



# **Bulletin**

**of the International Union of Soil Sciences**

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**de l'Union Internationale de la Science du Sol**

# **Mitteilungsblatt**

**der Internationalen Bodenkundlichen Union**

# **Boletín**

**de la Union Internacional de la Ciencia del Suelo**

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**INTERNATIONAL UNION OF SOIL SCIENCES  
UNION INTERNATIONALE DE LA SCIENCE DU SOL  
INTERNATIONALE BODENKUNDLICHE UNION**

Founded as International Society of Soil Science (ISSS)/Fondée comme Association Internationale de la Science du Sol (AISS)/Gegründet als Internationale Bodenkundliche Gesellschaft (IBG): 19-05-1924.

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A scientific union member of ICSU since/Membre scientifique du CIUS depuis/Wissenschaftliches Mitglied von ICSU seit: 1993.

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## EDITORIAL

In April 2000 an Extraordinary Council Meeting (Mid-Term Meeting between two World Congresses) was organized in Bangkok (as announced in Bulletin No. 96, pp 5-11), to provide a forum to discuss and decide upon a new scientific structure, and new bye-laws as a necessary supplement to the already existing rules of IUSS. On the following pages, the outcome of this Council Meeting will be outlined in detail.

Important changes are e.g.: the business language of IUSS, which will be only English in the future, the procedure for the determination of annual dues of National Soil Science Societies to the Union, and new voting procedures for operational units like Divisions, Commissions and Working Groups at the World Congresses. The Secretary-General must receive the proposals for candidates for chairpersons at least six months before the Congress. These proposals must be backed by a number of members.

Please read the following texts, especially the sections dealing with the new scientific structure and the bye-laws, in detail, as they provide comprehensive information about the changes in our Union.

Within the next months, the Treasurer and the Secretary-General, together with the Committee on Budget and Finances (CBF) will address the National Soil Science Societies in writing, for the settlement of the annual contributions of these Societies to the Union. In view of this fact, I would like to ask you to address your National Academies of Sciences in order to get support for the payment of these annual dues. If you need more detailed information on such a procedure, please contact the Secretary-General.

Looking back on the development of our Union in the last decade, it can be pointed out that in 1993 ISSS became a full member of the International Council for Science (ICSU). This fact highly increased our opportunities to reach out to National Academies and International Union Members, strengthening the links between soil science and the national scientific communities as well as co-operations with other sciences on a world-wide level.

In consequence, we had to change our Society into a Union, with new rules, a new scientific structure, and new bye-laws, in order to meet the challenge of future co-operation within and outside IUSS. This process was concluded at the end of the Mid-Term Meeting in April 2000 in Bangkok.

Nevertheless, the last and decisive steps still lie ahead, and it is now an important task for all of us to bring this new structure into operation. Concerning the financial matters, we do hope to conclude this process before the start of the 17<sup>th</sup> World Congress of Soil Science. The new scientific structure will come into force during the next World Congress in Bangkok, in 2002, through elections of new Chairpersons for Divisions, Commissions and Working Groups. I should like to ask for your kind co-operation and help in this matter, in order to conclude this phase of our common endeavours for a new future of our Union. With the start of a new millennium in 2001, the Bulletin will only be published in English, in accordance with the new bye-laws of our Union.

Winfried E. H. Blum  
Secretary-General of IUSS

**REPORT**  
**ON THE EXTRAORDINARY MID-TERM MEETING OF THE IUSS COUNCIL**  
**in Bangkok/Thailand, from April 17-21, 2000**

The Mid-Term Meeting was structured into two parts: during the first part, an International Symposium on »Soil Science: Accomplishments and Change in Paradigm towards the 21<sup>st</sup> Century«, on April 17-18, 2000 was held, together with colleagues from the Soil and Fertilizer Society of Thailand discussing the actual state of soil science in the international sphere, mainly focussing on two targets:

- the scientific re-structuring of the IUSS and
- the organization of the 17<sup>th</sup> World Congress of Soil Science in 2002.

Thereafter, the Mid-Term Meeting of the Council Members took place, with two main goals:

- discussion and conclusion of the new scientific structure of IUSS and
- conclusion of the Bye-laws, as necessary supplement to the new Statutes of IUSS, which entered into vigour after the 16<sup>th</sup> World Congress of Soil Science in Montpellier, France.

In the following, about both events will be reported.

**The International Symposium on Soil Science: Accomplishments and Changing Paradigm  
towards the 21<sup>st</sup> Century, 17-18 April 2000, Bangkok, Thailand**

In this Symposium, participants from 19 countries (Argentina, Australia, Austria, Canada, China, Cuba, France, Germany, Hungary, Italy, Japan, Kenya, Korea, Poland, Portugal, Spain, Thailand, the United Kingdom and the United States) took part, with a total of about 100 participants, about 40 of them from outside Thailand. *The Symposium was a great success, because it was possible to define a broad scope for the 17<sup>th</sup> World Congress of Soil Science (WCSS), under the theme: »Soil Science: Confronting New Realities in the 21<sup>st</sup> Century« and to define emerging issues in soil science, reaching from new methodological aspects in different scientific areas, especially in soil biology, up to new scales of dimensions, in which soil science research takes place.*

The outcome of this event was very important for the following discussions on the new scientific structure and the Bye-laws.



Participants of the International Symposium on Soil Science: Accomplishments and Changing Paradigm towards the 21<sup>st</sup> Century, 17-18 April 2000, Bangkok, Thailand



IUSS President Sompong Theerawong opens the Meeting. To his left: the Secretary-General, Winfried E.H. Blum, and the Vice-President, Irb Kheoruenromne.



The Council involved in intensive discussions during the Council Meeting, 18-21 April 2000.



Some relaxing hours for the Council during the performance of typical Thai dances.

**The Mid-Term Meeting of the IUSS Council  
April 18-21, 2000**

The first important outcome of this Mid-Term Meeting was an agreement on the new scientific structure of IUSS, which was approved on April 20, 2000. In the following, the IUSS revised structure is shown and explained in detail, for careful scrutiny:

**IUSS REVISED SCIENTIFIC STRUCTURE**

Approved by Council 20/04/2000

- D1.      Soil in Space and Time
  - C1.1    Soil Morphology
  - C1.2    Soil Geography
  - C1.3    Soil Genesis
  - C1.4    Soil Classification
  
- D2.      Soil Properties and Processes
  - C2.1    Soil Physics
  - C2.2    Soil Chemistry
  - C2.3    Soil Biology
  - C2.4    Soil Mineralogy
  
- D3.      Soil Use and Management
  - C3.1    Soil Evaluation and Land Use Planning
  - C3.2    Soil and Water Conservation
  - C3.3    Soil Fertility and Plant Nutrition
  - C3.4    Soil Engineering and Technology
  - C3.5    Soil Degradation Control, Remediation, and Reclamation
  
- D4.      The Role of Soils in Sustaining Society and the Environment
  - C4.1    Soils and the Environment
  - C4.2    Soils, Food Security, and Human Health
  - C4.3    Soils and Land Use Change
  - C4.4    Soil Education and Public Awareness
  - C4.5    History, Philosophy, and Sociology of Soil Science

At the IUSS Council meeting in Bangkok, Thailand in April 2000 the new scientific structure was approved. It is somewhat different from the structure published in IUSS Bulletin No 96 but it maintains the concept of four Divisions with a number of commissions as is shown above. The concept of only having four divisions keeps the overall management structure small with the best opportunity for synergistic interactions among disciplines. The idea is to promote multidisciplinary working groups to address joint activities. The revised structure is incorporated into the bye-laws and if there is a need, it later can be modified by a simple majority vote of the council. The Bye-laws were also modified at the council meeting and are published here. The Divisions, Commissions, and Working Groups along with their Chairpersons and Committees are defined in Statutes G1-G7, H1-H2, and I1-I2. The titles and duties of the Divisions are defined in the Bye-laws, as are the duties and functions of the Commissions. A careful reading of the Bye-laws is necessary so that changes in them are understood.

- Division 1 is the "What." It looks at the soil as a body and how it was formed, the extent of it global coverage, and the many complex interactions and interactions with the biosphere, hydrosphere, atmosphere, and lithosphere. This division focuses its attention on the "what" of the pedosphere and the extent of its current understanding. It is the medium and experimental material that is being investigated. It is why we are a Union of soil scientists in a common bond of interests.
- Division 2 is the "How" or the fundamental science behind our discipline, the understanding of fundamental processes.
- Division 3 is the "Why" it is important to society. It is the application of our fundamental knowledge to solve high priority social, economic, and environmental challenges of major societal and scientific interest. It can be considered the applied segment of science.
- Division 4 is more generalized and entails the transfer and outreach of our knowledge base to segments of our society where soils and soil science are frequently misunderstood or sometimes under appreciated. It takes the soils information generated in the other three divisions along with developing new scientific information and addresses public literacy in soil science, education, international conventions, consequences of human activities on soil ecosystems, policy issues, food security, history of the discipline, etc. This division might be considered the "capstone" division because it must integrate our scientific body of knowledge so scientists, policy makers, and those specialists remote to soil science may become more informed about the utility of this most essential natural resource at the Earth's surface. It is the scientific entity that interacts well beyond traditional bounds.

#### D1: Division 1 - Soils in Space and Time

Soils in time and space is a Division that deals with the "body" of soil in a landscape context. It quantifies pedogenic processes responsible for spatial diversity in soil cover with landscape, geomorphic and geographic patterns. It includes the scaling of soil morphology from micro to macro levels of generalization, calibration of morphology to pedogenic processes, and integration of this pedosphere knowledge with that of the biosphere, atmosphere, lithosphere, and hydrosphere. Only through the knowledge of morphogenesis is it possible to develop rational multiple working hypotheses of soil formation, soil chronology, soil morphology, and geographic distribution patterns. Without this linkage there is little opportunity to extrapolate our knowledge base on soil attributes beyond immediate locals where it was derived. Using a morphogenic bias, it is possible to catalogue and classify the population of soil attributes and generate multiple-use interpretations with spatial or tabular representations using GIS, and other state-of-the-science technologies.

##### C1.1. Commission 1.1: Soil Morphology

Soil is a continuous natural body that has spatial and temporal dimensions (soil cover or pedosphere). Primary organic and inorganic constituents are organized into secondary polyhedral structural units that in turn are assembled into vertical and lateral horizons that comprise soils unique to the environment under which they are formed. The morphogenetic properties that comprise soils are the essential elements of soil classification, interpretation, and land quality. They result from current and paleohistory of soil environments and in turn record many of the environmental signatures that result. Morphogenetic properties are dynamic and anisotropic in response to other state factor perturbations. The study of the soil cover structures develops knowledge about soil properties and dynamics; it permits the understanding of the genesis of the soil covers.

##### C1.2. Commission 1.2: Soil Geography

Soil geography is a study of the soil cover and its many morphogenetic attributes as a function of climate, geology, relief, vegetation, human activities, and history (natural and anthro-



pogenic). It is that component of the division that serves as a vehicle to transfer soils knowledge gained in C 1.1, especially as it impacts ecosystem sustainability, food security, land carrying capacity, human health, and the global biosphere. Different types of maps, at different scales, represent soil distribution covers of significance to these utilitarian priorities and the field of soil science as a whole.

### C1.3. Commission 1.3: Soil Genesis

This commission quantifies the fundamental physical, chemical, biological, and mineralogical processes (pedogenic) of gains, losses, translocations, and transformations occurring in soils from micro to macro scales to explain and understand profile formation. Utilizes fundamental knowledge gained from other disciplines to model dynamics and processes responsible for soil behavior at the landscape or ecological scale. This information is integrated with that of other scientific databases to quantify environmental interactions under which soils formed in both modern and paleo times.

### C1.4. Commission 1.4: Soil Classification

Soil classification is that commission within the division that categorizes the infinite number of morphogenetic attributes of the pedosphere so the attributes used to classify soils permits the greatest number, most precise, and most significant statements about soil behavior and genesis. Classification systems are hierarchical so the knowledge base and interpretational inferences become more specific from the higher categories to lower ones. Taxonomic names are given to the categories and constituent classes so the relationships between soil attributes (horizons, pedon(s), cartographic units, generalized soil associations, soil covers, etc.) can best be remembered for a specific objective. Classification allows scientists to communicate and share knowledge about the "body" that soil scientist's study.

## D2. Soil Properties and Processes

Division 2 is concerned with the integration of physics, chemistry, biology, mineralogy and pedogenesis to understand fundamental soil properties and processes that control transport, cycling, speciation and bioavailability of elements or molecules. These phenomena are studied at multiple scales ranging from global to atomic.

### C2.1. Commission 2.1: Soil Physics

Soil physics deals with the physical properties of the soil, with emphasis on transport of matter and energy. Major research thrusts include modeling transport of inorganic, organic and microbial contaminants, fractal mathematics, spatial variability, geostatistics, computer-assisted tomography, and remote sensing of soil physical properties.

### C2.2. Commission 2.2: Soil Chemistry

Soil chemistry deals with the chemical composition, chemical properties, and chemical reactions of soils. Major research thrusts include: application of molecular scale in-situ techniques to elucidate aqueous and surface chemical speciation and mechanisms, kinetics of soil chemical phenomena; rhizosphere chemistry; organic matter structure; and soil chemical modeling.

### C2.3. Commission 2.3: Soil Biology

Soil biology is concerned with soil inhabiting organisms, their functions, reactions, and activities. Major research thrusts are carbon sequestration, nutrient cycling, microbial ecology, bioremediation, and molecular soil biology.

## C2.4. Commission 2.4: Soil Mineralogy

Soil Mineralogy deals with all kinds of minerals occurring in soil environments especially rock-borne and soilborne ones. Important soil processes like weathering and mineral neo-formation are major tasks. The consequences of transport and biological turnover on minerals and their relevance to soil micro- and macro-structure is studied. The relevance of soil minerals and mineral-organic interactions are taken into account in relations to environmental and specifically soil fertility issues. Specific attention is given to the use of advanced analytical techniques to analyze mineral crystal structure, surface properties, and mineral-mineral as well as mineral-organic components interactions from the molecular scale up to the consequence for the landscape level.

## D3. Division 3. Soil Use and Management

"Soil Use and Management" is a Division which focuses on how we use the soil and how it links to the knowledge base of Divisions 1 and 2 in order to ensure that soils are used and managed in a sustainable manner. The Division is concerned with both soil use and management in terms of agricultural production, forestry, grazing lands, and the broader environmental context. Activities to remediate degraded soil, arising from the agricultural misuse of soil or contaminations resulting from non-agricultural activities are part of the scientific area of this Division. The aim of this Division is to ensure that through our knowledge and understanding of soil properties and processes and the distribution of soils within the landscape soils and soil quality are maintained and improved.

### C3.1. Commission 3.1 Soil Evaluation and Land Use Planning

As soil is increasingly acknowledged as a scarce and finite resource it is essential that decisions related to soil(s) use(s) are optimized taking account of the nature and pattern of the soil and the socio-economic conditions at a variety of scales. Activities of this commission will encompass the broad activities of soil evaluation and land use planning and will include related activities of data gathering and management including remote sensing and Geographical Information Systems.

### C3.2. Commission 3.2: Soil and Water Conservation

This commission acknowledges that an essential element in many soil management strategies is the need to maintain the quality of the soil resource through appropriate soil and land management practices, including tillage. Frequently, the conservation of soil is intimately coupled with the management of surface waters through erosion control. In addition to the prevention of erosion by water and wind, this commission would also concern itself with the efficient management of soil water through irrigation, drainage and the limitation of water loss from the soil surface.

### C3.3. Commission 3.3: Soil Fertility and Plant Nutrition

The management of soil fertility is a major activity of a substantial proportion of the world's soil scientists. The inclusion of plant nutrition in the title of this commission recognizes the often very close relationship between those managing soil fertility and those concerned directly with plant nutrition. This commission would concern itself with the identification of technologies appropriate to the particular soil conditions and combinations of soil conditions.

### C3.4. Commission 3.4: Soil Engineering and Technology

This commission is concerned with engineering uses of soils both in the agriculture and non-agriculture context. Soil serve many purposes such as road beds and fill material they are shaped and changed for many uses, used for filter fields, sewage and waste storage etc.

### C3.5: Commission 3.5: Soil Degradation Control, Remediation, and Reclamation

Many soils of the world are degraded, both because of agricultural activity and through the pollution arising from urban, industrial activity, and other human activities. The purpose of this commission is to use our knowledge and understanding of soil properties and processes to ensure that damaged/degraded soils may be remediated or reclaimed and returned to productive use.

## D4. The Role of Soils in Sustaining Society and the Environment

There is a need to provide soil science input in many policy-related topics addressing environmental and social concerns. This Division will provide the soil science input in the decision-making process and address special issues that will be brought to the attention of the IUSS especially in relation with the human and socio-economic use of the soils.

### C4.1. Commission 4.1: Soils and the Environment

This Commission will look at the soil as part of the ecosystem. Human activities have a strong impact on the ecosystems and the soil and environment interactions in relation to humans are particularly important. Soils, are a major component of the biosphere at the interface between *the lithosphere, atmosphere and biosphere, are investigated through several international programs such as IGBP*; in the same way, the soil plays a considerable role in the carbon sequestration (UN Convention on Climate Change) and is the habitat for a number of species covered by the Biodiversity Convention.

### C4.2. Commission 4.2: Soils, Food Security and Human Health

Soils are the essential for food production in most countries. Considering that one third of the land area is presently used for agriculture, and the world population is increasing, creating additional pressure on agricultural land, providing enough safe and nutritious food will be an ongoing challenge. Among the concerns of this commission, there is the maintenance and conservation of agriculture lands, the role of soils in a changing world in relationship to human health.

### C4.3. Commission 4.3: Soils and Land Use Change

Soils play a large role as source and sinks of greenhouse gases. In a context of global sustainability, this Commission will investigate how the source/sink function of the soils can be managed and controlled to mitigate the impact of climate change. Land use change is of a major interest to all, what is the effect of urbanization, lost of productive land to other uses, forest conversion, and other changes are of major interest and these changes will fall under this Commission.

### C4.4. Commission 4.4: Soil Education and Public Awareness

This commission deals with how we present knowledge teaching and the development of soil scientists as well as anyone interested in soils from a learning standpoint and the information we give to create a general public awareness of soils. A well informed public is needed so that the importance of soils is understood by all.

### C4.5. Commission 4.5: History, Philosophy, and Sociology of Soil Science

This commission deals with our past; it links the study of what has happened in history and how soils can be used to help explain the past changes. This commission is not just a record of the history but the use and understanding of soils information and its relationship to human development and history.

## New IUSS Bye-laws – Introductory Remarks

The second important outcome of the Council Meeting was the conclusion of the IUSS Bye-laws, which were approved by the IUSS Council on April 21, by representatives from 19 countries. They are published below. They should be read to see the changes that were made. The new approved scientific structure of the IUSS is incorporated into the Bye-Laws and it is covered in more detail on the preceding pages.

Some of the changes will be highlighted here. Nominations for chairs are quite different from previous statutes because they now will be handled from a slate of candidates prepared prior to the Congress rather than during the Congress. Nominations require prior signatures of specific number of Members (see Bye-Laws 3.1d and further details of process below).

1. New revised IUSS Scientific Structure. There are now four divisions and 18 commissions.
2. The duties and functions of Divisional Chairpersons and Committees, the Chairpersons and Committees of the Commissions, the Chairpersons and Secretaries of Working groups and the Standing Committees are explained and linked to specific Statutes of the IUSS as published in 1998. Our new Statutes make it easier to change administrative and scientific structure of the IUSS by a simple majority vote of Council. It is expected that over time some changes will be made of the Statutes and Bye-Laws to better accommodate functioning of the IUSS.
3. Of particular interest are changes to the Election of officers for Divisions and Working Groups (See Statutes K1-4). Members can vote for the officers of **one** Division, **two** Commissions, and **one** Working Group (Bye-Laws 3.1b). With these changes, it is implicit that IUSS Members understand the new structure so they may contribute to the Division, Commissions, and Working Group where their major expertise and interests may lie.

In the past nominations for the different offices were made at the congress. This has now changed and nominations will be made in advance for all officers. See section 3.1b of the revised Bye-Laws. **Nominations must be submitted to the Secretary General at least six months before the congress.** The nominee must be a fully paid-up Member (see section .1e for the relevant sections in the Statutes for who is a Member) and must submit in writing to the Secretary General a paragraph stating his/her willingness to serve. Nominations require at least 20 signatures (Faxed copies are acceptable) of fully paid-up members (as in Statute B2, B3, B4, or B6). Only 8 can be nationals of a single country.

You need to start putting nominations together now so that the needed number of members can sign them and they can be forwarded to the Secretary General early in 2001. Review the new scientific structure and develop your nominations for the Divisions, Commissions, and Working Groups. This will be the first election under the new structure and the members elected will have a major impact on the future of the IUSS. Do not delay.

A form that can be used for nominations is attached. Because of problems in getting signatures from different countries, e-mail support for a nomination will be acceptable. It is necessary that the e-mail address corresponds to that of the nomination supporter. A copy of the e-mail(s) needs to be attached to the nomination form.

Nominations are needed for the following:

- Division Chairperson
- Division Vice-Chairperson (Nominated by Host Country)
- Division Secretary (Nominated by Host Country)

Commission Chairperson  
Commission Vice-Chairperson  
Commission Secretary

Working Group Chairperson: Nominations not needed in advance (Election will take place at Working Group business meeting).

**IUSS Nominations for Offices of Divisions and Commissions**

**NOTE THIS FORM MUST BE COMPLETED AND SUBMITTED TO THE SECRETARY GENERAL AT LEAST SIX MONTHS BEFORE THE CONGRESS.**

Office candidate is being proposed for: \_\_\_\_\_

Candidate's Name including country he/she is from: \_\_\_\_\_

Attach a qualification statement to the form for the candidate.

Each nomination must have 20 supporters and 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. _____	_____	_____
11. _____	_____	_____
12. _____	_____	_____
13. _____	_____	_____
14. _____	_____	_____
15. _____	_____	_____
16. _____	_____	_____
17. _____	_____	_____
18. _____	_____	_____
19. _____	_____	_____
20. _____	_____	_____

**IUSS BYE-LAWS**  
**Approved by IUSS Council April 21<sup>st</sup> 2000**

**1. Definitions of the Bye-laws.**

Bye-laws are secondary to Statutes, and cannot contradict Statutes (Statute A5). The purpose of Bye-laws is to govern the detailed interpretation of the Statutes, and set rules for subjects that the Statutes do not deal with. They can be altered more easily and more frequently than the Statutes, as conditions change or experience is gained (Statute A5). Changing a Bye-law requires only a simple majority of IUSS Council on a formal motion, whereas changing a Statute requires a 2/3 majority on a postal ballot (Statute M1).

**2. Divisions, Commissions, Working Groups and Standing Committees.**

**2.1 Organisation of the Scientific Structure.**

**D1. Soil in Space and Time**

- C1.1 Soil Morphology
- C1.2 Soil Geography
- C1.3 Soil Genesis
- C1.4 Soil Classification

**D2. Soil Properties and Processes**

- C2.1 Soil Physics
- C2.2 Soil Chemistry
- C2.3 Soil Biology
- C2.4 Soil Mineralogy

**D3. Soil Use and Management**

- C3.1 Soil Evaluation and Land Use Planning
- C3.2 Soil and Water Conservation
- C3.3 Soil Fertility and Plant Nutrition
- C3.4 Soil Engineering and Technology
- C3.5 Soil Degradation Control, Remediation, and Reclamation

**D4. The Role of Soils in Sustaining Society and the Environment**

- C4.1 Soils and the Environment
- C4.2 Soils, Food Security, and Human Health
- C4.3 Soils and Land Use Change
- C4.4 Soil Education and Public Awareness
- C4.5 History, Philosophy, and Sociology of Soil Science

Divisions, Commissions and Working Groups, with their Chairpersons and Committees are defined in Statutes G1-G7; H1-H2; and I1-I2. The titles of the Divisions and the duties and functions of the Divisional Chairpersons and Committees are defined in the Bye-laws, as these must have a degree of permanence and certainty. The duties and functions of the Commission and Working Group Chairpersons and Committees are also defined in the Bye-laws. However, their titles are not defined here as these should respond to the views of the relevant members and to new developments in science. According-

ly, changes in these can be decided by Council as part of normal business, on the basis of proposals made by the Divisions to the Executive Committee (Statute G7).

## 2.2 Duties and functions of Divisional Chairpersons and Committees.

### Supervisory.

Their task is to ensure that the Division and its Commissions and Working Groups operate efficiently and properly, that they collaborate in an interdisciplinary manner amongst themselves and with other Divisions or parts of these, that they organise appropriate mid-term meetings alone or in collaboration, and that they collaborate with Congress Committees and other relevant parts of the IUSS.

### Strategic.

Their task is to follow wider changes in relevant sciences, and to make necessary changes in the Divisional structure through the Executive Committee and Council, or to address other initiatives. They should also ensure appropriate links and collaborations with related but non-IUSS science bodies.

### Representational.

The task of the Divisional Chairpersons is to represent the members and component bodies of the Division to and in Council and the Executive Committee. The Divisional Chairpersons and Divisional Committee should make sure that the Council and the Executive Committee are well informed, and that the interests of the Division are well served. They should also help in representing Soil Science to a wide external audience.

### Organisational.

Their task is to maintain good contact with the Bureau and Executive Committee of IUSS and the Secretary general, and to ensure that the Divisions plays their part in the general activity of the IUSS, including the organisation of Soil Congresses, the giving of assistance to soil science in developing countries, and any other initiatives.

## 2.3 Divisional Structure.

The Divisions are:

- D1. Soil in Space and Time
- D2. Soil Properties and Processes
- D3. Soil Use and Management
- D4. The Role of Soils in Sustaining Society and the Environment

The Secretary-General will maintain an up-to-date list of the full Scientific Structure at all times. Changes will be published in the Bulletin as soon as possible.

## 2.4 Duties and functions of Chairpersons and Committees of Commissions.

These are defined in Statute H1 and H2. It is the function of Commissions to organise meetings of all types, as agreed with the Divisional Committees, to maintain contact with members, and to collaborate with other Commissions. They should also take a full part in running the Divisions, particularly as Commission Chairpersons are **ex officio** members of the Divisional Committees. Joint Commissions between two or more Divisions are possible, and the Chairpersons then sit **ex officio** on all these Divisional Committees.

## 2.5 Duties and functions of Chairpersons and Secretaries of Working Groups.

These are defined in Statute I1 and I2. The duties and functions are to ensure that each Working Group is properly established and has membership of at least one Division. Each Working Group should hold at least one meeting between consecutive Congresses, and show a reasonable level of scientific activity. It should provide a brief report on its past and future activities, to the Divisional Chairperson(s) before each Congress.



## 2.6 Standing Committees.

These are defined in Statute F1. Council sets up a Committee when it feels that it is likely to need advice or supporting work on a given subject indefinitely into the future. The Committee may select a member to act as secretary. Members of a Standing Committee may be reappointed by Council and normally serve for not more than two terms of four years each. The title 'Standing Committee' should not be used for a short-term investigation, where the preferred title is 'Task Force', or for a scientific group, where 'Working Group' is more appropriate.

## 3. Elections of officers for Divisions, Commissions and Working Groups [See Statutes K1-4].

### 3.1 Elections, candidates and nominations.

a) Members (as defined in Statute B2) who are fully paid-up Members of their Adhering Body can take part in the voting procedure. National Societies shall supply a list of names of such Members one year before a Congress, on the request of the Secretary General to the Treasurer.

b) Members can vote for the officers of one Division, two Commissions and one Working Group. Voting cards will be issued to each entitled Member at Congress registration. These cards must be presented and stamped at the electoral meetings of the appropriate Division, Commissions and Working Group.

c) If Members have joined more than one National Society, they must choose one of these, and ensure that they are registered to vote with this one by the National Society. The records of Individual Members (as in Statute B3), Life Members (remaining from the ISSS) and Honorary Members (as in Statute B6) will be held centrally by the Treasurer.

d) Nominations need to be submitted to the Secretary General at least six months before the Congress. Candidates shall always be nominated by at least 20 Members (as in Statute B2, B3, B4 and B6), but the nominating Members must include not more than 8 who are nationals of a single country. Nominations of candidates will be accompanied by a paragraph stating qualifications.

e) Any person nominated as a candidate must be a fully paid-up Member (as in Statute B2) of a Full Member or Associate Member (as in Statute B4), an Individual Member (as in Statute B3), Associate Member (as in Statute B4), Honorary Member (as in Statute B6) or Life Member (remaining from the ISSS), 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, though this is not obligatory if they are represented by a supporter who can answer questions during the Meeting.

f) *The host country shall nominate the Secretary and the Vice-Chairman of each Divisional Committee to the Executive Committee before the Congress (Statute G5). These candidates will be presented to Divisional Electoral Meeting for acclamation.*

g) The Executive Committee shall ensure that there is a full list of acceptable names.

### 3.2. Voting procedure.

a) The date, time and venue of the Divisional Electoral Meetings shall be published by the Secretary General before the opening of the Congress. The Divisional Electoral Meetings (to elect Divisional and Commission Officers) will normally be within the first two days of the Congress.

b) The outgoing Chairperson of the Division shall act as the Chairperson of the Electoral Meeting, or in his/her absence, the Secretary-General will nominate a suitable Chairperson. The Chairperson will appoint two tellers.

c) The first election at each Divisional Electoral Meeting shall be of two Members for the Electoral Committee (Statute K1). The Chairperson will call for nominations for two candidates. These must be present and indicate their willingness to serve, and cannot be candidates for any Divisional offices. They may be elected by show of hands or by ballot if requested (Statute K3).

d) The tellers determine the two candidates who are the winners by the procedure in Statute K4. The Chairperson then communicates this result to the Secretary General.

e) Voting for Divisional and Commission Officers other than the Divisional Vice-Chairperson and Secretary (3.1f) takes place in turn. The final list of candidates for each office will be circulated at the beginning of the Congress. Voters mark their official ballot papers with two names, in order of pref-

erence, for each of the remaining offices of Chairperson for the Divisional Committee, and Chairperson, Vice-Chairperson and Secretary for Commission Committees. The results of the procedure given in Statute K4 are announced by the tellers and passed to the Electoral Committee.

f) Working Group elections shall be organised by the outgoing Chairperson.

### 3.3 Electoral Committee.

a) The responsibility of the Council to oversee the elections is delegated to the Electoral Committee.

b) The Electoral Committee shall consist of two members from each Division, elected at the Divisional Electoral Meeting, and a person nominated as Chairperson by Council (usually the IUSS President). The Secretary General shall be the Secretary of the Electoral Committee.

c) The Electoral Committee shall receive all the results from the Divisions voting (3.2e), those having the highest final percentages of the votes cast, are then declared elected. The names of those elected shall be notified officially by the Secretary General and shall be published in the Bulletin and the IUSS Website.

## 4 Intercongress Activities of IUSS.

### 4.1 Divisions.

Each Division is expected to organise a reasonable number of scientific meetings in appropriate science areas between Congresses, each under the aegis of the Division or one of its Commissions. Working Groups will notify the Division(s) with which they are associated of their scientific activities. Informal and small meetings require no notification or permission, but formal meetings will be considered official activities of the IUSS and should be notified to the Division(s). The IUSS logo can then be used, and the meetings will be publicised in the Bulletin and may receive other assistance, if they have been communicated to the Secretary General. It is acceptable for such meetings to be organised in collaboration with other relevant scientific bodies. Attendance at all such meetings must be open to all members of the IUSS, and they should be reported upon to the following Congress as part of the Divisional activities.

### 4.2 Standing Committees.

These Standing Committees should keep the Secretary General informed of their activities throughout the inter-Congress period, and should report on their work to Council at its Congress meeting. The current Standing Committees are:

Committee on Statutes and Structure (CSS)

Committee on Interdisciplinary Cooperation (CIC)

Committee on Standardisation (CST)

Committee on Budget and Finance (CBF)

## 5. Union Languages.

### 5.1 Business Language.

The business language of IUSS, in which Council and Committee business is transacted and official papers are published, is English. An Adhering Body may distribute part or all of the official papers in the original or their own language(s).

### 5.2 Congress Language.

The language of the World Soil Congress is English. The Host Country may use its own language, but must arrange appropriate translations into English.

## 6. IUSS Logo.

The Union logo will be used on the Bulletin and on a standard Union letterhead. This should be used on all material sanctioned by the IUSS.

## 7. Funding and Council voting arrangements.

### 7.1 Standard Scale Points.

The IUSS shall have a standard set of scale points (S) dependent upon the wealth of the country in question (Statute L3). The three scale points shall be in the ratio to each other as 1:3:5. Council shall periodically review this scale, and at least at each Congress, and on the advice of the Executive Committee and Finance Committee, may adjust all scale points. The General Rate R is a multiplier that is applied to all subscriptions *pro rata*, and will be used to alter the total subscription income of the IUSS.

### 7.2 Budget Negotiations.

Each Adhering Body will enter the IUSS at a scale point S determined in negotiation between the Committee on Budget and Finance and the Adhering Body (Statute L3). The Committee on Budget and Finance through its Chairperson shall take leadership in securing Full Members (as in Statute B1), Individual Members (as in Statute B3), Associate Members (as in Statute B4) and Sustaining Members (as in Statute B5) into the IUSS. The Budget and Finance Committee shall make recommendations to the Bureau for concurrence concerning financial matters of entry. This scale point shall be reassessed in the same way before each Congress. If agreement cannot be reached, the case may be appealed to Council, whose decision shall be final.

### 7.3 Annual Subscriptions.

The annual subscription of a Full Member shall be calculated as equal to  $S \times N \times R$ , where S is one of the three scale points, N is the number of members in the Full Member, and R is the General Rate, that is the same for all Full Members.

### 7.4 Minimum Subscription.

The minimum size of a Full Member is 50 members and the minimum subscription is US \$100.

### 7.5 Annual Budget.

The Budget and Finance Committee shall prepare an annual operating budget for approval by the Executive Committee.

## 8. Life Membership.

Members who have previously taken out Life Membership in ISSS will continue as Life Members of IUSS, and will receive the Bulletin.

## 9. Corresponding Journals.

The IUSS may form a link with well-established international scientific journals of high reputation. These will be called Corresponding Journals of the IUSS. In return, it is expected that these Journals will be made available on favourable terms to IUSS Members (as defined in Statute B2), Individual Members (as in Statute B3), Associate Members (as in Statute B4) Life Members (remaining from the ISSS) and Honorary Members (as in Statute B6), and that the Journals will make a regular financial contribution to the IUSS.



At the Extraordinary Council Meeting in Bangkok, in April 2000, Mr. Graham Price, President of the Australian Society of Soil Science presented a bid for the ASSSI to host the 19<sup>th</sup> WCSS in Brisbane, Australia, in 2010. The bid documents were handed to the President of IUSS, Dr. Sompong Theerawong and to the Secretary-General, Dr. Winfried E.H. Blum at the conclusion of the oral presentation, which included slides of the City of Brisbane and the convention centre where the congress is likely to be held. The photo, taken at the presentation, shows (left to right): Dr. Blum, Dr. Theerawong, and Mr. Price.

**The Soil and Fertilizer Society of Thailand (SFST)  
The International Union of Soil Sciences (IUSS)  
The Ministry of Agriculture and Cooperatives, Thailand (MOAC)  
Invite you to participate in the:**

**17<sup>th</sup> WORLD CONGRESS OF SOIL SCIENCE  
BANGKOK, THAILAND**

**14-20 August 2002**

**its general theme is:**

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

**The Congress will consist of:**

- plenary sessions
- symposia and special symposia
- poster sessions
- working sessions of the Divisions, Commissions, Sub-Commissions, Working Groups and Standing Committee of IUSS
- scientific and technical exhibitions

**Mid-Pre-and-Post Scientific Excursions will be arranged:**

- within various regions of Thailand
- within Asia and Australia
- with special programmes for accompanying participants

**Language: English is the medium for all presentation**

*The first announcement of the Congress Programme, including a preliminary registration form, will be published in IUSS Bulletin No. 98 (2000/2) printed in the autumn of 2000.*

The Congress Programme was decided upon during the IUSS Extraordinary Council Meeting in April 2000, Bangkok, Thailand. The Programme and calls for papers will be distributed to all organizations and parties concerning soil science.

In general, proposals for all presentations (oral and posters) in the form of one-page summaries should be submitted to the Organizing Committee of the Congress by the end of **April 2001**. The summaries will be evaluated and selected for presentations by the Scientific Committee and Symposia Conveners. The Congress requests the final submission of all papers by the end of **December 2001**. The Registration fee for the Congress will be approximately 16,000 Baht (400 US\$ at the actual rate) and should be remitted before **December 31, 2001**. Late registration fees will be approximately 20 percent higher. Young scientists, below 30, can pay a reduced registration fee. Authors of all papers are obliged to pay their registration fees before **December 31, 2001**.

**Address of the Congress Secretariat:**

The Office of the 17<sup>th</sup> World Congress of Soil Science  
Kasetsart Golden Jubilee Administration and Information Center (1<sup>st</sup> Floor)  
Kasetsart University, PO Box 1048, Bangkok 10903, Thailand  
Tel: (662) 940-5787, 940-5707-8; fax: (662) 940-5788  
E-mail: o.sfst@nontri.ku.ac.th    <http://www.17wcsc.ku.ac.th>

**ANNOUNCEMENT OF MEETINGS  
ANNONCES DE RÉUNIONS  
ANKÜNDIGUNG VON TAGUNGEN**

**Second Announcement and Call for Papers**

**SOILREM 2000**

**International Conference on Soil Remediation**

**Hangzhou, China, 15-19 October, 2000**

**under the auspices of:**

the International Union of Soil Sciences  
the Institute of Soil Sciences, Academia Sinica  
the Zhejiang University, China

The conference is dedicated to explore and discuss contemporary and emerging issues in in-situ and ex-situ remediation science and technology for soil remediation, specific to developing countries in South East Asia. The conference will provide a forum for professionals, regulators and students to present their most recent findings and to discuss up-to-date developments, methodology and analytical techniques with colleagues from around the world, and will be an excellent opportunity for stimulating international co-operations in this field.

Conference topics cover important aspects of fundamental research and innovative technologies for soil remediation, such as land farming, composting, biopiling, air-sparging, biofilters, in situ fixation, phytoremediation and phytoextraction. Target pollutants include inorganic pollutants, heavy metals, POPs, oils, petroleum hydrocarbons, etc.

**Themes:**

- ⇒ Risk assessment of pollutants
- ⇒ Bioremediation of organic pollutants
- ⇒ Phytoremediation for inorganic pollutants
- ⇒ Remediation of radionuclides
- ⇒ Metal fixation and bioavailability
- ⇒ Organic and inorganic amendments

**Information:** Conference Secretariat, Dr. Yongmin Luo,  
Institute of Soil Science, CAS, P.O. Box 821,  
Nanjing, P.R. CHINA,  
Tel: +86-25-322-8236; Fax: +86-25-335-3590  
e-mail: ymluo@mail.issas.ac.cn.

For more information and an on-line booking form, please see the Conference Webpage:

**<http://www.iacr.bbsrs.ac.uk/res/depts/soils/meetings/tsoilrem.html>**



ICSU  
INTERNATIONAL COUNCIL FOR SCIENCE



## International Conference on

### FOOD SECURITY OF URBAN AND PERI-URBAN SYSTEMS IN DEVELOPING COUNTRIES

*November 15 - 18, 2000  
Vienna, Austria*

As a follow up of an international conference on »Food Security« during the General Assembly of the International Council for Science (ICSU) in Cairo/Egypt in September 1999, an international conference will be held in Vienna/Austria.

Scientists of different research areas will discuss the results of scientific and technological research on food security of urban and peri-urban systems in developing countries.

An integrated research project between the International Geographical Union (IGU), the International Union of Soil Sciences (IUSS) and the Committee »Sciences for Food Security« of the International Council for Science (ICSU) was performed through three case studies: Cairo/Egypt, Chennai (former Madras)/India and Kathmandu/Nepal.

Research results of these case studies as well as further results from other scientists projects will be presented at the international conference in Vienna. Four topics will be discussed:

- **Sustainable food production**
- **Food technology**
- **Food markets and economy**
- **Food safety** (physiological accessibility of food)

#### **Programme of the conference**

The conference will be held in two consecutive parts:

1. **Scientific lectures:** presentation of the state of the art in a scientific conference with oral and poster sessions.
2. **Workshops:** Discussion of the four topics in four parallel workshops and presentation of the results in plenary session.

The conference ends with a conference tour to the Urban Organic Farming System of the city of Vienna, which represents an important component of urban sustainable agriculture.

The working groups will be chaired by the following persons:

- Sustainable food production: *Prof. Winfried E. H. BLUM* (Austria)
- Food technology: *Prof. Dietrich KNORR* (Germany)
- Food market and economy: *Prof. Hans-Georg BOHLE* (Germany)
- Food safety: *Prof. Mathura SHRESTHA* (Nepal)

#### **Call for papers**

*Scientists working in the area of urban and peri-urban food systems in developing countries are invited to present their results during this international conference. Participants who intend to give a pre-*



sentation should send an extended abstract with maximum 2 pages A4 (21x29 cm) to the Conference Secretariat **until August 31, 2000**. Guidelines for the preparation of extended abstracts are given in the Conference Webpage:

**[www.boku.ac.at/foodsec](http://www.boku.ac.at/foodsec)**

All abstracts will be reviewed and considered for the conference proceedings.

### **Conference Venue**

The conference rooms are located in the Campus of the University of Vienna »Altes AKH«, close to the city center of Vienna.

### **Conference Language**

The official language of the conference will be English.

### **Deadlines**

**August 31, 2000:** Deadline for the submission of abstracts

**September 30, 2000:** Notification of acceptance of presentations

**October 15, 2000:** Final registration and receipt of registration fee

**October 31, 2000:** Upon cancellation until this date, 80 % of the registration fee is refundable. No refund after this date.

### **Correspondence and Information:**

Please send all abstracts and other correspondence to:



#### **University of Agricultural Sciences**

Institute of Soil Research

Conference Secretariat

Gregor Mendel Str. 33

A-1180 Vienna, AUSTRIA

Tel.: ++43-1/47654 - 3103

Fax: ++43-1/478 9110

E-mail: [foodsec@edv1.boku.ac.at](mailto:foodsec@edv1.boku.ac.at)



## **REGISTRATION FORM**

☐ I wish to register for the conference

☐ I also intend to present a paper: ☐ oral presentation

☐ poster presentation

Surname .....

First Name .....

Title .....

Affiliation .....

Address .....

City .....

Postal Code ..... Country .....

Tel. .... Fax .....

E-mail .....

*You are cordially invited to participate in the  
5th International Symposium on Plant-Soil Interactions at Low pH (PSILPH)  
to be held in South Africa, 12 - 16 March 2001*

**VENUE:** Alpine Heath Resort and Conference Village ([www.suitehotels.co.za](http://www.suitehotels.co.za)) situated in the Drakensberg in the KwaZulu-Natal Province. Alpine Heath is in a rural area characterised by acid soils.

**DATE:** 12 - 16 March 2001

**BACKGROUND:** Soil acidity, in most parts of the world, is a major constraint to sustainable food and fibre production and to the sustainable management of the natural resource base. The International Symposium on Plant-Soil Interactions at Low pH, scheduled at 3 year intervals by the International Steering Committee, was initiated in 1987 by plant and soil scientists who realised that a multidisciplinary approach is fundamental to solving the problem of crop production on acid soils. The 1st Symposium held in Canada was followed by events in the USA (1990), Australia (1993) and Brazil (1996). The **objectives** of these Symposia are to share recent research results and applications in practice, to debate research theories and strategies, to network, to stimulate needs-driven research and technology development, and to critically analyse research successes and failures.

Since its inception in 1987, the Plant-Soil Interactions at Low pH Symposium has become such a prestigious international event of high scientific standing that the number of participants had to be restricted to a maximum of 300 to ensure meaningful interaction. This International Steering Committee tradition will be honoured by the South African Organising Committee. You are therefore encouraged to register immediately if disappointment is to be avoided.

**NOTICE OF INTENT:** Please complete the form attached and return to the Organising Committee as soon as possible, but no later than end February 2000.

**LANGUAGE MEDIUM:** English

**SYMPOSIUM THEME:** INTEGRATED MANAGEMENT AND USE OF ACID SOILS FOR SUSTAINABLE PRODUCTION. The following sessions are envisaged

- Global extent, development and economic impact of acid soils
- Effect of excessive soil acidity on the natural resources, agriculture and forestry
- Nutrient use efficiency in acid soils
- Microbial and faunal activity in acid soils
- Diagnosis and amelioration of surface and subsoil acidity
- Plant tolerance and adaptation to soil acidity
- Sustainable farming and forestry systems to prevent soil acidification

Each session will be introduced by one or more keynote speakers, followed by selected volunteer papers, and structured discussions.

A mid-week field visit to long-term crop production experiments on acid soils simultaneously comparing different tillage practices, and to conservation practices used in commercial, developing and communal farming will illustrate attempts to establish the sustainable management of acid soils.

**SYMPOSIUM PROCEEDINGS:** Papers will be peer reviewed and edited by an editorial committee. Subject to acceptance by a review panel, manuscripts will be published in a Proceedings.

**CALL FOR PAPERS AND CALENDER:** Submit to the Organising Committee

Proposed titles and concise, descriptive summaries of papers - 30 March 2000

Abstracts of papers accepted - 30 June 2000

Final manuscript - 30 November 2000

**GUIDELINES TO AUTHORS** will be distributed in May 2000 to those whose papers were accepted.

**SECOND ANNOUNCEMENT** will be sent only to those who respond to this 1st Announcement the end February 2000

**PRE- AND POST-SYMPOSIUM TOURS AND A COMPANION PROGRAMME** to be announced in the 2nd NOTICE

#### **SUMMARY OF DATES FOR SUBMISSIONS**

- |                                   |                   |
|-----------------------------------|-------------------|
| - Notice of intent                | End February 2000 |
| - Descriptive summaries of papers | 30 March 2000     |
| - Abstracts of papers accepted    | 30 June 2000      |
| - Final manuscript                | 30 November 2000  |

**ORGANISING COMMITTEE CORE GROUP** : Mara de Villiers (Convener), Dr Mart Farina (International Steering Committee Member) and Keith Taylor (National Department of Agriculture, who hosts the Symposium).

#### **CONTACT PARTICULARS ORGANISING COMMITTEE, 5th PSILPH**

Private Bag X79	Tel. + 27 12 310 2634
Pretoria 0001	Fax + 27 12 323 1157
South Africa	e-mail <a href="mailto:mara@igkw2.agric.za">mara@igkw2.agric.za</a>

#### **NOTICE OF INTENT**

<b>To :</b>	<b>Mara de Villiers</b>	<b>Fax + 27 12 323 1157</b>
	<b>Private Bag X79</b>	<b>e-mail <a href="mailto:mara@igkw2.agric.za">mara@igkw2.agric.za</a></b>
	<b>Pretoria 0001</b>	
	<b>South Africa</b>	

#### **5th PLANT-SOIL INTERACTIONS AT LOW pH SYMPOSIUM 2001**

Name: ..... Title: .....

Address: .....

Country: .....

Telephone: ..... Fax: ..... E-mail: .....

☐ Intend to attend the Symposium

☐ Intend to present a volunteer paper. My preferred form of presentation

☐ Oral presentation ☐ Poster ☐ Either

Preferred session: .....

Provisional title of paper: .....

.....

.....

☐ Will be accompanied by ☐ guest(s)

☐ Would like to receive information on the Pre- and/or Post-Symposium tours

# INTERNATIONAL WORKING MEETING ON MICROPEDOLOGY

Gent, July 9-13, 2001

organised by the  
International Training Centre for Post-Graduate Soil Scientists (ITC) and  
Ghent University, Belgium

## Call for papers

Both oral and poster presentations are welcome. The official language of the meeting will be English; posters will also be accepted in French, German and Spanish.

## Proposed topics

1. Advances in methods and techniques

1.1. Preparation techniques

1.2. Observation techniques

2. Soil micromorphology applied to:

2.1. Soil and regolith genesis

2.2. Weathering and alteration

2.3. Palaeopedology

2.4. Archaeology

1.3. Micromorphometry

1.4. Data recording and terminology

2.5. Sedimentology

2.6. Agronomy

2.7. Environmental studies

Depending on the interests of the persons responding to the first circular, topics may be added or broadened and the organisation of special symposia can be considered.

## Accommodation

Accommodation, from student rooms on the campus to four star hotels, is available at walking distance (less than 15 minutes) from the Geological Institute. As the campus can easily be reached by public transport from the historical part of the town, some participants may prefer to stay in a hotel in the town centre.

The prices range from 75 to 150 Euro per night in the centre and from 40 to 75 Euro in the area closer to the Institute. A student room will cost about 15 Euro. More information can be found on the website: <http://www.gent.be/gent/english/index.htm>.

## Registration fee

1. Participants maximum 100 Euro

2. ITC-alumni maximum 75 Euro

3. Students maximum 50 Euro

4. Accompanying persons 20 Euro

Prices for 1-3 include participation in the formal sessions and the symposia, abstracts of oral and poster presentations, coffee breaks, social events and the mid-conference excursion.

The price for accompanying persons includes social events and the mid-conference excursion. If sufficient interest is shown, a partners program could be organised (not included in the fee).

## Deadlines

Preliminary registration: **1st October 2000**

Final registration, submission of abstract and payment: **1st February 2001**

Extended abstracts: **1st April 2001**

The second circular will be mailed in **November 2000** to the persons who responded to the preliminary registration form. All the correspondence about the meeting will by preference be done by email ([iwmm@rug.ac.be](mailto:iwmm@rug.ac.be)).

Updated information and registration forms can be found at the ITC website:

<http://allserv.rug.ac.be/~amtanghe/PLRprog.html>.

As in the past, the course "Concepts of Micropedology" (G. Stoops), which is part of the curriculum of the post-graduate program "Physical Land Resources", will be open to outside students and others. This year it will again be organised as an intensive course, from 27/03/2000 to 07/04/2000, from 9 a.m. till 6 p.m..Information: Prof. Dr. G. Stoops: [georges.stoops@rug.ac.be](mailto:georges.stoops@rug.ac.be)

Preliminary registration form

**INTERNATIONAL WORKING MEETING ON SOIL MICROPEDOLOGY**  
**JULY 9-13, 2001**  
organised by  
**ITC - GHENT UNIVERSITY, BELGIUM**

Name (Prof./Dr./Mr./Mrs./Ms.) .....

First name .....

Affiliation .....

Address .....

Tel: ..... Fax: .....

e-mail: .....

I'm a student (proof to be presented at registration)

Accommodation: Student home ☐ Hotel near Institute ☐ Hotel town centre ☐

N° accompanying persons: .....

I intend to present the following communication(s):

1. Title: .....

Presentation: oral ☐ or poster ☐

Topic: ..... (see proposed topics)

2. Title: .....

Presentation: oral ☐ or poster ☐

Topic: ..... (see proposed topics)

Mail or fax this form to:

**Prof. Dr. G. Stoops**

**ITC, Ghent University**

**Krijgslaan 281, S8, B 9000 Gent, Belgium**

**email: [iwmm@rug.ac.be](mailto:iwmm@rug.ac.be) Fax: +32-9/264 49 84**

Reception of registration forms will be acknowledged by email.

**INTERNATIONAL SYMPOSIUM  
FUNCTIONS OF SOILS IN THE GEOSPHERE-BIOSPHERE SYSTEMS  
Moscow, Russia, August 26-29, 2001**

**FIRST ANNOUNCEMENT**

**Organizers:** IUSS, Com. V and VIII; Dokuchaev Soil Science Society; Russian Academy of Sciences; Moscow State University, Faculty of Soil Science

**Theme:** The problem of interaction between soils and other natural systems has been mostly interpreted by soil scientists all over the world in the context of the influence of biota, hydrosphere and lithosphere on soils. This influence is being usually investigated as the basic factor of soil genesis, evolution, diversity and functioning at global, regional and local scales. However, the response impacts of soil on other natural systems, perceived as the geosphere—biosphere functions of soil, were paid much less attention to. Meanwhile, these very functions are responsible for the great environmental importance of the soil mantle of the globe for maintaining the sustainable development of the biosphere and the commonwealth of people.

In the last decade, both the basic and applied branches of many Earth and Life sciences (geology, biology, ecology, geography, etc.) are facing the problems of the influence of soils and soil mantle on the atmosphere (global warming and soil gases emission), hydrosphere (contamination and remediation of fresh water), biosphere (importance of soil in maintaining the biodiversity and bioproductivity), and lithosphere (erosion control and conservation of soils and landscapes, generation of the terrestrial fine earth and accumulation of sediments). The present-day global process of soil degradation is exponentially reducing the reproduction of the life diversity on Earth and threatens the sustainable functioning of the biosphere.

In 1980–1990s, fundamental pioneer studies within the framework of the above-mentioned problems were carried out in Russia, and a new scientific research area »Structure-functional role of soils in ecosystems and biosphere« developed. Therefore, the Dokuchaev Soil Science Society of Russia is planning to organize this Symposium which will enable the soil scientists of the world and Russia to share their ideas and data concerning this problem, and to coordinate the prospects of future investigations.

**Main topics:**

**I. SOIL FUNCTIONING IN ECOSYSTEMS**

1. Biogeochemical cycles in natural and managed ecosystems.
2. Soil influence on biotic and ecosystem processes.
3. Soil functioning and biodiversity.

**II. SOIL-ATMOSPHERE RELATIONSHIPS**

1. Soil as a source of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O.
2. Heat and moisture exchange in the soil-atmosphere system.
3. Solid particles in the atmosphere: sources, fluxes and precipitation.

**III. SOIL INFLUENCE ON THE HYDROLOGICAL AND HYDROCHEMICAL CYCLES**

1. Regulation of hydrological cycle by soils
2. Role of soils and regoliths in formation of the water composition and quality
3. Soil as the buffer and filter for pollutants

**IV. SOIL FUNCTIONS IN THE LITHOSPHERE**

1. Soils and weathering mantle as generators of disperse materials in the lithosphere
2. Interactions of soil and geomorphic systems: natural and human-induced aspects
3. Role of soils in denudation and sedimentation processes.

**V. SOIL AS A RECORD OF GEOSPHERE-BIOSPHERE INTERACTIONS**

1. Recent and inherited features in soils.
2. Soil recording capacity and types of soil memory.

## VI. SOIL AS A NATURAL RESOURCE FOR HUMAN SOCIETY

1. Functions of soils in man-affected ecosystems.
2. Soil as a finite and unrenewable resource.
3. Soil resources and civilization in the past, present and future.

**Language:** English, Russian

**Programme:** Oral presentations, posters, one-day field excursion

**Participation fee, accommodation:** information will be provided in the Second Announcement, December, 2000

**Abstracts:** the texts should be submitted electronically as a MSWord attached file, in English, Times 12 font, single spaced on one page (format A4 with 2 cm free space at each margin). The texts should be submitted to e-mail:

**Deadline for abstracts is January 1, 2001.**

**For further information, please contact:**

**Nina P. Matekina, Olga V. Andreeva**

Faculty of Soil Science,

Moscow State University

119899 GSP, Moscow, Russia

Tel. 7-095-939-35-23, 7-095-939-37-74

Fax. 7-095-939-09-89 for N. Matekina

E-mail: NPM@soil.msu.ru; kust@soil.msu.ru

**Information in Internet:** <http://soilinst.msu.ru>

## NOTICE OF INTENT

International Symposium: "Functions of Soils in the Geosphere-Biosphere Systems"

SURNAME:.....

FIRST NAME(S).....

AFFILIATION.....

MAILING ADDRESS .....

PHONE: .....

FAX: .....

E-MAIL .....

PROPOSED TITLE OF THE PAPER .....

Please return this form not later than October 1, 2000 as hard copy or electronically



**BIOGEOCHEMICAL PROCESSES  
AND CYCLING OF ELEMENTS IN THE ENVIRONMENT**

**15 International Symposia on Environmental Biogeochemistry (ISEB 15)  
September 11 - 15, 2001, Wroclaw, Poland**

**Main topics**

1. Bioweathering and Biosynthesis of Minerals in Natural and Urban Environment
2. Interaction and Transformation of Organic and Inorganic Components
3. Biogeochemical Processes and Cycling in Aquatic Systems
4. Xenobiotics and Heavy Metals in Contaminated Ecosystems
5. Recycling of Municipal, Agricultural and Industrial Wastes
6. Biogeochemical Processes in Extreme Environments

**Information**

<http://www.ar.wroc.pl/~weber/iseb15.htm>

e-mail: [iseb15@ozi.ar.wroc.pl](mailto:iseb15@ozi.ar.wroc.pl)

fax: +48 71 3284849

phone: +48 22 3205631, +48 22 3205632

**ISEB 15 Chairperson**

Jerzy Weber

Agricultural University of Wroclaw, Institute of Soil Science and Agricultural Environment Protection, ul. Grunwaldzka 53, 50-375 Wroclaw, Poland, E-mail: [weber@ozi.ar.wroc.pl](mailto:weber@ozi.ar.wroc.pl)

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**PRE-REGISTRATION FORM / NOTICE OF INTENT**

Please, complete this Pre-registration Form and send by mail, fax or (preferably) e-mail.

If send by fax or mail, please use CAPITALS.

Family name ..... First name .....

Affiliation and mailing address .....

E-mail ..... Fax .....

I am interested in the ISEB 15 and I would like to receive further information on the conference.

I would like to be informed by:

☐ E-mail only    ☐ mail only    ☐ both E-mail and mail

☐ I plane to submit a paper to ISEB 15 on topic: .....

## **VI International Symposium and Field Workshop on Paleopedology (ISFWP)**

with pre- and post-conference field trips

Mexico City, October 2001

### ***Second Announcement and Call for Papers***

**Paleopedology Symposium organisers:** Instituto de Geología and Instituto de Geofísica, Universidad Nacional Autónoma de México (UNAM) and Working Group of Paleopedology IUSS. **Organising Committee:** J. Urrutia-Fucugauchi (Chairman), A. Bronger (Co-chairman), A.O. Makeev, E. Solleiro-Rebolledo (Secretary).

The Symposium organisers are planning a four-day program consisting of three session days interrupted by a one-day mid-symposium field trip.

Pre-conference field trip to area of volcano Toluca: Late Pleistocene and Holocene Andosols buried under ash and pumice flows with special attention to landscape and paleoclimate development. 2 days costs US\$ 150

Mid-conference field trip to Teotihuacan Archaeological Zone, visiting the lacustrine sedimentary sequence of Texcoco ex-lake. 1 day. Costs US\$ 50 (including lunch meal and entrance to the Archaeological site)

Post-conference field trip to Tlaxcala state: relict polygenetic Luvisols with tepetates (indurated horizons in volcanic sediments). 2 days. Costs US\$ 150

*Price of both two-days excursions include bus transportation, one-night hotel, excursion guide and lunch meals, one breakfast, and one dinner. Maximum number of participants: 40 per excursion.*

#### Tentative program:

1. Paleosol-sedimentary sequences (loess, alluvial, lacustrine, volcanic, etc.) as a record of the Pleistocene and Holocene environmental change. Special emphasis will be made on paleoecological interpretation of buried Andosols, paleosols with vertic properties and indurated horizons (tepetates) in the regions of active Quaternary volcanism.
2. Magnetic properties of Quaternary and pre-Quaternary paleosols and sediments as paleoclimatic indicators.
3. Polygenetic models of pedogenesis in relation to Quaternary climatic change. Emphasis will be given to non-glaciated subtropical and tropical regions.
4. Biomorphs (pollen, phytoliths, macroremains) in paleosols: research and interpretation problems.
5. Paleopedology and archaeology. Paleopedological evidences of ancient man-induced environmental change.
6. Dating of paleosols.

#### ***Tentative schedule of the Congress***

October 7-8	Arrival of participants, registration
October 6-7	Pre-conference field trip
October 8	Opening Ceremony
October 8-9	ISWP sessions
October 10	Mid-conference field trip
October 11	ISWP session (cont.) Paleopedology Business Meeting. Closing Ceremony
October 12-13	Post-conference field trip

#### **Abstracts**

Contributors are invited to submit their papers electronically as a Word 6.0 for Windows attached file. Please prepare your abstract in English, Times 12 font, single spaced on one letter-size page including line drawings, tables, references etc., within the format 2cm free space on each margin

Contributors will be informed within 4 weeks about acceptance as oral or poster presentation. A booklet of abstracts will be issued at the start of the meeting.

All abstracts must arrive latest by **March 31, 2001**:

From contributors of both Americas, Australia and New Zealand:

Alan Palmer, Soil and Earth Science, Institute of Natural Resources, Massey University, Palmerston North, New Zealand, Phone: (64 6) 356-9099 extn 7746, Fax: (64 6) 350-5632, E-mail: [A.S.Palmer@massey.ac.nz](mailto:A.S.Palmer@massey.ac.nz)

From contributors of Europe and Africa to:

Arnt Bronger, Department of Geography, University of Kiel, D-24098 Kiel, Germany. Phone: (49 431) 880 2952, Fax: (49 431) 880 4658. E-mail: [bronger@geographie.uni-kiel.de](mailto:bronger@geographie.uni-kiel.de)

From contributors of NIS and Asia to:

Alexander Makeev, Institute of Soil Science MSU-RAS, Moscow, Russia. Phone/Fax (7 095) 932 91 95, e-mail: [makeev@fadr.msu.ru](mailto:makeev@fadr.msu.ru)

Participation fee: US\$ 130. This will cover all sessions, abstract volume, program, bag with conference materials, coffee during the breaks, lunch meals during the session days, transportation from hotel to meeting place and from meeting place to hotel at the beginning and the end of sessions.

Payment after June 30: US\$ 160. Student fee US\$50

Accommodation:

In Mexico City, where the conference will be held, double-bed rooms and single-bed rooms are available for about:

Hotel Lisboa:

Single-bedroom: 32.00 USD

Double bedroom: 38.00 USD

Hotel Benidorm:

Single-bedroom: 52.00 USD

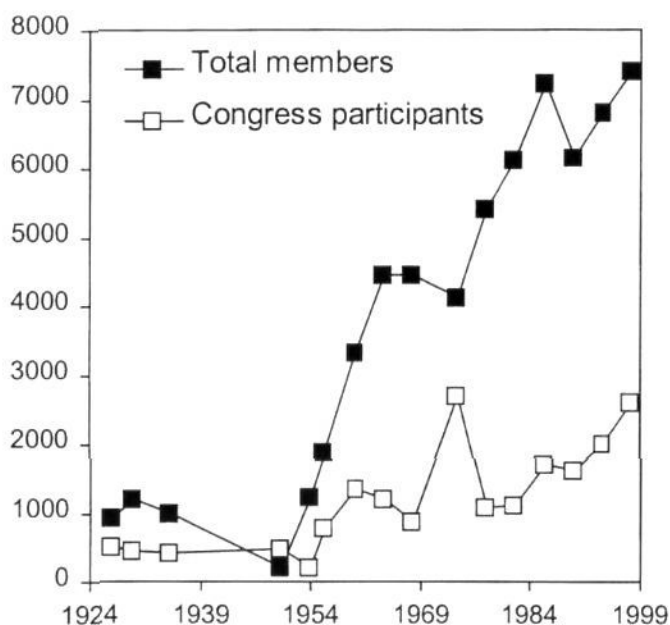
Double-bedroom: 62.00 USD

All correspondence should be addressed to:

Dr. Elizabeth Solleiro-Rebolledo, Instituto de Geología, UNAM. Circuito de la Investigación Científica, Ciudad Universitaria, C.P. 04510, Mexico City. E-mail: [solleiro@geologia.unam.mx](mailto:solleiro@geologia.unam.mx), Fax +52-56-22-43-17.

# **The International Society of Soil Science** **1924 – 1999\***

In May 1924, some 400 soil scientists came together in Rome for The Fourth International Conference on Pedology. At the end of the conference it was agreed to form the International Society of Soil Science which celebrated its 75<sup>th</sup> anniversary last year. The ISSS was mainly founded by European agropedologists who were interested in establishing standardised methods of soil analysis, soil classification and mapping. In the past 75 years, 16 international congresses were organized of which eight were held in Europe. These congresses have been important for the exchange of ideas in soil science and have contributed to the firm foundation of our discipline.



Total members and congress participants of the ISSS between 1924 and 1998

Numerous commissions, Subcommissions, Working Groups and Standing Committees have been established which deal with all aspects of soil research and management. The number of ISSS members increased from around 550 after WWII to over 7,000 in 1998. Almost 60% of the members are from North America and Western Europe. There are large differences in the number of soil scientists and members in relation to the total population and ha agricultural land. For example, in Australia in 1998 there were 54 soil scientists per million inhabitants – see table.

**ISSS members per million inhabitants and ha agricultural land of a few selected countries (1998 data)**

*ISSS members per million inhabitants and ha agricultural land of a few selected countries (1998 data)*

Country	Total number of soil scientists	Soil scientists per million inhabitants	Soil scientist per 100 km <sup>2</sup> agricultural land
Australia	1000	53.7	0.2
Brazil	2900	17.1	1.2
France	900	15.3	3.0
India	900	0.9	0.5
Israel	250	44.3	43.1
Thailand	500	8.3	2.4
USA	6050	22.4	1.4

One of the important contributions of the ISSS has been the Soil Map of the World, which was prepared in the 1960s and 1970s. The ISSS has also been active in dissemination and publishing of scientific results through periodicals and seven co-operating journals published by commercial publishers. In 1998, the ISSS was restructured into the International Union of Soil Sciences (IUSS) following upon its admission as a Union member of the International Council for Science (ICSU) in 1993. Due to structural changes whereby all members of national soil science societies are automatically IUSS member, there are currently over 45,000 members. A new scientific structure will come into force in 2002.

\* This is an extended abstract of the paper:

**van Baren, J.H.V., Hartemink, A.E. and Tinker, P.B., 2000. 75 Years The International Society of Soil Science. *Geoderma*, 96: 1-18.**

An offprint of this paper can be ordered from ISRIC, PO Box 3535, 6700 AJ Wageningen, the Netherlands.

Fax: ++31 317 471 700, E-mail: [Hartemink@isric.nl](mailto:Hartemink@isric.nl)

The full text it is also available on the web:

<http://www.elsevier.nl/inca/publications/store/5/0/3/3/2/>

and can be downloaded and printed as PDF document (106 kBytes) with Acrobat Reader.

Alfred E. Hartemink

**ISRIC, PO Box 353, 6700 AJ Wageningen, The Netherlands**

e-mail: [Hartemink@isric.nl](mailto:Hartemink@isric.nl)

fax: ++ 31 317 471 700

*Better the world should perish than that I or any other human being should believe a lie ... that is the religion of thought, in whose scorching flames the dross of the world is being burnt away.*  
Bertrand Russell (1872-1970)

## **1. Introduction**

The famous Dutch writer Gerard van het Reve once said that he was unquestionably a very evil and pestilential person. Not surprisingly, he added, as most human beings have a wicked nature. He believed that half of the depravity was inborn and the other half by human's own choice. Much of what van het Reve wrote was bordering on nonsense written in a brilliant way, but in my darker moments or when reading a newspaper, I sometimes tend to think that his observation is about right. Most people are good but some people are bad, and very few are very bad. History has learned that even the most decent and civilised person can become evil under extreme circumstances. There is no reason to believe that scientists are an exception.

I bring this up to discuss an important and sensitive issue: scientific fraud. Several cases have been reported and discussed in the past years in *Nature*. In order to get an appreciation of the size of the discussion, it is interesting to note that in 1999 *Nature* published nearly as much on fraud as on soil science. I thought it would be of interest to summarise some of the findings, and then discuss fraud and research ethics in soil science, which has received virtually no attention. This article is not an extensive review on fraud and research ethics but largely a summary of what *Nature* has published on the subject, supplemented with the opinion and experience of a number of soil science journal editors.

## **2. Scientific fraud**

Although various obscure cases of scientific fraud were unearthed in the past like for example "Abderhalden's enzymes" (1920s), the "Piltdown man" (1930s), and "Cold nuclear fusion" (1980s), it was not until the late 1980s that scientific fraud or research misconduct received public attention. It was noted that «...*Nature* was presented with the uncomfortable need to decide whether loose use of language, or inadequate experimental data, are consequences of authors' haste or some more sinister concealment of the whole truth. This does not happen often, but that it should happen at all is a serious matter, requiring the cultivation by referees and all other concerned, of an over-suspicious mind." (Maddox, 1989). At the same time, scientific fraud received widely attention in the USA and many thought initially that it was a query about the frequency of misdeeds (Guenin, 1999). Much of the early discussion on fraud was focused on a definition and what was to be included.

My Webster's dating from 1996 gives the following definition: "Deceit or trickery perpetrated for profit or to gain some unfair or dishonest advantage" but also: "something that is not what it pretends". Grosso modo such definition is clear but borderline cases forces a more unequivocal definition. Currently, the following is used: FFP, meaning Fabrication (or the construction of data and matching up of results), Falsification (manipulating, changing or omitting data in order to represent the results) and Plagiarism (appropriating another's work without credit) (Powledge, 1999). Guenin (1999) further distinguished misrepresentation (deliver false utterance or omitting material), plagiarism (intentional presentation of the words of another as the presenter's own), and misuse of another's work (intentional presentation as the presenter's own without attribution of the ideas or work of another).

### *Examples of Fabrication*

Several examples of fabrication and falsification have been reported in the last few years. Europe's worst case of scientific fraud dates from 1997 when the infamous Friedhelm Herrmann and Marion Brach stand accused of fabrication of data in more than 40 peer-reviewed publications over many years (Abbott, 1999). They were researchers in cancer and, amongst others, fabricated autoradiograms. Both were instantly dismissed from their institutes. Another interesting recent example is the "Petrol from plants" claim made by a 30-year-old self-taught chemist (Jayaraman, 1996). The chemist claimed to be able to power a scooter using "petrol" produced by adding leaves and bark extracts from a native herb to tap water. The set-up was cleverly done but in the end it appeared that his results were not reproducible. Scientific fraud not only occurs at universities and research centres but also in large public companies. For example, in 1998 the multinational Novartis dismissed a cancer researcher because of manipulating preclinical results (Schiermeier, 1998).

An overview of interesting cases on fabrication and falsification in science can be found on the homepage of Bernhard Hiller: <http://home.t-online.de/home/Bernhard.Hiller/home-eng.htm> (in German and English) which now also includes Walter W. Stewart's web site on scientific misconduct. These sites are worth a visit and both mention that "...scientific fraud is not minor and not under control". Most reported cases of fraud have come from the biomedical sciences.

### *Plagiarism and authorship*

Plagiarism is an important form of research misconduct and in its clearest form it comprises the copying of text without acknowledging the source. A recent example was reported whereby Scottish physicists were caught having copied 50% of a paper by someone from the University of Heidelberg. Several explanations were made ranging from denial to forgetting references but after some time the fraudsters apologised and mentioned that it was an accident, that there was no intent to plagiarise and they had better things to do than plagiarise. The fraudsters further added that if every article in the medical literature was checked, plagiarism would be found all over the place (Dalton, 1999). Another form of plagiarism is the theft of ideas and this could for example occur in the review process of manuscripts or project proposals. It is hard to prove.

Authorship problems include misrepresentation of authors or leaving authors which have nonetheless contributed to a piece of research or a manuscript, or listing an author who is not aware of that, for example to "upgrade" the appearance of the manuscript. That is also a form of plagiarism and fraud. I think we all know examples whereby department heads are automatically author on any paper – not for what they have authored but for what they are: institutional tycoons. It used to be worse. Until the 1960s or so it was very common that university professors would publish the research results from their students – usually these publications did not even carry the name of the students. At least that was the case at some universities in the Netherlands, but at the 16<sup>th</sup> WCSS in Montpellier I was told by a colleague that her supervisor published part of her Master's thesis without her knowledge and without acknowledging it. That occurred in the mid 1990s.

Recent reports have shown that authorship is a problematic issue for American and European young scientists (Tarnow, 1999). In Europe more than two-thirds of the young scientists are not given full credit for their research achievements and a survey of 191 postdoctoral physicists in the USA revealed that senior scientists are frequently listed as authors of papers even though they have had little or no participation in the work (Tarnow, 1999). Seventy-five percent had never discussed authorship criteria with their supervisors and in about 10% of the papers the postdocs found that their supervisor should not have been listed as an author. In 33% of papers with authors in addition to the supervisor or postdoc, one or more of those authors should not have been listed (Tarnow, 1999).

Another form of plagiarism is dual publication of the same findings – easy to detect, fairly common but rarely punished. This is in essence self-plagiarism which some consider very unethical whereas other think that self-plagiarism can not be a form of fraud.

Overall, when looking at the cases of fraud published I could not unravel a geographic pattern and reports have come from all over the world. This, at least to me, suggests that evil is reasonably well distributed over the globe. There are, however, hardly any data on the total number of fraud cases. The USA National Science Foundations reports that it averages only three findings of misconduct per year

or 0.01% of the total projects (Powledge, 1999), which suggests that scientists are mostly honest and that misconduct is uncommon. Others have argued that the publicised cases are merely the tip of an iceberg whereas some think that the question of how widespread scientific fraud is might be unanswerable (Abbott et al., 1999). Research publications are growing exponentially and growth is currently about 10% per year. Scientific misconduct and fraud are increasingly reported but it is not known whether fraud is growing faster than scientific output.

### *Causes for fraud*

Many scientific scandals result from incompetence, poor methodology or the unexpected behaviour of equipment, but why might a researcher deliberately falsify results? (Berry, 1999). I guess it needs a bit of a wicked and lazy nature in combination with extreme circumstances like stiff competition for research funds, pressure to publish, the fight for recognition and the rushing into print. Outliers of data and the frustration in attempts to have a theory recognised (Berry, 1999) may be other factors encouraging swindling of research information. The fact that barriers between industrial and academic research diminish (Finn, 1999) which may cause conflict of interest between funding agency and researcher, or ethical tension that arises from private research funding in public institutions (Rees, 1999) could also cause scientific fraud. Institutional circumstances which favour fraud are a strong hierarchical structure whereby the boss can get away with things, and extreme competition forcing the feeble-minded scientists to fraudulent practises. At last, many experiments cannot be repeated because of lack of funds so that results cannot be verified. Fraudulent authors know this.

Despite the various examples of scientific fraud little has been published about the driving forces. Mostly fraudulent scientists disappear and will not seek publicity. What drove an extremely successful scientist like Friedhelm Herrmann to fabricate and falsify in more than 40 peer-reviewed publications? According to Abbott (1999), it was due to the »web of sex, violence and intrigue« that bound Marion Brach to her mentor, scientific collaborator and lover Friedhelm Herrmann. A fascinating explanation. Brach confessed fraud (”...an achievement of which I am not proud”) but Herrmann continues to deny. In the good old days fraudsters, however bizarre their excuses, always admitted their guild when overwhelmed by evidence, but their modern counterparts usually obey their lawyers advice to deny it to the bitter end (Abbott, 1999).

### *Harm done by fraud*

Sound science is about the best possible way to answer a given question; to present with rigour the certainties and uncertainties of knowledge, and the assumptions underlying certain conclusions (Haerlin and Parr, 1999). Public trust is based on sound science, and therefore even rare instances of misconduct shatter public confidence in science (Powledge, 1999). Adverse publicity may harm budgets, employment opportunities, and careers. But there is more. All honest scientists are victims of scientists who commit misconduct for the fraudster occupies a working place of a honest scientist (Arst, 2000). Fraud also obstructs progress, or in other words: Real progress originates from the refusal to take a path that would threaten one's own moral choices and values (Sternheimer, 1999). Sometimes it takes very long and much research money before fraud is uncovered. For example, it was only in 1998 that an US University has stopped the ”cold-fusion” patents because ”...there has been no progress in duplicating the original research .. and we decided it was not appropriate to spend any more public funds on this” (Nadis, 1998). By that time about \$500,000 had been spent in pursuing the technology. Scientific fraud resembles financial fraud in that it can bring undeserved remuneration and power, a salient difference being that in scientific fraud the ill gotten gains are automatically institutionally laundered (Arst, 2000). Another difference is that financial fraudsters are usually still employable whereas those who have committed scientific fraud may have to start looking for another profession.

### *Fraud detection*

There has been a reasonable degree of apathy towards scientific fraud. As recently as 1997 the heads of UK research councils decided that misconduct is a lesser evil than the encumbrance of any mechanism to prevent it (Arst, 2000). They have changed their minds and have now published policies on misconduct. Although there are no mechanisms for ensuring compliance and institutions can white-



wash misconduct or sweep it under the carpet, which is tempting since investigations bring adverse publicity (Arst, 2000). The American Statistical Association has embraced a set of ethical guidelines for statistical practices whereas the White House Office of Science and Technology Policy (OSTP) has recently finished a draft policy on federal rules on misconduct in scientific research (Powledge, 1999). The policy has emerged from more than two decades of mostly bitter struggle with the distasteful realities of scientific chicanery (Powledge, 1999).

The detection of most fraud cases reported in the literature was done by colleagues, and such people are usually referred to as "whistleblowers". Some institutions have an often anonymous committee in place for such activities (similar to sexual harassment committees) but fears for retaliation may hamper the work of whistleblowers. A committee investigating scientific fraud should protect both the whistleblower and the accused scientist. Sometimes protection is impossible as was experienced at the University of Giessen where a young veterinary scientist stripped of his PhD, has been charged with trying to kill his whistle-blower by spiking his tea with digitoxin (Abbott, 1999) – very poisonous and fortunately not the type of chemical present in every soil lab. The whistleblower was taken to the hospital and treated in the intensive care whereas the accused scientist works as a veterinarian in a private practice – appealing the refusal of his thesis and denying the charge of attempted murder (Anon., 1999a).

### *The WWW*

The internet is transforming the world of scientific journals (see *The Economist* of 13<sup>th</sup> May 2000) but peer review, essentially aiming to differentiate the sense from the nonsense, will remain. Plagiarism will be easier to detect with electronic publishing but falsifying and fabricating data will be impossible to eradicate. Although the WWW will speed the flow of valuable information around the world, a negative side effect is the increased exposure of students and the public to misleading or biased science, or to opinion masquerading science (Allen et al., 1999), like for example to the exploiters of creationism. The web is also potential source of fraud and this may start with student theses. There are websites where students can download essays (e.g. <http://schoolsucks.com>, <http://EZWrite.com> or <http://cheater.com>), like for example "Food scarcity in India due to over population". This essay costs \$59.40 and apparently there are students happily paying that amount if it will pull them through the exams. In return, plagiarism search engines have been developed which check whether a paper has been copied from the internet (e.g. [www.plagiarism.org](http://www.plagiarism.org) and [www.canexus.com/eve](http://www.canexus.com/eve)). Such searches are not free of charge of course: fraud and fraud detection is business. A psychopharmacologist checked the papers of 320 students in a neurobiology class at Berkeley and found that 15% of the students had plagiarised material (Dalton, 1999). Students were warned beforehand that their work would be checked for plagiarism. It remained unclear whether they were actually encouraged to plagiarise or that they continued to do so after they were warned (Dalton, 1999).

I have done a quick search but could not locate any website advertising or selling soil science essays. They may exist or be developed (following publication of this paper), and in future lecturers and professors may have to use plagiarism search engines to check the originality of submitted essays for there is no reason to believe that soil science students are more honest than those studying neurobiology.

### **3. Ethics**

There is a wide discussion on ethics in agricultural research like for example on genetically modified crops, animal cloning or animal welfare. A small part of this discussion focuses on ethics regarding scientific fraud which essentially deal with the rules of the game of doing science, which every player is forced to obey if he or she is to stay on field (Ziman, 1999). In summary: face up the demands of peer review, cite generously and meticulously, reward originality and priority of discovery, present your work impersonally and exclude *ad hominem* jibes (Ziman, 1999).

Many scientists have argued that research ethics should be taught at the university (Finn, 1999). Other have argued that solid, reliable laboratory habits and supervision and mentoring are critical components to prevent misconduct (Meguid, 1999). At the World Conference of Science in Budapest in June 1999, science policymakers of Arab countries pledged that scientists should take an oath of ethics

including a commitment to high ethical standards, rigorous quality control of research findings, open access to their knowledge, and public accountability (Anon., 1999b). Having an ethics code is one thing, enforcing it, quite another (Luellen, 1992). The European Association of Science Editors (EASE) states that the mere existence of independent bodies dealing with scientific dishonesty have a strong preventive influence (Riis, 1994).

Unclear authorship may lead to fraudulent practises. One of the ways dealing with it is to state clearly in a paper who has done what. Statements clearly allocating credit and responsibility for the research done can only help to promote the health of science (White, 1999). Journals like *The Lancet* and *Nature* sometimes do this, for example: "R.R. conceived the experiment, and together with A.H. and L.L. carried it out; C.B.D. designed and carried out the data analysis; R.R. and C.B.D. co-wrote the paper" (Romo et al., 1999). A proposal of standards for such listings and other useful references can be found at: <http://www.councilscienceeditors.org>

EASE advocates that publication ethics involves the author, editor, the referee and the owner, whereby each has rights to expect and duties to fulfil (Riis, 1994). I will briefly summarise the EASE guidelines: "The author has an obligation to have gathered and interpreted his or her interventional or observational data in an honest way. After submission to a journal, the editor has the right to assume that the received manuscript does not contain fictitious data, deleted disturbing material, plagiarised material, biased citations or reference omissions, false priority statements, hidden multiple publications of the same data, or incorrect authorship. The author has the right to expect the manuscript to be treated as confidential material so that points of views or ideas are not, even indirectly, mentioned outside the editorial office. The author has the right to expect fairness from the editor, including unbiased selection of referees, because it is well known that an editor can kill a manuscript by selecting envious and critical reviewers from competing research groups." The reverse is also imaginable: 'old boys' networks whereby referees or co-authors are not critical enough – for example when they are the author's friend, or lover.

"The editor's possibilities for discovering scientific misconduct are less than most authors and readers believe, but if an editor's suspicion of scientific misconduct is raised, by whistle-blowing for example, he has the moral obligation to raise the matter with the author. Editor's duties comprise: competence, fairness, discretion, speed and politeness. The referee is the most invisible figure in the editorial process although there is a tendency towards greater openness. Referees are often anonymous and therefore present an ethical problem, especially seen with the author's eyes. The expectations of authors and editors of referees are: competence, fairness, confidentiality, speed and politeness. A major requirement is obviously fairness, because a referee may imitate an experiment and publish in parallel, or steal ideas. The reader has the right to expect reliable and adequate information from journal. The owner may be the publisher or a society has the right to expect that the editor runs the journal in a way that attracts and keeps readers. The owner has a strong ethical obligation to respect editorial freedom, which means that control of editorial decisions is unacceptable. Lack of editorial freedom is probably one of the surest means of destroying a good journal, according to EASE (Riis, 1994)." The same applies to fraud.

## SOME GUIDELINES

The web may be a source of fraud at the same time it is a major source of information on research and publication ethics. *Nature* (4<sup>th</sup> March 1999) published the following list of websites with details on good scientific practice or guidelines for handling, allegations of scientific misconduct:

US Office of Research Integrity: <http://ori.dhhs.gov/regguide.htm>

UK Medical Research Council: [www.mrc.ac.uk/mis-con.pdf](http://www.mrc.ac.uk/mis-con.pdf)

UK Biotechnology and Biological Sciences Research Council:

[www.bbsrc.ac.uk/opennet/structur/hrg/sciconco.htm](http://www.bbsrc.ac.uk/opennet/structur/hrg/sciconco.htm)

Germany's Max Planck Society: [www.mpg.de/fehlengl.htm](http://www.mpg.de/fehlengl.htm)

Deutsche Forschungsgemeinschaft: [www.dfg.de/aktuell/self\\_regulation.htm](http://www.dfg.de/aktuell/self_regulation.htm)

Danish Committee on Scientific Dishonesty: <http://www.forsk.dk/eng/cvk/index.htm>

Other sites of interest: [http://dmoz.org/Science/Science\\_in\\_Society/Research\\_Ethics](http://dmoz.org/Science/Science_in_Society/Research_Ethics) and useful information about authorship and credit is given in: <http://www.nap.edu/readingroom/books/obas>

4. Fraud in soil science?

To my knowledge there are no written and formal reports about fraud in the reporting of soil research. It could be that in soil science it may be more difficult to distinguish deliberate fraud from honest errors in the interpretation of the results and mistakes in recording readings. It could also be due to the following adage which was sent to me by Dennis Greenland: "A scientist always distrust his results, but firmly believes his theories; other trust his results, but disbelieve his theories." Besides a matter of trust there are other reasons why fraud is not so likely to occur in soil science. Most of our research is not "hot" enough - this as opposed to much of the research on public health or research on genetically modified crops or for commercial interesting patents. Thus fabrication and falsifying data is not so likely to occur in soil science. The only exception I can think of is in environmental soil science, like the evaluation of contaminated soils of a potential building site. Overall it seems that soil science simply yields too little fame and money to swindle.

On the other hand there are reasons why fraud could be occurring and increasing in soil science. There is an increased pressure to publish and this could cause lazy, wicked and foolish authors to falsify data and rush into print. An example is given in Figure 1, whereby awkward outliers in graphs could be weeded out in order to generate a better fit. In most cases, researchers know their data and hence could appraise the outliers (sample contamination, lab error etc). An increasing number of researchers work with large data sets which they have not collected themselves. Therefore, they may not have sufficient knowledge about the limitations of the data set or make assumptions about the data set which are intrinsically false. The opposite may also be the case whereby authors work with a small data set trying to fit a relation but have to deal with awkward outliers hindering the potential for publication of their research.

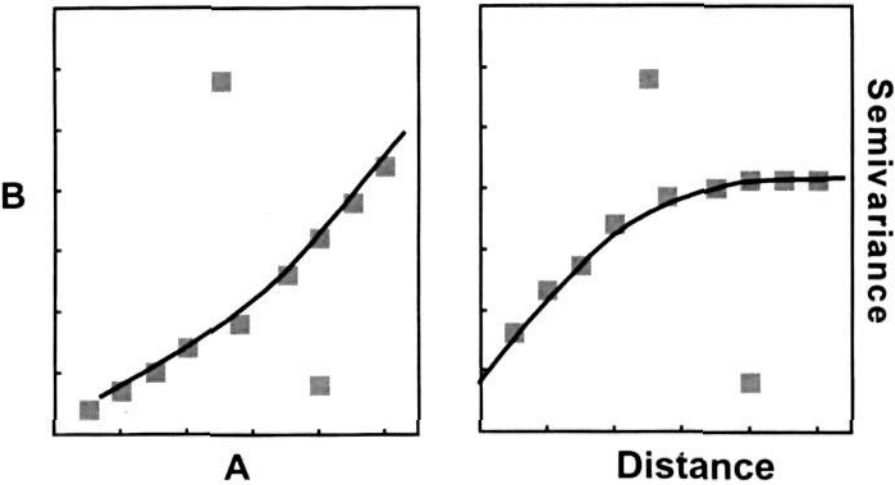


Fig. 1. Those awkward outliers!

There may also be political or commercial reasons to falsify graphs and figures. In many soil science subdisciplines funding opportunities are reduced (Mermut and Eswaran, 1997). Some soil scientists might be exaggerating the outcome of their research in order to secure funding because donors would probably be more impressed by a negative message than by a message casting doubts and uncertainties. In the long term, however, a biased message might perform a serious backlash and would do more harm than good, particularly as donors (although short-memoried) may show 'disaster-fatigue'. This was already pointed out by the former ISSS Secretary General, Dr Wim Sombroek, at the 13<sup>th</sup> Congress in Hamburg where he noted: "There is a temptation to bend the final results of a research project

towards those that were stated to be expected at the start; it may lead to 'trimming, cooking and forging' of the results. The way things go now, one may be prostituting soil science and adulterating development aid! Soil research has political dimensions, yes, but ethical behaviour should not be different in soil science from that in other sciences, just because it so down-to-earth.« A true word.

#### *What others think and found*

I have asked 23 editors from international soil science journals if they had experience with fraud. Not everyone replied and there were two editors who did not want to have their name and examples of fraud quoted, but here are the reactions:

Dr Bryan Davies, editor of *Soil Use and Management* (SUM), thinks that SUM may have been a victim of fraud based on the strong pressure to publish that scientists are under in some countries. This leads to authors splitting their projects between several papers with overlap between them, and also to premature papers written before sufficient information has been acquired. Dr Davies comes across such papers commonly and thinks it is only one further step for data to be deliberately 'strengthened'. Apart from editor's and referee's being vigilant and aware, Dr Davies sees no easy way of identifying fraud in the very 'impure' science of applied soil science. In addition, he thinks that approaches for identifying fraud will be useful to maintain the vital concept of scientific integrity.

Dr Alex McBratney, joint editor-in-chief of *Geoderma* wrote me the following: »Scientists, even soil scientists, are human and as such are prey to all the foibles of the human condition. Fraud is a realisation of one of the seven deadly sins caused perhaps by others such as pride or avarice. I think it is important to distinguish fraud – a definite intent to deceive – from bad scientific practice often a result of inexperience or the current pressure to publish. In terms of fraud, I think the mildest form I see, but see quite often, is taking material from one paper and putting it in another without due reference. I think this happens when a new line of research is being opened up. The transfer often happens from one continent to another. I also believe that ex-officio authors – names appearing on papers by virtue of one's position, i.e., without having contributed anything, and names appearing without consulting the particular author are fraudulent, and I believe this occurs. As far as fabrication of data or definite exclusion of aberrant points I know of no concrete cases. It would seem logical that this would be more likely for small data sets where each observation has a high leverage on any models fitted or conclusions drawn. I am not sure whether publishing the same material in more than one journal is fraud, but I certainly think it is bad practice. The main kind of bad practice I see is lack of knowledge and citation of the literature – it is incumbent on us as scientists to know and show the material that has been published in our various disciplines. I think fraud can only possibly be a tiny problem in soil science, bad scientific practice is a much bigger one, but by far the biggest problem we have, is a lack of new ideas.«

Dr Martin Carter, joint editor-in-chief of *Soil & Tillage Research*, and *Agriculture Ecosystems and Environment* has no experience with direct or full-scale fraud, only borderline cases. His main concern is plagiarism, especially in the description of methods. In some cases it may have been innocent copying of methods or approaches to methodology, but in a few cases authors have copied verbatim large portions of text without indicating 1) source and/or 2) without using quotes. Perhaps they consider because it is not 'data', it can be copied. Dr Carter have detected only a few cases of the above. However, in each case it was only by chance that he managed to detect it, and expects that it could be more widespread. In each case he has brought the concern to the author and requested that they provide a reference, use quotations, or rewrite the text in their own words.

Dr Mirek Kutilek, joint editor-in-chief of *Soil and Tillage Research*, commented the following: "It is difficult to distinguish what is fraud and what is an error. I have seen papers with an unbelievable lack of dispersion of measured soil data in field experiments where sampling was realised over a certain area and heterogeneity could be expected. Did the author »correct« or falsify the measured data? Was he or she aware of an improper measuring procedure and thus trying to »improve« the results? Or, did he or she measure at one location only and fabricated data for other localities? In several instances there were research papers where water content of a non-swelling soil was substantially higher than porosity, cumulative surface run-off by tens of percents higher than the cumulative rain, sum of exchangeable cations exceeding the CEC. Were some of those data fabricated, or were the analytical methods wrong? There is another act against scientific ethics: It happens quite frequently that instead of quot-

ing the original author(s) who have introduced a certain method or new theory, the citation is on the second author who has actually copied the method, or used the theory and this runs further and further on principle of chain-quoting.”

Dr John Waid, editor-in-chief of *Soil Biology and Biochemistry*, cannot recall any instance of fraud in soil science. The ex-officio editor of *Agroforestry Systems*, Dr Pedro Sanchez, has not come across a case of fraud in soil science. He finds that there are many articles published which omit important references and previous work which he considers an issue of quality of publication including the quality of the peer reviewers but not one of fraud.

Dr Richard Webster, editor of the *European Journal of Soil Science* (EJSS), has not come across fraud in his experience as editor. However, he thinks that ‘dual publishing’ is getting worse as authors are submitting virtually the same papers to more than one journal almost simultaneously. When this is identified it is written firmly to the authors pointing out the error of their ways and their paper is rejected. The EJSS does not compromise, for dual publishing is unethical when done without permission from publishers and contrary to the international law of copyright, according to Dr R Webster.

One of the joint editors-in-chief of *Catena*, Dr Mike Singer, is not aware of any cases of fraud that has been published. They have had a couple of cases among graduate students in his 27 years at Davis (California) where data have looked suspicious and experiments have been rerun under closer supervision. Plagiarism among students is something of a problem, especially among students for whom English is not their first language. This is usually easily corrected by discussing the problem with the student and cautioning them against repeated offences, according to Dr Singer. His colleague Dr Mike Thomas, has no recent fraud to report, either from his editorial experience or from the three soil scientists in his department. He added that some fraud may be ‘hidden’ and has worries about:

- duplication and fragmentation of results to achieve a greater number of papers than is justified by the data - common and difficult to police
- data sets lacking verifying information - such as careful specification of location and sample sites; also lack of replicates and attention to errors
- laziness in referencing, leading to lack of acknowledgement of source concepts, and comparable findings already published
- laziness in refereeing - most referees are conscientious, but some are not; very often these are well established scientists, who appear too preoccupied to give full attention to this essential task

Dr John Catt, of *Catena* and previous with *SUM*, has not come across any examples in his editing work - lots of incompetent writing but no fraud. He suspects soil scientists are more honest than the medics. Dr Olav Slaymaker also of *Catena*, wrote that he is not personally aware of fraud in soil science in the sense of fabrication or falsification of data. He added: “However, plagiarism is not an infrequent problem. Given that one is unlikely to recognise more than 10% of such cases, and given that I have caught several, this may well be the most serious problem (or at least the most widespread) that we have. My response has always been to return the manuscript and indicate unwillingness to take a second look or to send it out to other reviewers.”

Dr Warren Dick, editor of the *Journal of Environmental Quality* (JEQ) and editor-in-chief of the *Soil Science Society of America Journal* has come across plagiarism or sending to two journals of essentially the same paper which happens about one or two times per year cases per year. A letter is written informing the potential author what they have found, that the actions are unethical and that the authors must withdraw their paper. They have not had to do any follow up or unpleasant responses. The approach does not really punish in any way, but does alert the offender that the actions are not appropriate for a professional scientist, according to Dr Dick. He further added that they probably do not catch all incidences of fraud.

The editor of *Nutrient Cycling in Agroecosystems*, Dr Paul Vlek, mentioned that blatant fraud was never proven in submitted manuscripts. Occasionally he has strong doubts and generally these papers are eliminated from consideration due to other problems. Overall, it is difficult to prove fraud in soil science as we rarely can reconfigure the circumstances of the experiments, according to Dr Vlek.

The editor of *Soil Science*, Dr Robert Tate, made the following comments »I have encountered incidences of plagiarism and we had to adjudicate a situation where an author had published essentially the same paper in two separate journals. Also, I have encountered several instances where manuscripts



with many identical portions were submitted to *Soil Science* plus another soils journal. These were detected during the review process and dealt with. Similarly, I have had a couple of instances where referees have noted that their work had been plagiarized in the manuscript under review. In all cases, a) the author was reprimanded, b) the manuscript in question was rejected, and c) where the intent to »fraudulently publish« was clear, the author was banned from submitting material to our journal. In situations where other journals were involved I worked with the editors of the other journal to ensure that the decisions were consistent and fair to all involved. Fortunately, such occurrences are rare. I would estimate that over 15 years in the capacity of editor, I have probably encountered about half a dozen such situations.«

Ms Jenny Fegent, managing editor of the *Australian Journal of Soil Research*, wrote to me the following: "I have not come across fraud in soil science. I have encountered dishonesty in the form of concurrent submission to two (or more) journals and have dealt with it by rejection."

At last, at the editorial offices of Elsevier Science in Amsterdam five to ten cases per year occur whereby authors are unaware that their names are listed on a paper. The offices handle about 6,500 manuscripts for 40 journals, and they have not come across papers with fabricated data.

Summarising these observations it seems that multiple submissions and dual publication are the main problem. A number of editors mentioned that they have had experiences with falsification of data and they consider this more serious and asked me not to mention those cases for they may be recognised, or as someone said: "They were a long time ago. The people concerned have learned their lesson and are now respected members of the international scientific community." I have been talking and e-mailing to various colleagues and there are more of such paleo-fraud cases in soil science. There may be no reason to unearth all those but there are very good reasons to have fraud avoided – if it can be detected.

#### *How to detect fraud in soil science?*

There is a major role for colleagues, research collaborators and assistants to detect the fabrication and publishing of fraudulent data. There is also a role for reviewers and editors to detect dubious papers although peer-review procedures did not develop to detect fraud or even, originally, to establish the standards and authority of science (Burnham, 1992). Most editors have a difficult time detecting fabrication and falsification but allegations of plagiarism has come to attention several times (Meguid, 1999). Some journals asks authors to sign a declaration of scientific integrity in their letter of transmittal (Meguid, 1999). As far as I know, none of the agronomic or soil science journals has such a policy. Directly after submitting a manuscript to *Plant and Soil*, a form has to be signed in which the corresponding author declares, amongst others, that any person named co-author of the contribution is aware of the fact that and has agreed to being so named. I think that is a good initiative to which perhaps may be added »...and declares that the work is free of falsification and fabrication of any kind«. All journals require a copyright form to be signed which is no guarantee that papers are also published in another journal as dual publication seems to occur in soil science. It is obvious bad and fraudulent practice but to some extent I can understand authors neglecting copyright laws: not the publisher but the authors should be in the position to determine what can be done with their published work. However, with the signing of the copyright form authors agree upon the copyright laws. *Lex dura sed lex*.

## **6. Conclusions**

One cannot be a little bit pregnant. Pregnancy is a very definite although somewhat temporary status. Nor can one be a little corrupt. The same applies to scientific fraud. It is small in science and probably even smaller in soil science, but we need to be alert for fraud publicity destroys individual careers and harms the prestige of institutes and may also put soil science in a negative daylight. In the current situation of limited funding - despite the favourable economic conditions in many countries - such news would be undesirable. The brief survey of the experiences of various journal editors has shown that fraud is not absent in soil science. Therefore it deserves wider attention, and perhaps the formulation of guidelines on research ethics in soil science by a committee of the IUSS.

## Acknowledgements

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## References

- Abbott, A., Dalton, R. and Saegusa, A., 1999. Science comes to terms with the lessons of fraud. *Nature*, 398(6722): 13-17.
- Abbott, A., 1999. The fall of man: Fraud and falsification in German science, by M. Finetti, A. Himmelrath. *Nature*, 398(6730): 765-766.
- Allen, E.S., Burke, J.M., Welch, M.E. and Rieseberg, L.H., 1999. How reliable is science information on the web? *Nature*, 402(6763): 722.
- Anon., 1999a. Demoted PhD accused of trying to kill whistleblower. *Nature*, 397: 381.
- Anon., 1999b. Scientists 'should take oath of ethics'. *Nature*, 398: 185.
- Arst, H.N., 2000. Apathy rewards misconduct - and everybody suffers. *Nature*, 403(6769): 478.
- Berry, C.M., 1999. A rum affair: How botany's "Piltown man" was unmasked, by K. Sabbagh. *Nature*, 401(6755): 742-743.
- Burnham, J.C., 1992. How journal editors came to develop and critique peer review procedures. In: H.F. Maylan and R.E. Sojka (Editors), *Research ethics, manuscript review, and journal quality*. ASA-CSSA-SSSA, Madison, pp. 55-62.
- Dalton, R., 1999. Professors use web to catch students who plagiarize ... and author gets similar paper retracted. *Nature*, 402(6759): 222.
- Finn, J.T., 1999. Ethics training more important than ever. *Nature*, 401(6750): 208.
- Guenin, L.M., 1999. Expressing a consensus on candour. *Nature*, 402(6762): 577-578.
- Haerlin, B. and Parr, D., 1999. How to restore public trust in science. *Nature*, 400(6744): 499.
- Jayaraman, K.S., 1996. 'Petrol from plants' claim baffles Indian scientists. *Nature*, 383(6596): 112-112.
- Luellen, W.R., 1992. Conclusions and an overview of editorial quality from the journal perspective. In: H.F. Maylan and R.E. Sojka (Editors), *Research ethics, manuscript review, and journal quality*. ASA-CSSA-SSSA, Madison, pp. 75-79.
- Maddox, J., 1989. Where next with peer review? *Nature*, 339: 11.
- Meguid, M.M., 1999. Editors' responsibility in defeating fraud. *Nature*, 399(6731): 13.
- Mermut, A.R. and Eswaran, H., 1997. Opportunities for soil science in a milieu of reduced funds. *Canadian Journal of Soil Science*, 77(1): 1-7.
- Nadis, S., 1998. Utah university finally drops out of cold-fusion patent chase. *Nature*, 393(6680): 7-7.
- Powledge, T.M., 1999. Ain't misbehavin' - Addressing wrongdoing in research. <http://www.biomednet.com/hmsbeagle/67/notes/adapt>.
- Rees, D., 1999. Putting transparency into ethical balance. *Nature*, 401(6754): 641.
- Riis, P., 1994. The ethics of scientific publication. In: P.H. Enckell (Editor), *Science editor's handbook*. EASE, London, pp. 1-4.
- Romo, R., Brody, C.D., Hernandez, A. and Lemus, L., 1999. Neuronal correlates of parametric working memory in the prefrontal cortex. *Nature*, 399(6735): 470-473.
- Schiermeier, Q., 1998. Novartis goes public with fraud dismissal. *Nature*, 392(6674): 319-319.
- Sternheimer, J., 1999. How ethical principles can aid research. *Nature*, 402(6762): 576.
- Tarnow, E., 1999. When extra authors get in on the act. *Nature*, 398(6729): 657.
- White, B., 1999. Funding agencies must use their muscle. *Nature*, 400(6743): 398.
- Ziman, J., 1999. Rules of the game of doing science. *Nature*, 400(6746): 721

## SOIL SCIENCE HAS ITS MONUMENT IN BEIJING



In a time when people are living in skyscrapers, high above the ground, soils need a monument, so as not to be forgotten. China has such a monument: the Shejitan Altar in Beijing.

The monument, which has a size of 15.8 x 15.8 m, shows the five main soils of China, which differ in colour: in the center, yellow loess soils; in the east, blue paddy soils; in the south, red tropical soils; in the west, white desert soils; and in the north, black prairie soils. The monument was built in 1421 by the Ming Dynasty and can be traced back to a much earlier time. It served as an altar of land and grain. The Shejitan Altar is located in the Zhongshan Park next to the Forbidden City (Emperor's Palace).

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- être âgé de moins de 40 ans lors de la première demande de bourse (moins de 30 ans pour les candidats chinois) et au début de sa carrière scientifique,

- être titulaire d'un diplôme universitaire de 3ème cycle (DEA minimum ou équivalent),
- être employé par une université ou une institution de recherche d'un pays en développement.

Les candidatures de ressortissants de pays Européens, y compris la Turquie et Chypre ainsi que les pays de l'ex-URSS, ne sont pas recevables.

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Pour des renseignements supplémentaires et pour obtenir le formulaire de demande d'allocation de recherche en anglais ou en français, veuillez vous adresser à:

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Email: [info@ifs.se](mailto:info@ifs.se)

Website: [www.ifs.se](http://www.ifs.se)

## COMPACT DISKS ON OXISOLS AND VERTISOLS

The Natural Resources Conservation Service of the US Department of Agriculture, in collaboration with the University of Puerto Rico, has produced two CDs. One is on »Oxisols: Their properties, classification, distribution and management« and the other on »Vertisols: Their properties, classification, distribution and management.« The Oxisol CD has 175 images and the Vertisol CD 200. The images depict photographs of profiles and special features of typical soils from around the world, explanatory text, maps, tables, figures, and illustrations of sustainable management. Also included are extensive bibliographies that provide up-to-date references for further reading.

The CDs have user-friendly search capabilities: thumbnail images allow the quick selection of profiles and features, and hypertext links facilitate moving efficiently from text to images. Although the CDs have been designed primarily as teaching aids, they may serve other purposes as well. As the CDs are not copyrighted, images may be retrieved and edited for a variety of uses.

A limited number of copies of both compact disks may be obtained free of charge by contacting Dr. Hari Eswaran by snail-mail (USDA/NRCS, PO Box 2890, Washington, DC 20013, USA), fax (USA-202-720-4593), or e-mail ([hari.eswaran@usda.gov](mailto:hari.eswaran@usda.gov)).

The authors are currently compiling photographs, information etc. for a CD on Aridisols. We would like to have examples of such soils from every country of the world included in the CD. We are seeking slides of soils, landscapes, land use and misuse, special constraints, and special features. All contributors will be acknowledged and will receive a free copy of the CD. Please include your name on the slide, which will be digitized and returned. Please include information on the picture such as location, classification or description of the feature, profile description and data if available, and any other information that will be useful for teaching. We are also interested in historical pictures showing ancient irrigation or land use systems and of people who have enhanced our understanding of the these soils and their use and management.

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The participants of the Symposium on Paleosols, Amsterdam, 1970. Front Row, second from the right: the organizer, Prof. Dan H. Yaalon, fourth from the right: the Secretary-General, Prof. Ferdinand van Baren. (photo: Lindeman, Amsterdam)

## THIS LAND

From sea to far distant shining sea  
This land of freedom is ours legally  
Except for those whom we shun  
Crossing the border one by one  
Strange that in a world so grand  
Humans divide it, land by land  
Protecting it against the fiercest foe  
Letting some stay while others must go  
Forests and prairies once flourished here  
The buffalo roamed grazing without fear  
But technological progress filled every niche  
Wilderness gone, too late the sales pitch  
The folly of modern industrial technology  
We couldn't imagine in this land of the free  
Roads and buildings growing every where  
Factories with fumes spewing into the air  
With eyes closed tight and feet of clay  
Following the dream the pipers play  
Slowly, slowly in our imminent haste  
This precious land began to waste  
Erosion stripped away the precious soil  
Exposing roots and increasing the toil  
Of maintaining yields and productivity high  
Prices kept falling and farmers asked why?  
Waters received phosphorus, nitrates too  
Then came algal blooms and babies blue.  
Contaminated lakes and nearby streams  
Dashed the anticipation of recreation dreams  
But food prices remain as cheap as can be  
Lowest percentages in our short history  
Consumer goods regale our senses  
Exciting our tastes, lowering our defenses  
More cars, planes, and homes needing fuel  
Costs creep up, wages and pensions in a duel  
Disease-free seniors are becoming rare  
Mimicking the rising costs of health care  
Violence, whether direct or subliminal  
Blatant everywhere, no place is minimal  
Thus, value systems appear distorted  
As dissenting thoughts are exhorted  
***The time has come for each to behave  
As a responsible free being, not a slave  
Respecting this land, sustaining its might  
Letting stewardship be our guiding light***

Richard W. Arnold  
July 12, 2000

(Dick Arnold retired on July 30, 2000 from USDA Natural Resources Conservation Service)

## HOW MUCH SPARE LAND EXISTS?

The additional food production needed to reduce present levels of hunger in developing countries, and to meet the needs of population growth during the first half of the 21<sup>st</sup> Century, must come from three sources: an increase in cultivated land, higher crop yields, and reduction in post-harvest losses. It is recognized that the greater part of this increase must come from raising crop yields. Most discussions, however, assume that a contribution will come from a continuing, substantial, growth in the area of cultivated land.

This assumption is based on a series of estimates, by FAO and associated organizations, of the size of what is called the 'land balance': land which is cultivable (under rainfed agriculture) but not presently cultivated (for discussion with references, see Young (1998, 1999a). The most accessible of these estimates is given in Table A.5 of *World agriculture: towards 2010* (Alexandratos, 1995); the most recent, being prepared for the forthcoming study 'Towards 2015/30', is found in Bot et al. (2000). All show the same overall picture: for developing countries in total, a cultivable area of some 2500 M ha compared with present cultivation of about 900 M ha, a gross difference of 1600 M ha. After subtracting 12% under protected land (nature reserves, etc.) and 3% under settlements (now and in the future), this is reduced to a 'land balance' of 760 M ha.

*The existence of this supposed spare land, in excess of the whole of the present area under cereals in developing countries, provides a comforting thought: if all else fails, countries in need of food can fall back upon the age-old solution of taking more land into cultivation. The present static level of funding for research, and declining investment in the agricultural sector, reflects this complacency (Shah and Strong, 1999).*

The size of this balance of spare land has recently been challenged. It is argued that the true area of land available for sustainable cultivation is less than half of that given in official estimates. The impression given by these estimates is seriously misleading to world leaders and policy-makers, reducing the urgency with which agricultural research, including research into overcoming soil constraints, is regarded. This account is a summary and updating of that argument (Young, 1999a). At the end, your views are invited; as soil scientists, we have a duty to governments and their peoples to inform them of the true balance of land available for cultivation.

Throughout, the discussion refers to developing countries only. There is certainly land which could be taken into cultivation in the developed world, but that is not where it is needed to alleviate hunger.

### The basis of the challenge

Reasons to doubt the official estimates arise first, from indicators widely observed in the developing world, and secondly, from knowledge of specific countries. If there is so much spare land, why has cultivation been so widely extended onto steep slopes, onto extremely infertile soils, and into semi-arid zones liable to frequent crop failure? Why is there so much illegal incursion into forest reserves and national parks? Why has average farm size in some countries fallen below one hectare, and why is are infertile soils which need rest periods cropped continuously? Why is there so much land degradation, widely attributed to the interaction of land shortage with population increase and poverty? Above all, if it were possible to bring further land under cultivation, why do 800 million people suffer from endemic undernutrition? Inequitable land distribution is certainly part of the answer, but these indicators are so widespread as to suggest that in many regions, the supply of available land is approaching zero.

Consider next the estimates of the gross 'land balance' - uncultivated land as a percentage of cultivable - for some individual countries. The figures quoted are for the earlier (Alexandratos, 1995) and most recent (Bot et al., 2000) estimates, e.g. Thailand (28/35) means a land balance of 28% in the earlier estimate and 35% in the later one. In most cases the two estimates are in good agreement, although a few startling differences, in both directions, are found; for example, the gross land balance has risen in

Niger (5/65), Kenya (50/71) and Malaysia (47/95), but fallen in Jamaica (49/negative balance) and the Philippines (29/2). Real changes in cultivation, or new data, may account for a small part of these differences, but they must be mostly due to changes in the criteria used for assessment.

The estimates for some countries are in agreement with what can be observed in the field. Thus, the gross land balances for Rwanda, Haiti and Bangladesh are negative; in India, the 18% gross balance (both estimates) is almost entirely taken up by settlement and protected land, leaving a net zero balance. But credulity is strained by the estimates for some countries. Are there really such large areas of uncultivated but cultivable land in Vietnam (44/40), Kenya (50/71) and Ethiopia (57/74)? Certainly, spare land exists in Zambia (91/91) and Venezuela (91/93), but can one believe it is nine times the presently cultivated area? Hardest to believe is the estimate for Malawi (55/75), a country which I have known for 40 years; by 1975, cultivation was being extended, unsustainably, onto the hills and Rift Valley scarpland; and a recent field tour confirmed that the Southern and Central Regions are effectively 'full up', whilst new cultivation in the Northern Region is on sloping land, often with thin soils (Young, 1999b).

### Reasons for the discrepancy

The official estimates are not based on direct surveys of available land. They are derived by the approach of inventory of difference: estimation of the amount of cultivable land, and subtraction of the figures for present cultivation. These two kinds of data are derived from wholly independent sources. The estimates of cultivated land rest primarily on the digitized *Soil map of the world* (FAO/UNESCO, 1995), a corresponding climatic inventory, and quantitative crop requirements, combined by means of a computerized land evaluation. These studies have been conducted with great care and thoroughness, and in immense detail, and this article is in no way intended as a criticism of them. In contrast, the figures for present cultivation come from official data, supplied by governments or, by default, estimated by FAO (FAO, ongoing).

Reasons for the discrepancy between the official estimates and qualitative field observation must lie in one or all of the following:

- Overestimation of cultivable land.
- Underestimation of land presently cultivated.
- Insufficient allowance for demands on land for purposes other than cultivation.

Errors in the assessment of cultivable land can arise simply from incorrect soil mapping; thus, W. G. Sombroek (personal communication) reports examples from his knowledge of the Amazon region. However, overestimation arises particularly from reduction of soil surveys to small scales, often as a two-stage process: from detailed surveys to national soil maps, and from the latter to the 1:5 million scale of the *Soil map of the world*. Most types of terrain contain inclusions of uncultivable land amid more fertile soils: hills, scarps, rock outcrops, swamps and minor water bodies. These become 'lost' during scale reduction. This hypothesis could be tested by comparing detailed, reliable, soil maps with the corresponding areas as represented on the *Soil map of the world*.

A second reason for overestimation of cultivable land lies in loss by land degradation. Based on the GLASOD estimates (Oldeman et al., 1990), about 300 M ha, or 5% of usable land in developing countries, have been so severely degraded that for practical purposes they may be regarded as no longer available. Combining these two sources of error, an *overestimation of cultivable land by 10-15%* is suggested

Land presently cultivated is obtained from the figures for 'arable and permanent crops' in FAO land use data. They include land under temporary fallow (up to 5 years) but not 'abandoned land resulting from shifting cultivation'. Data on land use are among the least reliable of international statistics. This is demonstrated by the abrupt changes in values which appear in the annual data (which are then retrospectively changed), and but the 'adjustments', sometimes as high as 25-50%, which are made to reconcile cultivated land with reported totals for crops (Young, 1998, 57). The errors are not random

but systematic, because governments do not recognize, nor report, cultivation which is not supposed to exist, such as illegal incursions into protected land. *Underestimation of cultivation could be of the order of 10-20%*. Soil survey organizations could test this by sample surveys based on multispectral imagery combined with field traverses.

The official estimates recognize two kinds of non-agricultural use, protected areas and settlement. The proportion of the land balance which lies in protected areas is taken as 12%, and this figure I accept. Data on land occupied by settlements and associated uses is surprisingly sparse. It is taken to be 3% of the land balance, qualified by the phrase, "As far as some speculative estimates could be made, perhaps..." (Alexandros, 1995, 155). Land under settlements, however, is more than simply that covered by housing, industries, mining, and transport infrastructure; it includes also waste disposal sites, the cultural heritage, and the derelict land which is inseparable from urban development. Urbanization is rapidly increasing, and most of it takes place on cultivable land, often on the best soils. *An allocation of 4.5-6% of the gross land balance to settlement* is suggested as a more realistic figure for the near future.

Forest and woodland cannot realistically be confined wholly to uncultivable land, not least because of the social needs which these provide to the poor. Two thirds of the 'land balance' is found in only in 15 countries, many of which (e.g. Brazil, Zaire, Indonesia, Venezuela) have large areas of tropical forest, clearance of which is strongly opposed by international opinion. Lastly, it is unrealistic to say that permanent grazing must take place only on uncultivable land; on the contrary, another large section of the 'land balance' lies in semi-arid parts of countries such as Sudan and Kenya, where the people are dependent on cattle for their livelihood. *Taking forest, woodland and pasture together, an allocation of not less than 10-20% of the gross land balance*, possibly higher in forested countries, is reasonable.

### A speculative adjustment

The adjustments to each component of the estimates can be combined to give a speculative adjustment to estimates of the land balance - called 'speculative' because it is based on qualitative field observation, not quantitative surveys. Consider a representative country or region for which the official estimate, obtained by the approach of inventory and difference, is a cultivable area of 1000 ha of which 500 ha are presently cultivated, giving a gross land balance of 500 ha or 50%. After allowing 12% of the latter for protected areas and 3% for settlement, the net balance is 42% of the assessed cultivable land. Taking the lower and upper ranges of the adjustments suggested above, and their mean values, alternative estimates of the true land balance are given in Table 1. (Note that some upward adjustments appear smaller in hectares because at later stages of calculation they are percentages on a smaller base.)

<i>Hectares:</i>	<i>Original ( 'official' )</i>	<i>Minimum adjustment</i>	<i>Mean adjustment</i>	<i>Maximum adjustment</i>
Cultivable	1000	900	875	850
Cultivated	500	550	575	600
Gross land balance	500	350	300	250
Less:				
Protected land	60	42	36	30
Settlement	15	16	16	15
Forest, woodland, pasture	nil	90	131	170
Net land balance	425	202	117	35
Net balance as percentage of original estimate of cultivable land	42.5%	20%	12%	3.5%

**Table 1. A speculative adjustment to the land balance, based on the ranges of adjustments to components of the estimate (italicized) in the text above.**



An original gross land balance of 50% is therefore reduced to a realistic area of between 3% and 20% of the land presumed to be cultivable. If this were to be confirmed, the effect would be that countries assessed as having a gross land balance of less than 50% may, in fact, have little or no remaining land which can be sustainably cultivated; whilst for countries with larger balances, the true amount of land available may be half or less of the official estimates.

### **Testing the hypothesis: direct assessment**

For purposes of national and international policy it is highly important to know how much land remains available for cultivation. This information is needed as a basis for land use planning, agricultural research funding, and wider questions of food security and population policy. Whilst it might be possible to refine further the approach of inventory and difference (as FAO is continuously engaged in doing), there is a better way: direct observation, and if possible mapping, of where such land is to be found.

The suggested procedure in outline is as follows. A assessment team is brought together, with representatives from the national soil survey, Ministry of Agriculture, and perhaps an international consultant as moderator to assist in cross-country comparisons. Taking the official estimate of the land balance as a starting point, the team would first decide, from local knowledge, in which regions of the country this spare land is most likely to be found.

They would then visit such regions and, by mapping sample areas or transects, assess the percentage of land that is still available for cultivation. Refinements would be needed, such as specifications of the levels of inputs and conservation technology. Three criteria are essential:

1. Is the land really cultivable, on a sustainable basis?
2. Is it in reality not yet cultivated, nor under fallow needed to maintain fertility?
3. Is it already in use for other, necessary, purposes (e.g. strategic water catchments, support for pastoral peoples or indigenous communities, forest production for fuelwood needs)? This last criterion is of the highest importance.

A coordinating role could be taken by an international organization (e.g. ISRIC). Many national resource survey organizations would require financial assistance, but the cost, based on local staff with only limited use of consultants, would not be great.

### **Your views: an invitation**

Until such direct assessments are carried out, and as a basis for their justification, the author invites readers of this *Bulletin* to express their views. Obtain the estimate of the land balance for your own country, or a country of which you have wide knowledge. Let us know your views on how realistic is the assessment of the land balance, or what is your own, subjective, estimate of the true amount of land remaining available for cultivation. Views can be sent to [anthony.young@land-resources.com](mailto:anthony.young@land-resources.com), and will be displayed on the web site [www.land-resources.com/comments-spareland.html](http://www.land-resources.com/comments-spareland.html). If an employee of a governmental organization, please indicate whether you wish your name to be given or your views quoted anonymously.

Anthony Young, University of East Anglia, Norwich, UK



## References

- Alexandratos, N. (ed.) 1995 *World agriculture: towards 2010. An FAO study*. Chichester, UK: Wiley, for FAO.
- FAO ongoing. *FAOSTAT* (statistical database). Web site <http://apps.fao.org>.
- FAO-UNESCO 1995 *The digital soil map of the world and derived soil properties*. Land and Water Digital Media Series 1 (CD-ROM). Rome: FAO.
- Bot, A. J., Nachtergaele, F. O., and Young, A. 2000 (in press). *Land resource potential and constraints at regional and country levels*. World Soil Resources Report 90. Rome: FAO.
- Oldeman, L. R., Hakkeling, R. T. A., and Sombroek, W. G. 1990 *World map of the status of human-induced soil degradation*. Wageningen, Netherlands: ISRIC and UNEP.
- Shah, M. and Strong, M. 1999 *Food in the 21<sup>st</sup> Century: from science to sustainable agriculture*. Washington DC: CGIAR System Review Secretariat, World Bank.
- Young, A. 1998 *Land resources: now and for the future*. Cambridge, UK: University Press.
- Young, A. 1999a. Is there really spare land? A critique of estimates of available cultivable land in developing countries. *Environment, Development and Sustainability* **1**: 3-18.
- Young, A. 1999b. Malawi 1959-1999: a 40-year perspective. *Tropical Agriculture Association (UK) Newsletter* **19**(3): 20-22.

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**ACTIVITIES OF COMMITTEES, COMMISSIONS, SUB-COMMISSIONS,  
AND WORKING GROUPS  
ACTIVITÉS DES COMITÉS, COMMISSIONS, SOUS-COMMISSIONS  
ET GROUPES DE TRAVAIL  
AUS DER TÄTIGKEIT VON KOMITEES, KOMMISSIONEN, SUBKOMMISSIONEN  
UND ARBEITSGRUPPEN**

**Pedometrics '99  
3rd International Conference of the Working Group on Pedometrics  
Sydney, Australia, 27-29 September 1999**

The Working Group on Pedometrics (WG-PM) was established at the 14<sup>th</sup> World Congress of Soil Science held in Kyoto, Japan in 1990. Its mission is to promote the use of quantitative methods, mostly statistical and mathematical in nature, in soil science. The major activities of the WG-PM are : the organisation of Pedometrics conferences and workshops, the publication of the newsletter »Pedometron« and to grant annually the award »Best Paper in Pedometrics« to a distinguished publication in the field of Pedometrics.

The third international conference on Pedometrics took place at the University of Sydney, Australia and was locally organised by Prof. A. McBratney and his collaborators. Some 70 participants from most continents (but mainly Australia and Europe) participated actively.

The central theme of the conference was »Estimating Uncertainty in Soil Models«. Therefore, the conference was subdivided into six sessions, each with a keynote speaker and 2 to 6 oral contributions. The titles of these sessions were :

- Quantifying uncertainty in spatial models of soil
- Land resource monitoring
- Soil spatial models using environmental correlation
- Aggregation and disaggregation in spatial dimensions
- Modelling spatio-temporal variability in soil
- Deterministic/mechanistic and stochastic/empirical models in soil science.

Two poster sessions were organised at which each poster was individually presented during 10 min. followed by a discussion.

The scientific quality of all contributions was very high. New methods and models were presented, and a tendency towards a broadening of the application fields of Pedometrics could be observed. Whereas the major accent of the previous Pedometrics conferences was mainly on soil mapping and inventory techniques, new domains like *Precision Agriculture, Remote Sensing, GIS-analysis, Error management* in modelling have now found their way to Pedometrics.

During the conference dinner, the »Best Paper in Pedometrics« for 1997 and 1998 were awarded by the secretary of the WG-PM, Dr. P. Goovaerts.



The participants of the PEDOMETRICS Conference

A post-conference tour of 5 days allowed the participants to explore the soils, landscapes and land uses between Sydney and Brisbane. One of the highlights was a visit to the Cotton Research Institute at Narrabri where, under the supervision of Prof. A. McBratney, pioneering research is being conducted in precision agriculture.

Anyone who is interested in receiving the WG-PM newsletter *Pedometron* is kindly invited to join the WG-PM mailing list (please contact Dr. P. Goovaerts at [goovaert@engin.umich.edu](mailto:goovaert@engin.umich.edu)).

Marc Van Meirvenne  
Chairman WG-PM

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# INTERNATIONAL Agrophysics

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## INTERNATIONAL Agrophysics

A QUARTERLY JOURNAL ON PHYSICAL PROPERTIES  
AND PROCESSES AFFECTING PLANT PRODUCTION



INSTITUTE OF AGROPHYSICS, POLISH ACADEMY OF SCIENCES, LUBLIN

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### Aims & Scope

*International Agrophysics* is published quarterly. The journal focusses on physical properties and processes affecting plant production. The main topics are: mass (water, air, plant nutrients) and energy (light, heat) transport in the soil-plant-atmosphere continuum and ways of their regulation in order to reach biomass of high quantity and quality. In a wider meaning agrophysics concerns also animal and animal products.

The journal publishes papers reporting results of original research after review. Additional announcements may be published against payment.

### Audience

Researchers in soil, agriculture, forestry and environmental sciences, biologists, chemists, climatologists, ecologists, mathematicians, micro-biologists, physicists

**REPORTS OF MEETINGS  
COMPTE-RENDUS DE RÉUNIONS  
TAGUNGSBERICHTE**

**SOIL AND ENVIRONMENTAL CHEMISTRY WORKSHOP, TACOMA, USA**

The Soil and Environmental Chemistry Workshop was held during the Annual Meeting of the Pacific Northwest Regional Section of the AOAC INTERNATIONAL (AOACI) at the University of Puget Sound (UPS) in Tacoma, Washington, USA, June 8-9, 2000. The program included presentations by Ashok K. Alva (*Precision irrigation for improved nutrient management in sandy soils*), Irv Crump (*Water purification*), David Ferregamo and Dayle Ormerod (*Conductivity measurement in soil*), Yash P. Kalra (*International collaborative studies on soil analysis into Y2K and beyond*), and Pacita Ongoco (*Lead analysis by GFAA method*). There was interesting and stimulating discussion after each presentation.

The AOACI meeting consisted of the following workshops: Food Analysis, General Chemistry - Cyanide Analysis, Mercury Analysis, Metals Chemistry, Microbiology, Organics/Pesticides/Residues, Pharmaceutical/Forensic Chemistry, and Soil and Environmental Chemistry. With the current international discussion about genetically modified organisms (GMOs), presentations were made by Delano James, Sid Katz, and Karen McIntyre on the bio-engineered food products. At the banquet, Stephane Courteau discussed "*Our universe: Dark matter and vacuum energy as far as we can see*".

There were four training sessions: *An overview of ISO 17025 and changes from ISO 25* (James H. Scott), *Flow injection-The frontier of automated fluidic assays* (Jarda Ruzicka and Louis Scampavia), *Polymerase Chain Reaction basic techniques and demonstration* (Karen Jinneman and June Wetherington), and *Microzation of environmental organic methods* (Bob Rieck). As always, the very latest in scientific equipment were displayed at the Scientific Expo.

I found the meeting informative and rewarding. The planning committee, chaired by Steve Pope, is to be complimented for an outstanding program. The UPS Conference Services Staff made it an enjoyable and memorable experience.

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**International Conference on Paddy Soil Fertility  
Manila, The Philippines, April 24-27, 2000**

An international conference on paddy soil fertility, with the theme: "**Sustainable Paddy Soil Ecosystem: A Global Challenge in the Next Millennium**", was organized at the Makati Shangri-La Hotel in Manila, The Philippines, from April 24 to 27, 2000 as an activity of the IUSS Working Group on Paddy Soil Fertility (WG PS). The meeting was hosted by the Bureau of Soils and Water Management (BSWM) of the Department of Agriculture (DA) and the Philippine Society of Soil Science and Technology (PSSST). Conference sponsors included various agencies in the DA, i.e. the Bureau of Agricultural Research, the Philippine Rice Research Institute (PhilRice), the DA Regional Field Unit 4, the Bureau of Plant Industry, and the Agricultural Training Institute.

Approximately 100 participants attended technical sessions on the first two days. Apart from the participants from several national and international agencies and institutions in the country, a number of foreign delegates came from Japan, Thailand, Sri Lanka, Ghana and Austria. Two one-day field trips were arranged to visit PhilRice at Muñoz in the central part of Luzon Island (April 26) and to the International Rice Research Institute at Los Baños (April 27).

Dr Rogelio N. Concepcion, BSWM Director, President of PSSST and Chairperson of IUSS WG PS, was the Chairman of the Organizing Committee, with Dr Ireneo J. Manguiat, Vice President of PSSST, as Co-chair. At the opening, after the welcome address by Dr R.N. Concepcion, and the message from Dr Winfried E.H. Blum, Secretary General of IUSS, an impressive keynote address was delivered by Hon. Edgardo J. Angara, Secretary of Agriculture of The Philippine Government.

The two-day conference consisted of four lecture sessions and one poster session. In all, 4 keynote speeches and 20 oral presentations, as well as 10 posters focussed on 4 sub-themes:

1. The role of paddy soils in food security;
2. Policies, issues and concerns on paddy soils;
3. Action programs on paddy soils; and
4. Paddy soils environment and global climate change.

The presentations and deliberations on both days were quite lively. While some previously established facts like the rice yield decline after long-term continuous cropping, the applicability of bio-organic fertilizers (i.e. azolla, blue green algae, rice straw, green manure, etc.), and the benefit of crop rotation and on-farm trial, were once again confirmed, new, or relatively new concepts or attempts like Integrated Plant Nutrition System (IPNS), Dynamic Nutrient Management (DNM), Balanced Fertilization Strategy (BFS), techniques to mitigate  $\text{CH}_4$  emission, and the problem of paddy land conversion to non-agricultural use, were presented for further research and implementation. One local initiative which received wide interest was the establishment of the Strategic Agriculture and Fisheries Development Zones (SAFDZs), which is the land management unit that suits the production of specific crop.



Participants of the Conference



The Secretary-General of IUSS speaking at the opening ceremony

*At the end of the conference the participants agreed on the following action plan, which will be carried out as activities of IUSS WG-PS by relevant agencies / organizations:*

1. A publication will be produced within the year 2001, comprising a number of papers from the present conference and a number of invited ones, containing much of our present knowledge of paddy soil fertility, especially in relation to soil fertility conservation and management, food security, and global climate change.
2. A paddy soil fertility symposium will be organized at the 17<sup>th</sup> International Congress of Soil Science in Bangkok, Thailand (August, 2002).
3. An in-country regional workshop on paddy soils will be organized in the year 2001, to determine the scope of requirements for research, development and extension (RDE).
4. A policy on accreditation and incentives system to promote bio-organics and organically-produced commodities will be formulated, and regulations for the safe use of bio-organic materials for plant, animal and human health will be set.
5. Emphasis will be given to RDE on Integrated Crop Management (ICM) and IPNS with consideration on functional diversity of soil microorganisms.
6. Elaboration of precision agriculture vis-à-vis paddy soil productivity improvement.
7. Promotion of regional information exchange on paddy soil fertility maintenance.

I wish to thank all members of the OC and the working groups, who are mainly from BSWM, and all others who contributed to the success of this conference for their hard work.

Mabuhay ... and hope to see you all in 2002 in Bangkok.

*Samran Sombatpanit, Thailand  
Technical Editor of the Conference*



## **International workshop "Scale and Variability Issues in the Soil-Hydrological System"**

Wiks Castle, Sweden, 25-27 August 1999

The main objective of the workshop was to discuss the state of the art in scaling and variability issues within environmental physics and chemistry and to clarify the most interesting future developments. The workshop included three sessions of oral presentations, **'From pore to pedon'**, **'From pedon to field'**, and **'From pedon to catchment'** and a poster session.

Rien van Genuchten (USA) introduced the first session with a paper "Soil physical processes from pore to pedon". This session focused on heterogeneity and uncertainty of soil hydraulic properties. Together, the eight papers gave a comprehensive view of the state of art.

The scaling issue received more attentions in session II and III. Sjoerd van der Zee (NL) introduced the second session by discussing the implications of scaling, addressing both time- and space-dependency of different scales and the complexity of the soil unit (REV) of different scales. Dennis McLaughlin (USA) started session III by comparing "lumped" and "distributed" approaches to hydrological modelling. Many views on the scaling issue were presented, both those emphasising the difficulties and those emphasising the possibilities. Altogether, 48 participants from 15 countries joined the workshop and 30 papers were presented in this pleasant environment.

The workshop was organised by the Swedish University of Agricultural Sciences (Per-Erik Jansson, Nicholas Jarvis, Annemieke Gärdenäs) in co-operation with the Royal Institute of Technology, Sweden (Georgia Destouni) and the Technical University of Denmark (Karsten H. Jensen) and sponsored by the International Association of Hydrological Sciences. The workshop proceeding with abstracts of the oral presentations and posters was pre-published in

Gärdenäs (Ed.) 1999. Workshop proceedings 'Scale and variability issues in the soil-hydrological system' - the 25-27th of August 1999 at Wiks Castle, Sweden. Swedish University of Agricultural Sciences, Dept. of Soil Sciences, Division of Agricultural Hydrotechnics, Communications 99:3, 57 pp. (ISRN SLU-HY-AVDM--99/3--SE)

The proceeding is available for 100 SEK (\*12 US\$), contact: Annemieke Gärdenäs, Dept. of Soil Sciences, P.O. Box 7014, SE 750 07 Uppsala, Sweden. E-mail: Annemieke.Gardenas@mv.slu.se). The abstracts are also available at the homepage:

<http://www.mv.slu.se/bgf/Scales.htm>

Annemieke Gärdenäs, Uppsala, Sweden

## **International Scientific Conference "Genesis, Geography and Soil Ecology"**

Lviv, Ukraine, September 16-18 th, 1999

From September 16-18, 1999, the International Scientific Conference "Genesis, Geography and Soil Ecology" was held at the National Ivan Franko University of Lviv (Ukraine). It was sponsored by the Soil Geography Department, founded in 1993 (Director: Prof. S.Poznyak) and by the Scientific Research Laboratory of Soil-Geographical Studies, founded in 1957 by professor I. Gogolyev (Director: Docent M. Kit).

The work of the Conference was devoted to questions of soil genesis and classification, mountain soil formation, ecology, protection of soils, and agro-soil science.

Scientists from 10 (ten) countries, namely: Austria, Belarus, Estonia, Germany, Latvia, Lithuania, Moldavia, Poland, Russia, and the Ukraine took part in the Conference.

89 lectures were given and discussed. The collection of scientific studies were published in the «Herald of the L'viv University» (geography series, issue 25) on the basis of the results of the Conference

Lectures and reports dealt with the following problems: urgent problems in soil science genetics, elaboration of information indices of soil forming processes assessment, new approaches to the classification and evaluation of soils, the evaluation of agriculturally and technogenically changed soils, models of anthropogenetically influenced soil evolution, peculiarities of mountainous soil forming processes and its diagnostics, soil ecological conditions in urban settlements and reservation areas, forest and agricultural ecosystems, effective land utilization in agricultural production, application of expert systems in soil-agrochemical research, the role of agricultural microbiology in the protection of the environment, legal fundamentals of soil protection.

Main tendencies of soil genesis and ecological studies, effective soil utilization, increased fertility and soil protection have been determined. It was recommended to use the scientific and practical results of the Conference in order to increase the theoretical and methodological training level of soil scientists and ecologists for a higher qualification, and for the improvement of scientific research work in the fields of soil science, agrochemistry and ecology.

During the scientific excursion, the participants of the Conference got acquainted with morphogenetic and agroproduction peculiarities of specific soils of the Pre-Carpathians and Carpathians.

Theoretical and practical problems of genesis, geography and ecology of turf – podzolic, surface – clayey and brown soils were discussed. The Conference has approved methodical investigations of soil scientists of the Lviv University concerning the studies of the deterioration of soil quality under agrotechnogenic loading by evaluation procedures.

The exhibition of scientific work of Prof. Gogolyev, a prominent scientist and one of the founders of the Lviv School of Soil Sciences, was of great interest for the participants. His contribution to the development of Ukrainian soil science and geography of soils was highly praised in the reports of our national and foreign scientists.



Participants of the Congress: Left to right: 7 - Prof. S.Poznyak (Lviv, Ukraine),  
8 - Prof. I. Krupenikov (Kyshyniv, Moldova), 9 - Prof. V. Targulian (Moscow, Russia)

*The participants expressed confidence that holding conferences promotes the consolidation of efforts of soil scientists, agrochemists, geographers, and ecologists for a more effective development of modern soil science as the basis of preserving and reproducing land resources and the realization of the strategy of the sustainable development of the society.*

Prof.Dr. S.Poznyak,  
Director of the Soil Geography Department,  
National Ivan Franko University of Lviv, Ukraine

**NEWS FROM REGIONAL AND NATIONAL SOCIETIES  
NOUVELLES DES ASSOCIATIONS RÉGIONALES ET NATIONALES  
BERICHTE DER REGIONALEN UND NATIONALEN GESELLSCHAFTEN**

**Austrian Society of Soil Science**

**(Österreichische Bodenkundliche Gesellschaft)**

**Neugewählter Vorstand der Österreichischen Bodenkundlichen Gesellschaft (per 27.1.2000)**

**Geschäftsführender Vorstand**

Präsident:	Univ.-Doz.D.I.Dr. Martin Gerzabek
Altpräsident:	Univ.-Prof.D.I.Dr. Eduard Klaghofer
Vizepräsident:	Univ.-Doz.D.I.Dr. Otto H. Danneberg
Generalsekretär:	Dr. Andreas Baumgarten
Schatzmeister:	Dipl.-Ing. Erwin Murer
Schriftleitung:	Dipl.-Ing. Sigrid Schwarz
Beisitzer:	Univ.-Prof.D.I.Dr. Dr. h.c. mult. Winfried E.H. Blum
	Dipl.-Ing. Alfred Pehamberger

**Erweiterter Vorstand:**

Univ.-Prof.Dr. Ellen Kandeler  
D.I. Dr. Michael Englisch  
Univ.-Prof. D.I. Dr. Nicola Rampazzo  
Univ.-Prof. D.I. Dr. Gerhard Glatzel  
Gen.Dir. Dipl.-Ing. Arnold Köchl  
Dipl.-Ing. Josef Wagner  
Dipl.-Ing. Dr. Karl Aichberger

Kontaktadresse: Generalsekretär Dr. Andreas Baumgarten (andreas.baumgarten@bfl.gv.at):  
Bundesamt und Forschungszentrum für Landwirtschaft, Spargelfeldstraße 191, A-1226 Wien;  
Tel: ++43/1/73216/4219, Fax: /4222; homepage: <http://www.boku.ac.at/oebg>

**Croatian Society of Soil Science**

During the last Assembly of the Croatian Society of Soil Science, the following Board was elected:

President:	Prof.Dr. Zeljko Vidaček
Secretary:	Prof.Dr. Dragutin Petošić
Treasurer:	Aleksandra Mihaljčić, M. Sc.
Board Members:	Prof.Dr. Ivan Jurčić
	Doc. Dr. Nikola Pernar

The address is:

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CROATIA  
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E-mail: zvidacek@agr.hr

### **Cuban Soil Science Society**

This is the new Executive Council of the Cuban Soil Science Society:

President:	Dr. Rafael Villegas Delgado
Vice President:	Dr. Olegario Muñoz Ugarte
Deputy-Secretary:	Dr. Alberto Hernández Jiménez
Treasurer:	Eng. Regla Margarita Chang Ravelo
Members:	Dr. Mario Riverol Rosquet
	Dr. Greco Cid Lazo
	Dr. Germán Hernández Barrueta
	Dr. Julio E. Gandarilla Benítez
	Dr. Juan Miguel Pérez Jiménez

The XV Latin American Congress of Soil Science as well as the 2<sup>nd</sup> Iberoamerican Congress on Environmental Chemistry and Physics will be held in Cuba, in 2001 (see »Meetings« in this Bulletin).

Rafael Villegas Delgado, Cuba

### **64<sup>th</sup> Annual Convention of the Indian Society of Soil Science: A Brief Report**

The 64<sup>th</sup> Annual Convention of the Indian Society of Soil Science (ISSS) was held at the Tamil Nadu Agricultural University (TNAU), Coimbatore, Tamil Nadu, India on November 26-30, 1999.

The inaugural function was held on 26<sup>th</sup> November, 1999 at the Anna Auditorium, and it was attended by distinguished guests, which among others included Prof. Dr. Gyorgy Varallyay, Member of the Hungarian Academy of Sciences, Budapest, Hungary, about 320 delegates from different parts of the country, and other distinguished guests, invitees, and delegates.

Dr. M. Velayutham, President of the Indian Society of Soil Science, gave a welcome address. Dr. S. Kannaiyan, Vice Chancellor of TNAU, who presided over the function, reiterated the importance of Soil as a natural resource, basic to the support of different life forms. Chief Guest Dr. R.S. Paroda, Secretary, Dep. of Agric. Res. and Education, Govt. of India and Director General, Indian Council of Agricultural Research, New Delhi in his inaugural address elaborated on (a) soil as a basic resource of the ecosystem, (b) fertilizer use efficiency, (c) loss of nitrogen through leaching, (d) environmental concern arising out of poor utilization of applied fertilizer nutrients and (e) need to look into the pros and cons of organic farming.

Dr. R.S. Paroda presented the various Honours, Fellowships and Awards of ISSS for 1999 and Dr. G. Narayanasamy, Honorary Secretary of ISSS, read the citations.

Drs. N.N. Goswami, I.P. Abrol and G. Dev were elected as Honorary Members of ISSS. Dr. S.K. Banerjee, Jabalpur; Dr. A.P. Gupta, Hisar; Dr. Kunal Ghosh, Calcutta; and Dr. A.K. Singh, New Delhi, were elected as Fellows of ISSS. Dr. M.S. Brar, Ludhiana received 12th International Congress Commemoration Award. Dr. R. Dinesh, Port Blair, Andaman was awarded the ISSS Golden Jubilee Young Scientist Award. The recipients of Zonal Award were: Dr.T.N. Shivananda - South Zone, Dr. S.K. Chaudhari - West Zone,

Dr. Kanwar Barjinder Singh - North Zone and Dr. K.K. Bandyopadhyay - East Zone. The inaugural function came to a close with a vote of thanks by Dr. K.K. Mathan, Prof. & Head, Dept. of Soil Science, TNAU, Coimbatore.



Inaugural function: (left to right): Dr. T.V. Karivaradaraaju, Director, TNAU; Dr. M. Velayutham, President, ISSS; Dr. R.S. Paroda, Director General, ICAR; Dr. S. Kannaiyan, Vice Chancellor, TNAU; Dr. G. Narayanasamy, Secretary, ISSS and Dr. K.K. Mathan, Professor of Soil Science, TNAU, Coimbatore

The first Dr. N.S. Randhawa Memorial Lecture was delivered by Dr. J.S. Kanwar, DDG (Emeritus), ICRISSAT, Hyderabad on the topic 'Soil Science, food security, sustainability and the society'. The 17th Professor J.N. Mukherjee - ISSS Foundation Lecture was delivered by Dr. D.K. Das on the topic 'Role of soil information systems in sustainable use of land resources. The 26th Dr. R.V. Tamhane Memorial Lecture was delivered by Dr. I.V. Subba Rao on the topic 'Soil and environmental pollution - A threat to sustainable agriculture'. A Guest Lecture was delivered by Professor G. Varallyay, on the topic »Soils of Hungary-Potentially and Constraints«.

A series of panel discussions by eminent teachers and scientists on the theme »Post-Graduate Education in Soil Science in India« was arranged on 27th November 1999. The topics chosen for discussion were: (i) Role and scope of Soil Science, (ii) Basic requirements, (iii) Identification of broad areas for model syllabus and (iv) Teaching methodology and instructional materials. Finally a 'Plenary Session' in which the consensus arrived at by the different panels were adopted. A detailed report on this exercise is proposed to be brought out for circulation among the members of the Society, Chapters of ISSS,

Departments of Soil Science in State Agricultural Universities and Indian Council of Agricultural Research.

National Seminar: A National Seminar on, 'Developments in Soil Science: 1999, was organized on 26th, 28th and 29th November 1999 in which around 300 papers were presented in four concurrent oral sessions each day, besides poster sessions arranged in three exclusive sessions.

A cultural programme highlighting the rich and varied traditions of not only the Southern region of India but also other parts of the country through the medium of dances and songs was arranged in honour of the delegates.

Concluding Session: This was held on 29th November 1999 in which members were requested to present their suggestions regarding the activities of the Society in general and of the programmes of the Annual Convention in particular. Several members offered valuable suggestions and made pertinent observations for improving the activities of the Society. Finally Dr. M. Velayutham delivered the Presidential Address after which the technical sessions were formally concluded.

G. Narayanasamy  
Honorary Secretary, Indian Society of Soil Science

### **SOIL SCIENCE SOCIETY OF NIGERIA ANNUAL MEETING, BENIN CITY**

The 25th annual conference of Soil Science Society of Nigeria (SSSN) was held at the Precious Palm Royal Hotel, Benin City Edo State, November, 22-24<sup>th</sup>, 1999. The Theme of the conference was »Management of Soil Resources of Nigeria for Sustainable Agricultural Production in the 21st Century«. The opening ceremony was chaired by Professor A.A. Agboola while the Executive Governor of Edo State, Chief Lucky Nosekhere Igbiredion, ably represented by the Permanent Secretary in the Edo State Ministry of Agriculture, declared the conference opened.

The conference was attended by over 200 government officials, renowned scientists, academicians, and students from all over the country. More than 100 papers were presented as oral contributions. Two invited papers namely: Agricultural Land Use Policy in Nigeria by Dr Shariff Sanni and Perspectives on Fertilizer Use in the 21st century by Professor V.O. Chude were presented. Two other key speakers: Professor F.O.R. Akanmigbo and the Director, Water Resources Institute, Mando Kaduna were however, unavoidably absent at the conference.

Benin '99 was a success story. Dr Umoru Omoti, Chairman of the LOC and the National Vice-President of SSSN, delivered a presidential address on behalf of the outgoing Honourable President of SSSN, Professor Gabriel Lombin, who was unavoidably absent because of his new assignment as Nigerian representative on FAO and IFAD at Rome. Dr Omoti gave an account of how Professor G. Lambin transformed SSSN from a deficit account to that of surplus. Field trips were undertaken to Okomu oil palm farm, Okomu and Michelin Rubber Estates OSSE with a month watering lunch at Okomu.

During the annual general meeting of the congress, a new executive council of the society was elected for a period of two years.

President	Dr U.Omoti
Vice President	Prof. V.O. Chude
General Secretary	Prof.O.J. Ojениyi
Asst.General Secretary	Dr B.A. Raji
Financial Secretary	Dr J.A. Adediran

Treasurer	Dr Olu Obi
Business Manager	Dr A. Olayinka
Editor-In-Chief	Prof. O. Bababla
<i>Ex-Officio</i>	<i>Prof. A.A. Agboola</i>
Ex-Officio	Dr S.O. Sanni
Ex-Officio	Mr C.O. Ezendu

On behalf of the entire SSSN membership, we wish Prof. G. Lombin a successful tenure at FAO and IFAD.

## **POLISH SOCIETY OF SOIL SCIENCE**

At the Congress of the Polish Society of Soil Science in Lublin, the following Executive Board was elected for 1999 – 2003:

President:	Prof. Piotr Sklodowski
Vice-Presidents:	Prof. Slawomir Gonet
	Prof. Andrzej Mocek
Secretary:	Dr Jozef Chojnicki
Treasurer:	Dr Zbigniew Zagorski
Members:	Prof. Ryszard Debicki
	Prof. Adam Kaczor
	Prof. Stanislaw Kalembsa
	Prof. Janina Kaniuczak
	Prof. Jan Kucharski
	Prof. Edward Niedzwiecki
	Prof. Henryk Piascik
	Prof. Stefan Skiba
	Prof. Henryk Terelak
	Prof. Jerzy Weber

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## ANNUAL MEETING OF THE AMERICAN SOCIETY OF AGRONOMY

The 91<sup>st</sup> Annual Meeting of the American Society of Agronomy (ASA), 44<sup>th</sup> Annual Meeting of the Crop Science Society of America (CSSA), and the 63<sup>rd</sup> Annual Meeting of the Soil Science Society of America (SSSA) were held in Salt Lake City, Utah, USA, October 31-November 4, 1999. The National Society of Consulting Soil Scientists, a chapter of SSSA, also met in conjunction with these meetings. Salt Lake City, nestled between the Great Salt Lake and the dramatic Sasatch Range of the Rocky Mountains, is fast becoming one of America's foremost destinations. The majority of the activities were held at the Salt Palace Convention Center. Additional meetings took place in nearby hotels.



*The majority of the activities were held at the Salt Palace Convention Center.*

The theme of the meetings was *Science Serving Agriculture and Natural Resources: Present and Future*. The program focused not only on the basic sciences underpinning agronomy, crop science, and soil science, but also highlighted how our disciplines contribute to scientific advancement and provide sustenance for people around the globe and improvement to the quality of their environment. A total of 2907 papers were presented\*. In addition, four workshops and six professional tours were offered. There were also tours for the undergraduate students and for the accompanying persons and a series of food functions, receptions, and board and committee meetings. In addition, there were several other functions, e.g., All California Mixer, Cornell Thirsty Bear Reception, Ohio State University Buckeye Bash, Michigan State University Spartan Reception, and South Dakota Jackrabbit Stampede. The Association of Agricultural Scientists of Indian Origin, Association of Women in Soil Science, Iranian Society of Agricultural and Life Science Professionals of North America, Association of Chinese Plant and Soil Scientists in North America, USDA-ARS Scientists, and other groups also held meetings. There were a number of exhibits and publisher displays. A busy and exciting week indeed ! I had the opportunity of taking the tour organized by the Potash Production IMC Ogden Corporation. The tour visited the production facilities for a first-hand look at a unique production facility which utilizes the resources of the Great Salt Lake. IMC Potash is North America's largest specialty potash producer. The solar evaporation facility in Ogden consists of nearly 60,000 acres and is so large that it can be clearly seen in satellite photos taken from 125 miles in space.

\*This year's annual meeting was one of the largest in terms of the number of poster and oral papers presented. Overall it ranked second behind Seattle (1994, 3045 papers); Minneapolis being third (1992, 2707 papers), followed by Baltimore (1998, 2615 papers).



*The three Past -Presidents: (from left to right) D. Keith Cassel, SSSA President (1996-97), Yash P. Kalra, President, Canadian Society of Soil Science (1996-97), and Gary W. Petersen, SSSA President (1998-99) at the ASA Awards Presentation on November 3, 1999.*

Vernon B. Cardwell, Ronald L. Phillips, and Donald L. Sparks assumed 1999-2000 presidencies of ASA, CSSA, and SSSA, respectively. H.H. Cheng, Lowell E. Moser, and Gary W. Petersen completed their 1998-99 terms as Presidents. Presidents-Elect are Darrell W. Nelson, David A. Sleper, and Robert J. Luxmoore. The tri-societies' officers, organizers, and headquarters staff are to be congratulated for excellent meetings. The next three meetings are scheduled for Minneapolis, Minnesota (November 5-9, 2000), Charlotte, North Carolina (October 21-25, 2001), and Indianapolis, Indiana (November 11-14, 2002). For further information: The American Society of Agronomy, 677 S. Segoe Rd., Madison, Wisconsin 53711-1086, USA, phone (608) 273-8090, fax (608) 273-2021. To access this information on the World Wide Web, point your browser to <http://www.agronomy.org>, <http://www.crops.org>, and <http://www.soils.org>.

Yash P. Kalra, Canada

**INTERNATIONAL RELATIONS  
RELATIONS INTERNATIONALES  
INTERNATIONALE BEZIEHUNGEN**

**THIRD INTERNATIONAL ESSC CONGRESS**

Man and Soil at the Third Millennium  
*Valencia (Spain), 28 March-1 April 2000*

**CONCLUSIONS / PROPOSALS**

The »Third International Congress of the European Society for Soil Conservation« was held in Valencia (Spain) from the 28th of April to the 1st of May of 2000.

These congresses, which are held every four years, have as the main objective to make a revision of the soil and water degradation problems, their causes, and the progress that has been reached in their study and control, mainly in the European countries. There are also discussed the effects of those problems on other natural resources like flora and fauna, and on the society in general, looking for some possible solutions. In the interval between congresses the ESSC organize other meetings dedicated to more specific problems.

Although the ESSC is the organization responsible for the organization of these congresses, in this occasion the Congress was cosponsored by different institutions and organizations at local, national and European levels, but also by other important international organizations which have the same objectives like the "European Soil Bureau" (ESB), »World Association of Soil and Water Conservation« (WASWC), the »Soil and Water Conservation Society« (SWCS), the »International Soil Conservation Organization« (ISCO), the »International Union of Soil Science« (IUSS), Bureau of Land Management (USA Department of the Interior), and CIGR (Commission International du Génie Rural), which were represented by their Presidents, Vice-Presidents or Secretaries. This interaction has been very useful to reinforce the relations among all those organizations, which will help in the future to increase the co-ordination of their activities, pursuing the same objectives, in problems like the conservation of the soil and water natural resources which affect the whole World, with global consequences that cannot be limited to a particular region.

The direction and organization of the Congress was responsibility of the acting President of the ESSC, Dr. José L. Rubio, with the help and advice of an excellent group of collaborators at local, national and European level. Great part of the activities of the Congress were held in the magnificent facilities of the »Museo de las Ciencias Príncipe Felipe« (Ciudad de las Artes y las Ciencias). Besides there was a one day field trip in the S of the Valencia region, and a visit to the Centro de Investigación sobre Desertificación close to Valencia city.

The opening of the Congress was presided by the Príncipe D. Felipe de Borbón, heir of the Spanish crown, accompanied by the main political and administrative authorities at local and regional level. In his very well documented inaugural speech he called the attention about the important environmental problems, affecting the whole society derived of the soil degradation, and especially about the desertification process which is increasingly affecting the lands of the SE of Spain. The same orientation had the speeches of the Minister of Environment, the President of the Valencia Community and of the President of the ESSC.

In this third congress there was a record in the number of participants (456), number of countries (50) and number of papers presented (366). Besides European countries, there were represented USA,

Canada, Africa and Ibero-America. There were given 15 keynote lectures by well-known international specialists, including one past president (R. Lal) and two vice-presidents (E. Roose and I. Pla) of the WASWC. The presented papers, both oral and posters, covered a wide range of topics related with the *degradation and conservation of the soil and water resources, and their effects on people*. There were emphasized the processes of soil degradation and desertification and their influence on the hydrological cycle, climatic changes and biodiversity. The main conclusions of the Congress are refer to the need to take into consideration and to emphasize the functions of the soil as a fundamental part and regulator of the whole environment; and to the close relationship of soil degradation to hydrological processes and water conservation, creating problems in situ and off site, at present and in the close future, which may affect not only the local agricultural production but the whole society, without border limits. It was agreed, that with this way of focussing the problems of soil and water degradation and their effects, together with well documented specific examples of actual and prospective problems, would be easier to get the support of politicians and decision makers, and of the society in general, for the research and gathering of basic information which are urgently required for a better diagnosis of potential problems of soil and water degradation and their effects leading to more effective preventive and control measures. All activities and outcomes of the Congress were widely publicized by the local and national newspapers, TV and radio.

During the field trip it was possible to observe spectacular processes and problems of erosion and desertification in the SE of the Valencia region, mainly associated to abandonment or drastic changes in the traditional agricultural use and management of the lands, under a semiarid climate. There were also seen examples of how with the use of new technologies of land management and land use, when there are resources to adopt them and the results are economically productive, the process of land desertification may be stopped and even reversed. In the visit to the » Desertification Research Centre«, close to Valencia, it was possible to appreciate how an organism integrating local and regional research, teaching and political institutions, may effectively contribute to the study of the causes, processes and control practices of the growing soil degradation and land desertification in the Mediterranean region of Valencia, with projection to the whole Mediterranean area.



S.A.R. el Principe de España addressing the audience during the Opening Ceremony of the Third ESSC Congress.



Attendants of the Third ESSC Congress at the Museo de las Ciencias Principe Felipe de Valencia (Spain).

During the Congress there were meetings of the ESSC Council and one General Assembly of the ESSC. There were elected the new members of the Council and Executive Committee, and the new President (Dr. José L. Rubio) of the ESSC for the period 2000-2004. Prof. Dr. Roy P. C. Morgan (UK), second President of the ESSC, received the ESSC Award "Prof. Gerold Richter", and Dr. Stefan H. Doerr (UK) received the Young Person's Award.

The organizers, headed by José L. Rubio, must be congratulated by the great success of the Congress, both in the aspects related to the sessions of presentations of papers, posters, etc, and all other social activities, lunches, coffee brakes, etc, where the facilities, information, help, etc, making everything easy and agreeable, were appreciated by every participant. All this was only possible with the great effort, dedication, and spirit of collaboration of all the people that accompanied José Luis in such activities.

Ildefonso Pla Sentís  
**Vice-President of WASWC**  
**Member of the Executive Committee of the ESSC**  
**Member of the Executive Committee of ISCO**

## PROPOSALS FOR SOIL SUSTAINABILITY

1. Soil conservation should be linked with water conservation
2. Soil quality should be linked with land quality and environmental quality
3. Research should be encouraged, supported and oriented to assess processes of land degradation on different scales: from the field to the small and large catchment to an environmental unit
4. Attention should be given to the heritage and landscape value of traditional soil and water conservation systems
5. Socio-economical and political aspects at different levels (*field, watershed, community, region, ...*) should be integrated
6. Politician, decision-makers, land use planners should be educated and informed about soil quality, soil functions and the importance of soil and water conservation
7. The ESSC can act as key-actor in a campaign for the EU and national governments to adopt a convention on soil quality, soil care, soil restoration, soil protection and soil and water conservation

## **Thomas Rosswall Appointed Director of International Foundation for Science (IFS)**

The International Foundation for Science (IFS) has appointed Thomas Rosswall Director for the five-year period from September 2000. IFS, an international NGO, has its Secretariat in Stockholm. The IFS Mandate is to contribute to the building of scientific capacity in developing countries for research in biological resources. Since it began funding activities a quarter of a century ago, IFS has supported more than 3,000 scientists in 99 developing countries.

(From: IFS Press Release)

## **New Bulletin of the European Soil Bureau**

The European Soil Bureau, which is part of the Joint Research Centre of the European Commission, is editing a new Bulletin. The first number appeared under the title »ESB Bulletin N°1« in May 2000. The Bulletin provides information about new projects, meetings and conferences and new publications on soil science in Europe. The editors are Jean Jacques Lambert and Dominique King, from the National Institute for Agronomic Research (INRA), Olivet, France. The Bulletin is available by accessing the Website: <http://esb.aris.sai.jrc.it/links/>, under: documents – 2000-ESB-Bulletin. Printed copies can be obtained from

Dominique KING

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FRANCE

## **International Circumpolar Soil Database Meeting Oslo, Norway, March 13 – 14, 2000**

Global climate change is predicted to have a major impact on soils associated with those ecosystems that are expected to undergo significant increases in surface air temperatures. These changes will affect not only the carbon stored in soils, but also the outflow of pollutants and sediments into aquatic systems.

In order to address these issues, a meeting was held in Oslo, Norway. Approximately fourteen participants from seven countries were present, including scientists from four EU countries (Sweden, Denmark, Germany and Italy) and from Norway, Russia and Canada. The purpose of this meeting was to bring together experts from various countries to determine the availability and quality of the soil data that is essential for both the Circumpolar Soil Database and the Nordic Soil Database portion of the Soil Geographical Database of Europe. Other important goals were to exchange information, to develop common methodologies and to formulate cooperative projects for the near future.

At the beginning of the meeting, a representative of the European Soil Bureau made a presentation on the progress of the European Soil Database. Representatives of Russia, Norway, Denmark (including Greenland), Finland and Sweden then made presentations on the progress on the Nordic Soil Database. This was followed in the later portion of the morning by a presentation on the progress made on the CWG-coordinated Circumpolar Soil Database. Each presentation was followed by lengthy discussions concerning the soil classification system used, data availability, and the gaps in soil data that require further work.

During the afternoon of the first day the leaders of the PACE, AMAP and ACI programs and the IPA Task Force on Modeling Mountain Permafrost made presentations. The first day closed with a presentation on the environmental effect of global change on circumpolar soil carbon – a challenge to sustainable development.

During the second day in-depth discussions were held with the aim of formulating a cooperative project involving the EU Soil Bureau, the Nordic countries, Russia and Canada. The U.S. will also be invited to cooperate in this project. Those attending this meeting agreed to produce an expanded circumpolar database through cooperation between the IPA and IUSS Cryosol Working Groups, the EU Soil Bureau and other interested groups and agencies. An interim database will be presented at the 3<sup>rd</sup> International Cryogenic Soil Conference to be held in Copenhagen, Denmark in August 2001. This cooperative project will combine the expertise and data of the participating countries to generate an expanded Circumpolar Soil Database.

The objectives of this project are as follows:

1. To provide the uniform soil data needed for assessing the amounts of soil carbon in the Northern Circumpolar Region and, by using models, to predict the effect of climate change on this soil carbon.
2. To provide soil data from the Northern Circumpolar Region for model-generated predictions of the outflow of toxic elements and sediments from land to sea resulting from climate change.

Scheduling of the work:

1. Border harmonization between the Scandinavian countries will be completed by the end of 2000. Arnold Arnoldussen will coordinate this work.
2. Border harmonization between the Scandinavian countries and Russia will be finalized by the end of 2000. Vladimir Stolbovoi will coordinate this work.
3. Based on the presentations and discussions, a topic for further cooperation will be chosen and a project proposal will be formulated. Arnold Arnoldussen will coordinate this work.
4. The memorandum of agreement between the EU Soil Bureau, Agriculture and Agri-Food Canada (ECORC) and the USDA (Natural Resources Conservation Service) will be completed by the end of June 2000.
5. The EU Soil Bureau will provide the Eurasian Soil Database to the chair of the CWG.
6. The CWG will review the Eurasian Soil Database and the CWG-generated Circumpolar Soil Database and will recommend revisions and minimum datasets.
7. The GIS group in Ottawa, Canada will develop the first draft of the new Circumpolar Soil Database. C. Tarnocai will coordinate this work.
8. This database will be reviewed during the International Circumpolar Soil Database meeting in March 2001 and the necessary revisions will be made.
9. This revised database will then be presented at the 3<sup>rd</sup> International Cryogenic Soil Conference to be held in Copenhagen, Denmark in August 2001.

It was suggested that the next International Circumpolar Soil Database meeting be held in Vienna in March 2001. Vladimir Stolbovoi agreed to organize this meeting.

The participants at this meeting expressed special appreciation to Arnold Arnoldussen for organizing the meeting. His efforts led to the smooth running of this meeting and ensured that success was achieved.

#### Participants:

A. Arnoldussen, Norway (Arnold.arnoldussen@nijos.no), T. Balstrom, Denmark (TB@geogr.ku.dk), G. Broll, Germany (brollg@uni-muenster.de), J. Eriksson, Sweden (jan.eriksson@mv.slu.se), B. Etzelmuller, Norway (bernd.etzelmuller@geografi.uio.no), S. Goryachkin, Russia (pedology@igras.geonet.ru), B. Jacobsen, Denmark/Greenland (bhj@server1.geogr.ku.dk), L. Montanarella, Italy (Luca.montanarella@jrc.it), A. Nyborg, Norway (agn@nijos), L-O. Reiersen, Norway (lars-otto.reiersen@amap.telemax.no), E. Solbakken, Norway (eis@nijos.no), J.L. Sollid, Norway (j.l.sollid@nijos.no), V. Stolbovoi, Russia (stolbv@iiasa.ac.at), C. Tarnocai, Canada (tarnocaict@em.agr.ca)

Arnold Arnoldussen, Luca Montanarella, Charles Tarnocai and Sergey Goryachkin



**APPOINTMENTS, HONOURS, PERSONAL NEWS  
NOMINATIONS, DISTINCTIONS, INFORMATIONS PERSONNELLES  
ERNENNUNGEN, AUSZEICHNUNGEN, PERSÖNLICHE NACHRICHTEN**

**Prof. Dr. P. Bernard Tinker**, Chairman of the IUSS Standing Committee on Statute and Structure, has been awarded the Order of the British Empire for his services on the Governing Board of the Macaulay Land Use Research Institute as well as for his contributions to soil and environmental sciences.

**Prof. Louise Fresco** was appointed to the post of Assistant Director-General of FAO.

**Donald L. Sparks** is the current President of the Soil Science Society of America,

**Robert J. Luxmoore** is its President Elect.

**Domy C. Adriano** received the Environmental Quality Research Award.

**Stephen A. Boyd** received the Soil Science Research Award.

**Gary W. Colliver** received the Soil Science Professional Service Award.

**James M. Davidson and Howard Haise** received the Soil Science Distinguished Service Award.

**George P. Demas** received the Emil Truog Award.

**James W. Gilliam** received the Soil Science Applied Research Award.

**William A. Jury** received the Don & Betty Kirkham Soil Physics Award.

**H. Joseph Kleiss** received the Soil Science Education Award.

**Richard H. Loeppert, Jr.** received the Marion L. and Chrystie M. Jackson Soil Science Award.

**Lawrence P. Wilding** received the International Soil Science Award.

The following distinguished scientists were named Fellows of the Soil Science Society of America:

**John M. Baker, Peter J. Bottomley, Gary W. Colliver, John T. Gilmour, Sabine R. Goldberg,**

**Gary W. Hergert, James E. Hook, Jan W. Hopmans, A.D. Karathanasis, John E. Rechcigl, John**

**Ryan, George H. Snyder, George F. Vance, Scott R. Yates.**

**Dan H. Yaalon**, Chairman of the IUSS Committee on the History, Philosophy and Sociology of Soil Science, received the Georges Sarton Medal from the University Ghent, Belgium, on 17 February 2000. Professor O. van Cleemput, dean of the Faculty of Agricultural and Applied Biological Sciences, chaired the festivity, the laudatio was given by Professor D. Gabriels. Prof. Yaalon held a lecture for the audience of about 100 persons, entitled: Attitudes to soil care and land use through human history. The IUSS was represented by Hans van Baren.

**Dennis R. Keeney** received the Charles A. Black Award from the Council for Agricultural Science and Technology (CAST).

**Gary W. Petersen**, professor of soil and land resources in the Department of Agronomy, received the title of Distinguished Professor.

**Dr. David E. Kissel**, professor of Crop and Soil Sciences at UGA, has been appointed to the position of Head of the Agricultural and Environmental Services Laboratories at the University of Georgia.

**Dr. Albert Rovira** was presented the J.A. Prescott Medal of Soil Science of the Australian Society of Soil Science Inc.

## IN MEMORIAM

### Jul LÅG 1915 – 2000

Professor, Dr.Agric. Jul Låg died on February 2, 2000, after a short period of illness. Professor Låg was born in 1915 in Flesberg, Norway. He graduated in 1942 and received his doctorate in 1949 from the Agricultural University of Norway. The same year he was appointed to the chair of soil science, which he held for 36 years. He was Rector of the University 1968-1971. After his retirement in 1985 he continued to work full time on scientific matters.

Professor Låg made significant contributions to several areas of soil science and was among the most prominent soil scientists of his generation. Besides of his research activity he held a number of positions related to research policy and administration, such as Chairman of the Agricultural Research Council of Norway. He was a member of the Norwegian Academy of Science and Letters since 1953 and was president of the academy for 5 years. He served on many national and international commissions and was on the editorial board of several scientific journals. He was a member of academies in Denmark, Finland, Poland, and Sweden, and received the Copernicus Medal from the Polish academy.

Professor Låg had insight into many scientific disciplines and his research and scientific writing was characterized by his ability to combine knowledge from different areas. A typical example of his many scientific achievements is his demonstration of the very significant contribution of airborne marine salts to the exchangeable cation pool of forest soils in coastal areas. Much of his scientific activity concerned natural resources and environmental issues, and he was writing and lecturing about issues such as global environmental problems, pollution, protection of soil resources, and possible climate changes resulting from human activity long before these issues received general attention.

During his later years much of his work was devoted to the field of Geomedicine, which he defined as the science dealing with the influence of ordinary environmental factors on the geographical distribution of health problems in man and animals. In 1990 he published the book »Geomedicine« on CRC Press. He was longtime chairman of the IUSS Working Group »Soils and Geomedicine«, and in this capacity he organized a series of international symposia in Oslo on geomedical issues in collaboration with the Norwegian Academy of Science and Letters, the last one as late as October 1999. Professor Låg anticipated an increased international attention on these issues in the years to come.

Prof. Eiliv Steinnes,  
Trondheim, Norway



On 13 August 1999, sudden death took away Oleg Vladimirovich Makeev, Professor, Dr. Sci. (Geol.-Mineral.), an eminent Russian soil scientist and the founder of the soil cryogenesis science, honoured scholar, emeritus member of the Russian Society of Scientists, and member of the International Union of Soil Sciences.

Oleg V. Makeev was born on 3 August 1915 in the town of Kyakhtha in the south of Buryatia. In 1940, he graduated from the Irkutsk State University with a first-class honours degree in Soil Science and was enlisted on the University staff as a researcher. During World War II he was in the Army. From February 1942 until the end of the War, Oleg V. Makeev was in action at the Western and 2nd Belorussian fronts and received several important distinctions.

After demobilization, Oleg V. Makeev returned to the Irkutsk University to continue his research and teaching. In 1949, he defended his Cand. Sci. thesis devoted to the specifics of the

podzol-formation in Siberia on soil-forming rocks of different composition and origin. Eight years later, he defended his Dr. Sci. thesis and was granted the status of Professor in 1960. In 1959, his Doctorate dissertation was published as the monograph "Soddy Taiga Soils of Southern Siberia". This fundamental work has unraveled the peculiarities of soils under the hypercontinental conditions of Siberia. In contrast with the popular concepts of that time, O. Makeev has demonstrated the key role played by the metamorphic processes in the soil formation in this region, whereas the podzol formation was rated to be of secondary significance. The suppression of podzol formation was shown to be caused by the impact of cryogenic factor. Cryogenesis was likewise shown to influence other soil profile-forming processes, thus inducing a specific set of soil processes. In its essence, this work laid foundation for the cryogenic soil science.

The subsequent years witnessed the most important landmarks in his research and organizational activities. In 1958, O.V. Makeev organized the soil science department at the Buryatian Complex Research Institute of the Siberian Division of the USSR Academy of Sciences and two years later became its director. In 1963, he was nominated to head the Department of Soil Science and Agrochemistry at the Buryatian Agricultural Institute. During the same period he also endeavoured to set up the Commission on Microelements of the SD of the USSR Academy of Sciences.

Oleg V. Makeev was one of the principal organizers of the Buryatian Center of the DS of the USSR Academy of Sciences. After the Buryatian Complex Research Institute was divided into a number of specialized institutes he was nominated to the post of director of the Buryatian Institute of Natural Sciences and elected to chair the Presidium of the Research Center including 9 academic institutes. Under his leadership, the Buryatian Center became one of the leading research centers of Siberia.

The next important stage in the career of Oleg V. Makeev was related to setting up the Institute of Agrochemistry and Photosynthesis at the Pushchino Research Center of the USSR Academy of Sciences (Moscow region). Since the very beginning of the existence of this Institute, studies of the cryolithozone soils have become one of major lines of research. In 1973, he published the monograph "Microelements in Soils of Siberia and Far East" which systematized the results of many year-research carried out by Oleg V. Makeev and his associates and advanced the concepts of the cryogenic factor impact on properties of soils.

In the 1970s, thanks to the efforts of O. Makeev, his students and other researchers, the soil cryology was eventually shaped as a special field of soil science. Large-scale soil-geographic studies carried out in the Arctic, West Siberia and Mongolia under his supervision promoted the establishment of an integral network of stations studying the dynamics of soil characteristics. Parallel to the field studies,

O. Makeev supervised laboratory research concerned with the development of sets of models and compilation of databases. Oleg V. Makeev elaborated an original classification of cryolithozone soils based on the concept of permafrost as a subfactor of soil formation and on the idea of the existence of megaformations of the cryogenic and freezing non-cryogenic origin. The bases of cryopedology were presented in the concise form in the monograph "Facies of Soil Cryogenesis and Peculiarities of the Soil Profile Organization in Them" (1981). Prof. Makeev proposed his own classification of natural sciences focused on the fundamental role of pedology. His scientific-methodological and philosophic views were presented to wide audiences at the Second (Dokuchaev) Congress of Russian soil scientists in 1997 and at the two International Congresses of Soil Science held in 1994 in Mexico and in 1998 in France.

Oleg V. Makeev continued to work until his last day with his unparalleled enthusiasm and genuine interest in science. His numerous students and associates always admired his encyclopedic erudition, unquenching energy, cheerfulness and optimism. The blessed memory of Oleg Vladimirovich Makeev - an outstanding scholar, brilliant organizer of science and a bright and widely knowledgeable person - is engraved forever in our hearts.

David Gilichinsky, Russia

### **Professor Stanislaw Kowalinski** (1920-1999)



January 27, 1999 passed away Stanislaw Kowalinski, professor emeritus of the Agricultural University of Wroclaw, Poland. He was born in 1920 in Katarzynopole, Poland. After graduation from the University and Polytechnic of Wroclaw with MSc in agriculture in 1948, he started scientific work in the Department of Soil Science. He obtained PhD degree in 1951, DSc degree in 1961 and reached position of full professor in 1962. For many years he was a head of the Department of Soil Science at the Agricultural University of Wroclaw, and the Institute of Soil Science at the Agricultural University of Warsaw (1979 till 1981).

He recognised the importance of fundamental knowledge in soil science and organised modern and well equipped laboratories of soil micromorphology, organic matter analysis and soil mineralogy. The research works carried out in these laboratories laid the fundamentals for the schools of soil micromorphology and submicromorphology, soil humus and clay min-

erals, widely known in Poland and abroad. Over his long scientific activity, he authored more than 200 publications, including 9 books. His research interests covered a wide spectrum of topics: soil cartography, genesis and classification, soil physical and physicochemical properties, micro- and submicromorphological characteristics of soil, soil organic matter and the dynamics of soil processes in particular as affected by anthropogenic factors. Professor Kowalinski was one of the firsts in Poland who begin to organise and establish the Databank on Soil Environment. He was really enthusiastic on soil micromorphology and submicromorphology, which he initiated in Poland, and his scientific outputs in this area is well known and widely esteemed.

Professor had significant achievements in development and promotion of academic staff and he was an esteemed and admired academic teacher. His great erudition and pedagogical talent made his lectures very popular and willingly attended by students.

Simultaneously to his teaching and research activity, professor Kowalinski performed several admin-

istrative duties. He was a vice dean and dean of the Faculty of Agriculture and a vice-rector of the Agricultural University of Wrocław.

He was a member of numerous national and international scientific societies, committees of Polish Academy of Science, scientific boards and editorial boards of journals and publishers. He was especially active in the International Working Group on Soil Micromorphology of the International Soil Science Society.

Professor Kowalinski had friends in many countries of the world, and he will be remembered as a person of a great hearth, spirit and intellect, fully devoted to the science. He will be greatly missed by his former colleagues, friends and followers.

Jerzy Drozd

**Dr. Ekaterina A. Yarilova**  
**1911 – 2000**

Doctor Ekaterina Arsentievna Yarilova, an outstanding specialist in soil micromorphology and mineralogy passed away on February 2, 2000.

She published her first scientific paper being a second-year student of the Soil-Geological Faculty, Moscow University, as early as 1932, her supervisor was K.K. Gedroitz. In 1939 she defended her Ph.D. thesis entitled "Studies of manganese migrations in soils", and in 1944 she started the research work at the Dokuchaev Soil Institute in Moscow, in the staff of which she remained, even after she retired. E. Yarilova was lucky to enter the Laboratory of Soil Mineralogy with Academician B. Polynov as a head; there she studied some biochemical aspects of the weathering of crystalline rocks.

A good knowledge of three European languages and great diligence permitted E. Yarilova to become a broadly educated person in many spheres of pedology. So, once, she came across the famous "Micropedology" of W. Kubiena (the book was known in Russia due to her efforts), which, along with her mineralogical background, determined her future activities.

E. Yarilova was one of the first micromorphologists in Russia, her first publications in this new area of soil science appeared in the mid-50ies. Assessing now her extensive contribution to micromorphology in Russia, it is evident that it comprised at least three aspects. First of all, she was a pioneer and promoter of studying soils in thin sections, proving the advantages of this method. Secondly, she created by her own research and with numerous students and colleagues assembled an extensive "database" – micromorphological descriptions of the main soils of the former Soviet Union. Despite the political isolation of the country in the period of her most productive studies, she managed to contact foreign colleagues and procure foreign literature, thus maintaining an exchange of scientific information on soil micromorphology. These and the many other achievements of E. Yarilova were the reasons why she was awarded the highest international micromorphological award – the Kubiena Medal. It is worth noting that Dr. Yarilova is one of very few Russian soil scientists who won International prizes.

E.A. Yarilova published the results of her micromorphological studies of soils in many papers, e.g. in "Pochvovedenie", and in two manuals written together with Elena I. Parfenova: "Mineralogical studies in soil science", 1962, and "Handbook for micromorphological studies in soil science", 1977. Her contribution to the International "Handbook" of 1975 is appreciated by many specialists.

We all remember the last speech of Ekaterina Yarilova in 1996 at the Closing Session of the International Meeting on Soil Micromorphology in Moscow, when the whole audience applauded her with feelings of great respect and love. Now, her students and colleagues will miss her, and the only hope remaining with us is her daughter Lydia successfully continuing to solve new micromorphological challenges in the same Dokuchaev Institute, where her eminent mother started to develop new knowledge.

Prof. Maria Gerasimova

**MEETINGS, CONFERENCES, SYMPOSIA  
REUNIONS, CONFERENCES, SYMPOSIA  
TAGUNGEN, KONFERENZEN, SYMPOSIEN**

**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.

2000

**Eurosoil 2000**, Reading, UK, September 4-6, 2000.

Information: Dr. J.H. Gauld, BSSS Administrative Officer, MLURI, Cunningham Building, Craigiebuckler, Aberdeen AB15 8QH, UK; Tel: +44(0)1224318611; Fax: +44(0)1224208065; E-mail: j.gauld@mluri.sari.ac.uk.

**International Soil Forum 2000: Soils – a topic for the world exhibition »EXPO 2000«**, Hannover, Germany, September 10-16, 2000 (in conjunction with the EXPO 2000).

Information: OBE 2000 GmbH, Postfach 4460, 49034 Osnabrück, Germany. Tel: +49-541-323-2000; Fax: +49-541-323-2738; E-mail: moley@obe2000.de; Website: <http://www.obe2000.de>.

**International Conference: »New Pathways to Sustainable Land Management«**, Osnabrück, Germany, September 14-17, 2000 (in conjunction with the EXPO 2000).

Information: OBE 2000 GmbH, Postfach 4460, 49034 Osnabrück, Germany. Tel: +49-541-323-2000; Fax: +49-541-323-2738; E-mail: moley@obe2000.de; Website: <http://www.obe2000.de>.

**5th International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe**, Prague, Czech Republic, September 12-14, 2000.

Information: Prague 2000, Florida State University, 2035 East Paul Dirac Dr., 226 HMB, Tallahassee, Florida, 32310-3700 USA, Tel.: +1-850-644-7211; Fax: +1-850-574-6704;

Website: <http://www.prague2000.fsu.edu>.

**1st Workshop of the EARSeL Special Interest Group on: Remote Sensing for Developing Countries**, Gent, Belgium, September 13-15, 2000.

Information: Prof. Dr. R. Goossens, University Gent, Dpt. of Geography, Krijgslaan 281/S8, 9000 Gent, Belgium; Fax: +32-9-264-49-85; E-mail: Rudi.Goossens@rug.ac.be; Website: <http://allserv.rug.ac.be/~amtanghe/EARSeL.html>.

**International Conference on Global Land Reclamation/Remediation 2000 and Beyond**, Edmonton, Alberta, Canada, September 17-20, 2000

Information: E-mail: clra@telusplanet.net.

**Karst 2000: International Symposium and Field Seminar on Present State and Future Trends of Karst Studies**, Marmaris, Turkey, September 17-27, 2000.

Information: Prof. Gültekin Günay, International Research and Application Centre for Karst Water Resources (UKAM), Hacettepe University, Beytepe Campus, 06532 Ankara, Turkey.

Tel: +90-312-235-2543; Fax: +90-312-299-2136; E-mail: karst@hun.edu.tr; Website: <http://www.karst.hun.edu.tr/>

**7th International FZK/TNO Conference on Contaminated Soil (ConSoil 2000)**, Leipzig, Germany, September 18-22, 2000.

Information: Forschungszentrum Karlsruhe GmbH, Mrs. B. Mathes, PSA, P.O. Box 3640, 76021 Karlsruhe, Germany, Tel: +49-7247-82-3967; Fax: +49-7247-82-3949; E-mail: [consoil@fzk.de](mailto:consoil@fzk.de); <http://www.fzk.de/consoil2000/>

**International Symposium: Managing Forest Soils for Sustainable Productivity**, Vila Real, Portugal, September 18-22, 2000.

Information: Dr. M. Madeira, Instituto Superior de Agronomia, Tapada da Ajuda, 1399 Lisboa Codex, Portugal, Fax: +351-1-363-5031; Tel: +351-1-360-2044; E-mail: [nunocortez@isa.utl.pt](mailto:nunocortez@isa.utl.pt).

**Field Seminar on Present State and Future Trends of Karst Studies**, Marmaris, Turkey, September 25-29, 2001

**GeoEvent 2000 »Wasser, Gestein und Boden: Prozesse und Wechselwirkungen«**, Heidelberg, Deutschland, 30. September – 04. Oktober, 2000.

Information: GeoEvent 2000, c/o Lehrstuhl für Angewandte Geologie, Geologisches Institut, Universität Tübingen, Dr. Mike Herbert, Sigwartstr. 10, 72076 Tübingen, Deutschland; Fax: (+49)(0)7071-5059; E-mail: [mike.herbert@uni-tuebingen.de](mailto:mike.herbert@uni-tuebingen.de).

**International Conference on Agricultural Effects on Ground and Surface Waters: Research and Policy at the Edge of Science and Society**, Wageningen, The Netherlands, October 1-4, 2000.

Information: Ir. Joop Steenvoorden, Wageningen University and Research Centre, Alterra, P.O. Box 47, 6700 AA Wageningen, The Netherlands; Fax: +31-317-419000; E-mail: [j.h.a.m.steenvoorden@alterra.wag-ur.nl](mailto:j.h.a.m.steenvoorden@alterra.wag-ur.nl).

**8th International Symposium on Animal, Agricultural and Food Processing Wastes (ISAAFPW 2000)**

**1st International Swine Housing Conference**

**2nd International Conference on Air Pollution from Agricultural Operations**

Des Moines, Iowa, USA, October 9-11, 2000.

Information: Brenda West, Director, ASAE Meetings & Conferences, 2950 Niles Road, St. Joseph, MI 49085-9659; Fax: +1-616-429-3852; E-mail: [west@asae.org](mailto:west@asae.org).

**International Symposium on Balanced Nutrient Management Systems for the Moist Savanna and Humid Forest Zones of Africa**, Cotonou, Republic of Benin, October 9-12, 2000.

Information: Drs. N. Sanginga/B. Vanlauwe, Soil Microbiology Unit, IITA, c/o Lambourn & Co, Carolyn House, 26 Dingwall Road, Croydon, CR9 3EE, England. E-mail: [N.Sanginga@cgiar.org](mailto:N.Sanginga@cgiar.org) or [B.Vanlauwe@cgiar.org](mailto:B.Vanlauwe@cgiar.org).

**International Symposium on Balanced Nutrient Management Systems for Maize-Based Farming Systems in the Moist Savanna and Humid Forest Zones of West-Africa**, Ibadan, Nigeria, October 9-12, 2000.

Information: Profs. R. Merckx/J. Deckers, Lab. of Soil Fertility and Soil Biology, Faculty of Agricultural and Applied Biological Sciences, K.U. Leuven, Kardinaal Mercierlaan 92, 3001 Leuven, Belgium. E-mail: [roel.merckx@agr.kuleuven.ac.be](mailto:roel.merckx@agr.kuleuven.ac.be) or [seppe.deckers@agr.kuleuven.ac.be](mailto:seppe.deckers@agr.kuleuven.ac.be).

**SOILREM 2000 – International Conference on Soil Remediation**, Hangzhou, China, October 15-19, 2000.

Information: Conference Secretariat, Dr. Yongmin Luo, Institute of Soil Science, CAS, Nanjing, P.O. Box 821, P.R. China, Tel: +86-25-322-8236; Fax: +86-25-335-3590; e-mail: [ymluo@mail.issas.ac.cn](mailto:ymluo@mail.issas.ac.cn).



**2nd International IEP Symposium**, Lisbon, Portugal, October 16-18, 2000.

Information: Gill Heaton, IEP 2000 Conference Secretariat, Hillside Cottages, Wheatley Road, Islip, Oxford OX5 2TF, UK; Tel: +44(0)1865-373-625; Fax: +44(0)1865-375-855; E-mail: gill.heaton@virgin.net.

**FAO/IAEA International Symposium on Nuclear Techniques for Developing Sustainable Soil, Water, and Nutrient Management Practices**, Vienna, Austria, October 16-20, 2000.

Information: IAEA Headquarters, Wagramerstr. 5, P.O. Box 100, A-1400 Vienna, Austria. Fax: +43-1-26007; E-mail: official.mail@iaea.org; Web: www.iaea.org/programmes/nafa.

**Symposium: Soil Functioning Under Pastures of Intertropical Areas**, Brasilia, Brazil, October 16-20, 2000.

Information: Soil/Pastures Symposium, IRD, CP 7091, 71619-970 Brasília-DF, Brazil; Tel.: 55 61 388 98 22; Fax: 55 61 388 98 79; Email: soilpast@cpac.embrapa.br

**International Symposium on Microbiology of Composting**, Innsbruck, Austria, October 18-20, 2000.

Information: Prof. Heribert Insam, Inst. of Microbiology, University of Innsbruck, Technikerstr. 25, 6020 Innsbruck, Austria; Tel.: +43-512-507-6009; Fax: +43-512-507-2928; E-mail: submeco@uibk.ac.at.

**Remote Sensing 2000**, Corpus Christi, Texas, USA, October 22-25, 2000.

Information: Remote Sensing 2000, Blackland Research Center, 720 E. Blackland Road, Temple, Texas 76502-9622, USA; Tel: +1-254-770-6659; Fax: +1-254-774-6001; Website: <http://www.brc.tamus.edu/rs2k/rs2000.html>.

**11th International Soil Conservation Organization Conference (ISCO 2000)**, Buenos Aires, Argentina, October 22-27, 2000.

Information: Secretaría Científica ISCO 2000, FAUBA, Av. San Martín 4453, (1416) Buenos Aires, Argentina; Tel: +54-11-4481-1688, Fax: +54-11-4514-8739; E-mail: isco2000@cirn.inta.gov.ar or ISCO2000@mail.agro.uba.ar; Website: <http://agro.uba.ar>.

**26th Annual Conference of SSSN »Soil Organic Matter: A Key to Sustainable Agriculture«**, Ibadan, Nigeria, October 30–November 4, 2000.

Information: Prof. G.O. Obigbesan, Chairman, Editorial Committee, Local Organising Committee Ibadan 2000 26th Annual Conference of Soil Science, c/o Department of Agronomy, University of Ibadan, Ibadan, Nigeria.

**2nd International Conference on Earth Observation & Environmental Information (EOEI 2000)**, Cairo, Egypt, November 11-14, 2000.

Information: Prof. Dr. Sami Abdel Rahman, The National Authority for Remote Sensing and Space Science (NARSS), 23 Joseph Bross Tito, El Nozha-El Gedida, Cairo, P.O. Box 1546, Alf Maskan, Egypt; Tel: +2-2964386; Fax: +2-2964385; E-mail: sirahman@intouch.com or sirahman@hotmail.com or runarss@rusys.eg.net.

**8th International Congress of Soil Science**, Islamabad, Pakistan, November 13-16, 2000.

Information: Dr. Muhammad Ibrahim, Agricultural Chemist (Soils), Ayub Agricultural Research Institute, Faisalabad, Pakistan, Fax: +92-41-653874; E-mail: ehsan@mop-narc.sdnpc.undp.org; or: Dr. M. Ehsan Akhtar, Director, Potash Development Institute, National Agric. Research Center, Park Road, Islamabad, Pakistan, Fax: +92-51-240909; E-mail: ehsan@mop-narc.sdnpc.undp.org.

**XII Seminario Científico: 30 Aniversario del Instituto Nacional de Ciencias Agrícolas (INCA)**, San José de las Lajas, Cuba, 14-17 noviembre 2000.

Información: Dr. C. Walfredo Torres de la Noval, Secretario Ejecutivo, XII Seminario Científico, Instituto Nacional de Ciencias Agrícolas, Gaveta Postal 1, San José de las Lajas, La Habana, Cuba CP 32700; Fax: (53)(7)24-0942 o (53)(64)6-3867; E-mail: [evento@inca.edu.cu](mailto:evento@inca.edu.cu).

**International Conference on "Food Security of Urban and Peri-Urban Systems in Developing Countries"**, Vienna, Austria, November 15-18, 2000.

Information: Conference Secretariat, University of Agricultural Sciences, Institute of Soil Research, Gregor Mendel-Str. 33, 1180 Vienna, Austria; Tel: +43-1-47654-3106; +43-1-47891-10; E-mail: [foodsec@edv1.boku.ac.at](mailto:foodsec@edv1.boku.ac.at).

**International Conference on the Remediation and Management of Degraded Lands: »Remade Lands«**, Perth, Australia, November 30 – December 1, 2000.

Information: Dr. Kuruvilla Mathew, Environmental Science, Murdoch University, South Street, Murdoch, Western Australia 6150; Tel.: +61-8-9360-2896; Fax: +61-8-9310-4997; E-mail: [mathew@essun1.murdoch.edu.au](mailto:mathew@essun1.murdoch.edu.au).

**NZSSS/ASSS Soil 2000 Conference: »New Horizons for a New Century«**, Lincoln University, New Zealand, December 3-8, 2000.

Information: Ms. Helen Shrewsbury, Conference Management Group, P.O. Box 84, Canterbury, New Zealand. Fax: +64-3-32-53-840; E-mail: [shrewsbh@lincoln.ac.nz](mailto:shrewsbh@lincoln.ac.nz); Website: [lincoln.ac.nz/cted/nzsss/](http://lincoln.ac.nz/cted/nzsss/).

**ICIWRM-2000: International Conference on Integrated Water Resources Management for Sustainable Development**, Roorkee, India, December 19-21, 2000.

Information: Dr. B. Soni, Scientist 'F' & Organizing Secretary, ICIWRM-2000, National Institute of Hydrology, Roorkee 247667, Uttar Pradesh, India; Fax: +91-1332-72123; E-mail: [iciwrm@cc.nih.ernet.in](mailto:iciwrm@cc.nih.ernet.in); Website: <http://www.nih.ernet.in>.

2001

**21<sup>st</sup> International Soil Erosion Research Conference**, Honolulu, HI, USA, January 3-5, 2001.

Information: Website: <http://asae.org/>.

**The 2001 Dahlia Greidinger Symposium: »Fertilisers and Resource Mangement for Food Security, Quality and the Environment«**, Haifa, Israel, March 4-6, 2001.

Information: The International Fertiliser Society, P.O. Box 4, York, YO32 5YS, United Kingdom; Tel. & Fax: +44-1904-492-700; E-mail: [secretary@fertiliser-society.org](mailto:secretary@fertiliser-society.org).  
or: Prof. em. Josef Hagin, Technion – Israel Institute of Technology, Faculty of Agricultural Engineering, Haifa 32000, Israel. Websites: <http://www.technion.ac.il>; <http://www.fertiliser-society.org>.

**5th International Symposium on Plant-Soil Interactions at Low pH (PSILPH)**, KwaZulu -Natal Province, South Africa, 12 - 16 March, 2001.

Information: Mara de Villiers, Private Bag X79, Pretoria 0001, South Africa; Fax: +27-12-323-1157; e-mail [mara@igkw2.agric.za](mailto:mara@igkw2.agric.za)

**Humic Substances Seminar V**, Boston, USA, March 21-23, 2001.

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.

**8th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts on Karst**, Louisville, USA, April 1-4, 2001.

Information: PELA – P.E. LaMoreaux and Associates, Inc., 106 Administration Road Ste 4, Oak Ridge TN 37830, USA; E-mail: [pela@icx.net](mailto:pela@icx.net), Webpage: [www.pela.com/8thcon.htm](http://www.pela.com/8thcon.htm).

**2nd International Symposium of the Mediterranean Group of Pesticide Research (MGPR): Pesticide in Food and the Environment in Mediterranean Countries» and the MGPR Annual Meeting 2001**, Valencia, Spain, May 10-12, 2001.

Information: Miguel Gamon Vila, Lab. Agroalimentario CAPA-GV, c/Pintor Goya, 8, 46100 Burjassot, Valencia, Spain; Tel: (+34) 6 36-31-551; Fax: (+34) 6 39-00-510; E-mail: [Miguel.Gamon@agricultura.m400.gva.es](mailto:Miguel.Gamon@agricultura.m400.gva.es).

**1st International Conference on Soils and Archaeology**, Százhalombatta, Hungary, May 30 – June 3, 2001.

Information: Prof. György Füleky, Faculty of Agricultural and Environmental Sciences, Szent István University Gödöllő, H-2103 Páter Károly u. 1, Hungary. Tel: ++36-28-410-200/1817/1014/1027/1030; Fax: +36-28-410-804; E-mail: [fuleky@fau.gau.hu](mailto:fuleky@fau.gau.hu).

**6th International Symposium: In Situ and On-Site Bioremediation**, San Diego, California, USA, June 4-7, 2001.

Information: Battelle, 505 King Avenue, Columbus, Ohio 43201-2693, USA; or Carol Young, Tel: (+1)614-424-7604; Fax: (+1)-614-424-3667; E-mail: [biosymp@battelle.org](mailto:biosymp@battelle.org); Website: [www.battelle.org/conferences](http://www.battelle.org/conferences).

**2nd International Conference »Protection and Recultivation of Odra-Basin Areas: Land Management in River-Basins«**, Zielona Góra, Poland, 21-22 June 2001.

Information: Prof. Dr. Henryk Greinert, Head of the Zielona Góra Division of the Polish Soil Science Society, Technical University of Zielona Góra, Department of Environment Remediation, 50 Podgocza Str., 65-246 Zielona Góra, Poland; Tel: +48-68-328-2492 or –2639; Fax: +48-68-324-5597 or +48-68-3270735; E-mail: [dziekana@brick.wbis.pz.zgora.pl](mailto:dziekana@brick.wbis.pz.zgora.pl); [andgrein@poczta.wp.pl](mailto:andgrein@poczta.wp.pl); Website: [www.pz.zgora.pl/wbis/zodnowy/der.htm](http://www.pz.zgora.pl/wbis/zodnowy/der.htm).

**International Conference on »Sustainable Soil Management for Environmental Protection – Soil Physical Aspects«** Firenze, Italy, July 2-7, 2001.

(organized by IUSS Commission I – Soil Physics)

Information: Dr. Olga Grasselli, Mrs. Miranda Morandi, Istituto Sperimentale per lo Studio e la Difesa del Suolo, Piazza M. D'Azeglio 30, 50121 Firenze, Italy; Tel: +39-055-249-1255; Fax: +39-055-241485; E-mail: [marcello.pagliai@data.it](mailto:marcello.pagliai@data.it)

**International Working Meeting on Micropedology**, Gent, Belgium, July 9-13, 2001.

Information: Prof. Dr. G. Stoops, ITC, Ghent University, Krijgslaan 281, S8, B-9000 Gent, Belgium. Fax: +32-9-264-49-84; [iwmm@rug.ac.be](mailto:iwmm@rug.ac.be).

**3rd International Conference on Mycorrhizas (ICOM3)**, Adelaide, Australia, 8-13 July 2001.

Information: Professor Sally Smith, Department of Soil and Water, Waite Campus, The University of Adelaide, PMB 1, Glen Osmond, South Australia 5064; Phone: +61 (08) 8303 7351; Fax: +61 (08) 8383 6511; email: [sally.smith@adelaide.edu.au](mailto:sally.smith@adelaide.edu.au); WWW URL: [http://www.waite.adelaide.edu.au/Soil\\_Science/3icom.html](http://www.waite.adelaide.edu.au/Soil_Science/3icom.html)

**Detecting Environmental Change: »Science and Society«**, London, UK, July 16-20, 2001.

Information: Dr. Catherine E. Stickley, Environmental Change Research Centre, Department of Geography, University College London, 26 Bedford Way, London WC1H 0AP, UK.

**6th Scientific Assembly of the International Association of Hydrological Sciences (IAHS): »A New Hydrology for a Thrifty Planet«**, Maastricht, The Netherlands, July 18-27, 2001.

Information: IAHS Maastricht 2001, The Netherlands Institute of Applied Geoscience TNO – National Geological Survey, PO Box 6012, 2600 JA Delft, The Netherlands. Fax: +31-15-256-4800; E-mail: j.hooghart@nitg.tno.nl; Website: <http://www.wlu.ca/~wwwiahs/index.html>.

**7th International Symposium on Soil and Plant Analysis: »Fine tuning soil and plant analysis for economic and environmental betterment«**, Edmonton, Canada, July 21-27, 2001.

Information: Anette Palm, Palm International Conferences, Turnstrasse 11, 67706 Krickbach, Germany. Tel: (+49)6307-401103; Fax: (+49)6307-401104; Website: <http://www.ISSPA2001.COM>.

**14th International Plant Nutrition Colloquium**, Hannover, Germany, July 27 – August 3, 2001.

Information: IPNC Secretariat, Institute of Plant Nutrition, University of Hannover, Herrenhaeuser Str. 2, 30419 Hannover, Germany; Fax: +49-511-762-3611; E-mail: [ipnc@mbox.pflern.uni-hannover.de](mailto:ipnc@mbox.pflern.uni-hannover.de). Webpage: <http://www.ipnc2001.uni-hannover.de>

**12th International Clay Conference**, Bahía Blanca, Argentina, July 29-August 4, 2001.

Information: Dr. Fernanda Cravero, Secretary-General 12 ICC, Dpt. de Geología, Universidad Nacional del Sur, 8000 Bahía Blanca, Argentina. Tel: +54-291-459-5101-3041; Fax: +54-291-459-5148; E-mail: [12icc@criba.edu.ar](mailto:12icc@criba.edu.ar).

**6th International Conference on the Biogeochemistry of Trace Elements**, Guelph, Ontario, Canada, July 29 - August 2, 2001.

Information: Dr. Les Evans, Chair, ICOBTE, Department of Land Resource Science, University of Guelph, Guelph, Ontario, Canada N1G 2W1; Phone: (519) 824-4120 ext. 2531; Fax: (519) 823-1587; E-mail: [icobte@lrs.uoguelph.ca](mailto:icobte@lrs.uoguelph.ca); Website: <http://icobte.crlc.uoguelph.ca>

**12th World Fertilizer Congress on Fertilization in the Third Millenium: Fertilization, Food Security and Applied Ecology**, Beijing, P.R. of China, August 3-9, 2001.

Information: Congress Secretary, Prof. Dr. Chen Guanxiong, Institute of Applied Ecology, Academia Sinica, 72 Wenhua Road, P.O. Box 417, Shenyang, 11015, China, Fax: +49-531-596-377; E-mail: [CIEC2001@pb.fal.de](mailto:CIEC2001@pb.fal.de), Website: <http://www.pb.fal.de>.

**3rd International Conference on Cryopedology**, Copenhagen, Denmark, August 20-24, 2001.

Information: Dr. Bjarne Holm Jakobsen, Institute of Geography, University of Copenhagen, Oster Voldgade 10, 1350 Copenhagen K, Denmark; Tel. and Fax: +45-35322500; E-mail: [bhj@geogr.ku.dk](mailto:bhj@geogr.ku.dk); Web: <http://www.geogr.ku.dk/cryosols>.

**5th International Conference on Geomorphology**, of the International Association of Geomorphologists, Tokyo, Japan, August 23-28, 2001.

Information: Prof. Kenji KASHIWAYA, Secretary, 5th ICG, Laboratory for Hydro-Geomorphology, Department of Earth Sciences, Kanazawa University, Kakuma, Kanazawa 920-1192; Japan, Tel. and Fax: +81-76-264-5735; E-mail: [kashi@kenroku.kanazawa-u.ac.jp](mailto:kashi@kenroku.kanazawa-u.ac.jp).

**International Symposium "Functions of Soils in the Geosphere-Biosphere Systems"**, Moscow, Russia, August 26-29, 2001.

Information: Nina P. Matekina, Olga V. Andreeva, Faculty of Soil Science, Moscow State University, 119899 GSP, Moscow, Russia; Tel. 7-095-939-35-23, 7-095-939-37-74; Fax. 7-095-939-09-89 for N.Matekina; E-mail: [NPM@soil.msu.ru](mailto:NPM@soil.msu.ru); [kust@soil.msu.ru](mailto:kust@soil.msu.ru); Website: <http://soilinst.msu.ru>

**9th International Symposium on Microbial Ecology (ISME-9)**, Amsterdam, The Netherlands, August 26-31, 2001.

Information: Dr. Wietse de Boer, Secretary, ISME-9, NIOO-CTO, P.O. Box 40, 6666 ZG Heteren, The

Netherlands; Tel: +31-26-479-1311; E-mail: [wdeboer@cto.nioo.knaw.nl](mailto:wdeboer@cto.nioo.knaw.nl);  
Website: <http://www.eurocongress.com/isme9/>

**International Conference »Physical Methods in Agriculture – Approach to Precision and Quality«, Prague, Czech Republic, August 27-30, 2001.**

Information: Prof. Jiri Blahovec, Conference PMA, Czech University of Agriculture, 16521 Prague 6 - Suchbát, Czech Republic.

**3rd International Conference on Cryogenic Soils, Copenhagen, Denmark, August 27-31, 2001.**

Information: Dr. Bjarne Holm Jakobsen, Institute of Geography, University of Copenhagen, Øster Voldgade 10, 1350 Copenhagen K, Denmark; Tel: +45-3532-2500; Fax: +45-3532-2501; E-mail: [bhj@geogr.ku.dk](mailto:bhj@geogr.ku.dk).

**11th Nitrogen Workshop, Reims, France, September 9-12, 2001.**

Information: INRA, Unité d'Agronomie, 2, esplanade Roland Garros – BP 224, 51686 Reims cedex 2, France; Tel: +33-3-26-77-35-80; fax: +33-3-26-77-35-91; E-mail: [Nworkshop@reims.inra.fr](mailto:Nworkshop@reims.inra.fr); Website: <http://www.inra.fr/Internet/Projets/11Nworkshop>.

**15 International Symposium on Environmental Biogeochemistry (ISEB 15): »Biogeochemical Processes and Cycling of Elements in the Environment«, Wrocław, Poland, September 11-15, 2001.**

Information: <http://www.ar.wroc.pl/~weber/iseb15.htm>; E-mail: [iseb15@ozi.ar.wroc.pl](mailto:iseb15@ozi.ar.wroc.pl); Fax: +48-71-3284849; Tel: +48-22-3205631.

**3rd International Conference on Land Degradation (IUSS Sub-Comm. C and IUSS WG LD), Rio de Janeiro, Brazil, September 24-28, 2001.**

Information: E-mail: [webmaster@cnps.embrapa.br](mailto:webmaster@cnps.embrapa.br); Website: [www.cnps.embrapa.br/ICLD](http://www.cnps.embrapa.br/ICLD)

**7th International Meeting of Soils with Mediterranean Type of Climate, Valenzano, Bari, Italy, September 23-28, 2001.**

Information: E-mail: [imsmtc@iamb.it](mailto:imsmtc@iamb.it).

**VIth International Symposium and Field Workshop on Paleopedology (ISFWP), Mexico City, Mexico, October 7-11, 2001.**

Information: Dr. Elizabeth Solleiro-Rebolledo, UNAM, Instituto de Geología, Ciudad Universitaria, C.P. 04510, Mexico City, Mexico, E-mail: [solleiro@geologia.unam.mx](mailto:solleiro@geologia.unam.mx); Fax: +52-56-22-43-17.

**2nd Iberoamerican Congress on Environmental Chemistry and Physics, Havana, Cuba, 5 - 9 November, 2001.**

Information: Dr. Adriano Cabrera Rodriguez, Chairman of the Scientific Committee, Ave Van Troi No. 17203, Boyeros, CP 19210, Ciudad Habana, Cuba. Fono: 53-7-579076; Fax: 53-7-666036; e-mail: [adriano@inica.edu.cu](mailto:adriano@inica.edu.cu)

**6th ISRR Symposium on Roots: The Dynamic Interface between Plants and the Earth, Nagoya, Japan, November 11-15, 2001.**

Information: Website: [www.soc.nacis.ac.jp/jsrr/isrr/](http://www.soc.nacis.ac.jp/jsrr/isrr/).

**XV Latin American Congress of Soil Science CLACS-2001, Varadero Beach, Cuba, 11 to 16 November, 2001.**

Information: Dr. Rafael Villegas Delgado, President, and Dr. Olegario Muñoz Ugarte, Chairman of the Scientific Committee, Ave Van Troi No. 17203, Boyeros, CP 19210, Ciudad Habana, Cuba. Fono: 53-7-579076; Fax: 53-7-666036; e-mail: [XV@inica.edu.cu](mailto:XV@inica.edu.cu)

**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.  
Information: Ms. Roben Penny, Woodbine, Essex Road, Kalk Bay, 7975 Cape Town, South Africa;  
Tel./Fax: +27-21-788-1285; E-mail: robenpen@jaywalk.com; Web: <http://des2002.az.blm.gov>.

**17<sup>th</sup> World Congress of Soil Science«Soil Science: Confronting New Realities in the 21<sup>st</sup> Century«**, Bangkok, Thailand, August 14-20, 2002.  
Information: 17<sup>th</sup> World Congress of Soil Science, Kasetsart Golden Jubilee Administration and Information Center (1<sup>st</sup> 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.17wcsc.ku.ac.th>.

**Hydrology in the Mediterranean and Semiarid Regions**, Montpellier, France, April 2003.  
Information: Dr. Eric Servat, Centre IRD Hydrologie, BP 5045, F-34032 Montpellier Cedex, France;  
Tel.: +33-4-679-17260; Fax: +33-4-675-7106; E-mail: [eric.servat@mpl.ird.fr](mailto:eric.servat@mpl.ird.fr).

**INTERNATIONAL TRAINING COURSES  
COURS INTERNATIONAUX DE FORMATION  
INTERNATIONALE FORTBILDUNGSKURSE**

**The International Centre for Advanced Mediterranean Agronomic Studies – Mediterranean Agronomic Institute Zaragoza**, Spain, offers, among others, an Advanced Course on Rural Planning in Relation to the Environment, 2 Oct. 2000 – 8 June 2001;

as well as various courses in the fields of marketing, environment, animal production, and plant production.

Information: Instituto Agronómico Mediterráneo de Zaragoza, Apartado 202 – 50080 Zaragoza, Spain; Tel: (34)976-57-60-13; Fax: (34)976-57-63-77; E-mail: [iamz@iamz.ciheam.org](mailto:iamz@iamz.ciheam.org); Webpage: <http://www.iamz.ciheam.org>.

**The International Centre for Development Oriented Research in Agriculture (ICRA)** offers a **Professional Training in Interdisciplinary Team Research in Agriculture**, January-July 2001.

Information: ICRA, P.O. Box 88, 6700 AB Wageningen, The Netherlands; Tel: +31-317-422938; +31-317-427046; E-mail: [icra@iac.agro.nl](mailto:icra@iac.agro.nl); Website: <http://icra.agropolis.fr>.

**The Università degli Studi di Siena, Italy, organizes the**

**International Summer School on Environment and Health: Xenobiotics – Environment – Human Health**

Information: Prof. A. Renzoni, Dipartimento di Scienze Ambientali, Via delle Cerchia 3, 53100 Siena, Italy; Tel: +39-0577-232831; Fax: +39-0577-232806, E-mail: [renzoni@unisi.it](mailto:renzoni@unisi.it).

**The International Fertilizer Development Center** offers nine different training programs/study tours in the following countries:

Guatemala, India, Tanzania, USA, Malaysia, Thailand, Singapore, Australia, South Africa.

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: [hrdu@ifdc.org](mailto:hrdu@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**

- **Forestry for Sustainable Development**

- **Soil Information Systems**

- **Planning and Co-ordination in Natural Resources Management**

- **Rural Development and Resource Management**

- **Environmental Systems Analysis and Management**

Information: ITC Student Registration Office, P.O.Box 6, 7500 AA Enschede, The Netherlands. Fax: +31.53-487 44 00; E-mail: [pr@itc.nl](mailto:pr@itc.nl). Webpage: <http://www.itc.nl>.

**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](mailto:conti@ifeva.edu.ar) and [epg@ifeva.edu.ar](mailto: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](mailto: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:

- **Ground Water Hydrology**
- **Ground Water Flow Modeling using MODFLOW**
- **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](mailto: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, May 1 – 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](mailto: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](mailto: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](mailto: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**

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](mailto: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, specialised courses on Managing Agricultural Development, Environmental Management in Agricultural Development, Kent, UK.**

Information: The External Programme, **Wye College, University of London**, Ashford, Kent TN25 5AH UK (Tel.: 0233 812401; Fax: 0233 813320; Telex: 94017832 WYEGG).

**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](mailto: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.

## **ILRI**

- International Course on Water Management in Irrigation Systems, The Netherlands,  
4 months.

Information: ILRI, see below.

- International Course on Land Drainage, The Netherlands, 4 months.

Information: ILRI, see below

- International Course on Land and Water Management, The Netherlands, 3 weeks.

Information: ILRI, Training Coordinator, P.O.Box 45, 6700 AA Wageningen, The Netherlands.

Fax: +31-317-417187; E-mail:ilri@ilri.nl

## **Wageningen Agricultural University**

MSc Course Soil and Water, The Netherlands, 17 months.

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- Water Management, United Kingdom, 3 months.

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**Vulnerability and Adaptation to Climate Change for Bangladesh.** S. Huq, Z. Karim, M. Asaduzzaman, F. Mahtab, editors. Kluwer Academic Publishers, Dordrecht, 1999, xv + 147p. ISBN 0-7923-5536-9. Hardcover.

This authoritative study by some of Bangladesh's leading researchers uses climate projections derived from a particular General Circulation Model (GCM) US Geophysical Fluid Dynamics Laboratory GFDL to examine the potential effects of increased temperatures and monsoon rainfall, decreased winter rainfall, and higher carbon-dioxide levels and sea-levels in 2030 and 2075 on flooding, crop production, soil salinity, beach erosion, and forest and fisheries resources in Bangladesh. The potential effects of a rising sea-level on land submergence and salinity incursion in estuarine rivers are not examined. Bangladesh has a great deal of information available on its land and water resources. A surface-water simulation model coupled with GIS analysis was used to project changes in flood frequency, flooded area and flood depth with increased monsoon rainfall, and crop simulation models were used to estimate changes in three seasonal HYV rice crops and wheat production with higher temperatures, CO<sub>2</sub> levels and monsoon rainfall but (by 2075) zero winter rainfall (with consequent higher evapotranspiration rates and irrigation demand, but reduced water availability). Simulation models were also used to estimate possible reductions in rice production from increased soil salinity in coastal areas consequent upon the projected higher temperatures and evaporation rates. Land loss along parts of the south-eastern coast due to beach erosion caused by sea-level rise was calculated using a beach profile formula. Subjective estimates were made of possible forestry and fisheries impacts. The value of this study lies not in the precision spurious anyway suggested by the specific numbers of land and production losses provided by the exercise, but in forcing researchers and policy-makers to think more specifically about possible consequences of climate change. The Editors accept that the study raises as many questions regarding uncertainties as the possible adaptations the various authors suggest. Future studies need to explore the implications of climate projections derived from other GCMs and, in particular, to try to factor in the concurrent and even more rapid environmental changes caused by dynamic delta formation and intensification of land use in the Ganges-Brahmaputra-Meghna catchment area.

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**Physical and Chemical Processes of Soil Related to Paddy Drainage.** T. Maruyama and K.K. Tanji. Shinzansha Press Sci. & Tech., 1997, 229 p. ISBN 4-7972-2520-3. Hardcover.

East Asian countries cover only 13.5 percent of the world's lands, but have more than half of the population. The capacity to support this high population originates mainly from rice cropping. This book focuses on the paddy field drainage problem, an important aspect of increasing rice production. Drainage, as well as irrigation, is an important technology for rice cultivation. The necessity to irrigate rice is widely known, but drainage does not seem to be equally recognized. This book focuses on the on-farm paddy drainage problems. Much of the relevant research has been published in Japanese and is now available in English through this book.

Price: JPY 5340 plus about JPY 2500 for postage.

Orders to: Japan Publications Trading Company, P.O. Box 5030, Tokyo International, Tokyo, Japan. Fax: +81-3-3292-0410.

**Soil Remediation. A Systems Approach.** J.P. Oks. Thesis, Wageningen Agricultural University, Wageningen, 1998, xv + 169 p. ISBN 90-5485-929-6. Softcover.

Soil remediation has only a short history, but the problem addressed is a significant one. When solving soil remediation problems we have to deal with a large number of scientific disciplines, but solutions are often presented from the viewpoint of just one discipline. It is necessary to describe the interrelationships between these disciplines, by developing an adequate model of the desired process, which enables to consider and evaluate the essential factors as interdependent components. In the framework of this thesis three main phases in the soil remediation process are distinguished: problem identification, development of problem solving alternatives and selection of the best alternative. The study presents expert support models, combining knowledge and experiences during ex and in situ soil remediation. The aim of the models is to optimize knowledge transfer among the various parties involved in contaminated site management.

Requests to: Dr. J.P. Oks, Tauw, P.O. Box 479, 7400 AL Deventer, The Netherlands. Fax: +31-570-699360.

**Bodenerosion und Bodenerhaltung.** R.P.C. Morgan. Übersetzt von H.H. Becher und S. Witt. Enke, im Georg Thieme Verlag, Stuttgart, xvi + 236 S. ISBN 3-13-118321-7.

Bodenerosion stellt eine Gefahr dar, die traditionell mit der Landwirtschaft in tropischen und semi-ariden Gebieten in Verbindung gebracht wird und die wegen ihrer Langzeitwirkung auf Bodenproduktivität und nach-

haltige Landwirtschaft von Bedeutung ist. Das Problem ist jedoch viel weitreichender, denn es tritt ausserdem auf Flächen auf, die für Forstwirtschaft, Transport und Erholung genutzt werden. Seit die erste Ausgabe von 'Soil Erosion and Conservation' 1986 veröffentlicht wurde, ist die Erosion wegen ihrer Konsequenzen für die Umwelt wie Sedimentation und Verschmutzung ein globales Anliegen geworden.

Viele andere Veröffentlichungen erfüllen die verlockende Aufgabe, die Umweltaspekte im Detail darzustellen. Deshalb bleibt die Philosophie dieses Buches unverändert, nämlich einen Text vorzulegen, der sich auf die Erosionsprozesse als solche konzentriert und auf die Möglichkeiten, ihnen entgegenzuwirken. Das erste Teil des Buches gibt einen Überblick über die Mechanismen der Erosion mit der Betonung auf Ausmass und Defizite des gegenwärtigen Wissensstandes. Das zweite Teil befasst sich mit Bodenschutzmassnahmen. Zunächst werden Strategien für die Erosionskontrolle untersucht. Besonderer Wert wird dabei auf die Integration landwirtschaftlicher Massnahmen, technischer Konstruktionen und der Bodenbewirtschaftung gelegt. Die folgende Kapitel behandeln eine Reihe von Massnahmen, wobei besonderes Augenmerk auf ihre Ausführung und - durch einen Überblick über die Forschungsergebnisse - auf ihre Wirksamkeit gerichtet wird. Das Buch hat 61 Abbildungen und 45 Tabellen. Preis: DM 99,00.

Bestellungen an: Georg Thieme Verlag, Rüdiger Strasse 14, D-70469 Stuttgart, Deutschland, oder Ferdinand Enke Verlag, Postfach 301120, D-70451 Stuttgart, Deutschland. Fax: +49-711-8931. E-mail: Anne.Doebler@Thieme.de

**International Soil Fertility Manual.** Potash & Phosphate Institute, Norcross, 114 p.

This publication, which is also available in Spanish, features the basic principles of soil/plant relationships and fertilizer/lime use. It is practical, up-to-date reference on soil fertility, discussing the major, secondary and micronutrients, soil testing, plant analysis and diagnostic techniques. It is especially useful to agronomists, farm advisers, farmers and students, suitable for classroom use, meetings and individual study. It also includes a glossary of terms. Information on tropical crops and soils is given in this international edition of the manual.

A colour slide set for each of the ten chapters in the manual has also been produced, in total 317 slides.

Price: USD 30.00 for English edition (item 50-7000); USD 20.00 for Spanish edition (item SP-5070). For both: plus handling and postal charges.

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**Flow and Transport in Water Repellent Soils.** C.J. Ritsema. Thesis, Wageningen Agricultural University, Wageningen, 1998, 215 p. ISBN 90-5485-915-6. Softcover.

Water repellency in soils is currently receiving increasing attention, due to the adverse and sometimes devastat-

ing effects of soil water repellency on environmental quality and agricultural crop production. It may lead to serious erosion and runoff, rapid leaching of surface-applied agrochemicals, and loss of water and nutrient availability for crops. In general, soils become water repellent through the coating of soil particles or structural elements with water repellent organic substances originating from decaying plant material. Soil repellency manifests itself when the water content of the soil drops below a critical level. Water flow and solute transport patterns are complex under such conditions. The present study deals with flow and transport processes in an untilled, grass-covered water repellent sandy soil. Extensive use has been made of tracer experiments and model simulations. Future research should focus on improving the understanding of the origins, occurrence, hydrological responses and agricultural functioning of water repellent soils.

Requests to: Dr. C.J. Ritsema, Alterra, P.O.Box 47, 6700 AA Wageningen, The Netherlands. Fax: +31-317-424812.

**Fonctionnement et gestion des écosystèmes forestiers contractés sahéliens.** J.M. d'Herbes, J.M.K. Ambouta et R. Peltier. ORSTOM et Éditions John Libbey Eurotext, Montrouge, 1998, xxi + 274 p. ISBN 2-7420-0193-X. Broché.

Les sécheresses des dernières décennies au Sahel ont mis cruellement en évidence la décalage entre la capacité de production des écosystèmes et les besoins d'une population croissante. Le problème de la déforestation, en particulier dans les centres urbains, a suscité de nombreux programmes visant à reboiser et protéger les ressources existantes. Ces tentatives de restauration du capital forestier, pour beaucoup infructueuses, ont permis néanmoins de se forger une expérience réelle des problèmes actuellement connus en Afrique. Tous les acteurs ayant en charge les problèmes de déforestation ont participé à la rédaction de cet ouvrage et rendent compte de leur travaux et connaissances et des quelques solutions que l'on pourrait adopter pour limiter la destruction forestière en Afrique.

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**Sustainable Agriculture. Assessing Australia's Recent Performance.** SCARM Technical Report 70. CSIRO Publishing, Collingwood, 1998, viii + 150 p. ISBN 0-643-06266-1. Softcover.

The sustainability indicators contained in this report provide an assessment of how well Australian agriculture is meeting the principles of ecologically sustainable development (the balance of economic, ecological and social needs). These indicators are not comprehensive, but have been chosen for their ability to record the sustainability of agriculture. The attributes used to measure each indicator are those for which reliable and consistent data are available. In the future, other attributes will have to be developed, especially those for assessing the condition of the resource base and downstream

effects. Findings for each of the indicators have been reported separately. No attempt has been made to make general statements on the sustainability of agriculture, as there is no agreed method available to trade off the positive and negative trends between indicators linked to ecologically sustainable development. The sustainability indicators contained in this report are: long-term real net farm income; natural resource condition; off-site environmental impacts; managerial skills; and socio-economic impacts. The work covers how these indicators were measured and how we might assess sustainability in the future. This report is written for the Australian agriculture, but it is also a helpful guide for use as a blueprint for other countries or regions.

Price: USD 59.95.

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**People and Pixels. Linking Remote Sensing and Social Science.** D. Liverman, E.F. Moran, R.R. Rindfuss and P.C. Stern, editors. National Academy Press, Washington, DC, 1998, viii + 244 p. ISBN 0-309-06408-2. Softcover.

The US government has been collecting data about the earth's surface and atmosphere from planes and satellites for decades. In the past, technology and routines of data collection and management have been developed primarily for the earth science community. More recently there is an increased interest to the potential value of remote data for other users, including social scientists; farmers; and land-use, urban and coastal planners. A workshop was organized in November 1996, which brought together social scientists, who have tried to use satellite data, and experts in remote sensing technology. This publication includes revised versions of most of the presentations made at the workshop, as well as two overview chapters that identify major conceptual, methodological, and organizational issues faced by those who attempt to make greater use of remote sensing for social, scientific and related purposes.

Orders to: National Academy Press, 2101 Constitution Avenue, NW, Lockbox 285, Washington, DC 20055, USA. Fax: +1-202-334-2451. Homepage: [www.nap.edu](http://www.nap.edu).

**Sol: Interface Fragile.** Série Mieux Comprendre. P. Stengel et S. Gelin, coordinateurs. INRA, Paris, 1998, vii + 214 p. ISBN 2-7380-0786-4. ISSN 1144-7605. Broché.

Le Sol, auquel est consacré cet ouvrage, est celui de pédologues et des agronomes. Il s'agit de cette partie superficielle de l'écorce terrestre fortement soumise à l'action des agents climatiques et colonisée par les êtres vivants. Ceux-ci, conjointement et lentement, la transforment par un ensemble de processus où interagissent phénomènes physiques, chimiques et biologiques. La formation qui en résulte, couvre l'essentiel des surfaces continentales, et constitue la couverture pédologique. Utilisé par le passé comme un simple support pour la culture ou simple filtre conditionnant la qualité de

l'eau, le sol est enfin considéré comme un milieu vivant qu'il importe de préserver pour l'avenir. Ce livre présente une synthèse des connaissances nécessaires à cette nouvelle approche de la compréhension de l'écosystème sol et de son fonctionnement.

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**Heavy Metal Stress in Plants. From Molecules to Ecosystems.** M.N.V. Prasad and J. Hagemeyer, editors. Springer-Verlag, Berlin, Heidelberg, 1999, xiii + 401 p. ISBN 3-540-65469-0. Hardcover.

Trace elements constitute only about 1 percent of the total elemental composition on earth. A few of these are precious, like gold and platinum, some, like Cd and As are poisonous and others like Cs, Hg and Ga are liquids at room temperature. The specific gravity of an element does not have much physiological meaning for organisms; the categorization of metals into heavy and light is of practical interest for humans. Most of the heavy metals discussed in this book have been known for centuries or even millennia. Beneficial as well as detrimental effects of mining, use and disposal of various metals are described in reports dating back to ancient history. Therefore, it is astonishing that interest in effects of heavy metals on organisms has been aroused only recently, mostly in the last couple of decades. This volume presents a state-of-the-art review of the interrelations of heavy metals with Plants. In this treatise contemporary topics on the subject of heavy metals are covered starting with the metal availability and bioconcentration in plants in chapter I to various levels in following chapters: viz., the molecular, cellular, organismal (plant), and ecosystem level. The methodology is discussed in the last two chapters. The contributions show the immense damage by metal pollution to plants, the soil and ultimately to humans. By reviewing field and laboratory work, the book deals with the various functional and ecological aspects of heavy metal stress and outlines the scope for future research and the possibilities for remediation.

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**A New Framework for Conservation-Effective Land Management and Desertification Control in Latin America and the Caribbean. Guidelines for the preparation and implementation of National Action Programmes.** FAO, Rome, 1998, 20 p.

Also available in Spanish.

Serious problems of land degradation and rapidly

declining agricultural production occur in large parts of Latin America and the Caribbean. They are mainly caused by inappropriate land use or land management practices. Efforts at land conservation during the last decades have met with little success and there is now an unprecedented awareness of the urgent need to develop and implement sustainable land use and management practices that will effectively control land degradation and desertification. Recent experiences have shown that such practices will be much more readily adopted one land users perceive their direct economic and social benefits. This document incorporates new concepts and mechanisms related to technology development and transfer. Biological and agronomic conservation practices are emphasized, as well as the farming systems concept and use of micro-catchments. The adoption of participatory approaches is stimulated and the importance of the role of women is emphasized. The preparation and implementation of National Action Programmes (NAP) on conservation-effective land management and desertification control are proposed. The adoption of this framework for formulating and implementing NAP will give all actors in the development process a clearer vision of how best to achieve an optimal planning for the sustainable utilization and improvement of their land and water resources. Request to: Dr. J.C. Griesbach, AGLL, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy. Fax: +39-6-5705-6275. Homepage: [www.fao.org](http://www.fao.org).

**LUCC Data Requirements Workshop. Survey of needs, gaps and priorities on data for land-use/land-cover change research.** Barcelona, 11-14 November 1997. X. Baulies and G. Szejwach, editors. Update of 12 January 1999.

This report is based on the results of the scientific contributions to the LUCC Data Requirements Workshop in November 1997. This meeting was the first of four workshops planned to define the land-cover and land-use data needs of the international community engaged in LUCC and global change studies and to convey these needs to the appropriate data-oriented organizations and agencies. The report, available on Internet, is constantly being updated. One of the major challenges facing the LUCC project is the creation of a research framework integrating social and natural sciences. To formalize this multidisciplinary approach a specific effort on DAT is essential. In this context, the workshop was built on a theoretical approach as an attempt to outline the 'ideal' nature of land-use/land-cover change data. The workshop had three main objectives: articulation of specific data needs for research, identification of major common data needs and priorities, and monitoring system needs. This report contains the updated reports presented. Homepage: [www.uni-bonn.de/idhp/lucc/publications/reportseries/reportseries/html](http://www.uni-bonn.de/idhp/lucc/publications/reportseries/reportseries/html).

**Fertile Ground. The impacts of participatory watershed management.** F. Hinchcliffe, J. Thompson, J. Pretty, I. Guijt and P. Shah, editors. Intermediate Technology Publications, London, 1999, xvi + 385 p. ISBN 1-85339-389-4. Softcover. Growing concerns about environmental degradation,

declining agricultural productivity and increasing population pressure have led governments and agencies to seek new approaches to natural resources management. Although there are some innovative programmes in operation which are contributing to improved management and increased livelihood security, many of which include the active involvement of local people in planning and decision-making in soil and water management and participatory watershed management. Nonetheless, there is a lack of research and information into designing and implementing new soil and water management policies and programmes, which is much needed in this complex area. This book addresses this problem by presenting the findings of the study into the impacts of participatory watershed management in a wide range of agroecological and socioeconomical settings in Africa, Asia, Australia and Latin America. The 23 case studies present a rich and complex picture of the problems, achievements and continuing challenges faced by conservation professionals and farmers around the world. The importance of local people's involvement in natural resources planning and management is evident. The studies show that it is difficult to scale-up and institutionalize participatory approaches in large, sector-based programmes. The collection of papers provides an analysis of the biophysical, socio-economic and institutional impacts of development and management practices, and points to practicable and realistic ways forward for both governments and external support agencies. Price: GBP 15.95.

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**Nordic Reference Soils.** 1. Characterisation and Classification of 13 Typical Nordic Soils. 2. Sorption of 2,4-D, Atrazine and Glyphosate. E. Tiberg, editor. TemaNord 1998:537. Nordic Council of Ministers, Copenhagen, 1998, 106 p. ISBN 92-893-0194-5. ISSN 0908-6692. Softcover.

Data on soil properties are needed when assessing the environmental fate of chemical substances. This report describes the selection and characterization of 13 soils from Denmark, Finland, Norway and Sweden, as well as their capacities to adsorb and desorb three herbicides. The soils were selected to cover main parts of the Nordic land area, different climatic regions and landuse regimes. They include vulnerable types and soils subjected to high loads of chemicals used in intensive agriculture and horticulture, etc. Sites and soils are described, analyzed and classified according to international systems, and climatic data are given. The selected soils are meant to be used for ecotoxicological testing, including determination of pollutant adsorption, mobility and degradation. The collected soil data can also be used in chemical transport models. Price: DKK 100.00 plus VAT.

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**Anforderungen an die Verwertung von kultivierbarem Bodenmaterial.** Empfehlungen zu Technischen Regeln aus der Arbeit der Bund-/Länder- Arbeitsgemeinschaft Bodenschutz. BVB-Materialien, Band 1. R. Kohl, H. Meyer-Steinbrenner und C.G. Bannick. Erich Schmidt Verlag, Berlin, Bielefeld, 1998, viii + 37 S. ISBN 3-503-05019-1. Kartiert.

Mit diesem Band eröffnet der Bundesverband Boden (BVB) eine neue Schriftenreihe. Veröffentlicht in dieser Reihe werden Beiträge die aufgrund ihrer Bedeutung einer ausführlichen Darstellung und Erörterung bedürfen. Mehr als die Hälfte der in Deutschland beseitigten Abfälle sind heute Bodenaushub und Bauschutt. Um die Ressource Boden zu schützen, können Aushubmaterialien zur Boden- und Standortverbesserung eingesetzt werden. Ergänzend zu den Technischen Regeln der Länderarbeitsgemeinschaft Abfall (LAGA) für die Verwertung von Bodenmaterial bei bautechnischen Massnahmen wurde in der Bund-Länder-Arbeitsgemeinschaft Bodenschutz die Grundlage für die sachgerechte Verwertung im Sinne der Bodenverbesserung erarbeitet. Diese Ausarbeitung wird in diesem Band vorgestellt. Es werden fachliche Bewertungsmaßstäbe für die Eignung des Materials und die Verwertungsstandorte sowie Regeln für die Durchführung der Massnahmen vorgegeben. Preis: DM 18,60, ATS 136,00, CHF 17,00. Bestellungen an: siehe unten.

**Fachliche Eckpunkte zur Ableitung von Bodenwerten im Rahmen des Bundes-Bodenschutzgesetzes.** Bodenschutz und Altlasten, Band 4. G. Bachmann, C.-G. Bannick, u.A. Erich Schmidt Verlag, Berlin, Bielefeld, 1998, viii + 121 S. ISBN 3-503-04383-7. Kartiert.

Fehlende materielle Massstäbe und Grenzwerte mit konkretem Bezug zum Schutzgut Boden waren es nicht zuletzt die ein Bundes-Bodenschutzgesetz erforderlich machten. Darüber hinaus führte die Praxis etwa bei der Gefahrenbeurteilung von kontaminierten Böden zu vielfältigen Wertungswidersprüchen und einem "Listen-Wirrwarr", das den Grundsätzen der Rechtseinheitlichkeit und auch der umweltpolitischen Effizienz entgegenlaufen musste. Mit der vorliegenden Veröffentlichung werden die fachlichen Eckpunkte zur Ableitung der Bodenwerte vorgestellt, die in der Erarbeitung der Bodenschutz- und Altlastenverordnung eingehen.

Preis: DM 49,50, ATS 364,00, CHF 46,00  
Bestellungen an: Erich Schmidt Verlag, Postfach 102451, D-33524 Bielefeld, Deutschland. Fax: +49-521-583-0829

**Changing views on change: participatory approaches to monitoring the environment.** SARL discussion paper 2. J. Abbot and I. Guijt. International Institute for Environment and Development (IIED), London, 1998, 96 p. ISSN 1560-2192. Softcover.

The Sustainable Agriculture and Rural Livelihoods (SARL) Programme of the International Institute for Environment and Development (IIED) supports and promotes rural development based on sustainable agricultural and land management practices, strong rural

organisations and dynamic social enterprises. It seeks to analyse and promote the policies and practices needed to foster forms of rural economic growth that are socially inclusive and environmentally sensitive. The Discussion Papers present work-in-progress and preliminary findings from the Programme and its collaborators. This paper discusses approaches to participatory monitoring of the environment and other approaches to noting, recording and monitoring change, which are initiated within and by community members. Whatever the approach, it is essential that the monitoring objectives are clear, that the expectations and information needs of all stakeholders are understood, and that the end users and uses of the information are identified. The review highlights that the monitoring process must provide real benefits for all stakeholders, particularly for local people. It draws on published literature, interviews and practical experiences of a research project in Brazil.

For information about the Programme, please contact Simon Ferrigno, Programme Administrator, IIED, at address below, or e-mail: [simon-ferrigno@iied.org](mailto:simon-ferrigno@iied.org).

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**Collection Cible.** Educagri éditions, Dijon.

Cible est une collection de ressources éducatives plurimédias, qui comprend des dossiers d'autoformation, des vidéos, des fichiers informatiques pour l'autoévaluation et des cédéroms. Les dossiers sont conçus pour que l'utilisateur puisse étudier de façon autonome et à son propre rythme. Ils sont découpés en séquences indépendantes qui alternent des apports d'information et de nombreux exercices. Ils comportent en outre un guide de l'utilisateur, des tests, un glossaire et une bibliographie.

Pour des renseignements, s'adressez-vous à A.L. Colmart, Attachée de communication, ENESAD, BP 1607, F-21036 Dijon Cedex, France. Fax: +33-3-80-77-26-34. E-mail: [anne-laurance.colmart@educagri.fr](mailto:anne-laurance.colmart@educagri.fr). Site internet: [www.uducagri.fr](http://www.uducagri.fr).

Dans le domaine technologique et professionnel sont publiés:

**Largile et Lamotte - La fertilité du sol maîtrisée.** D. Paquelin, D. Azan, S. Monnet et L. Pasquier. Livret de 58 p., Cédérom, version PC Windows réseau. ISBN 2-11-090393-7. Réf. AG9800. Prix: FRF 450,00.

Embauché par un cabinet d'experts virtuel, le cabinet Largile et Lamotte, vous devez résoudre chacune des missions qui vous sera confiée. Vous pourrez réaliser des profils de sol, demander des analyses de terre, observer les agrégats afin d'établir un diagnostic et proposer des mesures adaptées. Les situations proposées permettront de traiter l'ensemble des notions relatives au sol et à la maîtrise de sa fertilité. Une encyclopédie intégrée apporte les informations agronomiques nécessaires à la résolution des différents problèmes. Le suivi pas à pas des actions de l'utilisateur constitue une véri-

table aide à la compréhension des difficultés qu'il rencontre.

**10 en Agronomie.** B. Prats et F. Desvages. 1998. Cédérom. ISBN 2-84444-013-4. Réf. CIB032. Prix: FRF 450,00.

Ce cédérom comprend un ensemble d'outils d'autoinformation permettant d'étudier les différents aspects de l'agronomie. Ces outils correspondent à dix séquences d'autoinformation: les constituants du sol; les propriétés physiques du sol; les propriétés chimiques du sol; les propriétés biologiques du sol; les analyses de sol; les amendements calciques; les bases de la fertilisation; les engrais minéraux; les engrais organiques; la protection des végétaux. Pour chaque séquence, le cédérom inclut un livret d'autoinformation, un livret de corrigés et un test informatisé. Ce cédérom, conçu pour le "Brevet professionnel option responsable d'exploitation agricole", est tout à fait adapté à d'autres formations de même niveau.

**Solimage.** Base de données d'images de sol. Regards sur le sol. A. Ruellan, auteur principal, avec la collaboration scientifique de P. Curmi et M. Dosso.

AUPELF-UREF et Educagri éditions, 1998. Cédérom. ISBN 2-84444-006-1. Prix: FRF 350,00.

La science du sol est une science du milieu, une science naturelle. Elle ne peut donc se passer d'une approche morphologique détaillée, conduite à toutes les échelles de l'organisation tridimensionnelle des couvertures pédologiques. Cela conduit à proposer que l'enseignement moderne en science du sol, quel que soit le public, soit fondé sur la découverte et l'interprétation des structures. Cet enseignement exige une abondante utilisation des images. Solimage est avant tout une banque de données pédologiques. Cette banque de données sur le sol comprend plus de 560 photographies de sols, accompagnées de fiches descriptives comportant plusieurs dizaines de champs. Un glossaire explique tous les mots utilisés. Le cédérom comprend également la version électronique, entièrement mise à jour, de l'ouvrage "Regards sur le sol", d'Alain Ruellan et Mireille Dosso, consacré à la morphologie des sols. Le cédérom est destiné à la découverte et à l'enseignement de la morphologie des sols et de ses applications à l'agriculture et à l'environnement. Conçu pour des formations supérieures, il est également utilisable dans le cadre de formations de techniciens de terrain et d'agriculteurs.

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**Using existing soil data to derive hydraulic parameters for simulation models in environmental studies and in land use planning.** Final report on the European Union funded project, 1998. Report 156. J.H.M. Wösten, A. Lilly, A. Nemes and C. Le Bas. DLO-Staring Centre, Wageningen, 1998. 106 p. ISSN 0927-4537. Softcover.

One way of addressing the paucity of soil hydraulic data for simulation modeling is through the use of pedotransfer functions. In this case soil data routinely col-

lected during systematic soil surveys are used to predict the soil hydraulic characteristics. To derive pedotransfer functions for European soils, 18 institutions in 10 EU countries participated in the establishment of a HYPRES database. After developing the database structure, measured hydraulic characteristics were added. These data were used for the derivation of class and continuous pedotransfer functions. Class pedotransfer functions were derived for 11 major building blocks. These functions and the Soil Geographical Data Base of Europe were combined for the generation of a map on the water availability of European soils.

Orders to: Dr. J.H.M. Wösten, Alterra, P.O. Box 47, 6700 AA Wageningen, The Netherlands. Fax: +31-317-419000. Homepage: [www.sc.wageningen-ur.nl](http://www.sc.wageningen-ur.nl)

**Soil Degradation. A Threat to Developing-Country Food Security by 2020?** 2020 Vision. Food, Agriculture and the Environment Discussion Paper 27. S.J. Scherr. International Food Policy Research Institute, Washington, 1999. vii + 63 p. ISBN 0-89629-631-8. Softcover.

While there is growing appreciation for our soil resources and the need to assure sustainability in their management, we do not as yet fully understand where, when, and how soil degradation affects food security; how important this problem is relative to other constraints in developing countries; and what policy and other actions to take to mitigate adverse effects of soil degradation. Until relatively recently, there has been a dearth of research on this topic, leading to uninformed dialogues and debates and leaving policymakers somewhat at a loss about whether and what to do to address soil degradation threats to food security. The author explains why and when soil degradation should be of particular concern to policymakers interested in assuring food security. It is based on 80 recent studies assessing past and present food-security related effects of soil degradation. On the basis of this evidence and assessments of the likely future trends in agricultural land use, future patterns of soil degradation are predicted.

Requests to: see below.

**The World Food Situation: recent developments, emerging issues, and long-term prospects. 2020 Vision Food Policy Report.** P. Pinstrup-Andersen, R. Pandya-Lorch and M.W. Rosegrant. The International Food Policy Research Institute, Washington, 1997. 36 p.

In the past couple of years, developments in global food supply, demand, and trade have raised concerns about the world's future food supply. The outlook for the future world food situation is not only an economic and development-related issue, but will also be significantly influenced by some emerging issues. Dietary patterns are changing rapidly in many countries in response to income increases, urbanization, changing preferences, and government policies. Growing scarcity and inappropriate allocation of water, as well as declining soil fertility in many regions of the world, are beginning to constrain food production. Farm yields in parts of Asia are approaching economically optimum levels, and yield growth rates are slowing. This reports

presents the authors' best assessment of prospects for global food security over the next quarter century, drawing upon recently updated information from IFPRI's global food model, which projects food demand, supply and trade to the year 2020. It reviews recent events that have significantly influenced food security as well as key emerging issues that have the potential to affect food security in the coming years. The report also analyses the implications of these recent events and emerging issues for agricultural research and food policy reform in developing countries.

Requests to: IFPRI, 2033 K Street, NW, Washington, DC 20006-1002, USA. Fax: +1-202-467-4439. E-mail: [ifpri-info@cgnnet.com](mailto:ifpri-info@cgnnet.com). Homepage: [www.ifpri.org](http://www.ifpri.org).

**Biologische Gewässeruntersuchung. Methoden der Biologischen Wasseruntersuchung.** Band 2. Herausgegeben von W. v. Tümping und G. Friedrich unter Mitarbeit von 41 Fachwissenschaftlern. Gustav Fischer, Jena, Stuttgart, 1999, 545 S. ISBN 3-437-35170-2. Wasser als unersetzliches und nicht austauschbares Lebensmittel sowie wichtiger Rohstoff bedarf seit langem umfangreicher Untersuchung auf seine wechselnde Beschaffenheit innerhalb des hydrochemischen Kreislaufes. Gewässer stellen als gleichsam "temporäre Lagerstätten" des Wassers innerhalb dieses Kreislaufs zugleich

Einen überaus wesentlichen Anteil der Biosphäre, und gültige Kunde über diese Lagerstätten ist nur mit ökologischen Methoden ihrer Untersuchung zu erlangen. Aus diesem Grunde spielen hydrobiologische Methoden der Gewässeranalyse schon lange einen bedeutenden Rolle in der Forschung wie in der gewässerkundlichen Praxis und im Gewässerschutz. In den letzten Jahren ist mit zunehmendem Umweltbewusstsein die Beachtung der Gewässer als Bestandteile der Natur und damit als besonders schutzbedürftige Ökosysteme mehr und mehr dem Zentrum wasserwirtschaftlichen Denkens und Handelns nähergerückt. Damit einher ging die zunehmende Bedeutung biologischer Gewässeranalysen. Für den Vollzug von Rechtsvorschriften der Wasser- und Gewässernutzung sowie des nationalen wie supranationalen Gewässerschutzes bedarf es standardisierter Untersuchungsverfahren. Die vorliegende Methodensammlung enthält sowohl langjährig erprobte Standardmethoden wie auch jüngere und spezielle analytische Verfahren. Die Methodensammlung hat mit dem zweiten Band der "Ausgewählten Methoden der Wasseruntersuchung" einen bewährten Vorläufer. In Anlehnung daran waren Autoren wie Herausgeber bemüht, durch weitgehend einheitliche Gliederung, sorgfältige Beschreibung der Arbeitsschritte und Hinweise auf mögliche Störungen und Probleme in der Durchführung wissenschaftliche Qualität und Praxisnähe zu verbinden. Sorgfältige Begriffsbestimmungen und Anwendungsbereiche für die einzelnen Methoden sollen zugleich der Verständigung und Interpretation der Ergebnisse für jene dienen, die sich weniger mit der Analyse als mit der Bewertung der Ergebnisse zu befassen haben.

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**Organic Matter in Natural Soils and in Soils contaminated by Atmospheric Organic Particles from Coal Processing Industries.** M.W.I. Schmidt. Shaker Verlag, Aachen, 1998, 136 S. ISBN 3-8265-3282-1. Softcover.

The term organic particles is used here to describe the anthropogenic material rich in organic carbon, originating from coal processing industries. This includes bituminous and brown coal particles as well as thermally altered particles, i.e. char, coke or soot. Especially in highly industrialised regions, the contribution of atmospheric organic particles to natural soils may be evident. The present study discusses the contamination of soils by atmospheric organic particles from coal industries. The approach is two-fold. First, the particle size fractionation procedure, which is applied in this study, is evaluated to assess potential artifacts. Second, the content and structure of soil organic matter (SOM) in natural soils as well as in soils contaminated by atmospheric organic particles from coal industries is investigated. The methodological approach involves the investigation of SOM in non-fractionated soils and particle size fractions by a suite of complementary methods, such as microscopy, magnetic susceptibility, elemental analysis, wet chemical analysis and spectroscopic methods, and carbon isotopic composition.

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**Beyond Malthus. Nineteen Dimensions of the Population Challenge.** The Worldwatch Environmental Alert Series. L.R. Brown, G. Gardner and B. Halweil. W.W. Norton & Company, New York and London, 1999, 168 p. ISBN 0-393-31906-7. Softcover.

Although the birthrate is falling in many industrialized countries, in many nations where the population has exploded in recent decades, birth rates remain high and populations will likely double or triple in the next fifty years. Nevertheless, these nations are showing the early signs of "demographic fatigue" – a slowdown in population growth due not to smaller families but to increasing death rates. The burden of rising populations is making itself felt: as governments struggle with the need to educate children, create jobs, and deal with the environmental effects of population growth, any new threat – such as AIDS or aquifer depletion – can rapidly escalate to disastrous proportions. In examining the states involved, the authors of this awareness-raising publication call for an expansion of assistance for family planning and new investments in educating young people, especially women, in the developing countries, helping to promote a shift to smaller families.

Price: USD 13.00.

Orders to: W.W. Norton & Company, 500 Fifth Avenue, New York, NY 10110, USA. Or: W.W. Norton & Company, 10 Coptic Street, London WC1A 1PU, UK. Homepage: [www.wwnorton.com](http://www.wwnorton.com).

**Assessing risks from soil pollution: inventory of bottlenecks and possible solutions.** Rapporten Programma Geïntegreerd Bodemonderzoek, Volume 15. A.G.



Nijhof and J.G.M. Koolenbrander. The Netherlands Integrated Research Programme, Wageningen, vi + 55 p. ISBN 90-73270-29-4. Softcover.

This exploratory study had three aims: summarising the present state of knowledge; indicating bottlenecks; and sounding out opinion about the need for future research. The report is based on 25 interviews with experts on assessing risks from soil pollution. It explores the technical, policy, organisational and communication bottlenecks experienced in the development and application of risk assessment and the possible ways of overcoming them. It concludes with the results of a workshop held to discuss the findings of the interviews.

Price: NLG 40.00, plus postal charges.

Orders to: The Netherlands Integrated Soil Research Programme, P.O. Box 37, 6700 AA Wageningen, The Netherlands. Fax: +31-317-485051.

**Agroforesterie indigène en Asie tropicale humide: structure et dynamique.** Analyse comparée de deux études de cas. Mitteilungen der Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL), Band 71. B. Sansonnens. WSL, Birmensdorf, 1996. 207 p. ISBN 3-905620-53-7. ISSN 1016-3158.

Les systèmes agroforestiers indigènes des régions tropicales ont suscité au cours des dernières années un intérêt croissant parmi les chercheurs. Deux études de cas sont présentées ici: l'une dans le sud du Sri Lanka, région au paysage très artificialisé, l'autre en pays encore largement forestier, au centre de Sumatra, Indonésie. La structure des agroforêts est analysée par la méthode architecturale sur la base de profils agroforestiers, combinée à des relevés de données dendrométriques plus "classiques". Les résultats de cette analyse sont comparés pour aboutir à une typologie dynamique des systèmes dans chaque station, illustrée pas la présentation d'exemples caractéristiques, et à l'élaboration d'un schéma général de l'installation et du développement des agroforêts indigènes, dont les parallèles avec la sylvigénèse naturelle sont présentés. L'origine et les modes d'évolution de ces milieux végétaux anthropogènes sont enfin abordés, en relation avec les autres types d'occupation de la terre.

Prix: CHF 43.80.

Commandes à: F. Flück-Wirth, Internationale Buchhandlung, CH-9053 Teufen, La Suisse.

**Land-Use and Land-Cover Change Implementation Strategy.** IGBP Report 48, IHDP Report 10. Prepared by the Scientific Steering Committee and International Project Office of LUCC, edited by C. Nunes and J.I. Augé. IGBP, Stockholm and IHDP, Bonn, 1999. 125 p. ISSN 0284-8015. Softcover.

This Implementation Strategy specifies in greater detail the activities and projects that will fulfil the mandate outlined in the LUCC Science/Research Plan published in 1995. The project, a joint initiative of the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimensions Programme on Global Environmental Change (IHDP), is addressing important global change questions on the local, regional and global scale. The planned and ongoing activities involve a wide community of natural and social scien-

tists. The Strategy will provide guidance to the scientific community on priorities for research and stimulate the expansion of the community of researchers working on LUCC topics. A set of specific activities to be conducted is proposed to move forward on the research agenda. An Open Science Meeting at the end of 2000 is planned to provide an opportunity for the community to present its research on land-use and land-cover change. The publication is free of charge to scientists involved in global change research.

Requests to: IGBP Secretariat, Royal Swedish Academy of Sciences, Box 50005, S-10405 Stockholm, Sweden. Fax: +46-8-166-404. E-mail: [sec@igbp.kva.se](mailto:sec@igbp.kva.se). Homepage: [www.igbp.kva.se/](http://www.igbp.kva.se/). Or: IHDP Secretariat, Walter Flex Strasse 3, D-53113 Bonn, Germany. Fax: +49-228-739-054.

E-mail: [holtmann.ihdp@uni-bonn.de](mailto:holtmann.ihdp@uni-bonn.de).

Homepage: [www.uni-bonn.de/ihdp/lucc/index.html](http://www.uni-bonn.de/ihdp/lucc/index.html).

**Incentives in Soil Conservation. From Theory to Practice.** D.W. Sanders, P.C. Huszar, S. Sombatpanit and Th. Enters, editors. Science Publishers, Inc. Enfield, 1999, xvii + 384 p. ISBN 1-57808-061-4. Softcover. Also published by Oxford & IBH Publishing Co., New Delhi and Calcutta. ISBN 81-204-1347-4.

Land degradation is now recognized as a major environmental problem and, globally, millions of dollars are now being spent annually on soil and water conservation programs. Many success stories can be found among these programs but, overall, progress has been slow and there have been many failures. There is an apparent reluctance of landusers to adopt conservation-effective practices, and it is usually not clear why practices that have appeared so promising in trials have not been accepted by them, or have been rejected after a short time. Attention has therefore turned to the landusers themselves, rather than the technology. Landusers are now much more involved in the process of identifying the problems, developing practical solutions and applying the necessary measures in the field. The International Workshop on Soil Conservation Extension: Concepts, Strategies, Implementation and Adoption, held in Chiang Mai in June 1995, looked at how soil conservation programs were being presented in the field and what were the problems. It appeared that although progress is being made in many ways, there was one major shortcoming: even where extension services are effective in fully involving landusers in the process of problem identification and the development of acceptable solutions, progress may still be very slow. The reason for this is that landusers may simply not be able to change their practices because of economic, social or political reasons that are beyond their control. To overcome this problem, programs have been using a variety of incentives and over the years a wide range has been developed and used. Because of the need to examine incentives more closely and to discover which incentives will work and under what circumstances, the editors, on behalf of the World Association of Soil and Water Conservation, invited workers in this field to contribute to the present book. It contains a variety of articles that explore many aspects of the use of incentives in soil conservation programs. The book gives a

clear understanding of the subject and also provides guidance to those involved in the development and implementation of soil conservation programs. An interesting addition to books on soil conservation! Price: USD 39.95 or GBP 26.00.

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**The Pedosphere and its Dynamics. A Systems Approach to Soil Science.** Volume 1: Introduction to Soil Science and Soil Science Resources. N.G. Juma. Salman Productions, Edmonton, 1999, ix + 315 p. ISBN 1-896263-10-0. Hardcover.

In this first volume in the series, the author shows how the soil is connected to the lithosphere, atmosphere, biosphere and hydrosphere, from which it develops, and to other disciplines of Earth Systems Science. Soils are natural, three-dimensional bodies in the landscape and can be studied using a systems approach. Soils are worthy of study in their own right. The advent of Internet has resulted in a revolution in teaching and learning possibilities. A team of the Department of Renewable Resources of the University of Alberta has developed web sites, which have server based interactivity in the form of questions and answers, tutorials and online content. The online textbook provides content and interactivity for learning and exploring soil science and soil resources at an introductory level. The content is organized in twelve sections. Each subsection has three headings: definitions, concepts and application.... The web-based interactivity, and design of mid-term tests and the final examination also follow the same design as the content. This method provides a quick and precise feedback. The use of web based material and currently available technology allows to go beyond the classroom and disseminate knowledge about soils to a global audience. This is probably the first web site on so many aspects of soils and soil management. A number of supplementary resources will be made available for individuals using the book and its web based material. Purchase of the publication includes a website interactivity license.

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**Linking Soil Fertility Management to Agricultural Input and Output Market Development: the Key to Sustainable Agriculture in West Africa.** Miscellaneous Fertilizer Studies No. 16. S.K. Debrah and W.G. Koster, editors. International Institute for Soil Fertility Management (IFDC-Africa), Lome, 1999, viii + 236 p. ISBN 9988-0-0139-8. Softcover.

This publication is the culmination of presentations and

synthesis arising from discussions during a seminar, organized by IFDC-Africa in Lomé in November 1996 about a strategy for the integration of both technical and socioeconomic aspects of the restoration, improvement, and maintenance of the productive capacity of the soils. Several aspects of this integrated management of soil fertility strategy were discussed during the workshop. They ranged from technological options available, through the effects of structural adjustment on investments in soil fertility to country case studies. At the heart of the discussions were issues related to the need for an integrated management approach and the rationale behind the advocacy for linking markets to soil fertility improvement. Technological options and structural adjustment issues were also discussed. The need for and the process of elaboration of national strategies were described for Burkina Faso and Ghana. All papers presented and the conclusions and recommendations are contained in this publication.

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**Soil Physics Measurements.** GeoEcology Paperback. Chr. Dirksen. Catena Verlag, Reiskirchen, 1999, xii + 154 p. ISBN 3-923881-43-3. Softcover.

Soil physics deals with the analysis and quantification of the physical properties and processes in the soil, with major emphasis on the transport and accumulation of water and solutes in the (water) unsaturated zone. There is relative abundance of textbooks dealing with theory and application of soil physics, but there are few books that give detailed descriptions of soil physical measurements and step by step instructions for exercises that are suitable for teaching. This book is intended to fill this gap for measurements related to water transport in unsaturated soil. This book gives a representative cross section of the available types of methods. After an introduction the basic concepts of soil physics are treated. The next chapters concern soil water content; tensiometry, steady hydraulic conductivity measurements; instantaneous profile method; sorptivity and diffusivity measurements; and finishes with soil hydraulic conductivity determinations. The general pattern of the chapters consists of theory, review of methods, selection of one or more methods, practical aspects, evaluation, and step by step instructions for exercises. They are written from the experimentalist's point of view. Mathematics is kept to a minimum. This textbook is well-illustrated with tables and figures.

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**Toward a Network of Regional Soil Surveys in the Frame of EU: the Cooperation among the European, National and Local Levels.** Atti del Workshop, Firenze 5 November 1998. Bollettino della Società Italiana della Scienza del Suolo, 1999, Vol. 49, no. 3, pp. 511-692. ISSN 0390-4865.

The purpose of this meeting was to stimulate the debate about the experiences and the future tasks of the European administrative regions and staffs working on soils in the European Union. More than 150 participants attended the workshop. Besides contributions about national and regional issues, information was given about the role of the European Soil Bureau and the possible implications of the World Reference Base for Soil Resources (WRB).

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**International Rice Commission Newsletter**, 1999, volume 48. FAO, Rome, 1999, 101 p. ISSN 0538-9550. The International Rice Commission celebrates its fiftieth anniversary. It was established by FAO, when the world faced a food shortage with the objective to promote national and international action on all aspects of the production, conservation, distribution and consumption of rice, with the exception of matters related to international trade. At present 61 countries, representing all the world's rice-growing regions, are members of the Commission. Rice production has been able to meet the increased demand of the world population over the last 50 years. However, at present, more than 800 million people in the world still have no food security and the growth rate of rice production has slowed considerably since 1990. As usual in the yearly Newsletter of the Commission, attention is being given to the world rice situation and prospects, new research findings and a listing of FAO-supported activities, reports of meetings, announcements of forthcoming meetings and reviews of some relevant publications. Most of the texts are in English; parts are translated in French and Spanish.

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**Estimating Rates of Nutrient Depletion in Soils of Agricultural Lands of Africa**. IFDC Technical Bulletin 48. J. Henao and C. Baanante. International Fertilizer Development Center (IFDC), Muscle Shoals, 1999, viii + 76 p. ISBN 0-88090-125-X. Softcover.

Because the agricultural sector is often the most important sector of the economies of developing countries, its performance substantially influences the economic growth and quality of life of the people in those countries. In Africa, agriculture accounts for more than 25 % of the GDP and about 65 % of the people depend on agriculture for their livelihood. Increasing agricultural production can make a major contribution to economic growth, social improvement and trade on the continent. However, much of Africa's agricultural land is being degraded, partly because of intensification of land use. Overcoming chronic problems that lead to degradation requires a good understanding of the interplay among biophysical, agroclimatic, economic and human factors that determine the management of natural resources

and prevailing farming systems. In this study, current rates of nutrient depletion in soils of agricultural areas of Africa are estimated to identify and characterize regions where the nutrient mining of soils is becoming a factor in land degradation and a major constraint to the sustainable intensification of agricultural production. Estimates of the amounts of nutrients required to balance inflows and outflows of nutrients are provided. Estimates of nutrient depletion are analysed in the context of prevalent circumstances such as current levels of crop production, inherent soil fertility conditions and resilience of the soils, biophysical and agroecologic environment, and population density. This report is part of the IFDC efforts to develop information management systems that provide information on key indicators of soil fertility status and changes affecting crop production and the conservation of land resources.

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**A Fertilizer Strategy for Zimbabwe**. Food and Agriculture Organization of the United Nations (FAO) and African Centre for Fertilizer Development (ACFD), 1999, vii + 97 p. Softcover.

Agriculture in Zimbabwe employs one-third of the total workforce, provides 60 % of all raw materials for the manufacturing industry and accounts for more than 40 % of total exports. Tobacco and cotton are major export crops. Out of 19 million ha of arable land, about 2.7 million ha are under cultivation (60 % of it under rainfed maize). Annually about 450 000 tons of fertilizer is used. The demand is projected to grow at 3 % per year. This report presents information about biophysical and agroecologic zones of the country, the agricultural sector and its fertilizer demand and supply and aspects of the smallholder farming sector. The major part of the report concerns the results of the fertilizer adoption and use survey carried out in the country with regard to small-scale farming.

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**Principles of Crop Improvement**. Second edition. N.W. Simmonds and J. Smart. Blackwell Science, 1999, xii + 412 p. ISBN 0-632-04191-9. Hardcover.

The objective of this book is to provide a broad, general introduction to the principles of plant breeding. It is not about the practice, nor is it about the science to which plant breeding naturally appeal, namely genetics, in its more applied aspects. Cytogenetics is included, as has seemed necessary to illuminate the plant breeding ideas at issue. The book starts with a sketch of the evolution of a wide range of crops and places. Chapter 2 provides a short general sketch of plant breeding. In chapters 3 to 11 the objectives and genetical principles are outlined, breeding plans are discussed in a long chapter, followed by trials and multiplication, diseases,

special techniques and genetic conservation, and closing with the social context of plant breeding. Throughout the book flow diagrams are used to supplement and expand information given in the text. The book is aimed at the honours degree-early postgraduate level of student in agriculture, horticulture and applied biology. Price: USD 104.95 or GBP 59.50.

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**Nutrient Disequilibria in Agroecosystems.** Concepts and Case Studies. E.M.A. Smaling, O. Oenema and L.O. Fresco, editors. CABI Publishing, Wallingford, 1999, xiv + 322 p. ISBN 0-85199-268-4. Hardcover.

It is now well recognized that nutrient imbalances have a substantial impact on the productivity and sustainability of agroecosystems worldwide. Fertilizer and manure use, atmospheric deposition, international transport of produce, solute and gas emissions and soil erosion have all contributed to deficits and surpluses, which in some areas have reached alarming proportions. This book explores the latest concepts of the causes of nutrient imbalances, including the importance of different spatial scales and examines ways to quantify and manage nutrient stocks. The increasing amount of legislation and the urgent need for the development of integrated nutrient management technologies are emphasized. Case studies from fish farms in Asia to nutrient flow monitoring in Kenyan tea/maize farms, the dairy sector in New Zealand and ecological farming in Switzerland. The future for global-level research in soil fertility management and nutrient flow analysis is also considered. The book ends with an interesting epilogue on the need for integrated nutrient management. To quote the editors in the preface: "We want to point out loud and clear that a natural resource such as 'soil' has so far been treated as a free good worldwide. This situation cannot continue much longer. Soils are not infinite suppliers of nutrients to to-be-harvested plants, nor are they indestructible dumpsites for surpluses of nutrients, including heavy metals and biocide residues. Sister resources such as air, water and biodiversity have been given the same raw deal".

Price: GBP 60.00, USD 110.00. Postal charges for outside UK.

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**Modelling Soil-Biosphere Interactions.** C. Müller. CABI Publishing, Wallingford, 1999, xii + 354 p. ISBN 0-85199-352-2. Hardcover.

Soils interact with the biological environment in a number of ways. Computer modelling can often enhance our understanding of these interactions. This book shows how even complex problems in the relationship between soil and the biosphere can be solved using modelling packages. Concepts and processes in soils and their interaction with the biosphere are explained in an easy-to-understand way and numerous examples are

presented using the software package ModelMaker. The book is aimed at a wide range of researchers, advanced undergraduate and postgraduate students in soil, plant and environmental sciences, who are interested in modelling. The primary function is to introduce basic modelling skills and to show how processes in the soil-biosphere can be described with the help of mathematics. The book starts at a very basic level by revisiting the mathematics needed for successful model development. The following chapters, which are each concerned with specific processes in the soil-biosphere, always begin with an introduction to the particular topic and then proceed to model development. The culmination of each section is a working model. The book is designed to be used together with the supplied models (set up in the modelling package ModelMaker from Cherwell Scientific (see below) and it is advisable to use both the book and the models in parallel.

Price of the book: GBP 49.95, USD 90.00. Postal charges outside UK.

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### **Characterization and Measurement of the Hydraulic Properties of Unsaturated Porous Media.**

Two volumes. M. Th. van Genuchten, F.J. Leij and L. Wu, editors. U.S. Salinity Laboratory, Agricultural Research Service, USDA, Riverside, and Department of Environmental Sciences, University of California, Riverside, 1999, xv + 1602 p. Hardcover.

These proceedings document presentations given at the International Workshop under the same title, held in Riverside in October 1997. The workshop was organized to review various aspects of water flow and solute transport in unsaturated porous media, particularly with respect to the characterization and measurement of the unsaturated hydraulic properties (water retention, hydraulic conductivity). Knowledge of the hydraulic properties is indispensable for addressing many soil, hydrological, environmental, ecological and agricultural problems. They are needed in nearly all basic and applied aspects of soil, water, nutrient, and salinity management research (including precision agriculture) and serve as integrated indices for soil quality. They are also needed in models for heat and mass transport near the soil surface to simulate the extent and effects of regional and global climate change, and to interpret or improve the utility of remotely sensed moisture data at a variety of spatial scales. About 220 scientists from some 20 countries participated and their 143 contributions are contained in these two very well produced volumes. Topics presented ranged from theoretical to application-oriented research, and from modeling to laboratory and field experimentation. These proceed-

ings, available for a relatively low price, will remain valuable in research, engineering, and extension and student education for many years to come, especially in the area of unsaturated flow and transport.

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**Nutrient Balances as Indicators of Productivity and Sustainability in Sub-Saharan African Agriculture.**

Special Issue of *Agricultural Ecosystems & Environment*, volume 71 (1998), nos. 1,2 and 3, December 1998. E.M.A. Smaling, guest editor. Elsevier, Amsterdam, Lausanne, 346 p. ISSN 0167-8809.

This issue contains the papers presented during the conference Fertility Management in Sub-Saharan Africa, held in Nairobi, February 1997. It brings together a

number of case studies, which are preceded by brief reviews covering the state of the art on nutrient balance research and development in West, East and Southern Africa, a general methodological framework for nutrient balance studies, and a prototype for collecting and managing data and information on nutrient flows and farm household performance. Country case studies deal with managed ecosystems, covering different spatial scales, ranging from country level to within-plot level. Most studies were conducted at farm level. Next to nutrient balance calculations and nutrient use efficiency, farm economic performance has also been studied and linked to nutrient management.

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**CR Cryosols/Cryosols/Frostböden**

Dr. C. Tamocai, Centre for Land and Biological Resources Research, K.W. Neatby Bldg., Ottawa, K1A 0C6, Canada

**DM World Soils and Terrain Digital Data Base/Carte Internationale Numérique des Sols et des Terrains/Digitalisierte Internationale Boden- und Landkarte (SOTER)**

Dr. W. Sombroek, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands

**FA Soil Organic Fertilizers and Amendments/Produits organiques d'engrais et d'amendement du sol/Organische Dünger und Bodenverbesserungsmittel**

Prof. Dr. P. Segui, Istituto Sperimentale per la Nutrizione delle Piante Via della Navicella 2-4, 00184 Roma, Italy

**GC Soils and Global Change/Sol et Changements Globaux/Böden und globale Änderungen**

Prof. Dr. Rattan Lal, School of Natural Resources, The Ohio State University, 2021 Coffey Road, 210 Kottman Hall, Columbus, OH 43210, USA.

**IC International Soil Convention/Convention Internationale des Sols/Internationale Bodenkonvention**

Prof. Dr. Hans Hurni, Centre for Development and Environment (CDE), Institute of Geography, University of Berne, Hallerstr. 12, 3012 Berne, Switzerland

**LD Land Degradation and Desertification/Degradation des Sols et Désertification/Bodendegradation und Wüstenbildung**

Dr. Hari Eswaran, USDA Natural Resources Conservation Service, POB 2890, Washington D.C. 20013, USA

**LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/ Informationssysteme zur Landbewertung**

Dr. J. Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ont. K1A 0C6, Canada

**MO Interactions of Soil Minerals with Organic Components and Microorganisms/Interactions entre les Minéraux du Sol, les Composés Organiques et les Microbes/Wechselwirkungen zwischen Bodenmineralen, organischen Substanzen und Mikroorganismen**

Prof. Dr. P.M. Huang, Univ. of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask. S7N 0W0, Canada

**PM Pedometrics/Pédométrie/Pedometrik**

Prof. Dr. M. Van Meirvenne, University of Gent, Dpt. of Soil Management and Soil Care, Coupure 653, 9000 Gent, Belgium.

**PP Paleopedology/Paléopédologie/Paläopedologie**

Prof. Dr. Arnt Bronger, Dpt. of Geography, University of Kiel, 24098 Kiel, Germany

**PS Paddy Soils Fertility/Fertilité des Sols Rizicoles/Irrigües/Fruchtbarkeit von Reisböden**

Dr. Rogelio N. Concepcion, Bureau of Soils and Water Management SRDC Building, Elliptical Road, Diliman, Quezon City, Philippines.

**PT Pedotechnique/Pédotechnique/Pedotechnik**

Prof. Dr. J. Koolen, Dept. of Soil Tillage, Wageningen Agric. Univ. Diedenweg 20, 6703 GW Wageningen, The Netherlands

**RB World Reference Base for Soil Resources/Base de référence mondiale pour les ressources de sol/weltweite Referenzbasis fuer Bodenressourcen**

Prof. Dr. J. Deckers, Wildenhoge 13, 3020 Winksele, Belgium

**RS Remote Sensing for Soil Survey/Pédologie et Télédétection/Fernerkundung für Bodenkartographie**

Dr. M. Mulders, Dept. of Soil Science & Geology, Wageningen Agric. Univ., P.O. Box 37, 6700 AA Wageningen, The Netherlands

**RZ Rhizosphere/Rhizosphère/Rhizosphäre**

Dr. Ph. Hinsinger, INRA UFR de Science du Sol, Place Viala, 34060 Montpellier Cedex 2, France

**SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin**

Prof. E. Steinnes, Dept. of Chemistry, Norw. Univ. of Sci. & Techn., 7034 Trondheim, Norway

**SM Environmental Soil Mechanics/Mécanique du Sol et l'Environnement/Bodenmechanik und Umwelt**

Prof. Dr. R. Horn, Inst. f. Pflanzenernährung u. Bodenkunde, Olshausenstr. 40, 24118 Kiel, Germany

**SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Grundwasserverschmutzung**

Dr. J.W. Hopmans, Univ. of California, Dpt. of LAWR, Davis, CA 95616, USA

**SU Soils of Urban, Industrial, Traffic and Mining Areas/Sols en Milieux Urbains, Industriels, d'Infrastructures et Miniers/Böden in städtischen, industriellen, Verkehrs- und Bergbaubetrieben**

Prof. Dr. W. Burghardt, Univ. GH Essen, Inst. of Ecology, Universitätsstr. 5, 45117 Essen, Germany.

**Standing Committees/Comités Permanents/Ständige Komitees - Chairpersons/Présidents/Vorsitzende:**

**CSS Committee on Statute and Structure/Comité sur Statuts et Structures/Komitee für Statuten und Struktur**

Prof. Dr. P.B. Tinker, Glebe House, Broadwell, Lechlade, Glos. GL7 3QS, UK

**CIC Committee on Interdisciplinary Cooperation/Comité de la Coopération Interdisciplinaire/Komitee für Interdisziplinäre Zusammenarbeit**

Dr. J. Kimble SCS/NSSC, Federal Bldg., Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866, USA.

**CST Committee on Standardization/Comité sur la Standardisation/Standardisierungskomitee**

Prof. Dr. S. Nortcliff, Dept. of Soil Sci., Univ. of Reading, Whiteknights, P.O. Box 233, Reading RG6 2DW, U.K.

**CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee**

Prof. Dr. W.R. Gardner, 1 Shadow Mountain Dr., Logan, Utah 84321, USA

**CES Committee on Education in Soil Science/Comité pour l'Enseignement de la Pédologie/Komitee für Bodenkundeausbildung**

Prof. Dr. M. Dosso, CNEARC, 1101 Av. Agropolis, B.P. 5098 Montpellier, Cedex, France

**CHP Committee on the History, Philosophy and Sociology of Soil Science/Comité sur l'Histoire, Philosophie et Sociologie de la Science du Sol/Komitee für Geschichte, Philosophie und Soziologie der Bodenkunde**

Prof. Dr. D.H. Yaalon, Inst. of Earth Sci., Hebrew Univ., Givat Ram Campus, Jerusalem 91904, Israel

**Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften**

ARID SOIL RESEARCH and REHABILITATION: BIOLOGY & FERTILITY OF SOILS; CATENA;

GEODERMA; JOURNAL OF PLANT NUTRITION AND SOIL SCIENCE; PEDOBIOLOGIA;

SOIL BIOLOGY & BIOCHEMISTRY; SOIL TECHNOLOGY.

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