 The impact of application of chlorates in longan plantations on the environment and the remedy  
*ONGPRAISERT Simecha, SUTIKOOLABUD Pathapan and AUMTONG Supathida*
- 1010 - 1030 Break
- 1030 - 1050 Hyperaccumulation of cadmium and zinc: physiological background and phytoextraction potential  
*LOMBI Enzo, ZHAO Fang-Jie, DUNHAM Sarah J. and McGRATH Steve P.*
- 1050 - 1110 Role of arbuscular mycorrhizal fungi in alleviation of Zn phytotoxicity and mineral nutrition of host plants  
*Li Xiaolin, CHEN Baodong, FENG Gu and CHRISTIE Peter*
- 1110 - 1130 Bioremediation on salinity land  
*KIRDMANEE Chalermpeet, MOSALEEYANON Kriengkrai, WANITCHANANAN Pruderm and WANUSSAKUL Ruenruedee*
- 1130 - 1150 General discussion and conclusions

## Symposium 43

### Cryosols and cryogenic environments in the 21<sup>st</sup> Century

Friday 16 August 2002

Room: Meeting Room 1

#### Morning Session

Chairs : TARNOCAI Charles, PIHMSARN Sathien

Secretary : THONGWITY Pensri

- 0830 - 0850 Introduction
- 0850 - 0910 Cryosols in a changing environment: their role and research needs  
*TARNOCAI Charles*
- 0910 - 0930 Morphogenesis of Cryosols and associated soils in the alpine zone of Tianshan, West China  
*PING Chien-Lu, ZHAO Lin, PAETZOLD Ronald, KIMBLE John, WANG Shaoling and YE Baisheng*
- 0930 - 0950 Cryogenic sector of the geoderma and its internal structure  
*KONELISHKOV Dmitri Ye and SOKOLOV Ilya A*
- 0950 - 1010 Turf hummocks on Ellesmere Island, Canada  
*BROLL Gabriele and TARNOCAI Charles*
- 1010 - 1030 Break
- 1030 - 1050 Permafrost distribution and soil climate in the Glacial Lake Agassiz basin in North-central Manitoba, Canada  
*VELDHUIS Hugo, EHERS Robert G. and MILLS Gordon F.*
- 1050 - 1110 The fate and effects of hydrocarbons in Antarctic soil: preliminary results of an experimental fuel spill  
*BALKS Megan R., HOLMES David J. and AISLABIE Jackie*
- 1110 - 1130 General discussion and conclusions

## Symposium 44

### Global and national digital databases on soil and terrain conditions, their compilation and uses

Thursday 15 August 2002

Room: Meeting Room 3

#### Afternoon Session

Chairs : SOMBROEK Wim, VEARASILP Taweesak

Secretary : THAYMUANG Wipawan

- 1400 - 1420 Introduction
- 1420 - 1440 World soil and terrain database (SOTER): past, present and future  
*NACHTERGAELE Freddy O. and OLDEMAN L. Roel*
- 1440 - 1500 A method for generalization of a soil geographical database: the example of the transfer of the European database EUSIS at 1:1 m to the world SOTER program at 1:5 m  
*KING Dominique, SABY Nicolas, LE BAS Christine, NACHTERGAELE Freddy, VAN ENGELEN Vincent, EIMBERCK Micheline, JAMAGNE Marcel, LAMBERT Jean Jacques and MONTANARELLA Luca*
- 1500 - 1520 SOTER as a tool for land use planning: experiences in West Africa and future applications  
*HERRMANN L., GRAEF F., IGUE M., WELLER U., GAISER T., HAMMEL K. and STAHR K.*
- 1520 - 1540 Digitized natural landscape units and associated soil point data as framework for Amazon biomass and biodiversity assessment  
*RAMALHO FILHO Antônio, DE SOUZA CARVALHO Albertino, CAMARGO DE MIRANDA Luiz and SOMBROEK Wim*
- 1540 - 1600 Break
- 1600 - 1620 Applications of the small-scale and large-scale SOTER databases in Hainan, China  
*ZHANG Gan-Lin, GONG Zi-Tong, ZHANG Xue-lei, ZHAO Yu-guo, QI Zhiping, VAN ENGELEN Vincent and MANTEL Stephan*
- 1620 - 1640 Development of world soils and terrain digital databases for South Africa  
*SAMADI Massoud, BEUKES Hein and REMMELZWAAL Arie*
- 1640 - 1700 ASRIS - Australian soil resources information system  
*JOHNSTON R.M., BLEYS E., BARRY S.J., BUI E.N. and McDONALD W.*
- 1700 - 1720 General discussion and conclusions

## Symposium 45

### Soil carbon dynamics and the greenhouse effect

Tuesday 20 August 2002

Room: Meeting Room 3

#### Morning Session

Chairs : KIMBLE John, CHAIROJ Prapai

Secretary : LUANMANEE Suphakarn

- 0830 - 0850 Introduction
- 0850 - 0910 Influence of land-use management on soil carbon stores in South-western Australia  
*MENDHAM Daniel S., GROVE Tim S. and O'CONNELL Anthony M.*
- 0910 - 0930 Soil carbon stocks among natural and manmade land use systems: a comparative analysis  
*NAGARAJA M.S., REDDY G.V.P. and RAVINDRANATH N.H.*
- 0930 - 0950 Influence of disturbance on soil C dynamics in Canadian boreal forests  
*BHATTI J.S. and APPS M.J.*
- 0950 - 1010 Simulation of SOM balance of Eastern Europe arable lands based on EuroSOMNET database  
*SIROTENKO Oleg, SHEVTSOVA Lyudmila, ROMANENKOV Vladimir, SMITH Pete, SMITH Jo U., ASHMAN Mark and LEACH Penny*
- 1010 - 1030 Break
- 1030 - 1050 Paired site sampling to estimate soil organic carbon changes following land clearing in Queensland  
*HARMS Ben, DALAL Ram and POINTON Shane*
- 1050 - 1110 Effects of soil microorganisms on the behavior of CO<sub>2</sub> and O<sub>2</sub> gases in soil  
*FUJIKAWA Tomonori and MIYAZAKI Tsuyoshi*
- 1110 - 1130 An assessment of potential carbon storage in the soils of France  
*ARROUAYS Dominique, LE BAS Christine, BALESDENT Jérôme and GAILLARD Jocelyn*
- 1130 - 1150 General discussion and conclusions

## Symposium 46

### Land degradation and desertification: confronting the realities of the 21<sup>st</sup> Century

Friday 16 August 2002

Room: Meeting Room 2

Morning Session

Chairs : ESWARAN Hari, VEERASILP Taweesak

Secretary : PANIKORN Vanida

- 0830 - 0850 Introduction
- 0850 - 0910 Soil degradation due to heavy metal accumulation under long term fertilization  
*PALANIAPPAN Muthavel, SHANMUGAM Kamaraj and PONNUSAMY Santhi*
- 0910 - 0930 Soil degradation and desertification in the Western Sierra Madre of Mexico  
*GONZALEZ-BARRIOS J.L., DESCROIX L., VIRAMONTES D. and ANAYA E.*
- 0930 - 0950 Degradation of soils in Azerbaijan  
*BABAYEV M.*
- 0950 - 1010 Characterization of land degradation in Central Argentina with hyperspectral AYIRIS and EO-1 data  
*HUETE Alfredo, GAO Xiang, KIM Ho Jun, MIURA Tomoaki, BORGHI Carlos and OJEDA Ricardo*
- 1010 - 1030 Break
- 1030 - 1050 Desertification study at life-size scale: human-soil interactions on land degradation in semi-arid West Africa  
*TANAKA Ujira, MIYAZAKI Hidetoshi, NODA Etsuka and KOSAKI Takashi*
- 1050 - 1110 Overview of environmental and natural resource degradation of agriculture in Bangladesh  
*ALI Md. Mohsin and WAKATSUKI Toshiyuki*
- 1110 - 1130 Natural restoration of degraded grazing land  
*ZOFBISCH M. and MASRI Z*
- 1130 - 1150 General discussion and conclusions

## Symposium 47

### Soil mineral - organic component - microorganism interactions and the impact on the ecosystem and human welfare

Monday 19 August 2002  
Morning Session

Room: Meeting Room 4

Chairs : HUANG Pan Ming, VITYAKON Patma

Secretary : VICHIEANSANTH Puntipa

- 0830 - 0850 Introduction
- 0850 - 0910 Soil minerals and organic components: impact on biological processes, human welfare and nutrition  
*HAIDER K. and GUGGENBERGER G.*
- 0910 - 0930 Maillard reaction catalyzed by  $\delta$ -MnO<sub>2</sub>: a significant mechanism in formation of "unknown nitrogen" in soils  
*JOKIC A., SCHULTEN H.R., SCHNITZER M. and HUANG P.M.*
- 0930 - 0950 The effect of organic matter and chemical properties on sulphate adsorption in Chilean volcanic soils  
*MORA M.L., SHENE C., DEMANET R. and VIOLANTE A.*
- 0950 - 1010 Factors affecting arsenate adsorption/desorption on/from variable charge minerals and soils  
*VIOLANTE Antonio, PIGNA Massimo and RAGUSA Raffaella*
- 1010 - 1030 Break
- 1030 - 1050 Sequential fractionation of Cu, Zn and Cd in soils in the absence and presence of rhizobia  
*HUANG Qiaoyun, CHEN Wenli and GUO Xuejun*
- 1050 - 1110 Impact of soil minerals - organic component - microorganisms interactions on restoration of terrestrial ecosystems  
*BOLLAG Jean-Marc, BERTHELIN Jacques, ADRIANO Domy and HUANG P.M.*
- 1110 - 1130 Olive oil mills waste waters and clay minerals interactions: organics transformation and clay particles aggregation  
*D'ACQUI Luigi P., SPARVOLI Enzo, AGNELLI Alberto and SANTI Carolina A.*
- 1130 - 1150 General discussion and conclusions

## Symposium 48

### Development in soil data processing

Friday 16 August 2002

Room: Meeting Room 2

Afternoon Session

Chairs : VAN MEIRVENNE Marc, NILNOND Chairatna

Secretary : KAEWMANO Chuthamard

- 1400 - 1420 Introduction
- 1420 - 1440 Determining optimized unit size for clean-up in contaminated soils based on dispersion variance  
*LEE Dar-Yuan, JUANG Kai-Wei and TSENG Chieng-Chih*
- 1440 - 1500 Modeling spatio-temporal changes in soil salinity and water-logging in Marvdasht Plain, Iran  
*MOAMENI Aziz and STEIN Alfred*
- 1500 - 1520 Soil inference systems  
*MINASNY Budiman and McBRATNEY Alex. B.*
- 1520 - 1540 Mapping soil properties from an existing national soil data set using freely available ancillary data  
*HENGL Tomislav, ROSSITER David G. and HUSNJAK Stjepan*
- 1540 - 1600 Break
- 1600 - 1620 Assessment of soil thickness spatial uncertainty using simulation techniques  
*BOURENNANE Hocine and KING Dominique*
- 1620 - 1640 Towards a quantitative assessment of soil organic carbon using proximally sensed digital imagery  
*VISCARRA ROSSEL Raphael A. and WALTER Christian*
- 1640 - 1700 New approaches to the exploitation of former soil survey data  
*BORUYKA Lubos, KOZAK Josef, NEMECEK Jan and PENIZEK Vit*
- 1700 - 1720 General discussion and conclusions

## Symposium 49

### Paleosols as a memory for understanding landscape history and environmental problems

Thursday 15 August 2002

Room: Meeting Room 4

#### Morning Session

**Chairs** : BRONGER Arnt, KANYAWONGHA Pornthiwa

**Secretary** : PHANCHINDAWAN Naree

- 0830 - 0850 Introduction
- 0850 - 0910 Pleistocene periglacial slope deposits influenced by geology and relief in the Rhenish Massif, Germany  
*SAUER Daniela, SCHOLTEN Thomas, SPIES Ernst-Dieter and FELIX-HENNINGSEN Peter*
- 0910 - 0930 Relict soils as paleoclimatic indicators: examples from the Austrian Alps and the Central Andes  
*VEIT Heinz*
- 0930 - 0950 Pedogenetic processes in loess sediments in Serbia and Milankovich's astronomic theory  
*PROTIC N.J. and KOSTIC N.M.*
- 0950 - 1010 Physical, geochemical and mineralogical indicators of aging in quaternary soils of Central Italy  
*COSTANTINI Edoardo A.C., ANGELONE Massimo and DAMIANI Damiano*
- 1010 - 1030 Break
- 1030 - 1050 Paleosols and new approaches to paleoenvironment reconstruction  
*DERGACHEVA Maria*
- 1050 - 1110 Vetusols and Paleosols: natural versus man-induced environmental change in the Atlantic coastal region of Morocco  
*BRONGER A. and SEDOV S.N.*
- 1110 - 1130 Loess-like deposits at Blayney, South-eastern Australia  
*HUMPHREYS Geoff S., HESSE Paul P., PETERSON Elizabeth K., CAMPBELL James and CONAGHAN Patrick J.*
- 1130 - 1150 General discussion and conclusions

## Symposium 50

### Sustainable paddy soil ecosystem: a global challenge

Saturday 17 August 2002

Room: Meeting Room 3

#### Morning Session

**Chairs** : CONCEPCION Rogelio N., SAENJAN Patcharee

**Secretary** : CHIDTHAISONG Annat

- 0830 - 0850 Introduction
- 0850 - 0910 Methane emission from Thai farmers' paddy fields as a basis for appropriate mitigation technologies  
*SAENJAN Patcharee, TULAPHITAK Duangsamorn, TULAPHITAK Thepparit, TANGCHUPONG Soupachai and JEARAKONGMAN Suwat*
- 0910 - 0930 Methane production and population dynamics of acetoclastic methanogens in relation to atmospheric methane in paddy field  
*CHAWANAKUL Sawasnee, CHAIPRASERT Pawoonce, KERDCHIOECHUEN Orapin, TOWPRAYOON Sirinthorncep and TANTICHAREON Marakot*
- 0930 - 0950 Stable carbon isotope fractionation during methanogenesis in California paddy field  
*CHIDTHAISONG Annat, McMILLAN Andrew L. and TYLER Stanley C.*
- 0950 - 1010 The role of organic matter quality in nitrogen cycling and yield trends in intensively cropped paddy soils  
*OLK D.C. and CASSMAN K.G.*
- 1010 - 1030 Break
- 1030 - 1050 Nutrient release from straw of three rice (*Oryza sativa* L.) varieties and the impact on the growth of rice  
*PANGGA Gona Villegas and BLAIR Graeme J.*
- 1050 - 1110 Dispersion of soil fertility in a field where was consolidated 37 years ago and influence for rice yield  
*HISATOMI Yoko, OHNISHI Masuo and WAKATSUKI Toshiyuki*
- 1110 - 1130 Spatial variability of soil properties and rice yield in paddies: is precision agriculture worth practicing?  
*YANAI Junta, LEE Choung Keun, UMEDA Mikio and KOSAKI Takashi*
- 1130 - 1150 General discussion and conclusions

# Symposium 51

Manufactured, amended, and intensively tilled soils and substrates

Friday 16 August 2002  
Afternoon Session

Room: Meeting Room 3

Chairs : KOOLEN Jos, KESAWAPITAK Prasat  
Secretary : CHUAYBUDDA Rattanachart

- 1400 - 1410 Introduction
- 1410 - 1430 Influence of type of organic material on strength of sport turfs  
*BOS O.F., WOLLESWINKEL A.P. and KOOLEN A.J.*
- 1430 - 1450 Estimating generalized soil-water characteristics from particle size distribution organic matter content and bulk density  
*BASSIRANI Nasrollah and GILL G.S.*
- 1450 - 1510 Relationships between mechanical properties, penetration resistance and bulk density in reconstituted Anthrosols  
*JEAN-PIERRE Rossignol and DEBAYLE Christophe*
- 1510 - 1530 Usability of brown coal for improvement of physical and water properties of sandy soil  
*MACIEJEWSKA Alina and KWIATKOWSKA Jolanta*
- 1530 - 1540 General discussion and conclusions
- 1540 - 1600 Break

## Symposium 52

### Remote sensing for data fusion and GIS as tools in land evaluation and degradation studies

Saturday 17 August 2002

Room: Meeting Room 4

#### Morning Session

Chairs : ESCADAFAL Richard, POPAN Apisak

Secretary : THANG-BUTRE Danchai

- 0830 - 0850 Introduction
- 0850 - 0910 Continental-scale spatial modelling of soil properties  
*BILL Elizabeth, HENDERSON Brent, MORAN Chris and JOHNSTON Rahyn*
- 0910 - 0930 Prediction of the soil organic carbon content at micro-, meso- and macroscales by digital terrain modelling  
*FLORINSKY Igor I. and EILERS Robert G.*
- 0930 - 0950 Remote sensing and modeling of topsoil properties: a clue for assessing land degradation  
*FARIFTEH Jamshid and FARSHAD Abbas*
- 0950 - 1010 Quantitative pedogenic approach on soilscapes by relief analysis, geophysics and remote sensing  
*SOMMER Michael, WEHRHAN Marc, ZIPPRICH Matthias, ZU CASTELL Wolfgang and WELTER Ulrich*
- 1010 - 1030 Break
- 1030 - 1050 Spectral unmixing versus spectral angle mapper for land degradation assessment: a case study in Southern Spain  
*SURENTHA D.P., MARGATE D.E., ANH H.V. and Van DER MEER F.*
- 1050 - 1110 Mapping salt affected areas in Northeast Thailand using LANDSAT - 5 TM data  
*SIKCHAN Somsak, KATAWATIN Roengsak, JANTHOTHAI Krungsak and BUCHAIHIT Pichai*
- 1110 - 1130 A detailed study on GIS aided (soil) "environmental" capacity of Farsala District in Larissa, Greece  
*LELENIHS Telemachus and FOTOPOLIOS Christos*
- 1130 - 1150 General discussion and conclusions

## Symposium 53

### Coupled hydraulic and mechanical processes in structured soils: a challenge to define sustainability

Monday 19 August 2002

Room: Meeting Room 3

Afternoon Session

Chairs : HORN Rainer, MAIRANG Warakorn

Secretary : TAKASHIMA Tidarat Rieko

- 1400 - 1420 Introduction
- 1420 - 1440 Stress strain effects in structured unsaturated soils on coupled mechanical and hydraulic processes  
*HORN Rainer*
- 1440 - 1500 Modeling the shrinkage curve of a soil clay matrix  
*CHEBOKOV Victor Yu.*
- 1500 - 1520 Wide range reduction in water permeability by compression and pore-structural change of soils  
*ISHIZUKA Makiko and MIYAZAKI Yuusaku*
- 1520 - 1540 Shearing-induced changes in saturated hydraulic conductivity under different soil conditions  
*ZHANG Bin and HORN R.*
- 1540 - 1600 Break
- 1600 - 1620 The results of heat and water transfer study in soil-plant-air system  
*GERBYZADE A.P.*
- 1620 - 1640 Electrical fields and soil properties  
*POZDNYAKOV Anatoly and POZDNYAKOVA Larisa*
- 1640 - 1700 Mechanical stability of soils derived from marsh sediments  
*ELFEGE H. and HORN R.*
- 1700 - 1720 General discussion and conclusions

## Symposium 54

### Vadose zone management strategies to prevent groundwater pollution

**Tuesday 20 August 2002**  
**Morning Session**

**Room: Meeting Room 4**

**Chairs : HOPMANS Jan W., SANGKHASILA Kumut**  
**Secretary : JEW Nitirat**

- 0830 - 0850 Introduction
- 0850 - 0910 Evaporative self-mulching of soil and moisture diffusivity function  
*GLOBUS A.M., NEUSYPINA T.A. and TOPAZH A.G.*
- 0910 - 0930 Nitrate contamination of groundwater under different anthropogenic activities  
*THIND H.S. and KANSAL B.D.*
- 0930 - 0950 Effects of pressure and density on the transport of gas-phase chemicals in the vadose zone  
*ROLSTON Dennis E., ALTEVOGT Andrew S. and WHITAKER Stephen*
- 0950 - 1010 Measurements of convective chemical fluxes in vadose zone by suction controlled lysimeter  
*KOSUGI Ken'ichirou and KATSUYAMA Masanori*
- 1010 - 1030 Break
- 1030 - 1050 Development of improved water and nutrient management strategies through strategic modeling  
*BRISTOW Keith L., HOPMANS Jan W., COTE Claire M., CHARLESWORTH Philip B., THORBURN Peter J. and COOK Freeman J.*
- 1050 - 1110 Model of vadose zone solute transport with root water and solute uptake  
*SCHOUPS Gerrit and HOPMANS Jan W.*
- 1110 - 1130 Role of ditches on water exchanges between two shallow groundwaters in an agricultural catchment  
*MAROFI Safar, MOUSSA Roger and VOLTZ Marc*
- 1130 - 1150 General discussion and conclusions

## Symposium 55

Improving knowledge about soils and their functions in urban,  
industrial and mining areas for a better life

Friday 16 August 2002  
Morning Session

Room: Meeting Room 3

Chairs : BURGHARDT Wolfgang, TANAVUD Charlchai  
Secretary : SRISUPHA-OLARN Tanapol

- 0830 - 0850 Introduction
- 0850 - 0910 Chemical content of the humic acids from Chernozems of the urbanized territories  
*BEZUGLOVA Olga and GORBOV Sergey*
- 0910 - 0930 Peculiarities of soil structure in urban, industrial and mining areas and their effects on soil functions  
*BURGHARDT Wolfgang*
- 0930 - 0950 Urban pollution management using soil and stormwater infiltration devices  
*HAZELTON P. and BEECHAM S.*
- 0950 - 1010 Long term on-site experiments and mass balances in waste water treatment by multi-soil-layering system  
*SATO Kumiaki, IHA Yoshihisa, LUANMANEE Supakarn, MASUNAGA Tsugiyuki and WAKATSUKI Toshiyuki*
- 1010 - 1030 Break
- 1030 - 1050 The concept of controlled afforestation of dredged sediment landfills polluted with heavy metals  
*VANDECASTEELE Bart and DE VOS Bruno*
- 1050 - 1110 Heavy metal load of soils around Mae Moh lignite mining, Thailand  
*WONGYAI K. and BASHKIN V.N.*
- 1110 - 1130 Development of soil chemistry and element cycles at afforested post-mining sites  
*SCHAAF Wolfgang*
- 1130 - 1150 General discussion and conclusions

## Symposium 56

### Soil education and public awareness

Friday 16 August 2002

Room: Meeting Room 4

#### Morning Session

**Chairs** : DOSSO Mireille, SUWANNARAT Chairerk

**Secretary** : THONGYON Raviya

- ✓ 0830 - 0850 Introduction
- ✓ 0850 - 0910 Invited paper  
Introducing the concept of soil biological fertility to land managers:  
a soil biology education program  
*ABBOTT Lyn, MILTON Nui, MURPHY Daniel and HAQ Krys*
- 0910 - 0930 Soil, support and provision for the plants: a project for the  
elementary and the high school education  
*REYES-SÁNCHEZ Laura Bertha and VIDAL JIMÉNEZ Leslie*
- 0930 - 0950 Soil education and public awareness: an international SOS2  
campaign  
*RABAH Lahmar, DOSSO Mireille and RUELLAN Alain*
- 0950 - 1010 Scientific aspects of the United Nations Convention to combat  
desertification  
*TAHOUN Salah A.*
- 1010 - 1030 Break
- 1030 - 1050 General discussion and conclusions

## Symposium 57

### Soil properties as influenced by the addition of organic fertilizers and amendments

Tuesday 20 August 2002  
Afternoon Session

Room: Meeting Room 3

Chairs : SIMS Tom, LIMTONG Pitayakon

Secretary : LEAUNGVUTIVIROG Chaveevan

- 1400 - 1420 Introduction
- 1420 - 1440 Near-infra-red spectroscopy (NIR) for characterisation of plant residue quality: a new approach for predicting decomposition and nitrogen release in agricultural soils  
*JENSEN Lars S., PEDERSEN Anders, STENBERG Bo, LUNDSTROM Christina, BRELAND Tor A., HENRIKSEN Trond M., PALMASON Fridrik, GUDMUNSON Jon and SALO Tapio*
- 1440 - 1500 Effect of paddy-upland crop rotation with various fertilizations on soil physical and chemical properties  
*WANG M.C. and YANG C.H.*
- 1500 - 1520 Sewage sludge-coir pith pellets: a source of organic manure  
*KRISHNASAMY R., SOMASUNDARAM J. and SAVITHRI P.*
- 1520 - 1540 Soil fertility comparison among organic and conventional managed citrus orchards in Sicily  
*CANALI Stefano, TRINCHERA Alessandra, DI BARTOLOMEO Emanuela, NISINI Luigi, BENEDETTI Anna and INTRIGLIOLO Francesco*
- 1540 - 1600 Break
- 1600 - 1620 Leaching of nitrogen from manures and inorganic fertilizer  
*BERGSTRÖM Lars and KIRCHMANN Holger*
- 1620 - 1640 Enhanced biological cycling of phosphorus increases its availability to crops in low-input sub-Saharan farming systems  
*AYAGA George and BROOKES Phil*
- 1640 - 1700 Co-application of biosolids and water treatment residuals  
*O'CONNOR George A. and ELLIOTT Herschel A.*
- 1700 - 1720 General discussion and conclusions

## Symposium 58

### Soil organic fertilizers and amendments: an outlook on key environmental and sanitary issues

Saturday 17 August 2002  
Afternoon Session

Room: Meeting Room 4

Chairs : SEQUI Paolo, PIRIYAPRIN Siangjeaw  
Secretary : LEAUNGVUTIVIROG Chaverran

- 1400 - 1410 Introduction
- 1410 - 1430 The application of precautionary principle to soil environmental and sanitary issues  
*TITARELLI Fabio*
- 1430 - 1450 Co-compost production from agricultural wastes and sewage sludge  
*EL-HOUSSEINI M., FAHMY Soheir S. and ALLAME H.*
- 1450 - 1510 Influence of composted manure and salinity on growth and nutrient content of maize tissue  
*IRSHAD M., YAMAMOTO S., ENEH A.E. and IRONNA T.*
- 1510 - 1530 Evaluation of atmosphere CO<sub>2</sub> enrichment from Italian agricultural soils: first results  
*SEQUI Paolo, BENEDETTI Anna and POMPILI Letizia*
- 1530 - 1540 General discussion and conclusions
- 1540 - 1600 Break
- 1600 - 1720 Papers from Symposium 60

## Symposium 59(1)

### Towards integrated soil, water and nutrient management in cropping systems: the role of nuclear techniques

Monday 19 August 2002

Room: Plenary Hall 1

#### Morning Session

Chairs : PHONGPAN Sakorn, CHALK Phillip

Secretary : CHUAYBUDDA Rattanachart

- 0830 - 0850 Introduction
- 0850 - 0910 Towards integrated soil, water and nutrient management in cropping systems: the role of nuclear techniques  
*CHALK Phillip, ZAPATA Felipe and KEERTHISINGHE Gamini*
- 0910 - 0930 Use of stable isotopes in assessing belowground contributions to N and soil organic matter dynamics  
*CADISCH G., NDUFA J.K., YASMIN K., MUTUO P., BAGGS E.M., KEERTHISINGHE G. and ALBRECHT A.*
- 0930 - 0950 Influence of crop rotation and soil tillage system in the organic C balance in an Oxisol (Typic Haplorthox)  
*URQUJAGA Segundo, SISTI Claudia, SANTOS Henrique dos, KOCHHANN Rainoldo, ALVES Bruno J.R. and BODDEY Robert M.*
- 0950 - 1010 Use of  $^{15}\text{N}$  dilution to study effects of soil temperature on N mineralisation, immobilisation and nitrification  
*RECOUS S., LUXHOI J., FILLERY I.R.P., JENSEN L.S. and MARY B.*
- 1010 - 1030 Break
- 1030 - 1050 Isotopic techniques, on-farm methods and simulation: can these help resource-poor farmers on degraded lands  
*RAMANA M.V., REGO T.J., KUMAR RAO J.V.D.K., MYERS R.J.K., KHADKE K.M., PARDHASARADHI G. and VENKATARATNAM N.*
- 1050 - 1110 Biological  $\text{N}_2$  fixing capacity of *Gliricidia sepium* and *Calliandra calothyrsus* and impact of alleys of them and reference species on performance of coffee  
*GUNARATNE W.D.L. and HEENKENDA A.P.*
- 1110 - 1130 Use of  $^{35}\text{S}$ -sulphur to monitor the dynamics and transformations of sulphur in soil  
*WU Jinhui, SYERS J. Keith and O'DONNELL Anthony G.*
- 1130 - 1150 General discussion and conclusions

## Symposium 59(2)

### Towards integrated soil, water and nutrient management in cropping systems: the role of nuclear techniques

Monday 19 August 2002

Room: Plenary Hall 1

Afternoon Session

Chairs : CHALK Phillip, PHONGPAN Sakorn

Secretary : THONGWITY Pensri

- 1400 - 1420 Introduction
- 1420 - 1440 Impact of irrigation and fertilization on NO<sub>3</sub> leaching and soil-ground water contamination in Lebanon  
*DARWISH Total, ATALLAH Therese, El Khatib M and HAJHASSAN Salah*
- 1440 - 1500 Comparison of soil moisture sensors between neutron probe, Diviner 2000 and TDR under tomato crops  
*HENG L K, CAYCI G, KÜTÜK C, ARBILLAGA L L and MOUTONNET P*
- 1500 - 1520 Estimating soil erosion using fallout caesium-137 in cultivated land at the watershed of Maximo River, Cuba  
*BRIGIDO Flores Osvaldo, GANPARIJA Benitez Julio, MONTALVAN Estrada Adolfo and BARRERAS Caballero Aldo*
- 1520 - 1540 Use of isotopic techniques for environmental issues in soil science  
*GERZABEK Martin H, ULLAH Shah M and HABERHAUER Georg*
- 1540 - 1600 Break
- 1600 - 1620 Stable sulphur isotope ratio as an indicator of atmospheric sulphur inputs to agricultural systems  
*ZHAO Fongjie and McGRATH Steve*
- 1620 - 1640 Nitrate retention and nitrogen isotope discrimination in a riparian buffer zone  
*DIJONDT Karel, BOECKX Pascal, VAN CLEEMPUT Oswald, HOFMAN Georges and DE TROCH François*
- 1640 - 1700 Innovations in the use of isotopes of sulfur in soil/plant/water/animal studies  
*BLAIR Gwynne, MURAOKA Takushi and TILL Ray*
- 1700 - 1720 General discussion and conclusions

## Symposium 60

### Comparison of bedrocks, soils, chemical climate and pollution as geomedical factors

Saturday 17 August 2002

Room: Meeting Room 4

Afternoon Session

Chairs : STEINNES Elin, JINTAKANONT Suradej

Secretary : THONGYON Raviya

- 1400 - 1540 Papers from Symposium 58
- 1540 - 1600 Break
- 1600 - 1610 Introduction
- 1610 - 1630 Biogeochemical cycling of iodine and selenium and potential  
geomedical relevance  
*STEINNES Elin*
- 1630 - 1650 Geologic nitrogen as a non-point source of nitrate in natural waters  
*DAHLGREN Randy A. and HOLLOWAY JoAnn M.*
- 1650 - 1710 Selenium fertilization and food chain quality  
*HARTIKAINEN Helmi*
- 1710 - 1720 General discussion and conclusions

## Symposium 61

### Soil Convention

Tuesday 20 August 2002  
Afternoon Session

Room: Meeting Room 4

Chairs : HURNI Hans, ANULUXITIPUN Yuttachai  
Secretary : THIANPOPIRIG Sansarit

- 1400 - 1420 Introduction
- 1420 - 1440 Current international actions for furthering  
the sustainable use of soils  
*HURNI Hans*
- 1440 - 1500 Pedosphere, global changes and environmental quality of soil  
*ZHAO Qiguo*
- 1500 - 1520 A preliminary assessment of the human impact on land systems of  
the world  
*ESWARAN Hari and REICH Paul*
- 1520 - 1540 Report on the activities of the IUSS working group: international  
actions on sustainable use of soil  
*MEYER Konrad H.*
- 1540 - 1600 Break
- 1600 - 1620 Building land and soil synergies  
*MAC KENSEN Jens and CHEVALIER Claudiane*
- 1620 - 1640 General discussion and conclusions

## Symposium 62

### WOCAT: World overview of conservation approaches and technologies

Monday 19 August 2002  
Afternoon Session

Room: Meeting Room 4

Chairs : KIMARU Gathru, SOMBATPANIT Samran  
Secretary : THAYMUANG Wipawan

- 1400 - 1420 Introduction
- 1420 - 1440 WOCAT in Eastern Africa Region: documenting and disseminating conservation approaches and technologies  
*KIMARU Gathru*
- 1440 - 1500 WOCAT program in the Philippines  
*RONDAL Jage and LABIOS Romeo*
- 1500 - 1520 WOCAT a potential tool for conservation education  
*ZOEBISCH M. and SOMBATPANIT S.*
- 1520 - 1540 Effects of long-term grazing exclusion on controlling soil erosion  
*MOHAMMADI J., ESKANDARI Z. and VARDANJANI Nosratollah Esmaeli*
- 1540 - 1600 Break
- 1600 - 1620 Embankment stabilization of reservoirs by vetiver hedgerows and other conservation practices  
*JANJAWAT S., JAMPITHUKSA V., POLJAN P. and PUENGPANICH P.*
- 1620 - 1640 A protocol for large-area diagnostic surveillance of soil degradation  
*WALSU Markus G. and SHEPHERD Keith D.*
- 1640 - 1700 Digital soil database of Honduras: a decision tool to support improved land use  
*AYARZA Miguel A., TREJO Marco Tulio, BARRETO Hector and MEJIA O.*
- 1700 - 1720 General discussion and conclusions

## Symposium 63

### Acid sulphate soil management in tropical environments

Wednesday 21 August 2002

Room: Meeting Room 3

#### Morning Session

Chairs : COOK Freeman, YUVANIYAMA Jumpol

Secretary : JINJARIDITH Bunjirtak

- 0830 - 0850 Introduction
- 0850 - 0910 His Majesty the King's initiation on improvement of acid sulphate soil in Thailand: the Klaeng Din project  
*ELIARSSORN Pisut, ROLIANASOONTIION Sonthal and SRIJANTR Phongsan*
- 0910 - 0930 Cropping systems on acid sulphate soils in the central plains of Thailand: constraints and remedies  
*CHOI K.M., RANAMUKHAARACHITH S.I. and ZOEIBISCH M.A.*
- 0930 - 0950 Influence of aluminium on soil quality  
*THANGADEL P. and SUBBURAM V.*
- 0950 - 1010 The geochemistry of Australian tropical acid sulfate soils and their environmental hazard  
*HICKS Warren, BOWMAN Greg and FITZPATRICK Rob*
- 1010 - 1030 Break
- 1030 - 1050 A case study on the relationship between the sulfur forms and acidity in acid sulphate soils  
*ZHANG Jia'en and LUO Shining*
- 1050 - 1110 Changes of acid sulfate soil properties and water quality as affected by reclamation in a tidal backswamp area  
*AYDA Markus and SISWANTO Agus B.*
- 1110 - 1130 Diogeochemical and mineralogical processes in acid sulfate soils: implications for environmental significance  
*FITZPATRICK Robert, SKWARNECKI Marian, RAVEN Mark, MERRY Richard and BONIFACIO Eleonora*
- 1130 - 1150 General discussion and conclusions

## Symposium 64

### Rhizosphere research: new challenges for soil scientists in the 21<sup>st</sup> Century

Friday 16 August 2002  
Afternoon Session

Room: Meeting Room 4

Chairs : HINSINGER Philippe, MALA Thongchai  
Secretary : LAOSUWAN Pornpana

- 1400 - 1420 Introduction
- 1420 - 1440 Roots regulate ion transport in the rhizosphere to counteract reduced mobility in dry soil  
*STEINGROBE Bernd, LIEBERSBACH Horst and CLAASSEN Norbert*
- 1440 - 1500 Rhizosphere research: a tool for creating phosphorus efficient crop varieties  
*GAHONJA Tara Singh and NIELSEN Niels Erik*
- 1500 - 1520 Release of protons bicarbonate ions in the rhizosphere of two bean genotypes as affected by P deficiency  
*TANG Cuxton, DREVON Jean-Jacques, JAILLARD Benot, SOUCHE Grard and HINSINGER Philippe*
- 1520 - 1540 Dynamics of rhizosphere-microbial communities as related to root exudation in P-deficient *Lupinus albus*  
*MARSCHNER Petra, NEUMANN Günter and KANIA Angelika*
- 1540 - 1600 Break
- 1600 - 1620 Solid phase metal fractionation as affected by organic matter in the rhizosphere of forested soils  
*SÉGUIN Véronique, COU-ROCHESNE François, GAGNON Christian, MARTIN Ronald R. and GOBBAN George R.*
- 1620 - 1640 Mobilisation of zinc by plants as affected by soil and rhizosphere pH  
*STRACZEK Anne, LOOSEMORE Nancy, BRIAT Jean François, HINSINGER Philippe, Valérie SAPPIN-DIDIER, VANSSUYT Gérard and JAILLARD Benoit*
- 1640 - 1700 An approach to study rhizosphere processes under major cropping systems in China  
*ZHANG Eysun, SHEN Jianbo, Li Long and LIU Xuejun*
- 1700 - 1720 General discussion and conclusions

## Symposium 65

### Soil functions in the biosphere

Thursday 15 August 2002  
Afternoon Session

Room: Meeting Room 4

Chairs : TROFIMOV Sergey Ya., KANGHAE Piboon  
Secretary : HOMYAMVEN Kannika

- 1400 - 1420 Introduction
- 1420 - 1440 Soil pore space as communication channel between the geosphere, the atmosphere and the biosphere  
*BLUM Winfried E.H.*
- 1440 - 1500 Soil functions in managed ecosystems: the need for a balance  
*DE KIMPE Christian*
- 1500 - 1520 Impact of forest plantations on soil functions in the biosphere: case studies in South Africa  
*ROZANJE Andrej and FEY Martin*
- 1520 - 1540 Entropy based triangle for designing sustainable soil management  
*OFESCHKO Klaudiv, KORVIN Gabor and FIGUEROA Benjamin*
- 1540 - 1600 Break
- 1600 - 1620 Model estimates of soil organic carbon storage in agricultural land in China  
*TANG Huajun, QIU Jianjun, VAN RANST Eric and LI Chongsheng*
- 1620 - 1640 Soils as biotic source of nitrous oxide in the biosphere  
*STEPANOV A.L.*
- 1640 - 1700 Soil functions in the biosphere: to what extent ecosystem processes are regulated by soil?  
*TROFIMOV Sergey, DOROFFEVA Ekaterina, FORIN Alexey and LUZIKOV Andrey*
- 1700 - 1720 General discussion and conclusions





*Good Food, Good Life*