



Bulletin

of the International Union of Soil Sciences

No. 100

2001/2

INTERNATIONAL UNION OF SOIL SCIENCES

Founded as International Society of Soil Science (ISSS): 19-05-1924.

Full Members, Associate Members, Individual Members and Sustaining Members since: August 1998.

A scientific union member of ICSU since: 1993.

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Commissions - Chairpersons:

I. Soil Physics

Dr. D. Tessier, Science du Sol, INRA, Route de Saint Cyr, 78026 Versailles Cédex, France

II. Soil Chemistry

Prof.Dr. D.L. Sparks, Univ. of Delaware, Dept. of Plant & Soil Sci., Newark, DE 19717-1303, USA

III. Soil Biology

Dr.J.K. Ladha, I.R.R.I., P.O. Box 933, 1099 Manila, Philippines; Fax: +632-845-0606 or -891-1292.

IV. Soil Fertility and Plant Nutrition

Prof.Dr. M.J. Swift, TSBF, P.O. Box 30592, Nairobi, Kenya.

V. Soil Genesis, Classification and Cartography

Prof.Dr. A.R. Mermut, University of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask. S7N 5A8, Canada

VI. Soil Technology

Dr. P. Pengasamy, Univ. of Adelaide, Dpt. of Soil and Water, Waite Campus, PMB1, Glen Osmond S.A. 5064, Australia.

VII. Soil Mineralogy

Prof.Dr. K. Stahr, Inst. f. Standortlehre u. Bodenk., Univ. Hohenheim, Emil-Wolff-Str.27, 70599 Stuttgart, Germany

VIII. Soils and the Environment

Dr. Ch. de Kimpe, Agriculture Canada, Direction Générale de la Recherche Sir J. Carling Bldg. 725, 930 Carling Av., Ottawa, Ont. K1A 0C5, Canada



Bulletin

of the International Union of Soil Sciences

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IMPORTANT NOTICE

**for the nomination of officers for the new Divisions and Commissions of IUSS at the
17th World Congress of Soil Science,
August 14-21, Bangkok, Thailand**

THE TIME SCHEDULE for nominations for offices of the new Divisions and Commissions of IUSS (see *IUSS Bulletin No. 97/2001-1*) **HAS BEEN DELAYED UNTIL MAY 14, 2002.** - *This should allow to have nominations for all offices of Divisions and Commissions. Officers of Working Groups can be elected at any congress and not necessarily at the IUSS World Congress (Rules I2).*

PLEASE OBSERVE that candidates shall always be nominated by at least 20 members (as in Statute B2, B3, B4 and B6), but the nominating members must not include more than 8 who are nationals of a single country. - It is not necessary to sign any support letter. It is sufficient to send an E-mail either to the candidate or to the Secretary-General in support of the candidate.

On the subsequent page you will find **A FORM THAT CAN BE USED FOR THIS PURPOSE.**

Any person nominated as a candidate must be a fully paid up member of a Full Member or Associate Member, an individual member, associate member, honorary member or life member and must state his/her willingness to serve, in writing to the Secretary-General.

It is expected that candidates will be present at the Election Meeting during the World Congress, but this is not obligatory if they are represented by a supporter who can answer questions during the meeting.

The Vice-Chairman and the Secretary of each Division will be nominated by the host country before the Congress. These candidates will be presented to the divisional electoral meeting for acclamation.

In view of the importance of these first elections for the implementation of the new scientific structure of IUSS, I would like to ask you all to contribute to this process by nomination of candidates.

Winfried E.H. Blum
Secretary-General, IUSS

IUSS Nominations for Offices of Divisions and Commissions

NOTE THIS FORM MUST BE COMPLETED AND SUBMITTED TO THE SECRETARY-GENERAL UNTIL MAY 14, 2002

Office candidate is being proposed for: _____

Candidate's name / country he/she is from: _____

Please attach a qualification statement to the form for the candidate.
Each nomination must have 20 supporters, only 8 of them can be from any one country.

Printed Name	Signature	Country of Residence
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____
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17. _____	_____	_____
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19. _____	_____	_____
20. _____	_____	_____

17

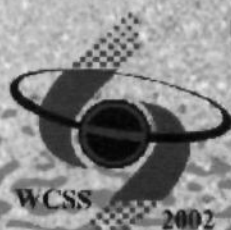
การประชุมวิทยาศาสตร์ทางดินของโลก

World Congress of Soil Science

Congrès Mondial de Science du Sol

Bodenkundlicher Weltkongress

Congreso Mundial de la Ciencia del Suelo



14-21 August 2002, Thailand

Soil Science : Confronting New Realities in the 21st Century

E-mail : o.sfst@nontri.ku.ac.th <http://www/17wcsc.ku.ac.th>

INVITATION

On behalf of The Soil and Fertilizer Society of Thailand, The International Union of Soil Sciences and the Ministry of Agriculture and Cooperatives, Thailand, I would like to confirm our commitment and intention on the organization of the Seventeenth World Congress of Soil Science in Bangkok, Thailand, during 14-21 August 2002. With all the kind cooperation rendered to us by individual renowned soil scientists and organizations, I can promise you that we will have one of the most fruitful and enjoyable Congress.

We look forward to welcoming you at the Congress.

Sompong Theerawong, IUSS President
President, 17th World Congress of Soil Science

CONGRESS THEME

Soil Science: Confronting New Realities in the 21st Century

CONGRESS VENUE

Queen Sirikit National Convention Center, Thailand

CONGRESS DATE

14-21 August 2002

17th WCSS SCIENTIFIC COMMITTEES

Sompong Theerawong, Advisory Member
Irb Kheoruenromne, Advisory Member
Lek Moncharoen, Advisory Member
Annat Suwanarit, Chairperson
Tasnee Attanandana, First Vice-Chairperson
Supamard Panichsakpatana, Second Vice-Chairperson

Committees on Commissions and Subcommissions

Tawachai Na Nagara
Omsub Nopamornbodi
Pisoot Vijarnsorn
Sumitra Poovarodom
Anchalee Suddhiprakarn
Pramuanpong Sindhusen
Manu Srikhajon
Juckgrit Homchan
Bunvong Thaiutsa
Taweesak Vearasilp
Preeda Parkpian
Prapai Chairroj
Kamron Saifuk, Committee and Secretary
Aniruth Potichan, Committee and Assistant Secretary
Kumut Sangkhasila, Committee and Assistant Secretary

Central Committees

Manas Sanmaneechai
Patma Vityakon
Charlchai Tanavud
Chairatna Nilnond
Sathien Phimsarn
Pitayakon Limtong
Pichit Pongsakul
Monkol Panichkul
Kannica Yoothong
Prasat Kesawapitak
Patcharee Saenjan

GENERAL INFORMATION

CONGRESS ACTIVITIES

1. Plenary Session (the 1st day)
2. Symposia of Commissions, Sub-Commissions and Working Groups (Six parallel Symposia each day, half a day for each Symposium oral presentations)
3. Special Symposia and Workshops organized by other Organizations
4. Poster Session (related to 2)
5. Pre-Congress Tours, Mid-Congress Tours and Post-Congress Tours
 - 5.1 Tours in Thailand-Technical and Cultural
 - 5.2 Tours in Asia and Australia
 - 5.3 Special tour programmes for accompanying persons of the participants
6. IUSS Business Meeting: Council Meetings, Meetings of Divisions, Commissions, Sub-Commissions, Working Groups, Standing Committees and other special group meetings

TENTATIVE PROGRAMME

<i>DATE / TIME</i>	<i>ACTIVITY</i>
13 AUGUST 2002 (Tuesday)	
1300-2000	On-site Registration
14 AUGUST 2002 (Wednesday)	
0830-1200	On-site Registration
	Opening Ceremony
1330-1730	Plenary Lecture
15-17 AUGUST 2002	
<i>Symposia: Morning Session</i>	
0830-1010	First Part
1010-1030	Break
1030-1150	Second Part
1150-1300	Lunch
<i>Poster Session</i>	
1300-1400	Poster Papers
<i>Symposia: Afternoon Session</i>	
1400-1540	First Part
1540-1600	Break
1600-1720	Second Part
18 AUGUST 2002 (Sunday)	
All day Mid-Congress Tours	
19-20 AUGUST 2002	
<i>Symposia</i>	
<i>(Same as for 15-17 August 2002)</i>	
21 AUGUST 2002 (Wednesday)	
<i>Symposia: Morning Session</i>	
0830-1010	First Part
1010-1030	Break
1030-1150	Second Part
<i>Afternoon Programme</i>	
1330-1500	Closing Ceremony
14-21 AUGUST 2002	On-site registration all day, everyday

Programme

REGISTRATION

1. IUSS Members (350 USD)
2. Non-IUSS Members (400 USD)
3. Young Scientists (150 USD)
(students under 30 years old with valid institution I.D. card)
4. Accompanying person (150 USD)
 - Registration fees (1-3) cover entries to all scientific events at the venue, Congress documents abstracts, Transactions of Symposia and welcome party.
 - The accompanying person registration fee (4) covers entries to exhibition at the venue, welcome party and a complimentary day-tour programme.

Late registration: a surcharge of 20% for payment received after 31 December, 2001.

ACCOMMODATION

Hotel Rates

A	100	USD up
B	80-100	USD
C	60-80	USD
D	40-60	USD

For accommodation close to venue, reservation will follow first come first serve basis. (Current exchange rate: 1 USD = 41 TB)

TIMETABLE AND DEADLINES

30 April 2001	Closing date for abstract submission
30 May 2001	Fourth Announcement
31 December 2001	Final date for registration of Authors and submission of papers
31 December 2001	Final date for participant registration without late fee
14-21 August 2002	The 17 th World Congress of Soil Science

OFFICIAL AIRLINE

THAI Airways International is appointed the Official Airline for the 17th World Congress of Soil Science and prepared to offer special airfare for participants. Please contact THAI's office in your area for assistance in travel arrangement. It is important to refer to an event code TG02081404 when contacting THAI's office.

COMMISSION I
SOIL PHYSICS

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

Stress should be laid on the transport of aqueous solutions and contaminants that can affect soil and water quality and human health. Special attention will be given to combining soil structure data and measurements in order to model water and mass transfer. An important aspect should be to consider soil as a structured and non-rigid material in preferential flows.

Keywords: soil structure, hydraulic conductivity, preferential flow, mass transfer, water quality, contaminants.

Convenor: Hans-Joerg VOGEL

Univ. of Heidelberg, Institute of Environmental Physics, Im Neuenheimer Feld 229, D-69120 Heidelberg, Germany,

Tel: 49 6221 54-5481, secretary: 49 6221 54-6350,

Fax: 49 6221 54-6405,

Email: hjvogel@iup.uni-heidelberg.de

Thai co-convenor: Somphob JONGRUAYSUP

Soil Science Div., Dept. of Agriculture, Phaholyo-thin Road, Chatuchak, Bangkok 10900,

Tel: 66 2 579-7516,

Email: somphob@doa.go.th

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

Papers dealing with research methodology according to the scale of investigation and the factors to be taken into account so as to understand and predict environmental problems. Particular attention should be paid to describing soil variability, the processes at this scale and their evolution over time.

Keywords: catchment, field scale, runoff, soil variability, modelling, transport processes.

Convenor: Chris MORAN

Land and Water, GPO Box 1666, Canberra ACT 2601, Australia,

Tel: 61 2 6246 5926, Fax: 61 2 6246 5965,

Email: chris.moran@csiro.au

Thai co-convenor: Monkol PANICHKUL

Soil Science Div., Dept. of Agriculture, Phaholyo-thin Road, Chatuchak, Bangkok 10900,

Tel: 66 2 579-7514, Fax: 66 2 940-5942,

Email: monkolpa@doa.go.th

03 Influence of biological activity on soil physical properties

This symposium address the role of biological activity in soil structure formation, degradation and remediation, in relation to soil management practices. Consequences for soil organic matter, and for the development of plant and micro-organisms, in systems subjected to high constrains.

Keywords: soil structure, soil management, micro-organisms, fauna, organic matter.

Convenor: Bev D. KAY

Soil Conservation and Management, Dept. of Land Resource Science, Univ. of Guelph, ON, N1G 2W1, Canada,

Tel: 519 824 4120 ext. 2484, Fax: 519 824 5730,

Email: bkay@lrs.uoguelph.ca

Thai co-convenor: Prasop VIRAKORNPHANICH

Development of Vegetable and Fruit Production in Northeast, Dept. of Agriculture, PO Box 19, Muang, Khon Kaen 40001,

Tel: 66 43 261-306/7, Fax: 66 43 261-308,

Email: prasop@doa.go.th

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

New concepts and tools have been developed over recent years in order to use soil data for predicting physical properties. Which types of soil data are needed? How to use these data to carry out a diagnosis on soil physical quality? Which are the conditions of validation, according to the surrounding environment, in particular in terms of chemical and climatic conditions and of soil management?

Keywords: water retention, porosity, texture, structure, organic matter, physico-chemical data, clay.

Convener: Daniel TESSIER

INRA, Soil Science Unit, route de Saint Cyr, F-78026 Versailles, France.

Tel: 33 1 3083-3243, Fax: 33 1 3083-3259,

Email: tessier@versailles.inra.fr

Thai co-convener: Tawachai NA NAGARA

Soil Science Div., Dept. of Agriculture, Phaholyo-thin Road, Chatuchak, Bangkok 10900,

Tel: 66 2 579-6511, 66 2 561-4681,

Fax: 66 2 561-4681, 66 2 940-5942,

Email: tnnagara@doa.go.th

COMMISSION II SOIL CHEMISTRY

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

The role of SOM in tropical soils is paramount. In many tropical regions, there is great concern over soil degradation and loss of SOM via erosion processes. This symposium will explore chemical and microbiological aspects of SOM dynamics and processes in tropical soils.

Keywords: C and N cycling, soil degradation, C sequestration, management and dynamics of SOM.

with WG. MO

Convener: Ladislau MARTIN-NETO

EMBRAPA/CNDDIA, Rua XV de Novembro 1452, 13560, 970 Sao Carlos SP, Brazil,

Tel: 55 162 472477, Fax: 55 162 725958,

Email: martin@cnpdia.embrapa.br

Thai co-convener: Sumalee SUTHIPRADIT

Dept. of Agricultural Science, Natural Resources and Environment, Naresuan Univ., Phitsanulok 65000,

Email: osfst@nontri.ku.ac.th

06 Frontiers in the chemistry and biochemistry of the soil rhizosphere

The chemical and biological processes of the soil rhizosphere are greatly influenced by intense interactions of soil minerals with microorganisms, microbial metabolites, root exudates, and organic components.

Keywords: root exudates, rhizosphere, microbial metabolites, organic acids.

with C. IV; WG. MO

Convener: P.M. HUANG

Dept. of Soil Science, Univ. of Saskatchewan, Saskatoon, Sask. S7N 0W0, Canada,

Tel: 1 (306) 966-6838, Fax: 1 (306) 966-6881,

Email: huangp@sask.usask.ca

Thai co-convener: Paiboon PRABUDDHAM

Dept. of Soil Science, Kasetsart Univ., Chatuchak, Bangkok 10900,

Tel: 66 2 942-8104/5, Fax: 66 2 942-8106,

Email: osfst@nontri.ku.ac.th

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

There is a veritable need to better understand the relationship between greenhouse gas (CO₂ and CH₄) emissions from soils and global change. This symposium will focus on processes of accumulation and decomposition of soil organic matter and propose new techniques and soil management practices to better control organic mineralization and reduce greenhouse gas emissions to the atmosphere.

Keywords: greenhouse gas emissions, mineralization, SOM decomposition.

with C. VII, VIII; WG. MO

Convenor: Alessandro PICCOLO

Dept. de Scienze Chimico-Agrarie, 80055 Portici, NA, Italy,

Email: alpiccol@unina.it

Thai co-convenor: Pirmpoon KEERATI-KASIKORN

Dept. of Land Resources and Environment, Fac. of Agriculture, Khon Kaen Univ., Muang, Khon Kaen 40002,

Tel: 66 43 364-639, Fax: 66 43 244-474,

Email: pirm@kku.ac.th

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

This symposium will focus on the use of molecular scale techniques, including spectroscopic, microscopic, and others, complimented by macroscopic approaches, to study the speciation, transformation, transport, immobilization, and bioavailability of nutrients, metals, oxyanions, radionuclides, and organic chemicals in the soil environment and impacts on chemical and biological remediation.

Keywords: in-situ spectroscopic and microscopic techniques, mechanisms of soil chemical reactions, contaminant speciation and remediation.

with WG. MO

Convenor: Donald L. SPARKS

Dept. of Plant and Soil Science, Univ. of Delaware, 153 Townsend Hall, Newark DE 19717-1303, USA, Tel: 1 (302) 831-2532, Fax: 1 (302) 831-0605,

Email: dlsparks@udel.edu

Thai co-convenor: Tasnee ATTANANDANA

Dept. of Soil Science, Fac. of Agriculture, Kasetsart Univ., Chatuchak, Bangkok 10900,

Tel: 66 2 942-8104/5, Fax: 66 2 942-8106,

Email: agrtna@nontri.ku.ac.th

COMMISSION III SOIL BIOLOGY

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

The proposed session would address new methodologies including molecular techniques linked with taxonomy, function, global distribution, GIS and soil biota for predicting soil type and plant diseases, and the spatial relationships of soil biodiversity to plant communities. In addition, full genome sequences for some important soil microorganisms are becoming available in 2000 and the analysis of this new information should be ready for summarization in 2002.

Keywords: biodiversity, microfauna, mesofauna, taxonomy, function.

Convenor: L. Anne GLOVER

Dept. of Molecular and Cell Biology, Univ. of Aberdeen, IMS, Foresterhill Aberdeen AB25 2Z, Scotland,

Tel: (0) 1224 273099, Fax: (0) 1244 273144,

Email: l.a.glover@abdn.ac.uk

Thai co-convenor: Omsub NOPAMORNBODI

Dept. of Agriculture, Phaholyothin Road, Chatuchak, Bangkok 10900,

Tel: 66 2 579-0574,

Email: omsub@doa.go.th

10 Research to enhance carbon sequestration in soils

This session would include following topics: (1) What level of sequestration can be expected, (2) New advances in C and N dynamics (3) Application of new methods to characterize the molecular-scale nature of SOM. (4) Challenges in measurement and monitoring methods for soil C sequestration, and (5) Regional and larger-scale analyses of strategies for soil C sequestration that include environmental and economic issues.

Keywords: C storage, C sequestration, SOM, N dynamics.

Convenor: F. Blaine METTING

Pacific Northwest National Laboratory, Battelle Boulevard, K9-76, Richland, WA 99352 USA,
Tel: 509 375 2607, Fax: 509 375 4343,

Email: blaine.metting@pnl.gov

Thai co-convenor: Ampan BHROMSIRI

Fac. of Agriculture, Chiang Mai Univ., Muang, Chiang Mai 50000,

Tel: 66 53 944-037, Fax: 66 53 944-666,

Email: ampan_b@yahoo.com

11 Microbial processes and populations in sub-merged soils

The proposed symposium will bring together expertise in rice soils and wetlands with talks addressing such issues as maintenance and turnover of soil organic matter; effects of fluctuation aerobic and anaerobic microbial populations on nutrient and C dynamics; microbial parameters as indices of soil productivity; and linkages of microbial activity and diversity to rate processes governing organic matter and nutrient dynamics.

Keywords: wetlands, SOM, sustainability, nutrient dynamics.

Convenor: Roland BURESH

Agronomy, Plant Physiology, Agroecology, Soil and Water Sciences Div., International Rice Research Institute, PO Box 3127, 1271 Makati City, Philippines,

Tel: 63 2 845-0563, Fax: 63 2 891-1292,

Email: r.j.buresh@cgiar.org

Thai co-convenor: Archara NUNTAGIJ

Soil Microbiology Research Group, Dept. of Agriculture, Chatuchak, Bangkok 10900,

Tel: 66 2 579-0065, 66 2 579-7522/3 ext. 333,

Fax: 66 2 561-4763,

Email: achara@doa.go.th

12 Manipulating soil microbial and enzymic activities

This symposium will cover following topics : soil ecology and its manipulation; the potential of inoculant technology in the 21st century; microbes and enzymes in bioremediation; advances in rhizobial and mycorrhizal technology; biocontrol agents and their place in the reduction of pesticide usage; manipulation of biogeochemical cycles and the impact of changes in climate and land use; plants and microbes 'designed' to suit soils, climates and consumer needs.

Keywords: microbial inoculant, biocontrol, bioremediation, biogeochemical cycle.

Convenor: R.G. BURNS

Dept. of Biosciences, Univ. of Kent, Canterbury, Kent CT2 7NJ, UK,

Tel: 44 01227 823698, Fax: 44 01227 763912,

Email: r.g.burns@ukc.ac.uk

Thai co-convenor: Nantakorn BOONKERD

Institute of Research and Development, Suranaree Univ. of Technology, 111 University Avenue, Muang, Nakhon Ratchasima 30000,

Tel: 66 44 216-750, 66 44 224-752,

Fax: 66 44 224-750,

Email: nantakon@ccs.sut.ac.th

COMMISSION IV
SOIL FERTILITY AND PLANT NUTRITION

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

The conversion of tropical rain forest to agricultural land use brings many challenges to the soil scientist. This symposium will offer the opportunity for review of current ideas about the optimal approaches to soil fertility management for the future – comparing the traditional practices of shifting cultivation, the impacts of high-input agriculture and attempts to bring forward practices which combine the best of both.

Keywords: shifting cultivation, organic matter, fertilizers, fallows, nutrient cycling.

Convenor: Bernard VANLAUWE

International Institute for Tropical Agriculture (IITA), c/o Lambourne and Co., Carolyn House 26 Dingwell Road, Croydon CR9 3EE, UK,

Tel: 234 22 412626/ 400300,

Fax: 874 1772276 (IN MARSAT),

Email: b.vanlauwe@cgiar.org

Thai co-convenor: Manas SANMANEECHAI

Dept. of Soil Science and Conservation, Fac. of Agriculture, Chiang Mai Univ., Muang, Chiang Mai 50000,

Tel: 66 53 944-037, Fax: 66 53 944-666,

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14 Soil fertility as an ecosystem concept

The relationships between soil and plant are integral to ecosystem productivity and its sustainability over time. These relationships can be described over a range of scales in time and space (e.g. for a plot, a farming system, a watershed) and are the product of a variety of interacting soil properties and feed-back effects. This concept of soil fertility as an ecosystem property goes beyond the conventional agronomic equation of soil fertility with nutrient availability. The papers in this symposium should explore these issues within the context of sustainable soil management.

Keywords: soil fertility, ecosystem services, nutrient cycling, biota, quality.

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15 Perceptions of soil management: matching indigenous and scientific knowledge systems.

Many societies have developed particular and detailed ways of describing and relating to the soil – which often go beyond the merely utilitarian. Although Western science tends to promote the idea of a homogenous method the perceptions of scientists from the different 'sub-disciplines' of soil science also vary. This symposium will explore the lessons to be learned from comparing differing concepts of the soil.

Keywords: knowledge, ITK, reductive science, culture.

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

Integrated soil fertility management, the combined use of organic and inorganic sources of nutrients has been widely accepted as the necessary approach to combat nutrient depletion and promote sustainable agricultural production. Advocacy of the approach assumes an increase in the efficiency of nutrient use but there is little agreement as to indicators of this effect. Nor are the mechanisms whereby it occurs generally agreed. This symposium will review current research on these topics.

Keywords: nutrients, efficiency, immobilization, indicators, INM.

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

Natural sources of nutrient, such as phosphate rock, are still under-exploited in many parts of the world, and the value of other amendments such as volcanic ash and sediments tend to be underestimated. This is at least partly to be ascribed to the low nutrient availability of the nutrient in these sources. Papers may report on the results of the monitoring of such inputs, of experiments on the use of such inputs under field conditions and on the development, performance and sensitivity of relevant models.

Keywords: phosphate rock, volcanic ash, sediments, lime, valuation, test, models.

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COMMISSION V

SOIL GENESIS, CLASSIFICATION AND CARTOGRAPHY

18 Anthropogenic factor of soil formation

This symposium is intended to look at the human influence on physical, chemical, and biological characteristics of soils in the past and present from the point of view soil classification, genesis, and use and management including quality loss and degradation. There are many places in the world in which the human influence has changed the soil quality drastically yet these changes are not properly recognized. Marks to identify the kind of human influence on soils will also be part of this symposium.

Keywords: soil genesis, anthropogenic influence, soil classification, soil quality and management.

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19 Soil system and land use

Examples of soil systems; morphology of soil at different scales (from landscape to micro), vertical and lateral differentiation of soil features, past and present; relationship between soil systems and human activities; the development of human activities according to the soil systems; the transformations of soil systems by the human activities; consequences of soil system transformations; how to discover and represent structural analysis; soil management according to soil systems.

Keywords: soil morphology, structural analyses, soil management, human influence.

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

Genesis of arid and semi-arid soils (especially the formation of calcic, gypsic, and salic horizons); management problems; and the use of these soils for archaeological interpretations are the main focal points of this symposium. The role of arid soils in carbon cycle and carbon sequestration; paleoclimate reconstruction are not well understood in the past and it is the aim of this symposium to bring together soil scientists, geologist and archaeologist to fill the interdisciplinary gap.

Keywords: genesis, formation of calcic gypsic and salic horizons, soil management, archaeology, carbon cycle (sequestration), paleoclimate.

Convenor: Brenda BUCK

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21 Soil classification, accomplishments and future

Presently there are many national soil classification systems and the World Reference Base. All these systems are developed and enhanced our knowledge of the soil resources. Because these soil classification systems represent and foster our understanding and helps communication on the world soil resources, we need to continue to widen our understanding. The purpose of this symposium is to bring scientists together to examine issues related to further developing and strengthening our understanding of soil classification systems for better use and management of soils.

Keywords: soil classification, soil taxonomy, national soil classification systems, soil classification paradigms.

Convenor: Mabel Susana PAZOS

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COMMISSION VI SOIL TECHNOLOGY

22 Technologies to overcome rootzone soil constraints

This symposium will discuss (1) the occurrence of soil constraints to agricultural productivity, particularly in subsoils, caused by sodicity, salinity, acidity, poor soil structure, poor biological health and ion toxicities, and (2) management strategies to overcome these constraints and remediation measures including agronomic practices and microbial methods.

Keywords: subsoil constraints, salinity, sodicity, acidity, biological health, ion toxicity.

Convenor: Pichu RENGASAMY

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23 Models and parametric methods for predicting soil degradation

This symposium will discuss (1) the soil processes leading to its degradation including all aspects - chemistry, physics and biology (2) quantification of the processes (3) modelling the processes and predictive parameters and (4) decision support systems for degraded soils.

Keywords: soil degradation, soil processes, modelling, parameters for predicting soil degradation, decision support system.

Convenor: Edward T. ELLIOTT

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

This symposium will discuss (1) use of soils and clays for waste management which includes containment, re-use and disposal (2) use of wastes as resources for the improvement of soils and landscapes (3) strategies and policy development in the management of urban and industrial wastes, and (4) diagnosis and monitoring of soil pollution.

Keywords: waste management, re-use, soils and clays, diagnosis and monitoring of soil pollution, strategy and policy development.

Convenor: Jock CHURCHMAN

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COMMISSION VII

SOIL MINERALOGY

25 Mineralogy and geochemistry of regolith

The transition of rock to soil is a long lasting sequence of processes. This is especially the case in landscapes of the tropics. Knowledge of neoformation changes taking place in the regolith allows not only a better understanding of weathering processes and mineral neoformation as a consequence of climate and the geochemical environment but also a better insight into the influence of mineralogy and geochemistry on fertility, hydrology, stability and contaminant mobility in soils.

Keywords: *weathering, geochemical environ-ment, tropical climate, secondary minerals.*

Convenor: Rob W. FITZPATRICK

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

Soil minerals are the memory of the soils, left to be recorded through the period of soil development. Climate and land management changes can alter the soil mineralogy as a whole or partially within the soil body. Soil environment changes such as drained acid sulfate soils, secondary saline soils, man made and rehabilitated mine soils affect mineral assemblages of soils including changes in the silicate, oxide, and carbonate in soils.

Keywords: *heritage, soil memory, climatic marker, paleoenvironment, mineral stability, equilibrium.*

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

The qualitative and quantitative assessment of soil genesis often needs insight into the changes in the nature of pedogenic minerals as well as their arrangement within the soil matrix. In order to reconstruct the conditions of active or past processes isotope abundance in soil minerals may be

used for the assessment of environmental conditions and for age determination. Spectroscopic analysis of soil minerals are also widely used in this field of research.

Keywords: soil genesis, micromorphology of weathering and neoformation, isotope fractionation.

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28 Soil mineralogy in relation to soil fertility and toxicity

Modern electron optical, spectrometer and microanalytical methods enable soil scientists to identify the minerals that control the solubility and bioavailability of nutrient and contaminant elements. Studies of contaminated soils have identified heavy metal compounds and for heavily fertilized soils the associations of sorbed phosphate with soil minerals can be distinguished. Such information is invaluable in research aimed at managing and remediating soils and sediments contaminated by nutrients and heavy metals.

Keywords: heavy metals, contamination, pollution, microanalysis, sorption.

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COMMISSION VIII

SOIL AND THE ENVIRONMENT

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

There is a growing concern regarding the management of urban and sub-urban soils, which has been underestimated. Excess applications of fertilizers, pesticides, and hazardous wastes may have a direct impact on human health, and as sources of soil and groundwater contamination, they create a further risk for human health.

Keywords: urban agriculture, food production, heavy metal, plant uptake.

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30 Food security and land use

World's population now exceeds 6 billion, and continues to increase. The responsibility of the agri-food sector is to assist in developing policies that will ensure safe food availability in a global market, considering that one third of the world's land is presently used for agricultural production. There are therefore very close links between food security and environmental issues that will be discussed in this symposium.

Keywords: sustainable intensive agriculture, productivity index, maximum yield, optimum yield.

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31 Exploring the attitude towards soil and land use

Global issues such as soil degradation and sustaining soil functions in agro-ecosystems bring social aspects to the technical knowledge base of soil science. Indigenous soil knowledge broadens our approaches to use of soils. It is thus important to look at different cultures, and across time in a culture. Have our ideas evolved, and where are we now? Can a study of these differences guide us in confronting these new realities of the 21st century?

Keywords: global land ethic, on-farm research, indigenous soil knowledge, new teaching requirement.

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32 Soil indicators for sustainable land use

Soil indicators are important for assisting decision-makers in the development of policies regarding land use and management. Indicators are also useful for monitoring our progress towards sustainable land use. Such indicators are being developed by several countries and also examined at the international (e.g. OCDE) level. The objective of the Symposium will be to evaluate the progress in the development and use of the soil quality indicators for sustainable development.

Keywords: soil quality, soil functions, soil health, land management.

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SUBCOMMISSION A

SALT AFFECTED SOILS

33 Salt affected soils and the environment

This symposium will address the information on soil salinity including its development and distribution naturally or human induced into agricultural land, surface and underground water; and its impact on the environment. Papers dealing with research methodology, planning and management of salt-affected soils in inland and coastal and their impact on the environment including soil, water, quality, vegetation and crops and living organism are most welcome.

Keywords: salinity, water quality, wetlands, ecology, impact, restoration.

Convenor: Jorge BATTLE-SALES

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34 Salinization, water management and policy

Soil salinization in suitable agriculture land has been expanded rapidly due to sea water aquaculture, pumping of underground water, seawater and freshwater irrigation development and mis-agricultural management. The discharged water into surface and underground water need to be properly managed. This symposium will deal with concepts, planning, and management policy, and monitoring technology to control salinization and introduce water management systems.

Keywords: salinization, brackish water, incentives, policy, irrigation, salinity control, modelling.

Convenor: Donald SUAREZ

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SUBCOMMISSION B

SOIL MICROMORPHOLOGY

35 Soil micromorphology to quantify soil structure qualities

The characterization of the soil pore system; the types of soil structure and their changing following agricultural activity and seasons; soil pore system, water retention and water movement; soil porosity as an indicator of soil degradation aspects (compaction, crusting, etc.).

Keywords: micromorphometry, porosity, quantification, soil degradation.

Convenor: Fabio TERRIBILE

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36 Soil micromorphology and submicroscopy for interpretation of soil qualities

Micromorphology as a tool to deduce processes of soil formation and transformation; natural and human induced processes; chronology of past and present processes; influence of processes on soil quality; relation between soil management practices and micromorphological characteristics; micro-morphology and experimental pedology; quanti-fication of processes.

Keywords: micromorphology, pedogenic processes, chronology, micromorphometry.

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SUBCOMMISSION C

SOIL AND WATER CONSERVATION

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

The soil and water conservation involve the productivity and socioeconomic development for agricultural sustainability under the specific agro-ecological condition. The parameters to evaluate soil quality should deal with the bio-physical characteristics as well as soil resilience and soil loss tolerance both on theoretical and methodological approaches.

Keywords: soil quality, health, productivity, and environmental functions; total impacts of degradation on soil quality; economic feasibility of restoring soil quality.

Convenor: Sonia Carmela Falci DECHEN

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38 Advances integral modeling to make decision in soil conservation

At this decade, soil information systems for soil conservation is quite essential as well as the integral modeling in soil conservation for decision making. Strategies research should be made on a constructive and innovative direction on the concept of conservation and development for sustainable agriculture.

Keywords: transforming information into decision aids; combining and sharing databases, models, and experiences; science-based and realistic scale conservation planning.

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SUBCOMMISSION E FOREST SOILS

39 Amelioration of degraded soils through afforestation

Vast areas of land which have previously been supporting forests, are degraded. Inappropriate soil management (e.g., heavy machinery), mining, land pollution and inadequate drainage, has caused soil degradation by erosion, changing physical (compaction, reduced infiltration), chemical (salinity, excessive acidity, nutrient losses), and biological (soil C, microbial-activity, mineralization) properties in soils. Amelioration by afforestation is an important issue in 21st century.

Keywords: afforestation, erosion, mining, pollution, compaction, chemical and biological properties.

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40 New developments in the evaluation and management of forest soils

Evaluation of soils for forestry is required for proper selection, establishment and productivity of tree species. Due to limitation in the classical soil survey many recent developments in the field and laboratory techniques have occurred which included: remote sensing, radiometry, IR and NIR spectroscopy, stable isotope analysis. GIS and other land based techniques are used to assess soils on a regional scale. Potential use of these techniques and recent improvements in managing forest soils will be explored.

Keywords: forest management, site evaluation, remote sensing, isotopes, GIS.

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SUBCOMMISSION G SOIL REMEDIATION

41 Techniques for remediation of contaminated soils: physicochemical techniques

The symposium will focus on the validation and application of in situ remediation techniques that are based on changing the speciation and mobility of organic and inorganic pollutants in soils. Technologies involving active (e.g. electrochemical) and passive (e.g. use of soil amendments) will be covered. There will be special emphasis on the applications of these technologies under field conditions and how their use relates to current national criteria for soil remediation.

Keywords: soil remediation, electrochemistry, soil washing, soil amendments, field trials, legislation.

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42 Techniques for remediation of contaminated soils: biological techniques

This symposium will cover important aspects of fundamental research and innovative technologies for soil remediation, and include both Phyto- and Bioremediation. It will focus mainly on in situ techniques, risk assessment and legislative aspects relevant to bioremediation. Technologies covered will include land farming, composting, biopiling, air-sparging, biofilters, phytoremediation and phytoextraction. Target pollutants include inorganic pollutants, heavy metals, POPs, oils, petroleum hydrocarbons, etc.

Keywords: soil remediation, risk assessment, bioremediation, heavy metals, POPs, oils, petroleum hydrocarbons.

Convenor: Steve P. McGRATH

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WORKING GROUPS & STANDING COMMITTEES

CR: Cryosols

43 Cryosols and cryogenic environments in the 21st Century

This symposium will focus on current research activities relating to Cryosols, with special attention being paid to those activities involving present-day issues such as global climate change at high latitudes and how the management and use of these soils affect the cryogenic environment. Since most Cryosols contain large amounts of carbon and ice, climatic changes and human activities may have a great effect on them. Therefore, future research activities should be directed towards acquiring a greater understanding of these soils and the associated environments in order to provide the information needed to deal with the diverse situations that may arise. The papers

presented at this symposium will provide some indication of where we are and what we need to do to deal with some of the challenges facing us in the future.

Keywords: permafrost-affected soils, cryosols, permafrost, global climate change.

Convenor: Charles TARNOCAI

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DM: World Soils and Terrain Digital Data Base

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

The IUSS Working Group on a World Soil and Terrain Digital Database (WG/DM) has been promoting the updating of geo-referenced information on soil patterns, landform and soil profile data. FAO, UNEP and ISRIC in cooperation with national institutes have produced such material at different levels of spatial resolution, as well as its practical applications. The completion of this effort is now becoming urgent, e.g. in view of the Kyoto Protocol on Climate Change, for up-to-date, reliable and easily accessible information on land conditions. The WG/DM intends to have relevant papers published in a special issue of a peer-reviewed international Journal.

Keywords: digital soil information; carbon sequestration; land degradation; land use planning; food security.

Convenor: Wim SOMBROEK

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GC: Soils and Global Change

45 Soil carbon dynamics and the greenhouse effect

The symposium will discuss state-of-the-knowledge in soil C dynamics in relation to the accelerated greenhouse effect. The principal objective is to deliberate the importance of world soils in the global C cycle in a warmer earth. Specific issues to be discussed include effects on soil C (inorganic and organic) dynamics of land use and management, soil erosion and sedimentation, and desertification control and soil restoration. Ancillary benefits of soil C sequestration, including on-site and off-site benefits, and societal value of C will also be debated.

Keywords: soil organic matter, greenhouse effect, soil restoration, soil quality, carbon sequestration.

Convenor: Rattan LAL

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LD: Land Degradation and Desertification

46 Land degradation and desertification: confronting the realities of the 21st century

About 33% of the global land surface are subject to desertification. This is about 42 million km² and affects more than 1 billion people. By 2020, if appropriate actions are not taken, the number of persons affected will be more than double. Asia and Africa will likely suffer the most. With a reduction of the ability of these regions to be self-sufficient in food, food security will emerge as a major global issue. This will stress more on the land resources including a net drain in soil nutrient resources and will be aggravated by climate change. The Symposium will address these and other issues with suggestions to mitigate the negative impacts.

Keywords: *land degradation, desertification, food security, global climate change.*

Convenor: Hari ESWARAN

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MO: Interactions of Soil Minerals with Organic Components & Microorganisms

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

The objective of this symposium is to provide a forum for interactions among soil and environmental scientists to integrate our knowledge on physical/chemical/biological interfacial interactions in soil systems and their impacts on human welfare which include global ion cycling and climatic changes, biodiversity, biological productivity and human nutrition, geomedicine, biotechnology, ecotoxicology and human health, remediation and restoration technology, and celestial exploration.

Keywords: *Mineral - organic component – micro-organism interactions, interactive soil processes, porosity, transformation and transport, biomolecules, nutrients, pollutants, ecotoxicology, remediation, human health, global changes, space exploration.*

with Com. I, II, III, VII

Convenor: P.M. HUANG

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PM: Pedometrics

48 Development in soil data processing

This symposium will focus on ongoing research results within the framework of pedometrics aiming at presenting the state-of-the-art in soil data processing. Topics include analysis of spatial and temporal variability of soil properties; development of decision support systems; assessment of error propagation; quantification of uncertainty and fuzziness of information and evaluation criteria; soil process simulation modelling; design and evaluation of sampling schemes and incorporation of exhaustively sampled information.

Keywords: soil data processing, decision support systems, error propagation, evaluation criteria, soil process, spatial variability, temporal variability.

Convenor: Marc Van MEIRVENNE

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PP: Paleopedology

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

This symposium focuses on unburied paleosols or relict soils formed under a different constellation of soil forming factors mainly a different climate and with it vegetation. The knowledge of their genesis is essential for understanding soil behaviour, landscape history and for a proper appreciation of many modern environmental problems.

Keywords: relict paleosol, paleosol memory, landscape history, environmental problems.

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PS: Paddy Soils Fertility

50 Sustainable paddy soil ecosystem: a global challenge

To discuss and exchange information on the current initiatives on bio-organic farming on paddy soils; to discuss cost-effective and sound technologies to improve productivity of derelict paddy soils; Evaluate the Valuation Techniques for Irrigation Water Use to resolve emerging conflicts on water demand and pricing between agriculture and urban and industrial sectors; to elaborate impacts of expanding the cultivation of paddy soils on food security and global climate change.

Keywords: food security; bio-organic farming; derelict paddy soils; water valuation and management; carrying capacity; environment and global climate change.

Convenor: Rogelio N. CONCEPCION

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PT: Pedotechnique

51 Manufactured, amended, and intensively tilled soils and substrates

Specific soil and substrate volumes and profiles like urban tree soils, sports grounds, potting soils, dikes, road sides, and revegetated and remediated areas. Measurements and description of initial conditions and source materials, and of final conditions; definition of allowable ranges of properties; development of processing equipment and procedures; optimization of specifications; testing unusual materials that are considered for installation.

Keywords: *horticulture, urban horticulture, sports grounds, civil engineering, revegetation, remediation.*

Convenor: Jos KOOLEN

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RS: Remote Sensing for Soil Survey

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

This symposium deals with topics on application of remote sensing techniques to soil and land resources studies. The topics include databases for land resources information, surface modelling, extracting remote sensing data for soil chemical properties, DEM and GIS for soil mapping and combining remote sensing data with field data, changing monitoring, disaster management, multitemporal remote sensing-derived LAI as indicator of land qualities and multitemporal approaches to studies and to achieve sustainable land use.

Keywords: *remote sensing techniques, data fusion, surface modelling, DEM, GIS, land evaluation.*

Convenor: Michel A. MULDER

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SM: Environmental Soil Mechanics

53 Coupled hydraulic and mechanical processes in structured soils - a challenge to define sustain-ability

The determination of hydraulic properties of structured soils requires amongst others pore or volume rigidity which neither by mechanical nor by pore water suction effects will be altered. How-

ever, natural soil processes like swelling and shrinkage or stress effects may induce soil volume, functions, and changes in ecological functions as soon as the internal strength (= history of the soil) is exceeded. During the symposium more detailed information about such coupled processes will be given.

Keywords: soil hydraulic properties, pore continuity changes, pore strength, mechanical stress, volume deformation.

Convenor: Rainer HORN

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SP: Soil and Groundwater Pollution

54 Vadose zone management strategies to prevent groundwater pollution

Chemical pollution generated by agricultural, industrial and municipal activities has contaminated soil and groundwater worldwide. Management strategies that target the rooting zone offer opportunities for preventing or limiting groundwater pollution and for soil remediation. The symposium is seeking papers on experimental and numerical modeling techniques that focus on management of the vadose zone. Interdisciplinary contributions among soil physicists, chemists and biologists are encouraged.

Keywords: unsaturated zone, contaminant transport, vadose zone-groundwater coupling, soil remediation.

Convenor: Jan W. HOPMANS

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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:

Humans are establishing a new environment for soils and create new soils. This is most pronounced in urban, industrial and mining areas. In these areas soils will go on to contribute essentially to life quality. We have to improve the knowledge for both: the features of these categories of soils and their potential to fulfill functions. In addition we have to learn more about the special fields of the use of soil information.

Keywords: soil functions, urban soils, industrial soils, mine soils, traffic soils, soil information, soil degradation, soil use, environment and soils.

Convenor: Wolfgang BURGHARDT,

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CES: Education in Soil Science

56 Soil education and public awareness

The symposium will deal with: how to speak about soil on global and interdisciplinary perspectives such as soil in the ecological and human systems, and presentation of examples of education experiences including field works. Specific topics include pedagogical strategies, formation of the teachers, educational role of soil science specialists.

Keywords: soil education, global soil, interdisciplinary approach, soil science teachers, soil science specialist, pedagogical strategies.

Convenor: Mireille DOSSO

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FA: Soil Organic Fertilizers and Amendments

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

The Symposium will focus on the influence of organic fertilizers and soil amendments on soil physical, chemical and physical properties, and soil fertility. It will also discuss the effect of these materials on soil development along with environmental issues related to their uses.

Keywords: organic fertilizers, soil amendments, soil properties, environmental issues.

Convenor: Tom SIMS

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

The symposium will encompass the discussion on different aspects of the effect of organic fertilizers and amendments added to the soils. These include the Kyoto Protocol, the role of soil organic fertilizers and amendments on the completion of nutrient cycles, recombinant DNA in soil from the use of organic fertilizers and amendments and the risk of TSE/BSE infection from the use of organic fertilizers made of animal residues.

Keywords: Kyoto Protocol, organic fertilizers, soil amendments, nutrient cycles, recombinant DNA, TSE/BSE infection, animal residues.

Convenor: Paolo SEQUI

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Special Symposium

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

This Symposium focuses on soil organic matter dynamics and nutrient cycling, evaluation and management of nutrient sources, water management and conservation, soil erosion and sedimentation, plant tolerance to environmental stress, environmental and pollution studies and advances in nuclear-based methodologies and instrumentation

Keywords: fertilizers, isotopes, plant nutrition, soil degradation, soil fertility, water.

Convenor: Phillip CHALK

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SG: Soils and Geomedicine

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

Much interest has been shown in recent years on the influence on human health from soil pollution. Less attention has been paid to health problems associated with natural chemical and physical factors of the soil and bedrock. Most frequently these problems are associated with local geochemistry, but influence of climate on the cycling of chemical substances in the environment may also play a significant role. The symposium will discuss the relative importance of these factors to human and animal health.

Keywords: geomedicine, bedrock, soil, health, natural factors, chemical climate, pollution.

Convenor: Eiliv STEINNES

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IC: International Soil Convention

61 Soil Convention

A background to the rising interest in the global community of the environmental benefits to soil through the introduction of a global policy for sustainable use of soils and an international envi-

ronmental law instrument; the international actions for furthering sustainable use of soils; progress made in the development of the global sustainable soil convention.

Keywords: sustainable use of soils, soil convention, international environmental law and policy, soil and land degradation, global soil policy, sustainable land management.

Convenor: Hans HURNI

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62 WOCAT: World overview of conservation approaches and technologies

A multi-institutional, world-wide programme called WOCAT: World Overview of Conservation Approaches and Technologies was launched in 1992. To date, more than 25 institutions from over 20 countries have joined the WOCAT global network, and about 300 individuals have submitted databases on successful Technologies and Approaches in Soil and Water Conservation. Participants of this symposium will obtain an overview of current WOCAT activities and main results in different countries, with an emphasis on internet online data and on SE Asia.

Keywords: soil and water conservation (SWC), SWC technology, SWC approach, evaluation of SWC, standardised data base, internet online data, decision-support system (DSS).

Convenor: Hans Peter LINIGER

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Thai co-convenor: Samran SOMBATPANIT

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AS: Acid Sulphate Soils

63 Acid sulphate soil management in tropical environments

This symposium will examine the management of acid sulphate soils in tropical environments. In particular papers are sought on the short and long-term environmental consequences of the use of these soils for agricultural production.

Keywords: acid sulphate soils, pH, pyrite, acidity, tropical environments.

Convenor: Freeman COOK

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POSTER SESSION

Content of each paper displayed on poster board should include;

1. Title of Paper
2. Names of Author/s
3. Abstract
4. Objectives
5. Materials and Methods
6. Important Findings
7. Relevant List of References

The actual area for display on board is 90 cm (horizontal) x 120 cm (vertical). All characters on board should be legible from a distance of 2 meters.

ABSTRACT

An abstract of 500 words is required for each Symposium paper. The abstract should contain brief note on materials and methods, clear objective/s and highlight/s of the findings and discussion. It is essential since the abstract will be reviewed by the Convenors and members of the Scientific Committee for selection as oral paper or poster paper. Early submission of abstract is advised to facilitate further communication. Author is requested to list three numbers of the Symposia, according to the preference for paper submission. Results of the review will be sent back to the author promptly for further necessary action.

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- E-mail attachment to abstract@17wcss.ku.ac.th in one of the following formats: **MS Word 95, 97 or 2000** (earlier versions of Microsoft Word are acceptable)
- **Times (New) Roman script; left and right margins spaced at 30 mm; top and bottom margins at 35 mm**
- **Title in English**, bold 18 point letters, centred, maximum 2 lines
- **Surnames of the author/s** in bold, 12 point capital letters, **first names** in bold 12 point letters. **Name of the author presenting the paper at Congress, must be underlined**
- **Institution/s** and **Full address/es** of author/s in 12 point letters, authors' titles not necessary to be included
- **Text in English**, 12 point letters, with single spacing between the lines, justified. **A maximum of 500 words in single A4 page (210x297 mm)**
- **Maximum of 6 Keywords in English**

THE 17th WCSS TOURS

I. PRE- AND POST-CONGRESS TOURS

Specific details of the tours will be provided to those who register. Late applicants to tours may have to pay a surcharge of 20% and registered participants who cancel after the cut-off date will be charged 20% of the tour cost. Tours will be cancelled if a minimum number of participants have not registered and paid. Registered participants of cancelled tours have the option to change to another tour or the money is refunded.

A – Pre-Congress Tours

B – Post-Congress Tours

A1, B1: Northern Thailand Tours

Duration: 6 days, 5 nights. Itinerary: Bangkok - Phetchabun - Sukhothai - Lampang - Chiang Mai. (Distance: approximately 1,000 km).

The excursion will emphasize the diversity of the regions beginning from the Central Plain via Pasak valley to the North. An important soil in the Central Plain is the acid sulfate soil. Management of these soils has been a major challenge. Just north of Bangkok, reclamation of an acid sulfate soil for orchard farming will demonstrate some of the successes that have been achieved. The Pasak valley is characterized by a different landscape with soils derived from basic igneous rocks. These soils are intensively cultivated. Further north, the highlands of Pitsanulok and Chiang Mai present other land use and conservation problems. The area is greatly affected by human activities and mitigation technology to reduce land degradation will be demonstrated. Traditional and cultural systems are very important to the region and participants will have an opportunity to appreciate how these affect land use and management. Historical and cultural sites like Sukhothai Historical Park, a world heritage center, handicraft manufacturing, elephants at work, hill tribe villages and ancient temples provide a glimpse of the traditions and heritage of the region.

Cost of each tour: Single US\$ 700, Double US\$ 600 per person.

A1- Northern Thailand Tour starts in Chiang Mai and ends in Bangkok from 8 August 2002 to 13 August 2002. Price does not include flight to Chiang Mai.

B1- Northern Thailand Tour begins in Bangkok and ends in Chiang Mai from 22 August 2002 to 27 August 2002. Price does not include return flight to Bangkok.

Arrangements can be made for participants who would like to prolong their stay in Chiang Mai or arrive earlier.

A2, B2: Northeast Thailand and Laos Tours

Duration: 6 days, 5 nights. Itinerary: Bangkok - Buriram - Udon Thani - Nong Khai - Vientiane (Laos) (Distance: approximately 850 km). Both tours (A2, B2) start from Bangkok. **A2** 8 - 13 August 2002. **B2** 22 - 27 August 2002.

Known as Isan in Thai, the Northeast presents diversity in terms of landscapes and soils, land use, history and cultural heritage. From Bangkok to the Northeast Plateau, we will visit orchard farming on typical Acid Sulfate Soils of the Bangkok Plain, a dairy farm, and pasture as well as rugged limestone landscape and soils at the escarpment front. On the Northeast Plateau, the tour presents different kinds of landscape, soil type, land use and management. The region consists mainly of sedimentary rocks formed during late Cretaceous to Triassic. Typical sandy soils, lateritic soils, and salt-affected soils will be observed and management problems evaluated. Locally Tertiary basaltic terrain is present with different kind of landscapes and soils. The famous Mekong River, bordering the Northeast and Laos,

is a highlight of the tour. Historically, the river was the lifeline of communities along its banks, aspects of which can still be observed. Along the tour, different kinds of native vegetation like Dipterocarp and dry evergreen forests that are constantly being reduced through shifting cultivation and a variety of land use types including paddy rice, annual upland crops, and tree crops will be shown. This is also one of the few places in the world where inland salt harvesting is taking place and the economic and ecological dimensions of this will be presented.

Isan – the golden gateway to Indochina, is also a region of fascinating historical interest. Stunning and amazing, the largest ancient Khmer style stone temple, a world prehistoric archaeological heritage center of Ban Chiang, and a well-preserved site of dinosaur fossils are among major Isan attractions. At Nong Khai province, a boat trip along the Mekong River will be arranged to enter Laos.

Cost of each tour: Single: US\$ 800, Double: US\$ 700 per person. (NOTE: Tour price does not include cost of return flight to Bangkok. Participants must have visa for Laos).

A3, B3: Southeast Thailand Tours

Duration: 4 days, 3 nights. Itinerary: Bangkok - Pattaya - Chantaburi - Ko Chang Island – Bangkok (Distance: approximately 400 km). Both tours (A3, B3) start and end in Bangkok. **A3** 10 - 13 August 2002. **B3** 22 - 25 August 2002.

This gem of a tour combines the study of landscapes, soils and agriculture with urbanization and industrialization along the southeast coast. Leaving Bangkok, we will traverse the Bangkok Plains with acid sulfate soils where land-use on one of the most acid soils of the world will be presented. The undulating granitic uplands present another major land-use problem. Intensive cassava (tapioca) cultivation is associated with some of the most extensive soil erosion problems and efforts to contain this will be demonstrated. The tour will spend a night at Pattaya, an unrivalled beach resort with its fine sand, blue sky and limpid sea. However, the negative impacts of tourism are also readily evident. Further to the east, other aspects of land use and management on the granitic terrain will be shown. Near the gem-capital of Chantaburi, a sandy soil with spodic horizon will challenge conventional theories on soil genesis. This is followed with a project on coastal zone management for aquaculture and mangrove conservation. Gem mining from the colluvial material derived from weathering products of Tertiary basalt will be visited along the trip to Chantaburi and impact on land is demonstrated. The area is famous for its fruits and a variety of fruits will be presented for tasting. The fruit culture dates back to several Centuries and this long tradition has been maintained and enhanced. The last night is at an island resort that requires a short ferry ride to reach. The Koh Chang National Marine Park may have less social life when compared with Pattaya, but it affords a tranquil escape amid idyllic surroundings.

Cost of each tour: Single: US\$ 500, Double: US\$400 per person, and the cost includes last night in Bangkok. Arrangements can be made for persons wishing to spend additional days at Koh Chang.

A4, B4: Southern Thailand Tours

Duration: 5 days, 4 nights. Itinerary: Bangkok - Hua Hin - Surat Thani - Phang-nga – Phuket. (Distance: approximately 950 km).

Peninsular Thailand is the neck of land connecting continental Thailand with the Malay Peninsula. The backbone is formed by granitic hills whose uplift also resulted in the exposure of sedimentary rocks like shale and sandstone. On the western coast, limestone hills form the classical tropical tower-karst topography. These haystacks are present inland and also dot the shallow waters of the Andaman Sea, giving a surrealistic charm unchallenged in the world. The Pleistocene coastal areas are speckled with

peat and mangrove swamps. The people, to diversify the agriculture and maximize the productive capacity of the land have exploited the combination of landform, climate and soils. Plantation agriculture dominates the southern part with rubber, oil palm, coconut, and fruit trees being the basis of the agro-economy. The coastal platform is also abundant with marine life, which is being managed for human consumption. Deforestation, urbanization, tourism, and mismanagement of land cumulatively threaten the environment.

The Southern Thailand Tour is designed to present a glimpse of tropical weathering and soils, the agriculture, and the land-people interaction. The land/sea interface is an integral part of the life of the coastal inhabitants. *Tourism along the coast and erosion in the uplands is threatening this fragile balance.* Solutions to sustainable development are generally elusive and some will be presented. Participants will have an opportunity to study the change from rock to soil via the pallid, mottled zones, and geomorphic transformation of the land. Soils on recent marine and fluvial terraces, including wetlands show the diversity of soil resources and conditions of the region. Highlights of the tour include visits to *plantations, supra - aqueous ecosystems, village in the sea, and the "island in the sun - Phuket"*

Cost of each tour: Single: US\$ 600, Double US\$: 500 per person.

A4 starts in Phuket on 9 August 2002 and ends in Bangkok on 13 August 2002.

B4 starts in Bangkok on 22 August 2002 and ends in Phuket on 26 August 2002.

Arrangements can be made for participants wishing to stay additional days at the island resort of Phuket. Cost of flight from or to Bangkok not included in the price.

B5: Taiwan Tour

Duration: 7 days, 7 nights from 22 August 2002 to 28 August 2002. Itinerary: Bangkok - Taipei - Ilan - Hualien - Taitung - Kengting - Kaohsiung

From North to east and then to South of Taiwan, passing through the volcanic national park, tectonic plate gorge national park, tropical national park, and beautiful seashore landscape, the tour will cover a wide landscape conditions. The tour will travel from sea level to about 3,000 meters, to demonstrate soils and land use developed from a subtropical to sub-alpine humid forest climates. Despite the small size of the island, there is a tremendous diversity in ecosystems. It will show the effects of climate, vegetation, geology and geomorphological factors on the differentiation of major soils. Highlights include volcanic soils (Andisols), Inceptisols with placic horizon, Spodosols on steep slopes, Histosols in the high mountains, Mollisols and Vertisols on the alluvial terraces, and Ultisols and Oxisols on older sediments. This differentiation has consequences on land use and ecology. The tour will also focus on different agricultural, forestry and pastoral activities and reveal the touristic and cultural richness of the regions, including the representative songs, dance, and scenic sites.

Cost of the tour: Single US\$ 1,200, Double US\$ 900 per person. Price does not include cost to and from Taipei. Participants must have visa for Taiwan.

B6: Yunnan Tour

Duration: 6 days, 6 nights from 22 August 2002 to 27 August 2002. Itinerary: Bangkok - Kunming - Wang Jai - Yuanmou (Soil Forest) - Minority Village - Kunming (Distance: approximately 1,200 km).

A frontier province in the southwest of China, Yunnan, straddles the Tropic of Cancer.

The SHASEA (Sustainable Agriculture in South-East Asia) research team is investigating the effec-

tiveness of soil conservation treatments validated in plot experiments in actual field conditions. This is being achieved by the development and scientific evaluation of modified and novel cropping practices in a representative highland catchment in northeast Yunnan. The Wang Jia Catchment covers 57.2 hectares near Kedu, in Xundian County, northeast Yunnan. The project consists of an evaluation of the effects of modified cropping practices on maize productivity and soil properties. Selected soil conservation treatments have been implemented in the catchment and the environmental and socioeconomic impacts of environment management are being assessed. Evaluated effects include physical, chemical and ecological impacts, the conservation of natural resources, management of wastes, returns for stakeholders, poverty alleviation, income augmentation and rural development. This holistic approach has not been attempted previously in the regions. The catchment is being used as an experimental area and training model for sustainable agricultural development in the South China highlands. Wang Jia is representative of about 85% of upland Yunnan and typifies the Yunnan countryside.

"The Three Forests of Yunan", namely, the Stone Forest in Lunan Yu, the Soil Forest in Yuanmou and the Sand Forest in Luliand, are well-known for their exotic picturesque landscapes which will impress you forever.

Cost of the tour: Single: US\$ 800, Double: US\$ 700 per person. Price does not include flight to and out of Kunming. Participants must have visa for China.

B7: South - Western Australia Tour

Duration: 5 days, 4 nights from 22 August 2002 to 26 August 2002.

This tour will focus on soils and issues of particular importance in southwestern Australia. The region experiences a Mediterranean climate but due to the widespread persistence of Tertiary lateritic soils there are many unique problems for soil scientists involved in land management, agriculture, forestry, hydrology, contamination science and mineral exploration.

21 Aug. Arrive in Perth, accommodation in a city centre hotel, welcoming dinner at central restaurant; 22 Aug. Depart Perth for Darling Range to view bauxite laterites, deep weathering, bauxite mining and mine rehabilitation. Opportunities to walk in native eucalyptus rainforest and observe wild flowers. Return to Perth.

23 Aug. Depart Perth for Wundowie, Bakers Hill and York to view the dissected laterite terrain of the intermediate rainfall zone. Plain topics will be pedogenesis, salinisation, land degradation and remediation, silcrete and ferricrete formation and soil fertility. Return to Perth.

24 Aug. Depart Perth and travel north via soils on marine and terrestrial sediments. Visit Cervantes to view the Pinnacles a dramatic landscape of calcrete pillars in a mobile coastal dune field. Visits to irrigated horticulture enterprises and an agricultural research farm to examine soil constraints to productivity. Return to Perth.

25 Aug. Depart Perth and travel south via the Swan Coastal Plain inspecting soils developed on alluvium and coastal dunes. The soils range in age from Recent to Tertiary and consequently exhibit a diverse range of pedological features. Mineral sands mining on ancient strand-lines will be visited with associated land rehabilitation including man made wet-lands for migratory birds. The premium wine growing area of Margaret River will be visited to relate wine quality to soil conditions. Return to Perth.

26 Aug. End of tour; depart Perth.

Cost of the tour: Single: US\$ 800, Double: US\$ 700 per person. Price does not include travel to and from Perth. Participants must have visa for Australia.

B8: Philippines Luzon Island Tour

Duration: 6 days and 5 nights from 22 August 2002 to 27 August 2002. Itinerary: Metro Manila – Mt. Pinatubo - -Banaue rice terraces - -Los Banos - -Manila. Distance: approximately 1,200 km.

As a consequence of the 1991 explosive volcanic eruption of Mt. Pinatubo, major portions of deposits on the surface of hills and mountains were mobilized due to heavy rains from 1992 up to 1999. Since then, the Lahar affected agricultural areas have continuously been rehabilitated by the Department of Agriculture to restore its productivity.

On the way to Banaue we can see the grassland plains configured by the rolling hills, while rice fields are on the valleys and alluvial plains. There is a zigzag road where the rain swept eroded mountains could be viewed. The slow climb accents the continuing problem of erosion not only of the mountains on one of the sides but also of the riverbanks on the other side. *The Banaue Rice Terraces considered as one of the Eight wonders of the world covers an area of about 40,000 hectares which was constructed 2,500 years ago. Essentially, the system is based on the construction of stonewalled terraces along hilly slope to conserve soil and water. The rice terraces are within the province of Ifugao, which is in the Cordillera Central Range. The uplift was greatly affected by diastrophism faults from northwest to northeast. At the southeastern side of the Cordillera, the volcanic formation consisting primarily of andesitic-basaltic pyroclastic flow deposits.*

The International Rice Research Institute (IRRI) is located in Los Banos, Laguna, at the foot slope of Mt. Makiling, a dormant volcano. We expect the travel to be very long and tedious, but exhilarating and challenging. It is worth the effort and educational.

Cost of the tour: Single: US\$ 700; Double: US\$ 600 per person. Price does not include flight to and from Manila.

A5: Peninsular Malaysia Tour

Duration: 6 days, 5 nights from 8 August 2002 to 13 August 2002. Itinerary: Kuala Lumpur – Lumut – Ipoh – Penang – Bangkok.

Peninsular Malaysia, with liquid sunshine, is an example of vegetation, soils and land use in a humid tropical climate. With no dry season, the dominant process of continuous leaching and weathering. *The unique character of the soils and the specific land use results from this special agro-environment. A significant part of the wealth of the country comes from the plantation agriculture of mainly rubber and oil-palm with smaller contributions from coconut, and other crops. Padi rice dominates the lowlands. Forest ecosystems comprise natural and managed and these provide a variety of forest products. Malaysia is known for its production of tin; other mineral resources are in lesser quantities.*

The tour traverses the agriculturally better developed west coast, starting from the capital and passing through tin-mining areas and ending in Penang. The Rubber Research Institute is a world's premier institute for this crop and participants are briefed on recent technology and will be able to evaluate two of the rubber-growing soils of the country. Moving northwards along the coastal plain, the landscape changes to oil-palm and coconut cultivation. Soil constraints and aspects of management of these crops will be presented. Close to Penang is the large rice-growing area of Malaysia. Staff of the rice research station will present research on all aspects of rice management. Rice soils are messy and participants must be prepared to have dirty boots. These soils seldom dry out and the effects of continuous water-logging with only an occasional oxidation of surface layers, presents unique features to the soil. Discussions during the tour will focus on environmental impacts and other constraints to agricultural development in the country. The tour ends in the metropolis of Penang, an island where participants may have difficulties in leaving.

Cost of the tour: Single: US\$ 700, Double: US\$ 600 per person. This cost includes accommodation/ transport and drink/food but not dinners. It does not include cost of airfare from Penang to Bangkok.

B9: Sabah Tour

Duration: 6 days and 5 nights from 22 August 2002 to 27 August 2002. Itinerary: Bangkok – Kota Kinabalu (via Kuala Lumpur) – Sandakan – Lahad Datu – Tawau – Kota Kinabalu.

Tropical rain forests and the highest mountain (Mt. Kinabalu) in S.E. Asia are the unique features of the State of Sabah, Malaysia. The selected route traverses the cross-section of the country, passing through virgin jungle, with occasional small communities and ending in the eastern part of the State, which is the new agricultural domain. Agricultural systems from traditional slash and burn to modern plantations can be seen. Landscapes and soils vary with the lithology and geomorphology. Native flora and fauna are fascinating and the participant will be able to share a banana or two with an orangutan. If lucky, they may see the dancing of the king cobra. Soils, ranging from recent alluvials, Andisols on basalts, Oxisols (some with a net positive charge), and Ultisols on ultrabasic rocks will be seen. Crops include rice, cocoa, oil-palm, and spices. Home gardens grow a variety of fruit trees and flowers. The tropical jungle may be viewed from sea-level up to about 13,000 feet. The summit of Mt. Kinabalu provides a most picturesque view that you do not want to miss.

Cost of the tour: Single: US\$ 700, Double: US\$ 600 per person. Price does not include travel to and from Kota Kinabalu. Participants must have visa for Malaysia.

II. CONGRESS DAY TOURS

During the congress, six special daily tours will be conducted in Bangkok and surrounding areas. These tours offer not only an amazing variety of touristic spots but also scientific interests. So, while you are in Bangkok and have a full-day break during the Congress, why not spend it to visit some of the wonderful sites Bangkok and its vicinity has to offer.

C - Congress Day Tours

C1: Acid Sulfate Soil Area and Ancient City

Stretching north of Bangkok is a vast area of Acid Sulfate Soils, which is worthy to visit since it has been utilized not only for agriculture but also urbanization and industrialization. Tour will also include a visit to Ayutthaya Ancient City and the Royal Summer Retreat of Bang-Pa-In, a fairy tale scene of architectural wonders. Ayutthaya was the Thai capital for 400 years until its destruction in 1707. The ruins of numerous temples offer wonderful scenery and are now one of the world heritage sites.

C2: Mangrove Forest, Shrimp Farm, Salt-Making Field, Floating Market and Home-made Sugar from Coconut

Just southwest of Bangkok, there occurs a wide strip of active tidal flats adjacent to the upper part of the Gulf of Thailand. Originally, Tropical Mangrove Forest occupied these areas. To date, they have been opened to various uses and undoubtedly such human activities affect soil and ecosystems. During the trip, we will visit a shrimp farm, salt-making field, mixed orchard farming and coconut orchard on raised-bedding, and traditional factory for making sugar from coconut juice. Included in the tour, is a visit to the bustling floating market and view typical Thai life on the canals — these are unforgettable experiences.

C3: Rose Garden, World's Tallest Buddhist Monument, Sugarcane Bowl and the Bridge over River Kwai

The highlight of the tour is the visit to the famous Bridge over the River Kwai. Allied Prisoners Of War during World War II built it. We will also visit a variety of interesting places like Rose Garden, a country resort, cultural center and beautiful theme park, and the Phra Pathom Chedi, the world's tallest Buddhist pagoda. Also en route are the vast areas of sugarcane plantations on alluvial fans with well-drained Alfisols. If time is available, we will visit a typical sugar factory located along the levee of the Maklong River.

C4: Temple and City Tour

This tour features visits to the Royal Grand Palace, the uniquely impressive residence of Kings chosen by the first monarch of Chakkri Dynasty; the dazzling Wat Pra Kaew and its revered Emerald Buddha, and Wat Arun (Temple of Dawn) and its impressive 280 feet pagoda decorated with colorful Chinese porcelain. The tour will be complimented with the Chao Phraya River cruise to witness traditional Thai houses, temples, hotels and towers along the river while enjoying fine luncheon. The tour will conclude with a shopping trip to Jim Thompson Thai House, a unique house of the legendary silk merchant, which contains collection of art objects displayed in a traditional Thai House setting.

C5: Degraded Land Improvement Project and Pattaya

On the east of Bangkok, there occurs Khao Hin Son Royal Development Study Center, initiated by His Majesty the King. At the center, we will visit the degraded land improvement project. Een route is Wat Yan Na Sung Worn, where 15 years ago, the land was degraded by severe erosion and supported very few plants. With great efforts, the area has been developed for recreation and faith. The tour will conclude at the Pattaya beach resort, a colorful and vibrant place that offers a lazy time at the beach and an enormous variety of water sports or on-shore entertainment.

C6: Acid Sulfate Soil Area, Vertisols Region and the Ancient City of Lop Buri

The trip commences with a site at Wang Noi, where an acid sulfate soil has been utilized for paddy and orchard farming under the Chao Phraya irrigation project. Further north from the Bangkok Plain is the rugged area of limestone, Terra Rosa, Mollisols and Vertisols that are exclusively used for various upland crops. From there the tour will conclude with Lop Buri where some remarkable ruins dating from the pre-Thai Khmer period and from 17th century are located and where King Narai held court. Historically, Lop Buri is one of the most intriguing towns in the whole of Thailand.

The cost per person for each special day tour is US\$ 50. The tours will leave the hotels at 7.30 a.m. and return by 6.00 p.m.

GENERAL INFORMATION ON THAILAND

Climate

Thailand enjoys a tropical climate with 3 distinct seasons- summer from March through May, rainy with plenty of sunshine from June to September and cool from October through February. The average annual temperature is 28° C, ranging, in Bangkok, for example, from 30° C in April to 25° C in December. The average temperature in August is 28° C

Passport

A valid passport is required for all people entering Thailand. Passport must be valid for longer than the period of stay in Thailand.

Visas

Temporary visitors to Thailand for the purpose of pleasure who are exempted from applying for entry visas, and who can stay for a maximum of 30 days in Thailand, must be of the nationality of and holding valid passports of travelling documents issued by:

- Americas : Argentina, Brazil, Canada, Mexico, and USA
- Asia : Bahrain, Brunei, Indonesia, Israel, Japan, Kuwait, Malaysia, Oman, Philippines, Qatar, Republic of Yemen, Saudi Arabia, Singapore, The Union of Myanmar, Turkey, and United Arab Emirates.
- Pacific : Australia, Fiji, New Zealand, Papua New Guinea, Vanuatu, and Independent State of Samoa
- Africa : Algeria, Djibouti, Egypt, Kenya, Mauritania, Morocco, Senegal, South Africa, and Tunisia
- Europe : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, and UK

Language

English is widely understood particularly in Bangkok where it is almost the major commercial language. English and other European languages are spoken in most hotels, shops and restaurants, in major tourist destinations, and Thai-English road and street signs are found nationwide.

Currency

The Thai unit of currency is the baht. The baht is divided into 100 satang. Copper coins are valued at 25 and 50 satang. Silver coins are in denominations of 1 and 5 baht. A 10 baht coin is composed of both silver and copper. Banknotes are valued at 10 baht (brown), 20 baht (green), 50 baht (blue), 100 baht (red), 500 baht (purple) and 1000 baht (grey).

CORRESPONDENCE

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Email: o.sfst@nontri.ku.ac.th

<http://www.17wcss.ku.ac.th>

Please also visit the Soil and Fertilizer

Society of Thailand Website at

<http://www.sfst.org>

**Greeting address of the Secretary-General of IUSS at the luncheon of the 2001
Annual Meeting of the SSSA in Charlotte, NC, USA, October 23, 2001.**

Distinguished Presidents of the SSSA,
Distinguished Chairman of the US National Committee for Soil Science,
Distinguished President-elect and Vice President-elect of the International Union of Soil Sciences,
Dear colleagues and friends, ladies and gentlemen,

Do you know what a friend is? A friend is somebody, who stands behind you in difficult times. Exactly in this sense, it is my honour and my pleasure to convey to all of you the best greetings on behalf of the IUSS. – Let me assure you here as Secretary-General that the IUSS is with you in the defence of humanity, justice and mutual respect among individuals, nations, religions and ethnic groups, which are at the same time the basis of science and of our professional life. Moreover, I am deeply convinced, that we will reach these targets by continuing to do our best within our professional work, standing firmly and without fear to our role as scientists for the sake of society and the global community. It was therefore an excellent decision to keep this meeting going.

Let me now share some thoughts with you, about the actual situation of soil science on a world-wide level and our main challenges ahead. Despite all our efforts and all the scientific progress we achieved, *neither national societies nor the global community, including their politicians and decision makers* fully understand so far the role of soil and soil sciences for the economic, social and cultural progress. It seems that we have not yet brought our message to the ear of those who decide about progress and development, including the funding of research and the use of soil research findings for politics and decision making.

It is therefore necessary and timely to think how and in which fields we can convince society, politicians and decision makers about the importance of our contributions. This is the key question with which we are confronted today in many parts of the world. In this context, we should not forget that we, as scientists, are not the players and stake holders in the use of soil. This are farmers and foresters, or to some extent land use planners, town planners and architects, hydrologists, environmentalists, toxicologists, and many others. Let us therefore reach out to others, and co-operate with them in order to convince the communities of the importance of our contributions to their economic, social and cultural welfare and development.

We will have the opportunity to discuss this further during the 17th World Congress of Soil Science in Bangkok, Thailand, in August next year, to which I invite all of you.

Coming back to this Annual Meeting here in Charlotte, I see many new developments, new scientific highlights and new ideas how to bridge between science, politics and decision making. In this sense, I wish all of you a successful continuation of this Meeting and much success in your future scientific endeavours. – But I especially wish you and all of us, that we will soon return to a world of justice and humanity, a world of mutual respect and understanding amongst people and nations. I am convinced, that this annual meeting after the 11th of September is the first successful step in this direction. Thank you.

ANNOUNCEMENTS

5th International Acid Sulfate Soil Conference

Tweed Heads, NSW, Australia, August 25-30, 2002

Conference theme:

Researchers, land managers and legislators have become very aware of the potential environment degradation for the unsustainable use of acid sulfate soils. The conference embraces four broad themes that are important in achieving sustainable management of acid sulfate soils.

A **field day** is included in the conference costs. A post-conference field trip to acid sulfate soil hotspots along the New South Coast from Tweed Heads to Sydney is also planned.

Scope of the Conference:

1. Characteristic of acid sulfate soil hazards

- a. Field Monitoring
- b. Lab Analysis
- c. Remote Sensing
- d. Geomorphology and Pedology

2. Management of acid sulfate soils

- a. Neutralisation techniques
- b. Broad acre agriculture
- c. Aquaculture
- d. Acid mine drainage
- d. Engineering

3. Planning, Legislation and Regulation

- a. Industry
- b. Public
- c. NGOs

4. Acid Sulfate Soil Education and Communication

- a. A special session for the dissemination of scientific results to managers of acid sulfate soils.

Information: Ben Macdonald,
Conference Director
School of Geography
University of New South Wales
Australia

E-mail: bennettmacdonald@bigpond.com
Website: <http://www.out.at/acidsoil>

International Conference on Soils Under Global Change – a Challenge for the 21st Century

Constanta, Romania, September 3-6, 2002

The main topics of the Conference will include:

1. physical degradation processes: water and wind erosion, compaction, structure deterioration, crusting, aridification, waterlogging etc;
2. chemical degradation processes: pollution, salinity, sodicity, acidification, humus and nutrient deficiencies, toxicity;
3. desertification in arid and dry-subhumid environments;
4. drought under various soil and management conditions, inter-relations with farming and environment;
5. global climatic changes, contribution of land use to emission of greenhouse gases from soils, effects of climatic changes in soils, farming practices and environment, carbon sequestration.

The mid-conference tour will visit the Valului Traian Research Station with field experiments on reduced tillage, soil compaction, irrigation, and use of sewage for fertilisation a.o.

The post-conference tour will include a 800 km bus trip from Constanța to Tulcea (with one full day trip by boat in the Danube Delta, one of the few natural wetlands still existing in Europe), then to Braila (saline soil reclamation) and Perieni (erosion control) and then back to Bucharest.

Intention to participate

Conference on Soils Under Global Change - a Challenge for the 21st Century

September 3-10, 2002, Constanța, Romania

Name

Profession

Institution/Organization

Address: Street/Number

City/Postal Code Country

Tel. Fax

E-mail

Title of paper

Topic number preferred oral poster

Post-conference tour (yes or no)

Signature Date

This form should be accompanied by a preliminary abstract (500 words) of the paper(s) to be presented.
Language: English.

Address: Research Institute for Soil Science and Agrochemistry, Bd. Marasti 61, Bucharest 71331, Romania; Tel: +40-1-22417-90 ext. 268; Fax: +40-1-222-5979; E-mail: r.enache@icpa.ro.

Full professor of Soil Inventory and Land Evaluation f/m

at the Laboratory of Soil Science and Geology

vacancy number: HGL2002-0203

Job description

Applicants are invited for a position of full professor of Soil Inventory and Land Evaluation at the Laboratory of Soil Science and Geology, Department of Environmental Sciences, Wageningen University and Research Centre.

The Chair of Soil Inventory and Land Evaluation is responsible for teaching and research aimed at understanding spatial patterns of soils in landscapes, methods to inventory those patterns and for determining the suitability of soils for different types of land use. Spatially explicit observations and measurements on soils properties are used to evaluate potential land use through the use of expert systems and simulation models. Research focuses on how soil properties can be used for a quantitative characterization of land use systems, while at the same time, analysis and evaluation of land use systems (agro-ecosystems, as well as (semi-)natural ecosystems) generates new questions for soil inventories. The Chair contributes to a variety of graduate and undergraduate teaching programmes, with a focus on the Bachelor programme Soil, Water, Atmosphere and the Master programme Soil Science. Its research is part of the Graduate School Production Ecology & Resource Conservation.

Profile

- a PhD or equivalent degree in Soil Science
- expertise in spatial patterns of soils in landscapes, as evident from pertinent publications in refereed scientific journals
- experience in interdisciplinary problem-oriented research
- excellent didactic skills and experience in university teaching on both undergraduate and graduate level
- evident research-fund acquisition skills
- excellent management qualities
- stimulating personality and good team-player

Remuneration:

Salary between € 4231,05 minimum and € 6173,68 maximum gross per month.

Information:

Additional information can be obtained from the chair or the secretary of the selection committee, prof. dr. M.J. Kropff, , tel. +31 317 477044, e-mail m.j.kropff@plant.wag-ur.nl, and drs. M.E. Vaane, tel. +31 488 411841 (private), e-mail evelinewim@planet.nl, respectively.

Applications

Applicants should send a curriculum vitae, a statement of their plans for research and their interest in teaching, and their e-mail address within 4 weeks of the date of this advertisement to: Stafbureau Wageningen Universiteit, P.O.Box 9101, 6700 HB Wageningen, mentioning number HGL 2002-0203 on letter and envelope.

PROPOSAL FOR 2 NEW IUSS COMMISSIONS

There are 2 proposals for new Commissions:

Paleopedology ⇒ within Division 1 "Soil in Space and Time"

Pedometrics ⇒ within Division 2 "Soil Constituents and Processes";

I would like to ask you to consider these two proposals, which will be submitted to the IUSS Council for decision during the 17th World Congress of Soil Science in Bangkok, in August 2002.

Winfried E.H. Blum, Secretary-General

Proposal for a Commission on PALEOPEDOLOGY

A Brief History of Activity

A **Paleopedology** commission exists within INQUA (International Union for Quaternary Research) since 1965. Within ISSS a Working Group was established during the 9th Soil Congress in 1968 in Adelaide, Australia, having the same composition of officers as the INQUA Commission to ensure cooperation with and support from both Unions. The early Presidents were I. P. Gerasimov, R.V. Ruhe and D.H. Yaalon. The group was responsible for arranging symposia, field trips, discussions, newsletters and publications, in particular the now classic book derived from the 1970 Amsterdam International Symposium - Paleopedology: Origin, Nature and Dating of Paleosols, edited by Dan Yaalon and published in 1971 in Jerusalem, with the assistance of the ISSS.

The more recent activity included a four day Second International Symposium on Paleopedology in 1993 in Illinois, USA, published as *Revisitation of Concepts in Paleopedology in Quaternary International* vol. 51/52, 1998, edited by L.R. Follmer, D.L. Johnson and J.A. Catt. In the current inter-congress period a symposium on Paleosols and Climatic Change was held in Lanzhou, China, in 1998, on *Paleosol Sequence as Evidence of Long- and Short-term Climatic Cycles*, in 1999 in Durban, South Africa, a meeting on Paleosols and Modern Soils as Stages of Continuous Soil Formation, in 2000 in Suzdal, Russia, and a Symposium and Field Workshop in 2001 in Chapingo, Mexico. All these meetings, organized jointly by IUSS and INQUA Paleopedology Commission with considerable local help, included field visits and workshops - an important and integral part of training and study in recognizing and interpreting paleosols in different geographic regions. They were attended by 50 to 90 participants from a number of countries. Selected reviewed papers are being published as special issues of international journals, like *Catena* or others. Newsletters are being produced periodically, no 16 is now in press. All this documents well the broad and continuous activity of the group.

Why a Division in IUSS?

Paleopedology, has as its objective the recognition, study and interpretation of paleosols, defined as soils which have formed in landscapes of the past. Both buried and non-buried (relict) paleosols are recognized. It is thus a natural complement of the four pedological commissions - In Space and Time - within Division 1 of the new IUSS scientific structure. It is at the same time an important interdisciplinary link to other earth sciences, like geomorphology, archaeology, paleoecology and especially Quaternary geology - through INQUA - which no other of these other Commissions have. More recently there is a spreading recognition of pre-Quaternary paleosols as indicating past climatic changes in older geological periods, and no longer within the domain of INQUA.

The scientific importance of paleosols as a proxy for interpreting past environmental changes, and hence for predicting likely soil changes during current and future climatic perturbations effected by humankind, is growing. Hence it is proposed by us to the IUSS Council to rename the current Working Group on Paleopedology and reestablish it as a Commission on Paleopedology within Division 1, in analogy to the INQUA Paleopedology Commission. There is strong support for this by all members of the working group and all participants at its Symposia meetings.

Conclusion

It is expected that with the new elected leadership, partly overlapping with the previous expertise, the activity of the group will continue also in the future on similar lines to the benefit of the broad soil community as a whole. The establishment of a *Paleopedology Commission* within Division 1 of the IUSS seems thus a strongly recommended decision.

Dan Yaalon, Israel

Proposal for a Commission on PEDOMETRICS

History of the Working Group

The Pedometrics Working Group of the ISSS came into being formally in 1990 at the International Congress of Soil Science in Kyoto. It arose out of the desire of soil scientists, working in isolation, to get together, to pool their knowledge and to discuss the application of statistics in their research and teaching.

There had previously been a Working Group on Information Systems in the ISSS. This Group's interests were principally in the fields of automated data banks and data management, information processing, and cartography. Nowadays we should call it informatics, though statistics was included. It was active; it met first in 1975 in Wageningen and later in Canberra (twice), Varna, Paris, and Bolkesjø, and it published the proceedings of its meetings. In the late 1980s many of the causes that it promoted were taken care of in commercial geographic information systems, and the Group disbanded. That left no forum for statistics in soil science, a vacuum to be filled.

After exchanges of correspondence some 20 statistically minded soil scientists met in Leuven in 1989 on the occasion of the Bernoulli Society's conference on spatial statistics in earth science with the aim of forming a new group. They agreed to seek the status of Working Group in the ISSS, and, as above, they were successful.

The Group held its first conference in Wageningen in 1992 and has met since in Madison (Wisconsin), Montpellier, Sydney and Gent. Typically 70 to 80 scientists participate on each occasion. The Group published significant papers from the first four of those meetings in special issues of *Geoderma*, and it plans to publish those of the Gent meeting in due course. It has already agreed to meet in 2003 in Reading, and has in mind to meet after that in the USA, probably in 2005, before the IUSS Congress in Baltimore the following year.

The name 'Pedometrics'

The Working Group saw its scope as the application of statistics and probability to soil and the development of technique to that end. It wanted to focus on the uncertainty accompanying quantitative methods arising from incomplete knowledge, whether from sampling fluctuation or random processes. Its scope was 'soil science under uncertainty', and it coined the term 'pedometrics' to encapsulate it. It

was analogous to biometrics, econometrics, psychometrics and environmetrics, terms already established in their own fields.

Development of the subject

What we may now call pedometrics predates the Working Group by two generations. We may identify its beginnings in the work of Mercer & Hall with their great paper on uniformity trials at Rothamsted and its appendix by 'Student' in 1911. Later Fisher, also at Rothamsted, revolutionized agricultural statistics and laid the foundations for sound sampling and efficient estimation and introduced the analysis of variance, techniques that remain in everyday use as the 'bread and butter' of consulting statisticians in agronomy and advisory soil science. In the 1960s and '70s soil engineers joined forces with soil surveyors to combine classical sampling with soil classification to predict soil conditions at inaccessible or otherwise unsampled sites. This collaboration resulted in some highly significant and thought-provoking papers in the literature of soil science.

The advent of computers around 1963 brought multivariate analysis within reach. For the first time pedologists could analyse large sets of multivariate data in their search for structure by ordination and for discrimination, for which the theory existed but which had been hitherto impracticable. To this they added automatic classification, elaborated it with contiguity constraints and spatial control, and also with fuzzy logic. That work continues to develop.

The research on soil classification revealed shortcomings, and in the early 1970s pedologists began the search for a more realistic representation of spatial variation that recognized continuity. Time series methods were investigated, and in 1976 their spatial analogue, geostatistics, was seen to have all the qualities that then seemed desirable. The first research papers appeared in 1980, and the numbers have increased steadily ever since as new developments and applications have been envisaged and investigated.

Quantitative description of the micro-structure of soil from thin sections was first attempted in 1940, but it was tedious, and it was only in the 1970s that it became seriously practicable with instruments such as the Quantimet for analysis. Since then more powerful automated image analysers have become available, and soil scientists have taken advantage of them. The images are in two dimensions only, whereas the real soil is three-dimensional, and inference of the three-dimensional structure has to call on stereology and stochastic geometry. Fractals also find application in studies of soil structure, and there has been substantial research on this aspect.

The most recent innovation (1999) in statistical pedology is the application of wavelets. Mathematicians developed the theory in the 1980s and early '90s largely for analysing, filtering and enhancing images. With some adaptation to smaller sets of data the methods are proving valuable for analysing soil data.

Functions or Tasks

We may summarize the quantitative functions or tasks that pedometrics can tackle. They include

- global estimation,
- general-purpose classification,
- ordination,
- the search for 'structure'.
- prediction of one variable from one or more others —
- standard regression
 - of one variable knowing the classification,
 - of one variable knowing its values elsewhere (kriging),

of one variable knowing its past – temporal forecasting,

of one variable knowing its values elsewhere and in the past – space-time prediction,

- image analysis and filtering, describing structure,
- pedogenesis – following the ideas H. Jenny,
- modelling the propagation of uncertainty.

Applications

Pedometrics is pervasive. It can play a role in almost every branch of soil science. The following list gives some idea, but is by no means complete.

- sampling and estimation,
- survey and mapping,
- monitoring,
- field experimentation,
- remote sensing, including ground-penetrating radar and electromagnetic induction,
- soil structure,
- Precision agriculture,
- Land reclamation and irrigation,
- Pollution and its control.

Education

Pedometrics has advanced apace in recent years, and it risks becoming a victim of its success in that the research is tending to outstrip the workaday pedologists' ability to apply its results and so losing contact with its roots. Two gaps are widening; one is between research and application, the other is between teaching to degree or diploma level and what is needed in research. Members of the Working Group recognize these and are acting to bridge the gaps. Two recent books by members, namely *Geostatistics for Natural Resources Evaluation* by P.Goovaerts (1997) and *Geostatistics for Environmental Scientists* by R.Webster & M.A.Oliver (2001), fill the first of the gaps in geostatistics. Other topics that need modern texts are the statistical analysis of soil structure, sampling theory and practice, stochastic process modelling, quantitative pedogenesis (an up-date of Jenny), and multivariate pedometrics. The Group is well qualified to write these.

The *European Journal of Soil Science* in alliance with the International Association of Mathematical Geology is attempting to bridge the second with its Series for Students written by experts in their fields. Three papers on specific topics have appeared, two are in the press, and a third has been commissioned. Members of the Working Group are encouraged to write for the Series without waiting for any further invitation.

Conclusion

Soil science is becoming increasingly quantitative in all its branches. Inference and prediction from quantitative results, however, must be seen against a background of variation in space and time and errors in measurements and models. Statistics and probability have vital roles. The IUSS is fortunate in having a group of able, inventive and active scientists to apply theory and develop technique and aid their colleagues in the Union. The time has come to recognize their force for the good of the whole of pedology and confer on the Group the status of Commission.

Richard Webster, UK

Publish or Perish (6) – Soil science for pleasure

Alfred E. Hartemink

with contributions from

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I can sympathize with people's pains, but not with their pleasures.

There is something curiously boring about somebody else's happiness.

Aldous Huxley (1894-1963)

Next to enjoying ourselves, the next greatest pleasure consists in preventing others from enjoying themselves, or, more generally, in the acquisition of power.

Bertrand Russell (1872-1970)

1. Introduction

I assume most of us have not chosen to become a soil scientist in order to get rich or to obtain a Nobel Prize. I guess most of us are soil scientists because of the great pleasure it takes to investigate, teach about or muddle through the upper few metres of the earth's crust. Of course those pleasure are different reflecting the wide interests of people; some are interested in microscopic studies, others prefer the pedon, field or watershed.

As opposed to the quotes from Huxley and Russell given above, I think everyone has the right to derive pleasures from his or her activities whether that is in the laboratory, field, lecture room or behind the computer screen. Since this series is dealing with publishing in soil science I will focus on the pleasures of publishing. As there is no publishing without writing, this article mainly deals with the pleasures of writing; first some general trends followed by my own experiences and those of some colleagues.

2. The trend

More and more soil science papers are being published each year, which is the result of (i) the increasing number of soil scientists, (ii) the increase in efficiency (e.g. computers), (iii) the recycling of ideas, and (iv) dilution of experimental data over various papers (iv) combined efforts by teams of scientists. Above all it reflects the pressing atmosphere in many academic departments and institutions to publish. It may not necessarily reflect advances in soil science but it does show that many soil scientists are productive writers. Now I will discuss each of the causes for the increase in the number of papers.

Although exact figures are not available, the number of soil scientists increased largely in the 1960s to 1990s. Total number of ISSS/IUSS members increased from 3958 to 7042 between 1974 and 1998 (+78%) (van Baren et al., 2000), whereas over the same period the world population increased from 4.15 to 5.86 billion (+42%). This shows that the relative increase in members exceeded the relative growth of the world population. Part of the increase is caused by the influx of persons attracted not by science as vocation but as source of money and jobs (Phillip, 1991). Apparently, working as a soil scientist is pleasant, and many soil scientists like to write what they have found.

A second cause for the increase is the use of computers by which it is far more easy to create graphs, tables and figures and to copy-edit text. Computers and the electrification of literature searches and retrieval have greatly reduced the time needed for writing papers. I think the time needed to read a paper or comprehend a method or complex problem has not changed unless people have got cleverer. Not so likely, and the only thing that we know and that can be observed when browsing through old literature is that the quality of papers has much improved. Not necessarily the quality of writing which is on the decline due to a new form of language *Netspeak*, but the quality of the science. Well, at least that how it looks like but it may have to do with the fact that we know so much more.

So computers have contributed to the increase in the number of soil science papers. But not always. In a recent tribute to the great Australian soil physicist¹ John Philip (1927-1999) it was mentioned that he avoided computers and for much of his career relied on a mechanical calculator. He performed calculations lying on the floor, and drew graphs by hand (think of this next time you open a new spreadsheet or Sigmaplot). In the same tribute, a list of papers by John Philip is given and in his 45-years of publishing John published more than 300 papers, many of them single-authored and groundbreaking. So to some extent this shows that computers are not essential for a large publication record although John of course had secretarial assistance for his manuscripts and a draughtsman for the graphs. How many soil scientists do have that today? We have computers.

Another trend that has occurred in the publishing of soil science is that an increasing number of papers are based on desk studies using existing data. An analysis of all papers published in *Geoderma* between 1967 and 2001 revealed that in the 1970s and 1980s about 60% of the papers was based on studies conducted in the lab, but in the 1990s the share of lab papers declined to 40% (Fig. 1). Most remarkable is the large increase in papers based on desk studies to about 40% in the late 1990s. Although this is the trend in the papers of one journal only, it shows that soil science is increasingly becoming an office science. There is an increasing group of soil scientists that never touch the soil and mainly sits behind computer screens.

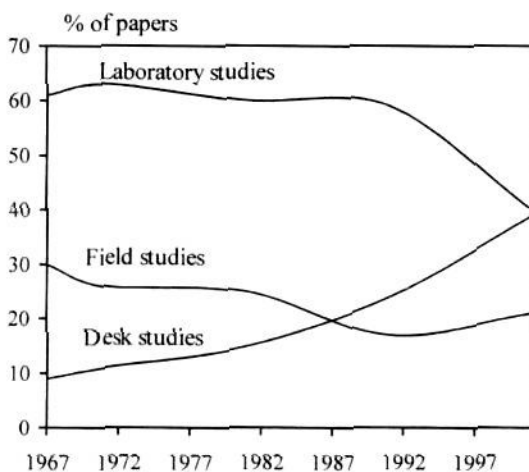


Fig. 1: Trends in papers from field, laboratory and desk studies between 1967 and 2001 in *Geoderma*. Based on 2079 papers. Modified from Hartemink et al. (2001).

¹ This tribute appeared in the *Australian Journal of Soil Research*, vol 39(4) 2001 and was prepared by close colleagues from CSIRO and ANU. It is puzzling why they call him "environmental physicist" instead of "soil scientist" or "soil physicist". It is perhaps exemplary for the changing of names from "soil science departments" into "departments of natural resources" and from soil science into bio-geo-ecology and alike? Selman Waksman who was awarded in 1952 the Nobel Prize in Physiology or Medicine for his studies of soil microbes that have led to the discovery of streptomycin, the first antibiotic remedy against tuberculosis, undersigned his letters with "soil microbiologist".

The third and fourth cause for the increase in the number of papers is the recycling of ideas and the dilution of experimental data over various papers. A common complaint of journal editors is that manuscripts contain premature information or that papers contain too much overlap (Hartemink, 2000). More papers to fill a CV or departmental requirement. As Richard Webster recently unearthed an interesting remark from G.V. Jacks: "...most scientific papers advance the scientists rather than the science".

The last cause for the increased number of papers is the formation of large research groups, often interdisciplinary, which requires that each contributor should end up in the list of authors in the resulting paper. This could be called the author-contribution-dilution effect. It may be that co-authors are now listed who in the past would have been acknowledged like for example technicians, but it may also be that some people are automatically listed because they are heads of the group or institutional tycoons. There seems a fair deal of confusion on the rules for authorship, but there is a trend that there are more authors per paper. Not many data are available but the analysis of Geoderma papers showed that the average number of authors was 1.7 in 1967, 2.5 in 1990 and 3.1 in 2000. The number of pages per author decreased from about 9 in 1967 to 7.2 in 1996 (Hartemink et al., 2001). So authors contribute less per paper. Recently an editor of *The Lancet* mentioned to me that he had seen the first paper with more than 500 authors.

3. Some of my own experiences

Reading and writing are complementary joys although it is easier to read for prolonged periods than to write. Both reading and writing can give new insights. Reading can give direct new information, whilst writing can give insight through the ordering of information into a logical or desirable sequence and form. I can hardly imagine that it is possible to do one without the other, but I tend to think that some people write more than they read – and if they read it might be mostly their own manuscripts, proofs or final papers. The more I read the more I notice how poor some people express themselves. Devoted reading is the forerunner for effective writing (Janzen, 1996).

In writing a paper I have about three stages that gave me pleasure. The first and most enjoyable stage is the actual writing. It is the stage of putting information and thoughts together and making discoveries in the data. I have to create the right atmosphere (phone off the hook, e-mail offline, cleared desk, door shut, music from Boccherini or Bach) but if that is provided and I have a clear framework, I may be able to type in a few thousand words. Later on in the train or the next day it appears that much of the text can be thrown away as it is irrelevant, duplicating or sheer nonsense. I will then double the remaining number of words, throw away again half of them and this process continues until the first draft. It seems a terrible inefficient process and although I become better with time, I still require a lot of dustbin space before a manuscript is finalised.

The second phase giving me pleasure, is the acceptance of the paper after revision. It is the time at which I have added something useful to the scientific community – I think. The pleasure is usually short. Seeing the final print and offprints is also enjoyable (your name in print!) but I have noticed that such joy diminishes with age. When my first paper was published I remember I read the offprint from A to Z but now I quickly glance through them and file them. Routine pleasures, and I rather read other work than my own. Despite this assumingly blasé attitude, there is something addictive about publishing and I think it is the first stage: the actual writing (of course with the knowledge that it may eventually end in print).

4. What others find

I have asked a number of colleagues to write a small section about the excitement and pleasures of writing, or where and how they write. I mentioned that their contribution should be of interest to young soil scientists but also for more experienced writers. Here is what they wrote:

Peter Buurman Peter.Buurman@BodEco.BenG.WAU.NL

During the first decades of my career, writing papers was a matter of typing a first version (I never hand-wrote manuscripts), and going through stages of cutting and pasting. The major influence on my

writing, however, was not the introduction of the computer, but the fact that I spent a couple of years in a research institute in Indonesia, sharing a room with two colleagues. The colleagues were fun, but the room was also the waiting room for our boss, so all visitors stopped at our desks for a bit of short talk. It was as if we were doing our work in a corridor. In this situation, I developed an ability of acute concentration, which helped me very much in all writing matters.

I write, perhaps, in two different ways. In both cases, I write up everything that comes to my mind, and not always in a logical sequence - ordering is for the second version. If I have an idea where I am going, I start with the introduction, and write the whole concept in its proper sequence, indicating where I have to look things up or to add references. On the other hand, if I don't know where the data will lead me, I start with a detailed description of the results (I usually have a lot of analyses to interpret). Graphs of data are very useful. When I describe the results, I find what the trends are, which anomalies occur, and whether there are any data that I cannot trust. A detailed analysis of data gives ideas of how to present them both in writing and graphically. I find out what I do or do not understand, which gives entries for discussion and conclusions. Especially with complex data sets (and most are), it helps to first look at the separate data and later find connections or correlation between data. That way, a paper writes itself. Even in published papers we sometimes find that authors have not made optimal use of their data, and I don't want this to happen. On the other hand: don't extrapolate your data too far.

Once I have a complete manuscript or section, I make corrections on the paper copy. The result never looks pretty: it is usually possible to improve phrasing, syntax or sequence, and the corrected manuscript is ablaze with red marks (Yes, for better contrast I annotate in red ink, both my own manuscripts and that of colleagues, even though this may seem offensive at first). After revision: throw away the previous version; if you keep it, it will hobble your progress. After publishing, throw away your manuscript, but keep the original figures.

Warren A. Dick dick.5@osu.edu

Pleasures of writing? I actually find writing hard work and so "pleasure" may not be an appropriate word I would use for such an activity. Also, in my dealings as editor, I have found that how people first react to rejection is an important indicator of long-term success. Many become withdrawn and afraid to continue to submit their findings for publication. Others simply ignore the review comments as stupid and thus don't really gain from them. The wise person is one who carefully sifts the comments and then takes those that are useful and puts them to work. I have tried to follow this latter approach in my work, but it is not always easy.

I had been an academic scientist for almost 15 years when I experienced my first rejection of a paper submitted for publication in a journal. A post doctorate had left me with a vast amount of data that seemed to be completely lacking in integration. I spent many hours plotting, replottting, writing and rewriting a paper on growth conditions that affect EPTC (a herbicide) degradation by various *Rhodococcus* strains. I was convinced there was an important story that needed to be told if I could just tease it out of the data. The work was not the best that had been done in my laboratory, but it did address several concepts related to how best to grow cultures of this Gram positive microorganism. The resultant manuscript was a rather modest package of 12 text pages along with two additional tables and four figures. I had no doubt that all of my hard work in analyzing the data would pay off. After all, I had experienced nothing but success in all of my previous journal submissions.

The rejection that came back from the journal was, therefore, a shock to me. Comments such as "The manuscript has serious deficiencies." and "although the conclusion that. is not surprising, these results will be useful in further experiments" initially caused me to be defensive. After allowing some time to pass, so that I could gain a little more perspective, I reread the review comments and agreed that most were appropriate. I had simply overstated my ideas and their importance. The reviews gave me an outside perspective on where I should refocus my work and what areas of deficiency needed to be addressed in order to move forward. I also comforted myself with the thought that many great scientists have had papers rejected for publication and I need not become defeated. Instead, trying to act as professionally and objectively as possible, I decided to work through my temporary disappointment and move on. Taking what I had learned from the work of the post doctorate and the comments of the reviewers, I continued to sharpen my objectives and research methods.

I have since continued the work on EPTC degradation in soils and by cultured strains of *Rhodococcus*. Several Ph.D. students have completed dissertations studying the metabolic pathways of EPTC degradation and their genetic aspects. Several of the key concepts in this later work grew out of the paper that was rejected. *Other work mentioned in the rejected paper was simply abandoned.*

Is their joy in experiencing rejection? As most athletes will tell you after they retire, it is not the championships they miss as much as the joy of competition. The process of creating the data and writing it up for publication was hard work. The rejection was painful. Yet I experienced something in the entire process that was beneficial. In hindsight, I realized I did experience scientific growth during the hard work of organizing and writing the paper - and ultimately at least some of the work was proven useful and ended up in subsequent publications.

Alex McBratney Alex.McBratney@acss.usyd.edu.au

A famous Australian supermodel, perhaps slightly more renowned for her physicality than her intellect, when questioned about her reading habits, replied that she read only what she wrote. Sometimes when I peruse journals I think we have catwalks of supermodels in soil science. I generally enjoy reading stuff I don't write and savour reading much better than writing. Nevertheless we are obliged to provide fodder for others.

The scientific paper is pretty much a straightjacket. It has its own structure and by the time the idea has been hatched, the work designed, the data gathered and analysed, the results mulled over and confronted by the ocean of literature, the writing is fairly straightforward. The pleasure for me comes in trying to take the utilitarian straightjacket and transform it into an elegant garment that might have been designed by Yves St Laurent. Adding ribbons and sashes and sequins and fine needlework in the form of interesting quotations and turns of phrase, in writing down ideas that seem counter-intuitive or putting them succinctly in equations, or showing that all this was known a hundred years ago but we've *all forgotten, or some brave new idea for the future. It's not free in form like writing modern poetry* but there's a challenge and a pleasure in darting in the literary direction.

Oswald Van Cleemput Oswald.VanCleemput@rug.ac.be

My very first experience with publishing a paper goes back to the mid-1960s. Although I did not write the paper myself - I was one of the co-authors - I was extremely excited about it and showed it proudly to my parents. Seeing my name in print gave me an exceptional feeling and, in fact, I still have that feeling. It might show some pride, but don't we all have this?

In the 1960s and 1970s, my publication output was very low because there was no incentive. Soil chemistry and soil fertility studies were of local interest and ended up in reports. I am convinced that a lot of useful information has been published in reports, many of them written in other languages than English. At that time I even did not know the expression 'peer review'.

My first big experience with an international journal was with the *Soil Science Society of America Proceedings* (which has been renamed the *SSSA Journal*) in the early 1970s. I submitted a rather short paper covering thermodynamic calculations on the spontaneity of nitrogen reactions in soils. But it got rejected and I was very angry about the reviewers' comments. Apparently, they did not understand thermodynamics and the editor-in-chief followed the reviewers. I wrote a letter showing their wrong comments and my paper got accepted within a minimum of time. I was very proud again. Later on this little paper opened the door for a one-year fellowship in a laboratory in the US. I am still using that example to show to young scientists the importance of publishing good material in high-ranked peer-reviewed journals. One good innovative paper can change the direction of a scientific career. However, *strange enough, when I returned to Belgium after my stay in the US, the publication pressure disappeared again because of the lack of incentives. It drastically changed 10 years ago. From the late 1980s and early 1990s research proposals ask for proof of expertise in a certain field. And the best proofs are peer-reviewed papers!* Therefore, I continuously encourage my co-workers to publish in peer-reviewed journals. At all occasions I insist to publish results as soon as there is enough material to proof a hypothesis. I insist the paper should be short, as I also prefer to read short papers.

The availability of journal information, ISI data, Web of Science, etc. has helped my laboratory to select the proper journals and we changed from one or two peer-reviewed papers per year to more than

ten papers per year. If someone had asked me ten years ago to publish ten papers a year, I would have said this is not serious as I am not a publication machine. Now, I realise that it is indeed possible if one has in mind the publication of a paper already at the time of setting up the proposal. That is the way to go! Publishing provides the scientist the ultimate pleasure of carrying out research.

Anthony Young anthony.young@land-resources.com

Pleasures of writing? It is a hard graft at the time. When I was younger, before the days of word-processing, I used to get up at 5.00 a.m. and write for 2 hours before the day's work, like the novelist Anthony Trollope (1815-1882). The pleasure comes afterwards, on seeing the proofs, if you realize it is a job well done.

I've written five books, none of them best-sellers, but all appear to be appreciated by colleagues. In particular, reviewers seem to think that I know how to write: "A stimulating text", "The arguments are carefully weighed, cogent and lucid", "Entertainingly written and most carefully structured". I like that last one as I do try to make it readable and, as far as the subject matter permits, entertaining. (Did you think there were not many jokes in *Land Resources: Now and for the Future* published Cambridge UP in 1998)? They were 'censored' from the text - so to find them, skim through the Endnotes.)

So what advice can I offer to those who would like to write? First, a book should be written for the benefit of its readers, not its writer. Think who your readers will be, and write for them. Secondly, the KISS acronym (told to me by Pedro Sanchez): Keep It Simple, Stupid; rather making a concept sound difficult in order to show off that you know, try to understand it so well that you can explain it clearly. Thirdly, have lots of summaries: I now put them at the beginning of chapters, or in text boxes. And lastly, whilst presenting all the evidence with proper scientific objectiveness, once you have reached your conclusion, then seek to convince others, try to write in a persuasive manner.

The standard of Abstracts in most journals is terrible. These should be informative, not indicative, i.e. give the results, so that 95% of readers will be spared the burden of having to read the article. Every journal author should read advice by that finest of soil science writers, G.V. Jacks (1901-1977), "The Summary" (*Soils and Fertilizers* 24, 1961, 409-410). Jacks' own 'Abstract' of this? A poem: "Take out every surplus letter—boil it down./Fewer syllables the better—boil it down./Make your meaning plain. Express it/So we'll know, not merely guess it;/Then, my friend, ere you address it, BOIL IT DOWN." Rudyard Kipling (1865-1936) said the same thing: "Words, sentences, even whole paragraphs that you have deleted from your first draft are like ash raked out from a fire: no-one knows it has been done, but everyone feels the warm glow".

Finally, cut down on references. The former, academic, need to acknowledge precedence can be overdone: "The rain in Spain falls mainly in the plains (Shaw, 1913)". I have been taken to task by editors asking what is my source for such-and-such an observation, when the answer is 'Young (2001)', this very article, I saw it, now I'm telling you about it!

Yes, I have enjoyed writing this contribution. But what matters is whether you have taken 'Pleasure in Reading' it.

5. Concluding remarks

Everyone has the right to derive pleasures from work but I am afraid the ever-increasing number of papers might become a burden to the soil science community as it requires (i) a large system to produce, and (ii) it is difficult to keep abreast of real developments. It would be better to use the money for real research. In many departments there is a rule on the number of publications per year, varying from 2 to 8 papers in international journals. Papers in conference proceedings, book chapters, newsletter articles or whole books are usually not counted or are given little credit. Most soil scientists have accepted the rule, know how to play the game, and produce vigorously. And with pleasure. But as we all know 80% of the papers are never cited. Pity of all the work.

It might be better if the rule was that each researcher was allowed to write a maximum of 2 publications in peer-reviewed journals per year. This would avoid the dilution of experimental data as scientists will only publish the real important and hot material and forget about the rest. For those who real-

ly enjoy the writing it would still be possible to write a monograph or a large web based version of their research paper. This proposal would not take away the pleasure of writing. Given the current publication culture it is likely that such proposal will not gain wide acceptance but I think it would be far more efficient and be good for science as well.

Acknowledgements

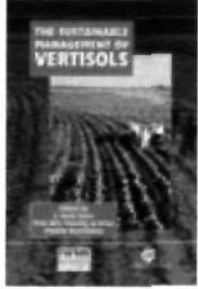
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NOTEWORTHY

The Sustainable Management of Vertisols



Edited by J K Syers, Naresuan University, Thailand, F Penning de Vries, IBSRAM, Thailand and P Nyamudeza, DRSS, Zimbabwe.
Publication Date: August 2001, Number of Pages: 320, Binding: Hardback, ISBN: 0851994504.

Readership: Soil science and agricultural engineering, agricultural development.

Price: £55.00 (US\$100.00)

This book is based on a workshop held in Zimbabwe, May 1999, organized by the Department of Research and Specialist Services (Zimbabwe) and the International Board for Soil Research and Management (IBSRAM). Reviewing the current state of knowledge on and the practical aspects of the management of Vertisols in Africa, this book also includes comparative chapters covering other parts of the world, such as

India, Australia and Texas (USA). Contents: Contributors Foreword Eric T. Craswell, International Board for Soil Research and Management, Thailand Part One: Keynote and Overview Papers Vertisols: genesis, properties and soilscape management for sustainable development, J Deckers, Catholic University of Leuven, Belgium, O Spaargaren, International Soil Reference and Information Centre, The Netherlands and F Nachtergaele, Food and Agriculture Organization of the United Nations, Italy Soil and water conservation strategies for Vertisols: Past perspectives and challenges ahead for Africa, J Hussein, University of Zimbabwe, and M A Adey, University of Newcastle upon Tyne, UK Sustainable nutrient management of Vertisols, J K Syers, Naresuan University, Thailand, P Nyamudeza, Chiredzi Experimental Station, Zimbabwe and Y Ahenkorah, University of Ghana New tools for research and development to promote sustainable land management, E T Craswell and F Penning de Vries Part Two: Country Papers and Natural Perspectives on the Management of Vertisols Vertisols management in Malawi, A D C Chilemba, Chitedze Agricultural Research Station, Malawi Vertisols management in South Africa, A J van der Merwe, M C de Villiers, C Bühmann, D J Beukes and M C Walters, ARC-Institute for Soil, South Africa Vertisols management in the Sudan, A T Ayoub, Sudan Vertisols management in Tanzania, F B R Rwehumbiza, N Hatibu and H F Mahoo, Sokoine University of Agriculture, Tanzania Vertisols management in Zambia, N Mukanda, Mt Makulu Central Research Station, Zambia and A Mapiki, Sokoine University of Agriculture, Tanzania Vertisols management in Zimbabwe, B. Matibiri, Zimbabe Sugar Association Experiment Station, Zimbabwe, P. Nyamudeza and J Hussein Improving the productivity of Vertisols for small-holders on the Accra Plains of Ghana, E K Asiedu, Soil Research Institute, Ghana, P Dreschel, IBSRAM Ghana, J W Oteng, University of Ghana, and Y Ahenkorah From plot to watershed management: Experience in farmer participatory Vertisol technology generation and adoption in highland Ethiopia, M Jabbar and M A M Saleem, International Livestock

Research Institute, Ethiopia and T Mamo, Ethiopian Agricultural Research Organisation, Ethiopia Part Three: International Perspectives on the Management of Vertisols Low-cost animal drawn implements for Vertisol management and strategies for land use intensification, A. Astatke and M. Jabbar, International Livestock Research Institute, Ethiopia Indian Vertisols: ICRISAT's research impact - past, present and future, R J K Myers, ICRISAT, Zimbabwe and P Pathak, International Crop Research Institute for the Semi-Arid Tropics, India Planning and facilitating a 'negotiated learning and action system': Participatory research to improve soil management practices on Indian Vertisols and Alfisols, C A King, H P Singh, G Subba Reddy, Central Research Institute for Dryland Agriculture, India and D M Freebairn, Queensland Department of Natural Resources, Australia Research approaches to developing sustainable management practices on Australian Vertisols, R Connolly, N Dalgleish, K Coughlan and D M Freebairn, Queensland Department of Natural Resources, Australia and M E Probert, CSIRO, Australia The Vertisols of Texas, K N Potter, USDA-ARS, USA and T J Gerik, Texas A&M Experiment Station, USA Part Four: Conclusions Research needs and opportunities, J K Syers, E T Craswell and P N Nyamudeza Index

The Amsterdam Declaration on Global Change

The scientific communities of four international global change research programmes - the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP) and the international biodiversity programme DIVERSITAS - recognise that, in addition to the threat of significant climate change, there is growing concern over the ever-increasing human modification of other aspects of the global environment and the consequent implications for human well-being. Basic goods and services supplied by the planetary life support system, such as food, water, clean air and an environment conducive to human health, are being affected increasingly by global change.

Research carried out over the past decade under the auspices of the four programmes to address these concerns has shown that:

- **The Earth System behaves as a single, self-regulating system comprised of physical, chemical, biological and human components.** The interactions and feedbacks between the component parts are complex and exhibit multi-scale temporal and spatial variability. The understanding of the natural dynamics of the Earth System has advanced greatly in recent years and provides a sound basis for evaluating the effects and consequences of human-driven change.
- **Human activities are significantly influencing Earth's environment in many ways in addition to greenhouse gas emissions and climate change.** Anthropogenic changes to Earth's land surface, oceans, coasts and atmosphere and to biological diversity, the water cycle and biogeochemical cycles are clearly identifiable beyond natural variability. They are equal to some of the great forces of nature in their extent and impact. Many are accelerating. Global change is real and is happening now.
- **Global change cannot be understood in terms of a simple cause-effect paradigm.** Human-driven changes cause multiple effects that cascade through the Earth System in complex ways. These effects interact with each other and with local- and regional-scale changes in multidimensional patterns that are difficult to understand and even more difficult to predict. Surprises abound.
- **Earth System dynamics are characterised by critical thresholds and abrupt changes. Human activities could inadvertently trigger such changes with severe consequences for Earth's environment and inhabitants.** The Earth System has operated in different states over the last half million years, with abrupt transitions (a decade or less) sometimes occurring between them. Human activities have the potential to switch the Earth System to alternative modes of operation that may prove irreversible and less hospitable to humans and other life. The probability of a human-driven abrupt change in Earth's environment has yet to be quantified but is not negligible.
- **In terms of some key environmental parameters, the Earth System has moved well outside the range of the natural variability exhibited over the last half million years at least.** The nature of changes now occurring simultaneously in the Earth System, their magnitudes and rates of change are unprecedented. The Earth is currently operating in a no-analogue state.

On this basis the international global change programmes urge governments, public and private institutions and people of the world to agree that:

- **An ethical framework for global stewardship and strategies for Earth System management are urgently needed.** The accelerating human transformation of the Earth's environment is not sustainable. Therefore, the *business-as-usual* way of dealing with the Earth System is not an option. It has to be replaced – as soon as possible – by deliberate strategies of good management that sustain the Earth's environment while meeting social and economic development objectives.
- **A new system of global environmental science is required.** This is beginning to evolve from complementary approaches of the international global change research programmes and needs strengthening and further development. It will draw strongly on the existing and expanding disciplinary base of global change science; integrate across disciplines, environment and development issues and the natural and social sciences; collaborate across national boundaries on the basis of shared and secure infrastructure; intensify efforts to enable the full involvement of developing country scientists; and

employ the complementary strengths of nations and regions to build an efficient international system of global environmental science.

The global change programmes are committed to working closely with other sectors of society and across all nations and cultures to meet the challenge of a changing Earth. New partnerships are forming among university, industrial and governmental research institutions. Dialogues are increasing between the scientific community and policymakers at a number of levels. Action is required to formalise, consolidate and strengthen the initiatives being developed. The common goal must be to develop the essential knowledge base needed to respond effectively and quickly to the great challenge of global change.

Berrien Moore III
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Arild Underdal
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Challenges of a Changing Earth:
Global Change Open Science Conference
Amsterdam, The Netherlands
13 July 2001

SOME INTERESTING WEBSITES

A Mountain of Information.

The website (www.mountains2002.org) for the Year of the Mountain (2002) is online and expanding fast. Available in English, French and Spanish, it has sections on the world's mountain ranges, upcoming events, publications, news and key themes, including gender, water, soil degradation, forests, agriculture, food security, and biodiversity.

A New Search Engine.

A new search engine, specifically for agricultural topics worldwide (www.web-agri.com) has been available since February. The search engine, in English and French, counted 500.000 webpages in May 2001

News about Africa.

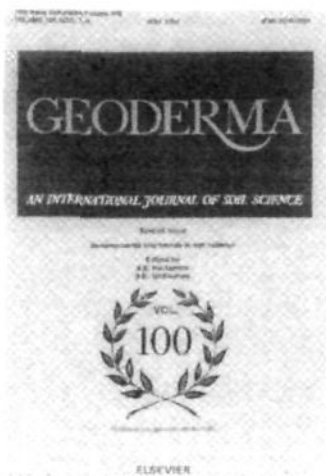
If you are looking for news related to agriculture or the environment, specifically in Africa, surf to the site of Newafrica (www.newafrica.com) which gives you the latest news regarding these issues.

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Currently over 10,000 soil science papers per year are being published with an annual increase of about 5%. For many soil scientists it is difficult to stay abreast of the developments. In 2002 a new journal will be launched which will only publish review articles on important developments in soil science. The journal will be a cooperating journal of the IUSS. The aim is to launch the first issue of the journal at the 17th World Congress of Soil Science in Bangkok, Thailand in August 2002.



Aims and Scope

Soil Science Reviews provides authoritative and didactic reviews on recent advances in the study of chemical, biological and physical properties of the soil. Reviews on interdisciplinary research efforts will be encouraged, as will be articles reviewing the interaction between soil science and other scientific disciplines. Articles will be written on invitation, but offers to contribute are welcomed. Authors will be expected to briefly discuss historical developments in the subject under study, and the writing style and level of technical detail should be understandable to soil scientists in other sub-disciplines. Articles will have to contain a combination of basic and applied research results.

Type of papers

The main content will consist of short to medium length reviews that digest the literature rather than long, scholarly reviews. The core content would consist of approx. 6 to 8 review articles per issue, which may be complemented by other features possibly including opinion articles, news, book reviews, a Calendar, and meeting reports. The development of non-core content will depend on further discussions with the IUSS.

For more information see: <http://www.elsevier.nl/locate/ssr>

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STANDING COMMITTEE ON INTERNATIONAL PROGRAMMES (CIP):

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STANDING COMMITTEE ON BUDGET AND FINANCES (CBF):

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STANDING COMMITTEE ON EDUCATION IN SOIL SCIENCE (CES):

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ACTIVITIES OF COMMITTEES, COMMISSIONS, SUB-COMMISSIONS, AND WORKING GROUPS

INTERNATIONAL WORKING MEETING ON MICROPEDELOGY Gent, Belgium July 9 - 13, 2001

During the closing session of the 10th International Working Meeting on Soil Micromorphology in Moscow, 1996, it was decided to have the next meeting organised partly in Amsterdam (by the Dutch Soil Science Society) and partly in Gent (by the Belgian Soil Science Society), in September 2000. Because of the low number of inscriptions this meeting had to be cancelled. As a response to the many letters of disillusion, Prof. G. Stoops agreed to organise an alternative meeting on micromorphology in Gent in 2001. The meeting was organised in the frame of ITC-activities, as a joint effort of the Laboratory of Mineralogy, Petrology and Micropedology (Prof. G. Stoops, Dr. V. Marcelino, Dr. F. Mees) responsible for the practical and scientific aspects of the meeting as such, and the Laboratory of Soil Science (Prof. R. Langohr, Prof. E. Van Ranst and co-workers) organising two mid-conference excursions.

The following general themes were discussed in the oral and the poster sessions:

Micromorphology applied to Paleopedology (4 oral, 10 posters)

Micromorphology applied to Agronomy (4 oral, 5 posters)

Micromorphology applied to Environmental Studies (4 oral, 7 posters)

Advances in Methods and Techniques (1 keynote talk, 4 oral, 3 posters)

Micromorphology applied to Sedimentology (1 keynote talk, 4 posters)

Micromorphology applied to Soil and Regolith Genesis (15 oral, 19 posters)

2 keynote talks on the future of soil micromorphology.

Two mid-conference excursions were organised, one to the sandy area of the Campine where podzols and soils on glauconite were studied under the guidance of Prof. E. Van Ranst and Em. Prof. F. De Coninck, the other to the loess area, where soils ranging from old agricultural land to soils with minimal anthropic impact were investigated under the direction of Prof. R. Langohr and J. Mikkelsen.



The participants of the Working Meeting

During the closing session the Kubišna Medal of the IUSS was awarded to Prof. Dr. Larry Wilding (Texas A & M University, USA), for his scientific and educational contribution to soil micromorphology. During former international meetings the medals were awarded respectively to R. Brewer (Australia, 1988) and E. Yarılova (Russia, 1988), G. Stoops (Belgium, 1992) and E. FitzPatrick (U.K., 1996).

The international audience consisted of 93 participants representing 24 countries of the five continents. It was a hopeful sign that many young scientists participated.

During the business meeting the place of micromorphology in the new structure of IUSS (replacing the ISSS) was discussed and a strategy developed. It was decided that the next meeting will take place in 2004 in Adana (Turkey). Following officers of the Subcommittee on Micromorphology were elected for a period of 4 years: S. Shoba (Russia, Past-Chairman), G. Stoops (Belgium, Chairman), F. Terribile (Italy, Vice-Chairman), S. Kapur (Turkey, Vice-Chairman), P. Goldberg (USA, Vice-Chairman) and G. Humphreys (Australia, Secretary).

There will be no books with proceedings as such of the meeting, but the organisers are making arrangements with Elsevier Publishing Co. to publish part of the papers in a special issue of *Catena*. Some papers will be published in *SoS* (Sciences of Soils, an on-line journal of Springer Verlag).

THEMATIC SCHOOL OF MICROSCOPY APPLIED TO SOILS AND ENVIRONMENT.

GENT, July 6-8, 2001

Previous to the International Working Meeting on Micropedology the ITC-Gent hosted a thematic school on the use of microscopic techniques to soils and environmental studies. The course was organised by Brigitte van Vliet (Lille, France), Georges Stoops (Gent) Yann Babut (France) and Frédéric Boulvain (Liege, Belgium) with the financial support of CNRS (France) and FNRS (Belgium). 17 invited scientists lectured on topics ranging from the use of specific techniques (e.g. CT-Tomography, cathodo-luminescence, UV-fluorescence) to the interpretation of thin sections for agriculture, sedimentology, archaeology, etc.

A total of 34 young scientists, from France, Belgium, Germany, Morocco, The Netherlands, Norway and Switzerland, all with a different scientific background, participated in this successful course. The lecture notes will be published by CNRS as a CD-ROM.

G. Stoops
University of Gent, Belgium

ARCHAEOLOGY

GENT, July 14-15, 2001

Following the International Working Meeting on Micropedology, the annual international workshop on the use of micromorphology in archaeology was organised by J. Hinsch Mikkelsen, R. Langohr and G. Stoops in the Geological Institute. The aim of this series of regular meetings is to give archaeologists and earth scientists the opportunity to compare thin sections from different countries, materials and archaeological periods, and to discuss specific problems inherent to the application of microscopic techniques to archaeological materials. One of the important topics discussed at every meeting is the interpretation of anthropogenic components.

21 scientists from Europe and the USA participated in this meeting.

For informations on future meetings, the forth coming meeting will be held on Sardinia in spring 2002, please contact jari.mikkelsen@rug.ac.be

G. Stoops and J. Hinsch Mikkelsen

**International Symposium
IUSS Sub-commission A Salt Affected Soils**

**Sustained Management of Irrigated Land or Salinity and Toxic Element Control
25-27 June 2001
Riverside, California, USA**

The International Symposium was held in the Riverside Convention Center and co-sponsored by The Soil Science Society of America, (Bouyoucos Conference), Center for Water Resources and Kearney Foundation, University of California, Riverside and George E. Brown, Jr. Salinity Laboratory, USDA-ARS.

The symposium was co-organized by Dr. Donald Suarez, First Vice Chair of sub-commission A, Salt Affected Soils and Research Leader at the Salinity Laboratory, USDA-ARS, Dr. John Letey, Director of the University of California Center for Water Resources and Dr. Inma Lebron of the Salinity Laboratory, USDA-ARS.

Over 120 scientists attended the conference from 24 countries representing arid and semi arid irrigated agriculture.

The symposium consisted of 3 days of invited and volunteered oral presentations and posters with the goal to present research and management approaches for environmentally responsible, cost effective, sustainable agricultural production on salt and toxic element affected soils.

Sessions were organized around the following themes:

- Measurement and assessment of salinity at the field and district scale
- Management practices for control of B, As, and Se in soils and drainage waters
- *Modeling for salinity, sodicity and toxic element control*
- Reclamation of saline, sodic or toxic element affected soils
- Irrigation with low quality waters; management practices and plant selection

Dr. James Rhoades, former Director of the U.S. Salinity Laboratory provided the keynote lecture. The symposium provided state of the art presentations on instrumentation and methodology for conducting detailed and rapid salinity surveys. New management techniques were described for control



The participants of the Symposium of Sub-Commission A



On the post-symposium tour

of toxic elements in soils and drainage waters and reclamation with minimal use of amendments and water. Several computer and conceptual models were described for use as tools to aid management decisions and assess water suitability for irrigation.

Approximately 40 participants attended the post symposium tour. Sites visited the first day included sodic soil reclamation, organic date farm, Coachella Valley Water District Office for discussion of water delivery operations and demonstration of remote sensing salinity equipment used in Coachella Valley, commercial fish farm, constructed wetlands for treatment of waste water, visit to the Salton Sea - the receiving water for drainage from Coachella and Imperial Valley in US and Mexcali Valley, Mexico and discussion of disposal of agriculture drainage water. The second day of the field trip consisted of a visit to the Imperial Irrigation District Offices for discussions of water delivery operations and visit to site used in Imperial Valley for tailwater recovery, demonstration of remote sensing salinity equipment, drain tubing installation, demonstration evaporation pond for drainage water disposal and the Salton Sea Wildlife Refuge.

Donald Suarez
IUSS Sub-Commission A

**International Conference on Sustainable Soil Management for
Environmental Protection – Soil Physical Aspects,**

Florence, Italy 2-7 July 2001

An International Conference on Sustainable Soil Management for Environmental Protection – Soil Physical Aspects, was organized by the Istituto Sperimentale per lo Studio e la Difesa del Suolo in Firenze, Italy, from July 2 to 7, 2001 as an activity of the IUSS Commission I (Soil Physics), the Italian Soil Science Society (SISS), the Field of Interest Soil and Water of the European Society of Agricultural Engineers (EurAgEng) and Section I Land and Water Use of the International Commission of Agricultural Engineering (CIGR). The Organisation of this Conference benefited from a contribution of the European Commission in the ambit of the Fifth Framework Programme for RDT "Quality of life and management of living resources" and the European Soil Bureau (European Commission JRC – S.A.I.) for the publication of the proceedings.

The aim of the conference was to present information, to discuss, and to propose contributions useful for policymakers in order to develop future strategies to be adopted for a real sustainable agriculture. Only by the inclusion of such knowledge, soil physical degradation can be prevented if we take into account interactions between forms of soil degradation (like erosion, loss of structural stability following the depletion of organic matter, compaction, crusting, sealing and so on), that up till now have been very often neglected.

Many environmental disasters that frequently occur in the Mediterranean area, where the soils are very dynamic and show high variability, but also in all part of the world, are caused by incorrect land use and management.

Approximately 150 scientists attended the Conference coming from 32 countries:



The opening of the Conference (photo: Olga Grasselli, Italy)

Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Czech Republic, Ethiopia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Lithuania, Kuwait, Nigeria, Poland, Portugal, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom. The large number and the qualification of participants created a good opportunity for a deep discussion of experiences carried out in different pedological environments.

The programme was subdivided in six sessions:

1. Introductory Session
2. Soil Compaction
3. Soil Structure
4. Soil Hydrology
5. Soil Erosion
6. Development of modelling approaches, Databases and Maps

The introductory lectures were given by Prof. Dr. Winfred Blum, Secretary General IUSS, "Environ-



The Secretary-General of IUSS giving the introductory lecture (photo: Olga Grasselli, Italy)

mental Protection through Sustainable Soil Management – A Holistic Approach”; Prof. Daniel Tessier, Chairman Commission I – IUSS, “Progress and Perspectives in Soil Physics”; Prof. Daniele De Wrachien, Vice Chairman EurAgEn, “Sustainable Land Use: The Role of Agricultural Engineering”; Dr. Robert Jones, European Soil Bureau, “Assessing the Vulnerability of Soils to Degradation”; Dr. Freddy Nachtergaele, FAO, “Soil and Terrain Databases and their Applications with special reference to physical soil degradation and soil vulnerability to pollution in Central and Eastern Europe”.

Each session was introduced by outstanding invited scientists: Drs Jan van den Akker (Netherlands), Rainer Horn (Germany), Anthony Dexter (Poland), Marcello Pagliari (Italy), Marnik Vanclouster (Belgium), Paolo Bazzoffi (Italy), Andrei Canarache (Romania).



Audience of the Conference (photo: Olga Grasselli, Italy)

Fifty oral presentations were delivered and concurrently 67 posters were exhibited during the Conference. A book with abstracts and a book with keynote papers were distributed to the participants.

It was agreed that now the rate of soil degradation, in large areas of the world, is higher than the sustainability rate and therefore it is absolutely necessary to promote a correct use of such a resource. For example, soil compaction is estimated to be responsible for the degradation of an area of 33 million ha in Europe. About 32% of soils in Europe are highly vulnerable to soil compaction and another 18% is moderately vulnerable. It was stressed, both in the introductory lecture of Prof. Blum and in several discussions, that the role of soil management in a sustainable environment is to provide multiple functions for the well being of humans. However, the necessary harmonization of the uses of the soil functions is not a scientific question, but a political one. Therefore the task of scientists is to develop scenarios and to explain which causes and impacts may occur when different options are exercised. Those scenarios can be condensed into indicators, which may help politicians and decision-makers as well as people living in a certain area to choose the right options.

The problems of the indicators were strongly debated during the Conference. It was for example stressed to improve the integration of data on soil structure, soil pore system and soil hydrology. Other aspects strongly discussed were the advantages, disadvantages and the limitation of the use of pedo-transfer functions and the problems of physically based models for prediction water movement in soil, soil loss, soil runoff volume and so on. In the Conference was emphasised the necessity to determine gaps in data and in knowledge required for generalisation of the problem and to develop modelling approaches and databases in order to predict changes in physical soil properties (soil structure quality) due to agricultural activities. This knowledge is the basis for recommendation of sustainable soil management systems able to improve the soil structure quality and to prevent soil degradation.

On July, 6 about one hundred participants took part in a field excursion to the Experimental Centre of the Institute in a typical hilly environment of Central Italy where soil compaction and erosion trials are carried out.



Participants to the Field excursion (photo: Olga Grasselli, Italy)

The Proceedings of the Conference will be published by the European Soil Bureau in 2002 after review and acceptance of the submitted papers by the Scientific Committee.

Marcello Pagliai
Chairman of the Organising and Scientific Committee

**International Conference on Sustainable Soil Management for Environmental Protection:
Soil Physical Aspects**

Florence, Italy, 2-7 July 2001

To meet future challenges of food and fiber security, further development of agriculture is necessary. This development, however, has to guarantee both the growth in agricultural output and the conservation of natural resources.

In the past, demand for food and fiber supplies has been met by expanding agricultural land. Nowadays, the availability of new land is limited. Moreover, the more or less uncontrolled increase in agricultural production during the past few decades, in industrial as well as in developing countries, has pushed agriculture's productivity to be often above the hedge of sustainability, so causing soil erosion and environmental degradation. Thus, agriculture, is forced to find a new balance between development and conservation. In this process, the sustainable use and management of the soil play a role of paramount importance. To this respect, soil management practices and systems are sustainable if they are compatible with the farmers' expectations and their influence on the environment is such that they can be practiced indefinitely, without irreversible impairments of natural resources.

On those themes, an International Conference was held in Florence (Italy), on 2-7 July 2001, organized by the Institute for the Study and Conservation of the Soil, with the scientific support and co-sponsorship, among other Frameworks, of IUSS, European Soil Bureau, FAO, CIGR Section I "Land and Water Engineering", and the EurAgEng Field of Interest on Soil and Water.

The main purposes of the Event were:

- to bring together experts, scientists, engineers and researchers on soil science to exchange experience in their respective fields;
- to promote transfer of knowledge and expertise between the scientific and technical grounds;
- to foster and enhance a multidisciplinary and holistic approach to manage soil erosion and conservation problems and develop suitable strategies for a sustainable agriculture.

The Conference was attended by over 180 participants from 35 countries, and consisted of an Opening Session and five Topic Sessions focusing on the following subjects:

- Soil compaction
- Soil structure
- Soil hydrology
- Soil erosion
- Databases and modeling approaches.

In his welcome address, the Chairman M. Pagliai gave review of the latest findings and research results on soil structure and soil management measures and practices, and L.S. Pereira highlighted the main activities carried out by CIGR Section 1° on the themes covered by the Conference. Five key note lectures followed the aforesaid addresses, delivered, respectively, by: W. Blum (Secretary General, IUSS), D. Tessier (Chairman Commission 1°, IUSS), D. De Wrachien (EurAgEng Incoming President), R. Jones (European Soil Bureau) and F. Nachtergaele (FAO).

In the Topic Sessions, each starting with an invited review report, 127 papers were presented, 50 in oral presentation and 77 as posters.

At the Closing Session, it was recognized that the research activity, in Europe, as well as elsewhere, is too fragmentary to be able to cope with the demands of sound soil conservation and environmental protection measures. It was also suggested that the actual projects, with every detail worked out in advance should give way to more flexibility, so that programs can be modified during implementation to take advantage of experience gained and lessons learned. Moreover, it was pointed out that successful research thrust and development on sustainable soil management should include the following actions:

- adaptive research; including the need to strengthen the links between soil science and engineering approaches
- database improvement;
- institutional strengthening;
- technology transfer and networking.

Furthermore, several areas relative to the conference topics requiring deeper and innovative research were identified and discussed.

A field trip to the Experimental Center of the Institute, in a typically hilly environment of Tuscany, where soil erosion trials are carried out and new measures for soil protection are tested, ended up the International Conference.

The Conference was therefore very much successful both in placing under discussion very good and updated research topics and in joining engineering and science perspectives for further developments. Also to be referred the successful organization of the meeting. A post-conference edited book including the papers after being submitted to a review process is to be published.

Prof. D. De Wrachien
EurAgEng Incoming President and Coordinator
Field of Interest On Soil and Water

Prof. L.S. Pereira
Chairman CIGR Section 1°
"Land and Water Engineering"

PEDOMETRICS 2001

After Wageningen (1992), Madison (1997) and Sydney (1999), the fourth International Conference on Pedometrics, under the auspices of the IUSS Working Group on Pedometrics, took place in Ghent (Belgium), from September 19-21, 2001. The Organising Committee consisted of Marc Van Meirvenne (Chair), Gerard Govers (Vice Chair), Marijke Meul (Secretary), Stefaan De Neve, Inge Leroy and Maarten Vanoverbeke. The conference was sponsored by Ghent University and the Flanders Fund for Scientific Research. There were 71 participants, coming from 23 countries and all continents.

The scientific program started with a plenary lecture by R.M. Lark on wavelets. Under the general theme 'Applications of Pedometrics', a total of 23 oral presentations followed, grouped into 6 sessions:

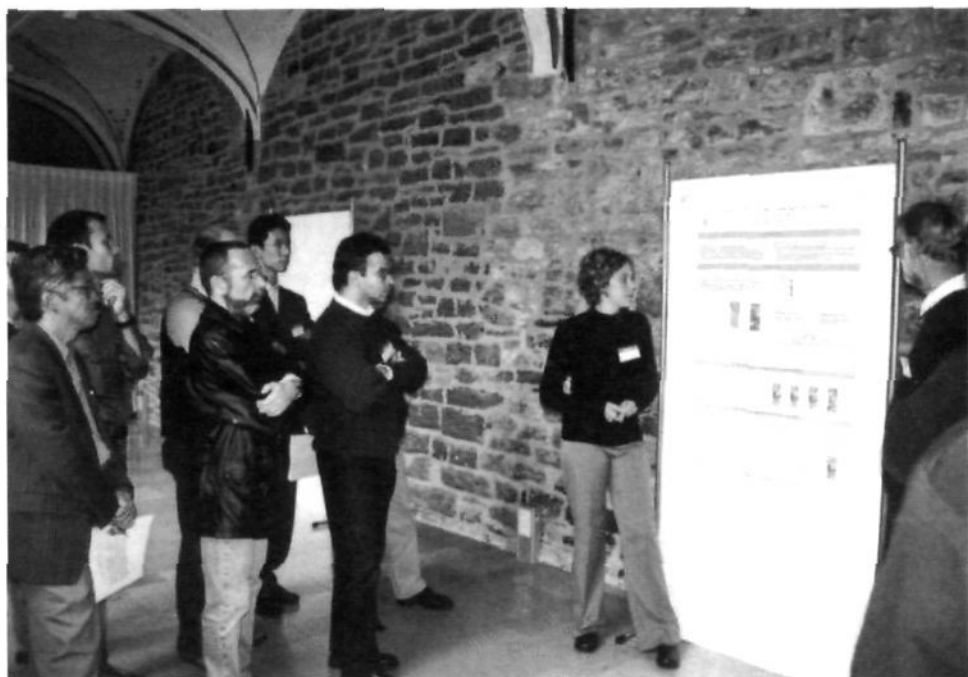
- Pedometrical methodology
- Soil biology and chemistry
- Sampling and sensing
- Soil physics
- Precision agriculture and environment



Participants of the Conference in front of the historical venue of Ghent University

In addition, every day in the afternoon about 10 posters were presented, smartly organised as follows. The posters were divided into two sets and displayed in two separate locations. The participants were also divided into two groups, each making a guided tour along both sets of posters. In front of each poster, the author gave a 5 minute oral presentation, followed by a discussion led by the tour guide. This proved to be a very successful formula. The Best Poster Award went to Meul and Van Meirvenne.

After a special discussion session it was concluded that the Working Group should aim to become a Commission on Pedometrics. In the closing session it was announced that the proceedings of the conference will appear as a Special Issue of *Geoderma*, and that the next conference in this series will be in 2003 in Reading, UK.



Poster presentation with discussion during the Conference

Alltogether, the scientific program was generally rich, interesting and well presented. The medieval ambiance of Ghent was magnificent, the atmosphere was very friendly, there was ample opportunity for informal exchange and contact among the participants, and the conference dinner was superb (what else in Flanders?). In short, this conference a great success, both scientifically and socially. Many thanks to the organizers and the participants! Up to Reading.

J.J. de Gruijter, Wageningen, The Netherlands

Report on the VI International Symposium and Field Workshop on Paleopedology, Mexico City, Mexico, 7-16 October 2001.

The YI ISFWP was organized by the Universidad Nacional Autonoma de México and was attended by 46 people coming from 10 countries. The local state governor welcomed the participants mentioning the importance of basic and applied researches on soils, and expressed the wide expectation that policy makers rely on soil scientists.

During the three days of conference, 30 oral and 11 poster papers were presented about: i) Paleosol-sedimentary sequences (loess, alluvial, lacustrine, volcanic, etc.) as a record of the Pleistocene and Holocene environmental change; ii) Magnetic properties of Quaternary and pre-Quaternary paleosols and sediments as paleoclimatic indicators; iii) Paleopedology and archaeology and dating of paleosols. Paleopedological evidences of ancient man-induced environmental change. Applied Paleopedology. Biomorphs (pollen, phytoliths, macroremains) in paleosols: research and interpretation problems; iv) Polygenetic models of pedogenesis in relation to Quaternary and Pre-Quaternary climatic change.

Comparing with the previous Symposia (held in Germany 1997, China 1998, Russia 2000) the following new tendencies are notable: 1) traditional topic of study and interpretation of loess-paleosol sequences was enriched with the presentations on loess profiles from South America, until now much less studied compared with the sequences of Eurasia and North America. Regarding the Eurasian loess, a detailed stratigraphic schemes and far distance correlation of the sequences were discussed, while a specific Holocene loess from the North American Great Plains was presented. Only one presentation dealt with the paleosols of the Pleistocene periglacial area of Europe, the topic being discussed extensively at the previous meetings. 2) A completely new item were the results from tephra-paleosol sequences of Mesoamerica and from the buried paleosols in alluvial sediments of Argentina. 3) The studies of magnetic properties of paleosols were represented by a set of lectures on the different magnetic characteristics of the Mexican paleosols and modern soils. The completely different pattern from that of the soils of the standard zonal sequence was shown, that requires more research to be explained.



Participants of the post-conference field trip in front of tepetate (Si indurated) horizons in volcanic material

Besides papers focused to new paleopedology frontiers, a set of presentations were devoted to classical studies about: 1) mineralogical characteristics of paleosols to be interpreted as an indicator of modern versus ancient weathering and mineral neoformation. 2) Archaeological paleopedology and paleosol indicators of past human impact on the environment, especially in the area of pre-hispanic civilizations of America. 3) Applied topics of paleopedology. 4) Paleogeographical interpretation of pre-Quaternary paleosols.

The organization committee provided for a pre-meeting, a middle meeting, a post meeting and a post-post meeting field trip. The first one was related to the research obtained from the tephra-paleosol sequences of the Nevado de Toluca volcano, during the mid one we were shown the very peculiar saline

soils of the Mexico city lacustrine basin, formed on volcanic ashes, and the archeological remains of the Aztec and pre-Aztec civilizations. The post conference tour was conducted in the region of Tlaxcala state and several modern soils and paleosols formed on volcanic ashes were presented. Many of the soils of the area are characterized by the presence of particularly impressive indurated horizons, all named "tepetates", which are very common all along the Andes chain and present peculiar management problems. In spite of being called with the same name, different kind of properties and possible origins were recognized during the field trip.

The post-post-conference field trip was in the El Eden Reserve, in the state of Quintana Roo (Mexico) on the Peninsula of Yucatan. The region has been disturbed by human impact, hurricanes and forest fires. Notwithstanding, it was amazing to notice how the ecosystem recovered very fast in a time span of 10 – 20 years.

Edoardo A.C. Costantini, with contributions of Elisabeth Solleiro and Birgit Terhorst.

VI International Symposium and Field Workshop on Paleopedology (Sexto Simposio Internacional de Paleopedología y Taller de Campo)

The VI International Symposium & Field Workshop on Paleopedology (*Sexto Simposio Internacional de Paleopedología y Taller de Campo*) was held in the *Colegio de Posgraduados* (Montecillo, México) on October 6 to 13 (2001). This Symposium was organised by Drs. Elizabeth SOLLEIRO and René DRUCKER (from the *Universidad Nacional Autónoma de México, UNAM*, and Drs. Benjamín FIGUEROA and Jorge ETCHEVERS (from the *Colegio de Posgraduados, CP*).



Dr. Jorge Etchevers
in front of a typical Paleosol

Two Field workshops were programmed. The first one (before the Symposium) was focused on a Tephra-paleosol sequence of the *Nevado de Toluca*, not longer from Mexico D.F., and had the collaboration of Dr. Sergey SEDOV; in the second one, after the Symposium, modern Andosols and relict polygenetic Luvisols were discussed (including indurated horizons in volcanic sediments, named

locally 'tepetates') of *Sierra Nevada* and Tlaxcala and had the collaboration of Gerd WERNER. A mid-field trip was also conducted to visit the Texcoco lake and a Paleosol-lacustrine sedimentary sequence. A large list of international and local collaborators contributed with data to these Field workshops, and life discussions on field were very interesting, contrasting the interesting, different opinions between the Modern Chemist-pedologists and Geologist-Paleopedologists on Paleosols and sediments, and confusion between.

Five sessions were scheduled; the first one dealt on 'Paleosol-sedimentary sequences as record of the Pleistocene and Holocene environmental change' (11 communications were discussed); the second one 'Magnetic properties of Quaternary and pre-Quaternary Paleosols and sediments as paleoclimatic indicators' had 5 communications; in the third and fourth sessions 19 communications were exposed dealing on Paleopedology, archaeology, Paleosols dating, ancient man-induced changes, Applied Paleopedology, and Biomorphs; lastly, the fifth session was titled 'Polygenetic models of pedogenesis in relation to Quaternary and pre-Quaternary climatic change, discussing 9 communications. In all the sessions discussions were open and very interesting.

I think the Symposium on Paleopedology was a successful meeting and I learnt and enjoyed it a lot. Congratulations (and thanks!) to the organisers. Next Symposium will be held at Yugoslavia.

In addition, some of the visited plots will be running in the next INCO/E.U. Project REVOLSO. This Project will deal with *Tepetates* (indurated, young volcanic soils, easy to be eroded) and *Trumaos* (young volcanic, organic matter rich soil), in Mexico & Chile, respectively.

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Focus on WRB in the International Symposium on "Soil Classification 2001", 8 – 12 October, 2001, Velence, Hungary

1. Objectives

This meeting was organized by the Hungarian Society of Soil Science, Szent Istvan University, Hungary and was supported by IUSS and the , EU Joint Research Centre. The main objective of this meeting was to discuss new philosophies, concepts, and principles to enhance soil classification systems to better serve the users of soil information. Furthermore the aim was to set the scene for improving information exchange and correlation between national soil classification systems.

2. Findings

This meeting was the single most important international soil science gathering in-between the two IUSS (International Union of Soil Science) Conferences of 1998 and 2002. Indeed, the attendance exceeded 50 international experts and soil scientists of 23 different nations attended including the US, Russia, Canada, Australia and nearly all European countries. About 30 Hungarian soil scientists attended in addition. The American presence would have been even more important were it not for travel restrictions for the US Administration. The opening took place in the Academy of Sciences in Budapest and the remainder of the workshop was in Velence.

The workshop programme focussed on the testing of national soil classification systems and their correlation with international systems, WRB in particular. Significant parts of the workshop were dedicated to Anthropogenic (man made) soils for which it remains difficult to find a general classification agreement. Interesting correlation ideas and schemes were developed by Kosse for Urban soils and by Ivanova for Anthrosols in general. There was a general feeling that there is now an urgent need to document the philosophy of soil classification and its history in the light of a new generation of "digital" soil scientists taking over. (Micheli, Gerasimova, and Arnold presented papers in this sense). Another finding was the great steps the Russian Soil Classification system has taken over the last five years and it has now come surprisingly close to the international systems, although it maintains its traditional

strong link with pedogenesis. The same is true, but this is less surprising, for the French system which is a near carbon copy of the WRB system but without tropical soils.

The mid- and post-conference tours highlighted the soil scapes around lake Velence, the Danube depression and the soils of the Eastern Carpatian Mountains. This was a real test for the WRB definitions of the soils with a Mollic and Chernic horizons. A large number of pertinent suggestions have been noted for improving the concepts and the qualifiers for these soils.

In a business meeting progress was reported on WRB field-testing, translations and scope for its future. Some reservations of the American delegates towards the world-wide acceptance of WRB were voiced. It was also announced that the present WRB Task force, will be renewed at the occasion of the next World Soil Congress at Bangkok.



The participants of the WRB-Symposium

3. Conclusions

There is a clear convergence of all national classification systems presented in the meeting to align themselves to the FAO/IUSS World Reference Bas of Soil Resources. This very positive development was most notable in the Russian presentation. The USA, though supportive of WRB, still has apparent *ambitions to maintain the USDA Soil Taxonomy as an international system. The proceedings of the meeting will be published jointly with the European Soil Bureau in 2002.*



At a soil pit

4. Acknowledgement

The WRB task force wishes to sincerely thank the Hungarian Society of Soil Science, Szent Istvan University, Hungary for accommodating the IUSS Working Group RB in this prestigious symposium on soil classification. Special thanks are due to Prof. Erika Michelli and her students who went through great lengths to make this symposium a benchmark for all the participants, not only from scientific viewpoint. Also the many social events which were organised along with the symposium have left us with a warm feeling for Hungary and its hospitable people.

Seppe Deckers, KU Leuven, Belgium

REPORTS OF MEETINGS

1st International Conference on Soils and Archaeology

Százhalombatta, Hungary, May 30-June 3, 2001

45 participants from 14 countries attended the 1st International Conference on Soils and Archaeology, co-organized by the Szent István University Gödöllő and the Matrica Museum Százhalombatta. 26 lectures and 10 posters were presented. 2 pre-conference tours, 1 mid-conference and 1 post-conference *tour were organized to different excavation sites in Hungary. The conference aimed to demonstrate the mutual interest of soil scientists and archaeologists and at the same time bring them together for discussing common problems. The main topics of discussion were: soil morphology, stratigraphy, micro-morphology, magnetometry, fate of artefacts in soil, terracing, ditch systems, soil organic matter, soil formation and landscape development from an archaeological point of view. Both soil scientists and archaeologists expressed their interest in approaching the terminology of the two sciences. It became clear that there is a need from the side of archaeology for a permanent consultation on the field with soil scientists and for a check-list provided by the soil specialists. At the same time soil scientists should adopt the new methods for archaeological purposes, too.*



The participants of the Conference

Special emphasis was given to the less known function of soil: to the memory. It was decided to organize a working group within IUSS with the name of Archaeopedology or Soils and Archaeology. The next conference will take place in Pisa in the spring of 2003.

Prof. György Füleký
Szent István University
Gödöllő, Hungary

International Symposium on Functions of Soils in the Geosphere-Biosphere Systems

August 27-30, 2001

This symposium was organized by the Dokuchaev Soil Science Society, Russian Academy of Sciences; Moscow State University Faculty of Soil Science. Commission V and Commission VIII of the International Union of Soil Science has supported this symposium and Chairmen of both Commissions (Drs. A. R. Mermut and C de Kimpe) were present during the meeting. Geosphere and biosphere are perceived to be as the two basic soil-forming factors by soil scientists for a long time. Little attention is given about the function of soils on geosphere and biosphere. However, increased understanding of such functions has paramount importance for sustainability of life on the planet earth. The problems of global warming (carbon cycle), contamination of surface and groundwaters, maintaining biodiversity, soil degradation recently started to bring many earth and life scientists to work together. Between 1980 and 1990 some fundamental studies were carried out in Russia. Therefore, the Dokuchaev Soil Science Society and Moscow Lomonosov State University Faculty of Soil Science has organized this symposium with the full support of the IUSS.

Total of 400 delegates, out of which 71 foreign scientists, representing 28 countries have registered to participated in this meeting. The organizers indicated that about half of the delegates were unable to participate. The main topics discussed included:

- soil functioning in ecosystems,
- soil atmosphere relationship,
- soil influence on the hydrological and hydrochemical cycles,
- soil functions in the lithosphere,
- soil as a record of geosphere-biosphere interactions, and
- soil as a natural resource for human society.



R. Arnold, D. Yaalon, O. Frolova, P. Sklodowski

Papers were presented in both Russian and English. While a large number of poster papers scheduled for presentation, unfortunately only a few were posted in the corridor. Due to heavy load of oral presentation, the participants had very little time to see and interact with the authors of the poster papers. Majority of the papers was presented in Russian language. Lack of proper translation into English was unfortunate for the foreign delegates and this also restricted questions and dialog among the scientists. The topics discussed were very wide and perhaps a bit ambitious. However, it generated a lot of interest for organization of similar symposia the future.

A very enjoyable scientific excursion took place on Wednesday, August 29/2001 in Malinin forest in Podolsk district, South of Moscow region, in Krasnopakhorski forest enterprise. Prof. L.O. Karpachevskiy from Moscow State University has lead the excursion and a total of three profiles, under different vegetation types of southern Taiga were observed. The core of the plain is made of Jurassic clays and Cretaceous sands, covered by glacial deposits and loess. Very lively and thought provoking discussions took place in each site. It was considerable eye opening for many foreign delegates to see the forest soils of the excursion site. We would like to thank to Prof. Karpachevskiy and his colleagues for the preparation of the excursion guide and bringing it to a successful end. It was indeed very nice to meet so many well-known Russian Scientists during the symposium

In addition to two Commission Chairs, the presence of Profs. D. Yaalon, R. W Arnold, W. Blum (Secretary General IUSS) have added tremendously to the scientific discussions

A. R. Mermut and D. H. Yaalon

C.I.H.E.A.M



*Mediterranean Agronomic Institute
Bari-Italy*

International Union of Soil Sciences



*Societa Italiana
della Scienza del Suolo
SISS*

European Commission



*Joint Research Centre
European Soil Bureau
Ispra-Italy*

7th International Meeting on Soils with Mediterranean Type of Climate – Preserving the Mediterranean Soils in the Third Millennium

The 7th International Meeting on Soils with Mediterranean Type of Climate was held in Valenzano, Bari, Italy, from 23-28 September 2001. The Meeting was sponsored by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) through the Mediterranean Agronomic Institute of Bari, the International Union of Soil Sciences, the Italian Society of Soil Science, and by the European Soil Bureau of the European Commission. About 130 participants from 24 countries attended the Meeting. They mainly represented countries from the Mediterranean region, Balkan Peninsula and southern Europe, however attending there were also participants from as far as Brazil and Iran.

The tradition that was established back in 1946 in the first Meeting on Red Mediterranean Soils held in France continued its right track. As Professor Fiorenzo Mancini (Chairman of the Scientific Committee of the 7th IMSMTC) pointed out in his remarks during the Meeting in Bari, the first Meeting held in France, took place less than one year after the 2nd World War ended. This was a sign of hope to re-start the study of these soils and to bring the soil science community back to work.

The Meeting in Bari, followed six successful previous ones held in France (1946), Spain (1966), Turkey (1993), Greece (1995), Bulgaria (1997), and again Spain in 1999. It is interesting to notice that the number of participants in these types of Meetings has increased considerably. Given the sensitive international situation when the Meeting in Bari was held, we should be grateful to all of them who attended. They represent well-known figures in the soil science community as well as a large number of less known people that came to share their knowledge and experience in the study and management of these fragile Mediterranean eco-systems.

Fifty-four oral presentations and forty-five poster papers were presented in ten sessions. They range from soil quality indicators in the Mediterranean environments, soil pollution and environmental protection, soil degradation and conservation, soil use and management, soil genesis, classification, and cartography, soil fertility and plant nutrition, and organic farming. A special session was devoted to the actions taken in the Apulia region for improving land use planning and management. (Bari is the capital of Apulia).

Two mid meeting tours were organised in the surroundings of Bari. One headed south towards the area of *Alberobello* (an UNESCO site) typical, among others, for the conic roofs of the houses, where red soils (Rhodoxeralfs or Chromic Luvisols) and Haploxerolls or Phaeozems were observed.



Picturesque picture of the area of Alberobello. In the centre of the photo could be seen the famous "trulli" of Apulia.

Calcareous hard limestones dominate the geology of the area. Major forms of land use are olives, vineyards, and fruit trees. This type of land use is mainly influenced by the shallow soils of the area. Other forms of cultivation include horticulture and forage crops.

The second tour visited the area of *Tavoliere delle Puglie* where large parts are covered by Vertisols, which are formed mainly on Pliocene clays mixed with conglomerates. The Tavoliere region is the largest durum wheat producing area in Italy. Many of the famous Italian pastas originate from the products of this region.



Profile showing Vertisols and the landscapes of Tavoliere delle Puglie



Constructive discussions were made at every profile that was observed during the field trips

The outcomes of the 7th IMSMTC could be summarised as follows:

- High quality presentations were made;
- Challenging and thought provoking discussion took place;
- This is the first Meeting bringing scientists of different disciplines together;
- However, interdisciplinary studies should be encouraged;
- More basic research is still needed, especially in the area of soil genesis;
- Large number of papers dealt with application aspects (management, land degradation, fertilisation);
- More papers were presented in applied aspects compared to the previous Meetings;

- More papers were presented from the Southern Mediterranean countries compared to the previous Meetings;
- It was strongly suggested that the voice of soil scientists should reach the politicians and decision-makers;
- More emphasis is needed on public awareness;
- Sustainable land management is still far from being a reality in the Mediterranean and elsewhere;
- Transfer and dissemination of knowledge and technology among the scientists should be encouraged.

All the participants agreed that the whole Mediterranean is facing desertification, scarcity of water resources, urbanisation, salinisation and alkalinity, soil erosion, overgrazing, loss of biodiversity, and massive landslides. It is widely accepted among concerned soil scientists, that soil science could play a crucial role in reducing these negative effects.

The Mediterranean is one of the most important birthplaces of civilisation with a historical tradition of thousands of years. It reflects an ancient history in the cultivation of crops and tradition in agriculture, but shows also many past mistakes in mismanagement and misuse of natural resources. Ancient civilisations including Arabs, Illirians, Greeks, and Romans, cleared large areas of forests damaging thus the natural ecosystem to an irreversible status.

It is unfortunate to notice that there are still many examples throughout the Region and beyond, which clearly show that land degradation is accelerating, fertile lands are lost to urbanisation and tourism industry, salinisation is increasing, and erosion is continuously reducing the land resource base. Human-induced land degradation plays a great role in this scenario.

It is therefore the time to come out and make a difference. Many of the participants pointed out that we should not stand in the same position as we were thirty years ago, by just exposing the damages of land degradation. The time has come that we should change and convince first ourselves, and then the politicians and decision-makers that conservation of soil and land resources is at stake and we have to ensure the survival and well being of ever growing future generations.

The International Centre for Advanced Mediterranean Agronomic Studies, through its Mediterranean Agronomic Institute in Bari, in collaboration with the European Soil Bureau of the European Commission and INRA in France is taking immediate steps in this direction. Following a Memorandum of Understanding signed in Bari in 1999 by 12 countries of the region the Institute is helping in establishing and strengthening a network of Euro-Mediterranean Soil Information. Some countries already have submitted to INRA their soil maps at 1:1 Million scale and work is going on to complete this task before the Congress of IUSS in Thailand in 2002. The Institute in Bari is co-ordinating the establishment of a thematic network to combat land degradation in the coastal areas of the Mediterranean region following a participatory approach that will include farming communities, scientists and decision makers from almost all the countries surrounding the Mediterranean Sea.

The 8th IMSMTC will be held in Marrakech, Morocco in September 2003. We say good bye to those who came to Bari and to those that could not come. Hopefully in Morocco we will be able to demonstrate that we are able to make a difference and to expose some good examples of soil conservation, sustainable agriculture and societal development.

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NEWS FROM REGIONAL AND NATIONAL SOCIETIES

XV LATIN AMERICAN SOIL SCIENCE CONGRESS

Cuban Society of Soil Science Varadero, Cuba, November 11-16, 2001

The XVth Latin American Soil Science Congress and the Vth Cuban Soil Science Congress were held in Varadero, Cuba, with the theme "Soil Science in Latin America and its Challenges in the New Millennium".

More than 500 scientists from different parts of the world attended the Congress. The greatest number of participants (105) came from Mexico, followed by Argentina, Venezuela, and Costa Rica, among others.

During the Congress, 12 remarkable lectures were given by distinguished guests, such as Winfried Blum, Nicola Senesi, Segundo Urquiaga, Alvaro Garcia, Helena Kurganova, Alfredo Gutierrez, Adolfo Rodriguez, Gustavo Moscatelli and Antonio Ramalho

Ten symposia were held within 9 Commissions:

1: Soil and Plant Analysis in Latin America and its Control, coordinated by Dr. Francisco Silva Mojica, Colombia; 2: Biological Management of Soils, coordinated by Dr. Cheryl Palm, EEUU; 3: Rhizosphere, organized by Dr. German Hernandez, Cuba; 4: Precision Agriculture, coordinated by Dr. Jose Espinosa, Ecuador; 5: Nuclear Techniques, coordinated by Dr. Takashi Muraoka, Brazil; 6: Nutrient Integrated Management, coordinated by Dr. Eduardo Casanova, Venezuela; 7: Soil and Water Efficient Management, coordinated by Dr. Mario Riverol, Cuba; 8: Teaching in Soil Science, coordinated by Dr. Laura Bertha Reyes, Mexico; 9: Agricultural Extension, coordinated by Jacques Marzin, France and 10: Global Environmental Changes, coordinated by Raul Ponce-Hernandez, Mexico.

Within the framework of this event, for the first time in the history of the Soil Science the "Andres Aguilar Santelises"-Prize was awarded in memoriam of this great scientist. The first place was awarded ex aequo to two teams of scientists from Cuba, the second one was also shared between Colombia and Brazil and the third one went to Colombia.

Place	Title	Authors
1.	Generation of fertilizers recommendations on experimental bases in Sugar cane	Mario E. de León and col.
1.	Management of micorrizas arbusculares associations on the postures of coffee production (Arabic c. l. var. Catuai)	Felix Fernandez and col.
2.	Susceptibility and prediction of the erosion in hillside of the Colombian Central Coffee area soils	José Horacio Rivera
2.	Camadas superficiais adensadas en reposta a insolação temperatura e umidade de solo	Milson Lopes and col.
3.	Impact of the earth use in hillsides areas above soil communities of macrofauna (Caldomo, Cauca, Colombia).	Alexander Feijoo

Very interesting field excursions were organized by the Organizing Committee in order to show the scientists and students of soil science different soils affected by limiting factors, such as salinity or drainage, and visits to important institutions dealing with agricultural activities were offered.



Participants of the Congress

This important meeting was organized by the president of the SCCS Dr. Rafael Villegas, vice-president Dr. Olegario Muñiz, and the secretaries Maribel Gonzalez and Manuel Perez, together with other members of the staff of the Society.

The new directory of the Cuban Soil Science Society was compiled by: Dr. Ramón Rivera as President, and the other members of staff: Dr. Rafael Villegas, Dr. Olegario Muñiz, Dr. Greco Cid, Dr. Rafael Martinez Viera, Dr. Julio Gandarilla, Dr. Fernando Ortega, Dr. Alberto Hernandez, Eng. Carlos Balmaseda.

The headquarters of the Congress were at Varadero, a beautiful beach located in the province of Matanzas, where the visitors had the opportunity to see the wonders of our small Island. They were invited to return to Cuba to enjoy the hospitality and friendliness of the Cuban population.

Rafael Villegas Delgado
villegas@inica.edu.cu

Moldavian National Society of Soil Science

On August 9-10, 2001, the Moldavian National Society of Soil Science organised a National Conference: "Soils and future". More than 100 reports on various problems of theoretical pedology, physics, the amelioration of soils, erosion and soil protection, agrochemistry and chemistry of soils and soil biology were submitted.

Specialists in soil science and agrochemistry from Romania, Ukraine and Belarus took part at the Conference.

The papers that were presented at the Conference allowed a good overview of the present state of agricultural soils, which is rather disturbing, revealing the gravity and orientation of the degradation processes, as a basis for the implementation of measures to improve and protect soils.

The conference passed a declaration addressed to the state government and the social community of the country, which expresses the concern of the pedologists with regard to the actual state of soils, and proposes measures for intensifying the protection of soils and their effective utilisation.

On August 10, a pedological excursion to the State Scientific Reservation "Plaiul Fagului" was organised, during which the participants were familiarised with various problems of the use and protection of soils.

A book with the texts of the reports submitted at the Conference has been issued in Romanian, Russian and English.



Participants of the pedological excursion in Scientific Reservation „Plaiul Fagului“

At the General Meeting of the members of Moldavian National Society of Soil Science, a report on the work of the Presidium for the term 1996-2001 was presented and the new Council of the Society was elected:

President:	Prof. Andrei Ursu, academician
Vice-president:	Dr. Serafim Andries, corresponding member
Vice-president:	Dr. Gheorghe Jigau
General secretary:	Dr. Prof. Grigorie Stasiev
Member of Council:	Prof. Valentin Ungureanu; corresponding member
Member of Council:	Dr. Ion Marcov

Address of the Society:

MNSSS, 1, Academiei street, Chişinău, MD-2028, Republic of Moldova

Phone: (3732) 728426; Fax: (3732) 739838; E-mail: snmss@mail.md

Dutch Society of Soil Science

(Nederlandse Bodemkundige Vereniging - NBV)

The Dutch Society of Soil Science has a new board:

President	Prof Dr Sjoerd E.A.T.M. van der Zee Wageningen University, Section Soil Quality PO Box 8005, 6700 EC Wageningen, The Netherlands e-mail: Sjoerd.vanderZee@BodHyg.BenP.WAU.NL
Vice-President	Dr Gerard B.M. Heuvelink Institute for Biodiversity and Ecosystem Dynamics Science Faculty, University of Amsterdam Nieuwe Achtergracht 166, 1018 WV Amsterdam, The Netherlands e-mail: g.b.m.heuvelink@science.uva.nl
Secretary-treasurer	Dr Alfred E. Hartemink ISRIC PO Box 353, 6700 AJ Wageningen, The Netherlands e-mail: Hartemink@isric.nl
Members	Mr J. Alblas Drs M. de Bakker Ir N.H. Batjes Ir M. Geense Dr Ir H. van Grinsven Drs D. Hallewas Drs A. ter Harmsel Ir R. Henneman Dr Ir J.J. Stoorvogel Mr J. Knol Dr Ir J. Koolen Dr Ir S.W. Moolenaar Dr Ir J.J. Neeteson Mr J. Staverman Dr P. Vos Dr S. Vriend Dr W. van der Zon

Portuguese Soil Science Society
Sociedade Portuguesa da Ciência do Solo

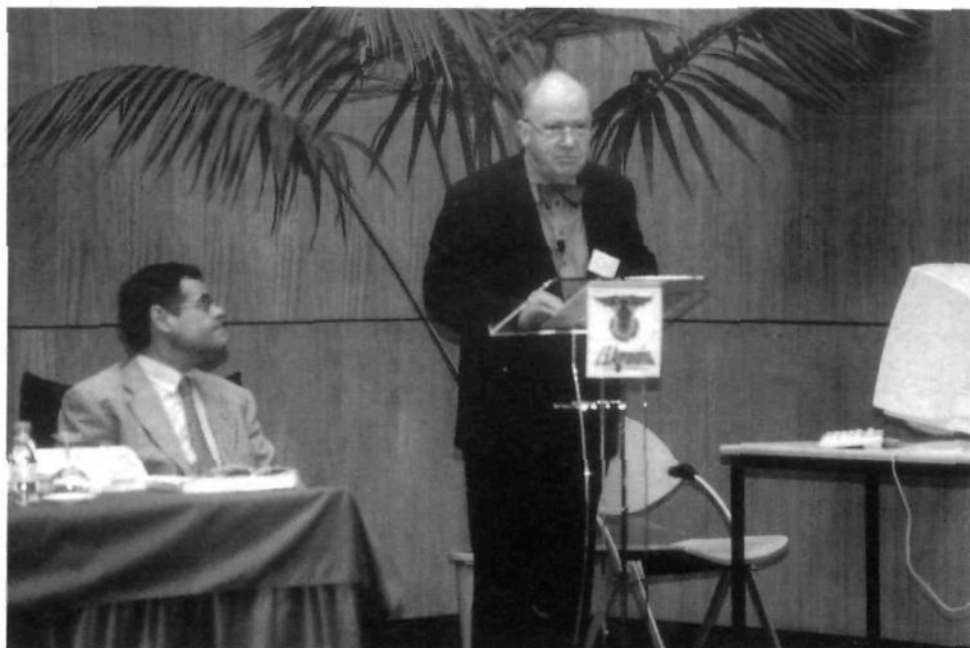
The Portuguese Soil Science Society (PSSS) organised the 1st National Congress of Soil Science which was held from 27 to 29 June 2001 in Lisbon. Soil and sustainability of agrarian ecosystems and environmental quality was the main subject of the Congress. Several topics were considered: (a) Soil formation, classification and mapping; land evaluation and new technologies; (b) Chemistry, soil fertility and nutrient management; (c) Soil physics, root development and solute transport; (d) Soil and land use planning; (e) Transformation and use of residues and effluents; (f) Technology and indicators for sustainable management of agrarian systems; (g) Soil functions and environmental quality; (h) Ecology and soil biological processes.

The opening ceremony was presided by the Secretary of State of Agriculture and Rural Development. The Congress opened with a welcome from PSSS President Prof. Manuel Madeira. Prof. Winfried Blum, the Secretary-General of the International Union of Soil Sciences, expressed wishes for the success of the Congress and the activities of the PSSS.



During the opening ceremony of the Conference

About 200 scientists participated in the Congress. The abstracts of the contributions were available at the time of registration. One hundred contributions covering the above mentioned topics were presented. The Secretary-General of the International Union of Soil Sciences gave a lecture on "Challenges for Soil Science at the Dawn of the 21st Century". Lectures on specialised topics were given by Dr. Koos Dijkshoorn (ISRIC), Prof. Adrien Herbillon (Louvain University) and Prof. Dale Heermann



Prof. Blum, Secretary-General of IUSS addressing the Conference

(USDA-ARS). the papers presented will be published as a special issue of the “Revista de Ciências Agrárias” after the regular review process.

Manuel Madeira
President of the PSSS

SOIL SCIENCE PUBLICATIONS IN SOUTH AMERICA: THE CASE OF ARGENTINA

Public universities and the National Institute of Agricultural Technology (INTA) are the institutions which generate advances in the soil science area in Argentina (Figure 1). Thirty-one public universities and 47 experimental stations of INTA are distributed along the national territory. Other public research institutions and 44 private universities had a minor contribution. Public universities generated around 60 % of the communications presented in congresses and forums and nearly 80 % of peer reviewed papers in journals. Much of this is produced by the *University of Buenos Aires-Faculty of Agronomy*, which generates 15 % of communications to congresses, 30 % of papers published in local journals and 70 % of those in international journals (indexed in well-known databases i.e. Current Contents).

Congresses are events where scientists communicate their advances and usually lack mechanisms of revision. As a consequence, almost all the submitted communications are accepted, in some cases of high scientific level but in many of poor value. The most important soil science forum in Argentina is the *Argentine Congress of Soil Science, organized by the Soil Science Association of Argentina*, which had a biannual periodicity. Other important meetings for Argentine soil scientists are the Latin American and the International Soil Science Congresses. Diffusion of advances by these ways is very restricted, even locally, taking into account that proceedings are not easy to find in common libraries. In Argentinean libraries of scientific institutions proceedings are not indexed. Thirty percent of the communications presented in congresses became peer reviewed papers but only 8 % are published in international journals (Figure 2). Such low publication index in journals of great diffusion turns scientific work produced in Argentina invisible to world scientist.

The Soil Science Association of Argentina also edit *Ciencia del Suelo* since 1983, one of the few soil journals in the world published in Spanish. *Ciencia del Suelo* is published semiannually with a presswork of 500 copies and its diffusion is restricted mainly to Argentina. The editorial board and the reviewers are Argentine researchers and the release rate is about 50 %. This journal publishes 60 % of the papers generated by Argentine researchers edited in local journals. The remaining papers published in local journals correspond to around 10 publications of Argentina or Latin America with also very restricted circulation, generally circumscribed to the country of edition. These publications are not included in *Current Content* or similar abstracts and can not be found in common libraries worldwide. Papers are in most cases of local value. Many times, are descriptions of already known phenomena at a particular site or quantification of processes of agronomic significance.

International journals, commonly edited in English, have larger presswork than local ones, with subscribers in the whole world and can be found in libraries and on-line. They are also indexed in abstracts and consequently published papers are seen by researchers everywhere. Their editors and referees are recognized scientists in their fields and evaluation of manuscripts usually is taken as a very carefully job. These considerations lead to acceptance of papers that present advances in knowledge and information of only local importance or bad papers are refused. As examples *Soil Sci. Soc. Am. J.* and *Agron. J.* have around 4000-5000 subscribers and a release rate of 40-45 % (data kindly provided by the editors). It is interesting to see that the release rate of some local journals, as *Ciencia del Suelo*, and those of international ones may be similar. Nevertheless, papers are of different quality because authors submit their best works to well-known, abstracts indexed journals, and those of lower level to local publications. In many cases, differences between local or international papers is originality. *Ciencia del Suelo* accepts for publication manuscripts that present data of agronomic significance as results of fertilization experiments, tillage systems, etc., that can be useful in Argentina but of little significance for others.

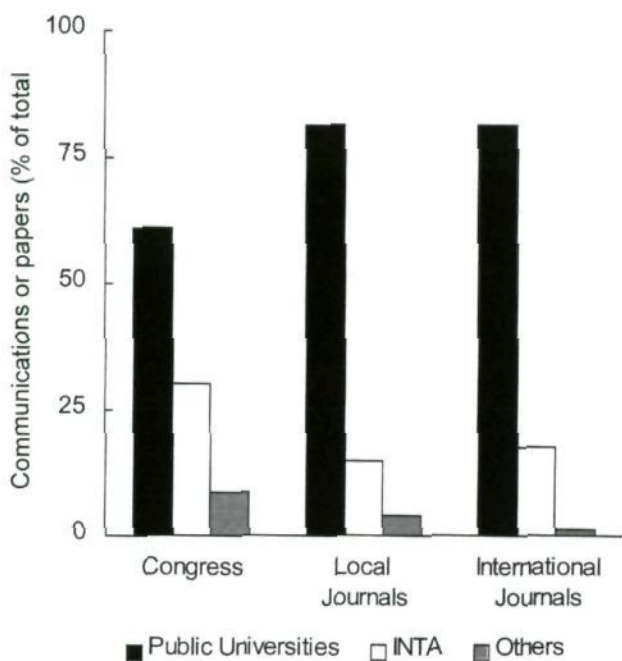


Figure 1. Percentage of communications to congresses and forums or papers published in peer reviewed journals generated by public universities, the National Institute of Agricultural Technology (INTA), and other public or private institutions during the 1996-2000 period in Argentina in the soil science area.

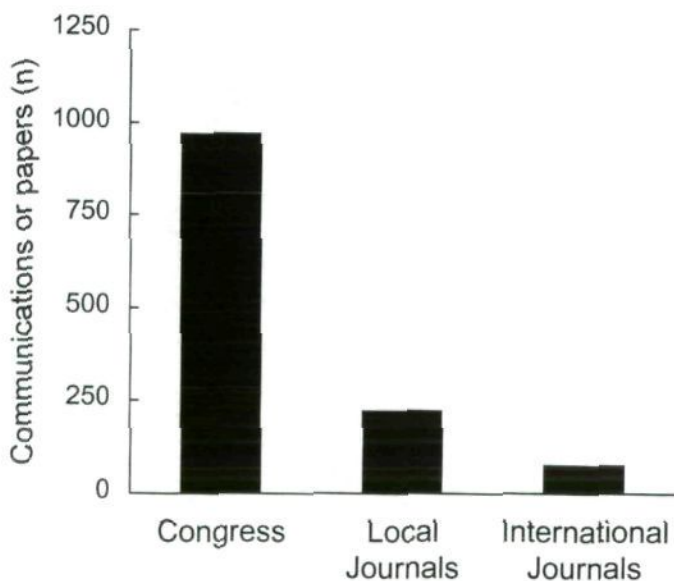


Figure 2. Number of communications presented in congresses and forums and papers published in peer reviewed journals for Argentine researchers during the 1996-2000 period in the soil science area.

In the 80' no more than 3-4 soil scientists in Argentina were able to generate research of international interest and could prepare manuscripts of an acceptable standard periodically. Nowadays many researchers, including young postgraduate students, are publishing their work in journals of high quality. *In spite of this, international papers are still produce in only 4 argentine universities. In part, this is the consequence that some authors lack the ability of writing in English and lost the opportunity to publish good papers in international journals, submitting them to local ones.* In the last decade the conscience that research advances must be share with the international scientific community has gained space, and is one of the forces that leads to an increase in publication of experimental results beyond country frontiers. The creation of postgraduate schools for the training of masters and doctors in science is another driving force that improve researches and publications quality in Argentina. Fear to rejection and the prejudice of many argentine authors that editors and referees of international journals can see anomalously their work are disappearing. Experience had shown that good manuscripts are published independently of the origin of the authors. It is likely that in next years research quality and publication indices in well-diffused journals will increase.

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INTERNATIONAL RELATIONS

Workshop of the Western Enviro-Agricultural Laboratory Association

The 12th Annual Workshop of the Western Enviro-Agricultural Laboratory Association (WEALA) was held in association with the Alberta Water Analysts Committee (AWAC) and the Western Canada Microtox Users Committee (WCMUC) at the Alberta Research Council (ARC), Edmonton, Alberta, Canada, on April 11, 2001. The theme of the workshop was "*Scientific, Environmental, and Analytical Issues of Greenhouse Gas Emissions and Global Warming*". Ian Potter, Business Unit Manager for Climate Change Technologies, ARC, welcomed the delegates.

The Workshop included the following presentations: (1) The scientific and environmental issues related to greenhouse gas emissions and global warming, and possible solutions: Mitigation vs. adaptation (Bill Gunter, ARC) (2) Regulatory aspects of greenhouse gas emissions and global warming (John Donner, Government of Alberta and National Climate Change Program, NCCP member) (3) Alberta climate change central and its role in issues related to greenhouse gas emissions and global warming (Allen Amey, Climate Change Central) (4) Agricultural issues related to greenhouse gas emissions: Effect on agriculture and agriculture's role in mitigation (Karen Haugen-Kozyra, Alberta Agriculture) (5) Coal bed methane technology and its role in mitigation of greenhouse gas emissions (Ken Sinclair, Gas Technology Institute) (6) Oil and gas industry response to issues related to greenhouse gas emissions and global warming (Rick Hyndman, Canadian Association of Petroleum Products) (7) Power industry response to issues related to greenhouse gas emissions and global warming (Joel Nodelman, Edmonton Power Corporation, EPCOR) (8) Carbon sequestration in agricultural soils (Norm Flore, Westco Fertilizers Ltd.), and (9) Analytical issues related to greenhouse gas emissions and global warming (Larry Serbin, EnviroTest Labs). There was a very stimulating panel discussion at the end of the presentations. Salim Abboud and his committee are to be complimented for an excellent program.

The Association held its Annual Business Meeting following the Workshop. The results of recently-conducted round robin study for soil salinity analysis were discussed. Lloyd Hodgins (President), Brenda Chomin (Vice President), and Wayne Rae (Secretary/Treasurer) completed their terms on the 2000-2001 Executive. The Executive for 2001-2002 consists of Brenda Chomin (President), Joel Crumbaugh (Vice President), and Wayne Rae (Secretary/Treasurer).

Yash P. Kalra, Past President WEALA

Mitigating carbon through landuse and forestry

One fifth of global greenhouse gas emissions come from landuse, landuse change and forestry (LULUCF) activities, most from deforestation in the tropics. The number of studies on forest carbon has increased dramatically over the last decade, but, as **Ken MacDicken**, CIFOR's Director of Research says, "No one was trying to assemble a coherent list of problems and attract donors to the work." CIFOR organised a workshop in March where 70 scientists, donors, policymakers and private sector representatives outlined a global agenda of high priority research to resolve one of the biggest issues of contention in the global climate debate: whether projects based on land use change can achieve carbon mitigation goals.

Several groups have already used the research agenda: CGIAR's Inter Centre Working Group on Climate Change has taken up several of the research themes. Both USAID and the Environment Directorate of the European Commission have been studying the issues the meeting outlined.

There are three broad types of LULUCF project: avoiding emissions, increasing carbon storage and substituting carbon for fossil fuel. The agenda covers the whole spectrum, recommending research on institutional issues and questions of scale, social costs and benefits, permanence issues, leakage and monitoring and baseline requirements.

Current negotiations in the Kyoto Protocol have identified scale of abatement, sequestration and mitigation, as one of the main issues in the process. A global review of the potential of different options for the Clean Development Mechanism (CDM) would give an insight into the scale of abatement related to CDM and LULUCF activities in particular. Estimates of each country's capacity to produce certified emissions reductions (CERs) could be combined to create a 'global CER supply curve', showing potential CDM volume under each project type and country as a function of the international permit price and eligibility criteria.

A key research output would be an evaluation of the potential of different CDM options, over time, within each country. Information about the supply potential for the CDM is probably the most important requirement to assess the scale issue. A further invaluable research output would be an analysis of the relationship between project cost per carbon unit and the sustainability of the impact of a project. *This information could be used to assess any potential tradeoff between trading restrictions, eligibility rules and minimum sustainability standards.*

Major issues for CIFOR

The two issues in the research agenda most relevant to CIFOR are the social costs and benefits of carbon mitigation and its permanence.

Costs and benefits

Forestry and estate crop plantations in the tropics often have unintended social costs and unequal distribution of benefits. Large-scale carbon mitigation activities may further disadvantage resource-poor people dependent on forested or marginal agricultural lands. Any research agenda focusing on the costs and benefits of LULUCF projects will need to identify the costs and social benefits of any initiative, as well as indicators of sustainable development. Also important is the need to ensure the equitable distribution of benefits. The identification of stakeholders and the valuation of benefits are key research issues. Outcomes from the research agenda should include a methodology on choice and measurement of benefits, a synthesis of existing information on indicators, minimum criteria and project benefits, an assessment of community needs for individual projects, an initial list of stakeholders, individual benefits and methods on capturing overall project benefits and a process to develop and adapt existing valuation methodologies.

Permanence

Permanence is the longevity of a carbon pool and its stability in the environment and under management. The conceptual and practical problems related to permanence continue to dominate part of the LULUCF CDM debate. The viability of LULUCF projects will depend ultimately on their capacity to generate long-term social and atmospheric benefits. There is no agreement on what constitutes 'long-term' in the context of the Protocol, nor on the process by which agreement might be reached, so it is *essential to establish a value for the non-permanent capture of carbon. Emission reductions resulting from improvements in the efficiency of industrial equipment, power-generation plants and other uses of fossil fuels can be considered permanent, but carbon stored in a forestry stand is transient.* Solving the problem of permanence is therefore crucial if forestry projects are to be included in the Protocol, together with a concrete solution on how best to equate the benefits of projects of different duration.

Moving forward

The end result of the workshop was an extensive programme of research that will answer many pressing questions on carbon mitigation, forest and land use change and keep policymakers better informed about this important topic in the current climate change negotiations. Some work has already been done. About 3.5 Mha are currently included in 27 LULUCF projects focussed on mitigating emissions in 19 countries, representing an investment of about \$150 million. CIFOR is particularly concerned

that the broader agenda is taken up, as the developing countries will be the hardest hit by global warming, but those countries also have the most to gain from a concerted programme of international research. They will see increased investment to improve their own landuse, they will be able to reduce their own emissions through new initiatives in afforestation, reafforestation and plantation management and promote sustainable development within their own nations' forests.

(from: CIFOR-News, Number 28, August 2001)

IWMI (International Water Management Institute) assimilates IBSRAM (International Board for Soil Research and Management)

What is IWMI? IWMI is one of the 16 'Future Harvest Centers' and a member of the Consultative Group on International Agricultural Research (CGIAR). Its recently reformulated mission is "Improving water and land resource management for food, livelihoods and nature". IWMI began operations 15 years ago as the International Irrigation Management Institute, and recently broadened its scope from 'irrigation' to 'water' management, with the view that water cannot be managed without land management. Its headquarters is located in Sri Lanka and its activities are carried out through regional offices in South Africa, West Asia and South Asia, and now also in Southeast Asia. After the merger, IWMI will have about 40 internationally recruited staff from 25 countries, and about 150 nationally recruited staff in eight countries. IWMI's research is carried out in five themes:

- Theme 1: Integrated water resource management
- Theme 2: Smallholder land and water management
- Theme 3: Sustainable groundwater management
- Theme 4: Water resource institutions and policies
- Theme 5: Water, health, and environment.

On 1 April 2001, all programmes of the International Board for Soil Research and Management (IBSRAM) will merge with those of the International Water Management Institute (IWMI), and its staff will be re-appointed by IWMI. On this date, IBSRAM will cease to exist. The Bangkok office will move to new premises at Kasetsart University campus, and be transformed into IWMI's Southeast Asia Regional Office. IBSRAM's staff in Ghana will continue their work in Kumasi under IWMI's regional office in South Africa.

Reason for this merger: In 1995, IBSRAM moved from its former soil science mandate towards a more generic sustainable land management (SLM) mission. An important consequence was that it needed to expand significantly to establish a critical mass of staff in all SLM disciplines, including crop science, economics, and sociology. Core and project funding became increasingly difficult to find, however, and IBSRAM was not able to grow. Therefore IBSRAM's Board decided to explore continuation of SLM activities through a merger.

IWMI Headquarters can be reached at P.O. Box 2075, Colombo, Sri Lanka, tel. 94-1-867404, and fax 94-1-866854, and through the Internet: www.cgiar.org/iwmi; E-mail: iwmi@cgiar.org

**Association of Official Agricultural Chemists/
Association of Official Analytical Chemists/
AOAC INTERNATIONAL Pacific Northwest Section**

(http://www.aoacpacnw.com)

Executive Board 2001-2002:

President:	Yash Kalra, Canadian Forest Service, Edmonton, Alberta, Canada
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Josephine Pompey,
Secretary AOAC PNW
Washington Department of Health
1610 N.E. 150th Street,
Shoreline, Seattle, WA 98155, USA
Email: josephine.pompey@doh.wa.gov

Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, New Orleans, USA

The 52nd Annual Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy (www.pittcon.com) was held at the 3/4 mile-long Ernest N. Morial Convention Center in New Orleans, LA, March 4-9, 2001. There was 1.1 million square feet of contiguous exhibit space (7 miles of walking) on one level in one building along the Mighty Mississippi River. Battery-powered trams were available if one was too tired to walk. Due to the size of the convention center, loop-shuttle was provided outside the halls to assist people in moving from one end of the hall to the other. The conference theme "*The voyage of discovery*" embraced the broad issues of cutting-edge technology, innovative research, new products and techniques, and recent developments in instrument design and laboratory management. The program included a broad range of analysis and application areas including bioanalytical, biomedical, environmental, food, forensic chemistry, instrumentation, materials characterization, nanotechnology, pharmaceuticals, sample preparation, sensors, softwares, and much more. It featured the best in technical papers, seminars, and exhibits.

PITTCON - a name for the Pittsburgh Conference that was adopted by conferees and exhibitors over the years, and made official 11 years ago - is held annually in conjunction with the largest technical meeting in the world devoted to analysis and measurement. It is sponsored by the organization "*The Pittsburgh Conference on Analytical Chemistry and Applied spectroscopy*", which is based in Pittsburgh, Pennsylvania, USA. The Conference consists of members of two sponsoring societies, the Spectroscopy Society of Pittsburgh and the Society for Analytical Chemists of Pittsburgh. The previous conferences have been held in Pittsburgh (1950-1967), Cleveland (1968-1979), Atlantic City (1980-1984, 1986, 1987), New Orleans (1985, 1988, 1992, 1995, 1998, 2000), Atlanta (1989, 1993, 1997), New York (1990), Chicago (1991, 1994, 1996), and Orlando (1999).

The program began on Sunday, March 4 and featured exhibitor New Products Forum, workshops, and a poster session/mixer. This was a great place to meet longtime friends and make new acquaintances and thus to interact with some of the leading scientists in the world. Michael N. Carmosino, President



Pitcon2001 was held at the 3/4 mile-long Ernest N. Morial Convention Center, probably the longest room in the world.

of the 52nd Pittcon and New Orleans's mayor Marc H. Morial welcomed attendees at the official opening. Sunday also kicked off activities related to the 100-Year Centennial Celebration of National Institute of Science and Technology. The Pittcon2001 program included over 2,500 oral presentations, poster sessions, 61 short courses, and high-intensity workshops to highlight the latest developments in analytical chemistry and applied spectroscopy. It brought together over 30,000 conferees and exhibitors from around the world. There were 1,300 vendors exhibiting their instruments in 3,300 booths. So many booths to visit, so little time. The conference can be summed up in one word: WOW !

Time to take a breather: Fisher Scientific had piña colada and strawberry daiquiri for conferees all day, every day. Mettler-Toledo, Inc. kept up with the café generation, offering attendees espresso and cappuccino and jazzy music with a cool talented trio doing the honors.

The White Alligator, complete with Mardi Gras jester's cap and white fringe scarf, was Pittcon 2001's mascot. Several tours were provided: Plantations, ghostly encounters, dinner jazz cruise, battlefield cruise on Creole Queen, city tour, air boat tour, swamp tours, etc. On the swamp tour, we experienced the timeless beauty of the marshes, swamps, and bayous of southern Louisiana. Beyond curtains of Spanish moss, we saw herons, nutria (Louisiana river rat), egrets, alligators, and other wildlife. Gators are the kings of the swamps.

Those who have been to New Orleans, like to come back time and time again. It is one of the most unique cities in the world; 5 feet below sea level. It is also known as the Big Easy and the Crescent City; so named because it is tucked away in a bend of the Mighty Mississippi River. The city has a passion for food and music. Dinner at Brennan's was just formidable ! There are several nightspots showcasing the live jazz and blue music. A trip to New Orleans is not complete unless you visit the world famous Bourbon Street, the street that never sleeps. While there, try a hurricane (the cocktail that was created as a promotion at Pat O'Brien's in New Orleans and is made with a passion fruit flavouring, dark rum, and citrus juices). And don't forget the beads. Laissez les bons temps rouler; Let the good times roll ! Go to New Orleans. Guaranteed, you will be back again.

Yash P. Kalra, Canada
ykalra@nrcan.gc.ca

Soil and Plant Analysis Council, Inc.
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621 Rose Street, Lincoln, NE 68502-2040, USA;
E-mail: bvaug12345@aol.com; website: <http://www.spcouncil.com>.

Soil and Environmental Chemistry Workshop, Tacoma, Washington, USA

The AOAC (Association of Official Agricultural Chemists/Association of Official Analytical Chemists/Association Of Analytical Communities) Pacific Northwest Regional Section Annual Meeting was held at the campus of the University of Puget Sound in Tacoma, Washington on June 21-22, 2001 under the leadership of Jim Silkey, the Section President from the Oregon Department of Agriculture, Portland. Total attendance at the meeting was 166. Michael Brodsky, the President of the AOAC International, opened the meeting with a description of the role and the activities of AOAC. The technical program featured a mini-symposium on food safety and human health. It included presentations by Michael Dana, Michael, Brodsky, and Davoli Bell.

The PNW Section then followed its standard format involving presentations and discussions by section members and guests, on Thursday afternoon and Friday morning, on a variety of topics in the following workshops: Food Analysis, General Chemistry, Metals Chemistry, Microbiology, Pesticide Residue, Pharmaceutical/Forensic Chemistry, and Soil and Environmental Chemistry. The Soil and Environmental Chemistry Workshop included these presentations: Pure water - the basics (Ken Hatori, Barnstead/Thermolyne, Sammamish, WA), Modifications that affect laboratory atmospheric

deposition (Linda Bingler, Marine Sciences Laboratory, Battelle, Sequim, WA), Collaborative studies: Rx for the generation of high quality results (Yash P. Kalra, Canadian Forest Service, Edmonton, AB), Determination of inorganic anions by ion chromatography: EPA Method 300.0 Part B (Pacita Ongoco, Public Health Laboratories, Shoreline, WA), Theory of pH measurement and techniques for soil analysis (Jeff Allen, Thermo Orion, Gig Harbor, WA), and Recent advances in the analysis of organic horizons (Yash P. Kalra and Joel A. Crumbaugh, Canadian Forest Service, Edmonton, AB). The following training sessions were held on June 22: (1) Laboratory accreditation to the new ISO Standard 17025 (2) LC/MS - Instrumentation and method development (3) Pulsed field gel electrophoresis - Disease surveillance, and (4) Metals analysis - Sample preparation and method selection. The Instrument Expo was a highlight involving productive interchange between 23 vendors and delegates. The banquet featured Carlos Ventura and the popular Pacific Northwest topic of "The art and science of earthquake engineering".

The meeting was an excellent opportunity for the participants to update their knowledge and meet with other scientists working in their areas of interest. After the meeting, I spent the weekend in Seattle. If you love sea food, this is the place to be (don't forget the oyster shots). After experiencing the hustle and bustle of the Pike Place Market (where you come across signs like "Warning: flying fish") on Saturday morning in Seattle, I took a ferry to Bremerton. Next day I took a ferry to the Bainbridge Island. What a pristine, relaxing environment! I returned to Edmonton, renewed, refreshed, and recharged for the rest of 2001.

Yash P. Kalra, Chair
Soil and Environmental Chemistry Workshop

World Association of Soil and Water Conservation

For the three-year term starting 1st January 2002, the following persons have been elected as new Board members of WASWC:

Samran Sombatpanit	-	President
Michael Zöebisch	-	Deputy President
Bill Moldenhauer	-	Executive Secretary
Maurice Cook	-	Treasurer
David Sanders	-	Immediate Past President

The President can be reached at: sombatpanit@hotmail.com, the Secretary at: moldwc@itctel.com.

For membership, at USD 10 per year, please send a mail to waswc@hotmail.com or to: waswc@yahoo.com.

The WASWC Newsletter is, as of 2002, only available through the internet.

J.H.V. van Baren
Wageningen, The Netherlands

**2nd IBERO-AMERICAN CONGRESS ON ENVIRONMENTAL PHYSICS
AND CHEMISTRY**

(Segundo Congreso Iberoamericano de Química y Física Ambiental).

The Second Ibero-American Congress on Environmental Physics and Chemistry was held in the 'Hotel Habana Libre' (La Havana, Cuba) from November 8 to 10. This Congress was planned for November 5 to 8 in Varadero (Cuba), but the Hurricane 'Michelle' (focused on Varadero at that time) forced the organizers to change the place and date, as many hotels in the area and the Congress Center itself were damaged.

Due to the remarkable efforts made by the organizers (Drs. A. CABRERA, N. MEDINA, and R. VILLEGAS) the Congress could be held in La Havana; and for this the organizers deserve special recognition.

Eight symposia were held as planned, but the Round Table on 'Environmental Problems in Ibero-America' was postponed because of the problems mentioned above. In spite of these troubles, a total of 68 contributions were presented, corresponding to 65 attendants, of which 45 were Cuban scientists and the other 20 scientists from 5 Ibero-American countries.

The inaugural lecture, entitled 'Challenges and Targets of Chemistry in the XXI Century', was held by Dr. Alberto J. NUÑEZ. The titles of the Sessions were: I. 'Atmospheric Physics & Chemistry'; II. 'Hydrological Cycle'; III. 'Interactions Land-Ocean-Atmosphere'; IV. 'The Soil: Basic Component of the Terrestrial System and the Environment'; V. 'Education & Dissemination'; VI. 'Technology, Processes & New Products'; VII. 'Biological Agriculture'; and VIII. 'Environment & Human Health'. Among the chairpersons and keynote speakers were Drs. Jaime BECH, Juan F. GALLARDO, Jeroni LORENTE, Nicolás MEDINA, Raúl G. MORALES, Laura B. REYES, etc., all of them belonging to the International Scientists' Committee.

There was a final discussion on the 'Ibero-American Environmental Chemistry Network' (*Red Iberoamericana de Química Ambiental: RIQA* <www.uchile.cl/cqa> & <www.cenma.cl>); it was recommended that every country should implement a national network as soon as possible, which should subsequently be integrated in the Ibero-American network. The *RIQA* is open to every scientist interested in Ibero-American environmental problems, regardless of his/her origin (background and/or country).

The III Congress will be held in Mexico (in 2003 or 2004), organized by Dr. Laura B. REYES <lbrs@servidor.unam.mx>, from the *Universidad Nacional Autónoma de México*; Congratulations and we wish her luck in the organization of the next Congress.

Juan F. Gallardo Lancho
<jgallard@usal.es>, Salamanca, Spain

APPOINTMENTS, HONOURS, PERSONAL NEWS

Prof. Hans Sticher from ETH Zurich (retired 1999) was elected Vice-President of the Swiss Academy of Sciences.

Prof. Machito Mihara, from the Tokyo University of Agriculture, has received the JSIDRE award from the Japanese Society of Irrigation, Drainage and Reclamation Engineering for his outstanding research.

Yash P. Kalra, Soil Chemist, Canadian Forest Service, Edmonton, was installed President of the Association of Official Analytical Chemists International Pacific Northwest Section at the Annual Meeting in Tacoma, Washington in June 2001. He is currently also President of the Soil and Plant Analysis Council (Lincoln, Nebraska).

Dr. Per Pinstrup-Andersen, Director General of the International Food Policy Research Institute (IFPRI), Washington, received the 2001 World Food Prize in Des Moines, Iowa, USA, on 8 October 2001. He received this prestigious award in recognition of a lifetime commitment to help poor and malnourished people in developing countries. The prize was created fifteen years ago by Dr. Norman Borlaug, Nobel Peace Prize Laureate in 1970.

Dr. Joachim von Braun has been elected the new Director General of the International Food Policy Research Institute. He succeeds Dr. Pinstrup-Andersen effective 1st September 2002.

Dr. D.K. Pal, Principal Scientist and Head, Division of Soil Resource Studies, National Bureau of Soil Survey and Land Use Planning, Nagpur, India, was made a Fellow of the Indian Society of Soil Science, New Delhi.

The following persons won **SSSA awards** in 2001:

David J. Read from the University of Sheffield received the Francis E. Clark Distinguished Lectureship on Frontiers in Soil Biology;

François Tardieu from INRA and Montpellier University of Agronomy received the Howard M. Taylor Memorial Lectureship;

Rodney T. Venterea from the University of California received the Emil Truog Award;

Dani Or from the Utah State University received the Don and Betty Kirkham Soil Physics Award;

Scott E. Fendorf received the Marion L. & Chrystie M. Jackson Soil Science Award;

James W. Biggar from the University of California received the Soil Science Distinguished Service Award;

Dale Swartzendruber, retired from the University of Nebraska, received the Soil Science Distinguished Service Award;

Robert Horton from the Iowa State University received the Soil Science Research Award;

John G. Graveel from the Purdue University received the Soil Science Education Award;

K. Ramesh Reddy from the University of Florida received the Soil Science Applied Research Award;

Albert E. Ludwick from the Potash & Phosphate Institute received the Soil Science Professional Service Award;

Ramachandran P.K. Nair from the University of Florida received the International Soil Science Award;

Norman A. Berg, retired from the USDA Soil Conservation Service, and **Roberta Parry**, from the US Environmental Protection Agency, were elected Honorary Members of the SSSA;

IN MEMORIAM

Roy Luther Donahue

1908 – 1999



Roy Luther Donahue, soil scientist, agronomist, forester, international consultant, and textbook author, was born in Texas, on 3 November 1908.

In 1926 Donahue enrolled at Michigan Agricultural College (now Michigan State University). During this time, he spent his summers working as a Forest Mapper and Control Chief for the Michigan Department of Conservation Land Economic Survey in Michigan.

After receiving his B.S. in Soil Science in 1932, he worked in the Civilian Conservation Corps (CCC). In 1934-35 he was an instructor in soil science at Michigan State, and in 1935 he was appointed the founding head of the Department of Forestry at Mississippi State University; as a Research Professor of Forest Soils at that school he taught a course in forestry and initiated a forest-soils research project in the Mississippi Delta.

After two years at Mississippi State University, Donahue entered graduate school at Cornell University, majoring in agronomy (forest soils) with minors in geology, meteorology, and forestry. After receiving a Ph.D. degree in 1939 he accepted a position as associate professor of soil science in the Department of Agronomy, Texas A&M College (now University). From 1945 to 1952 Dr. Donahue was an extension agronomist for Texas A&M University, and then served as Chairman of the Department of Agronomy at the University of New Hampshire from 1952 to 56. He had extensive foreign experience, having worked in Greece, for many years in India, but also at the University of the Ryukyus in Okinawa, and in several African countries.

In 1966, he returned to Michigan State University, where he served as a tenured Professor of Soil Science in the Dept. of Crop and Soil Sciences until he retired in 1972.

Dr. Donahue was a prolific author of agricultural textbooks and reports and honorary or life member of a number of societies, among them the American Society of Agronomy, the Indian Society of Agronomy, the Indian Soil Science Society and the International Union of Soil Sciences.

L.V. VAIDYANATHAN

1928 – 2000



Dr. L.V. Vaidyanathan, Vaidy to those who know him, was born in southern India. Educated at the University of Madras, where he took a first class degree, he spent three years lecturing in chemistry, before joining the Indian Coffee Board as an advisor. In 1959 he came to England to take up a post-graduate studentship at Rothamsted Experimental Station; he never worked again in India.

After completing a PhD on soil phosphorus under the supervision of O. Talibudeen, he left Rothamsted for Oxford, to join P. Nye in seminal work on ion diffusion in soils. After a year working on radioisotopes in Vienna with IAEA, he returned to the UK, determined to devote himself to the problems of practical agriculture, and joined the Agricultural Advisory and Development Service (ADAS). During his time with ADAS in Cambridge, he introduced soil mineral N assessments to UK agriculture. In the 1980s he conceived a legendary multi-site wheat experiment in which just about anything which could be measured was measured, whether in the field of soil science, plant pathology, entomology, weed science or plant physiology. It was named "Marathon" by the exhausted field team, who used to keep out of Vaidy's way in case he added yet another measurement to the list.

He was a dedicated supervisor of students and soon after arriving in Cambridge took on responsibility for guiding soil science postgraduate students, just as he had done earlier at Oxford and later in Birmingham. His students often rued their supervisor, but afterwards they appreciated the way they had been challenged and cajoled by his probing imagination.

Vaidy was the Socrates of British Soil Science, although happily no one ever made him drink hemlock. He had a rare gift for challenging one's pet theories – and a much rarer gift for leaving you grateful (and wiser) for the challenge. Like Socrates, Vaidy lived simply, sending most of his salary home to relatives in India. For the most part, his diet was bread, rice and beans, cooked in the laboratory, supplemented by any delicacies he found when diagnosing at the ADAS Plant Clinic. He took delight in debating with anyone who would listen – his views were challenging, because he had no time for pedantry or sloppy arguments, often exasperating, but always full of fun and stimulating. He never compromised his views of principles to have a quieter life. Farmers turned up in droves to his meetings, to take part in arguments that invariably extended hours after they were expected home. He is much missed.

D.B. Davies and D.S. Jenkinson
IACR-Rothamsted, UK

MEETINGS, CONFERENCES, SYMPOSIA

Important Notice

IUSS, as a Scientific Union Member of the International Council for Science (ICSU), subscribes to the principle of free movement of bona fide scientists; patronage or sponsoring will therefore automatically be withdrawn if the country of venue denies or purposely delays visa awarding to any IUSS member who wishes to participate in the meeting concerned.

2002

International Conference “Geochemical processes with longterm effects in anthropogenically affected seepage and groundwater” - GeoProc2002. Bremen, Germany, March 4-7, 2002.

Information: Prof. Horst D. Schulz, Fachbereich 5 – Geowissenschaften, Universität Bremen, Postfach 330 440, 28334 Bremen, Germany; Tel: +49-421-218-3393; Fax: +49-421-218-4321; E-mail: hdschulz@uni-bremen.de; Website: www.geochemie.uni-bremen.de.

2nd International Conference on Soil Structure Interaction in Urban Civil Engineering: “Planning and Engineering for the Cities of Tomorrow”. Zurich, Switzerland, March 7-8, 2002.

Information: ETH Zurich, Institute for Geotechnical Engineering, Mrs. Monica Dekanovsky, Conference Secretariat, CH-8093 Zurich, Switzerland; Tel.: +41(0)1-633-25-00; Fax: +41(0)1-633-10-79; E-mail: dekanovsky@igt.baug.ethz.ch.

1st ASEM Conference on Bioremediation. Hanoi, Vietnam, March 11-14, 2002.

Information: The Asia-Europe Environmental Technology Centre (AEETC), Technopolis, Klong 5, Klong Luang, Pathumthani 12120, Thailand; Tel: +662-577-41-91-94; Fax: 662-577-41-96; E-mail: biorem@aeetc.org.

2nd Saudi Symposium on Halophyte Plantation. Riyadh, Saudi Arabia, March 17-20, 2002.

Information: Prof.Dr. Ali Al-Jaloud, 2nd Saudi Symposium on Halophyte Plantation, King Abdulaziz City for Science and Technology, Natural Resources and Environment Resarch Institute, P.O. Box 6086, Riyadh-1142, Kingdom of Saudi Arabia; Fax: +966-1-481-3611; E-mail: aljaloud@kacst.edu.sa.

9th International Congress of the Soil Science Society of Pakistan. Faisalabad, Pakistan, March 18-20, 2002.

Information: E-mail: niab@fsd.paknet.com.pk

5th IFSA European Symposium “Farming and Rural Systems Research and Extension – Local Identities and Globalisation”. Florence, Italy, April 8-11, 2002.

Information: Symposium Secretariat, Luigi Omodei Zorini and Caterina Contini, Dipartimento Economico Estimativo Agrario e Forestale, P.le delle Cascine 18, 50144 Firenze, Italy; Tel: +39-055-3288240; Fax: +39-055-361771; E-mail: ifsa.symposium@unifi.it; Website: <http://www.unifi.it/unifi/deeaf/ifsa>.

International Symposium on “Rural Community Interaction and Workshop - Combating Desertification: Alternative Ways to Combat Desertification – Connecting Community Action with Science and Common Sense”. Cape Town, South Africa, Rural Communities and Gobabeb, Namibia, April 8-20, 2002.

Information: Odette de Heer Kloots, Tel.: +27-21-762-8600;

E-mail: desertification@globalconf.co.za; Web: <http://des2002.az.blm.gov/homepage.htm>.

XVIII Congreso Argentino de la Ciencia del Suelo, Puerto Madryn, Argentina, April 16-19, 2002.
Information: XVIII Congreso Argentino de la Ciencia del Suelo, Comisión Organizadora, Centro Nacional Patagónico (CENPAT), CONICET, Boulevard Brown s/n, CC 128, (U9120ACV) Puerto Madryn, Chubut, Argentina. Tel.: +54-2965-451024; Fax: +54-2965-451543; E-mail: suelos@cenpat.edu.ar.

International Conference on Drought Mitigation and Prevention of Land Desertification, Bled, Slovenia, April 21-25, 2002.

Information: E-mail: SDNO-SINCID@guest.arnes.si, Internet:
<http://www2.arnes.si/~ljsdno2/eng7.htm>

International Conference "Soil Tolerance for Natural and Anthropogenic Impacts", Moscow, Russia, April 23-25, 2002.

Information: V.V. Dokuchaev Soil Science Institute, Pyzhevskii per. 7, Moscow 109017 Russia; Fax: +7-095-951-5037; E-mail: rojkov@agro.geonet.ru.

9th International Symposium on the Interactions Between Sediments and Water, Banff, Alberta, Canada, May 5-10, 2002.

Information: Dr. Ellen Petticrew, University of Northern British Columbia, 3333 University Way, Prince George, BC, V2N 4Z9, Canada; Tel.: +1-250-960-6645; Fax: +1-250-960-5538; E-mail: iasws@unbc.ca.

12th International Soil Conservation Organization (ISCO) Conference: Sustainable Utilization of Global Soil and Water Resources, Beijing, People's Republic of China, May 26-31, 2002.

Information: China National Administration Center for Seabuckthorn Development, Jia 1, 6th Floor, Fuxinglu, Beijing 100038, China; Tel.: +86-10-6320-4362/6320-4363; Fax: +86-10-6320-4359/6320-2841; E-mail: isco2002@swcc.org.cn; Website: www.swcc.org.cn/isco2002.

European Grassland Federation – EGF 2002: Multi-Function Grasslands – Quality Forages, Animal Products and Landscapes, La Rochelle, France, May 27-30, 2002.

Information: EGF 2002 / AFPF, INRA – Route de St. Cyr, F-78026 Versailles Cedex, France, E-mail: egf2002@lusignan.inra.fr; Website: <http://www.poitou-charentes.inra.fr/egf2002>.

6th International Conference on the Occurrence, Properties, and Utilization of Natural Zeolites, Thessaloniki, Greece, June 3-7, 2002.

Information: Dr. Panagiotis Misaelides, Assoc. Professor, Dept. of Chemistry, Aristotle University, P.O. Box 1547, GR-54006 Thessaloniki, Greece; Tel: +30-31-99-77-89; Fax: +30-31-99-77-53; E-mail: misaelid@chem.auth.gr.

International Meeting on Mountain Ecosystems: "The Tropical Mountains Toward 2020: Water, Life, and Production", 5-7 June 2002, Huaraz, Peru.

Information: Maria Cecilia Rozas; E-mail: mrozas@rree.gob.pe; Internet:
<http://www.mtnforum.org/calendar/events/0206imma.htm>.

8th New Phytologist Symposium "Impacts of Soil Microbes on Plant Population Dynamics and Productivity", Helsinki, Finland, 9-14 June, 2002.

Information: Dr. Robin Sen (Docent), Department of Biosciences, Division of General Microbiology, The Viikki Biocenter, P.O. BOX 56 (Viikinkaari 9C), FIN-00014 University of Helsinki, Finland; Tel: +358 9 19159221/59223; Fax: +358 9 19159262; E-mail: robin.sen@helsinki.fi; Web site: <http://www.biocenter.helsinki.fi/nps2002/>

World Food Summit, Rome, Italy, June 10-13, 2002.

Information: Fax: +39-06-570-55249; E-mail: food-summit@fao.org; Website: <http://www.fao.org/worldfoodsummit>.

International Conference on Sustainable Land Use and Management, Çanakkale, Turkey, June 10-13, 2002.

Information: İlhami Bayramın, Ankara Üniversitesi, Ziraat Fakültesi, Toprak Bölümü, 06110 Ankara, Türkiye; Tel.: +90-312-317-05-50 ext: 1420; +90-312-317-84-65; E-mail: conference2002@toprak.org.tr; Website: <http://ozel.gop.edu.tr/ciec2002>.

Soil and Environmental Chemistry Workshop, AOAC INTERNATIONAL Pacific Northwest Regional Section Annual Meeting, Tacoma, WA, USA, June 20-21, 2002.

Information: Yash P. Kalra, Canadian Forest Service, Northern Forestry Centre, 5320 122nd Street, Edmonton, AB T6H 3S5, Canada, Phone (780) 435-7220; Fax: (780) 435-7359, E-mail: ykalra@nrcan.gc.ca (web site <http://www.aoacpacnw.com>).

Soil and Water Conservation Society 2002 Annual Conference, Indianapolis, USA, July 13-17, 2002.

Information: Soil and Water Conservation Society, 7515 NE Ankeny Road, Ankeny, Iowa 50021-9764; Tel.: +1-515-289-2331; Fax: +1-515-289-1227; E-mail: Webmaster@swcs.org; Website: <http://www.swcs.org>.

6th International Conference on Precision Agriculture and Other Resources Management, Minneapolis, USA, July 14-17, 2002.

Information: Kellen Sullivan, Fax: +1-612-624-4223; sullivan@soils.umn.edu.

International Humic Substances Society 20th Anniversary Conference: "Humic Substances - Nature's Most Versatile Materials", Boston, USA, July 21-26, 2002.

Dr. Elham A. Ghabbour, Barnett Institute, 341 Mugar Hall, Northeastern University, 360 Huntington Ave., Boston, MA 02115, Tel: +1-617-373-7988; Fax: +1-617-373-2855; e-mail: eghabbou@lynx.neu.edu; Website: www.hagroup.neu.edu.

ICAR5 and GCTE-SEN Joint Meeting, Lubbock, Texas, USA, July 22-25, 2002.

Information: ICAR5/GCTE-SEN, c/o Dr. Ted Zobeck, 3810 4th Street, Lubbock, TX 79415, USA, Tel.: +1-806-723-5240; Fax: +1-806-723-5272; E-mail: tzobek@Lbk.ars.usda.gov; Website: <http://www.lbk.ars.usda.gov/wewc/icar5/icar5home.html>.

3rd International Conference on Water Resources and Environment Research, Dresden, Germany, July 22-26, 2002.

Information: Cathleen Schimmek, Gisela Schöler, Conference Secretariat ICWRER 2002, Institute of Hydrology and Meteorology, Dresden University of Technology, Wuerzburger Str. 46, 01187 Dresden, Germany; Tel.: +49-351-463-3931; Fax: +49-351-463-7162; E-mail: icwrer2002@mailbox.tu-dresden.de.

Humic Substances Seminar VI, Boston, USA, July 27, 2002.

Information: Dr. Elham A. Ghabbour, Barnett Institute, 341 Mugar Hall, Northeastern University, 360 Huntington Ave., Boston, MA 02115, Tel: +1-617-373-7988; Fax: +1-617-373-2855; e-mail: eghabbou@lynx.neu.edu; Website: www.hagroup.neu.edu.

17th World Congress of Soil Science "Soil Science: Confronting New Realities in the 21st Century", Bangkok, Thailand, August 14-20, 2002.

Information: 17th World Congress of Soil Science, Kasetsart Golden Jubilee Administration and Information Center (1st floor), Kasetsart University, P.O. Box 1048, Bangkok 10903, Thailand; Fax: (662)940-5788; E-mail: o.sfst@nontri.ku.ac.th; Web: <http://www.17wcss.ku.ac.th>.

World Summit on Sustainable Development, Johannesburg, South Africa, September 2-11, 2002.
Information: Andrey Vasilyev, DESA, New York; Tel.: +1-212-963-5949; E-mail: vasilyev@un.org;
Website: <http://www.johannesburgsummit.org/>

International Conference on Soils Under Global Change – a Challenge for the 21st Century, Constanta, Romania, September 3-6, 2002.

Information: Research Institute for Soil Science and Agrochemistry, Bd. Marasti 61, Bucharest 71331, Romania; Tel: +40-1-22417-90 ext. 268; Fax: +40-1-222-5979; E-mail: r.enache@icpa.ro.

2nd International Conference on Sustainable Agriculture for Food, Energy and Industry, Beijing, China, September 8-13, 2002.

Information: Dr. Fan Zengxing, Institute of Botany, Chinese Academy of Sciences, Beijing 100093, China; Tel. and Fax: +86-10-82593128; E-mail: ISAConfe@hotmail.com; lidj@ns.ibcas.ac.cn.

International Conference on Sustainable Agriculture for Dry Areas for the Second Millennium, Shijiazhuang, China, September 15-19, 2002.

Information: Catherine Vachon, Lethbridge Research Center, Agriculture and Agri-Food Canada, Tel.: +1-403-317-2257; Fax: +1-403-382-3156;

Website: <http://res2.agr.ca/lethbridge/hebei/confindex.htm>.

International Workshop on Vulnerability of Water Resources to Environmental Change, Beijing, China, September 16-19, 2002.

Information: Dr. Xia Jun, Leading Professor, Chief of Hydrology & Water Resources Branch, Institute of Geographical Science & Natural Resources, Anwai, Datun Road, 917 Building, 100101, Beijing, P.R. China; Tel./Fax: +86-10-64856534; E-mail: jxia_mail@263.net, xiaj@igsnr.ac.cn.

International Rice Congress, Beijing, China, September 20-26, 2002.

Information: www.cgiar.org/irri/irc2002/index.htm

International Symposium on Sustainable Use and Management of Soils in Arid and Semiarid Regions, Murcia, Spain, 22-26 September, 2002.

Information: Prof. Dr. Angel Faz Cano, Secretary Organization Committee, Department of Agricultural Production, The Polytechnic University of Cartagena, Paseo Alfonso XIII, 48. 30.203 Cartagena, Murcia, Spain; Tel.: 34-968-325440; Fax: 34-968-325435; Email: sumass2002@upct.es; Web Page: <http://www.upct.es/sumass2002>; <http://www.um.es/sumass2002>

International Colloquium “Landuse management, erosion and carbon sequestration”, Montpellier, France 24-28 September, 2002.

Information: Dr. Eric Roose, IRD, BP 5045, 34032 Montpellier, France; Tel.: (+33)467-416265; Fax: (+33)467-416294; E-mail: roose@mpl.ird.fr.

3rd Mediterranean Clay Meeting, Jerusalem, Israel, September 30 – October 3, 2002.

Information: Dr. Zev Gerstl, Director, Institute of Soil, Water and Environmental Chemistry, Volcani Center, ARO, P.O.B. 6, Bet Dagan, 50250, Israel; Tel.: +972-3-968-3272; Fax: +972-3-960-4017; E-mail: zgerstl@volcani.agri.gov.il; Ms. Sue Salomon, Secretary: soil@agri.huji.ac.il; Website: http://www.agri.huji.ac.il/clay_meeting/

IFDC – Integrated Soil Fertility Management in the Tropics, Togo, October 7-12, 2002.

Information: IFDC – International Fertilizer Development Center, Director, Human Resource Development, Tel.: +1-256-381-6600; E-mail: hrd@ifdc.org; Website: www.ifdc.org.

IPI Golden Jubilee Congress: “Feed the soil to feed the people – the role of potash in sustainable agriculture”, Basel, Switzerland, October 8-10, 2002.

Information: International Potash Institute, Tel.: +41-61-261-29-22; E-mail: ipi@iprolink.ch; Website: www.ipipotash.org.

32nd IAH Congress on Groundwater and Human Development, Mar del Plata, Argentina, October 21-25, 2002.

Information: Dr. Emilia Bocanegra, Centro de Geología de Costas y del Cuaternario, Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Mar del Plata, Argentina; Tel.: +54-223-475-4060; Fax: +54-223-475-3150; E-mail: ebocaneg@mdp.edu.ar.

3rd International Symposium on sustainable Agro-environmental Systems: New Technologies and Applications, Cairo, Egypt, October 26-28, 2002.

Information: Prof. Sami Abdel-Rachman, Symposium Organizer/Secretary General, National Authority for Remote Sensing and Space Sciences (NARSS), 23 Joseph Brows Tito st., Elnozha Elgedida, Cairo, Egypt. P.O. Box: 1564 Alf-Maskan; Tel.: (202)2964386 – 2975688; Fax: (202)2964387 – 2964385; E-mail: sirahman@intouch.com.

2003

International Conference on the Hydrology of the Mediterranean and Semi-arid Regions, Montpellier, France, April 7-10, 2003.

Information: Muriel Tapiau, Conference 2003, Laboratoire HydroSciences Montpellier, UMR 5569, BP 5045, F-34032 Montpellier Cedex, France; Tel.: +33-4-6714-9020; Fax: +33-4-6714-9010; montpellier2003@msem.univ-montp2.fr.

Symposium on Alternative Ways to Combat Desertification, Cape Town, South Africa, April 8-20, 2002.

Information: Odette de Heer Kloots; Tel: +27-21-762-8600;
E-mail: desertification@globalconf.co.za; Website: <http://des2002.az.bfm.gov/homepage.htm>.

International Conference on Drought Mitigation and Prevention of Land Desertification, Bled, Slovenia, April 21-25, 2002.

Information: E-mail: SDNO-SINCID@guest.arnes.si;
Website: <http://www2.arnes.si/~ljsdno2/eng7.htm>.

EUROCLAY 2003, Modena, Italy, June 15-19, 2003.

Information: Maria Franca Brigatti, Dipartimento di Scienza della Terra, Università di Modena e Reggio, Largo S. Eufemia 19, 41100 Modena, Italy. E-mail: ec2003@unimo.it; Fax: +39-059-2055887; www.unimo.it/euroclay2003.

7th International Conference on the Biogeochemistry of Trace Elements (ICOBTE), Uppsala, Sweden, June 15-19, 2003.

Information: Conference Secretariat, SLU Conference, Swedish University of Agricultural Sciences, P.O. Box 7059, SE-750 07 Uppsala, Sweden; Fax: +46-18-67-35-30; E-mail: 7thICOBTE@slu.se.

XXIII General Assembly of the International Union of Geodesy and Geophysics with IAHS symposia and workshops, Sapporo, Japan, June 30 - July 11, 2003.

Information: IUGG2003 LOC Office, Deep Sea Research Department, Japan Marine Science and Technology Center (JAMSTEC), 2-15 Natsushima-cho; Yokosuka, Kanagawa 237-0061; Japan. E-mail: iugg_service@jamstec.go.jp; Website: <http://www.jamstec.go.jp/jamstec-e/iugg/htm/frist.htm>.

10th North American Forest Soils Conference: Forest Soils Research: Theory, Reality and Role in Technology Transfer, Sault Ste. Marie, Ontario, Canada, July 20-24, 2003.

Information: 10th North American Forest Soils Conference, c/o Dr. Mary Beth Adams, USDA Forest Service, P.O. Box 404, Parsons, WC 26287, USA; E-mail: mbadams@fs.fed.us; Website: <http://www.fs.fed.us/forestsoilsconference>.

Congress of the Polish Society of Soil Science & International Conference: Soil in the Environment, Kraków, Poland, September 9-12, 2003.

Information: Prof. dr hab. Stefan Skiba, Dr Andrzej Kacprzak, Zak ad Gleboznawstwa i Geografii Gleb IG UJ, ul. Grodzka 64, 31-044 Kraków, Poland; tel: +48-12-431-18-21, fax: +48-12-422-55-78; e-mail: kongres@grodzki.phils.uj.edu.pl ; website: <http://www.geo.uj.edu.pl/soil>.

12th World Forestry Congress. Québec City, Québec, Canada, September 21-28, 2003; Information: Webpage: <http://www.wfc2003.org/>

2005

19th International Congress on Irrigation and Drainage (ICID), Beijing, China, September 10-18, 2005.

Information: Chinese National Committee on Irrigation and Drainage, No. 20 West Chegongzhuang Road, Beijing 100044, China; Tel.:+86-10-6841-5522/6841-6506; E-mail: cncid@iwhr.com

INTERNATIONAL TRAINING COURSES

The Vrije Universiteit Brussel, Belgium, offers a 2-year **Master Programme in Human Ecology** (1 year short course also possible, leading to a Postgraduate Diploma in Human Ecology)

Information: Serge Gillot, Admissions Administrator, VUB, Human Ecology Department (GF), Laarbeeklaan 103, B-1090 Brussels, Belgium; Tel.: +32-2-477-4281; Fax: +32-2-477-4964; E-mail: sgillot@meko.vub.ac.be; Website: <http://meko.vub.ac.be/~gronsse/>

FGRA – Formation en Gestion de la Recherche Agricole Pour les Chefs de Programmes des Systemes Nationaux de Recherche Agricole, organisé par le Conseil Nationale de Recherche Agricole (CNRA), Abidjan, Côte d'Ivoire, 5-17 novembre 2001.

Information: Zenete Peixoto França, Chef du service de la formation ISNAR, B.P. 93375, 2509 AJ, La Haye, Pays-Bas; Tél: +31-70349-6100; Fax: +31-7038-19677; E-mail: isnar@cgiar.org.

The International Centre for Development Oriented Research in Agriculture (ICRA), offers "Professional Training in Interdisciplinary Team Research in Agriculture" (13 weeks knowledge acquisition in Wageningen, NL, and 13 weeks professional experience in Africa/Asia/Latin America. Information: ICRA – P.O. Box 88, 6700 AB Wageningen, The Netherlands. Tel.: +31-317-422938; Fax: +31-317-427046; E-mail: icra@iac.agro.nl; <http://icra.agropolis.fr>.

The International Fertilizer Development Center offers various training programs/study tours in the USA, Africa, Asia, South America and Europe.

The topics include: "Developing Competitive Agricultural Input Markets to Benefit Smallholders", "International Training Program on Safety in Fertilizer Production and Handling", "Workshop on Globalization, Privatization, and Agricultural Input Markets: Challenges and Opportunities", "Use of Geographical Information Systems in Natural Resource Management", "International Workshop on NPK Fertilizer Production Alternatives", "Integrated Soil Fertility Mangement in the Tropics", "Developing Competitive Fertilizer Marketing for Small and Medium Agricultural Enterprises", "International Workshop on the Impact of Environmental Issues on Fertilizer Use and Production".

Information: Director, Human Resource Development, International Fertilizer Development Center, P.O. Box 2040, Muscle Shoals, Alabama 35662, USA.

Tel: +1-256-381-6600; Fax: +1-256-381-7408; E-mail: hrd@ifdc.org; Website: <http://www.ifdc.org>.

The International Institute for Aerospace Survey and Earth Sciences (ITC) offers, among others, the following courses (MSc and Professional Master degrees, modular system of courses):

- Sustainable Agriculture
- Rural Land Ecology
- Land Degradation and Conservation
- Soil Information for Sustainable Land Management
- Environmental Systems Analysis and Management

Information: ITC Student Registration Office, P.O.Box 6, 7500 AA Enschede, The Netherlands. Tel.: +31-53-487-42-05; Fax: +31-53-487-42-38; E-mail: education@itc.nl. Webpage: <http://www.itc.nl/education>

Post-graduate Courses in Soil Science, Plant Production, and Ecology. MSc and PhD Degree, Universidad de Buenos Aires, Argentina.

Language: Spanish

Information: Ing.Agr. Marta E. Conti, Facultad de Agronomía, UBA, Escuela para Graduados, Av. San Martín 4453, (1417) Buenos.Aires, Argentina. Fax: (+541)522-1687. E-mail: conti@ifeva.edu.ar and epg@ifeva.edu.ar.

The University of Gent and the Free University of Brussels, Belgium offer:

International Interuniversity Post-Graduate Programmes in Physical Land Resources. Diploma and Master Courses,

Information: Programme Secretariat, Physical Land Resources, Krijgslaan 281 (S8), B-9000 Gent, Belgium; Tel: +32-9-264-46-18; Fax: +32-9-264-49-91; E-mail: PLRprog.adm@rug.ac.be, Website: <http://allserv.rug.ac.be/~amtanghe/PLRprog.html>.

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The Interactive Remote Instructional System (IRIS®) is an internationally recognized distance learning program in the hydrologic and environmental sciences and engineering. This program provides continuing education and professional development for scientists, engineers and administrators working in the environmental field. 12-week courses are offered on:

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- **Aquifer Test Analysis/Well Hydraulics**
- **Soil and Ground Water Contamination**
- **Site Remediation**
- **Environmental Geophysics**

Information: The Center for Ground Water Management, Wright State University, Dayton, Ohio 45435-0001; Tel: +1-937-775-3648; Fax: +1-937-775-3649; E-mail: IRIS19@wright.edu; Web: <http://geology.wright.edu/iris.html>.

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Short Postgraduate Course on Soil and Plant Analysis and Data Handling

Wageningen, the Netherlands, May1 – 26, 2000.

Organized by the Wageningen University (WU), in co-operation with the International Agricultural Centre (IAC) and the International Soil Reference and Information Centre (ISRIC).

Information: International Agricultural Centre (IAC), Lawickse Allee 11, P.O. Box 88 6700 AB Wageningen, The Netherlands; Tel.: +31-317-490-111; Fax: +31-317-418-552; E-mail: IAC@IAC.AGRO.NL; Telegrams: INTAS; Telex: 45888-INTAS NL.

The Katholieke Universiteit Leuven and the Vrije Universiteit Brussel offer, among others a:

2-year Master of Science Programme in Water Resources Engineering for undergraduates, faculty staff, project engineers, staff of ministries etc.

The programme provides advanced training in information technology, mathematical modelling, and decision support systems with application to water resources problems. Course options are hydrology, irrigation, waste water treatment and aquatic ecology.

Information: Institute for Land and Water Management, K.U. Leuven, Vital Decosterstraat 102, 3000 Leuven, Belgium. Tel: +32-16-32-97-45; Fax: +32-16-32-97-60; E-mail: iupware@agr.kuleuven.ac.be, or: Laboratory of Hydrology, V.U. B., Pleinlaan 2, 1050 Brussel, Belgium. Tel: +32-2-629-30-21; Fax: +32-2-629-30-22; E-mail: fdesmedt@vub.ac.be.

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International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) offers a wide range of short- and long-term studies in the field of

- **Plant Production**
- **Animal Production**
- **Environment**
- **Agricultural Marketing**
- **Wetland Management, Restoration and Applications**

Information: Instituto Agronómico Mediterráneo de Zaragoza; Apartado 202, 50080 Zaragoza, Spain; Tel: (34-76)57-60-13; Fax: (34-76)57-63-77

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ITC Postgraduate Diploma and MSc Degree Courses, Enschede, The Netherlands,

ITC offers a wide range of courses for example

PM and MSc Degree Courses in

- *Geoinformation Management for Rural Development and Resource Management*
- Rural Land Ecology – Agriculture, Conservation and Environment
- Soil Information Systems
- Planning and Coordination in Natural Resources Management
- Environmental Health Using GIS and Remote Sensing.

Information: ITC, Student Registration Office, P.O.Box 6, 7500 AA Enschede, The Netherlands, Tel: +31-(0)53-487-42-05; Fax: +31-(0)53-487-42-38; E-mail: education@itc.nl; Website: <http://www.itc.nl/education>.

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Silsoe College, Bedford, England, offers a wide range of post-graduate courses and studies, e.g.:

Agribusiness Management and Technology (MSc.), Agroforestry (MSc.), Land Resource Management and Planning (MSc. and Postgraduate Diploma programmes), Engineering for Rural Development (MSc.), Agricultural Engineering (Agrochemicals Application Technology - MSc., etc.), Management for Agricultural Development (MSc.), Agricultural and Food Marketing (MSc. and PD), Agricultural Water Management (MSc.), Crop Production Technology (MSc.), Information Technology (MSc.), etc.

Information: The Student Recruitment Executive, Silsoe College, Silsoe, Bedford MK45 4DT, U.K.; Tel: (0525) 860428; Fax: (0525) 861527; Telex: 826383 silcam g

External Programme, MSc, PG Diploma and other programmes related to Environment, Biodiversity, Sustainable Agriculture, Rural Change, Applied Economics and Agribusiness and Food Management. Information: External Programme, Imperial College at Wye, University of London, Ashford, Kent TN25 5AH, UK (Tel: +44 (0)20 759 42680; Fax: +44 (0)1233) 812138; email:

epadmin@ic.ac.uk)

The University of East Anglia, Norwich, UK, offers a specialist training for development. Tailor-made courses are organized in different fields, e.g.:

- **Natural resource policy and management**
- **Agroforestry and cropping systems**
- **Farming systems research**
- **Land use planning**
- **Rangeland, livestock and pastoralism**
- **Fisheries assessment and management**
- **Demographic and population studies**
- **HIV/AIDS impact assessment**
- **Industrial development and policy and others**

It also offers a 10-week **Short Course on Sustainable Information Systems.**

Information: The Overseas Development Group, University of East Anglia, Norwich NR4 7TJ United Kingdom; Tel: +44-1603-456-410; Fax: +44-1603-505-262; Telex: +51-317210 BUREAU G ODG/UEA; E-mail: odg.train.@uea.ac.uk.

The Wageningen Agricultural University offers an International Postgraduate Programme in different fields, e.g.:

Msc Courses in Agricultural Economics and Management; Agricultural Engineering; Animal Science; Biotechnology; Crop Science, Ecological Agriculture, Environmental Sciences, Soil and Water, Urban Environmental Management etc., as well as a PhD Programme.

Information: Ms. Jeanine W.M. Hermans, Dean, Office for International Students, Wageningen Agricultural University, P.O. Box 453, 6700 AL Wageningen, The Netherlands; Tel.: +31-317-483618 or -

483433; Fax: +31-317-484464; E-mail: Office@DOIS.SZ.WAU.NL; HTTP://WWW.WAU.NL/;
Internet for education and student information: HTTP://WWW.WAU.NL/WAUEDUC.HTML

The Soil Science Department, Faculty of Agriculture, of the Minia University, Minia, Egypt, organizes the following International Courses:

- **International Course on Soil and Plant Analysis** (in cooperation with the Royal Tropical Institute, Amsterdam, The Netherlands);
 - **International Training Course for Extension Workers on Soil and Water Problems;**
 - **International Training Course on Water Analysis for Agricultural Purposes;**
- Information: Prof. Dr. M. A. Kishk, Minia University, Faculty of Agriculture, Service Laboratory for Soil, Plant & Water Analysis, Minia, Egypt. Tel and Fax: +20-86-345-394; Fax: +20-86-322-182.

International Institute for Land Reclamation and Improvement (ILRI)

offers international short courses (1-12 weeks) e.g. on:

- Water Management in Irrigation Systems;
 - Land Drainage;
 - Land and Water Management
 - Computer Applications in Irrigation;
 - Microcomputer Applications in Land Drainage;
- etc.

Information: ILRI, Training Coordinator, Lawickse Allee 11, P.O.Box 45, 6700 AA Wageningen, The Netherlands. Fax: +31-317-495590; E-mail: ilri@ilri.nl

Lincoln University, New Zealand

MSc Course on Resource Management, New Zealand, 2 years.

Information: Lincoln University, International Centre, P.O.Box 94, Canterbury, New Zealand.
Fax: +64-3-3253879; E-mail: wwwic@lincoln.ac.nz.

Cranfield University, United Kingdom

- Msc Course on Land Resource Management, United Kingdom, 1 year.
- Msc Course on Soil Physics and Soil Management, United Kingdom, 3 months.
- Msc Course on Soil Conservation, United Kingdom, 10 weeks
- MSc Course on Land Resource Management, United Kingdom, 1 year.
- Water Management, United Kingdom, 3 months.

Information: Cranfield University, School of Agriculture, Food and Environment, Admissions Office, Silsoe, Bedford MK45 4DT, UK. Fax: +44-1525-863316; E-mail: admissions@cranfield.ac.uk.

CNEARC, France

Techniques d'Irrigation. France, 5 semaines.

Centre National d'Etudes Agronomiques des Régions Chaudes (CNEARC), B.P. 5098, F-340033 Montpellier Cedex 01, France.

Fax: +33-467-410232.

CATIE

- Desarrollo rural basado en el manejo de ecosistemas naturales tropicales, Costa Rica,
- Gestión Ambiental. Costa Rica, 2 semanas.

Information: CATIE, Coordinator, Programa de Educación, Apartado 126, Área de Capacitación, Turrialba, Costa Rica. Fax: +506-5561533; E-mail: capacita@computa.catie.ac.cr.

Université des Sciences Agronomiques

Diplôme en Gestion et Développement des Milieux Intertropicaux, Belgique, 1 année.

Information: Université des Sciences Agronomiques, Passage des Déportés 2, B-5030 Gembloux, Belgique.
Fax: +32-81614544; E-mail: boudoin@fsagx.ac.be.

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Master Courses in Applied Environmental Geoscience at the University of Tuebingen, Germany

Information: Dr. C.I. McDermott M.Sc. (AEG Course Administrator) Chair of Applied Geology, Sigwart Str. 10, 72074 Tuebingen, Germany; E-mail: chris.mcdermott@uni-tuebingen.de; Tel: (+49) (0)7071-2978921; Fax: (+49) (0)7071-5059.

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IV Curso Internacional de Postgrado en "Manejo de Suelos Tropicales"

Universitat de Lleida-Centre Tecnologic Forestal de Catalunya, Solsona (Lleida), España. 7 Mayo-1 Junio del 2001

Participantes: Ing. Agrónomos, Ing. Forestales, Biólogos, Geógrafos, Licenciados en Ciencias Ambientales, especialmente de América Latina y España, que estén trabajando o piensen trabajar en la investigación, desarrollo y aplicación de sistemas y prácticas de manejo y conservación de suelos en zonas tropicales y subtropicales.

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Dirección del curso: Prof. Dr. Ildefonso Pla Sentís. Dept. de Medi Ambient i Ciències del Sol. UdL. Av. Alcalde Rovira Roure, 177. E-25198 Lleida. España; Email: ipla@macs.udl.es; Fax: +(34)(973)-702613

Programa de Doctorado en "Medio Ambiente y Ciencia del Suelo"

Departamento de Medio Ambiente y Ciencia del Suelo. Universitat de Lleida. Lleida (Catalunya). España

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NEW PUBLICATIONS

Waste Composting for Urban and Peri-urban Agriculture: Closing the Rural-Urban Nutrient Cycle in Sub-Saharan Africa. P. Drechsel and D. Kunze, editors. International Water Management Institute, Colombo; FAO, Rome; and CABI Publishing, Wallingford and New York, 2001, xviii + 229 p. ISBN 92-5-104591-7 (FAO); and 0-85199-548-9 (CABI). Hardcover.

Rapid urbanization has created a major challenge with regard to waste management and environmental protection. However, turning organic waste into compost for use as an agricultural fertilizer in peri-urban areas can ameliorate the problem. This is especially significant in less developed countries, where food security is also a key issue. This book is based on papers presented at a workshop held in Accra, Ghana, from 2 to 6 August 1999 to address these issues. Special reference is given to Sub-Saharan Africa, with acknowledgement to experiences in other parts of the world.

After an introductory chapter, the following themes are addressed: (1) The potential use of waste-stream products for soil amelioration in peri-urban interface agricultural production systems (1 paper); (2) Economic, sociocultural and environmental considerations ((3 papers); (3) Turning urban waste into fertilizers: case studies from East and West Africa (9 papers); (4) Modelling biomass and nutrient flows (5 papers); (5) Urban agriculture: international support and capacity building in Africa (1 paper). The book closes with a chapter about research and development priorities.

Price: GBP 45.00; USD 80.00.

Orders to: see below.

Securing the Harvest. Biotechnology, Breeding and Seed Systems for African Crops. J. DeVries and G. Toenniessen. CABI Publishing, Wallingford and New York, 2001, xvi + 208 p. ISBN 0-85199-564-0. Softcover.

As the one remaining major world region where agriculture has yet to be transformed from subsistence, low-yield systems dependent on shifting cultivation to efficient modern systems capable of producing regular surpluses, the question of crop improvement is especially important to Africa. This continent is also the sole world region where many indices of food security have shown a serious decline in recent years. In the context of high population growth and an increased emphasis on keeping Africa's unique natural environment intact, it is clear that crop yields must be substantially and sustainably increased. More efficient, better-performing crop varieties can play a significant role in achieving this goal. Improved food security, led by increased productivity among many small-scale farmers, has been the aim of significant national and international efforts in recent decades. It has proved to be one of the most critical challenges facing humankind.

This book grew out of a two-year exploration conducted by the food security theme of the Rockefeller Foundation, focusing on the potential for crop genetic improvement to contribute to food security among rural

populations in Africa. It provides a critical assessment of the ways in which recent breakthroughs in biotechnology, participatory plant breeding and seed systems can be broadly employed in developing and delivering more productive crop varieties in Africa's diverse agricultural environments. It also presents an analysis of current plant breeding and biotechnology strategies for seven key crops in Africa: maize, sorghum, millet, cowpea, rice, cassava and banana.

Price: GBP 27.50.

Orders to: see below.

Nitrate and Man: Toxic, Harmless or Beneficial? J. l'Hirondel and J.L. l'Hirondel. CABI Publishing, Wallingford and New York, 2001, 184 p. ISBN 0-85199-566-7. Hardcover.

Nitrate is ubiquitous. It is present in water, soil, plants and food, and it is also a normal human metabolite. The main external sources of nitrate are vegetables and drinking water. This book examines the relationship between nitrates and human health. Nitrate has been feared as the source of some serious diseases. This book sets out research results to disprove these assumptions, and goes on to explore the beneficial effects of nitrate in preventing infections, cancer and cardiovascular diseases.

Price: GBP 35.00; USD 65.00

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The Sustainable Management of Vertisols. IBSRAM Proceedings No. 20. J.K. Syers, F.W.T. Penning de Vries and P. Nyamudeza, editors. CABI Publishing, Wallingford and New York, in association with the International Water Management Institute (IWMI), Bangkok, 2001, xiv + 304 p. ISBN 0-85199-450-4. Hardcover.

Black cracking clay soils, classified as Vertisols, are an important and important resource in the subtropics and tropics. In Africa, Vertisols occupy an area of over 100 million ha, or 6% of the arable land area. These soils also feature significantly in Australia, India and the USA. The physical properties make them difficult to cultivate and present inherent problems of low infiltration rates, waterlogging and erodibility. In combination with widespread chemical fertility decline, the physical problems represent a major constraint to their sustainable management. Nevertheless, research shows that careful management of the soil surface can control and improve the soil regime, significantly boosting crop yields. Despite a number of success stories, the benefits of new technologies are bypassing many millions of farmers cultivating Vertisols. In May 1999, the International Board for Soil Research and Management (IBSRAM, which merged with IWMI in April 2001) organized a forum for Vertisol researchers from all over the world to review their progress, and develop plans for collaborative research to fill any gaps identified. A key element in the choice of the papers was the need for social and economic aspects of research to be considered alongside the biological and physical aspects. A

series of working groups identified research needs, and the output is included in the book. All papers have undergone a process of peer review, editing, updating and revision. The book provides up-to-date information on Vertisols research and guide readers to important reference material.

After four keynote and overview papers, the publication contains eight country papers. In five papers attention is given to international perspectives on the management of Vertisols.

Price: GBP 55.00; USD 100.00.

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Nitrogen Fixation in Tropical Cropping Systems. Second edition. K. Giller. CABI Publishing, Wallingford and New York, 2001, 448 p. ISBN 0-85199-417-2. Hardcover.

This second edition of the highly successful book, first published in 1991, contains thoroughly updated and revised material on the theory and practice of nitrogen fixation in tropical cropping systems. Nitrogen fixation is especially important when farmers are trying to minimize fertilizer use for cost or environmental reasons. The significant research advances in the last decade on both the fundamental and applied level are covered, including those relating to the classification and description of N₂-fixing bacteria and symbioses and the processes of N₂-fixation.

Price: GBP 60.00; USD 110.00.

Planning Agricultural Research: A Sourcebook. G. Gijbers, H. Hambly Odame, W. Janssen, and G. Meijerink, editors. CABI Publishing, Wallingford and New York, 2001, 363 p. ISBN 0-85199-401-6. Agricultural research is an investment in future production, productivity, and food security. But it is an uncertain business, because the investments required are large and the benefits are unknown and far away. Planning in agricultural research aims to guide the investments towards the most relevant outputs, in the most cost-effective manner. New approaches to planning are emerging that emphasize

the use of plans to identify strategic issues and to help organizations adjust to rapidly changing conditions in the external environment. These ideas are important for agricultural research organizations, which must balance the need to adjust to changing circumstances with the long-term nature of agricultural research. The book provides a variety of perspectives on agricultural research planning, grouped into four sections dealing with the context of planning, planning content, planning processes, and planning tools. A glossary provides an overview of concepts and definitions.

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Some sections are available free of charge in html and pdf formats. See at internet:

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Note: 10% discount is granted to IJSS members, when ordering online at orders@cabi.org, mentioning reference code AVT. This applies to all CABI books mentioned above.

Tropical Ecosystems and Ecological Concepts. P.L. Osborne. Cambridge University Press, Cambridge and New York, 2000, xiv + 464 p. ISBN 0-521-64251-5. Hardcover: 0-521-64523-9, Softcover.

Over one third of the earth's terrestrial surface is situated in the tropics, with environments ranging from hot deserts to tropical rain forests. This introductory textbook, aimed at students in tropical ecology, is a guide to the major aquatic and terrestrial biomes in the tropics. Chapters describe the ecology of deserts, grasslands, savannas, tropical rain forests, lakes, rivers and floodplains, maintains, wetlands, mangroves, coral reefs and tropical islands, with descriptive case studies providing a framework around which ecological concepts are presented. Information is also given on the human ecological dimension, with coverage of issues such as population growth, urbanization, agriculture and fisheries, natural resource use and pollution, conservation of biodiversity, climate change, and the concept of ecological sustainability. The text is supported by boxes containing supplementary material on a range of topics and organisms, plus mathematical concepts and calculations, and is enlivened with diagrams, maps and photographs. A cross-referenced glossary, references and an index are included also.

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Food Security in Sub-Saharan Africa. S. Devereux and S. Maxwell, editors. ITDG Publishing, London, 2001, xviii + 350 p. ISBN 1-85339-523-4. Softcover. Sub-Saharan Africa is the only region in the world currently facing both widespread chronic food insecurity and threats of famine. Why is this so and what can be done? In seeking to answer these questions, the authors have brought together eleven different perspectives on critical food security issues, from the causes of food insecurity to planning and policy interventions. They have drawn on a variety of disciplines, from agricultural economics to nutrition.

An evolution of thinking would appear to have taken place over the last ten years. Food insecurity is no longer seen simply as a failure of agriculture to produce sufficient food at the national level, but instead as a failure of livelihoods to guarantee access to sufficient food to people at the household level. This conceptual shift and related arguments are presented for the non-

specialist reader as well as the development specialist. The contributors illustrate their arguments with empirical data and case studies from across the sub-continent. Price: GBP 15.95.

Orders to: ITDG Publishing, 103-105 Southampton Row, London WC1B 4HL, UK. Fax: +44-20-7436-2013. E-mail: orders@itpubs.org.uk. Homepage: www.developmentbookshop.com.

Organic Recycling & Biofertilisation in South Asia.

H.L.S. Tandon, editor. Fertiliser Development and Consultation Organisation (FDCO), New Delhi, 2001, vi + 167 p. ISBN 81-85116-46-6. Hardcover.

This book is published in the FDCO's series of reference and practical publications on various aspects of mineral, organic and biofertilisers; nutrition of food grains, other field crops and plantation crops through major and micronutrients from diverse sources; analytical methods, non-traditional sectors of fertiliser use and volumes on individual nutrients. The present volume has been prepared largely to put in one place some of the current information on biofertilisers and organic recycling in South Asia, covering Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Most of the 550 abstracts appearing in this publication have been taken from the FAO-RAPA series "Organic Recycling in Asia and the Pacific", volumes 1 to 13. The dominant share of information is from India. It has a subject and an author index.

Price: Rs. 350 in India, elsewhere USD 60.00, including airmail charges.

Orders to: FDCO, 204-204A Bhanot Corner, 1-2 Pamposh Enclave, New Delhi 110 048, India. Fax: +91-11-6417801. E-mail: fdco@vsnl.net. Homepage: www.tandontech.8k.com

Land Use and Cover Change. R.B. Singh, J. Fox and Y. Himiyama, editors. Science Publishers, Enfield and Plymouth, 2001, xi + 299 p. ISBN 1-57808-147-5. Hardcover.

Land-use and land-cover change is a focal theme and emerging issue in the study of global environmental change. Human modifications and alterations of the environment cause impacts on the surface of the earth, threaten global sustainability and livelihood systems, and contribute to changes in the biogeochemical cycles on the earth, which in turn affect atmospheric levels of greenhouse and other trace gases. Scientists working in this area of research have recently drawn attention to the need to integrate research on monitoring land-use and land-cover change from space with research on the socio-economic causes of these changes. Remote sensing observations alone cannot explain the socio-economic and institutional factors that cause land-use and land-cover change, nor can they identify the factors that influence regional trends or local dynamics. These issues can only be addressed by using population and other social science data in a comparative framework. Geographic information systems are used to merge social science variables spatially and temporally with physical science data. This analysis must then be supplemented by field research in order to understand the individual-level decision processes that produce the

land-use and land-cover change.

At a meeting held in Honolulu in July 1999, the papers presented focused on land-use and land-cover change in relation to information bases, historical assessment, modeling, and predication, remote sensing and GIS application, and environmental impact assessment. This book is a compilation of 24 papers presented and discussed, and have been edited and updated. A few invited papers have also been included in order to bridge the gaps in research knowledge.

Price: USD 88.00; GBP 61.00.

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Knowing Where You're Going. Information Systems for Agricultural Research Management.

R. Vernon. International Service for National Agricultural Research (ISNAR), The Hague, 2001, xxxi + 345 p. ISBN 92-9118-054-8. Softcover.

Agricultural researchers, especially in developing countries, are facing serious problems in accessing information. Scientific journals are becoming less and less affordable to most institutions. Research is often inefficient: scientists pursue lines of research unaware that the topic has already been covered in the past, because they have no access to records of former research, even in their own country. Research managers supervise programs and make decisions with insufficient information from within their own research programs, and little or no information on external factors that should have a crucial bearing on research priorities. But there is also good news! Never before has there been such rapid development of information and communication technologies. Capacities and speeds are increasing, while prices are falling. The Internet has opened a vast range of information to millions of users. CD-ROMs provide enormous capacity for cheap storage and distribution of information, even to those without Internet access. Most of the benefit of the information management revolution, however, accrues to the developed countries, and the North-South gap in information access is increasing. It is the target of this book to help reverse that trend. The objective of this book is to provide agricultural research managers at all levels, and information specialists within agricultural research organizations, with a source of ideas, concepts, methodologies, explanations, and guidance in information management within their respective roles. Part 1, covering about one-third of the text, is aimed particularly at research managers and part 2 at information managers. The complete text is also available free of charge from the internet. See: www.isnar.cgiar.org/publications/mis_book.htm.

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Soil and Environmental Science Dictionary. Edited

by E.G. Gregorich, L.W. Turchenek, M.R. Carter and D.A. Angers for the Canadian Society of Soil Science. CRC Press LLC, Boca Raton, London, 2002. xvii + 577 p. ISBN 0-8493-3115-3. Hardcover.

The terminology of soil science is a language in itself. Soil scientists collaborate increasingly with colleagues from many fields, and a basic working knowledge of the vocabularies of those fields improves understanding and enhances the flow of information. This dictionary brings together the conventional vocabulary of soil science with that of many overlapping disciplines. It includes definitions from a range of disciplines such as agronomy, botany, geology, geography, plant science, forestry, biochemistry, applied ecology, microbiology and remote sensing. It has over 4000 terms, which are presented in traditional dictionary format, with equivalent French terms following each definition. The terms are extensively cross-referenced, giving a *deeper understanding of the interdisciplinary nature of soil science*. Indexes group the terms according to discipline and subject area in English and French. Appendices include SI units, tables on the Canadian soil classification and diagrams of soil structure and texture. The Canadian Society of Soil Science should be complimented with the initiative to prepare this practical dictionary!

Price: USD 69.95; GBP 46.99.

Orders to: see below.

Heavy Metals Release in Soils. H.M. Selim and D.L. Sparks, editors. Lewis Publishers, CRC Press LLC, Boca Raton, London, 2001. viii + 249 p. ISBN 1-56670-531-2. Hardcover.

Characterizing the nature of heavy metal release reactions, sorption mechanisms, and movement in the soil is the main topic of this book. Because soils are heterogeneous, heavy metals in soils can be involved in a series of complex chemical and biological interactions including oxidation-reduction, precipitation and dissolution, volatilization, and surface and solution phase complexation. The heterogeneous nature of the different soil constituents adds to the complexity of interactions of heavy metal species with the soil environment. *In the first four chapters, the primary focus is on transport processes and parameters which control the mobility of heavy metals in contaminated and uncontaminated soils, assessment of their potential for migration, and the impact on the soil environment. Models that are often used to describe the reactivity and transport of heavy metals in the soil system are described. The subsequent two chapters are devoted to the kinetics of sorption-release processes in the soil environment. Theoretical and experimental analyses of kinetic and reversible processes are presented. The next two chapters deal with the identification of the major soil parameters affecting metal lability in soils, a requisite to the prediction of metal behavior and establishment of appropriate soil screening levels. The next chapter discusses the sorption and release processes of selenate in various soils typical of the Mediterranean area. In the last chapters, complexation and speciation processes and their influence on heavy metal mobility are discussed in detail.*

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Rice: Nutrient Disorders & Nutrient Management.

A. Dobermann and T.H. Fairhurst. Potash & Phosphate Institute, Potash & Phosphate Institute of Canada, and International Rice Research Institute, 2000. viii + 191 p. ISBN 981-04-2742-5. Softcover. With CD-ROM.

Thirty years ago, persuading rice farmers to use modern varieties and fertilizers was easy, because the yield increases were often spectacular. Fertilizers were subsidized, irrigation facilities improved, rice prices supported, these factors made rice intensification economically attractive. Future yield increases will mostly result from the positive interactions and simultaneous management of different agronomic aspects such as nutrient supply, pest and disease control, and water. Decreasing subsidies and the increasing responsibilities of farmers instead of governments for the maintenance of irrigation facilities means that to achieve the required future increases in rice production, extension services will need to switch from distributing prescriptive packets of production technology to a more participatory or client-based service function. The present handbook and CD-ROM provide a guide for detecting nutrient deficiency and toxicity symptoms and managing nutrients in rice grown in tropical and subtropical regions. Some background information is included on the function of nutrients in the rice plant and possible causes of nutrient deficiencies, together with a description of nutrient deficiency symptoms, the effect of nutrient deficiency on plant growth, and the effect of flooding on nutrient availability. Estimates of nutrient removal in grain and straw have been included, and strategies for preventing and treating nutrient deficiencies are described. The main targets of the handbook are the irrigated and rainfed lowland rice systems. Where appropriate, additional information is given for upland rice or rice grown in flood-prone conditions. The texts are illustrated with many color photographs.

For more information, please contact: tfairhurst@ppi-ppic.org; homepage: www.esiap.org; or e.hetter@cgiar.org; homepage: www.cgiar.com/irri. Price: HDC: USD 80.00; LDC: USD 20.00; plus postage and handling charges of USD 12.00 for HDC and LDC

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Soil Fertility Kit. A toolkit for acid, upland soil fertility management in Southeast Asia. T.S. Dierolf

T.H. Fairhurst and E.W. Mutert. Potash & Phosphate Institute, 2000, x + 149 p. ISBN 981-04-2745-X. Softcover.

In Southeast Asia, the greatest potential for future increases in agricultural production and productivity lies in the 295 million hectares of upland or rainfed land. Most upland soils have a low fertility status and vulnerable to degradation when cleared of the protective forest cover. The major causes for soil erosion and upland degradation in SE Asia are rapid deforestation and poor crop management. Biological, physical and chemical deterioration of these soils mark the onset of a vicious poverty cycle of decreasing yields, income reduction, and environmental destruction, and as a result, most small-scale upland farmers are unable to participate fully in the developing regional market economy. Participatory methods are more suitable than prescriptive packages in upland farming systems development, and technology needs to be developed and tested with the full involvement of local farmers. There is an urgent need for soil fertility recapitalization in the uplands where years of neglect have led to a decreasing soil fertility. The present publication is a compendium of information and methods for managing upland soil fertility in SE Asia. This handbook with its many color photographs, graphs and figures, is a useful toolkit for extension workers, farmers and researchers. Part 1 presents practical tools and participatory approaches for investigation and diagnosis of soil fertility problems in acid, upland soils. Part 2 provides information on the chemical, physical and biological properties of acid, upland soils, and the major causes of soil fertility problems. Part 3 is a compilation of essential information for extension workers and researchers on soil classification, soil/plant sampling and testing, identification of nutrient deficiencies fertilizer recommendations, simple field tests, critical soil/plant nutrient levels, and nutrient uptake and removal in crops. The book also contains a bibliography of relevant publications. Price: USD 15.00, plus USD 10.00 for postage and handling. Discount for bulk orders of two or more copies. Please apply to Ms. Doris Tan at the address mentioned below.

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Sustaining Soil Fertility in West Africa. SSSA Special Publication Number 58. G. Tian, F. Ishida and D. Keatinge, editors. Soil Science Society of America and American Society of Agronomy, Madison, 2001, xxi + 321 p. ISBN 0-89118-838-X. Softcover.

The rapid growth of the population of West Africa and the exploitative use of non-renewable resources in the region have seriously undermined food security. Local production of food is becoming increasingly challenged. Though the reasons for this low productivity are complex, one of the causes is poor levels of soil fertility, resulting from a combination of low activity clay (LAC) soils and a lack of external inputs. Based on research carried out by national and international agricultural research institutions better-integrated practices in soil and nutrient management have been developed.

Progress has been made in understanding how best to manage the LAC soils, through minimizing soil degradation and maximizing the use of local organic nutrient sources in combination with inorganic fertilizers.

This publication is the outcome of a symposium, held in Minneapolis in November 2000. The topics in this volume address the principles, practices, and opportunities for enhancing soil fertility, presenting the current knowledge of the understanding and management of soil fertility in West Africa. The book has 14 chapters arranged in three sections. The first section (5 chapters) highlights information on the storage, turnover, and loss of soil nutrients and organic matter in LAC soils following agricultural intensification. The second section (5 chapters) presents a range of fallow management systems including the use of cover crops and trees. The third section (4 chapters) demonstrates opportunities that exist in the region to achieve substantial levels of additional food production.

Price: USD 30.00.

Orders to: see below.

Humic Substances and Chemical Contaminants.

C.E. Clapp, M.H.B. Hayes, N. Senesi, P.R. Bloom and P.M. Jardine, editors. Soil Science Society of America, Madison, 2001, 502 p. ISBN 0-89118-837-1. Hardcover. With CD-ROM.

There have been numerous publications that deal with humic-anthropogenic and humic-metal interactions, but there has not been a single treatise with all aspects of these interactions. The lack of such a book provided the inspiration for this publication. It is divided into four sections. The first section covers composition and structure of humic substances. The theme for the second section is the interaction with xenobiotics. The chapters take account of adsorption-desorption phenomena involving organic chemicals and humic fractions. The focus the third section is on interaction with metals. Emphasis here is on modeling metal-humic complexation, and due attention is given also to modern spectroscopic analytical procedures, and to applications of nuclear magnetic resonance for investigations of the metal/humic binding mechanisms. The final section examines transport and modeling. This section is of prime environmental importance, especially with regard to the tracing of a contaminant to its source. The CD-ROM combines computational chemistry, scanning probe microscopy and animated virtual reality to allow readers to visualize the chemical reactivity of humic substances in ways we've never been able to before.

Price: USD 54.00.

Orders to: see below.

Sustainability of Agricultural Systems in Transition. ASA Special Publication Number 64. W.A. Payne, D.R. Keeney and S.C. Rao, editors. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, Madison, 2001, 272 p. ISBN 0-89118-149-0. Softcover.

Agriculture has changes during the last few decades, and will change even more during the next few. Modern agriculture faces several daunting challenges,

including global food security, persistent poverty, low commodity prices, dwindling land and water resources, environmental protection, and meeting the demand of diverse social, commercial and political movements. Because of the changing demands placed upon agriculture, and the many technological advances in feed, food and fiber production, agricultural systems of the world are ever in transition. To become sustainable, agricultural systems ought to transition towards ones that are characterized by favorable economics, conservation of resources, preservation of ecology, and promotion of social justice. These issues, with case studies from various countries, are addressed in this publication.

Added in the publication are relevant papers presented at a concurrent symposium entitled *Food Security and Sustainable Development for the 21st Century in India*. Perhaps no country has witnessed greater change in agriculture during the last few decades than India. This nation was threatened by hunger and mass starvation in the 1960's, has become self-sufficient in staple foods, while her population more than doubled. India's agricultural systems face many familiar problems, including flooding, deforestation, soil erosion, overgrazing, air and water pollution and desertification. These important issues related to ensuring food security in India are presented in 7 papers.

Price: USD 48.00.

Orders to: see below.

Proceedings of the 5th International Conference on Precision Agriculture, Bloomington, July 2000. P.C. Robert, R.H. Rust and W.E. Larson, editors. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, Madison, 2001. CD-ROM.

At this well-attended meeting more than 200 oral and poster papers were presented at four concurrent sessions: natural resource variability, managing variability, engineering technology, crop modeling, remote sensing, profitability, environment, technology transfer, and new sessions on geostatistics/sampling, management zones, management of crop qualities, integrated approaches and new applications around the world. Participants were convened in working groups to discuss and make recommendations on needs and use of Decision Support Tools. A summary of the workgroups comments and recommendations are also presented.

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Estimating Uncertainty in Soil Models (Pedometrics '99) I.O.A. Odeh and A.B. McBradney, editors. Special Issue of *Geoderma*, volume 103, nos. 1-2. September 2001, 229 p. Elsevier, Amsterdam, London. ISSN 0016-7061.

This issue of *Geoderma* contains some of the papers presented at the Third Conference of the Working Group on Pedometrics (WG-PM) of the IUSS, held on September 27-29, 1999, at the University of Sydney.

The theme of the conference, *Estimating Uncertainty in Soil Models*, is retained. Uncertainty is inherent in all estimation models of natural phenomena, whether they are stochastic or deterministic, mechanistic or empirical. The 11 papers deal with uncertainty in all these categories in a search for adequate models for describing and explaining soil phenomena quantitatively. Incorporating and evaluating uncertainty remains a huge challenge for pedometrics for the first decade of the 21st century.

Orders to: see below.

Land Use and Sustainability: FAM Research Network on Agroecosystems. P. Schröder, J.C. Munch and B. Huber, editors. Special Issue of *Geoderma*, volume 105, nos. 3-4, February 2002, pp 355-386. Elsevier, Amsterdam, London. ISSN 0016-7061.

Improving information about agroecosystems, developing future strategies for environmentally compatible land use, and achieving agricultural productivity and sustainability under one umbrella are the main goals of the FAM Research Network on Agroecosystems. Scientists of various disciplines study these topics on a 150 ha research farm in Bavaria, Germany. The farm is divided into two farming programs: an organic and an integrated crop production. The researchers record, evaluate and forecast management-induced changes of this agrarian ecosystem and its environment. They seek indicators for sustainable land use and model processes at the field level, the farm level and, whenever possible, at the landscape level.

This special issue of *Geoderma* contains selected research papers from the period 1993-1998, a subset of the wide range of topics encompassing the FAM project: farming and economic aspects, biodiversity and effects on flora and fauna, impacts on soil, water and air, and process modeling. For further information on the FAM project, see <http://fam.weihenstephan.de>
Orders to: see below.

Predicting Land-use Change. A. Veldkamp and E. Lambin, guest editors. Special Issue of *Agriculture Ecosystems & Environment*, vol. 85, nos. 1-3, June 2001, 292 p. Elsevier, Amsterdam, London. ISSN 0167-8809.

Land-use change modeling, especially if done in a spatially-explicit, integrated and multi-scale manner, is an important technique for the projection of alternative pathways into the future, for conducting experiments that test our understanding of key processes in land use changes. Land-use change models should represent part of the complexity of land-use systems. They offer the possibility to test the sensitivity of land-use patterns to changes in selected variables. They also allow testing of the stability of linked social and ecological systems, through scenario building. To assess current progress in this field, a workshop on spatially explicit land-use/land-cover models was organized within the scope of the Land-Use and Land Cover Change project (LUCC). The main developments presented in this special issue concern progress in: (1) modeling and drivers of land use change; (2) modeling of scale dependency of drivers of land use change; (3) modeling progress in

predicting location versus quantity of land use change; and (5) the incorporation of biophysical feedbacks in land-use change models.

Orders to: see below.

XVth ISTRO Conference on Tillage at the Threshold of the 21st Century: Looking Ahead. W.B. Voorhees, guest editor. Special Issue of Soil & Tillage Research, volume 61, issues 1-2, August 2001, 123 p. Elsevier, Amsterdam, London. ISSN 0167-1987. Published in collaboration with the International Soil Tillage Research Organization.

This special issue contains the keynote papers of the 15th ISTRO Conference, which took place in Forth North, from 2-7 July 2001. It contains an overview paper about ISTRO's important history since 1955 and eight keynote addresses, grouped into four general themes: (1) tillage and soil structure; (2) tillage and erosion; (3) tillage and biology; and (4) tillage and sustainable systems.

Orders to: Customer Support Department at the Regional Sales Office in New York, Amsterdam, Tokyo and Singapore. See www.elsevier.nl for details.

The Sustainability of Long-term Growth. Socioeconomic and Ecological Perspectives. M. Munasinghe, O. Sunkel and C. de Miguel, editors. Edward Elgar, Cheltenham and Northampton, 2001, xvii + 463 p. ISBN 1-84064-515-6. Hardcover.

This is a comprehensive review of the links between sustainable development and long-term growth. This state-of-the-art book develops our understanding of the complex issues that will shape sustainable development strategies in the 21st century – economic growth, poverty eradication, environmental protection, social inclusion and good governance. Sustainability is analysed in terms of its economic, social and environmental dimensions. The authors argue that material-intensive conventional economic growth is unsustainable in the long term, unless environmental and social elements are given equal priority. Important issues are critically discussed, including durability versus optimality of development globalization, dematerialization of production and consumption, alternative lifestyles, green national income accounting and environmental valuation, ecodesign, the growing North-South development gap, environmental and trade policy and the equitable distribution of assets and among nations. The coverage ranges from comprehensive analytical models to practical case studies applications, ensuring this will be essential reading for policy analysts and researchers as well as academics involved in economic growth, environmental economics and sustainable development.

Price: GBP 75.00.

Orders to: see below.

Biodiversity in the Balance. Land Use, National Development and Global Welfare. R. Cervigni. Edward Elgar, Cheltenham and Northampton, 2001, xix + 271 p. ISBN 1-84064-345-5. Hardcover.

Biodiversity has become over the last couple of decades the subject of world-wide debate, due to mounting con-

cerns about the negative consequences of its accelerating decline. The contribution of biological resources both to sustainable national development and to the well being of the international community has been underestimated in the past. Ecological and biological research is increasingly pointing to the possibility that "low" diversity of life forms may threaten the satisfaction of material needs, imperil the life support functions of natural systems, and in general deprive present, and more likely future generations of material and spiritual benefits related to a biologically diverse planet. At the same time, biodiversity is a concept that encompasses multiple scientific dimensions (genetic, species and ecosystem levels), multiple scales (local, national and international), and multiple justifications (materialistic, ethical, religious) for concern and action. As a result, there seems to be little clarity on what should constitute the objectives of public policies for biodiversity conservation and management. One set of issues appears of particular interest, and is addressed in this book. These revolve around the broad question of whether there are options to conserve the benefits of biodiversity without compromising the benefits of development. Specific questions that stem from this are: how much land may be allocated to productive uses without compromising the ability of biodiversity to contribute to human welfare? Will the development process continue to exert pressure on biodiversity, or will it generate incentives for its sustainable use? Does the international community have a role in facilitating the transition towards sustainability?

This book contains a collection of writings, drafted between 1993 and 1998. The introductory chapter summarizes the main terms of the scientific and policy debate. Chapter 2 proposes a framework to analyse the sequence of land use changes typically observed in a number of tropical countries; and discusses different policy interventions which could alter the incentives for land conversion. A model that addresses the allocative and incentive implications of the incremental cost mechanism is proposed in Chapter 3. The actual process of land use change is presented in a case study made in the region of Sierra de Santa Marta, Mexico. The social and economic factors are presented, and an economic model is then proposed for simulating further impacts at the farm level over the next decade in Chapters 4 and 5. Chapter 6 considers the problem of the appropriate mix of conservation and sustainable use management options in the study area. It further formulates tentative policy conclusions and sketches line of possible future research.

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Labormethoden-Dokumentation. Geologisches Jahrbuch, Reihe G, Heft 8. J. Utermann, coordinator, unter Mitarbeit von A. Gorny, M. Hauenstein, V. Malessa, U. Müller und B. Scheffer. Bundesanstalt für Geowissenschaften und Rohstoffe und den Staatlichen Geologischen Diensten in der Bundesrepublik

Deutschland, Hannover. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 2000, 215 S. ISBN 3-510-95864-0. ISSN 1431-5084. Mit CD-ROM.

Die Staatlichen Geologischen Dienste setzen für viele Bodenkenngrößen unterschiedliche bodenanalytische Verfahren ein. In der vorliegenden Labormethoden Dokumentation wird eine Prioritätensetzung in dem Sinne vorgenommen, dass allgemein verwendete Verfahren aufgenommen sind, ohne dabei weniger verbreitete Verfahren unberücksichtigt zu lassen.

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Encyclopedia of Global Change. Environmental Change and Human Society. A. Goudie, editor-in-chief, D.J. Cuff, associate editor. Oxford University Press, Oxford, 2001, 1440 p. ISBN 0-19-510825-6. Hardcover.

This comprehensive and interdisciplinary guide to the Earth's environment includes 320 entries, 300 graphs, *photographs and maps*. It describes the current knowledge of natural and anthropogenic changes in the physical, chemical and biological systems and resources, and explores the effects of those on changes in human society. The articles cover concepts of global change, earth and earth systems, human factors, resources, responses to global change, agreements and associations, institutions, policies, biographies and case studies. Enhanced by 1500 charts, diagrams, and other illustrations, extensive cross-references, bibliographies and an index, the encyclopedia links essential knowledge across many fields, including geography, geology, geophysics, atmospheric science, political science, economics, technology, and others.

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+44-1536-454-518. E-mail: book_orders@oup.co.uk. Homepage: www.oup.co.uk. Or: Order Department, OUP, 2001 Evans Road, Cary, NC 27513, USA. Homepage: www.oup-usa.org.

Remote Sensing for Tropical Ecosystem Management. United Nations.

Monitoring the Earth's environment by remote sensing provides an opportunity for greater information sharing and predicting changes in the Earth's environment. These conference proceedings spread an awareness among managers and planners concerned with natural resources and environmental management about the usefulness of remote sensing and geographic information system techniques in aping, monitoring and managing the land and its resources in tropical environments. Recently have been published:

Proceedings of the Sixth Regional Seminar on Earth Observation for Tropical Ecosystem Management, Ho Chi Minh City, Viet Nam, 3-7 November 1997, 116 p. Sales number E.99.II.F.32. USD 40.00.

Proceedings of the Seventh Regional Seminar on Earth Observation for Tropical Ecosystem Management, Dhaka, Bangladesh, 7-11 December 1998, 112 p. Sales number E.99.II.F.68. USD 40.00.

Proceedings of the Eighth Regional Seminar on Earth Observation for Tropical Ecosystem Management, Yangon, Myanmar, 25-29 October 1999, 148 p. Sales number E.00.II.F.52. USD 50.00.

Orders to: see below.

Compendium of Soil Clean-up Technologies and Soil Remediation Companies. 2nd edition, 2000. United Nations, New York, Geneva, 2000, vii + 143 p. ISBN 92-1-116748-5. Sales number E.00.II.E.7. Softcover.

This compendium outlines the major clean-up technologies, which have been well established in the commercial soil remediation sector. The technologies are grouped according to the mechanism employed: chemical, physical or biological. It also presents a listing of non-commercial websites, which provide information about technologies, companies and events in the soil decontamination field. In addition, the publication offers a list of soil remediation companies giving contact information, technologies used and number of employees.

Price: USD 40.00

Orders to: United Nations bookstores and distributors around the world, or: United Nations Publications, Sales Office and Bookshop, CH-1211 Geneva 10, Switzerland. Fax: +41-22-917-0027. E-mail: unipub@unog.ch. Or: United Nations Publications, Sales and Marketing Section, 2 United Nations Plaza, Room DC2-853, Dept. C023, New York, NY 10017, USA. Fax: +1-212-963-3489. E-mail: publications@un.org. Homepage: www.un.org/publications.

Monitoring Nutrient Flows and Economic Performance in Tropical Farming Systems (NUTMON).

Part 1: Manual for the NUTMON-toolbox. And Annex. J. Vlaming, H. Van den Bosch, M.S. van Wijk, A. De Jager, A. Bannink and H. van Keulen. Alterra,

Wageningen and Agricultural Economics Research Institute, The Hague, 2001, 180 p. and 137 p. ISBN 90-327-0303-X. Ringbinder. With CD-ROM.

Soil fertility is a dynamic entity. While parts of Western Europe and North America face surpluses of nutrients and related pollution problems, large parts of the tropics see their soil fertility gradually decrease. Many tropical soils are very old, and such soils are already deprived from soil nutrients by weathering and leaching. Soil fertility decline is a largely invisible, gradual process, which does not get enough attention. Although it is hard to quantify rates of soil fertility decline, the picture for Africa and presumably large parts of other tropical continents, is one of slow to rapid decline. Each year farmers derive part of their income from soil nutrients. The NUTMON (NUTrient MONitoring) programme was developed to study the relation between soil fertility decline (or nutrient mining) and household income.

The present NUTMON-toolbox enables a full-fledged nutrient and monetary analysis of (a group of) farm households and their constituents. After describing the momentary picture by a farm inventory, a farm monitoring can be performed, showing where and how fast soil fertility changes, and how this relates to farm economic performance indicators. Several modules have been built-in, such as relating fodder production to feed intake by number of livestock units and their production of milk, meat and manure. After this diagnosis, the Toolbox allows comparison of development options by bringing in 'better' farming systems based on integrated nutrient management (INM) technologies. The Toolbox can assist in showing farmers how different INM technologies change both the soil fertility level as well as their farm income.

The Toolbox includes four modules and two databases that together facilitate nutrient monitoring at the level of individual farmers' fields and farms as a whole. The following modules are included: (1) a set of Questionnaires that collects the required farm-specific information on management, the farm environment, the farms household, soils and climate; (2) a Data Entry Module that facilitates entry of the data from the questionnaires into the computer; (3) a Background Data Module, storing non-farm-specific information on crops, crop residues, animals, inputs and outputs; and (4) a Data Processing Module that calculates nutrient flows, nutrient balances and economic indicators, based on the farm-specific data from the questionnaires and general data from the Background Database, using calculation rules and assumptions. The included databases are: (1) a Background Database containing non-farm-specific information on, for instance, nutrient content of crop and animal products, crop and livestock parameters; and (2) a Farm Database storing farm-specific information.

The set is nicely produced with clear figures, forms, and photographs. For more information see: www.nutmon.org.

Price: EUR 250, plus VAT when applicable. Free for Universities, National Research Institutions and relevant NGO's in developing countries. See for details the homepage mentioned above.

Orders to: Alterra, P.O. Box 47, 6700 AA Wageningen,

The Netherlands. Fax: +31-317-419000. E-mail: nutmon-support@alterra.wag-ur.nl.

Homepage:

www.nutmon.org.

Sustainable Agriculture in Sub-Saharan Africa. The Role of Soil Productivity. A.J. Rayar. AJR Publication, Chennai, 2000, xviii + 339 p. ISBN 81-7525-181-6. Softcover.

The primary aim of this book is to provide a general outline of the various multifaceted factors, particularly soil productivity that influence sustainable agriculture in Sub-Saharan Africa. There is growing need for a well-documented information source on the interrelationship between sustainable agriculture and long-term soil productivity, and the author treats all relevant factors involved. In this publication the main thrust of emphasis is on technically feasible, economically profitable, environmentally sustainable and socially acceptable means of increasing and maintaining soil productivity on a long-term basis. Issues such as those related to the impact of desertification and soil degradation, the role of biotechnology, integrated fertilizer management, the role of organic matter and appropriate soil management strategies are also discussed. The author, who has an experience of more than 20 years in Nigeria and Rwanda, calls also for a range of institutional matters: active environmental pressure groups in every country to monitor activities related to environment, and effective international linkages among research institutions.

Price: USD 35.00; EUR 41.55.

Orders to: Prof. A.J. Ayar, Higher Institute of Agriculture & Livestock, Ribilisi, B.P. 3971, Kigali, Rwanda. E-mail: aj_rayar@yahoo.com.

Comparative Performance Analysis of Agro-Ecosystems. C.A.J.M. de Bie. Doctoral thesis, ITC dissertation no. 75. ITC, Enschede, 2000, 232 p. ISBN 90-5808-253-9. Softcover.

In this doctoral thesis land use concepts and land evaluation approaches are reviewed. Recent advances in information technology can contribute to a more efficient use of land management information for the improvement of land use planning. The author introduces new land use database software and a comprehensive method of land use impact and productivity studies. The Comparative Performance Analysis (CPA) is introduced as a new method for land use impact and yield gap studies, the yield gap being the difference between the average farm yield and its potential. Three case studies in Thailand and Kenya demonstrate the applicability of the CPA.

Price: EUR 13.61.

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Conservation Agriculture, A Worldwide Challenge. Volume I: Keynote Contributions. Volume II: Offered Contributions. L. García-Torres, J. Benites and A. Martínez-Vilela, editors. ECAF, Córdoba. Volume I, xii + 391 p. ISBN 84-932237-1-9. Volume II, xxxi + 815 p. ISBN 84-932237-2-7. Set of two volumes: ISBN 84-932237-0-0. Hardcover.

These volumes contain the proceedings of the First World Congress on Conservation Agriculture (Madrid, 1-5 October 2001), which was organized by the FAO and the European Conservation Agriculture Federation (ECAAF). Serious problems of land degradation, desertification, declining soil fertility and agricultural production levels are occurring in large parts of the world. These are for a part caused by the effects of plough-based or hoe-based agriculture on the soil as a rooting environment. Inappropriate land management practices cause the soil to become more compact, the organic matter content to be reduced and water runoff and soil erosion to increase. They also lead to the effects of droughts becoming more severe and the soil becoming less fertile and less responsive to fertilizer. There is now a wealth of evidence from examples throughout the world of sustainable production systems that can be achieved when the basic principles of good farming practice is applied. The term being adopted for such systems is Conservation Agriculture (CA). This implies conformity with three general principles: no mechanical soil disturbance, direct seeding and planting; permanent soil cover, making particular use of crop residues and cover crops; judicious choice of crop rotations. CA has demonstrated that high production levels can be combined with enhancing the natural resource base and conserving the environment. Globally, CA is being practiced on about 60 million hectares, and the rate of adoption is growing. To promote the dissemination of information through workshops and meetings, the 2001 Madrid Conference was organized as a high-profile example.

Volume I of the Proceedings contains 40 keynote papers, Volume II the 153 contributions presented at this well-attended first international congress on Conservation Agriculture.

Price: EUR 60.00 plus postal charges.

Orders to: European Conservation Agriculture Federation (ECAAF), CIFA Alameda del Obispo, Avda Menéndez Pidal, s/n, Apdo 3092, E-14080 Córdoba, Spain. Fax: +34-957-760797. E-mail: ecaf@arrakis.es. Homepage: www.ecaf.org/congress/latest_news.htm.

World in Transition: Conservation and Sustainable Use of the Biosphere. H.-J. Schellnhuber, J. Kokot, F.O. Beese, et al. German Advisory Council on Global Change (WBGU). Published by Earthscan, London and Sterling, 2001, xxvi + 451 p. ISBN 1-85383-802-0. Hardcover.

Biodiversity – the planet's natural capital – is undergoing a dramatic collapse: its 'Sixth Extinction'. The losses, which are due to human activities and overexploitation of the biosphere, are irreversible. They are undermining the basis of future well-being and prosperity – including genetic resources, food production, climate stability, and coastal and soil protection. This volume presents an analysis of the state of the biosphere. In it, the scientists of the German Advisory Council on Global Change show that the time remaining for remedial action is fast disappearing and they set out a range of initiatives to be undertaken at different levels. Among their main urgent recommendations are: (1) protect 10 to 20 per cent of the global land area; (2) establish an

International Panel on Biodiversity to provide scientific advice; (3) conservation of the diversity of cultivated as well as wild plant species; (4) extend bioregional management and nature sponsorship; and (5) a greater multilateral cooperation and implementation of the Convention on Biological Diversity. It is a thorough, interdisciplinary view of the biosphere, covering both science aspects as well as policy issues.

Price: GBP 50.00. If ordered online from Earthscan directly: GBP 40.00.

Orders to: see below.

World in Transition 2. New Structures for Global Environmental Policy. H.-J. Schellnhuber, J. Kokot, F.O. Beese, et al. German Advisory Council on Global Change (WBGU). Published by Earthscan, London and Sterling, 2001, 242 p. ISBN 1-85383-852-7. Hardcover.

International institutions and structures are crucial to the management of the global environment. Today, more than 900 bilateral and multilateral environmental treaties are in force. Nevertheless, the most pressing problems of global environmental change remain unresolved – some, indeed, are intensifying – and alternative institutional responses are urgently needed. In this volume the current problems are analysed and comprehensive and persuasive policies for a successful future regime are set out. The authors offer a vision of reforming the United Nations in the environmental arena that they term the 'Earth Alliance', comprising three interlocking realms: (1) Earth Assessment: the establishment of an independent body to provide advance warning of the risks of particular environmental changes. (2) Earth Organization: the radical redesign of the organizational core of the international policy, centered on the establishment of an International Environmental Organization, with the existing United Nations Environment Programme as its initial nucleus. (3) Earth Funding: the exploration of new avenues for financing global environmental policy.

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Orders to: see below.

Farmer Innovation in Africa. A Source of Inspiration for Agricultural Development. C. Reij and A. Waters-Bayer, editors. Earthscan, London and Sterling, 2001, xxii + 362 p. ISBN 1-85383-816-0. Softcover.

One of Africa's major untapped resources is the creativity of its farmers. This book presents a series of clear and detailed studies that demonstrate how small-scale farmers experiment and innovate in order to improve their livelihoods, despite the adverse conditions and lack of appropriate external support with which they have to contend. The studies are based on fieldwork in a wide variety of farming systems throughout Africa, and have been written primarily by African researchers and extension specialists. Examples show how a participatory approach to agricultural research and development that builds on local knowledge and innovation can stimulate the creativity of all involved – not only the farmers. This approach, which recognizes the farmers as the crucial component of success, pro-

vides a much-needed alternative to the conventional 'transfer of technology' paradigm.

This book is a rich source of case studies and analyses of how agricultural research and development policy can and should be changed. It presents evidence of the resilience and resolution of rural communities in Africa and will be an inspiration for development workers, researchers and policy makers, as well as for students and teachers of agriculture, environment and sustainable development.

Price: GBP 18.95. Special Reader Offer if ordered online from Earthscan directly: 15% discount.

Orders to: see below.

Handbook of the Field Assessment of Land Degradation. M.A. Stocking and N. Murnaghan. Earthscan, London and Sterling, 2001, xiii + 169 p. ISBN 1-85383-831-4. Softcover.

With the increasing concern over rural livelihoods and the food security of poor communities in developing countries, it is vital that the land quality is maintained. Yet land degradation is widespread and is lowering the productive capacity of the land in these countries. This practical guidebook presents simple, non-technical indicators for assessing land degradation in the field. Based on the perspective of the farmer, the methods selected lend meaning to real farming situations, helping the field professional to understand not only the impact of degradation but also the benefits to be gained from reversing it.

The handbook shows how to calculate indicators such as those of soil loss and explains the interpretation of results and, in particular, how combinations of different indicators can give conclusive evidence of the severity of land degradation. The focus of the book is on understanding the farmer's interaction with the land, and how environmental protection, food security and the well being of rural land users may be assured. With many figures, colour photographs, worked examples and sample forms based on assessment techniques validated by field professionals in Africa, Asia and Latin America, this will be an essential training manual for field-workers, researchers in educational institutions and students. An outline for a two-week training workshop in land degradation field assessment is also given, as well as an annotated bibliography for further reading, and a listing of websites.

Price: GBP 25.00. Special Reader Offer if ordered online from Earthscan directly: 15% discount.

Orders to: see below.

Dynamics & Diversity. Soil Fertility and Farming Livelihoods in Africa. Case studies from Ethiopia, Mali and Zimbabwe. I. Scoones, editor. Earthscan, London and Sterling, 2001, xii + 244 p. ISBN 1-85383-820-9. Softcover. ISBN 1-85383-819-5. Hardcover.

The management of Africa's soils is one of the major challenges facing agriculture and livelihoods in the 21st century. Policies to address this tend to assume that soils are being degraded on a large scale, and that farmers' practices often contribute to a 'downward spiral' of degradation and poverty – a familiar narrative of negative environmental change.

But have policies been attuned to local-level understandings of soils and their change? What can we learn from a detailed understanding of the way farmers actually manage their soils and the social and environmental processes that result in their transformation? Is the story of environmental change always so gloomy? What factors encourage more positive trends? These are just some of the critical questions addressed in this book. Based on a series of detailed case studies from Ethiopia, Mali and Zimbabwe, it explores the complex dynamics of soil fertility change from an interdisciplinary perspective, looking at the way farmers actually manage their soils and the social and environmental processes that determine their transformation. Through this analysis, new ways of thinking about agricultural development policy and practice are presented.

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Trace Elements in Terrestrial Environments. Biogeochemistry, Bioavailability, and Risks of Metals. Second edition. D.C. Adriano. Springer-Verlag, New York, Berlin, 2001, xii + 866 p. ISBN 0-387-98678-2. Hardcover.

The first edition of this book appeared in 1986 under the title *Trace Elements in the Terrestrial Environment*. The primary objective was to provide students and professionals with a comprehensive book about many important aspects of trace elements in the environment. The present edition follows a similar format, but includes new chapters on biogeochemistry, bioavailability, environmental pollution and regulation, ecological and human health effects, and risk and risk management and expanding the coverage to include freshwater systems and groundwater where appropriate. In addition to plants, which were the main biota of emphasis in the first edition, fish and wildlife and invertebrates are discussed as necessary. The ecological and human health effects of major environmental contaminants, such as As, Cd, Cr, Pb and Hg are also highlighted, along with relevant information on potential risks to the ecology and human health.

The chapters are organized by element, which are grouped into "the big five" environmental metals, the essential elements, and other trace elements. For all elements are given: the general properties; the production and uses; the element in nature; the element in soils; the element in plants; factors affecting mobility and bioavailability of the element; the element in animal and human nutrition; the sources of the element in the environment; and an extensive listing of references. As with the first edition, the book contains many tables and figures.

Price: USD 198.00; GBP 161.50; SFR 403.39.

Orders to: see below.

Treatment of Contaminated Soil. Fundamentals, Analysis, Applications. R. Stegmann, G. Brunner, W.

Calmano and G. Matz, editors. Springer-Verlag, Berlin, Heidelberg, 2001, xvi + 658 p. ISBN 3-540-41736-2. Hardcover.

Anthropogenic activities have resulted in contaminated soils covering significant areas of land. In the 1980s people recognized the size and the consequences of this problem. The developed treatment and remediation processes were often very pragmatic. There was a lack of a scientific basis and a need for further development. There are four main alternatives for the treatment of contaminated soils: (1) leave the contamination as it is, but restrict the utilization of the land; (2) complete or partial encapsulation of the contamination; (3) excavation of the contaminated soil and land filling; and (4) treatment of the contaminated soil *in-situ*, either at an onsite or central plan. In the long term, the only alternative that makes sense is the decontamination of the polluted soil. Only by this means the problem can be solved without transferring it to the future; the soil needs to be used without any restrictions. This optimum solution cannot always be achieved, and compromises *have to be made*.

In the actual remediation, mechanical, thermal and biological processes are usually practiced. The state of the art is characterized by a multitude of procedures. This situation has been achieved by intensive worldwide research where processes have been optimized and further developed. It was essential to adapt and further develop the *chemical analytical methods and the monitoring processes* for contaminated soil. In addition, the treatment goals have been elaborated and defined, as toxicological and ecotoxicological target values are now available on a scientific basis. Technical soil protection has been developed into a newly acknowledged scientific discipline, where an integrated cooperation among scientists from different disciplines of engineering, chemistry, biology, soils, geology and environmental planning is essential. The book contains the following main parts: (1) fundamental aspects (3 papers); (2) chemical analysis of contaminated soils (6 papers); (3) ecotoxicological assessment of soils (2 papers); (4) bioremediation (14 papers); (5) physical treatment (8 papers); and (6) natural attenuation (3 papers). The appendix offers a survey of materials, test methods and apparatus, as well as a description of analytical directions and processes.

Price: EUR 125.19; GBP 86.50; USD 129.00.

Orders to: see below.

Understanding the Earth System. Compartments, Processes and Interactions. E. Ehlers and T. Krafft, editors, in collaboration with C. Moss. Springer-Verlag, Berlin, Heidelberg, 2001, xvi + 290 p. ISBN 3-540-67515-9. Hardcover.

This volume includes revised versions of most of the presentations made at an international conference under the same title as this book, which was held in Bonn in November 1999.

There is no doubt that "Global Change" and its scientific analysis and interpretation are on the forefront of international research efforts. Since the detection of global warming, first signs of world-wide melting of ice-masses and glaciers, indications of sea-level rises

and/or depletion of the atmospheric ozone-layers, increasing number of scientists have devoted their research to the solution of these and related problems. Global change research and its development over the last 20 or 30 years are testimony not only to the almost unbelievable broadening and deepening of themes, but also to a shift of scientific disciplines. As a matter of fact: the title of the conference and the publication of its proceedings are part of this development. The book has four parts: (1) Panorama: the Earth system: analysis from science and the humanities (5 papers); (2) Focus Water in the Earth system: availability, quality and allocation in cross-disciplinary perspectives (3 papers); (3) Perspective: advancing our understanding: reductionist and/or integrationist approaches to Earth system analysis (5 papers), and (4) Appendix: Working Group reports (6 papers).

Price: EUR 106.95; GBP 68.50; USD 99.00.

Orders to: see below.

Plant Nutrient Acquisition. New Perspectives. N. Ae, J. Arihara, K. Okada and A. Srinivasan, editors. Springer-Verlag, Tokyo, Berlin, 2001, xvi + 520 p. ISBN 4-431-70281-4. Hardcover.

This book is a compilation of research papers presented at an international workshop, held in Tsukuba, Japan, in 1998. The objectives of this workshop were to discuss newly emerging concepts of the mechanisms that plants use to acquire soil nutrients, and to relate those concepts in the context of applied agriculture.

New research reveals that plants actively acquire nutrients; the acquisition process is not a passive one in which plants simply wait for dissolved nutrients to come closer to their roots. In fact, plants play a far more active role than once understood to be possible in nutrient acquisition and in adaptation to problem soils. This book presents an overview and summary of concepts of plant nutrient acquisition mechanisms, and sets forth their practical implications in crop production. The scope is wide-ranging, from biochemical, molecular, and genetic analysis of nutrient acquisition to global nutritional problems. Part I is a historical review, part II has 4 papers on root exudates in nutrient acquisition and metal tolerance. Part III, entitled Cell apoplast in nutrient acquisition and metal tolerance, contains 6 papers. Part IV, Contribution of soil microorganisms and soil fauna, has 3 papers. Part V, Direct incorporation of soil micro and macro organic molecules, contains 4 papers, while in Part VI, 3 papers deal with the practical implications. In the Epilogue, the organizers of the workshop make a plea for reducing dependence upon mineral fertilizers to increase food crop production through greater use of natural soil components and processes. The book is well produced and has 230 figures.

Price: EUR 164.00.

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Sustainable Water and Soil Management S. Kunst, T. Kruse and A. Burmester, editors. Springer-Verlag, Berlin, Heidelberg, 2002, xvi + 393 p. ISBN 3-540-42428-8. Hardcover.

This book looks at the pressing problems of water and soil management, presenting state-of-the-art knowl-

edge and exploring future projects. Special consideration is given to the perspective of developing countries, based on experience gained at the International Women's University (ifu), held in Hannover in the summer of 2000, as part of the EXPO 2000 World Exposition. In three months, 747 women junior scientists from 115 countries, of which more than 60% came from the developing world, studied at the International Women's University, the staff consisted of 313 women lecturers and visiting scholars from 49 countries. The present volume is the first in a series presenting the results of ifu's pilot semester to the international scientific community. The following topics are addressed: introductory chapters about the framework and the innovative aspects of the project; scientific aspects regarding wastewater treatment and reuse, water distribution and rainwater harvesting, river development planning, health and sanitation, technical and social aspects of water management. Throughout the chapters use is made of case studies, many of which in developing countries. In the appendix is a manual for the analysis of soils and related materials.

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Food Security for Papua New Guinea. Proceedings of the Papua New Guinea Food and Nutrition Conference. PNG University of Technology, Lae, 26-30 June 2000. ACIAR Proceedings No. 99. R.M. Bourke, M.G. Allen and J.G. Salisbury, editors. ACIAR, Canberra, xviii + 892 p. ISBN 1-86320-308-7 (printed), 1-86320-309-5 (electronic). Softcover.

Between 1970 and 1999 nearly 30 conferences devoted to food production or human nutrition in Papua New Guinea (PNG) were held. An important meeting took place in June 2000, of which the proceedings are recorded in this publication. Part 1: Food Security and Nutrition, has six sections: Food Security, Policy Issues (7 papers) Food Security, General (12 papers), Food Shortages and the 1997 Drought and Frosts (17 papers), Renewable Resource Management (14 papers), Human Nutrition (7 papers), Information and Extension (9 papers). Part 2: Food Production in PNG, has five sections: Food Production, General (13 papers), Animal Production (10 papers), Crop Production, Sweet Potato (9 Papers), Crop Production, Other Root Crops (9 papers), and Crop Production, Non-root Crops (8 papers). The last part of the book has a conference summary and recommendations for policy and programs. The book is available online at: www.aciar.gov.au/publications/proceedings/99/index.html.

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Soils Magic. Geotechnical Special Publication 114.

D.J. Elton. American Society of Civil Engineers, 2001. 60 p. ISBN 0-7844-0568-9. Softcover. With CD-ROM. This book consists of a fascinating collection of simple and inexpensive experiments focusing on the principles of soil mechanics. The experiments are suitable for students from elementary school to college, while teaching them about science and the behavior of soil. From turning soil into fluid to making water flow uphill, each experiment conveys a principle of science through a mysterious and captivating "magic trick". The CD-ROM provides video footage of actual experiments and their results. Very suitable for science teachers, or anyone who wants to make science and engineering fun and easily accessible.

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Plant Nutrient Management in Hawaii's Soils.

Approaches for Tropical and Subtropical Agriculture. J.A. Silva and R.S. Uchida, editors. College of Tropical Agriculture & Human Resources, University of Hawaii at Manoa, 2000. 158 p. ISBN 1-929235-08-8. Softcover.

Agriculture in the Hawaiian Islands has a history that is somewhat unique, but it has also strong similarities to agriculture elsewhere in the Pacific, and in many other (sub) tropical locations as well. The islands contain 11 of the 12 soil orders of the USDA Soil Taxonomy, and a variation in temperature from warm subtropical lowlands to temperate conditions at the highest elevations. These varied soil and climate conditions complicate methodological approaches to agriculture.

This book presents information on how soils provide nutrients to plants and how soils can be managed to improve their nutritional status for plant growth. The book is intended to help growers and extension personnel understand how soil and plant tissue analyses are interpreted to diagnose plant nutrition problems and how soil management recommendations are developed to prevent or correct those problems. Although the details discussed are about soils and crops found in the Hawaiian Islands, the general information on soil conditions and nutrient management are applicable in many other regions of the world, where plants, soils and climate are similar to those of Hawaii.

Price: USD 14.00, plus handling and shipping charges.

Orders to: University of Hawaii, College of Tropical Agriculture and Human Resources, 3050 Maile Way, Gilmore Hall 11, Honolulu, Hawaii 96822. Fax: +1-808-956-5966. E-mail: ctahrpub@hawaii.edu. Homepage: www2.ctahr.hawaii.edu/oc/forsale.

Strunz Mineralogical Tables, Chemical Structural

Mineralogical Classification System, 9th edition. H. Strunz and E.H. Nickel. E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, 2001. x + 870 p. ISBN 3-510-65188-X. Hardcover.

This book was first published in 1941, in German. The present ninth edition, the first in the English language, is completely revised and updated, incorporating a large number of data on new minerals and new data on previously described minerals. The book uses a chemical-structural mineral classification system. All minerals are apportioned into one of ten classes according to their principle anionic constituents. Each of these ten classes is broken down into divisions, subdivisions and groups, based on chemical composition and crystal structure. A simple alphanumeric coding system is applied to the various categories.

The data are presented in tabular form, with minerals grouped by structure type, and include the chemical formula and crystallographic parameters for each mineral, as well as the authors of the original mineral description. Literature references to reports of crystal structure determinations and to the more recent descriptive papers are also provided. Each group is accompanied by a brief description of the crystal structures of the minerals comprising the group, and crystal-structure drawings are given for many of the important structure types.

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Humic Substances: Chemistry and Function. Special issue of Soil Science, volume 166, number 11, November 2001, pages 721 to 871.

This special issue of the journal Soil Science contains 10 papers on several issues related to humic substances. It is the primary objective of this collection of papers to provide the readers of Soil Science with a current analysis of the status of the research and with a foundation for future quests into the nuances of the structure and function of a keystone in the function of our environment – soil humic acid. According to the editor-in-chief of Soil Science, Robert L. Tate III, it is the hope of all involved in the production of this issue that the data presented, the theories postulated, and the debate revealed herein will stimulate renewed quests into the complexities of the enigmatic, elusive humic acid molecule and the importance of this complex organic substance to ecosystem function, behavior of toxicants, and sustainability and resilience of land-based systems in general. Price: USD 30.00.

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Soil Science Simplified. Fourth edition. M.I. Harpstead, Th.J. Sauer and W.F. Benneth. Illustrated by

M.C. Bratz. Iowa State University Press, Ames, 2001, vii + 225 p. ISBN 0-8138-2942-9. Hardcover.

The third edition of this book appeared in 1997. As with the former editions, this book explains soil science in an easily understandable manner for persons wishing to have a working knowledge of the many aspects of soil science and be able to apply the information to their endeavors. It covers soil formation, soil components, chemistry, fertility, classification and conservation.

At one time, soil science was largely directed toward agriculture. Farming remains at the forefront of food production and is, more than ever, concerned with soils; but the properties of soils affect everyone who works with soils. Horticulturists, foresters, landscape architects and home gardeners frequently seek an in-depth understanding of soils, so do persons engaged in waste disposal, and engineers who need to understand how the physical and chemical properties of soils react to human installations and manipulations. This fourth edition expands and updates each topic. New approaches to content have been incorporated to increase the reader's ease in understanding explanations. The illustrations demonstrate the principles described in the text and enhance comprehension. The book ends with a useful glossary and index.

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The Encyclopaedic Dictionary of Environmental Change. J.A. Matthews, co-ordinating editor, E.M. Bridges, C.J. Caseldine, A.J. Luckman, G. Owen, A.H. Perry, R.A. Shakesby, R.P.D. Walsh, R.J. Whittaker and K.J. Willis, editors. Arnold, London, co-published in the USA by Oxford University Press, New York 2001. xiii + 690 p. ISBN 0-340-74109-0. Hardcover. Environmental change has become a subject of major concern and has a wide and rapidly developing terminology. This comprehensive reference provides definitions and explanations of all the important environmental terms likely to be encountered in this field of study. The entries range from concise accounts of basic terms to longer discussions of the important issues and more complex aspects of environmental change. The dictionary covers the diverse sources of evidence of environmental change; it's local, regional and global effects; and the approaches and techniques used for reconstructing, dating, monitoring, modeling and predicting change. It addresses both natural and anthropogenic changes affecting the Earth in the past, the present and future over geologic, intermediate and short timescales. The editors have taken an interdisciplinary approach extending from the natural environmental sciences into relevant areas of the physical, Earth, biological, archaeological and social sciences. They have striven to provide an up-to-date synthesis of all aspects of environmental change.

This intermediate between dictionary and encyclopaedia on environmental change contains more than 7000 terms and concepts, defined, exemplified and cross-referenced in over 3450 entries. There are several levels of entries, ranging from a definition alone (one or two sentences); there are 2200 entries of this type) to short reviews of about 1000 words (54 entries), and over 1000 entries at intermediate level. The longest entries cover broad topics or areas of understanding that are particularly relevant to environmental change. Entries at intermediate level cover terms that may appear in one or more of the longer entries, but the importance of which in the context of environmental change is deemed to warrant separate treatment. Shorter entries include terms likely to be encountered but not always in an environmental-change context. This excellent book for persons interested in environmental change in a broad sense is fully illustrated and referenced to publications in the English language.

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Organo-Clay Complexes and Interactions. S. Yariv and H. Cross, editors. Marcel Dekker, New York and Basel, 2002. viii + 687 p. ISBN 0-8247-0586-6. Hardcover.

Organo-clay complexes occur everywhere in nature, and the interaction between organic matter and clay minerals was one of the most important reactions in determining the history of our planet. The systematic scientific study of clay-organic interactions started at the beginning of the twentieth century. In the past 60 years various advanced studies have been carried out and published. This book summarizes the progress made and examines various ideas and advanced techniques and their contributions to our knowledge of organo-clay.

The book contains 11 chapters. After a general description of clay minerals and their surface activity, Ch. 2 presents an introduction to organo-clay complexes and describes the different types of complexes. Ch. 3 deals with organo-vermiculite complexes. Ch. 4 and 5 discuss the physical chemistry of two specific surface phenomena of organo-clay complexes: organophilicity and hydrophobicity of these complexes and ion-exchange equilibria in these systems. Four chapters are devoted to advanced investigative methods commonly used in the study of organo-clay complexes: nuclear magnetic resonance (NMR), differential thermal analysis (DTA), thermogravimetry (TG), infrared (IR) and thermo-IR spectroscopy, and visible absorption spectroscopy. Ch. 10 deals with the catalytic activity of clay minerals and their contribution to organic chemical reactions in nature and in the laboratory. The last chapter reviews the various ideas that relate clay minerals to the origin of life. Many important subjects in clay-organic systems have not been included in this volume.

These might be covered in a second volume.

Information on clay-organic interactions and organo-clay complexes is important to workers in many disciplines, including agricultural chemists, earth and soil scientists, geochemists, environmental scientists, and engineers in industries in which both clays and organic matter are essential ingredients. All chapters have many clear figures and carry extensive lists of references. The book also contains a mineral index, an organic compound index, and author and subject indexes.

Price: USD 195.00.

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Metals in the Environment. Analysis by Biodiversity. Books in Soils, Plants, and the Environment. M.N.V. Prasad, editor. Marcel Dekker, New York and Basel, xii + 487 p. ISBN 0-8247-0523-8. Hardcover.

This volume spotlights the potentiality of biodiversity for monitoring and abatement of metal pollution in the environment, and also explores the emerging issues and initiatives concerning metals in the environment. Heavy metals are being enriched in all aspects of the environment, viz., air, water, and soil, by anthropogenic as well as natural processes. Data on heavy metal accumulation are given, and contamination, bio-monitoring, toxicity and tolerance, and the importance of biodiversity for environmental monitoring and clean up of metal-contaminated and polluted ecosystems are discussed in this book. The contributions show the importance of the use of bacteria, mycorrhizae, freshwater algae, salt marshes, bryo- and pteridophytes, angiosperms, constructed wetlands, reed beds, and floating plant systems and tree crops to treat wastewater and industrial effluents containing heavy metals. The book has also interesting papers on adaptation of trees to heavy metal stress and the role of trees in remediating heavy metals in the soil, the impact of heavy metals on microbial and belowground biodiversity, and gives information on the financial costs of polluted soil remediation. The volume has more than 1800 references.

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Principles of Plant Nutrition. 5th edition. K. Mengel and E.A. Kirkby, with the support of H. Kosegarten and Th. Appel. Kluwer Academic Publishers, Dordrecht, Boston, 2001, xvi + 849 p. ISBN 0-7923-7150-X. Hardcover; 1-4020-0008-1. Softcover.

The fourth edition of this well-known textbook appeared more than 10 years ago. During this time, the rate at which relevant literature has appeared has increased exponentially and to keep pace with this ever-increasing flow has required continuous and tenacious study.

The main objective of this textbook for students and guide for those interested in plant science and crop production is to explain basic processes and relationships

of relevance to the scientific understanding of Plant Nutrition. These include diffusion, mass flow and interception of plant nutrients in soils, nutrient buffer power, cation exchange, anion adsorption in relation to soil minerals, water potential and redox potentials in soils, *assimilation of nutrients by plants and assimilation and mineralization of organic matter by soil microorganisms*, ion pumps and transporters and related electrochemical potentials of plant cells, osmosis and plant water potentials. All are involved in Plant Nutrition and the complex process of growth, and hence also in crop production and in crop quality. Plant Nutrition is an essential discipline of Crop Science which is the science of crop production. In energetic terms crop production is the conversion of solar energy into a storable energy form of chemical energy. Most living organisms, including humans, are directly or indirectly dependent on this fundamentally important process of energy conversion. In the near future the world-wide importance of crop production will greatly increase bearing in mind too that every year millions of hectares of fertile land are ruined by desertification, acidification, erosion and salinization. Energy conversion by cultivation of efficient crop species and the maintenance of soil fertility are therefore paramount tasks of agriculture and present a major challenge for agricultural scientists. To meet his challenge requires the application of relevant knowledge and its further elaboration. It is the prominent intention of this book to contribute to this goal.

The text refers to about 2000 references. The well-produced book with many figures also includes a useful list of books and papers for further general reading.

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GeoENV III – Geostatistics for Environmental Applications. Quantitative Geology and Geostatistics Volume 11, P. Monestiez, D. Allard and R. Froidevaux, editors. Kluwer Academic Publishers, Dordrecht, Boston, 2001, xiv + 540 p. ISBN 0-7923-7106-2. Hardcover, 0-7923-7107-0, Softcover.

This volume contains the proceedings of the Third European Conference on Geostatistics for Environmental Applications, which was held in Avignon in November 2000. From the 70 contributions during the conference, 40 were selected for the present book. They went through peer-review. The book opens with two keynote papers, One-third of the papers deal with the most recent methodological developments, with examples predominantly in environmental sciences. Other papers provide a good indication of the wide variety of environmental applications, in which geostatistics reached its place, and of the new methodological issues that are relevant to environmental studies.

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recht, The Netherlands. Fax: +31-78-6546474. E-mail: services@wkap.nl. Homepage: www.wkap.nl.

Soil Sampling, Technical Engineering and Design Guides as adapted from the U.S. Army Corps of Engineers, no. 30. American Society of Civil Engineers, 2000, 224 p. ISBN 0-7844-0375-9. Softcover.

To provide accurate knowledge of the subsurface conditions, as well as the physical and engineering properties of foundation materials, soil sampling operations are routinely conducted to determine those conditions that affect the safety, cost-effectiveness, and design of a proposed engineering project. This manual presents a summary of commonly accepted soil sampling practices and procedures to assist geotechnical personnel performing actual field studies. It provides both technical guidance for conducting soil sampling operations, and the best methods for handling and storage of samples obtained in support of the investigations. The principles, equipment, procedures, and limitations for obtaining, handling, and preserving soil samples are discussed. Since the highest quality samples are often obtained at the least cost by using a variety of equipment and techniques, this manual surveys the different devices and techniques that have been developed for drilling and sampling geotechnical materials ranging from soil to rocks. The manual further suggests the various types of sampling devices best suited to obtain samples of various soil types encountered during geotechnical investigations. Of special interest are the parts about the equipment and procedures for undisturbed and disturbed soil sampling in borings; sampling frozen soils; underwater sampling of soils; handling and storage of samples and sampling records; and backfilling boreholes and excavations.

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Pesticides, Pollutants, Fertilizers and Trees: their role in forests and amenity woodlands. Forestry Series, E. Harris, editor, J.R. Aldous, Research Studies Press, Baldock, 2000, viii + 588 p. ISBN 0-86380-199-4. Hardcover.

The objective of the Forestry Series is to make available specialist texts in developing areas of science and technology tailored to particular but limited markets. The present book in this series is a comprehensive account of the state of knowledge of the use of chemicals in forestry and the many issues associated with this. Though primarily concerned with the situation in Britain, both the facts presented and the issues discussed are relevant throughout the world and are of interest to foresters, land managers and tree growers everywhere. To meet wider needs, scientific facts and concepts are expressed as far as possible in terms understandable to the lay reader.

The first part of the book starts with ethical issues before going on to laying out the chemical and legal

frameworks and the safety system, summarizing these in a chapter in integrated forest protection. In the core of the book, pests of all forms, nutrients and fertilizers are discussed in a way that leaves little of these complex issues untouched, before going on to a comprehensive account of the present knowledge of pollutants and forest health. In the final chapter, the author returns to ethical issues and emphasis that if our woodlands and forests, as well as the ecosystems surrounding them, are to be sustainable the opportunities provided today by technological advances must be handled carefully, responsibly and with understanding. The text is supported by over 2000 references.

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Soil Erosion Risk in Europe. M. Grimm, R. Jones and L. Montanarella. European Soil Bureau, Institute for Environment and Sustainability, JRC, Ispra, 2001, iv + 38 p. Publication EUR 19939 EN.

This publication has five chapters. After an introduction and outlining the processes of soil erosion, mainly by water, the third chapter is the largest. It deals with the assessment of soil erosion risks, giving information about seven expert-based and model-based approaches to erosion risk assessment, with their advantages and limitations. The fourth chapter outlines indicators of soil erosion and includes some lines about indicators of response. It ends with conclusions and recommendations, a list of references and a glossary. A useful introduction to soil erosion risk in Europe, with illustrative small scale maps at continental and country level.

Requests to: European Soil Bureau, IES, JRC, I-21020 Ispra (VA), Italy. Homepage: www.jrc.org.

Soil Analysis, Sampling, Instrumentation and Quality Control. M. Pansu, J. Gautheryou and J.-Y. Loyer. Translated by V.A.K. Sarma. A.A. Balkema, Lisse, Abington, 2001, ix + 489 p. ISBN 90-5410-716-2. Hardcover.

This is the translation from the book "l'analyse du sol", published by Masson, Paris, in 1998, and announced in the Bulletin. The objective of this book is to provide a better understanding of soil-analysis tools in order to use them more efficiently. Given the increasing number of analytical methods and techniques, this book has been designed as a guide that will enable first the selection of the method appropriate to the problem and, then, its execution. The first part is concerned to sampling, which includes selection, taking, drying and fractionation of samples. Problems related to the actual analysis and to quality control of the results form the subject of the second part. Principal physico-chemical methods, especially spectroscopic and chromatographic, are presented in detail. Techniques of laboratory automation and of statistical quality control of the results are explained at the end of the book. The appendix contains

such items as a bilingual glossary of abbreviations, symbols and acronyms, the international system of units, statistical tables, and suppliers of analytical instruments and equipment.

Price: EUR 85.00; USD 85.00; GBP 57.00, plus VAT when applicable.

Orders to: see below.

Phytoliths: Applications in Earth Sciences and Human History. J.D. Meunier and F. Colin, editors. A.A. Balkema, Lisse, Abingdon, 2001, 378 p. ISBN 90-5809-345-X. Hardcover.

Phytoliths are fossil micrometric minerals (generally hydrated opal-A) precipitated in plant tissues. This book presents recent advances in phytolith research and addresses the use of phytoliths for deciphering fundamental issues in Earth Sciences and Human History. After a review paper on grass phytolithology, the book contains 29 papers under the following subject areas: (1) phytoliths in paleoclimatology and paleoecology (3 papers); (2) phytoliths, diet and health (3 papers); (3) archaeological structures, ancient agricultures and paleoethnobotany (10 papers); (4) methodology, taxonomy and taphonomy (9 papers); and (5) soil-plant interactions (4 papers). Most of the papers were presented at the Second International Meeting on Phytolith Research, held in Aix en Provence, France, in August 1998, and were subsequently peer-reviewed.

Price: EUR 112.50; USD 123.75; GBP 75.00, plus VAT when applicable.

Orders to: A.A. Balkema Publishers, P.O. Box 1675, 3000 BR Rotterdam, The Netherlands. Fax: +31-10-4135947. E-mail: orders@swets.nl. In North America: A.A. Balkema Publishers, c/o Ashgate Publishing Company, 2252 Ridge Road, Brookfield, VT 05036-9704. Fax: +1-802-276-3837. E-mail: info@ashgate.com. Homepage: www.balkema.nl.

Impact of Human Activity on Groundwater Dynamics. IAHS Publication no. 269. H. Gehrels, N.E. Peters, E. Hoehn, K. Jensen, C. Leibundgut, J. Griffoen, B. Webb and W.J. Zaadnoordijk, editors. International Association of Hydrological Sciences, Wallingford, 2001, x + 369 p. ISBN 1-901502-56-2. Softcover.

Human activities are intricately linked to the evolution and dynamics of groundwater quantity and quality. Given the alarming rate of land use change globally, it is important to understand the linkages between land use change and groundwater dynamics, as land use affects the quantity and chemical quality of recharge water. The recharge directly determines the natural dynamic behaviour of the groundwater system, and is (hence) often the most important driving force in groundwater systems. In many areas, groundwater is the major source of surface water, and in others, surface water infiltration is a major source of recharge. Consequently, understanding the interaction of groundwater and surface water is important to the understanding of groundwater dynamics. Geochemical aquifer characteristics also have to be quantified to enable prediction of both the movement and contamination of groundwater.

In this book with 53 papers presented at the Sixth IAHS Scientific Assembly, July 2001, the impact of a number of human activities on groundwater dynamics and resources are presented in five themes: (1) Quantification of groundwater recharge (13 papers); (2) Urbanization and land use change (11 papers); (3) Groundwater-surface water interaction (6 papers); (4) Aquifer characterization and transport modeling (12 papers); and (5) Groundwater contamination (11 papers).

For details of the papers and abstracts see the IAHS web page at: www.cig.ensmp.fr/~iahs.

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Orders to: see below.

Soil-Vegetation-Atmosphere Transfer Schemes and Large-Scale Hydrological Models. IAHS Publication no 270. A.J. Dolman, A.J. Hall, M.L. Kavvas, T. Oki and J.W. Pomeroy, editors. International Association of Hydrological Sciences, Wallingford, 2001. x + 372 p. ISBN 1-901502-61-9. Softcover.

Soil-vegetation-atmosphere interactions determine, to a large extent, the global climate and the behaviour of the hydrological cycle. Model predictions thus depend critically on adequate parameterization of this interaction. The present volume represents a state of the art in Soil-Vegetation-Atmosphere Transfer (SVAT) modeling in the hydrological community. It contains 48 papers presented at the Sixth IAHS Scientific Assembly, Maastricht, July 2001. Several key issues in SVAT models are poorly parameterized or simply not well enough understood. Current SVAT schemes include increasingly complex descriptions of the physical mechanisms governing land surface processes requiring large numbers of soil and land surface parameters controlling the vertical fluxes. The underlying rationale is that improved process representation will result in parameters, which are easier to measure or estimate, and in improved model performance and robustness. However, this is not necessarily so. Studies show that characterizing surface properties is fraught with difficulties, as determining representative parameterizations in non-trivial due to our inability to accurately measure land surface properties. Hence, data assimilation, whereby measurements are integrated with models, is increasingly used to keep hydrological models on track.

The book is organized into five sections: (1) General SVAT modeling (9 papers); (2) SVAT and precipitation processes at large scale (7 papers); (3) Parameter estimation of large-scale hydrological models (12 papers); (4) Data assimilation in large-scale hydrological models (10 papers); and (5) Snow-vegetation interactions (10 papers).

For details of the papers and abstracts, see the IAHS web site: www.cig.ensmp.fr/~iahs

Price: GBP 59.50.

Orders to: Mrs. Jill Gash, IAHS Press, Centre for Ecology and Hydrology, Wallingford, Oxfordshire OX10 8BB, UK. Fax: +44-1491-692448/692424, E-mail: jilly@iahs.demon.co.uk.

Role of Fertilizers in Sustainable Agriculture. Proceedings 12th International Symposium of the

International Scientific Centre of Fertilizers (CIEC), 21-22 August 2000, Suceava – Romania. C. Hera, E. Schnug, M. Dumitru and A. Dorneanu, editors. CIEC, Romanian Academy and Romanian National Branch of CIEC, Bucharest, 2001, 550 p. ISBN 973-8115-09-4. Hardcover.

The second part of the last century witnessed countless improvements in crop technology and the yields increased considerably. By increasing the yield per unit area, nutrient mining represents an alarming process, particularly when fertilizer consumption is decreasing. Fertilizers play and will further play a great role in maintaining and increasing soil fertility, crop productivity and meeting the increasing demand for food for the growing world population. Fertilizers should be utilized in accordance with soil fertility status, ecological conditions and nutrient crop demands. The papers published in these proceedings provide the latest information and achievements on fertilizer research, development and application, as tools for sustaining and increasing soil fertility and crop productivity. The contributions are arranged in the following themes: Session I, Nutrient management for quantitative and qualitative sustainable crop production (10 oral presentations and 11 posters); Session II, Fertilizer use efficiency-methods and techniques of fertilizer application (4 oral presentations and 8 posters); Session III, Nutrient balance – the future fertilizers need for ecological sound and economic feasible sustainable crop production (5 oral presentations and 13 posters); Session IV, Fertilizers strategies in sustainable agriculture (4 oral presentations and 5 posters).

Price: USD 45.00.

Orders to: Dr. A. Dorneanu, Bd. Marasti 61, Sector 1, Bucharest, Romania. Fax: +40.1.222.5979. E-mail: agrochim@icpa.ro.

Soil Management and Conservation for Small Farmers. Strategies and methods of introduction, technologies and equipment. FAO Soil Bulletin 77. V.H. de Freitas. FAO, Rome, 2000, 66 p. ISBN 92-5-104499-6. ISSN 0253-2050. Softcover.

In many places in the world, efforts are underway to improve the living and working conditions of farming communities. It is becoming clear that the active interest and initiative of the farmers is crucial for the success of such efforts. The present report is intended for development practitioners, extensionists and leaders or pioneers in farming communities, to inform them about the experiences and initiatives of farmers with conservation agriculture in Santa Catarina State, Brazil. On the basis of several local initiatives, inventions and developments, there have been widespread improvements in soil management in various parts of the state, resulting in lower costs and improved returns, combined with conservation and improvement of the soil resources. While these developments cannot be simply applied elsewhere, the methods and strategies may well inspire others to adapt and modify them for the application in their own environments.

Price: USD 16.00.

Orders to: see below.

Conservation Agriculture. Case studies in Latin America and Africa. FAO Soil Bulletin 78. Land and Plant Nutrition Management Service, Land and Water Development Division. FAO, Rome, 2001, 69 p. ISBN 92-5-104625-5. ISSN 0253-2050.

Empirical evidence has been accumulating that sustainable intensification of crop production is technically feasible and economically profitable. Added benefits are the improvement of the quality of the natural resources and the protection of the environment in currently unimproved or degraded areas, provided farmers participate fully in all stages of technology development and extension. This has led to what is called "conservation agriculture". Three criteria, i.e. no mechanical soil disturbance, permanent soil cover and crop rotations, distinguish conservation agriculture from a conventional agriculture system.

This publication demonstrates how conservation agriculture can increase crop production while reducing erosion and reversing soil fertility decline, thus improving rural livelihoods and restoring the environment in developing countries. The document is based on testimonies and experiences of farmers and extensionists in Latin America and Africa.

Orders to: see below.

The European Soil Information System. World Soil Resources Reports 91. FAO, Rome, 2000, vii + 150 p. ISBN 92-5-104454-6. ISSN 0532-0488. Softcover.

This publication contains the proceedings of a Technical Consultation, held in Rome, 2-3 September 1999. The consultation, convened to consider the issues related to soil information systems in Europe, was organized by FAO and the European Commission. The participants were experts in the field of soil information and they made brief statements on the status of soil information in their respective countries. More detailed country reports are included in this publication. Important items discussed were the harmonization of the concepts underlying mapping scales, procedures and classification, and interpretation and the issues related to data ownership and availability of the products. The purpose of the meeting was not merely to promote the establishment of a European Soil Information System, permitting easy inter-European exchange of data and experience, but also to facilitate its practical use to solve problems both national and continental, and encourage the exchange of experience with such activities. An important by-product would be the example to other countries, particularly those in the developing world, on how well utilized soil information can help to solve national and global problems in a rational and cost-effective manner. Besides the country reports, the publication contains the texts of the two keynote papers, the conclusions reached at the meeting and the recommendations.

Orders to: see below.

Carbon Sequestration Options under the Clean Development Mechanisms to Address Land Degradation. World Soil Resources Reports 92. FAO, Rome, 2000, ix + 36 p. ISBN 92-5-104515-1. ISSN 0532-0488. Softcover.

The Clean Development Mechanism (CDM) is one of several mechanisms created in Kyoto Protocol (KP) that enables Parties to cooperate with each other to reduce emissions of greenhouse gases. An important issue is carbon sequestration – retaining in the geosphere the carbon that would otherwise escape into the atmosphere. Carbon sequestration can occur in several sites: biomass, forests, wetlands, geologic formations and soils, among others.

This publication contains the result of a study on the origin and background of the carbon sequestration options and the CDM. It documents the outcome of several proceedings of meetings on this subject. The publication examines the various initiatives that have been taken, including that of the Global Environment Facility (GEF) and the World Bank to facilitate the funding of land degradation projects under GEF. It also includes a review on the ongoing programme of collaboration between the International Fund for Agricultural Development (IFAD) and FAO on carbon sequestration and indicates how it would fit within the framework of the existing international environmental treaties, as well as the GEF and World Bank initiative.

Orders to: see below.

Land Information Systems in Asia. World Soil Resources Reports 93. FAO, 2000, vii + 92 p. ISBN 92-5-104516-X. ISSN 0532-0488. Softcover.

This report forms the proceedings of a Regional Workshop held in Quezon City from 25 to 27 January 2000. The purpose of the meeting was to promote land resources information systems and their application in the assessment, mapping and monitoring of land in relation to sustainable agricultural development and food security in Asian countries. Ten Asian countries were represented, who contributed experiences from their countries and prepared recommendations for future collaboration in the region, including exchange of data, information and experiences. This includes the preparation of national and regional reports on the state of the land, water and plant nutrient resources in Asia.

Orders to: see below.

Lecture Notes on the Major Soils of the World. World Soil Resources Reports 94. P. Driessen, J. Deckers, O. Spaargaren and F. Nachtergaele, editors. FAO, Rome, 2001, vi + 334 p. ISBN 92-5-104637-9. ISSN 0532-0488. Softcover. Plus CD-ROM produced by J.P. Lesschen and N. Witte.

After adoption of the World Reference Base for Soil Resources (WRB) as a universal soil correlation tool by the International Union of Soil Sciences, the Reference Working Group has endeavoured to promote, test and improve the system further. The publication is a successor to Lecture Notes on the Major Soils of the World, edited by P.M. Driessen and R. Dudal and published in 1991. The aim of the publication is to make the WRB system available to all interested scientists at an affordable price and the publishers should be congratulated to make this available as a well-illustrated text with a very useful CD-ROM, containing additional data about profiles, analytical data and virtual field excu-

sions.

After introductory parts about the World Reference Base for Soil Resources, the 30 Reference Soil Groups, assembled in 10 sets, are treated in detail. Data given are the major landforms in which the soils occur, their *definition, summary description and characteristics*, regional distribution, associated soils, and some information about their management and use. In the annex are the key to the Reference Soil Groups; the descriptions of the diagnostic horizons, properties and material; the formative elements for naming soil units as subdivisions of the Reference Soil Groups (qualifiers); and how to use them. This publication is a very useful tool to facilitate the study of soils and the exchange of soil information, and provides a common language for soil science. The CD-ROM will become available in the course of this year.

Price: USD 30.00.

Orders to: see below.

Land Resources Information Systems in the Caribbean. Proceedings of a Subregional Workshop held in Bridgetown, Barbados, 2-4 October 2000. World Soil Resources Reports 96. FAO, Rome, 2001, 128 p. ISBN 92-5-104624-7. ISSN 0532-0488. Softcover.

This publication contains the proceedings of a workshop on Land and Water Resources Information Systems (LWRIS). The purpose of the meeting was to launch a Caribbean network and to promote the use of land and water resources information systems in the assessment, mapping, monitoring of land and water resources in this region. Seven resources persons contributed by sharing their experiences and assisted in the preparation of the plan of action to promote future reporting and exchange of information in the region. Each country reported on the progress in preparing its national report on the state of Land, Water and Plant nutrition resources, using FAO guidelines. The largest part of the publication contains these reports from 13 countries in the region. In the annex are the guidelines for the preparation of the said country reports, and the status of preparation of these reports.

Orders to: see below.

Global Forest Resources Assessment 2000. Main Report. FAO Forestry Paper 140. FAO, Rome, 2001, xxvii + 479 p. ISBN 92-5-104642-5. ISSN 1020-6150. Softcover.

This assessment (FRA 2000) was the most comprehensive since FAO first reported on forest resources 50 years ago. FRA 2000 was based on the bottom-up approach, and supplemented by global level verification. The backbone of FRA 2000 was the data, information and knowledge provided by countries. This information was verified and supplemented with "top-down" studies and remote sensing analysis using the latest technology. Countries were then invited to *review and comment on the outcome of the combined global analysis*. This publication constitutes the principal report of FRA 2000. Part I presents the main findings on forest areas and area change, the results of studies on wood volume and biomass, plantations and other

key parameters studied in FRA 2000. Part II presents findings organized by geographic (sub) region. Part III describes the methodologies and processes underpinning the assessment and the mapping processes used to obtain the global maps of forest cover and ecological zones. Also described is the development of a comprehensive Forestry Information System (FORIS). Part IV summarizes the conclusions of the assessment, reviews the process and presents recommendations for future efforts. More detailed data by country are posted in the country profiles on the FAO Forestry website: www.fao.org/forestry.

Price: USD 40.00.

Orders to: National sales agents of FAO publications. Or: Sales and Marketing Group, Information Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy. Fax: +39-6-5705-3360. E-mail: publications-sales@fao.org. Homepage: www.fao.org.

Note: the prices given are without mailing costs. Prices may vary per country.

The Australian Soil Classification - An Interactive Key. version 1.0. D.W. Jacquier, N.J. McKenzie, K.L. Brown, R.F. Isbell and T.A. Paine. CSIRO Publishing, Melbourne, 2000, 15 p and CD-ROM.

With this CD-ROM as a reference tool Australian soil profiles can be classified in the Australian soil classification. This powerful electronic system enables soil classes to be identified even when field and laboratory data are incomplete, and will allow for uncertainties and mistakes. It includes extensive notes and colour illustrations and photographs. The package of booklet and CD comes with a tutorial, which takes one step-by-step through the process of allocating a soil profile with this system.

The CD also contains an abridged and updated version of the Australian soil classification system, a glossary and extensive references. Also for persons outside Australia, this is an excellent introduction to the various soils of Australia, and may be used as a blueprint for other soil survey organizations.

Price: AUD 59.95.

Orders to: see below.

Australian Soil, Poster 70x98 cm. Produced by K. Brown, N. McKenzie, R. Isbell and D. Jacquier. CSIRO, ACLEP and Natural Heritage Trust.

Australia has a great variety of soils. Most are ancient, strongly weathered and infertile. Others are younger and more fertile. The soils shown on this nicely designed and produced poster shows typical examples of the 14 Orders distinguished in the Australian Soil Classification. The poster has 47 photographs of soil profiles, size about 4x8 cm, and some important characteristics at the Order level. The main occurrences of the Orders are also shown. This is very instructive information for teachers about the importance of soils! Price: AUD 11.00, plus postage of AUD 9.00 for Australia and New Zealand, plus AUD 35.00 for other countries.

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E-mail: sales@publish.csiro.au.
Homepage: www.publish.csiro.au.

Agricultural Disaster Management in Bangladesh.

H. Brammer. The University Press, Dhaka, 1999. xix + 427 p. ISBN 984-05-1448-2. Hardcover.

This book, the third volume of a series on agricultural aspects of Bangladesh, includes selected papers on agricultural disaster management based on the author's thirty-five years experience in agricultural development in Bangladesh. This was a field in which the author did pioneering work: first by analyzing the impacts of natural disasters an agricultural production and indicating practical rehabilitation measures for different kinds of land and soils month by month throughout the year; then by codifying institutional procedures for reporting and assessing crop damage and for organising appropriate relief and rehabilitation measures. Although the information and procedures relate specifically to Bangladesh, the principles described in this book can be applied in other countries, especially in those countries where small-scale farmers predominate.

Part I describes Bangladesh's physical environment, Part II comprises chapters describing procedures for preparing contingency plans, assessing damage, and preparing and monitoring rehabilitation programmes, monitoring and interpreting weather data, plus a chapter describing measures to protect flood-protection, road and railway projects from flood damage. The core of the book is in Part III and deals with the individual kinds of disasters, including floods, droughts and cyclones. Part IV comprises reports made after specific cyclone and drought disasters, while the last chapter sums up the lessons learnt from the author's experience. Earlier books by H. Brammer were: *The Geography of the Soils of Bangladesh* (1996) and *Agricultural Development Possibilities in Bangladesh* (1997).

Orders to: see below.

Agroecological Aspects of Agricultural Research in Bangladesh.

H. Brammer. The University Press, Dhaka, 2000, xvii + 376 p. ISBN 984-05-1506-3. Hardcover.

This fourth volume of the author's collected works brings together selected papers describing the relationships between environmental factors and Bangladesh's unique agricultural systems. Part I provides background information on the physical environment and includes a chapter describing research needs in the country's drought-prone environments. Part II comprises chapters describing how farmers in different parts of the country have adapted, and are still adapting, their cropping practices to the micro-environments of their small fragmented holdings. Part III deals with various issues of soil management which need research attention. Part IV describes environmental factors needing to be considered in siting and monitoring agricultural trials and demonstrations, and the methods used on three field studies. In Part V, the author reviews his experience of agricultural research and development in the country, emphasizing the need for research scientists and extension officials to become more

deeply aware of the environmental factors influencing cropping systems, farmers' practices and agricultural development possibilities in Bangladesh.

Price: Tk. 750.00.

Orders to: The University Press, P.O. Box 2611, Dhaka 1000, Bangladesh. Fax: +88-2-956443. E-mail: upl@biib.net. Homepage: www.uplbooks.com.

Reiseführer – Zu den Böden Deutschlands. Böden sehen – Böden begreifen.

(Guide to Soils in Germany)

Umweltbundesamt, Berlin, Germany, 2001, 164 S., 52 Abb., 72 Fotos. (in German language).

Ziel der vorliegenden Veröffentlichung ist es, einer breiteren Öffentlichkeit in der Bundesrepublik Deutschland bodenwissenschaftliches Anschauungsmaterial nahezu bringen. Es wird versucht, die Böden einzelner Landschaften in ihrer Entstehung, ihrer Nutzung und ihrer Schutzwürdigkeit auch Nicht-Fachwissenschaftlern in einer im Freiland anschaulichen und "anfassbaren" Form nahe zu bringen und damit zu einer Erweiterung des allgemeinen "Boden-Bewusstseins" beizutragen.

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besondere zu wünschen, dass ihre Bemühungen um Offenhaltung und ständige, fachkundige Pflege der Anlagen und der Erläuterungs-Einrichtungen im Gelände von Erfolg gekrönt bleiben. Dies erfordert neben persönlichem Engagement auch finanzielle Mittel, die oft nur durch mühsame Aufklärungsarbeit bei politischen Entscheidungsträgern bereitgestellt werden können. Dieser zukunftsweisenden Publikation ist nicht nur ein nachhaltiger Erfolg zu wünschen, sondern auch eine nützliche Vorreiter-Rolle, die zu ähnlichen Versuchen in anderen Staaten führen kann.

This publication aims at spreading knowledge of soils on a visual basis to a broader public in the Federal Republic of Germany. Soils of particular regions in Germany are presented – most of them accessible in the field – with emphasis on their genesis, utilization and need of protection. It is hoped that even non-scientists might become aware of soils as an important natural body. A detailed glossary and a list of literature on soils are included.

Altogether 49 sites in various federal states of Germany are listed, covering teaching paths (soil pit sequences in the field) (18 sites), single soil pits (19 sites) and profile collections, soil museums and other items. Besides information on the topographic situation, the itinerary by road or rail and contact addresses of supervisors, the soil objects are briefly characterized, and their context with landscape and environment is dealt with in more detail. The soil objects do not cover only natural soils and their genesis, but also man-made soils such as influenced by industrial and urban activities. Also sites of archaeological interest and soil erosion phenomena are dealt with.

The publication is meant to assist in planning visits by single visitors as well as by groups (e.g. school classes). Teaching staff might find useful information. It is well known that open soil pits (as well as geological exposures) tend to become destroyed by nature as well as by vandalism rather rapidly. Hence it is hoped that the caretakers of the sites remain successful in their continuous attempt to keep the pits and the accompanying information not only open and accessible, but in a good condition. Besides personal commitment, financial support will be required, and this of course needs laborious educational work among political decision makers. It is hoped that this publication not only helps to increase general knowledge of soils in Germany but might serve as a stimulus towards similar endeavours in other countries.

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Bodenschutz in der Bauleitplanung - Vorsorgeorientierte Bewertung

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Bautätigkeit ist eine der größten Einschränkungen natürlicher Bodenfunktionen und unterliegt daher, dem Geltungsbereich des Deutschen Bodenschutzgesetzes. Für einen nachhaltigen Bodenschutz ist daher eine umfassende Bodenbewertung im Rahmen einer qualifizierten Abwägung im Planungsverfahren notwendig. Die hierbei entwickelten Leitlinien sind Empfehlungen und Vorschläge auf der Grundlage des vorsorgenden Bodenschutzes. Auf ihrer Basis können verantwortliche Fachleute aus Ingenieurbüros, Verbänden und staatlichen Institutionen die Bauleitplanung unter Berücksichtigung von Bodenschutzaspekten gestalten. Zu beziehen bei: Erich Schmidt Verlag, Berlin, Bielefeld, München

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von Dr. Claus G. Bannick, Dr. Heinz-Ulrich Bertram, Dr. Peter Dreher und Dr. Wilhelm König. Reihe BVB-Materialien, Band 7, 212 S., kartoniert, ISBN 3 503 06003 0, 2001.

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Herausgegeben von Dr. Wilhelm König, Redaktion: Jörg Leisner-Saaber in der Reihe BVB-Materialien, Band 8, 220 S., kartoniert, 2001, ISBN 3 503 06047 2. Diese Veröffentlichung enthält Vorträge einer Veranstaltung im September 2000 über "Altlasten – Bodenschutz" und umfasst das gesamte Spannungsfeld vom vorsorgenden Bodenschutz bis hin zu technischen Fragen der Altlastensanierung.

Hierbei wurden durch namhafte Referenten ergänzende Regelungen zum Bodenschutzrecht, Bodenschutz und Altlasten im Bauplanungs- und Bauordnungsrecht, Umgang mit schädlichen Bodenveränderungen sowie Sanierung von Altlasten ausführlich behandelt.

Die Publikation ist daher ein wesentlicher Beitrag zur Abklärung von rechtlichen und fachlichen Fragen in den oben genannten Anwendungsbereichen.

Zu beziehen bei: Erich Schmidt Verlag, Berlin, Bielefeld, München

Preis: Euro 36,80

Nachweis von Umwelchemikalien - Auswerte- und Interpretationsmethoden für Toxizitätsdaten aus einer ökotoxikologischen Testkombination

von Helga Neumann-Hensel, Dr. Fintelmann, Dr. Meyer, Wolfgang Ahlf und Volker Wachendörfer. Reihe: Initiativen zum Umweltschutz, Band 29, 111 S., kartoniert, 2001, ISBN 3 503 06019 7

Umwelchemikalien gelangen durch menschliche Aktivitäten in die Umwelt, wobei sie in Konzentrationen auftreten können, die umwelt- sowie human-toxikologisch bedenklich sind. - Vorliegendes Buch befasst sich vor allem mit biologischen Nachweismethoden zum Nachweis toxischer Wirkungen von Bodenverunreinigungen. Ökotoxikologische Verfahren können jedoch komplexe Bodenbelastungen nur vollständig diagnostizieren, wenn sie zu einem Testset kombiniert werden. Die Ergebnisse müssen in ihren Wechselbeziehungen interpretiert werden und bilden somit die Bewertungsgrundlage für ökotoxikologische Risiken. Vorliegende Veröffentlichung stellt erstmalig Auswerte- und Interpretationsmethoden der so gewonnenen komplexen Daten vor und ist daher ein wesentlicher Schritt vorwärts im Nachweis von bodenbelastenden Umwelchemikalien.

Zu beziehen bei: Erich Schmidt Verlag, Berlin, Bielefeld, München.
Preis: 24,00 Euro

Leitfaden zur Berücksichtigung von Bodeninformationen im Rahmen der Agrarstrukturplanung in Niedersachsen – Nutzung der Daten des Niedersächsischen Bodeninformationssystems NIBIS – Handlungsanleitung/ Empfehlungen.

herausgegeben von Klaus Erdmann & Udo Müller im Rahmen der Serie: Arbeitshefte Boden des Niedersächsischen Landesamts für Bodenforschung, Heft 2000/3, 62 S., 3 Abb., 18 Tab., Hannover 2000;

Der Leitfaden beschreibt zunächst die Grundlagen und Anwendungsbereiche sowie die Ziele um anschließend die Bewertung von Bodenfunktionen sowie einen Anforderungskatalog zur Berücksichtigung von Bodeninformationen bei Agrarstrukturplanungen zu erläutern. Dazu kommen Informationsgrundlagen und Arbeitshilfen, die eine Durchführung des vorgeschlagenen Ansatzes unterstützen sowie ein Literaturverzeichnis. Die Broschüre kann allen, die sich mit Agrarstrukturplanung beschäftigen zur Lektüre empfohlen werden, da die hier dargestellten Methoden auch über das Land Niedersachsen hinaus mit Erfolg eingesetzt werden können.

Zu beziehen bei: E. Schweizerbart'sche Verlagsbuchhandlung, Johannesstraße 3 A, D-70176 Stuttgart.
Preis: 6,39 Euro

Bodenschutz in Raumordnung und Landschaftsplanung.

herausgegeben von U. Müller, I. Dahlmann, E. Bierhals, B. Vespermann und Ch. Wittenbacher im Rahmen der Serie: Arbeitshefte Boden, herausgegeben vom Niedersächsischen Landesamt für Bodenforschung, Heft 2000/4, Hannover 2000.

Die Publikation beschreibt nach einer Einleitung und

Zielsetzung den Bodenschutz in Raumordnung und Landschaftsrahmenplanung sowie als Aufgabe der Landschaftsrahmen- sowie der Regional- und Landesplanung. Hierzu werden Datengrundlagen zur Integration des Bodenschutzes in die Planung am Beispiel des Niedersächsischen Bodeninformationssystems dargestellt und Auswertungsmethoden beschrieben. Ein Ausblick, sowie ein Literatur- und ein Abkürzungsverzeichnis runden die Publikation ab, die allen, die sich mit Raumordnung und Landschaftsplanung beschäftigen zur Lektüre sehr empfohlen werden kann, zumal diese Broschüre auch über Niedersachsen hinaus viele neue Anregungen enthält.

Zu beziehen über: E. Schweizerbart'sche Verlagsbuchhandlung, Johannesstraße 3 A, D-70176 Stuttgart.
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Schwermetalle in Böden Niedersachsens, Hintergrundwerte für Schwermetalle in Böden Niedersachsens, Schwermetallbelastung in den Böden der Talauen des Harzes und Harzvorlandes, Schwermetalle in einem städtischen Belastungsraum. von Jürgen Schneider, herausgegeben in der Reihe: Arbeitshefte Boden des Niedersächsischen Landesamts für Bodenforschung, Heft 1999/2, 25 S., 3 Abb., 4 Tab., 3 Karten, Hannover 1999.

Vorliegende Publikation befasst sich mit der Bodenbelastung Niedersachsens durch Schwermetalle, gibt hierbei Hintergrundwerte und beschreibt Analyseanforderungen sowie technische Daten bei der Erhebung von Belastungsgrößen. Darüber hinaus wird die Schwermetallbelastung in den Böden der Talauen des Harzes und des Harzvorlandes sowie eines städtischen Belastungsraumes am Beispiel Nordenham aufgezeigt. Die vorliegende Publikation ist allen, die sich mit Bodenbelastungen von urbanen, peri-urbanen und Naturräumen beschäftigen, zur Lektüre sehr empfohlen.

Zu beziehen bei: E. Schweizerbart'sche Verlagsbuchhandlung, (Nägele u. Obermiller) Johannesstr. 3 A, D-70176 Stuttgart, Germany.

Preis: 6,39 Euro

Bereitstellung von Bodendaten für die Bauleitplanung. von Jürgen Schneider, Sabine Kunzmann u. Florian Raecke, unter Mitarbeit von Frank Lehmeberg u. Frank E. Pantel, herausgegeben in der Reihe: Arbeitshefte Boden des Niedersächsischen Landesamts für Bodenforschung, Heft 2000/2, 48 S., 4 Tab., 14 Abb., Hannover 2000.

Nach einer Einleitung werden Raumplanung sowie rechtliche Rahmenbedingungen für den Bodenschutz in der Bauleitplanung, die Umsetzung der rechtlichen Vorgaben sowie die Umsetzung des gesamten Ansatzes am Beispiel der Ergebnisse aus einem Pilotprojekt (Stadt Achim) dargestellt. Die Publikation enthält eine Zusammenfassung, ein Literaturverzeichnis sowie ein Sachregister im Anhang. Sie kann allen die sich mit Fragen der Bewertung von Böden im Rahmen der Bauleitplanung befassen, zur Lektüre sehr empfohlen werden.

Zu beziehen bei: E. Schweizerbart'sche Verlagsbuchhandlung, (Nägele u. Obermiller) Johannesstr. 3 A, D-70176 Stuttgart, Germany.

Preis: 8,81 Euro

Landschaften und Böden im Regierungsbezirk Karlsruhe,

herausgegeben 1999 vom Regierungspräsidium Karlsruhe. ISBN 3510651928

Die vorliegende Publikation stellt eine umfassende Beschreibung von Böden und Bodenlandschaften des oberrheinischen Tieflands, des Schwarzwalds, der Gäulandschaften, des Odenwalds, sowie der Keupen- hugel- und Berglandregion des Regierungsbezirks dar, mit zahlreichen Bodenabbildungen und Bodenprofilen und zusatzlichen Erluterungen zur Bodenfunktion, zur Geologie und zu Bodenkennwerten.

Die Publikation stellt somit einen wichtigen Beitrag zum Verstandnis der Okologie eines wesentlichen Teiles von Baden-Wurttemberg dar und ist in seinem Aufbau und in seinen Aussagen beispielhaft. Sie wendet sich an die verschiedensten, an Natur und Okologie interessierten Leser aller Altersgruppen, sowie Lehrpersonen und solche, die sich fachlich mit der Okologie Sudwestdeutscher Landschaftsrume beschaftigen.

Zu beziehen bei: Gebruder Borntrager, Verlagsbuchhandlung, Berlin und Stuttgart. E. Schweizerbart'sche Verlagsbuchhandlung, Johannesstr. 3 A, 70176 Stuttgart, Deutschland. Preis: 13,80 Euro

Methodendokumentation Bodenkunde, 2. Auflage – Auswertungsmethoden zur Beurteilung der Empfindlichkeit und Belastbarkeit von Boden.

232 Seiten, 26 Abb., 112 Tabellen, herausgegeben von Ad-hoc-AG Boden, Koordination: Volker Hennings, Bundesanstalt fur Geowissenschaften und Rohstoffe, 2000.

Vorliegende Publikation im Rahmen des Geologischen Jahrbuchs, Sonderhefte, SG1, ist ein wesentlicher Beitrag zur Beurteilung der Empfindlichkeit und Belastbarkeit von Boden, insbesondere bezuglich potentieller Verdichtung, Filtervermogen fur Schwermetalle, potentielle und aktuelle Erosionsgefahrung durch Wasser, Grundwasserneubildung uber Sickerwasserraten aus dem Boden, Nitratruckhaltevermogen, ackerbauliches Ertragspotential, potentielle Erosionsgefahrung durch Wind sowie potentielle Versauerungsgefahrung von Waldboden. Hierzu werden Kennwerte zur Einschatzung der jeweiligen Parameter dargestellt und erlautert, wodurch fur den Nutzer erhebliche Vorteile im schnellen Erkennen und Bewerten von Problemen und Losungsmoglichkeiten gegeben sind. Die vorliegende Methodendokumentation ist daher hervorragend geeignet, denjenigen, die sich mit der Raumplanung und Bodennutzungsplanung im weitesten Sinne befassen, bei der Beurteilung der Empfindlichkeit und Belastbarkeit von Boden eine schnelle Hilfestellung zu vermitteln.

Zu beziehen bei: Schweizerbart'sche Verlagsbuchhandlung, Johannesstr. 3 A, 70176 Stuttgart, Deutschland. Preis: 70,56 Euro

“La foret et sa culture sur sol a nappe temporaire – Contraintes subies, choix des essences, interventions et gestion durable” par Gerard Levy et Yves Lefevre

– avec le concours de la Direction de l'Espace rural et de la Foret, Ministere de l'Agriculture et de la Pecher. Sols a nappe temporaire sont normalement reserve a la foret, en raison de leur propriete physique defavorable et sont pour le forestier particulierement difficile a gerer.

C'est la raison pour laquelle ce livre contribue d'une maniere tres importante a comprendre meilleur les relations ecologiques complexes entre les forets et les sols a nappe temporaire. L'ouvrage est ecrit par deux auteurs qui connaissent parfaitement le sujet traite auquel ils ont consacre avec leur equipe beaucoup d'annees de recherche. C'est pourquoi cette ouvrage rendra le plus grand service aux forestiers de terrain confronte avec la gestion du sol a nappe temporaire, parce qu'il trouveront de judicieux conseils sur la choix des essences, la conduite des peuplements, et aussi sur les methodes d'amelioration les mieux adaptees aux differents situations ecologiques.

Le livre est diffuse par le Service Edition de l'Ecole nationale du Genie rural, des Eaux et des Forets de Nancy, 14, rue Girardet, CS 4216, 54042 Nancy CEDEX, a un prix de 220 FF.

German Environmental Law. Maire Mulloy/Eike Albrecht/Tanja Hantisch, Eds. Erich Schmidt Verlag, Berlin, Bielefeld, Munchen, Serie: Beitrage zur Umweltgestaltung, Vol. A 147, 2002, XXIV, 434 pages, 14.4x21 cm, soft cover. ISBN 3 503 06072 3.

The English-language version of the legislation for the protection of the environment currently in force in Gemany aims at making this body of law accessible to non-German speakers, students and professionals alike. The book addresses the principle laws aiming at the protection of air, soil, and water, of national landscapes and habitats, including flora and fauna, as well as laws of a more general scope, e.g. those regulating liability in cases of harmful impacts on the environment. Moreover, laws with particular relevance for potential investors, such as the Environmental Impact Assessment Act and others are included in this compilation.

The publication also contains translations of the respective German language original versions of the laws in force by October 2001.

Price: EURO 29.80/ SFR 51.-

New Journals

Malaysian Journal of Soil Science. A scientific journal published by the Malaysian Society of Soil Science. S. Jusop, Chief Editor. ISSN 1394-7990.

The first issue of this yearly publication appeared in 1997, but came to my attention only recently. This scientific journal publishes papers in English and Bahasa Malaysia on matters related to soil and soil-plant problems. The aim is to promote the development of soil science in Malaysia and the Southeast Asian region in general.

For further information, contact the Chief Editor, Prof. Dr. Shamsuddin Jusop, Department of Soil Science, Universiti Putra Malaysia (UPM), 43400, UPM Ser-

dang, Selangor Darul Ehsan, Malaysia

Journal of Soils and Sediments, Protection, Risk Assessment and Remediation. Quarterly. T. Knacker, W. Kordel and W. Peijnenburg, Editors-in-Chief. TF. Guerin and J. Matschullat, Co-Editors. Ecomed Publishers, Landsberg. ISSN 1439-0108.

Aims and Scope of the journal with regard to soils. Soils as the interface of lithosphere, hydrosphere, atmosphere and biosphere present one of the most challenging topics for environmental research. The role of healthy soils to sustain life and generate food is but one of their invaluable functions. We only start to understand soils as natural biochemical reactors, and the Journal of Soils and Sediments (JSS) will contribute to a better comprehension of soil systems. The journal is printed and is available online (www.scientificjournals.com/webedititions/jss).

For further information about subscription possibilities, contact Sigrid Unger, Ecomed Publishers, Justus-von-Liebig-Strasse 1, D-86899 Landsberg, Germany. Fax: +49-8191-125-103. E-mail: s.unger@wmi-verlagsservice.de. The Publisher Editor is Almut Beate Heinrich, Fax: +49-8191-125-492. E-mail: a.heinrich@ecommed.de. Homepage: www.scientificjournals.com.

New AG International. The World Leading Publication on High Tech Agriculture. Quarterly. J.P. Leymonie, Editorial Director. NAI Ltd., Teddington.

World Agriculture is rapidly becoming more sophisticated with the High Technology sector growing at 8-10% per annum. This first international magazine covers all aspects of the chain from the supply to the end-user of specialty farm inputs, equipment and services. The primary focus will be on plant nutrition and water management.

For further information: J.P. Leymonie, 12 rue du Hagueneck, F-68000 Colmar, France. Fax: +33-389305134. E-mail: editorial@newaginternational.com. Subscription enquiries: Fax: +44-1932-781668. E-mail: newag@newaginternational.com. Homepage: www.newaginternational.com.

Vadose Zone Journal. R. Van Genuchten, Editor, L. Al-Amoodi, Managing Editor. Soil Science Society of America. Electronic Journal.

This new peer-reviewed electronic journal will have its inaugural issue in 2002. It will cover physical, chemical and biological aspects of the vadose zone in the environmental, agricultural and earth sciences. Examples of topics are: variably saturated fluid flow, heat and solute transport in granular and fractured media, flow processes in the capillary fringe at or near the water table, shallow water table management, climate change impacts on the vadose zone, carbon sequestration, biogeochemical transformation processes, microbial processes, bioremediation, and fate and transport of radionuclides, chemicals, colloids, viruses and microorganisms.

For additional information, see: www.soils.org.

Ethics, Place and Environment. T. Unwin, editor. Carfax Publishing, Taylor and Francis Group. Print: ISSN 1366-879X; online 1469-6703.

The central aim of this journal is to provide a forum for the publication of research and scholarship on all aspects of geographical and environmental ethics. Each issue includes mainline papers (research papers and reviews of key thematic issues), short contributions (research notes, conference reports, letters and debates), and reviews (reviews of recent material in the relevant fields). For further information see: www.tandf.co.uk/journals.

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Perspectives in Plant Ecology, Evolution and Systematics. P.J. Edwards, editor-in-chief, K. Fleischmann, managing editor. Bi-annually. Urban & Fischer, Nature Publishing Group. ISSN 1433-8319.

The journal's aim is to put the subject of plant ecology, evolution and systematics in perspective, publishing not only reviews of existing material, but also monographic studies which include original data. Key topics include: plant population dynamics and ecology, plant demography, plant evolution and genetics, Plant-ecosystem development, and biogeographical research. Subscription prices: institutional rate: combined print and online: GBP 67.00 or USD 112.00; print or online: GBP 61.00 or USD 102.00; personal rates: combined print and online: GBP 31.00 or USD 50.00; print or online: GBP 28.00 or USD 45.00. Orders to: see below.

Basic and Applied Ecology. Journal of the Gesellschaft für Ökologie. T. Tschamtké, editor-in-chief. Urban & Fischer, Jena. ISSN 1439-1791.

This journal is a forum in which significant advances and ideas can be rapidly communicated to a wide audience. It publishes mini-reviews and original contributions from all areas of basic and applied ecology. The journal especially welcomes papers that strive to integrate the various disciplines and issues within the broad field of ecology. The Gesellschaft für Ökologie is a scientific society which includes a broad spectrum of disciplines, including soil science and landscape ecology. Subscription prices (2001): Europe: GBP 165.00; Rest of world: GBP 172.00. Airmail is surcharged. Single issues GBP 58.00.

Orders to: German speaking countries: Urban & Fischer Verlag, Abo-Service und Vertrieb, Barbara Dressler, Löbdergraben 14a, D-07743 Jena, Germany. Fax: +49-3641-626443. E-mail: b.dressler@urbanfischer.de. Elsewhere: The Nature Publishing Group, Linda Still, Brunel Road, Basingstoke, Hampshire RG21 6XS, UK. Fax: +44-1256-463570. E-mail: l.still@nature.com. Homepage: www.urbanfischer.de/journals.

Ecological Indicators. Integrating Monitoring, Assessment and Management. D.E. Hyatt, editor-in-chief. S.E. Joergensen, associate editor. Elsevier, Amsterdam. ISSN 1470-160X

The aim of this new journal is to integrate the monitoring and assessment of ecological and environmental indicators with management practices. It provides a forum for discussing the applied scientific development and review of traditional indicator approaches, as well as for assessing theoretical, modeling and quantitative applications such as index development. Accepted are original research papers and case studies, invited review articles, thematic issues, short notes, invited viewpoint articles, letters to the editor and book reviews.

Subscription prices (2002): Europe: EUR 313; Japan: JPY 41.600; elsewhere: USD 351.00.

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Tropical Soil Science News.

This newsletter is distributed free of charge. It contains a large variety of kinds of contributions about tropical soil science and related topics. See www.calm.unimas.my/portal/scripts/polling/pollmentor/unimasdirectory.asp.

For further information and contributions: Dr. Eswaran Padmanabhan, Faculty of Resource Science and Technology, University of Malaysia Sarawak, Jalan Dato' Musa, 94300, Kota Samarahan, Sarawak, Malaysia. E-mail: eswaranpadma@yahoo.com. Homepage: www.unimas.my

RESPONSE TO LAND DEGRADATION

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Published: June 2001, size 18 x 24 cm, ca. 500 pp., with 10 colour plates
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CR Cryosols

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DM World Soils and Terrain Digital Data Base (SOTER)

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FA Soil Organic Fertilizers and Amendments

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IC International Soil Convention

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