75 YEARS ISSS/IUSS
1924–1999

Bulletin

of the International Union of Soil Sciences

Bulletin

de l'Union Internationale de la Science du Sol

Mitteilungsblatt

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de la Union Internacional de la Ciencia del Suelo

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INTERNATIONAL UNION OF SOIL SCIENCES
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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.
Full Members, Associate Members, Individual Members and Sustaining Members since/Membres à part entière, Membres Associés, Membres à titre Individuel et Membres Bienfaiteurs dépuis/ Vollmitglieder, assoziierte Mitglieder, Einzelmitglieder und fördernde Mitglieder seit: August 1998.
A scientific union member of ICSU since/Membre scientifique du CIUS depuis/Wissenschaftliches Mitglied von ICSU seit: 1993.
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CONTENTS - SOMMAIRE – INHALT

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:

17th WORLD CONGRESS OF SOIL SCIENCE
BANGKOK, THAILAND

14-20 August 2002
its general theme is:

"Soil Science: Confronting New Realities in the 21st 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. 96 (1999/2) printed in the autumn of 1999.

The actual Congress Programme will be decided upon during the IUSS Extraordinary Council Meeting in April 2000, Bangkok, Thailand. The Programme and calls for papers will then 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 17th World Congress of Soil Science
Kasetsart Golden Jubilee Administration and Information Center (1st 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.17wcss.ku.ac.th

A NEW SCIENTIFIC STRUCTURE FOR IUSS

PROPOSAL FOR DISCUSSION

From October 7-10, 1999, the Executive Committee of IUSS, consisting of the Bureau and the Chairpersons of the Commissions and Standing Committees of IUSS, together with members of the Standing Committees on *Statutes and Structure* and on *Budget and Finances*, met in Vienna, in order to discuss the new byelaws and the new scientific structure for IUSS. The group consisted of 23 scientists, and was chaired by Prof. Bernard Tinker. The Symposium was financially supported by the Austrian Ministry of Science and Transport.

The participants were:

Officers of IUSS:	S. Theerawong, I. Kheoruenromne, A. Ruellan, W.E.H. Blum, H. Van Baren, P.U. Lüscher;
Chairpersons of Commissions:	S. Arunin, C. De Kimpe, B.H. Janssen, J. Kühle, A.R. Mermut, D.L. Sparks, K. Stahr, D. Tessier;
Members of CSS:	B. Tinker, R. Dudal, V. Targulian, W. Sombroek , G. Varallyay, L. Wilding;
Member of CBF:	W. Gardner
Member of CIP:	J. Kimble
Member of CST:	S. Nortcliff

After discussions in Vienna/Austria (1995), Moscow/Russia (1996), Montpellier/France (1996), Louvain-la-Neuve/Belgium (1997), Montpellier/France (1998), and once again Vienna (1999), a proposal could be elaborated with inputs from many participants of the Meeting, which reached a large majority among the participants. We are now proposing for you this new structure and are waiting for your comments, which will be taken into consideration before a final vote in April 2000 in Bangkok/Thailand, during the Extraordinary Council Meeting.

Please feel free to make any comments and send these to the Secretary-General (see address on the second page of the Bulletin).

IUSS REVISED SCIENTIFIC STRUCTURE

D1. Soil in Space and Time

- C1.1 Soil Morphology and Formation
- C1.2 Soil Geography
- C1.3 Soil Classification

D2. Soil Properties and Processes

- C2.1 Soil Physics
- C2.2 Soil Chemistry
- C2.3 Soil Biology
- C2.4 Soil Minerals and Organic Components
- C2.5 Soil Genesis.

D3. Soil Use and Management

- C3.1 Soil Fertility and Plant Nutrition
- C3.2 Soil -Water Conservation
- C3.3 Soil Remediation

C3.4 Soil Evaluation
C3.6 Soils used for non-agricultural purposes

D4. Soil Policies and Environmental Issues

C4.1 Soils, International Scientific Programs and International Conventions
C4.2 Soil, Food Security and Human Health
C4.3 Soil and the Environment
C4.4 Soil and climate change
C4.5 Soil Science and Education
C4.6 History, Philosophy and Sociology of Soil Science

Scope and Rationale for the New Structure of IUSS

At first glance, the proposed new structure may appear quite surprising. There are now four divisions and a number of commissions. The concept of having only four divisions is intended to keep the over all management structure small and a style that facilitates integration and cooperation among the disciplines. The proposed scientific structure groups commissions into a management structure that will offer the best opportunity for synergistic interaction among disciplines while maintaining the opportunity for individuals to work within their areas of disciplinary expertise. The goal was to recognize the need for multidisciplinary approaches to soil studies rather than fragment the discipline into specific research components. This new distribution of the existing Commissions will prompt the creation of multidisciplinary working groups to address joint activities.

At first glance, the proposed new structure may appear radically changed. Actually, it is not so radical. We retain our existing commissions as the disciplinary cores. Further it is obvious that the proposed structure does not artificially fragment disciplines into commission sub-disciplines that are not viable components of a discipline. A Divisional Committee comprised of the division officers, and the commission chairs, will be charged with the managerial responsibilities of the divisions. Hence, all entities of the scientific structure participate in representative governance of the Union. All scientists will have an opportunity individually and collectively to contribute to the Union and its multiple-faceted mission through Divisional Committees. This is consistent with the revised statutes of the IUSS, that states the divisions are the unit of the Union structure responsible for carrying out the broad-based science, synergistically with other scientists and programs within the International Council for Science (ICSU). It will facilitate the need for public relations and the communication to the public of a general understanding of the activities conducted by the International Union of Soil Sciences: most often people do not realize what is the soil and the need for its investigation. Clarifying the issues of soil distribution, basic understanding of the soil properties, its applications in many areas, and its importance in international fora where science input is essential, will give more visibility to the IUSS. It is deemed that this proposed scientific structure has the best opportunity of succeeding for these specified goals.

Divisions will be grouped into four broad subject matter categories that can be envisioned as the "What", "How" and "Why" of soil science. As stated above, the concept is to have a limited number of integrative broad subject matter areas that will bring many different soil scientists and other scientists together in areas of common interest. - An example is work on climate change. In this area, we are interested in carbon sequestration, gas fluxes, role, and effects on soil fertility, soil quality and sustainability etc. Expertise from all disciplines of soil science are needed to understand the fundamental soil processes involved and how they relate use and management. We need to apply basic principles and processes of chemistry, physics, biology and soil genesis to comprehensively examine soils' effect on climate change, the effect of climate change on the pedosphere, and then apply this fundamental knowledge through soil management interventions to achieve the desired objectives on the ground.

Commissions in the first division allow scaling of the integrated knowledge base generated in the second and third divisions to a broader base of inference and clientele found in the fourth division. The first division will also focus on the landscape dimensions of soils and geographic coverage where many of our international partners have worked to sustain food security. As scientists, we must integrate among subject matter areas and go beyond traditional boundaries better than in the past. At the same time, the desirable strengths and bonds of the existing commissions where soil scientists have worked fruitfully for years are maintained. The proposed structure allows for all of this flexibility. Everyone should find a home in this structure for his/her valuable contributions. We would anticipate that the managerial style through our divisional structures should enhance the operational efficiency and effectiveness of soil science in ICSU. It should also allow for greater vertical integration of our science and its policy bodies.

- Division 1 is the »What." It looks at the soil as a body, how it was formed, the extent of its 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 consider 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 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 thus enabling scientists, policy makers, and those specialists remote to soil science to 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.

Rationale for the Divisions and Commissions

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 and Formation

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 these environmental signatures result. Morphogenetic properties are dynamic and anisotrophic 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 anthropogenic). It is that component of the division that serves as a vehicle to transfer soils knowledge gained in C.11, 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 Classification

Soil classification is that commission within the division that categorizes the infinite number of morpogenetic attributes of the pedoshpere so the attributes used to classify soils permit 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 scientists and others study.

D2: Division 2 - 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 tech-

niques 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 Minerals and Organic Components

This commission deals with the study of inorganic (phyllosilicates, metal oxides, and amorphous materials) and organic (humic and non-humic) components. Major research areas are use of molecular scale and advanced analytical techniques to study the structure of inorganic and organic soil components; mineral dissolution; and mineral-organic interactions.

C2.5: Commission 2-5: 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 soil cover formation. It utilities 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.

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 and forest production and the broader environmental context. Activities to remediate degraded soil, arising from the agricultural misuse of soil or contamination's resulting from non-agricultural activities are part of the scientific remit 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 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.

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 Remediation

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 and returned to productive and multifunctional use.

C3.4: Commission 3-4: Soil Evaluation

As soil is increasingly acknowledged as a scarce and finite resource it is essential that decisions on soil use are made optimally 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 will include related activities of data gathering and management including remote sensing and Geographical Information Systems.

C3.5: Commission 3-5: Soils used for non-agricultural purposes

This Commission recognizes the increasing involvement of soil scientists in the management of soil for non-agricultural purposes including forestry. In particular the use of soil in construction and artificial landscaping is an area where soil science is currently poorly represented, yet the successful use of the soil in these conditions requires the same understanding of fundamental soil properties and processes as agricultural land management. The activities of this commission will also include the production of artificial soils using mixtures of waste organic and inorganic materials.

D4: Division 4 - Soil Policies and Environmental Issues

There is a need to provide soil science input in many policy-related topics addressing environmental 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, International Scientific Programs and International Conventions

Soils, 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. Moreover, soil plays a prominent role in the Convention to Combat Desertification (CCD). The object of the Commission will be to examine the contribution of soils in such areas.

C4.2. Commission 4-2: Soil, Food Security and Human Health

Soils are the essential support for food production in most countries. Considering that one third of the land area is presently used for agriculture, and the increasing world population that is creating additional pressure on agricultural land, providing enough safe and nutritious food will be an ongoing challenge. Among the concerns of this commission, there are also direct relations between soil, land and human health.

C4.3: Commission 4-3: Soil and the Environment

This Commission will look at the soil as part of the terrestrial and aquatic ecosystems. Human activities have a strong impact on the ecosystems and the soil-environment interac-

tion in relation to humans is particularly important. This commission will also pinpoint »emerging issues« in the soil-environment relationship.

C4.4: Commission 4-4: Soil and climate 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.

The following two commissions present a problem, as a clear consensus has not been reached yet. Some feel they should remain standing committees, others feel they need to go into Division 1. For now, they are left in Division 4.

C4.5: Commission 4-5: Soil Science and Education

This commission deals with how we present knowledge to others, especially on primary, secondary and tertiary education levels.

C4.6: Commission 4-6: 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 of use 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.

ANNOUNCEMENT

V International Symposium and Field Workshop on Paleopedology (ISFWP) of IUSS (WG Paleopedology) and INQUA (Commission Paleopedology) »Paleosols and Modern Soils as Stages of Continuous Soil Formation«

Suzdal, Russia, 10 – 15 July 2000

Organization: A. Bronger, Kiel, Germand, A. Velichko, A. Makeev, Moscow, Russia.

Rationale:

1. Polygenetic concepts of Quaternary and pre-Quaternary surface paleosols.
2. Methodological recognition of soils with relic properties: definition, classification and modeling.
3. Environmental implications of paleopedogenic features for agriculture, forestry etc.
4. Buried Quaternary and pre-Quaternary paleosols as tools for reconstructing and modeling environmental changes.
5. Paleopedology and archaeology. Dating of paleosols.

The organizers plan a four-day program consisting of a three-day session interrupted by a one-day inter-sympoisum field trip.

Abstracts:

Deadline for abstracts is March 1, 2000. The texts should be submitted electronically as a World6.0 for Windows attached file, in English, Times 12 font, single spaced on one page (format: A4, with 2 cm free space at each margin.), including line drawings, tables, references etc., to one of the following addresses:
Prof. A. Bronger, Dptmt. of Geography, University of Kiel, 24098 Kiel, Germany; Phone: +49-431-880-2952; Fax: +49-431-880-4658; E-mail: bronger@geographie.uni-kiel.de.
Prof. T.D. Morozova, Institute of Geography, Staromonetny per. 29, 109017 Moscow, Russia; Phone: +7-095-238-8208; E-mail: paleo@glasnet.ru.

Contributors will be informed within 4 weeks about acceptance as oral or poster presentation. Submitted abstracts will be published in the abstract volume. Each oral presentation will be 15 min. in length. Slide (5x5cm) and overhead projectors are available.

Participation fee: US$ 130. this will cover all sessions, abstract volume, programme, bag with conference material, coffee during the breaks, lunch meals during the session days, simultaneous translation during the morning session of the first day, transportation from Sheremetievo International Airport to Suzdal.
The participation fee must be paid until May 31 to*:

Beneficiary:	**Irina A Martynenko**
Beneficiary's Account:	42301.840.0.0000.0000.089
Beneficiary's Bank:	acc. 608 475 726 **Bank Derzhava** Moscow State University, Telephone Exchange Bldg., Moscow 117234, Russia
Intermediary Bank:	**Republic National Bank of New York** 452, Fifth Avenue, 10018 NY New York SWIFT: BLIC US 33 XXX

* Please include all this information without any deviations.
Payment after May 31 is US$ 160.

Accommodation: In the tourist center of Suzdal, double- and single bedrooms, including breakfast are available for approx. US$ 20-30 per night.

Mid-Conference Tour: July 14, Surface paleosols of Vladimir Opolie (US$ 50)
Post-Conference Tour: 3 one-day trips,
July 16, Upper Pleistocene loess-paleosol sequence of Vladimir Opolie;
July 17, Upper and Middle Pleistocene loess-paleosol sequence near Kolomna; and July 18, Famous Sungir paleolithic site and archaeological exhibition.
Cost: 150 US$.

Notice of Intent / Registration form

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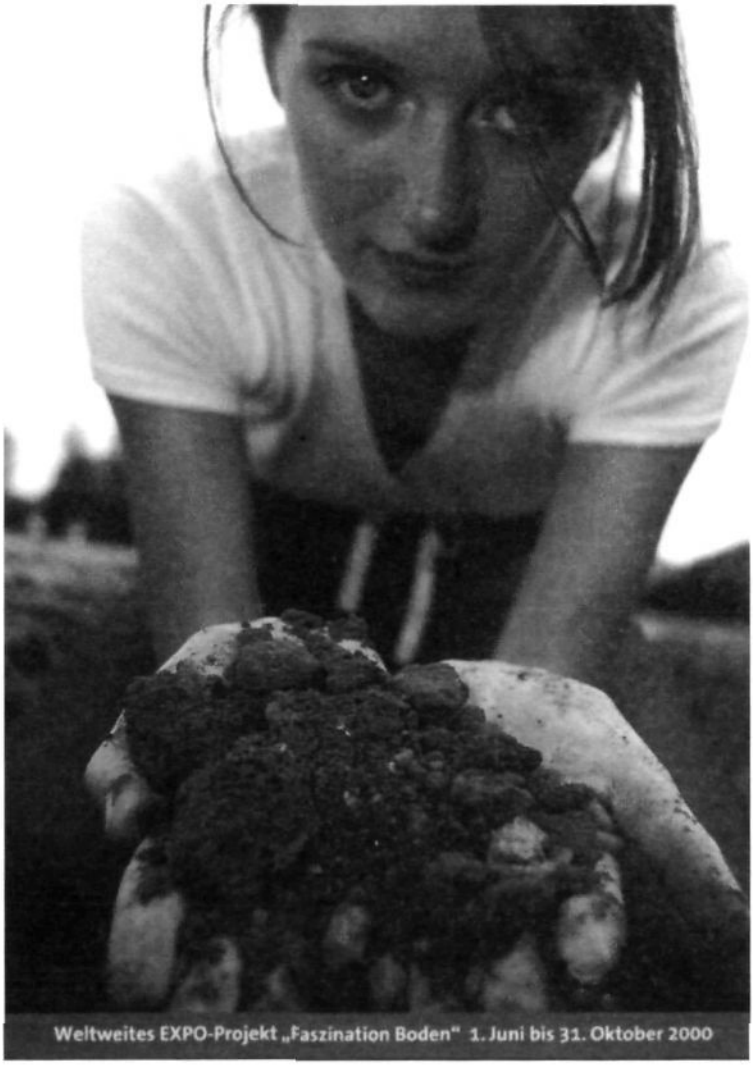

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PUBLISHING IN SOIL SCIENCE

Publish or Perish (2) – How much we write

Alfred E. Hartemink *

"It is easy, after all, not to be a writer. Most people aren't writers, and very little harm comes to them".
Julian Barnes (1946–)

1. Introduction

I know very few people who read a lot and do not write, but I know more people who write a lot and do not regularly publish. Nevertheless the number of books appearing each year is on the increase - not only in the literary world but also in our great world of science.
Scientific careers are increasingly depending on what one has written (and where) and not so much on what one has read. Having read widely and erudition used to be momentous in academic positions, but it seems that publication record is now the most important evaluation criterion. In the majority of job interviews there will be questions about the applicant's publication record, whereas questions like "What was the latest (soil science) book you have read?" are not asked. The answer will involve something like "I have little time to read a whole book, I rather write one".

The emphasis on writing has not missed its goal, and in the past 25 years the number of scientific journals roughly doubled. Also the number of soil science journals has increased, and 5 of the 11 leading soil science journals did not exist in the 1970s. Currently, there are about 25 journals solely dedicated to publishing soil research whereas more than 35 other journals publish regularly soil research papers. There are more than 60 national and international journals in which our research and thoughts on soil science can be published.
In this paper, we have a look at the number of soil science publications over time and for different subdisciplines. Numbers were estimated using Current Contents published by ISI Philadelphia (USA) and with the help of the information division of CAB International in Wallingford (UK).

2. Our total output

Current Contents displays the tables of contents from more than 7,500 journals and 2,000 books and conference proceedings. It provides complete bibliographic data for every item covered in a journal: articles, editorials, corrections, meeting abstracts, commentaries, reviews and letters to the editor. More than 900,000 publications are listed each year. On-line searches were conducted through the 1994 to 1998 databases with the word 'soil' in the title, or abstract, or any database field (Table 1).

Table 1. Number of publications with 'soil' in article title, or abstract, or any database field from 1994 to 1998 (Data from Current Contents)

	1994	1995	1996	1997	1998
'Soil' in title	3,678	3,940	4,413	4,268	4,544
'Soil' in title or abstract	8,256	8,817	9,548	9,505	10,023
'Soil' in any database field	*9,279*	*10,001*	*10,804*	*10,958*	*11,561*

The total number is increasing with about 450 publications per year, or on average 5%. This is probably not the best estimate of how much we publish. The figures are an overestimate because publications from entomologists studying soil nematodes, road constructors, or medical doctors investigating soil-borne human diseases are also included. Those are not the type of papers written by soil scientists. On the other hand, the figures underestimate our total output because it is excluding most non-English documents.
What the searches cannot show is an overview of number of soil research publications per journal per year. The 14 soil science journals listed in IUSS Bulletin no. 95, published 1,612 papers in 1997. So many papers are appearing in agronomic journals or are being published in non-specialised journals. Very few are, however, written in the leading international journals of science: "Nature" and "Science" (Table 2).

Table 2. Number of publications with 'soil' in article title, keyword or abstract in "Nature" and "Science" from 1994 to 1998 (Data from Current Contents)

	"Nature"		"Science"	
Year	Soil	Total	Soil	Total
1994	17	3,330	7	2,528
1995	14	3,308	9	2,597
1996	9	3,104	7	2,791
1997	8	3,086	14	2,753
1998	13	3,082	7	2,727

Less than 0.6% of all manuscripts published in "Nature" and "Science" are related to the study of soils. There is little doubt that much of our soil research is of the highest scientific standard, but apparently very few soil scientists publish in these two high impact journals, probably because their readership is

too general. If current trends continue whereby soil scientists are mainly evaluated according to where they have published, that may perhaps change.

3. Papers per sub-discipline

In the 1930s, the Commonwealth Agricultural Bureaux (CAB) started abstracting and classifying soil science publications. CAB, which is now known as the not-for-profit organization CAB International, continues to date to abstract agricultural publications. It has developed a monumental database on soil science publications. From this database an overview was prepared of the number of abstracts of soil science papers published in "Soils and Fertilizers" between 1938 and 1998 (Table 3).

Table 3. Number of abstracts published in "Soils and Fertilizers" between 1938 and 1998 (Data from CAB International)

	Year						
Subject area	1938	1948	1958	1968	1978	1988	1998
Soil Science (General)	15	19	2	0	6	11	20
Soil Chemistry	248	182	342	704	832	1,290	2,204
Techniques & Analysis	221	111	263	465	423	763	738
Soil Physics	123	98	195	316	409	635	922
Soil Classification & Soil Types	139	38	148	346	180	424	126
Soil Fertility	56	4	6	28	44	154	288
Soil Biology	77	110	279	624	750	1,332	1,694
Soil & Land Resources	41	12	21	143	289	334	324
Soil Morphology, Formation & Erosion	80	67	57	109	235	684	560
Soil Management	33	37	29	41	38	105	95
Fertilizers (inc. plant nutrition)	276	215	476	651	506	1,731	833
Reclamation, Soil & Water Conservation, Irrigation & Drainage	54	46	30	76	247	832	909
TOTAL	1,363	939	1,848	3,503	3,959	8,295	8,711

- These figures, taken from the sections "Soil Science" and "Fertilizers, Soil Management, Crop Management" of "Soils and Fertilizers", do not include books, reports, and other reference documentation, except for 1938 and 1948 which include all documentation apart from reports.

The table shows that the largest increase occurred in the 1970s and 1980s, and in 1998 there were nearly 9,000 abstracts. The number of abstracts increased for most of the subject areas listed although differences were large. Relative differences were investigated by setting the number of abstracts in 1938 at 100 (Fig. 1). The most dramatic increase occurred in the field of soil biology. The increases in the area of soil chemistry and physics were similar. There is a declining trend in the number of abstracts on Soil Classification & Soil Types, and this reflects the reduced interest in this area.

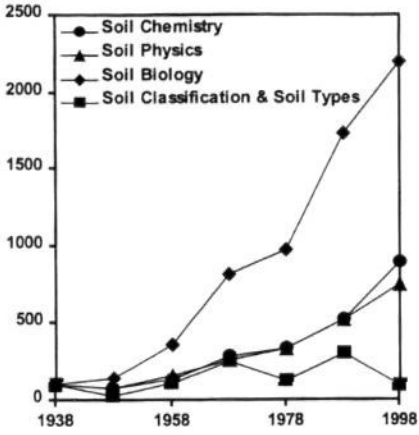

Fig. 1. Relative changes in number of abstracts on Soil Chemistry, Physics, Biology and Soil Classification & Soil Type between 1938 and 1998 (1938 = 100)

4. Compared to others

Both the data of CAB International and Current Contents have shown that the number of soil science publications is increasing. How does the increase relate to other areas? Searches were made with the key words 'soil', 'water' or 'air' and the results are given in Table 4.

Table 4. Total number of publications with 'soil', 'air' or 'water' between 1993 and 1998 (as a percentage of the total in parentheses) (Data from Current Contents)

Year	Total in Current Contents	Soil	Air	Water
1994	887,685	9,279 (1.1)	14,081 (1.6)	35,875 (4.0)
1995	920,746	10,001 (1.1)	14,851 (1.6)	38,275 (4.2)
1996	962,263	10,804 (1.1)	15,978 (1.7)	40,172 (4.2)
1997	967,086	10,958 (1.1)	16,467 (1.7)	41,705 (4.3)
1998	976,088	11,561 (1.2)	17,107 (1.8)	44,036 (4.5)

Although this search has the same limitations as discussed before, the table roughly shows that from the 900,000 articles included annually in Current Contents, about 4 times more publications list water than soil. The table also shows that there is steady increase in all three areas, and total number of publications. The relative increase has been investigated by setting the 1994 figures at 100 (Fig. 2). The increase is similar for the three areas (about 5% per year), and higher than the increase in total number of publications.

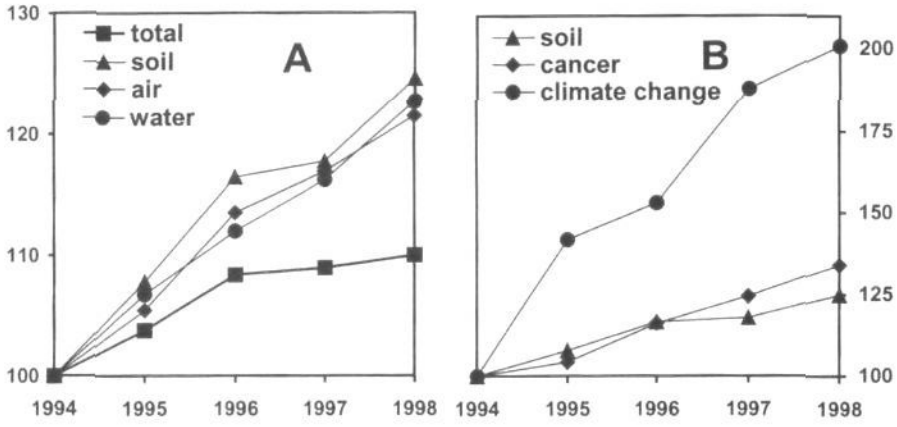

Fig. 2. Relative changes in number of publications on soil, air, and water in relation to total number of publications (**A**), and changes in relation to publications on cancer and climate change (**B**) (1994 = 100).

The increase in number of publications is similar to those on cancer, but largely exceeded by the increase on climate change publications. Absolute number of publications on climate change were, however, less than 1,000 in 1998.

5. Discussion

The number of soil science publications is increasing with about 5% per year. A similar figure was given by Yaalon (1989). Total number of soil science publications fairly well correspond to those reported by Yaalon (1964, 1989) and McDonald (1994). Some reasons for the increase are: increased pressure to publish, increased number of journals, computers facilitating manuscript preparation, computers generating publishable knowledge. And of course the number of publishing soil scientists has increased both absolutely and relatively. World-wide there are currently about 45,000 soil scientists which corresponds to about 19 publications per 100 soil scientists. Between 1974 and 1998, the number of ISSS members increased from 3,958 to 7,042 (van Baren et al., in press) and if it is assumed that the number of soil scientists grew in pace with the number of ISSS members, then there were about 25,500 soil scientists in 1974. This corresponds to 14 publications per soil scientist in 1974. So publication output per soil scientist increased by about 30% between 1974 and 1998.

Even more could have been published if all research which had yielded valuable results, had been written up. We do not know how much this is but it is probably decreasing. A colleague recently made an *inventory of unpublished agricultural research in Papua New Guinea, and counted about 400* unpublished manuscripts in research centres, which could potentially yield at least 160 scientific papers (Bourke, 1999). The survey indicated that much of the research has not been published. The situation may also prevail in other developing countries where English is not the mother tongue of the research scientists, and pressure to publish and competition is less.

Is the increasing number of publications not affecting the quality, or as someone recently questioned : "More haste, less science?". Hawkins (1999) found that more and more errors are being published in a leading international journal. Most errors were trivial but also technical errors are on the increase. Production standards are more difficult to maintain and authors are less careful and editors and reviewers less thorough. This is related to increasing complexity and technical sophistication by which errors escape attention of authors, reviewers and editors (Hawkins, 1999). In addition to the increasing number of errors, Geerts (1999) noted that the reader-friendliness of most atmospheric science journals declined over time. But there are also positive sounds. Satchell (1992) stated that the quality of papers improved

over time and that papers published 30 or 40 years ago would unlikely be accepted today. He also thinks that standards of acceptance for publication become more rigorous when pressure on journal editors increases. Both arguments suggest that quality improves with increasing number of publications.
A problem facing many soil scientists is keeping abreast of the fast-growing literature: "Who can keep up with all developments in his or her field and who will have time to read even the slightest minority of these publications?" (Satchell, 1992). The answer is strictly personal, but I would like to add to this that accessibility to literature may be as big a problem as keeping abreast. With many journals solely available in electronic form or being slashed from the library shelf, accessibility may be as problematic as quantity. We should be pleased now that 12 major commercial publishers have agreed to link references in the articles they publish to the source papers on the websites of their respective publications (Nature, 18 Nov. 1999). Let us hope it will become accessible for all soil scientists, and that the soil science society journals will be linked to this as well.
Some scientists question whether the increasing number of publications is a proper indication of the advancement of our knowledge, or is it simply the chase after attention – from our peers and the public (Franck, 1999)? That, I think, we should not worry about too much as developments in soil science are staggering, and apparently a lot of paper is needed to spread the message. Separating wheat from the chaff is, however, something different but perhaps journal reputation still guarantees the quality of a paper. The most important question is, however, whether and how soil science has contributed to society (Greenland, 1991). We all think we do, but the extent goes largely unquantified. Counting publications and quantifying impact on our peers is easier than quantifying the impact on society.
One more point. Is the increasing number of publications a sign that people read more? One could argue the other way around i.e., that those who write a lot have little time to read. Not reading and conducting cutting-edge science are of course mutually exclusive. The leisurely days of conducting science without prolific writing have long gone. More and more is being published about soils and there are no reasons to assume that this trend will reverse. Big changes are, however, on the way as – like it or not – the days of ink on paper are numbered (Anon, 1999), and so are the days to see your name in print.

Acknowledgements

I am greatly indebted to Miss K. Whitaker of the Natural Resources Group (CABI Information) at CAB International in Wallingford for kindly compiling and providing the data listed in Table 3, and to ir J. Kiebert of Elsevier Science in Amsterdam for providing various bits of information. ISI data were assembled with the help of librarians at the Australian National University in Canberra. Useful comments on the draft were obtained from Prof D.J. Greenland and my ISRIC colleagues Drs J.H.V. van Baren en ir N. Batjes. I remain solely answerable for the presented information and view points.

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In Reply to: "Publish or Perish (1) Journal Prices and Impact"

In the previous IUSS Bulletin (no. 95: 13-17) I have spoken about the relation between the price of soil science journals and their impact factor (see: http://www.bsss.bangor.ac.uk/iuss2.htm). I received some questions on the use of impact factors and how they are calculated and I would like to refer to a paper published in Science in 1972 (Vol. 178: 471-479) for a detailed explanation. The paper is written by Dr E. Garfield who invented the impact factor and – if I am correct – was also the founder of the ISI, which publishes these factors annually around September. Most editors, and certainly publishers, recognise the impact of these factors.
I further received a number of e-mails which require a reaction, particularly as this column is meant to stimulate discussion. Ms J. Fegent, managing editor of the "Australian Journal of Soil Research", mentioned that the journal is not published by a national society, as I had written, but by CSIRO Publishing on behalf of CSIRO and the Australian Academy of Science. I stand corrected. CSIRO Publishing is a not-for-profit organization. Having that information, I would still rank the journal as a society journal as not-for-profit is essentially different from the basic principle and strategy of commercial publishers.
Dr Richard Tucker, Senior Land Resources Officer in Alice Springs, suggested to explore the relation between costs, circulation (distribution) and impact factor. No doubt such analysis would be of interest but hard data are difficult to get. Most publishers will not freely provide the number of journal subscriptions nor their geographic distribution. I think that widely distributed journals tend to have higher impact factors: they have more readers and likely will be cited more, hence increasing the impact factor. Society journals are in general wider distributed than those from commercial publishers and may thus have disproportionally higher impact factors.
Dr R. Webster, editor of the "European Journal of Soil Science" noted also that some institutions in rich countries are cancelling their subscriptions. He mentions that universities look at journals over the whole field of their teaching and research and that they will tend to cut subscriptions to expensive journals. Thus, if a journal of soil science costs more per page or per paper than a biological journal then the former is likely to be cancelled, according to Dr Webster. He also mentioned that one university's library has stated that it would have to cancel ALL subscriptions to journals if prices and budgets continue on their present course. That would be very serious indeed, but the situation is different in different places. Mr G. Spikman, journal collection manager at Wageningen University, mentioned to me that they had cancelled 300 of their 4,000 paid subscriptions for the 1st January 2000. Not the number of pages per USD, but the following criteria were used: doubling of subscription (journal is available in nearby institutes); unnecessary subscriptions (for a complete collection but without a direct need for students and researchers); whether journals contain papers from Wageningen University researchers (if not: cancelled). The library policy has changed emphasising "quality rather than completeness of collection" (we all know that that is a cover-up for a slashed budget). Mr Spikman had, however, the impression that annual price increases for journals were currently below 10% thanks to the pressure on the commercial publishers. They used to be about 20%.
The libraries of the University of Wisconsin recently analyzed the costs of their journals (see below). The largest increase in journal subscription price occurred in a society journal and many journals from commercial publishers had price increases below those of national societies. The data were used as one of the criteria to cancel subscription, but as Ms Lois Komai, librarian at the Wisconsin University poin-

ted out, the most important criteria is faculty opinion. So my suggestion is to keep in close contact with *your library before they slash what you really need.*

Dr D. Czeschlik of Springer Verlag noted that "Biology and Fertility of Soils" was not included in the 1997 overview. The reason hereto was that the information on the subscription price was received too late. For your information, the impact factor of "Biology and Fertility of Soils" was 1.003 in 1997 and number of pages per USD was 0.5 in 1997. The journal ranks 8th on the list and has the lowest page/USD of all journals listed.

I recently received the 1998 impact factors and the picture has changed (Table 5). Despite the large inter-annual variation, the average sequence in top 10 of soil science journals is not changing much. The table also shows that most journals increased their subscription price and the average price increase was similar for journals of commercial publishers and national soil science societies (about 10% per year). Costs/use indicators were calculated as the annual subscription price divided by the number of time a particular journal was consulted in the Wisconsin libraries. As the data are from USA libraries, journals in which the majority of the papers are from the USA have a low cost/use value because they are consulted more often than journals publishing soil science from other parts of the world. This ratio obviously differs for libraries in different parts of the world. It seems that not-for-profit and society journals are not a better bargain in terms of cost/impact than those of commercial publishers – this opposed to journals in physics, neuroscience and economics (Butler, 1999), and the general belief.

Table 5. Soil science journals, change in costs and costs per use (Data from Wisconsin-Madison Libraries), and journal impact factors for 1997 and 1998

Rank †	Journal	Published by:	change in costs 1996/98‡ (in % y^{-1})	costs/use 1996/98‡ (in USD)	Impact factor 1997	1998
1	Soil Biology and Biochemistry	Commercial	+18	4.8	1.326	1.592
2	Soil Science Society of America Journal	National Soil Science Society	+33	0.4	1.336	1.587
3	Soil Science	Commercial	+9	1.0	1.253	1.400
4	European Journal of Soil Science	National Soil Science Societies	+13	13.0	1.811	1.364
5	Plant and Soil	Commercial	+1	9.9	1.193	1.216
6	Applied Soil Ecology	Commercial	nd	nd	1.127	1.157
7	Biology and Fertility of Soils	Commercial	+6	13.0	1.003	1.083
8	Geoderma	Commercial	+8	17.2	0.839	1.059
9	Australian Journal of Soil Research	National Soil Science Society/not-for-profit	+13	7.3	0.868	1.012
11	Soil Use and Management	National Soil Science Society/not-for-profit	+19	20.2	0.595	0.987
12	Canadian Journal of Soil Science	National Soil Science Society	-1	0.9	0.613	0.859
13	Journal of Soil and Water Conservation	Soil and Water Conservation Society	-18	0.3	0.617	0.833
14	Catena	Commercial	nd	nd	0.639	0.788

† ranking based on 1998 impact factor of ISI

‡ change in costs and costs per use calculated from 1996, 1997 and 1998 data published by the libraries of the University of Wisconsin-Madison http://www.wisc.edu/wendt/journals/costben.html

nd - means no data

JOURNAL DONATION RECIPIENTS SOUGHT

The Agronomic Science Foundation of the Soil Science Society of America is considering launching a program that would allow members leaving active employment to donate their Society journals to suitable recipients. To ensure that appropriate libraries in need benefit from any potential project, the foundation is seeking the names of possible recipients that would be unable to purchase journals. Recipients must be scientific, educational, or government institutions or libraries from areas such as Eastern Europe, Asia, Africa, or South America.

Members with names of potential journal recipients should forward a complete shipping address and contact person to Leann Malison at the foundation (lmalison@agronomy.org). If enough potential recipients are identified, the Agronomic Science Foundation board will consider launching the journal donation program soon.

From: Agronomy News, September 1999

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News from the IUSS Working Groups DM and RS

In 1999, the Working Groups DM and RS continued cooperation in organising a symposium in Kathmandu - Nepal in the period 22-27 August. The symposium with title »Remote sensing and GIS for monitoring soils and geomorphic processes to assist integrated development of mountainous land« was well attended with respect to regional spreading of the participants. The region was well represented in number by participants of Nepal, Bhutan and India, but also other parts of the world were represented, namely different countries in Europe as well as Iran, Thailand, Myanmar, Bangla Desh, Sri Lanka, China, Mexico and Canada.
The spin-off of the symposium will be served by this international character but also by the valuable cooperation with the International Centre for Integrated Mountain Development (ICIMOD - Kathmandu), hosting the symposium, and with the International Institute for Aerospace Survey and Earth Sciences (ITC, Enschede, The Netherlands) as well as the International Association of Geomorphologists (IAG).
The contribution from the side of geomorphologists was highly appreciated, despite this group being low in number. It certainly has to be encouraged in future.
The contributions in general were of high quality, that is the Remote Sensing and GIS techniques were properly used, which will encourage their application.
Still there were needs as formulated in the round table sessions, such as:

- the near future developments in Remote Sensing, being directed towards improvement of temporal and spatial resolutions, force the scientific community to prepare itself technically and scientifically;
- the maps on exploratory scale of environmental aspects, such as land degradation, have to be improved by incorporation of small scale Remote Sensing data;
- the need in developing countries for user friendly techniques on processing Remote Sensing data and recent progress in application of GIS ought to be served per region by training courses of short duration;
- more input is wanted of geomorphology in the study of dynamical aspects; it can act as a key science if human induced processes on land degradation are regarded as well.

The next symposium, jointly organised by the Working Groups DM and RS, will be in the period 14-15 July, 2000 as satellite workshops in Wageningen (The Netherlands) of the XIXth Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) to be held in the period 16-23 July in Amsterdam. In the Workshops, emphasis will be placed upon new techniques in Remote Sensing and on integration of small scale Remote sensing data with GIS based land resources information systems (such as SOTER), leading to improved exploratory mapping and monitoring of land degradation, soil fertility and land suitability assessment and other thematic spatial information..
For more information see section Meetings, Conferences and Symposia.

Wim Sombroek, Chair WG DM
Michel Mulders, Chair WG RS

Working Group »Soil Organic Fertilizers and Amendments«

Important Notice

Many Colleagues gave a positive reply to the call for collaboration by the Working Group » Soil Organic Fertilizers and Amendments« of the International Union of Soil Sciences published in the IUSS Bulletin No. 95 (1999/1) at pages 29-30. The group may rely now on a satisfying international participation, with about 40 national Societies co-ordinated with its activity.

Since the Group is still tryng to improve its efficiency and become more and more representative, all interested colleagues who did not answer until now are still cordially invited to fill the »Short Questionnaire« published at page 30 of the IUSS Bulletin No. 95 and send it back to me. **Please note that my e-mail address changed to** psequi@isnp.it and the old address will be deactivated soon.

Thank you for your attention and help,

Paolo Sequi
President of the Italian Society of Soil Science
and Chair of IUSS FA

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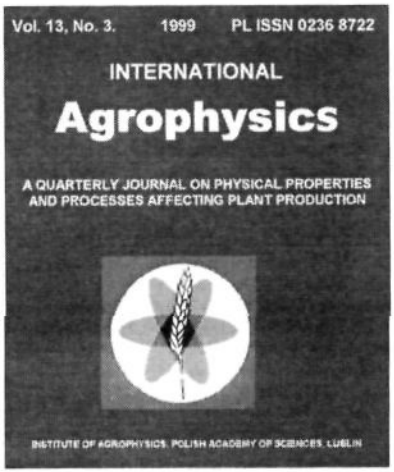

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International Agrophysics is published quarterly. The journal focusses on physical properties and processes affecting plant production. The main topics are: mass (water, air, plant nutrients) and energy (light, heat) transport in the soil-plant-atmosphere 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.
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First National Symposium on Plant Nutrition, Querétaro, Mexico

About 400 delegates participated in the First National Symposium on Plant Nutrition held in Queretaro, Mexico, September 20-23, 1998 at the Instituto Tecnologico y de Estudios Superiores de Monterrey. The Primer Simposio Nacional sobre Nutricion de Cultivos was sponsored by the Sociedad Mexicana de la Ciencia del Suelo. The event was organized by Coordinadora Nacional de Fundaciones Produce, Fundaciones Produce de Queretaro y Guanajuato, La Sociedad Mexicana de la Ciencia del Suelo, El Instituto Tecnologico y de Estudios Superiores de Monterrey, Campus Queretaro, El Gobierno del Estado de Queretaro, El Instituto Nacional de Investigaciones Forestales, Agricolas y Pecuarias, El Colegio de Postgraduados, El Instituto de la Potassa y el Fosforo y El Consejo Nacional de Ciencia y Tecnologia.

One of the exhibits at the Symposium in Queretaro

The oral and poster papers were presented in the following areas: Foliar fertilization, chemical analysis and diagnostic techniques, nutrition and postharvest quality, funding to conduct research on plant nutrition, fertigation, hydroponics, and organic agriculture. Three plenary papers were presented. On September 21, Gabriel Alcantar Gonzalez discussed plant nutrition in Mexico. On September 22, Yash P. Kalra's paper dealt with the North American Proficiency Testing Program for soil and plant analysis laboratories. On September 23, Carol Lovatt discussed management of foliar fertilization. All papers, except two, were in Spanish. The papers by Kalra and Lovatt were in English; a simultaneous translation into Spanish was provided for these two presentations. There were several interesting exhibits. At the symposium I got the opportunity of meeting some scientists (Andres Aguilar Santelises, Gabriel Alcantar Gonzalez, Jorge D. Etchevers Barra, Prometeo Sanchez Garcia, and Victor

Ordaz Chapparo) whom I had met at the 16th World Congress of Soil Science in Montpellier, France in August. I also met M.C. Rosa Maria Lopez Romero who had visited my laboratory in Edmonton a few days ago to discuss proficiency testing for soil and plant analysis.

Queretaro is a beautiful colonial city, 210 km northwest of Mexico City. The cultural program, including *mariachi band, in zocalo was great. The trip to Mexico gave me an opportunity to do some sight*-seeing after the symposium. Rosa Maria Lopez was my guide in Mexico City (population 23 million), the largest city in the world. Mexico City is the heart of Mexico and zocalo (main square) is the heart of Mexico City. Zocalo covers an area of about 25 hectares, only Moscow's Red Square is larger. Metro subway system carries five million riders daily. The National Museum of Anthropology displays priceless historic and cultural artifacts. Francisco and Nayibi Gavi showed me the San Juan Teotihuacan, 50 km northeast of Mexico City. The magnificent Pyramid of the Sun (60 m) is the world's third largest pyramid; only those of Cholula and Cheops, Egypt are bigger. The view from the top was breathtaking; the arduous climb of 248 steps was worth every step. In Texcoco, Francisco Gavi gave me a tour of the Colegio de Postgraduadaos en Ciencias Agricolas. Andres Aguilar Santelises took me to the historic Puebla.

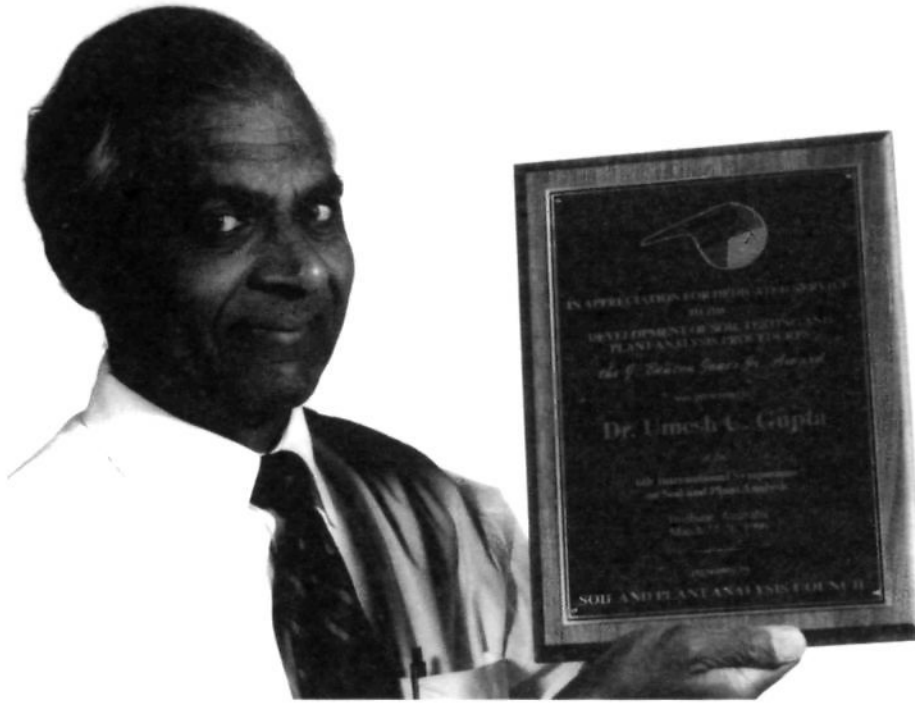
I was impressed by the quality and variety of fruits in Mexico. This reminded me of the array of fruits available in India and Thailand. I learnt a lot about fruit crops from Silvia Monica Aviles Marin. Although language was somewhat of a barrier, we were able to communicate very nicely using Latin names such as *Musa sapientum, Persea americana, Psidium guajava,* and *Punica granatum.* I am grateful to Gabriel Alcantar Gonzalez for inviting me to participate in the symposium. The organizing committee is to be complimented on a successful meeting. Nieves Rodriguez Mendoza helped me with Spanish-English translation. My trip to sunny Mexico was an unforgettable experience. Muchas gracias, Mexico ! Hasta la vista !

Yash P. Kalra, Canada

International Symposium on Soil and Plant Analysis, Australia

The 6th International Symposium on Soil and Plant Analysis was held at the Hilton Hotel in Brisbane, Queensland, Australia, March 22-26, 1999. The symposium was hosted by the Australian Soil and Plant Analysis Council. The theme was "Opportunities for the 21st century: Expanding the horizons for soil, plant, and water analysis". The objective of the symposium was "To bring together agricultural and natural resource scientists from around the world to disseminate information on methodology, terminology, interpretation, and application of soil, plant, and water analyses for the purpose of efficient resource management, sustainable production, and environmental protection".

The program included training workshops, plenary and poster papers, instrument exhibition, and tours. The Symposium was preceded by six half-day training workshops: (1) The human element in operating soil and plant analysis laboratories (2) Soil analysis: Interpretation and recommendation (3) Acid sufate soils (4) Quality analysis and laboratory accreditation (5) Plant analysis: Interpretation and recommendation, and (6) Chemistry in land resource assessment. The plenary sessions focused on (1) Analytical methods and quality assurance (2) Data presentation, interpretation, and communication (3) Applications in natural resource management
(4) Applications in sustainable production, and (5) Applications in food quality and environmental contamination. The poster presentations provided opportunities for maximum discussion and interaction among the participants.



Umesh C. Gupta received the prestigious J. Benton Jones, Jr. Award for his significant contributions in the development of soil testing and plant analysis.

The pre-symposium tour on March 20 and 21 visited the Sunshine Coast to view crops, soils, and magnificent scenery representative of coastal Queensland. It gave the opportunity to see some of Australia's unique native animals, tropical horticultural research station, forestry and pasture areas, and sugarcane trial sites. Access to the Cooloola National Park by a 4-wheel drive tour along the beach provided a magnificent view of the colored sands. For the mid-symposium tours on March 25, participants had three choices: Sunshine Coast north of Brisbane, south to the Gold Coast, and west (inland) from Brisbane. I took the last tour. It traveled through the Lockyer Valley (a major horticultural production area) to Toowoomba. It was a pleasant surprise to meet Wayne Strong there; Wayne and I were students at the University of Manitoba in the 1960s.

This is the first time that the Council's symposium was held south of the equator. The 7th International Symposium on Soil and Plant Analysis will be held in Edmonton, Canada in 2001. For further details visit the Council's web site (http://www.spcouncil.com).

Yash P. Kalra, Canada

6th International Meeting: Soils With a Mediterranean Type of Climate

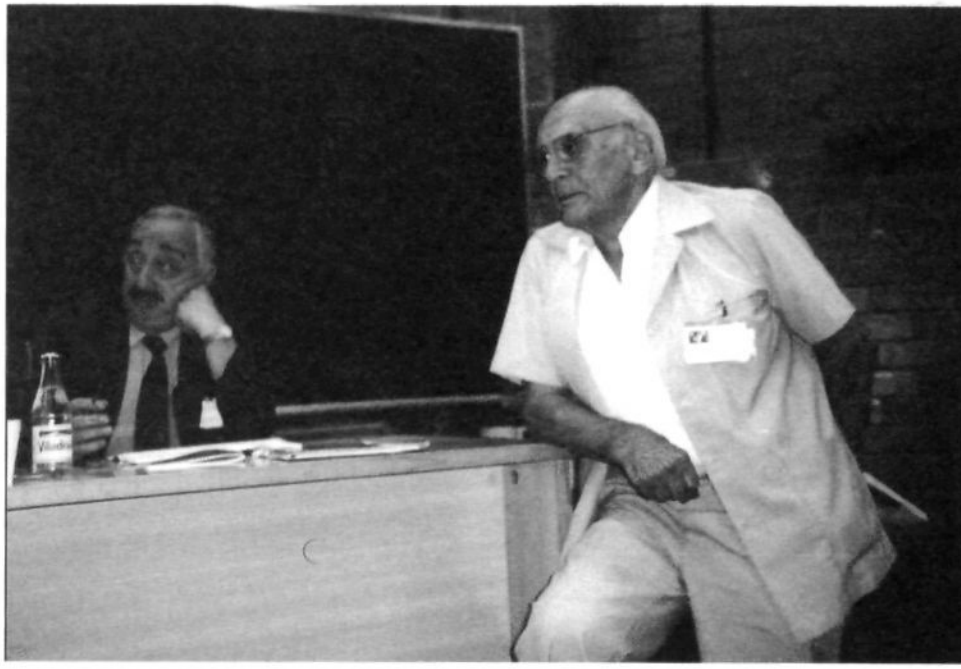
Barcelona, Spain, 4 – 9 July 1999

The a.m. Meeting took place on July 4-9, 1999, organized by the Faculty of Biology of the University of *Barcelona* (Spain). In contrast to previous meetings, this one had a large number of participants: approx. 400 scientists from 60 countries took part in the meeting. The great interest in this Meeting was due to the extension of subject matters. Participants did not only come from Mediterranean countries, but also from countries with a Mediterranean type of climate. The typical feature of this type of climate is abundant rainfall in winter, which accounts for its »dry« landscapes, with acidic soils. A Mediterranean type of climate is not only prevailing in countries situated in the littoral region of the Mediterranean Sea, but also around the Black Sea, in the Caucasian region, in Asia Minor and in parts of the Middle East, South Australia, South Africa, and the west coast of North America (California) and South America (Chile).

The initiator of the progressive transformation of this Meeting from a regional event to an international meeting was its organizer, Prof.Dr. Jaime Bech, Vice-Chair of Commission VIII, IUSS, a scientist with an immense knowledge (He has doctor's degrees in three branches of science: pharmacy, biology and geology), and inexhaustible energy, a brilliant expert for the nature, culture and history of Spain, especially of Catalonia.

Prof. Bech also expanded the subjects of the meeting. Besides Commission V – Soil Genesis, Classification and Cartography of IUSS, others, like Commission I – Soil Physics, Commission II – Soil Chemistry, Commission III – Soil Biology, Commission IV – Soil Fertility and Plant Nutrition, Commission VI – Soil Technology, Commission VII – Soil Mineralogy, and Commission VIII – Soils and the Environment also co-operated in the Meeting.

From left to right: Prof. D. Yaalon (Israel), Prof. A. Ruellan (France), Prof. J. Bech (Spain), Prof. C. Bergareche (Spain), Prof. J. Salicru (Spain)



Convenors of Commission V-1 Soil Genesis: Prof. T. Urushadze (Georgia) and Prof. D. Yaalon (Israel)

During the field trip

Prof. Alain Ruellan's speech on »The main rules of soil distribution in the Mediterranean world« during the plenary meeting at the beginning, contributed greatly to the success of the Meeting. In his speech, Prof. Ruellan summarized a tremendous amount of material and raised new questions concerning the genesis of soils in countries with a Mediterranean type of climate.

The Meeting included a 3-day field trip, in the course of which the 9 main types of soils in Catalonia were shown (Profondec, Petric, Leptic, Dystric, Luvisols, Luvic, Hypercalcic, Calcisols and Abruptic Lixisol).

One of the main topics of discussion among scientists from Europe (Prof. A. Ruellan, Prof. V. Targulian and Prof. T. Urushadze), Australia (Prof. R. Fitzpartick) and the UŞA (Prof. H. Smith, Prof. H. Eswaran) was the nature of soils with a red colour profile: Are they initially homogenous or not?

The organizers published a high-quality polygraphic collection of reports of the participants, as well as the programme of the Meeting with the guide book for the field trips.

The participants supported the proposal of the Italian scientists to hold the next meeting in Italy.

Prof. Tengiz F. Urushadze (Georgia)

XXIXth annual meeting of ESNA
(European Society for New Methods in Agricultural Research) and of the working group soil to plant transfer of UIR in Wye / UK,
8-12 September 1999

Report of the Chairman of working group 3 (soil-plant relationships)

The annual meeting was well attended and in total 42 papers were presented orally (25) or as posters (17) by scientists originating from 15 countries.
The first part of the sessions dealt with recent developments in terrestrial radioecology, addressing both agricultural and semi-natural environments (12 oral presentations, 2 posters). Mitchell (U.K.) reported on the present status of the fluxdatabase of UIR, which, due to its 17000 entries provides an excellent basis for applying or testing new model approaches. One paper was presented on the upward movement of mobile (Na, Cl) and less mobile (Cs) radionuclides in soil columns (Wadey/UK). Skarlou/Greece and Goncharova/Byelorussia highlighted important impact factors on soil-plant transfer of Cs and Sr as soil pH and ageing of contaminants/hot particles. Two presentations (Kirchner/Germany, Konopleva/Russia) focussed on successful soil scientific approaches to describe plant uptake of Cs and Sr taking into account ion competition in soil. Klemt/Germany presented an interesting model to estimate Cs-transfer to roe deer and highlighted the importance of mushroom in this respect. The important role of fungi for Cs-dynamics in forest soil was confirmed by the data of Nikolova/Bulgaria. Spiridonov/Russia presented a radioecological model describing Cs-dynamics in forest ecosystems. The FORESTLAND/FORTREE model is parameterized for both deciduous and coniferous forests. A set of three papers (Tkachenko/Ukraine, Goncharova/Byelorussia, Oncsik/Hungary) focussed on countermeasures. It became quite evident that the effect of applications of macro- and micronutrients, clay minerals and zeolithes on radionuclide soil-plant transfer is highly site specific and needs consideration of soil properties. Two papers described the long-term impact of radionuclide contamination on the collective dose of the population (Kravets/Ukraine, Goncharova/Byelorussia).

The contribution in the field of soil and plant sciences covered a broad range of topics. Influencing soil physical properties by applying soil conditioners (Sheta/Libya) was addressed as well as the impact of

scots pine originating from different countries on soil microbial activity (Kieliszewska-Rokicka/Poland) and the consequences of slash and burn agriculture on soil fertility in Indonesia (Ketterings/USA). The impact of heavy metal contaminations of soil was addressed by various papers (Kovácz/Hungary, Shumik/Ukraine, Roxana/Romania, Bujtas/Hungary). The last mentioned author presented an interesting approach using mobile heavy metal fractions to predict heavy metal plant uptake. The impact of P fertilizers on trace element uptake through alternation of soil pH was demonstrated by the paper of Osztoics/Hungary. Stanica/Romania presented interesting results on heavy metal contamination of apple trees with varying distances to a highway. N dynamics in the soil/plant system again was one of the main topics of this meeting. Gerzabek (Austria) evaluated the possibilities to use natural abundance of ^{15}N to quantify N-turnover from organic manures. Hejnak (Czech Republic) used ^{15}N applications to quantify the impact of soil pH on N-utilisation. Another ten papers focussed on the efficient use of N-fertilizers or other macronutrients (Nankova/Bulgaria, Gökman/Turkey, Budoi/Romania) including the impact of cereal varieties and the description of interesting models to optimize fertilizer applications.

One session focussed on economical aspects of fertilizer application in Turkey. The series of four oral presentations and 3 posters elaborated both on specific questions related to crops grown in Tokat province (Akca/Turkey) and general topics of global input-output analysis in the fertilizer sector or the suitability of organic farming for less developed countries (Karkacier/Turkey, Esengün/Turkey, Kizilaslan/Turkey, Akcay/Turkey).

Summing up we can conclude that we had a highly interesting meeting with lifely discussions in all sessions and we enjoyed the environment provided by our host institution.The proceedings of the meeting will be published later this year.

The XXXth annual meeting of ESNA will be held in Keszthely/Hungary between 26th and 30th August 1999 (information: Prof. A. Szabo, e-mail: H9623MED@ELLA.HU)

Martin H. Gerzabek (martin.gerzabek@arcs.ac.at)
Chairman working group 3 , Soil-plant relationships
Liaison officer of IUSS to UIR

XII International Conference on »Chemistry for the Protection of the Environment«

Nanjing, China, September 19-22, 1999

According to the decision of the Organizing Committee of the 11th CPE, the 12th International Conference on »Chemistry for the Protection of the Environment« (CPE) was held in Nanjing, China, from September 19-27, 1999. The Institute of Soil Science, Academia Sinica (ISSAS) acted as the local organizer. The former Director General of the Institute, Prof. Dr. Zhihong Cao, was elected to chair the Conference.

It was the first CPE Conference to be held in Asia, a fact that received a lot of attention, and it was therefore supported in various ways by many institutions, such as the International Union of Soil Sciences (IUSS), the Chinese Academy of Sciences (CAS), the Technical University of Lublin, Poland, and the local Jiangsu Provincial Government. In total, more than 120 participants from all five continents attended the Conference: over 80 delegates from China, India, Japan and Thailand; European scientists from Austria, Germany, Poland and the UK; participants from Australia and New Zealand; delegates from the USA; and also from Morocco, to represent the African continent. In addition to Dr. Pawlowski, the initiator of the CPE Conferences, Prof. Dr. W.E.H. Blum, Secretary-General of IUSS; Dr. D. Friedman, of the United States Environmental Protection Agency, Washington D.C.; Prof.Dr.

R. Horn, Director of the Institute of Soil Sciences and Plant Nutrition, Kiel, Germany; Prof. Dr. J. Glinski, Director of the Institute of Agrophysics, Polish Academy of Sciences, Lublin, Poland; Drs. R.J. Stevens and P. Christie of the Queens University of Belfast, UK; and Dr. R. Naidu, from CSIRO, Australia; and Prof. Dr. M.H. Wong, from BUHK attended the Conference.

From left to right: Dr. Y. Luo, Dr. T. Zhang, Dr. W.E.H. Blum, Dr. Zhihong Cao, Dr. M.H. Wong and Dr. R. Naidu, in front of the Global Soil Remediation Network Asia Center in Nanjing/China

Prof.Dr. Cao and his team worked hard to ensure the perfect organization of the event. Due to this fact, the proceedings of the Conference could be published before the Conference, with contributions from the keynote speakers and a large number of highly informative and original papers, which were presented orally or as posters.

Chair of the Conference, Prof. Dr. Zhihong Cao (3rd from left) and other participants of the Conference during the Banquet

On behalf of IUSS, Prof.Dr. Winfried E.H. Blum expressed his sincere congratulations to the Chair, Dr. Zhihong Cao and his colleagues, for their excellent work in the preparation of the of the Conference. He also presented an important keynote paper entitled »Land use – a chemical threat to the environment«. The three-day Conference consisted of two lecture sessions and one poster session. In total, 10 keynote speeches and 26 oral presentations, as well as a number of posters focussed on three main themes:

- mobility and bioavailability of nutrients and pollutants in soil and water;
- emission of greenhouse gases;
- control and remediation techniques for the protection of the environment.

These contributions cover the newest advances in environmental chemistry and environmental protection, as well as in practical technology.

At the Conference, it was announced that the Global Soil Remediation Network Asia Center would be established in Nanjing, China.

Canadian Society of Soil Science Annual Meeting, Charlottetown

The 45th Annual Meeting of the Canadian Society of Soil Science (CSSS) was held at the University of Prince Edward Island, Charlottetown, PEI on August 8-11, 1999 during the 79th Annual Conference of the Agricultural Institute of Canada (AIC) and its affiliated societies. It was hosted by the PEI Institute of Agrologists. The theme of the conference was "Knowledge and creativity: Keys to agriculture's future". The pre-conference tour on August 8 traveled across the central portion of PEI with stops at a vegetable farm, a private potato research facility, a mixed farm operation, and Agriculture and Agri-Food Canada's Research Farm. "A Taste of the Island", the welcome reception that evening, offered a chance to sample an assortment of fine foods produced in PEI, and was an excellent opportunity to make new friends and become reacquainted with old ones.

The CSSS technical sessions consisted of (1) Soil science: Concepts and methodology (2) Nutrient cycling (3) Soil technology and tillage research (4) Organic amendments, fertilizers, and nutrients (5) Soil fertility and testing (6) Soil quality, and (7) Soil biology. In addition, there were symposia on "Humic substances" and "Nutrient cycling".

Gary W. Petersen, President of the Soil Science Society of America (center) congratulating (left to right) Martin R. Carter, R. Gary Kachanoski, Yash P. Kalra, and Ahmet R. Mermut who were elected Fellows of the CSSS.

The highlight of the CSSS meeting was the Awards Banquet on August 10. Martin R. Carter, R. Gary Kachanoski, Yash P. Kalra, and Ahmet R. Mermut were elected CSSS Fellows. The C.F. Bentley and President's Awards were presented to students in recognition of excellence in oral and poster presentations. Travel and Student Book Awards were also presented. Loraine D. Bailey and John W.B. Stewart, CSSS members, received the AIC Fellowships. Banquet speaker Maurice Roy gave an interesting talk on "North shore impressions of PEI" with a show of breath-taking slides of the fragile sand dunes, bird and plant life, and PEI's unparalleled beauty.

There were two post-conference tours on August 11. The "Eastern PEI" tour included stops at a dairy farm operation, potato farm, blueberry farm, and a livestock operation. The "Land and sea" tour visited a mussel farm, a colony of harbor seals, Orwell Corner Historic Village, and the Rossignol Estate Winery. The accompanying persons program included a tour to "Anne's Land" and visit to the world-famous "Green Gables" house that inspired the many works of Lucie Maud Montgomery.

Yash P. Kalra, Canada

Soil Science Society of China

On October 19-22, 1999, the Soil Science Society of China convened its 9th National Conference, with a total of nearly 1000 delegates present and 22 volumes, with a total of 1142 papers (about 6,316,000 Chinese characters) submitted by the soil science societies of various provinces, cities and autonomous regions of China. The academic exchange at the conference was centered on the theme »Soil science marching towards the 21st century – raising soil quality and promoting sustainable agricultural development«. Twenty-six scientists delivered their papers, reviewing the past and presenting an outlook into the future of the study and education of soil science in China, as well as of research in the fields of soil quality, soil nutrients and fertilizers, soil and environment, and soil and water conservation. Professional committees held 21 workshops of special topics around the theme, conducting extensive exchange of the findings, experience and technologies of research in various branches of soil science in the last four years in China.

The 9th Board of Directors of the Soil Science Society of China was elected at the Conference, consisting of 146 members.

President:	Academician Prof. Zhu Zhaoliang
Exec. Vice-Pres. and Secretary-General:	Prof. Zhou Jianmin
Vice-Presidents:	Prof. Mao Daru
	Prof. Sun Yiheng
	Prof. Tian Junliang
	Prof. Li Jiakang
	Prof. Zhu Zhonglin
	Prof. Yu Rangshui

Address:
Soil Science Society of China
The Institute of Soil Science
Academia Sinica
P.O. Box No. 821
71 Beijing Road East
Nanjing
People's Republic of China
Fax: +86-(0)25-7712-663

Sociedad Ecuatoriana de la Ciencia del Suelo

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

President:	Dr. Fausto Maldonado
Vice President:	Dr. José Espinosa
Secretary:	Dr. Marcelo Calvache
Treasurer:	Ing. Editrudis Mendosa
Board Members:	Dr. Washington Padilla
	Ing. Leonardo Chamba
	Ing. Nelson Motato
	Ing. Saul Mestanza

The address of the Society is:

Gaspar de Villaroel # 154 y Eloy Alfaro
Casilla 17-17-980
Quito
Ecuador
E-mail: inpofos@uio.satnet.net

Soil Science Society of Iran

The 6th Congress of the Soil Science Society of Iran (SSSI) was held from 28 to 31 August, 1999 at the Ferdowsi University of Mashhad, in the Province of Khorassan. The Congress was attended by a great number of government officials and renowned scientists, academicians, students, and specialists from all over the country. More than 300 papers, approved by the scientific committee, were presented as oral contributions or posters. During the congress, papers were simultaneously presented in six different lecture halls. The papers covered various topics, from soil fertility and plant nutrition, soil erosion and conservation, soil physics, soil biology, soil chemistry and pollution, to soil genesis and land classification.

In his inauguration speech, Dr. Roozitalab, the President of SSSI, pointed out important issues related to soil and natural resources and steps that need to be taken towards sustainability. Then, Dr. Haghnia, from the Congress Secretariat, welcomed the audience and presented a thorough report on SSSI's activities. Finally, His Excellency, Dr. Issa Kalantari, Minister of Agriculture of the Islamic Republic of Iran, addressed the participants and emphasized the importance of soil and the role it plays in national production. On the final day of congress an 8-point resolution was prepared for submission to government authorities and decision makers. This resolution highlighted future research needs and opens the way for research as well as for the formulation of policies to implement soil conservation and safeguarding natural resources and genetic diversity.

During the General Assembly of the Congress a new Board of Directors of the Society was elected:

President:	Dr. Mohammad Hassan Roozitalab
Secretary:	Dr. Najaf Ali Karimian
Treasurer:	Eng. Mohammad Hassan Banaie

Committee members:	Dr. Mostafa Karimian Eghbal
	Dr. Gholam Hossain Haghnia
	Dr. Mohammad Reza Neishaburi
	Dr. Abolghasem Tavassoli
Auditors:	Dr. Amir Fotovat
	Dr. Ahmad Golchin
Substitute members:	Dr. Amir Hossain Charkhabi
	Eng. Mohammad Reza Balali

On the last day of the meeting, it was decided to hold the 7th SSSI Congress in September 2001.

Sociedad Latinoamericana de la Ciencia del Suelo

14 ° Congreso Latinoamericano de la Ciencia del Suelo
CLACS-99

PUCON – TEMUCO – CHILE

8 – 12 noviembre de 1999

La Universidad de La Frontera de Temuco, organizadora del 14ª CLACS-99, 50ª Congreso de la Sociedad Agronómica de Chile y 9ª Congreso Nacional de la Sociedad Chilena de la Ciencia del Suelo, con el patrocinio de la Sociedad Latinoamericana de la Ciencia del Suelo, Sociedad Agronómica de Chile y Sociedad Chilena de la Ciencia del Suelo, bajo el tema del Congreso

"EL SUELO Y SU BIODIVERSIDAD HACEN SOSTENIBLE LA VIDA EN EL PLANETA"

SUELO ⇔ AMBIENTE ⇔ VIDA

Han cumplido con el propósito de reunir a la comunidad científica de Iberoamérica y de otros continentes con el objetivo de intercambiar experiencias y conocimientos en torno al tema de la convocatoria, es así como se presentaron 4 conferencias Plenarias a cargo de los profesores Robert White (Australia), Winfried H. Blum (Austria), P.M. Huang (Canadá) y Zilmar Ziller Marcos (Brasil), 64 Conferencias temáticas distribuidas en las 12 Comisiones que funcionaron paralela y sincronizadamente durante el desarrollo del evento, 218 ponencias orales y 529 posters presentados por científicos provenientes de 28 países, a saber, Alemania, Argentina, Australia, Austria, Bolivia, Brasil, Canadá Chile, Colombia, Costa Rica, Cuba, Ecuador, España, Francia, Guatemala, Holanda, India, Italia, Japón, México, Panamá, Perú, Portugal, República Dominicana, USA, UK, Uruguay y Venezuela.

Itilier Salazar-Quintana
Presidente 14ª Congreso Latinoamericano de la Ciencia del Suelo, CLACS-99, y
Presidente Sociedad Latinoamericana de la Ciencia del Suelo. 1996 - 1999
Pucón, Temuco Chile

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Sociedad Latinoamericana de la Ciencia del Suelo
Reunión del consejo durante el14 ° Congreso Latinoamericano de la Ciencia del Suelo (CLACS-99)

Durante el desarrollo del 14ªCLACS-99 se realizaron 2 reuniones del Consejo de la Sociedad Latinoamericana de la Ciencia del Suelo presidida por el presidente Itilier Salazar-Quintana, donde concurrieron 14 países representados por los presidentes de las Sociedades Nacionales de la Ciencia del Suelo, entre ellos,

Argentina:	Gustavo Moscatelli
Bolivia:	Vladimir Orsag
Brasil:	Antonio Ramalho
Chile:	Itilier Salazar-Quintana
Colombia:	Raúl Zapata
Costa Rica:	Floria Bertsch
Cuba:	Rafael Villegas
Ecuador:	José Espinoza
España:	José Aguilar Ruiz
Guatemala:	José Luis Colocho
México:	Victor Ordaz Chaparro
Perú:	Raúl Bazan
Portugal :	Joao Coutinho
Venezuela:	Carmen Rivero, y

El Secretario General de la Unión Internacional de la Ciencia del Suelo, Prof. W.H. Blum.

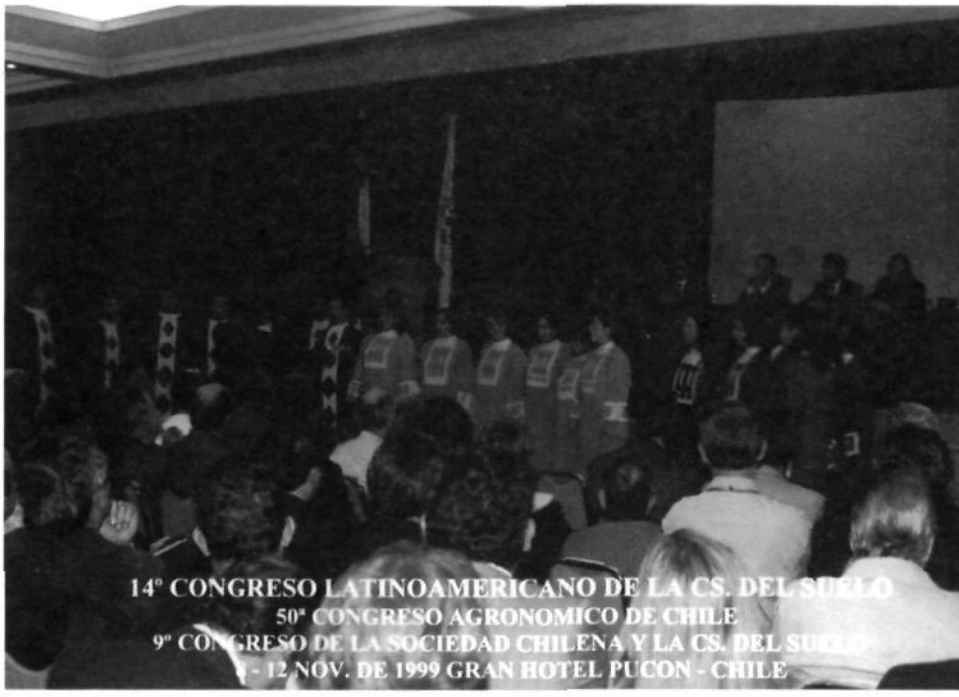
El presidente da cuenta de la organización del 14ª CLACS-99, su estructura, tema del congreso y objetivo de las giras científicas intracongreso y postcongreso. También informa de la creación de una pagina web, cuya dirección es: www.ufro.cl/slcs e invita a cada Asociación a enviar información para completar la homepage.

El Prof. Blum informa de la nueva propuesta de estructura de la Unión Internacional de la Ciencia del Suelo a sancionar en reunión de consejo de la IUSS el segundo trimestre del año 2000 en Tailandia, reunión a la cual se invitó a los representantes de la SLCS

Se expusieron los dos temas de trabajo asignados en la asamblea realizada en Montpellier, Francia a cargo de Ildefonso Pla (Venezuela) y Juan Gallardo (España) en relación a la inserción/participación de la Sociedad Latinoamericana de la Ciencia del Suelo en la Unión Internacional de la Ciencia del Suelo y Jorge Etchevers en relación a una revista que represente a la Sociedad Latinoamericana de la Ciencia del Suelo. En torno este último punto se nombró una nueva comisión de estudio integrada por Raúl Zapata (Colombia), Rafael Villegas (Cuba), Ildefonso Pla (Venezuela), Juan Gallardo (España) y Victor Ordaz (México) para evaluar las revistas publicadas por cada Asociación y vertir su informe para ser publicado en la página web de la SLCS durante el mes de julio del año 2000.

Se leyó la solicitud de Cuba para organizar el 15ª CLACS el año 2001. Siendo la única postulación formal se aprobó por unanimidad quedando México y Costa Rica como alternativa. Argentina manifestó su interés en organizar el 16ª CLACS el año 2005.

Se designó como el nuevo presidente de la Sociedad Latinoamericana de la Ciencia del Suelo al Dr. Rafael Villegas y El Secretario General Dr. Olegario Muñiz, ambos de Cuba.



Acto inaugural del Congreso

El Secretario General de la UICS, Prof. W.E.H. Blum, inaugurando el Congreso

de izquierda a derecha: Prof. Itilier Salazar-Quintana, Presidente de la SLCS, Prof. Eduardo Navarrete, Decano, Universidad de la Frontera, Prof. W.E.H. Blum, Secretario General, UICS, Dr. Claudio Werly Kupfer, Presidente, Soc. Agronómica de Chile

Miembros del Consejo de la Sociedad Latinoamericana de la Ciencia del Suelo

Dra. Bertsch, Presidente SCS de Costa Rica, Dr. Salazar-Quintana, Presidente SLCS y Dr. Sanchez, Presidente SCS de Perú

Participantes del Congreso durante el acto de clausura

El Dr.Rafael Villegas, Presidente de la SLCS por el período 1999-2001 agradece la designación e invita al presidente saliente, Itilier Salazar-Quintana a integrar el Comité Organizador del 15ª CLACS y a una reunión de trabajo en la Habana durante el mes de enero 2000 con el propósito de transmitir información y esperiencias del 14ºCLACS-99 a los integrantes del nuevo Comité Organizador y de planificar la promoción del próximo evento en Cuba.

Itilier Salazar-Quintana
Presidente Soc. Latinoamericana de la Ciencia del Suelo. 1996-1999

El presidente del proximo Congreso, el 15o CLACS, en Cuba, en 2001, Dr. R. Villegas, junto a las tres alternativas para el siguiente Congreso, en 2004: Floria Bertsch/Costa Rica, Gustavo Moscatilli/Argentina y Victor Ordaz/Mexico.

Malaysian Society of Soil Science

Management Committee 1999/2000

Management Committee

President:	Dr. Zulkifli Hj. Shamsuddin
Vice President:	Dr. Ghulam Mohd. Hashim
Vice President (Peninsular):	Dr. Mohd. Khanif bin Yusop
Vice President (Sarawak):	Dr. Eswaran Padmanabhan
Vice President (Sabah):	Mr. Deratil Boaklan
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Honorary Treasurer:	Dr. Anuar Abd. Rahim
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	Mr. Amir Hamzah Yusak
	Mr. Ahmad Tarmizi Mohamad
Auditors:	Dr. Mohd. Mokhtaruddin Ab. Manan
	Dr. Hawar Jaafar

Address of the Society:

Malaysian Society of Soil Science
(Persatuan Sains Tanah Malaysia)
Abdul Razak Hamzah
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INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE BEZIEHUNGEN

Soil Ecological Tour in Russia

The traditional Soil Ecological Tour in Russia took place in July and August 1999. It attracted 55 participants from Austria, Germany and Sweden who traveled 2500 km in 19 days.
During the excursion about 35 profiles were shown, illustrating the most important soil types of west Russia. The tour started in the southern taiga zone north of Moscow (*Podzols, Podzoluvisols, Arenosols, Histosols*), crossed the forest-steppe (*Luvisols, Greyzems*) and typical steppe zones (*Phaeozems, Chernozems*). The unique biosphere reserve near Kursk with a deep Russian Chernozem, as well as 100 years old experiments on sustainable land use initiated by Dokuchaev were demonstrated. Semi-desert soils (*Calcisols, Kastanozems, Solonetzes, Vertisols*) and an evolutionary sequence of *Fluvisols* within the Volga valley were shown near Volgograd.
During a visit to a collective farm, a kolkhoz, in the Chernozem zone the most important problems of modern agriculture in Russia were discussed, especially land management and infrastructure.
During the excursion the famous historical monuments and museums in Moscow, Volgograd and some small cities were visited. Information about the 1999 tour and the next tour in the summer of 2000 (program, costs, camp stops, pictures etc.) will be shown at the Internet site: **http://www.uni-hohenheim.de/~kuzyakov/soil-ex.htm.**
Additional information, may also be obtained from:
Dr. Yakov Kuzyakov, Institute of Soil Science and Land Evaluation (310), University of Hohenheim, D-70599 Stuttgart, Germany. Tel.: +49-(0)711-459-3669, Fax: +49-(0)711-459-4071, e-mail: kuzyakov@uni-hohenheim.de.

Bericht über die 6. Expertentagung der Arbeitsgruppe Bodenschutz 12. bis 14. Oktober 1999 in Wiener Neustadt (Niederösterreich)

Die Darstellung nationaler wie auch internationaler Probleme, der Vergleich von Kartierungen und erarbeiteten Daten sowie das Suchen nach gemeinsamen Lösungen war die erklärte Zielsetzung der 6. Expertentagung der Arbeitsgruppe Bodenschutz der Arge Donauländer. Diese fand vom 12. bis 14. Oktober 1999 unter dem Vorsitz von Dr. M. Dzatko und dem organisatorischen Leiter, Univ.-Prof. Dr. O. Nestroy, in Wiener Neustadt statt.

Im Rahmen dieser von 26 Experten aus Bayern, der Tschechischen Republik, Ober- und Niederösterreich, Wien, dem Burgenland, der Steiermark, Ungarn, der Slowakei, Kroatien und Bulgarien gestalteten Tagung fand auch eine Halbtagsexkursion in den Raum Eisenstadt – St. Margarethen und Oslip statt, die einen Einblick in die physisch-geographische Ausstattung wie auch landwirtschaftliche Produktionsmöglichkeiten dieser Räume vermittelte.

Um bessere Relationen zwischen land- und forstwirtschaftlicher Nutzung zur Zahl der Bewohner einer bestimmten Region erstellen zu können, schlug Dr. M. Dzatko in seinem einleitenden Referat ein Programm vor, daß die folgenden Punkte umfaßt:

1. Regionalisierung der Spezifika und Prioritäten des Bodenschutzes nach internationalen Standards;
2. Monitoring und gegenseitiger Datenaustausch;

3. Bewertung des Einflusses der Kontamination und Bodendegradation;
4. ökologische Aspekte und Bodenschutz;
5. Abfallbehandlung;
6. legislative Rahmenbedingungen und Möglichkeiten der Anwendung;
7. neue Konzepte und Modelle des Bodenschutzes für die kommenden Generationen.

Im Mittelpunkt stand aber eine Reihe von 15minütigen Referaten mit anschließender Diskussion über die Themenbereiche Bodenzustandsinventuren und Bodenschutz in Österreich, Bodenbewertung und nachhaltige Bodenbewirtschaftung, Bodenerosion und Naturschutz sowie Bodenbelastung und Bodenschutz.

Auf die Inhalte dieser Vorträge im einzelnen einzugehen würde den vorgegebenen Rahmen sprengen; deshalb werden nur die Vortragenden und die Titel der gehaltenen Vorträge im folgenden angeführt.

Michael Wandl: Aufbau der digitalen Bodenkarte am Beispiel des KB Gänserndorf;
Otto H. Danneberg: Einbindungen der Österreichischen Bodenzustandsinventuren in die digitale Bodenkarte;
Josef Funovits: Die Entwicklung der Bodennutzung im Burgenland;
Othmar Nestroy: Bodenschutz in Österreich – ein nicht nur optimistischer Zustandsbericht;
Walter Martin: Bewertung natürlicher Bodenfunktionen und Bodengefährdungen als Voraussetzungen für eine nachhaltige Nutzung der Böden;
Marietta H. Buzás und Péter Márth: Erhaltung der Bodenfruchtbarkeit in der nachhaltigen Landwirschaft in Ungarn;
Pavol Jambor: Land resources dynamic in Slovakia;
Michael Dzatko: Sustainable land use in large/small scale;
Endre Molnár und Maria Szabó: Nature conservation and land use parctice – soil and environment (case studies);
Blanka Ilavská und Michal Svicek: Evaluation of potential and actual water erosion;
Pavel Novák, T. Krejca und Svetlana Zlatu_ková: Calculation of retention water capacity of soils of large areas (Example: River catchment of upper Morava);
Stefan Gorbanov: Soil degradation and soil conservation in Bulgaria;
Ján Morovic: Soil contamination in the Slovak Republik – Damage caused by the Soviet Army;
Ivan _imunic: Stand von Schwermetallen und Atrazin in hydromeliorierten Pseudogley-Gley Böden;
Milan Sánka und Jaroslav Stana: Neue vorgeschlagene Grenzwerte für die Risikostoffe in landwirtschaftlichen Böden der CR;
Erwin Szlezak: Kompostierung biogener Abfälle und Reste als Beitrag zum Bodenschutz, dargestellt am Beispiel des Bundeslandes Niederösterreich.

Diese Vorträge werden zu Beginn des kommenden Jahres in gedruckter Form vorliegen.

In einer abschließenden Generaldiskussion wurden nochmals die in den einzelnen Referaten angesprochenen Probleme artikuliert und ein Arbeitsprogramm bis zu kommenden Tagung, deren Ort zwar noch nicht fixiert ist, die aber in der zweiten oder dritten Oktoberwoche 2000 stattfinden wird, erstellt.

O. Nestroy

ASIA SOIL CONSERVATION NETWORK FOR THE HUMID TROPICS (ASOCON)

The deterioration of natural resources (forests, land and water) in the Asia and the Pacific region, has become a serious problem. Forest burning, deforestation, shifting cultivation, overgrazing, land misuse or poor land-use, shortage of land due to the ever increasing population and lack of sound farming practices are the major causes of this degradation.

These practices result in serious soil erosion in the uplands, thus turning the productive land into degraded land. The on site effects are the loss of economic benefits; loss of bio-diversity; change of the social orientation and opportunities, while off site effects are sedimentation and flood damages in the lowland, and other related environmental disturbances.

In line with the FAO international program in accelerating conservation of lands and in the spirit of Technical Cooperation among Developing Countries (TCDC) seven countries established ASOCON in 1993. This inter-country network involves China, Indonesia, Malaysia, Papua New Guinea, the Philippines, Thailand, and Vietnam. It develops programs of common interest related to tackling the problems of maintaining sustainable and environmentally sound land use at the level of the small-scale farmer.

The network aims to assist its member countries for the development and dissemination of soil and water conservation practices especially for small-scale farmers.
Member countries of ASOCON have agreed to the need for a long term planning in relation to the conservation of lands of Asia and the Pacific as outlined in the Conservation of Lands in Asia and Pacific (CLASP) document. In this respect it was noted that considerable variation exist between countries in the terms of existing Long Term Policies.

Countries were therefore encouraged to seek endorsement of CLASP as a guideline or framework of action towards Long Term Land Conservation Policies and Strategies through existing networks such as ASOCON National Committees, National Soil Conservation Committees and Agenda 21 strategy groups.

Possible mechanisms for achieving this were identified by each participating country.

The network of ASOCON identified possibilities for exchange of information and experience in fields of interest, on the understanding that existing initiatives under international and bilateral assistance program be fully taken into account to minimize duplication of effort and wasted resources.

The network strongly recommends cooperation and where possible, pooling of resources to design and implement national, bilateral and international participatory and integrated projects and program in land conservation involving all sectors of society, with particular emphasis on women and underprivileged groups, the public and private sectors, Government and Non-Government organizations, in order to secure the conservation and sustainable development of lands in Asia and the Pacific.
ASOCON publishes its activities in the periodical CONTOUR Newsletter.

China. This country has set up around 10,000 projects of small watersheds management which are linked to soil conservation activities, mobilization of farmers to participate in land development and incentives followed to land tenure program. This program covers about 3 million ha annually.

Vietnam. Vietnam has accelerated the program of re-greening, agro-forestry, and reforestation to rehabilitate barren lands. In farming system development they incorporate soil conservation measures to increase farmers income and sustain land productivity.

Thailand. Thailand **has** been successful in demonstrating various technologies and approaches to conserve and rehabilitate lands such as integrated conservation system, hillside ditches, vegetative control, agro-forestry, sustainable farming system, hedgerow inter-cropping, alley cropping, etc. Soil Doctor program widely implemented in order to improve skill and awareness of the community in managing their lands. Soil Doctor program extended to the individual farm level, help and suggest to know how to identify the status of soil and land, techniques of training for soil conservationist and farm leaders.

Malaysia. This country has been expanding the program of land rehabilitation and consolidation. They consolidated individual farmer's land into mini estates; management was carried out on the basis of one large farm. Soil conservation activities provide perennial tree crops as the land use type combined with terraces, covered by grasses, and leguminous crops.

Indonesia. As in the other countries, Indonesia has also promoted the national program in conserving forest, land and water through watershed management and soil conservation project activities. To implement this program, Indonesia has established Centers of Land Rehabilitation and Soil Conservation (LRSC) covering around 472 priority watersheds throughout the country. In addition, about 200 Soil Conservation and Re-greening Services have been established throughout the country to accelerate the program. To strengthen and improve the farmers' capital, a conservation farming credit program has been introduced.

Papua New Guinea. PNG has put the program to increase environmental concerns and public awareness on the effect of improper land use on top national priority (Provincial Land Use Policies Plans, "an integrated land use planning approach«).

The development of Conservation Farming Systems (CFS) project is the nation's second priority; this has reached the majority of the farmers whose livelihood is depending on subsistence agriculture.

The Philippines. This nation has developed various Slope Agricultural Lands Technologies (SALT) for managing sloping agriculture and watershed lands, expanding soil and water conservation activities, developing conservation farming systems to the farmers, using »Gintung Ani« approach meaning »golden harvest" campaign and GAMA (Gintung Ani for developing marginal areas) to alleviate poverty on the marginal sloping lands. This country offers training in GIS, develops information systems and uniform baseline data storage retrieval systems, and is a central exchange venue for ASOCON members and other interested parties.

For more information about ASOCON and its activities, see the CONTOUR Newsletter and/or the homepage http://www. asocon.org.

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

Dr. John Ryan, of ICARDA, Syria, has been elected SSSA Fellow.

Dr. Umesh C. Gupta, Emeritus research scientist, received the international J. Benton Jones Award in recognition of his dedicated service to the development of soil and plant analysis.

Dr. Bernardo van Raij has received the 1999 International Fertilizer Award for a career dedicated to research in soil fertility analysis.

IN MEMORIAM

DR. ANDRÉS AGUILAR SANTELISES (1946 – 1999)

Prof. Andrés Aguilar Santelises, Past President of ISSS, passed away on *November 5, 1999*.

Born in Mexico City, he began his studies at the Instituto Politécnico Nacional, at the Escuela Nacional de Ciencias Biológicas, where he obtained the title of »Licenciado« (1970). He carried out his postgraduate studies at the University of Wageningen, Netherlands (MSc., 1973 and Ph.D., 1981).

From 1974 on he held the position of Professor at the *Escuela Nacional de Agricultura* and also at the *Universidad Autónoma Chapingo*, where he was Professor in Chair for soil chemistry, soil chemical analysis, and soil fertility.

In his research work, he headed several projects in the fields of chemical analysis, soil acidification and application of lime to soils, and soil productivity.

He promoted a great number of research projects, succeeding in obtaining financial support from outside for their realization, among them many projects of special importance through international participation, as e.g.:

INSTRUCT (Canada, Ecuador y Mexico);

ELISA -development of soil quality indices (EEC, Costa Rica, Nicaragua and Mexico).

He was also the leader of the working group that created the »Atlas Ecológico de la Cuenca Hidrográfica del Río Lerma« (Ecological Atlas of the Hydrographical Basin of Río Lerma).

As the Secretary-General of the Mexican Society of Soil Science (Sociedad Mexicana de la Ciencia del Suelo) from 1987 to1988, and as its President from 1989 to 1990, he gave new impulses to research in soil science in Mexico.

He also was President of the Mexican Society of Soil Science from 1989 to 1990.

He headed a group of scientists who succeeded in making Mexico the venue of the XV World Congress of Soil Science, which was organized under his presidency in the year 1994.

From 1990 to 1994 he was President of the International Society of Soil Science.

At the Universidad Autónoma Chapingo he was the founder and co-ordinator of the Research Program on Natural Resources and Ecology (Programa de Investigación en Recursos Naturales y Ecología) (1995 – 1998).

Until his death he was the Editor in Chief of the scientific journal »Terra«, the official bulletin of the Mexican Soil Science Society.

He was Deputy Director of Research and Director of Internal Affairs of the Department of Soils.

He also had a leadership function within the Academic Assistance Program of the Universidad Autónoma de Chapingo from 1984 to 1987.

Prof. Aguilar is survived by a wife, Ina and a daughter, Lydia, to whom we express our heartfelt condolences.

The sudden death of Prof. Aguilar leaves a great gap, not only in the Mexican, but also in the international soil science community, for which he was always active. He participated in many developments, including the new administrative and scientific structure of IUSS. We will miss him as a scientist and a friend.

He will be remembered for his important contributions to soil science and he will be sorely missed by his family, friends and colleagues all over the world.

Winfried E.H. Blum

Prof.Dr. Vukota Okiljevic

1925 - 1998

Prof. Vukota Okiljevic, who was an outstanding pedologist over a period of four decades, died on October 15, 1998, at the age of 73. He was born on May 4, 1925 in Platice, near Gacko, Bosnia and Herzegovina. He took part in World War II as a soldier, fighting for the liberation of Yugoslavia. After the war he finished secondary school and graduated at the Agricultural Faculty in Belgrade, at the Department of Arable Crops, in 1950.

After graduating, he was employed at the Institute for Research in Agriculture, Department of Agropedology and Agrochemisty in the period from 1951 to 1955, from 1955 to 1960 at the Agricultural

Station in Prijedor, as an advisor for pedology and arable crops. He was Head of this institution for three years and, during that time, established a soil laboratory there. In 1959, he went to the USA (Arizona, Tennessee, Alabama, South and North Carolina), specializing on soil fertility, fertilizers and soil liming.

He received the degree of D.Sc. in Pedology at the Agricultural Faculty in Belgrade, in 1965.

After the foundation of the Agricultural Institute in Banja Luka, he taught chemistry, pedology and agrochemistry there for 13 years (1960-1973). His students still remember him as an excellent teacher.

Dr. Okiljevic worked at the Institute for Scientific Research »Agroekonomik« in Belgrade, as a scientific collaborator, from 1973 to 1978. During this period he worked in Yugoslavia as well as abroad: in Iraq, in Egypt and Algeria, on the topics of soil research, soil classification and land reclamation.

From 1978 to 1990 he was the Head of the Department of Plant Nutrition and Land Reclamation of the Agricultural College in Banja Luka. During that time, apart from his outstanding scientific work, he succeeded in procuring modern field and laboratory equipment for the Department, ensuring remarkable progress in soil research. He retired in 1990, but continued to teach pedology and petrography as professor emeritus at the Faculty of Agriculture and Forestry in Banja Luka.

He had been a member of the Soil Science Society of Yugoslavia since its foundation in 1953 and a member of the International Society of Soil Science (ISSS) from 1978 on, participating in several World Soils Congresses. He was also a member of the Soil Science Society of America (SSSA) and the American Society of Agronomy (ASA).

Prof. Okiljevic was an eminent soil scientist. He is sorely missed by his wife and sons, and he will be remembered by all his colleagues and students for his important contributions to the development of Pedology and Agrochemistry in Bosnia Herzegovina and abroad.

M. Markovic, M.Sc., Agricultural Faculty
Banja Luka, Republica Srpska, Bosnia and Herzegovina

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

2nd International Conference: Geospatial Information in Agriculture and Forestry, Disney's Coronado Springs Resort, Florida, USA, January 10-12, 2000.
ERIM International, Inc. Agriculture/Forestry Conference, P.O. Box 134008, Ann Arbor, MI 48113-4008; Tel: +1-734-994-1200, ext. 3234; Fax: +1-734-994-5123; E-mail: wallman@erim-int.com.

International Conference on Diffuse Pollution, Bangkok, Thailand, January 16-20, 2000.
Information: Ms. Nitayaporn Tonmanee, OLD, Phaholyothin road, Chatuchak, 10900 Bangkok, Thailand. E-mail: ldd@mozart.inet.co.th; Website: http://www.ldd.go.th/iawq.htm.

3rd International Conference on Geoscience Education, University of New South Wales, Sydney, Australia, January 16-21, 2000.
Information: Website: http://www.agso.gov.au/geoscied

International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century, New Delhi, India, February 14-18, 2000.
Information: Dr. A.K. Singh, Secretary General, Intl. Conf. on Managing Nat. Res., Indian Society of Soil Science, Indian Agricultural Research Institute, New Delhi – 110 012, India; Tel: +91-11-573-1494; Fax: +91-11-575-5529; E-mail: icmnr@bic-iari.ren.nic.in.

31st Annual Conference and Trade Exposition of the International Erosion Control Association, Palm Springs, California, USA, February 21-25, 2000.
Information: IECA 2000 Conference Program, P.O. Box 774904, Steamboat Springs, CO 80477-4904, USA; Tel: 800-455-4322 or +1-970-879-3010; Fax: +1-970-879-8563; E-mail: ecinfo@ieca.org; Website: http://www.eica.org

2nd European Symposium: »NMR in Soil Science«, Freising-Weihenstephan, Germany, 27 Feb. -1 March 2000
Information: Heike Knicker Lehrstuhl für Bodenkunde, TU München, 85350 Freising-Weihenstephan, E-mail: knicker@weihenstephan.de; Tel: +49-8161-714423; Fax: +49-8161-714466.
Symposium Office: Maureen Schwarz (mschwarz@weihenstephan.de)
Web: http://www.weihenstephan.de/bk/index.htm

2nd World Water Forum and Ministerial Conference, The Hague, Netherlands, March 16-22, 2000.
Information: Fax: +31-70-348-67-92; E-mail: office@worldwaterforum.org; Web: www.worldwaterfurom.org.

International Conference on Soil Dynamics (ICSD-IV), Adelaide, Australia, March 26-30, 2000.
Information: Conventions Worldwide (ICSD-IV), P.O.Box 44, Fundle Mall, SA 5000, Adelaide, Australia. http://www.unisa.edu.au/icsd-iv/index.htm.

International Conference: Soil, Food and People: A Biointensive Model for the New Century, Davis, California, USA, March 27-29, 2000.
Information: Web: www.universityextension.ucdavis.edu/biointensive.

3rd International Congress of the European Society for Soil Conservation: »Man and Soil at the Third Millennium«, Valencia, Spain, March 28 – April 1, 2000
Information: Sabina Asins, Centro de Investigaciones sobre Desertificación, Camí de la Marjal, s/n, Apartado Oficial, 46470 Albal, Valencia, Spain.
Tel: +34-96-1260126; Fax: +34-96-1263908; E-mail: sabina.asins@uv.es; http://www.uv.es/cide or http://www.zalf.de/ESSC/essc.htm

4th European Symposium on »European Farming and Rural Systems Research and Extension into the Next Millennium: Environmental, Agricultural and Socio-Economic Issues«, Volos, Greece, April 3-7, 2000.
Information: Symposium Secretariat, Dr. Alex Koutsouris, Development Agency of Karditsa, Artesianou 5, 43100 Karditsa, Greece.
Tel.: +30-441-74666/26345/42363; Fax: +30-441-71636; E-mail: alex@kar.forthnet.gr

Conference of the British Society of Soil Science: Soil, Environment and Human Health, Birmingham, UK, April 7 and 8, 2000.
Information: Dr. Jim Gauld, BSSS, Cunningham Building, Macaulay Land Use Research Institute, Craigiebuckler, Aberdeen, AB15 8QH, UK; E-mail: j.gauld@mluri.sari.ac.uk or k.ross@mluri.sari.ac.uk.

10th IAOPN International Colloquium:Plant Nutrition for the Next Millennium, Cairo, Egypt, April 8-13, 2000.
Information: Intl. Assoc. for the Optimization of Plant Nutrition, Fax: +202 361 0850.

International Symposium on Integrated Water Resources Management, Davis, CA, USA, April 9-12, 2000.
Information: Prof. Miguel A. Marino, 139 Veihmeyer Hall (LAWR), University of California, Davis, CA 95616-8628, USA; E-mail: mamarino@ucdavis.edu; Website: http://conferences.ucdavis.edu.

4th International Symposium on Environmental Biotechnology, Noordwijkerhout, The Netherlands, April 10-12, 2000
Information: ISEB 4, c/o S. Hartmans, Industrial Microbiology, P.O. Box 8129, 6700 EV Wageningen, The Netherlands; Fax: +31-317-484978; iseb@imb.ftns.wau.nl.

XVII Congreso Argentino de la Ciencia del Suelo, Mar del Plata, 11-14 abril 2000.
Información: Comisión Organizadora, Unidad Integrada Balcarce, CC 276, 7620 Balcarce. Fax: +54-2266-421756; E-mail: cacsxvii@balcarce.inta.gov.ar; Website: www.inta.gov.ar/crbsass/balcarce.

International Symposium on Gully Erosion under Global Change, Leuven, Belgium, April 16-19, 2000.
Information: Jeroen Nachtergaele, Laboratory for Experimental Geomorphology, K.U. Leuven, Redingenstraat 16, 3000 Leuven, Belgium.
Tel: +32-16-326426; Fax: +32-16-326400; E-mail: jeroen.nachtergaele@geo.kuleuven.ac.be.

International Conference on Paddy Soil Fertility (IUSS), Clark Field, Pampanga, Philippines, April 24-27, 2000.
Information: The Secretariat, Intl. Conf. on Paddy Soil Fertility, Bureau of Soils and Water Management, Department of Agriculture, Elliptical Road, Diliman, Quezon City 1100, Philippines. Tel: +632-920-4382; Fax: +632-920-4318; E-mail: bswm@pworld.net.ph.

5th International Symposium on Environmental Geochemistry, Cape Town, South Africa, April 24-29, 2000.
Information: Dr. Martin V. Fey, Department of Geological Sciences, University of Cape Town, 7700 Rondebosch, South Africa; Tel: +27-21-650-2903; Fax: -3783; E-mail: fey@geology.uct.ac.za. Homepage: http://www.uct.ac.za/depts/geolsci/menviro/main.html.

International Conference on: »The Future of the Mediterranean Rural Environment – Prospects for Sustainable Land Use and Management, Menemen, Turkey, May 8-11, 2000.
Information: Gill Burrows, Silsoe College, Cranfield University, Silsoe, Beds. MK45 4DT, UK.
Fax: +44-1525-863-344; E-mail: g.burrows@cranfield.ac.uk.
Website: http://www.silsoe.cranfield.ac.uk/ForthcomingEvents

3rd Symposium ISMOM2000 »Soil Mineral-Organic Matter-Microorganisms Interactions and Ecosystem Health«, Naples and Capri, Italy, May 22-26, 2000.
Information: Prof. Antonio Violante, Chairman, ISMOM2000, Dipartimento di Scienze Chimico-Agriarie, Università di Napoli »Federico II«, Via Università 100, 80055 Portici (Napoli) Italy; Tel: +39-081-7885317; Fax: -7755130; E-mail: violante@unina.it.

International Conference on Tracers and Modelling in Hydrogeology » TraM'2000«, Liège, Belgium, May 23-26, 2000.
Information: LGIH University of Liège, B-19 Sart-Tilman, B-4000 Liège, Tel.: +32-4-366-22-17; Fax: +32-4-366-28-17; Email: fcheslet@ulg.ac.be; http://www.lgih.ulg.ac.be/tram2000.

30th Annual International Symosium on Environmental Analytical Chemistry (30th ISEAC), Espoo, Finland, June 13-16, 2000.
Information: IAEAC Secretariat, Mrs. M. Frei-Häusler, P.O. Box 46, CH-4123 Allschwil 2, Switzerland; Tel: +41-61-481-27-89; Fax: +41-61-482-08-05; E-mail: iaeacmfrei@access.ch.

International Conference: GIS for the 21st Century, Lisbon, Portugal, June 14-16, 2000.
Information: Gabriella Cosutta, Conference Secretariat, GIS, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK; Tel.: +44(0)23-80-293223; Fax: +44(0)23-80-292853; E-mail: gcosutta@wessex.ac.uk.

3rd International Workshop on Sustainable Land Use Planning »Fragmentation and Land Use Planning: Analysis and Beyond«, Wagningen, The Netherlands, June 19-21, 2000.
Information: WAU-Land Use Planning, Prof. Hubert van Lier, Fax: +31-317-482166; E-mail: isomul@users.rpv.wau.nl; Website: http://www.wau.nl/rpv/isomul/isomul5.htm.

15th ISTRO Conference »Tillage at the Threshold of the 21st Century: Looking Ahead«, Fort Worth, Texas, USA, July 2-7, 2000.
Information: Dr. John Morrison, ISTRO-2000 Conference, USDA-ARS-GSWRL; 808 East Blackland Road, Temple, Texas 76502, USA; Tel: +1-254-770-6507; Fax: -6561; E-mail ISTRO@brc.tamus.edu;

International Symposium on the Role of Erosion and Sediment Transport in Nutrient and Contaminant Transfer, Waterloo, Ontario, Canada, July 10-14, 2000.
Information: Dr. M. Stone, School of Urban and Regional Planning, 200 University Avenue, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1. Tel.: +1-519-888-4567 ext. 3067; Fax: 1-519-725-2827; E-mail: mstone@fes.uwaterloo.ca.; http://www.uwaterloo.ca/research/iahs2000

V International Symposium and Field Workshop on Paleopedology (ISFWP) »Paleosols and Modern Soils as Stages of Continuous Soil Formation«, Suzdal, Russia, July 10-16, 2000.
Information: Dr. A.O. Makeev, Soil Institute of the Faculty of Soil Science, MSU, Moscow, Russia; E-mail: makeev@fadr.msu.ru; Tel./Fax: (+7-095)932-9195.

4th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences »ACCURACY 2000«, Amsterdam, The Netherlands, July 12-14, 2000.
Information: Conference Office, Universiteit van Amsterdam, P.O. Box 19268, 1000 GG Amsterdam, The Netherlands, Tel: +31-20-525-4791; +31-20-525-4799; E-mail: congres@bdu.uva.nl.; http://www.gis.wau.nl/Accuracy2000.

1st International Conference: Soils of Urban, Industrial, Traffic and Mining Areas, Essen, Germany, July 12-18, 2000.
Information: Prof.Dr. Wolfgang Burghardt, FB 9 – Angewandte Bodenkunde, Universität-GH Essen, Postfach 103 764, 45117 Essen, Germany; Tel: +49-201-183-3754 or 2390, Fax: +49-201-183-2390; E-mail: wolfgang.burghardt@uni-essen.de; Website: http://www.uni-essen.de/bodenkunde.

International Workshops (WS) of IUSS Working Groups DM and RS, WS 8-9, July 14-15, 2000 (Wageningen, The Netherlands) preceeding the ISPRS Congress »Geoinformation for all« in Amsterdam in period July 16-23, 2000. WS8: Advances in application of Remote sensing and GIS to mapping and monitoring soil and land cover. WS9: Land resources Information Systems for Assessment and Monitoring.
Information WS 8 (RS): Mr. Dhruba P. Shrestha, ITC, P.O. Box 6, 7500 AA Enschede, The Netherlands. Tel: +31-53-48-74-264. Fax: +31-53-48-74-399. E-mail: dhruba@itc.nl. Internet://www.itc.nl
Information WS 9 (DM): Dr. Vincent van Engelen, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands. Tel: +31-317-47-17-36. Fax: +31-317-47-17-00. E-mail: vanengelen@isric.nl

5th International Conference on Precision Agriculture, Minneapolis, Minnesota, USA. July 16-19, 2000.
Information: Dr. P. Robert, University of Minnesota, Precision Agriculture Center;
1991, Upper Buford Circle, St. Paul, MN 55108, USA. Fax: 612/624-4223;
E-mail: probert@soils.umn.edu; Website:http://precision.agri.umn.edu/

6th International Congress on Applied Mineralogy, Göttingen and Hannover, Germany, July 16-22, 2000.
Information: ICAM 2000 Office, BGR/NLfB, P.O. Box 510153, 30631 Hannover, Germany; Tel.: +49-511-643-2298; Fax: +49-511-643-3685; E-mail: ICAM2000@bgr.de; Website: http://www/bgr.de/ICAM2000.

XIXth Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) »Geoinformation for All«, Amsterdam, The Netherlands, July 16-23, 2000.
Information: ISPRS Organizing Committee, Attn. Ms. Saskia Tempelman, c/o ITC, P.O. Box 6, 7500 AA Enschede, The Netherlands, Tel: +31-53-487-4358; Fax: +31-53-487-4335; E-mail: isprs@itc.nl; Website: http://www.itc.nl/~isprs.

International Symposium on Extraordinary Floods »The Extremes of the Extremes«, Reykjavík, Iceland, July 17-19, 2000.
Information: Extremes 2000 Conference Secretariat, Helga P. Finnsdóttir, Hydrological Service, National Energy Authority, Grensásvegi 9, IS-108 Reykjavík, Iceland; E-mail: extremes2000@os.is; Website: http://www.os.is/vatnam/extremes2000.

10th International Meeting of the International Humic Substances Society (IHSS10) »Entering the Third Millennium With a Common Approach to Humic Substances and Organic Matter in Water, Soil and Sediments«, *Toulouse, France, July 24-28, 2000.*
Information: PROGEP-Florence Foucaud, »IHSS 10«, 18 chemin de la Loge, 31078 Toulouse Cedex 4, France. Tel: +33-(0)5 62 25 23 80; Fax: +33-(0)5 62 25 23 18; E-mail: Progep@ensigct.fr.

31st International Geological Congress and GEOEXPO'2000, Rio de Janeiro, Brazil, August 6-17, 2000.
Information: 31st IGC, Secretariat Bureau, Av. Pasteur, 404-ANEXO 31 IGC, Urca, Rio de Janeiro RJ, CEP 22 290-240 Brazil; Tel: +55-212-95-5847; Fax: +55-212-95-8094; E-mail: 31igc@cristal.cprm.gov.br.

XXI World Congress of the International Union of Forest Research Organizations (IUFRO), Kuala Lumpur, Malaysia, August 7-12, 2000.
Information: Chair of the Organizing Committee, Forest Research Institute, Kepong, 52109 Kuala Lumpur, Malaysia; Fax: +603-636-7753; E-mail: iufroxxi@frim.gov.my; Website: http://frim.gov.my/iufro.html.

11th International Working Meeting on Soil Micromorphology, Amsterdam, The Netherlands: The Meeting had to be cancelled.

3rd International Crop Science Congress: Crop Science 2000 – Meeting Future Human Needs, Hamburg, Germany, August 17-22, 2000.
Information: Fax: +49-40-3569-2269; E-mail: crop-science@cch.de; Website: www.cch.de/CROP-SCIENCE.

5th International Symposium on Environmental Geotechnology and Global Sustainable Development, Belo Horizonte, Brazil, August 17-23, 2000.
Escola de Engenharia, Universidade Federal de Minas Gerais, Avenida do Contorno, 842 sala 104, Belo Horizonte, Minas Gerais, CEP 30 110-060 – Brazil, Fax: +55-31-2381793; Tel: +55-31-2381742; E-mail: cassia@etg.ufmg.br, Website: http://www.5iseggsd.eng.ufmg.br.

XVI National Conference of the Romanian Soil Science Society: »Sustainable uses of soil and land resources and environmental quality in Bucovina«, Suceava, August 23-28, 2000.
Information: Prof. Dr. Gh. Lupascu, Universit »Al.I. Cuza« Iasi, B-dul Carol 20A, 6600 Iasi, Romania, E-mail: glupascu@gemma.geo.uaic.ro.

IFOAM 2000: »The World Grows Organic«, Conference of the International Federation of Organic Agriculture Movements, Basel, Switzerland, August 28-31, 2000.
Information: IFOAM 2000 c/o FiBL, Postfach, CH-5070 Frick, Switzerland; E-mail: ifoam2000@fibl.ch; Website: www.ifoam2000.ch.

International Soil Forum 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.

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; 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.

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.

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: Dr. Joop Steenvoorden, DLO Winand Staring Centre, Postbox 125, 6700 AC Wageinigen, The Netherlands; Fax: +31-317-424812; E-mail: j.h.a.m.steenvoorden@sc.dlo.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.

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 or 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. Mercks/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.mercks@agr.kuleuven.ac.be or seppe.deckers@agr.kuleuven.ac.be.

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 NuclearTechniques 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.

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.

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 and Fax: +54-11-4481-1688; E-mail: isco2000@cirn.inta.gov.ar or ISCO2000@mail.agro.uba.ar; Website: http://agro.uba.ar.

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.

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; Website: lincoln.ac.nz/cted/nzsss/.

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@dada.it

6th Scientific Assembly of the International Association of Hydrological Sciences (IAHS), 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.

14th International Plant Nutrition Colloquium, Hannover, Germany, July 28 – August 3, 2001.
Information: Fax: +49-511-762-3611; E-mail: ipnc@mbox.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.

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, 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; 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.

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.

3rd International Conference on Land Degradation (IUSS Sub-Comm. C and IUSS WG LD), Rio de Janeiro, Brazil, September 16-21, 2001.
Information: E-mail: webmaster@cnps.embrapa.br; Website: www.cnps.embrapa.br/ICLD

VIth International Symposium and Field Workshop on Paleopedology (ISFWP), Mexico City, Mexico, October 7-11, 2001.
Information: Dr. Jaime Urrutia Fucugaucci, UNAM, Mexico, E-mail: juf@tonatiuh.igeofcu.unam.mx; Tel: +52-56-22-41-22; Fax: +52-55-50-24-86;
or: Prof.Dr. Arnt Bronger, University of Kiel, Germany, E-mail: bronger@geographie.uni-kiel.de, Fax: +49-431-880-4658.

2002

17th World Congress of Soil Science«Soil Science: Confronting New Realities in the 21st Century«, Bangkok, Thailand, August 14-20, 2002.
Information: 17th World Congress of Soil Science, Kasetsart Golden Jubilee Administration and Information Center (1st floor), Kasetsart University, P.O. Box 1048, Bangkok 10903, Thailand; Fax: (662)940-5788; E-mail: o.sfst@nontri.ku.ac.th; Web: http://www.17wcss.ku.ac.th.

INTERNATIONAL TRAINING COURSES
COURS INTERNATIONAUX DE FORMATION
INTERNATIONALE FORTBILDUNGSKURSE

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; 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 Mangement**
- **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. 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 and epg@ifeva.edu.ar.
8

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: Prof.Dr. G. Stoops, Chairman Steering Committee, Programme Secretariat, Krijgslaan 281, B-9000 Gent, Belgium; Tel: +32-9-264-46-18; Fax: +32-9-264-49-91; E-mail: PLRprog.adm@rug.ac.be.
8

The Interactive Remote Instructional System (IRIS®) is an internationally recognized distance learning program in the hydrologic and environmental sciences and genineering. This porgram 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; Web: http://geology.wright.edu/iris.html.

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Short Postgraduate Course on Soil and Plant Analysis and Data Handling
Wageningen, the Netherlands, May1 – 26, 2000.
Organized by the Wageningen University (WU), in co-operation with the International Agricultural Centre (IAC) and the International Soil Reference and Information Centre (ISRIC).
Information: International Agricultural Centre (IAC), Lawickse Allee 11, P.O. Box 88
6700 AB Wageningen, The Netherlands; Tel.: +31-317-490-111; Fax: +31-317-418-552; E-mail: IAC@IAC.AGRO.NL; Telegrams: INTAS; Telex: 45888-INTAS NL.

The Katholieke Universiteit Leuven and the Vrije Universiteit Brussel offer, among others a:
2-year Master of Science Programme in Water Resources Engineering for undergraduates, faculty staff, project engineers, staff of ministries etc.
The programme provides advanced training in information technology, mathematical modelling, and decision support systems with application to water resources problems. Course options are hydrology, irrigation, waste water treatment and aquatic ecology.
Information: Institute for Land and Water Management, K.U. Leven, Vital Decosterstraat 102, 3000 Leuven, Belgium. Tel: +32-16-32-97-45; Fax: +32-16-32-97-60; E-mail: iupware@agr.kuleuven.ac.be. or: Laboratory of Hydrology, V.U. B., Pleinlaan 2, 1050 Brussel, Belgium. Tel: +32-2-629-30-21; Fax: +32-2-629-30-22; E-mail: fdesmedt@vub.ac.be.
9

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:
- MSc. Degree Courses: Geoinformation for Sustainable Soil Resource Management
- MSc Degree Course: Rural Land Ecology – Agriculture, Conservation and Environment
- Professional Master Degree Course: Rural Land Ecology Survey
- Msc Degree Course: Environmental Systems Analysis and Monitoring

Information: ITC, Student Registration Office, Attn. Mrs. A Scheggetman, P.O.Box 6, 7500 AA Enschede, The Netherlands, Tel: +31-(0)53-4874-205; Fax: +31-(0)53-4874-238; E-mail: education@itc.nl; Website: http://www.itc.nl.
For information on the **ITC's Natural Resources Management Programme**, please contact:
Drs. T.M. Loran, Tel: +31-53-4874545; Fax: +31-53-4874399; E-mail: lorantm@itc.nl.
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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).

ICRA, Centre International pour la Recherche Agricole orientée vers le Développement - International Centre for Development Oriented Research in Agriculture
Formation post-académique pour de jeunes chercheurs agricoles des pays en voie de développement et leurs collègues des pays développés qui ont une expérience de travail dans des pays en voie de développement.
Post-academic training for young agricultural scientists from developing countries and their colleagues from developed countries who have some working experience in developing countries.
Information: The Director of ICRA, P.O.Box 88, 6700 AB Wageningen, The Netherlands.
Fax: +31-317-427046; E-mail: icra@iac.agro.nl; http://icra.agro.nl
or: ICRA-Agropolis International, Av. Agropolis, 34394 Montpellier CX5, France; Fax: +33-4-67-04-75-26; E-mail: icra@agropolis.fr; http://icra.agropolis.fr
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The University of East Anglia, Norwich, UK, offers a specialist training for development. Tailor-made courses are organized in different fields, e.g.:

- **Natural resource policy and management**
- **Agroforestry and cropping systems**
- **Farming systems research**
- **Land use planning**
- **Rangeland, livestock and pastoralism**
- **Fisheries assessment and management**
- **Demographic and population studies**
- **HIV/AIDS impact assessment**
- **Industrial development and policy**

and others

It also offers a 10-week **Short Course on Sustainable Information Systems.**
Information: The Overseas Development Group, University of East Anglia, Norwich NR4 7TJ United Kingdom; Tel: +44-1603-456-410; Fax: +44-1603-505-262; Telex: +51-317210 BUREAU G ODG/UEA; E-mail: odg.train.@uea.ac.uk.

The Wageningen Agricultural University offers an International Postgraduate Programme in different fields, e.g.:
Msc Courses in Agricultural Economics and Management; Agricultural Engineering; Animal Science; Biotechnology; Crop Science, Ecological Agriculture, Environmental Sciences, Soil and Water, Urban Environmental Management etc., as well as a **PhD Programme.**
Information: Ms. Jeanine W.M. Hermans,Dean, Office for International Students, Wageningen Agricultural Unversity, 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.
Wageningen Agricultural University, Laboratory of Soil Science & Geology, P.O.Box 37, 6700 AA Wageningen, The Netherlands. Fax: +31-317-482419; E-mail: michel.mulders@bodlan.beng.wau.nl.

Lincoln University, New Zealand

MSc Course on Resource Management, New Zealand, 2 years.
Information: Lincoln University, International Centre, P.O.Box 94, Canterbury, New Zealand. Fax: +64-3-3253879; E-mail: wwwic@lincoln.ac.nz.

Cranfield University, United Kingdom

- Msc Course on Land Resource Management, United Kingdom, 1 year.
- Msc Course on Soil Physics and Soil Management, United Kingdom, 3 months.
- Msc Course on Soil Conservation, United Kingdom, 10 weeks
- MSc Course on Land Resource Management, United Kingdom, 1 year.
- Water Management, United Kingdom, 3 months.

Information: Cranfield University, School of Agriculture, Food and Environment, Admissions Office, Silsoe, Bedford MK45 4DT, UK. Fax: +44-1525-863316; E-mail: admissions@cranfield.ac.uk.

CNEARC, France

Techniques d'Irrigation, France, 5 semaines.
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Enquiries to: Amor MTIMET, Direction des Sols, 30 rue Alain Savary, 1002 Tunis, Tunisia; Fax: +216-1-718-208.

Regenwasserversickerung und Bodenschutz, mit Beiträgen der Fachtagung des Fachausschusses Regenwasserversickerung im Bundesverband Boden e.V.
Bearbeitet von Prof. Dr. W. Burghardt, B. Mohs und Dr. G. Winzig.
Reihe BVB-Materialien, Band 2, 1999, 148 Seiten, 14,4x21 cm, kartoniert, ISBN 3 503 04865 0.
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Proceedings of the International Wind Erosion Symposium/Workshop. CD-ROM. Kansas State University Agricultural Experiment Station, Manhattan, 1999.
This CD-ROM contains the proceedings of the above event, held 3-5 June 1997, at Kansas State University, Manhattan. The symposium celebrated 50 years of *wind erosion research by the USDA, Agriculture* Research Service, Wind Erosion Research Unit, in cooperation with Kansas State University. The major sections of the disc are: manuscripts and abstracts; slide show of the history of the Wind Erosion Research Unit; tour reports, breakout session reports; organizer contact information. The contents of the disc can also be accessed on the web at: http://www.weru.ksu.edu/symposium/index.htm. It also contains links to sites visited on the tours.
Orders to: Symposium 97, USDA-ARS WERU, 1007 Throckmorton Hall, Kansas State University, Manhattan, KS 66506, USA. Fax: +1-785-5326528. E-mail: symp@weru.ksu.edu.

IFA World Fertilizer Use Manual. CD-ROM. W. Wichmann, coordination and editor, A. Finck, introduction. International Fertilizer Industry Association, Paris.
This manual is a 600-page handbook, containing detailed information on current fertilizer use recommendations and practices, for a wide range of crops. Following an introduction on fertilzers and their efficient use, there are chapters on individual crops or group of crops. There is information on more than 100 crops grown for food and renewable raw materials. Each chapter contains: information on the biology of the crop; plant and soil analysis data; nutrient uptake and removal figures; recommendations for fertilizer use; current fertilizer practice in different countries; further reading. The files are available in both HTML and RTF formats.
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ChinaFood . Can China Feed It? CD-ROM. G.K. Heilig. IIASA, Laxenburg, 1999.
Does China has enough arable land and water to feed its population in 2025? How serious is the degradation of the soil? Will there be a further increase in meat consumption? Is cropland area declining due to construction activities? Will China import large amounts of cereals and destabilize world grain markets? The ChinaFood CD-ROM discusses and answers these and related questions related to China's food prospects. The analyses are embedded into a hyperlink document together with hundreds of related tables, charts, maps, and remote sensing images. Also included is a large number of links to China-related Internet resources. This work was carried out in the framework of the Land-use Change Project of the International Institute for Applied Systems Analysis (IIASA).
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Biopile design, Operation, and Maintenance Handbook for treating Hydrocarbon-Contaminated Soils. F.M. von Fahnestock, G. B. Wickramanayake,R.J. Kratzke and W.R. Major. Battelle Press, Columbus, 1998, xi + 163 p., plus CD-ROM. ISBN 1-57477-035-7. Softcover.

This book gives the reader the knowledge and tools to efficiently select, design, construct, operate, maintain, and close out a biopile system. The included software package enables easy estimation of capital, operating and unit treatment costs.

The handbook starts with a general biopile technology overview and continues with detailed descriptions of selection criteria, regulatory issues, design parameters, and construction procedures. The designs can be readily adapted for the specific needs of the reader. Furthermore, the book covers operation and maintenance topics, including biopile system management, sampling and analysis methods, regulatory interactions, and health and safety requirements. It also includes ready to use calculation sheets with completed problem checklists, and data sheets. Other appendices include a general health and safety plan and a troubleshooting guide. Price: USD 54.95.

Orders to: Battelle Press, 505 King Avenue, Columbus, OH 43201-2693, USA. Fax: 1-614 4243819. E-mail: press@battelle.org.

Land Use & Land Cover Change in West & Central Africa. A Workshop to develop a collaborative regional research effort. START Report No. 1. H. Virji, C. Fleming, a.o., editors. International START Secretariat, Washington, 1998.

The West and Central African region encompasses 14 countries, with diverse biophysical conditions and generally low levels of economic development. In parts of the West African region, land cover has been extensively altered for a number of uses ranging from agriculture, pastoral bush burning, materials extraction and transportation. In contrast, the Central African region contains the second largest moist tropical forest of the world, undergoing rapid exploitation, albeit not as drastic as in the case of West Africa. These contrasting situations provide a unique opportunity to consider regional processes of land-use/cover change and to draw lessons on possible sustainable land-use activities. A workshop was held in Accra, November 1997, to: (1) review the state-of-scientific understanding of regional Land Use and Land Cover Change (LUCC) issues in the context of global change and to identify issues and challenges for further consideration: (2) develop a collaborative LUCC-related research effort in Central and West Africa: and (3) identify a core group of scientists and develop strategies for formulating a regional network of scientists who collaborate in a focused regional effort on impacts and implications of global changes and regional land use/cover change.

This report comprises keynote lectures and summaries of major thematic presentations, summaries of outputs from various working groups and the overall recommendations.

Orders to: International START Secretariat, 2000 Florida Avenue NW, Suite 200, Washington, DC 20009, USA. Fax: +1- 202-457-5859. E-mail: Start@kosmos.agu.org.

Guidelines for Environmental Assessments and Traditional Knowledge. P. Croal. Canadian International Development Agency, 1997, 74 p. Softcover.

Development projects that have a significant effect on the environment are being carried out at an ever-increasing pace. The significance of the loss of natural habitat on the biodiversity of the world is large, and may eventually represent a survival issue for all of humankind. One large segment of human population is already being affected on a large scale. Indigenous people live on 20% of the world's landmass, often in areas of nature least affected by humans. Modern use of natural resources often harms the well being of indigenous dwellers and past practices have not been as careful of the needs and rights as is necessary. Thus, developing guidelines on how to include indigenous people in the decision-making process about their future is a crucial.

The present guidelines, to be tested, suggest a framework within which managers of environmental assessment and developing planning projects can ensure appropriate inclusion of indigenous people and their traditional knowledge as part of the process. A useful publication for soil scientists who work in the areas concerned, also in view to possibly increase indigenous soils knowledge in the guidelines.

Contacts can be taken up with Dr. Peter Croal, Policy Branch, CIDA, 12th Floor, 200 Promenade du Portage, Hull, Quebec, Canada, K1A 0G4. Fax: +1-819 9533348.

The Fertile Triangle. The interrelationship of air, water, and nutrients in maximizing soil productivity.

B. Wolf. Food Products Press, Binghamton, 1999, xiii + 463 p. ISBN 1-56022-878-4. Hardcover.

The relationship of balanced air, nutrition and water in a soil determines its fertility. It is desirable to improve the soil to the maximum permitted by the limits of the medium, the economics of the crop, and acceptable environmental stewardship. This book treats the importance of air, water and nutrients and how each is maintained at ideal levels, including the use of management practices at the farm level. In all sections, the aim has been to provide enough material for a basic understanding of the subject as well as potentially for practical applications.

Price: USD 69.95, plus postage; outside USA, Canada and Mexico USD 84.00, plus postage.

Orders to: see below.

Nutrient Use in Crop Production. Z. Rengel, editor. Food Products Press, Binghamton, 1998, xiv + 207 p. ISBN: 1-56022-061-9. Hardcover. Co-published simultaneously as Journal of Crop Production, vol. 1, no. 2, 1998.

Food production by the year 2020 will have to increase about 50% on top of the present levels to satisfy needs of around 8 billion people. Most of that increase would have to come from intensification of agricultural production. Judicious nutrient management, including fer-

tilization, has been critical in increasing production to present levels, and will be essential for maintaining soil fertility and food production in the future. This book summarizes various aspects of optimal use in crop production. After dealing with the production of food, feed and fibre, and their distribution in terms of population demands on one side and soil fertility decline on the other, the importance of testing soils and plants for the nutrient status to achieve optimal fertilization is discussed. Four chapters that follow describe various fertilizer and other nutrient sources, their chemistry and agronomic effectiveness in optimizing crop production. Chapters about fertilizer application and other management strategies is followed by a discussion of the role of nutrient-efficient genotypes (those that are superior in taking up and utilizing nutrient when grown in nutrient-poor conditions) in modern agriculture.
Price: USD 49.95, plus postage; outside USA, Canada and Mexico USD 60.00, plus postage.

Mineral Nutrition of Crops. Fundamental mechanisms and implications. Z. Rengel, editor. Food Products Press, Binghamton, 1999, 408 p. ISBN 1-56022-880-6. Hardcover.
This book treats the complexity of the soil-water-plant-microbe interactions governing nutrient uptake and utilization by crops. It establishes a base at the single plant level as well as plasma membranes at these cells, and then builds from there to include issues related to plant pathology, soil microbiology, soil chemistry, hydrology, breeding and modeling. It covers therefore a wide range of topics that span several disciplines: agriculture, agronomy, botany, forestry, plant science and soil science.
Price: USD 125.00, plus postage; outside USA, Canada and Mexico USD 150.00, plus postage.
Orders to: Food Products Press, The Haworth Press, 10 Alice Street, Binghampton, NY 13094-1580, USA. Fax: +1-607-771-0012. E-mail: getinfo@haworthpress.com. Homepage: www.haworthpress.com.

Soils and Geomorphology, Third edition. P.W. Birkeland. Oxford University Press, New York and Oxford, 1999, xi + 430 p. ISBN 0-19-507886-1. Softcover.
This book is mainly written as a textbook on soils for geomorphologists, sedimentologists, environmental geologists, and archaeologists working in Quaternary research. The emphasis is on the study of soils in the field. The overall organization of the book is, first, a discussion of soil morphology, weathering and soil-forming processes and, then, variation in soils with variation in the soil-forming factors. Only the US Soil Taxonomy is used. The book ends with a chapter on application of soils to geomorphological, sedimentological and environmental studies. It has many references to literature in the English language.
The focus of the book is on the United States, but conditions in other regions of the world are mentioned also. It is well illustrated with figures and photographs in black and white.
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Orders to: Oxford University Press, 198 Madison Avenue, New York, NY 10016, USA. Homepage www.oup-usa.org, or: Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK. Fax: +44-1865-556646.

Soil Resources and the Environment. U. Aswathanarayana. Science Publishers, Enfield, 1999, xix + 248 p. ISBN 1-57808-067-3. Hardcover.
This book looks at soil from two interrelated angles, namely, as a resource and as an environmental medium. It is characterized by abroad-spectrum, contextual approach, and is modelling-oriented. The author seeks to provide an overview as to how knowledge of the soil processes can be put to practical use to manage soil nutrients, conserve soil moisture, reduce soil degradation, reclaim salt-affected soils, build civil constructions, and prevent soil contamination. Attention is drawn to the impact of climatic change on the soil processes and productivity of ecosystems, and ways and means of mitigating its adverse consequences.
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Orders to: Science Publishers, Inc., P.O. Box 699, Enfield, NH 03748, USA. E-mail: sales@scipub.net. Homepage: www.scipub.net.

Bioremediation of Contaminated Soils. Agronomy Monograph 37. D.C. Adriano, J.-M. Bollag, W.T. Frankenberger, Jr., and R.C. Simes, editors. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, Madison, 1999, 772 p. ISBN 0-89118-137-7. Hardcover.
During the past decades, the prevention of soil pollution and cleanup of contaminated soils have become a world-wide environmental priority. The goal of bioremediation is not only the timely degradation, transformation, remediation, or detoxification of these pollutants by biological means but also to protect soil quality. Remediation approaches may generally be classified as physical, chemical, and biological. The first two are referred to as engineering strategies, the latter as bioremediation, defined as the use of living organisms to reduce or eliminate environmental hazards resulting from accumulations of toxic chemicals and other hazardous wastes. Bioremediation is often the preferred method for the removal of hydrocarbons. Another new trend in bioremediation is the use of phytoremediation, or plant-based remediation, as a cleanup tool. This method may offer some solutions for dealing with mixed wastes. Phytoremediation technologies exploit various biogeochemical processes in the rhizosphere including extraction, immobilization, and degradation of contaminants.
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Manual for the Soil Chemistry and Fertility Laboratory. Analytical methods for soils and plants equipment and management of consumables. E. van Ranst, M. Verloo, A. Demeyer and J.M. Pauwels. University

of Ghent, 1999, 243 p. ISBN 90-76603-01-4. Softcover.
This is a practical and detailed guide to laboratory and pedological studies. It is addressed to students, laboratory technicians, researchers, agronomists and pedologists who are confronted directly with soil and plant analyses. The aim is to provide a better understanding of the nature of soils, their fertility and the nutrient condition of the vegetation. It is also a window into an analytical laboratory for everyone who is interested in soil chemistry, pedology and fertility and who wants an introduction to these closely related disciplines. The analyses described have been chosen because of their practical interest. Each description of an analysis has the analytical principle, the reagents, apparatus and glassware, the procedure, and the calculation of the result. To this, technical, practical, and sometimes theoretical remarks are added. The authors have added a practical listing of necessary chemicals for 100 analyses as well as an estimate of requirements in materials and glassware for a capacity of one thousand samples of soils and plants per year.
Price: BEF 1500, EUR 37.18, USD 45.00, plus postage.
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Newly available Agency Data Sets that are significantly Global Change Related. 1998. Data Management Working Group of the CENR's Subcommittee on Global Change Research.
Since its inception, the U.S. Global Change Research Program has had the policy of full and open data availability. This policy has already been implemented not only through the participating agencies but also through many inter-agencies mechanisms such as publications, internet-based services, and in many international settings. One of the present publication's objectives is to provide the diverse user community with a concise summary of what data has been catalogued and made newly available each year. All information is available in the Global Change Data and Information System on the Internet (www.gcdis.usgcrp.gov) with links to each data set, where available.
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Towards Integration of Irrigation and Drainage Management. W.B. Snellen, editor. ILRI, Wageningen, vi + 172 p. Softcover.
The Earth Summit emphasized the need for integrated irrigation development and management. The Jubilee Symposium at the occasion of the 40th anniversary of the International Institute for Land Reclamation and Improvement (ILRI) looked at the possibilities and potential benefits of better integration of irrigation and drainage management in order to alleviate many of the problems in irrigated agriculture. As irrigated agriculture is by far the largest consumer of freshwater, these issues are highly relevant for the communities as a whole. The present proceedings provide an account of what was presented and discussed at the Jubilee Symposium.
Price: DFL 20.00.
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Water and Food Security in (Semi-) Arid Areas. Proceedings of the second Wageningen Water Workshop, 2-4 November 1998. A. Schrevel, editor. ILRI Special Report, ILRI, Wageningen, 1999, ix + 182 p. Softcover.
These proceedings comprise twelve papers presented at the second Wageningen Water Workshop-WWW98. The theme was chosen in preparation for the Second World Water Forum, which will take place in The Hague, The Netherlands, from 17-22 March 2000 (see www.worldwaterforum.org for details)
Orders to: ILRI, P.O. Box 45, 6700 AA Wageningen, The Netherlands. Fax: +31-317-417187. E-mail: ilri@ilri.nl. Homepage: www.ilri.nl.

Soil Physical Chemistry. Second edition. D.L. Sparks, editor. CRC Press, Boca Raton, Boston, 1999, 409 p. ISBN 0-87371-883-6. Hardback.
Since the publication of the first edition in 1986, there have been many new and exiting developments in the field of soil chemistry. The emphasis on understanding the rates and mechanisms of soil chemical reactions and processes has greatly intensified. This is in large part due to the importance of accurately predicting the fate, mobility, speciation, and bioavailability of plant nutrients, metals, metalloids, organic chemicals, and radionuclides in soil and water environments. Significant advances in surface complexation modeling, kinetic measurements, and the use of in situ spectroscopic and microscopic surface techniques have occurred in the last decade. These innovations have enabled soil chemists to precisely determine the mechanisms of important soil chemical reactions at the molecular scale. This edition includes discussions on advances in modeling complexation reactions at the mineral/water interface, kinetics of soil chemical reactions, and the use of in situ spectroscopic and microscopic techniques to elucidate reactions mechanisms and to ascertain the structure and chemistry of soil organic matter. Updated chapters on the electrochemistry of the double-layer, thermodynamics of the soil solution, kinetics of soil chemical processes and the redox behaviour are contained in this edition. New chapters on chemical modeling of ion adsorption in soils, precipitation/dissolution reactions in soils and the chemistry of SOM are also found. The book is well illustrated with figures, and all chapters have extensive lists of references.
Price: USD
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Handbook of Soil Science. M.E. Sumner, editor-in-chief. CRC Press, Boca Raton, London, 2000, xxviii + 2112 p. ISBN 0-8493-3136-6. Hardcover.
This monumental work is a comprehensive reference to the discipline of Soil Science as practiced today. It con-

tains descriptions of each major area in the discipline, including its fundamental principles, appropriate methods to measure each property, many examples of the variations in properties in the different soils throughout the world, and guidelines for the interpretation of the data for various applications. This Handbook provides professional soil scientists, agronomists, engineers, ecologists, biologists, naturalists, and students their points of entry into a particular aspect of Soil Science. It provides a thorough understanding of soil science principles and practices based on a rigorous, complete, and up-to-date treatment of the subject. The book is organized into the following sections: soil physics (352 p.), soil chemistry (352 p.), soil biology and biochemistry (200 p.), soil fertility and plant nutrition (189 p.), pedology (412 p.), soil mineralogy (182 p.), interdisciplinary aspects of soil science (298 p.), and soil databases (94 p.). The sections contain between 4 and 11 contributions from well-known scientists from around the world. The associate editor, who has integrated the separate contributions, introduces these sections. Each subsection has the following elements: description of concepts and theories, definitions, approaches, methodologies and procedures, data in tabular and figure forms, and extensive references. It has many illustrative figures and black and white photographs. The price makes this Handbook within the reach of many individuals!
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Ecoregions. The ecosystem geography of the oceans and continents. R.G. Bailey, illustrations by L. Ropes. Springer-Verlag, New York, 1998, ix + 176 p. ISBN 0-387-98311-2, softcover; 0-387-98305-8, hardcover. With two maps.
This book applies principles of climate and geography to describe and characterize the major ecological zones of the Earth. Since issues that appear to be local will often require solutions at the landscape and regional scale - working with the larger pattern, understanding how it works, and designing in harmony with it. The author developed for this purpose a geographical ecologically based system that would classify the natural ecoregions of the Earth and plot their distribution. This book is intended to provide detailed descriptions, illustrations and examples that will assist the user of the ecoregion maps in interpreting them. A major objective of the book is to suggest explanations or the mechanisms that act to produce the world pattern of ecoregion distribution and to consider some of the implications for land use. The present system recognizes only major ecoregion types. For regional studies additional subdivisions as needed can be added. The author developed one for the US.
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The Global Environment. Institutions, law and policy. N.J. Vig and R.S. Axelrod, editors. Earthscan Publications, London, 1999, 368 p. ISBN 1-85383-645-1, softcover; 1-85383-646-X, hardcover.
All serious environmental threats are now international in scope and more than one thousand international environmental agreements already exist. Yet, the prospects for international cooperation leading to the management of impacts on the planet remain grim. This book meets the need for an up-to-date assessment of the state of international environmental institutions, laws and policies. It examines disagreements over the meaning of sustainable development, problems inherent in implementing environmental policies and the conflict over the exclusion of developing countries from the Kyoto Protocol.
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Alternative Irrigation. The promise of runoff agriculture. C.J. Barrow. Earthscan Publications, London, 1999, xvii +172 p. ISBN 1-85383-496-3, softcover; 1-85383-495-5, hardcover.
This publication is a comprehensive introduction to an ever more important form of agriculture. Runoff agriculture uses surface and subsurface water, which is often otherwise overlooked and wasted. It enables small farmers as well as commercial agriculturists to improve yields and security of harvest, even in harsh and remote environments. The author introduces the techniques and strategies, as well as the challenges and the potential of this crucial approach, which can contribute so much to reducing land degradation and improve conservation and sustainability. It is illustrated with figures showing many practical field techniques.
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Palaeohydrology and Environmental Change. G. Benito, V.R. Baker and K.J. Gregory, editors. John Wiley & Sons, Chichester, New York, 1998, xi + 353 p. ISBN 0-471-98465-5. Hardcover.
Over the last decade, the scientific understanding of global change has become one of the main issues for the scientific community. The International Geosphere-Biosphere Programme (IGBP) was established to study various aspects of global change. In the context of environmental change, there is a general consensus that future human activity and economic development will be conditioned by water availability. The hydrological effects of global change are predicted via the use of general circulation models. These are elegant models of the atmosphere, but they are unable to reconstruct feasible catchment–scale scenarios or to develop realistic simulations of basic hydrological processes. For this reason,

the study of the characteristics of past hydrological cycles and their role in past environmental changes is crucial for the prediction of future environmental change. Past hydrological changes provide long-term data which can be used to validate the response of global or regional models in different environmental settings. At the Second International Meeting on Global Continental Paleohydrology (GLOCOPH), held in 1996, current knowledge and methodological advances on global palaeohydrology for the past 20 000 years were reviewed. A selection of the papers presented was reviewed and, along with additional articles, these form the chapters of this book. It explores real hydrological scenarios during past environmental changes and cover extensive areas of Europe, America, Africa, Asia and Australia. The review describes advances with respect to understanding the compositional reconstruction, distribution and movement of the Earth's main continental water bodies during past hydrological cycles in an even-changing environment.
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Land Subsidence: by fluid withdrawal; by solid extraction; theory and modeling; environmental effects and remedial measures. IAHS Publication no. 234. F.B.J. Barends, F.J.J. Brouwer and F.H. Schroeder, editors. International Association of Hydrological Sciences, Wallingford, 1995, xx + 492 p. ISBN 0-947571-4. Softcover.
This publication constitutes a part of the proceedings of the Fifth International Symposium on Land Subsidence (FISOLS 95). A particular emphasis for this symposium was on ecological and monitoring aspects of land subsidence, anticipating the need for a broad multidisciplinary approach to new problems and modern solutions related to land subsidence.
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FRIEND '97 – Regional Hydrology: concepts and models for sustainable water resource management. IAHS Publication no. 246. A. Gustard, S. Blazkova, M. Brilly, S. Demuth, J. Dixon, H. van Lanen, C. Llasat, S. Mkhandi and E. Servat, editors. International Association of Hydrological Sciences, Wallingford, 1997, x + 364 p. ISBN 1-901502-35-X. Softcover.
This publication contains 39 papers selected for the FRIEND '97 Conference. The FRIEND – Flow Regimes from International Experimental and Network Data – large research project within the framework of the International Hydrological Programme is a collaborative study on regional hydrology. The objective of the publication is to illustrate theoretical and applied links between regional hydrology and the integrated catchment management systems. The roster of issues tacked in the book ranges from hydrological processes and catchment modelling, through spatial and temporal variability, to hydrological extremes. Several contributions are devoted to variability of hydrological regimes, which control our domestic, agricultural, energy, and environmental use of water.
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Interactions between the Cryosphere, Climate and Greenhouse Gases. IAHS Publication no. 256. M. Tranter, R. Armstrong, E. Brun, G. Jones, M. Sharp and M.Williams, editors. International Association of Hydrological Sciences, Wallingford, 1999, viii + 281 p. ISBN 1-901502-90-2. Softcover.
Scientists whose research involves snow and ice masses are acutely aware that these elements of their systems respond to climate forcing on a range of time scales. The magnitude and direction of the response is of particular concern at present, given concerns about the effects of the probable trend in global warming. The thirty papers in this publication were selected for a symposium held as part of the scientific programme of the IAHS during the XXII General Assembly of the International Union of Hydrological Sciences, Birmingham, July 1999. These papers address aspects of the response of the cryosphere to climate forcing and are divided into four sections: interactions between climate, snow and permafrost (9 papers); monitoring and modelling snow cover (5 papers); ice mass variability (10 papers); and chemical processes in the cryosphere (6 papers).
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Impact of Land-Use Change on Nutrient Loads from Diffuse Sources. IAHS Publication no. 257. L. Heathwaite, editor. International Association of Hydrological Sciences, Wallingford, 1999, viii + 271 p. ISBN 1-901502-95-3. Softcover.
This publication comprises 32 papers selected for a symposium on diffuse pollution held during the XXII General Assembly of the International Union of Hydrological Sciences, Birmingham, July 1999. The papers deal with process and modelling studies at different scales, the contribution of agricultural and forestry land-use practices to nutrient export from diffuse sources and the effect of control strategies on water quality, including the role of soil properties and interaction between surface water and groundwater. The contributions covers a wide range of situations with respect to size of study area, type of experiment, climate, soil and its use, hydrology and agricultural production systems. Processes in soils associated with nitrogen and phosphorus losses to waters receive much attention.
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Proceedings of 1999 NIES Workshop on Information Bases and Modeling for Land-use and Land-cover Changes Studies in East Asia. K. Otsubo, editor. Center for Global Environmental Research, Environment Agency of Japan, Tsukuba, 1999, 293 p. Softcover.

Asia is the most populous part of the world, with 3 billion people in 1990, accounting for 57 % of the world's population. There are increasingly serious environmental problems, such as devastation of natural resources, including forests and soils; the consequent loss of biodiversity; land degradation; pollution; widening social disparities; and unsanitary conditions. These problems are serious and cumulative, but they do not occur everywhere and they are usually local. Land-use/land-cover changes indicate whether an area's development is sustainable or not. The workshop was aimed at contributing not only to the betterment of the understanding in land-use/cover change in East Asia, in related information bases, etc., but also to the establishment of a research network in the region for future research collaboration. The proceeding contain the 37 general papers presented, as well as 7 country reports.
Requests to: National Institute for Environmental Studies, Japan Environment Agency, 16-2 Onagawa, Tsukuba, Ibaraki 305-0053, Japan. Fax: +81-298-50-2576. E-mail: kuninori@nies.or.jp.

Agriculture in China 1949-2030. T.C. Tso, F. Tuan, M. Faust, editors. Ideals, Beltsville, 1998, xxix + 775 p. ISBN 1-891998-00-5. Hardcover.
During the past two decades, the People's Republic of China became a major power in the world economic community, but the Chinese agricultural sector remained weak and may not be able to support the overall development. There is much concern whether China will exhaust the world's grain supply in the next century, particularly with a strong purchasing power. The objective of this monograph is to examine China's resources, agricultural past, current status and major concerns. It also contains concrete recommendations on what approaches China must take to achieve agricultural self-sufficiency towards 2030, when its population is expected to reach 1.6 billion persons. There is a clear need to increase production per unit area. To achieve this the soil quality must be improved, water-use efficiency increased and new water resources be explored.
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Mercury Contaminated Sites. Characterization, Risk Assessment and Remediation. R. Ebinghaus, R.R. Turner, L.D. de Laserda, O. Vasiliev and W. Salomons, editors. Springer-Verlag, Berlin, Heidelberg, 1999, xvii + 538 p. ISBN 3-540-63731-1. Hardcover.
Mercury is outstanding among global environmental pollutants of continuing concern, especially during the last decade. It has often been suggested that anthropogenic emissions are leading to a general increase in mercury, resulting in contaminated sites, posing risks to human and ecological health. Soils and vegetation located close to large atmospheric mercury sources have been clearly sinks while these sources were active in the past. In the long run, however, these soils may have become important diffuse area sources after the original emissions were discontinued. This book summarizes information on the characterization, risk assessment, and remediation on mercury-contaminated sites. Review chapters are supplemented by detailed case studies. Included are papers, which were initially presented at the 4th International Conference on Mercury as a Global Pollutant, held in Hamburg, in 1996.
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Policies for soil fertility management in Africa. I. Scoones and C. Toulmin. International Institute for Environment and Development, London and The Institute of Development Studies, Brighton, `1999, 128 p. ISBN 1-899825-41-X. Softcover.
Soil fertility issues have risen up the African development policy agenda in recent years. A number of high profile international meetings have been held leading to a variety of different initiatives aimed at addressing the problem of soil fertility decline in Africa. For some, the issue of soil management in Africa is the main development challenge in Africa for the next century.
This paper aims to reflect in this debate, the nature of the evidence on which such initiatives have built, and the strategies being proposed to address soil fertility issues in Africa. The book comprises fifteen case studies from twelve countries in east, west and southern Africa, with the aim of identifying factors which influence patterns of soil fertility management. A range of options for improving soil capital stock is considered.
Orders to: IIED, Drylands Programme, 3 Endsleigh Street, London WC1H 0DD, UK. Fax: +44-171-388-2826. E-mail: drylands@iied.org.

Improving Smallholder Farming Systems in Imperata Areas of Southeast Asia: Alternatives to Shifting Cultivation. ACIAR Monograph no. 52. K. Menz, D. Magcale-Macandog and I. Wayan Rusastra, editors. Australian Centre for International Agricultural Research (ACIAR), Canberra, xxxvi + 280 p. Softcover.
There are an estimated 35 million ha of grasslands dominated by Imperata cylindrica var. major in Asia, of which 8 million ha in Indonesia and 2 million ha in the Philippines. These are the countries where much of the research reported in this book was undertaken. Much forested land has been converted to Imperata grassland through the processes of logging, shifting cultivation and burning. This land is generally occupied, or utilized, by poor smallholders, undertaking low input cropping in the context of shifting cultivation. Imperata is an aggressive competitor with crops, having the potential to substantially reduce crop yields. In the introduction the nature of the problem is outlined. After a bioeconomic analysis of the traditional smallholder farming systems, a series of case study descriptions of successful tree growing by smallholders on Imperata grasslands is given. The core modelling work of the project is reported, in which various tree-based interventions are modelled. Attention is also given to fire control and to carbon sequestration in Imperata grasslands.

Complete versions of the Imperata Project Papers are available at the homepage: http://cres.ana.edu.au/imperata/imperat1.htm
Requests to: ACIAR, G.P.O. Box 1571, Canberra, ACT 2601, Australia. Fax: +61-6-217-0501. E-mail: comms@aciar.gov.au. Homepage: www.aciar.gov.au.

Biogeochemical Investigations at the Watershed, Landscape, and Regional Scales. R.K. Wieder, M. Novak and J. Cerny, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1998, 504 p. ISBN 0-7923-5167-3. Hardcover. Reprinted from Water, Air, and Soil Pollution, vol. 105, nos. 1-2, 1998.
The future of biogeochemistry is bright and promising. As the world's human population continues to grow, human activities will increasingly alter the natural cycles of elements and flows of energy. The maturing disciplines of biogeochemistry and ecosystem science are uniquely suited for assessing past and present anthropogenic disruptions and disturbances to the earth's ecosystems at local, regional and global scales. This volume contains 45 reviewed papers, presented at the Third International Symposium on Ecosystem Behavior (BIOGEOMON), in 1997. Earlier meetings were concerned mainly with small watersheds; its scope has broadened considerably to include research in much larger watersheds, often assessing landscape or regional patterns and processes. Major themes are acidification of soils and waters, biogeochemical implications of nitrogen and sulphur deposition, and gas fluxes from the land to the atmosphere. Collectively, the papers present a variety of approaches to biogeochemical research at the ecosystem level, including monitoring, field and laboratory manipulations, stable and radioisotopic tracers, modeling, and geographic information system analyses.
Price: NLG 350.00, USD 189.00, GBP 119.00.
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Sulphur in Agroecosystems. Nutrients in Ecosystems, volume 2. E. Schnug, editor. Kluwer Academic Publishers, Dordrecht, Boston, 1998, vii + 221 p. ISBN 0-7923-9123-1. Hardcover.
This is the second volume in the series, the first one being Magnesium deficiency in forest ecosystems, published in 1997. Sulphur as an essential plant nutrient has received little scientific attention. This is explained by the fact that S was obviously in sufficient supply from the atmosphere, from soil and as a by-product in mineral fertilizers. Increases in the yield potential and thus in the nutrient requirement of modern crops, however, as well as remarkable changes in sulphurdioxide emissions, have altered the situation to a large extent. Extended research programs on the physiological functions on S in plants, on the occurrence and plant availability of S in agricultural and forest soils and on the chemistry of S compounds in the tropo- and stratosphere have been initiated. It is the aim of this book to give an overview about present knowledge with a special focus on the S situation in agrosystems of industrialized Western Europe.
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Beneficial Co-Utilization of Agricultural, Municipal and Industrial By-Products. S. Brown, J. S. Angle and L. Jacobs, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1998. xvi + 430 p. ISBN 0-7923-5189-4. Hardcover.
The concept of co-utilization is simply the blending, mixing, and/or co-composting of two or more by-products in order to produce a value-added "designer" material which can be beneficially utilized to solve an agricultural problem, remediate soils, and/or fulfill a market niche. The land application of by-products from agricultural, industrial or municipal sources is certainly not a new phenomenon. Positive responses led to agricultural practices which were continued over time. Today, with renewed interest in concepts such as sustainability, biodynamic farming, and natural resource conservation, the practice of applying by-products to land continues. There is a growing understanding that residuals can be deliberately mixed for specific end uses. This is the initial phase of the transition from residual disposal to product development. The XXII Annual Beltsville Symposium, held in May 1997, focused on the range of factors that need to be taken into account for any co-utilization program to be successful. The proceedings presented here include research reports as well as reports from the private sector. Potential uses as well as areas requiring more research are also outlined.
Price: NLG 340.00, USD 185.00, GBP 116.00.
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Soil Formation. N. van Breemen and P. Buurman. Kluwer Academic Publishers, Dordrecht, Boston, 1998, iv + 377 p. ISBN 0-7923-5263-7. Hardcover.
The starting point of this textbook is not soil classification, but weathering of parent materials, mobilization, transport, and immobilization of dissolved and suspended compounds, placed in the context of biosphere and geosphere. Connections between processes and diagnostic horizons of soil classification are discussed. Emphasis in lain on the universality of soil forming processes and on the soil as a dynamic entity that forms part of the total environment. After an introductory part, the most important individual physical, chemical and biological processes are discussed that, in various combinations, are involved in soil genesis. The bulk of the book is concerned with processes involved in soil profile development. The text has many examples and the student is guided through the book by a large number of questions and problems, the answers of which are also given. Because of this aspect, the book is very suitable for self-study. The book contains a useful glossary.
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Soilguide. A handbook for understanding and managing agricultural soils. Agriculture Western Australia Bulletin no. 4343. G. Moore. Agriculture Western Australia, Perth, 1998, 381 p. ISBN 0-7307-0057-7. Softcover.
This book was specifically intended as an extension tool for the dryland farming regions of southwestern Australia. It is a comprehensive and practical guide to understanding agricultural soils and their management. The conceptual frameworks presented will be applicable to other regions and the world, especially in dryland agriculture. The guide describes a variety of methods for the assessment of soil properties that influence production and land degradation in agricultural areas. It emphasises the links between soil morphology, soil properties, management options and agronomy. It has more than 1400 references.
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Nitrogen Dynamics in the Environment. Information and Activities for Soil and Water Education. A. Schipper and L. Schipper. Landcare Research New Zealand, Hamilton, xii + 110 p. Softcover.
The goal of this publication is to increase the understanding of the role of nitrogen, its importance to life and its implications for water quality. It is written for students in New Zealand. Once students realize the interrelationship between individual actions and environmental effects, they can make more responsible and informed decisions about natural resources. The learning activities in the present project use simple, inexpensive materials. They lend themselves to group work and participant-led conclusions to support the given background material. Although based on the New Zealand environment, the approach presented could be used elsewhere.
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Tillage for soil and water conservation in the semi-arid tropics. W. Hoogmoed, Doctoral thesis. Tropical Resource Management Papers 24. Wageningen University and Research Centre, xii + 184 p. ISBN 90-5808-026-9. Softcover.
Soil tillage plays an important role in crop production in the semi-arid tropics. Soils can be characterized as sealing, crusting and hardsetting. These processes are aggravated by the aggressive and unpredictable nature of the rainfall. Problems are the large losses of rainwater due to runoff from the sealed and crusted soil surfaces, the poor emergence from the crusted seedbeds and the very high energy requirements for tillage. In this thesis, research is reported from West Africa and Brazil, carried out on fine and coarse sandy soils. Tillage and no-tillage experiments were carried out and the results are being compared. Simulation models in the field of soil tillage are reviewed.
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Soil Chemistry and Ecosystem Health. SSSA Special Publication no. 52. P.M. Huang, editor, and D.C. Adriano, T.J. Logan and R.R. Checkai, coeditors. Soil Science Society of America, Madison, 1998, xvii + 386 p. ISBN 0-89118-830-4. Softcover.
The pedosphere, hydrosphere, atmosphere and biosphere are environmental compartments that overlap and are intimately associated in the ecosystem. Therefore, what happens in soil should have a profound impact on not only soil quality, but also ecosystem health. This book emphasizes the key role of soil chemistry in understanding the functioning of ecosystems. The impact of soil chemical and biogeochemical processes on ecosystem health is critically assessed and linkages are built between soil chemistry and other disciplines pertaining to ecosystem health. Information has been summarized for scales ranging from the microscopic to landscapes. This book demonstrates the key interrelationships between scientific disciplines studying ecosystems and the necessity for interdisciplinary efforts to understand the increasingly complex issues facing science and society.
This publication forms the proceedings of a workshop held in 1995.
Price: USD 55.00. Advance payment and 10 percent per book for postage is required on all orders outside the US.
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Quantifying Soil Hydromorphology. SSSA Special Publication no. 54. M.C. Rabenhorst, J.C. Bell and P.A. McDaniel, editors. Soil Science Society of America, Madison, 1998, xvii + 258 p. ISBN 0-89118-832-0. Softcover.
Wetlands are a component of many landscapes and have become a critical issue for policymakers, as the public desires to protect the ecological, biological and hydrological contributions of these important natural environments. A major issue is the development of criteria for identifying and delineating wetlands as they are found in a landscape. Although numerous definitions have been proposed, they all contain three common characteristics: hydrology, soils and vegetation. Soil processes are influenced by and interact with the hydrological cycle. The hydrologic cycle controls a variety of soil processes, the end products of which may be reflected in morphologic properties of soils, many of which are useful criteria for the field identification of wetlands, such as soil colour. The complex interactions of hydrology, soil and vegetation emphasize the need for ongoing studies to elucidate the basic physical, chemical, and biological properties in soils. This publication is a compilation of 14 papers presented at a symposium in 1996.
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Enzymology of Disturbed Soils. Developments of Soil Science 26. S. Kiss, D. Pasca and M. Dragan-Bularda. Elsevier, Amsterdam, Lausanne, 1998, xiv + 336 p. ISBN 0-444-50057-X. Hardcover.

The disturbance of soils, like other phenomena of environmental pollution, encountered in so many areas of the world, has become a subject of extensive concern and has led to a vast literature in the field of enzymology, too. The present work deals with the enzymology of three great categories of disturbed soils, including their remediation, namely with (1) Enzymology of oil-contaminated soils; (2) Enzymology of soils affected by industrial emissions; and (3) Enzymology of technogenic soils.

Studies of enzyme activities in disturbed soils and in those subjected to remediation are reviewed considering both western and eastern literature. The present work is a revised, enlarged, and updated synthesis of four previous papers.

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Approaches to Scaling of Trace Gas Fluxes in Ecosystems. Developments in Atmospheric Science 24. A.F. Bouwman, editor. Elsevier, Amsterdam, Lausanne, iv + 362 p. ISBN 0-444-82934-2. Hardcover.

The world's terrestrial and aquatic ecosystems are important sources of a number of greenhouse gases and aerosols, which cause atmospheric pollution and disturb the energy balance of the Earth-atmosphere system. Although in recent decades the measurement techniques and instrumentation for quantifying gas fluxes have been improved considerably, the uncertainties in the regional and global budgets for a number of atmospheric compounds have not been reduced due to the large spatial heterogeneity and temporal variability of the factors that control gaseous fluxes in ecosystems. Techniques used for extrapolating measurements or properties and constraining results between different temporal and spatial scales are referred to as "scaling". All scaling methods are embedded in the data. An important step in scaling of gas exchanges between ecosystems and the atmosphere is the delineation of functional types where distinct differences in structure, composition or properties of landscapes or water bodies coincide with functions or processes relevant for gas fluxes. This book is an effort of a diverse group of scientists to review the state-of-the-art in the field of scaling of gaseous fluxes. It focuses on identification of gaps in knowledge, and on finding solutions and determining future research efforts. The book is the result of a workshop, organized by ISRIC in 1998, as a follow-up to the Soils and the Greenhouse Effect conference, which ISRIC held in 1989.

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International Symposium on Salt-Affected Lagoon Ecosystems - ISSALE-95. J. Battle-Sales, editor. Universitat de Valencia, Estudi General and the International Society of Soil Science, 1997, v + 463 p. ISBN 84-605-6642-0. Softcover.

This publication contains the texts of the plenary lectures, and oral and poster presentations at ISSALE-95, which took place in Valencia from 18-25 September 1995. This well-attended symposium was organized by the University of Valencia and the ISSS. The proceedings have 54 papers, covering a large variety of issues related to properties, use, management and amelioration of this important ecosystem. This publication also contains a contribution by Dr. M. Redly, chairperson of the ISSS Subcommission A on Salt-affected Soils about the achievements of the Subcommssion in the investigation and management of saline and alkali soils during the period 1964-1994. In all, 18 international meetings took place, of which 17 were concluded with published proceedings.

Requests to: Prof. J. Battle Sales, Departamento de Biologia Vegetal, Universitat de Valencia, Avda. Vicente Andres Estelles s/n, E-46100 Burjasot, Valencia, Spain. Fax: +34-96-3864289. E-mail: Jorge.Battle@uv.es.

Cover Crops in West Africa contributing to Sustainable Agriculture, Plantes de Couverture en Afrique de l'ouest. Une contribution a l'agriculture durable. D. Buckles, A. Eteka, O. Osiname, M. Galiba and G. Galiano, editors. IDRC, Ottawa, IITA, Ibadan and Sasakawa Global 2000, Cotonou, 1998, xxiv + 293 p. ISBN 0-88936-852-X. Softcover.

Agricultural productivity in Sub-Saharan Africa (SSA) must be increased substantially in the next decade to avert a serious food crisis. Since the 1970s food production across much of the region has not kept pace with population growth. This has led to increased pressure on the land, a decline in soil fertility, and accelerated desertification of marginal soils. Where external inputs, such as chemical fertilizers, are expensive or their availability is limited, green manure cover crops (GMCCs), grown on site, can help to maximize the benefits of external inputs. GMCCs are efficient, low-cost sources of Nitrogen. They improve soil structure, increase the soil's biological activity, and help to control pests.

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The papers are in English and French, with abstracts in both languages. The text is available on internet at: www.idrc.ca/books/focus.html.

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Tracing Technique in Geohydrology. W. Kaess. A.A. Balkema, Rotterdam, Brookfield, 1998, xv + 581 p. and CD-ROM. ISBN 90-5410-444-9. Hardcover.
This volume describes in a comprehensive manner the techniques enabling the study the subterranean flow paths of water, its flow velocity and residence times in the subsurface. These methods have been receiving interest in recent years, as they provide models for investigating the transport and distribution behaviour of contaminants. These fields of interest also include the interactions between subterranean water and surface water. Therefore, the use of tracer techniques in surface water is also described. The text contributions have been complemented with numerous figures. An included CD-ROM aids in the successful evaluation and presentation of data gained by tracing tests. This book is a revised English version of the book in German Geohydrologische Markierungstechnik , published in 1992, to which several new sections have been added.
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Orders to: A.A. Balkema, P.O. Box 1695, 3000 BR Rotterdam, The Netherlands. Fax: +31-10-4135947. E-mail: sales@balkema.nl. Homepage: www.balkema.nl, or: A.A. Balkema Publishers, Old Post Road, Brookfield, VT 05036-9704, USA. Fax: +1-802-276-3837. E-mail: info@ashgate.com.

Soil Analysis. An Interpretation Manual. K.I. Peverill, L.A. Sparrow and D.J. Reuter, editors. CSIRO Publishing, Collingwood, 1999, 875 p. ISBN 0-643-06376-5. Hardcover.
This extensive manual is a practical guide to the interpretation of soil tests. It considers what soil tests are, when they can be used reliably and consistently, and discusses what limits their application. It has been written for Australian soils and conditions. The first three review chapters cover the general principles and concepts of soil testing, factors affecting soil test interpretation and soil sampling and handling procedures. The next two chapters describe morphological indicators of soil and include colour plates of twenty major Australian agricultural soils. These are followed by chapters on soil test calibration data for individual elements or a related group of tests, such as the range of tests used to interpret soil acidity. The last chapter presents a structured approach to nutrient management and making fertilizer recommendations using soil test data. All chapters have extensive lists of references.
Because many of the soil tests evaluated in this book are used throughout the world, it is therefore also of interest for readers outside Australia.
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Modern Methods from Traditional Soil and Water Conservation Technologies. Proceedings of a DFID Land Management Workshop, January 1998, Kabale. S.R. Briggs, J. Ellis-Jones and S.J. Twomlow, editors. Silsoe Research Institute, Silsoe, 1998, v + 213 p. Softcover.
The purpose of this workshop was to bring together individuals and institutions involved in research and development in Kenya, Tanzania and Uganda to discuss the use of indigenous conservation technologies. The workshop provided a platform from which the research findings from Phase I of the Department for International Development's Environmental Research Programme Project could be disseminated and discussed. Plenary dialogue and focussed discussion groups were used to provide future direction to research and development into soil and water conservation research in the region. The workshop provided a vehicle for helping enhance research-extension-farmer linkages, and active stakeholder participation allowed for networking between researchers and developers ensuring that future research and development programmes more readily meet the needs of land users. The report is available free of charge.
Requests to: Dr. Jim Ellis-Jones, Silsoe Research Institute, Wrest Park, Silsoe, Bedfordshire MK45 4HS, England. Fax: +44-1525-860156. E-mail: jim.ellis-jones@bbsrc.ac.uk. Homepage: www.sri.bbsrc.ac.uk.

Biodiversity Information. Needs and options. D.L. Hawksworth, P.M. Kirk and S. Dextre Clarke, editors. CAB International, Wallingford, 1997, x + 194 p. ISBN 0-85199-183-1. Hardcover.
The importance of conserving and managing the biological wealth of this planet, as a foundation for sustainable development, is now well understood among scientists and indeed throughout society in many parts of the world. This widespread concern has been recognized by many nations in subscribing to the Convention on Biological Diversity, and to Agenda 21 of the Earth Summit, which give heavy emphasis to the need to improve the collection, management and dissemination of scientific information, particularly to bridge the information gap between the developed and developing parts of the world. Major international efforts are now underway to assess and sustainably utilize biodiversity. However, there is a need to collect, manage and disseminate information related to biodiversity in an efficient and effective way. The purpose of this book is to review the needs and opportunities for information and information flows in support of world priorities in biodiversity. It is based on papers presented at a workshop in 1996, organized by CAB International, UNEP, IUBS, IUCN and IUFRO. These proceedings contain the keynote address and papers in the following sections: (1) defining and meeting needs for information; (2) collecting and managing the information; and (3) distributing the information. The book closes with a final report and recommendations.
Price: GBP 35.00, plus postal charges.
Orders to: see below.

Climate-change Mitigation and European Land-use Policies. W.N. Adger, D. Petenella and M. Whitby, editors. CAB International, Wallingford, 1997, xvi + 351 p. ISBN 0-85199-185-8. Hardcover.
The UN Convention on Climate Change requires countries to reduce their polluting greenhouse-gas emissions from all sources including agriculture, forestry, and

land-use. Emissions associated with land-use are inherent in modern farming and forestry practices, with the commitments under the Convention representing a clear challenge to restructuring of Europe's agriculture and forestry policies. This book forms one element in the EU Concerted Action on Policy Measures to Control Environmental Impacts from Agriculture. It results from a workshop in 1996 to examine critical issues of emissions from agriculture and forestry. There are direct linkages and correlation between diverse environmental issues examined under other parts of the Concerted Action: pesticides, mineral flows and landscape conservation with fluxes of greenhouse gases, especially in the forestry sector. This book considers greenhouse-gas emissions at the farm, national, EU and global scales. Efficiency, equity and implications of policy in this area are the primary focus of the volume.
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Plants that Hyperaccumulate Heavy Metals. Their role in phytoremediation, microbiology, archaeology, mineral exploration and phytomining. R.R. Brooks, editor. CAB International, Wallingford, 1998, 384 p. ISBN 0-85199-236-6. Hardcover.
Plant species, which can accumulate high concentrations of heavy metals, have been known for over one hundred years. However, until the last twenty years their potential went largely unnoticed by scientists. The term hyperaccumulation was first introduced by the editor in 1977. This renewed interest, together with heightened environmental awareness and the discovery of the phenomenon in many more species has since stimulated research into a number of novel scientific and commercial uses. This book brings together relevant ecological information on hyperaccumulators and describes the new disciplines, methods, and uses from them, which continue to be explored. These include the removal of heavy metal pollutants from soils and water (phytoremediation), the identification of ancient human settlements (phytoarchaeology), mineral exploration, the revegetation of degraded land and the exiting possibility of the commercial extraction of heavy metals from crop plants (phytomining). An interesting book, also for soil scientists!
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Economics and Policy Issues in Climate Change. W.D. Nordhaus, editor. Resources for the Future, Washington, 1998, ix + 324 p. ISBN 0-915707-95-0. Hardcover.
In this volume, which represents the results of a workshop held in 1996, nineteen analysts tackle the social and economic aspects of climate change and offer their views on the most difficult issues-cost-benefit analysis, the discount rate, the impacts and costs of climate change-as well as the framework issues of how to think about such long-run and uncertain problems. Contributions review issues critical to understanding the scope and implications of the matter, including analyses of economic questions.
Price: USD 45.00.
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Fractals in Soil Science. Special issue of Geoderma, vol. 88, nos. 3-4, 1999. Ya.A. Pachepsky, J.W. Crawford and W.J. Rawls, editors. Elsevier, Amsterdam, Lausanne, 1999, 364 p. ISSN 0016-7061.
This special issue of Geoderma provides an account of the application of fractal models to soil science. They offer the soil scientist the possibility of relating soil properties at different scales and quantifying the intrinsic heterogeneity of soils. The application of fractals to these problems is a recent development in soil science with the first papers only appearing in the eighties. The set of papers in this issue represents the state of the science. Authors from abroad background explore topics from geochemistry to microbiology, and from scales of micrometers to the landscape. Limitations of the approach are discussed as well as the level of success in the hope that opportunities for future work will become clear. Challenges encountered in the measurement and interpretation of fractal properties are discussed. An overview of the research contributions is given in the first paper.
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Pedometrics '97. Special issue of Geoderma, vol. 89, nos. 1-2, 1999. J.J. de Gruijter, editor. Elsevier, Amsterdam, Lausanne, 1999, 175 p. ISSN 0016-7061.
This special issue of Geoderma contains the papers presented at the Second International Conference on Pedometrics, held under the auspices of the Working Group on Pedometrics of the IUSS, at the University of Wisconsin, Madison, August 1997. The proceedings of the first conference in 1992 were published in Geoderma, vol. 62, nos. 1-3, 1994. There were two main themes: (1) methodological reviews of familiar topics such as soil geostatistics and sampling and reviews of newer topics such as neural networks and fractals; and (2) spatial prediction models. With regard to the second theme, there were two, somewhat distinct, approaches. The first is the geostatistical approach, using various forms of kriging. In the second approach prediction of soil properties is made from other environmental variables, principally derived from digital elevation models. The synthesis of these two approaches was not really discussed, and this will be an area for much further research in pedometrics.
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The National Cooperative Soil Survey of the United States. D.R. Gardner. Thesis Harvard University, May 1957. Issued October 1998 as Historical Notes number

7. Resource Economics and Social Science Division, and Soil Survey Division, Natural Resources Conservation Service, USDA, 270 p.
The USDA Natural Resources Conservation Service, formerly the Soil Conservation Service, and the collaborators in the National Cooperative Soil Survey are celebrating the survey's 100th anniversary in 1999. The present publication, submitted in 1957 at Harvard University, has not been generally available and the NRCS took the laudable decision to make a reprint available for this event. It is a valuable contribution to an understanding of the contribution of soil survey to the United States. After an introductory chapter, the scientific and administrative origins of the US soil survey are discussed. The bulk of the publication is concerned with classification, mapping and interpretation from 1899 to 1952. Copies are available as long as stocks last.
Requests to: Dr. Douglas Helms, Resource Economics and Social Sciences Division, NRCS, USDA, P.O. Box 2890, Washington, DC 20013-2890, USA. Fax: +1-202-720-6473. E-mail: douglas.helms@usda.gov.

Dust Aerosols, Loess Soils & Global Change: an interdisciplinary conference and field tour on dust in ancient environments and contemporary environmental management. Conference Proceedings. Seattle, October 1998. A. Busacca, editor. Washington State University, Pullman, 1998, 234 p.
This publication has 63 short papers on an array of dust-related subjects. The following sections are included: dust aerosol production in contemporary environments (9 papers); measuring, monitoring, and modeling of contemporary wind erosion and dust aerosols (16 papers); loess soils and society (1 paper); reconstruction of dust aerosols at glacial maxima and beyond (6 papers); reconstruction of paleoclimate from proxy records in loess, paleosols, and other deposits (17 papers); dust aerosols in the Asian paleomonsoon system (6 papers); and the role of dust in soil development (7 papers).
Requests to: Prof. Alan Busacca, Crop and Soil Sciences Department, Washington State University, Pullman, WA 99164-6420, USA. E-mail: busacca@wsu.edu.

Physical Nonequilibrium in Soils. Modeling and Application. H. Magda Selim and Liwang Ma, editors. Ann Arbor Press, Chelsea, 1998, xxi + 492 p. ISBN 1-57504-049-2. Hardcover.
Soil is not uniform in structure and composition. Such nonuniformity extends spacially and temporally, and significantly affects water flow and solute transport in soils. Experimentally, soil heterogeneity was investigated by mapping soil pores, characterizing soil structure, and studying the characteristics of water flow and solute transport in soils under various conditions. Mathematically, conceptual models were proposed to account for soil heterogeneity. New experiments are also developed to quantify parameters associated with these models. Most model applications are at the laboratory scale, with only few designed and tested for the field scale. This book provides knowledge on physical nonequilibrium phenomena in soils and an insight to the complexity of our physical world. The first five chapters describe various approaches yielding coupled physical and chemical nonequilibrium models. The next three chapters provide laboratory and field evaluation of multiregion models and methods of parameter estimation. The remaining ten chapters deal with stochastic approaches, and nonaqueous phase liquid dissolution figuring and preferential flow.
The book is dedicated to the late Professor R. Jeff Wagenet.
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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, x + 140 p. ISBN 3-8265-3282-1. Softcover.
This study conveys a wealth of information on the structure of organic matter in some German and Dutch soils differing in pedogenesis, texture and management practice. Special attention is given to soils in urban areas as influenced by atmospheric input of organic particles from coal industries. For the first time, established calibration protocols are presented for the growing field of organic matter research in physical fractions. Emphasis is also placed on a novel technique to improve solid-state NMR spectra by acid extraction. A literature review, based on 200 titles, gives an up-to-date overview.
The results from this study will be useful for assessing properties of soils in industrialized areas.
Price: DM 89.00.
Orders to: Shaker Verlag, Kaiserstrasse 100, D-52134 Aachen, Germany. Homepage: www.shaker.de.

More jobs per drop: targeting irrigation to poor women and men. B. van Koppen. Thesis Wageningen Agricultural University. Royal Tropical Institute Press, Amsterdam, 1998, 188 p.. ISBN 90-6832-124-2. Softcover.
This publication provides an analysis based on literature from around the world plus two in-depth field studies on irrigation support for rice cultivation in Burkina Faso and Bangladesh. This empirical basis is then used to identify factors that are critical to effective targeting of organizational, technical and financial support by agencies. The book analyses the role of governmental and non-governmental irrigation agencies in including or excluding poor men and especially women; identifies factors critical to effective targeting of support; and argues against the assumption of a necessary trade-off between poverty alleviation and production.
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Instant Notes in Ecology. A. Mackenzie, A.S. Ball and S.R. Virdee. BIOS Scientific Publishers, Oxford, 1998, x + 321 p. ISBN 1-85996-161-4. Softcover.
The last 40 years have witnessed a vast expansion of both interest and knowledge in ecology. There is a widening public awareness of the importance of ecological interactions, with particular focus on such issues as the impact of pesticides upon food chains and the loss of biodiversity owing to habitat destruction. The expansion in understanding has lead to a problem for the student of the subject, as leading textbooks have grown greatly in size and complexity to accommodate new theories and new data. Further, ecology courses are now an integral part of a wide range of biological science degrees. This book attempts to distil the key areas of ecology in a way, which will help both full-time students of the subject and those studying ecology as a subsidiary subject. Each of the over twenty topics begins with a summary of the essential facts, followed by detailed explanations and clear, simple illustrations.
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Soil and Aquifer Pollution. Non-Aqueous Phase Liquids – Contamination and Reclamation. N. Rubin, N. Narkis, J. Carberry, editors. Springer-Verlag, Berlin, Heidelberg, 1998, xxii + 412 p. ISBN 3-540-62586-0. Hardcover.
This book is the outcome of the international workshop under the same title of this book, held in Haifa, May 1996. Groundwater pollution, especially by petroleum products, is one of the pressing issues facing Israel and other countries, which depend on groundwater for water supply. Understanding the processes of groundwater contamination, recommending the proper measures for preventing it, and determining the best means for reclamation once pollution has occurred, are of great practical importance. Non-aqueous phase liquids are among the most significant contaminants. The book has five parts. After an introduction and general considerations, the physical-chemical considerations are considered, followed by biological aspects. Part IV treats different modeling issues, part V gives information about field studies. All contributions have introductions and summaries and conclusions, and extensive lists of references.
Price: DM 298.00, GBP 114.50, USD 189.00.
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Integrated Nutrient Management for Sustained Crop Production in Sub-Saharan Africa (a Review). TropSoils/TAMU Techn. Bull 98-03. K. Franzluebbers, L.R. Hossner and A.S.R. Juo. Texas A&M University, College Station, 1998, 50 p. Softcover.
The decline of food production in Sub-Saharan Africa in recent decades has often been attributed to the lack of adoption of modern farming technologies. However, a primary limitation seems to be the farmer's inability to replenish lost nutrients in the widespread kaolinitic soils as the more sustainable bush fallow system is being replaced by continuous cultivation. In this report, the authors review published work on soil nutrient management for food production in SSA. It is intended for a wide range of users, including soil scientists, agronomists, social scientists and extension workers. Although a large volume of research results is available on this subject matter, the main body of this review has been drawn from English language publications, especially from more recent research from TropSoils and its national collaborators and from International Agricultural Research Centers.
Requests to: Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843-2474, USA.

Micronutrients in Soils, Crops and Fertilizers – A Sourcebook-cum-Directory (1999). Second edition. H.L.S. Tandon. Fertilizer Development and Consultation Organisation, New Delhi, 1999, vi + 177 p. ISBN 81-85116-43-1. Softcover.
The need for micronutrient application for sustaining high crop yields and ensuring good quality produce is increasing. Out of the seven plant micronutrients, the ones of greatest practical importance from application point of view at present are zinc, followed by iron and boron. Access to reliable technical information on micronutrients, and products through which these can be applied using correct
application techniques is very important. This sourcebook-cum-directory was first prepared in 1995 to meet the above requirements The basic layout and style has been retained in this second edition. The publication will be of direct interest and use to all those who are interested in balanced crop nutrition in general and micronutrients in particular. About half of the book is concerned with the directory for India.
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Organic Fertilizers and Biofertilizers. A Techno-Commercial Source Book. H.L.S. Tandon. Fertilizer Development and Consultation Organisation, New Delhi, 1999, vi + 191 p. ISBN 81-85116-44-X. Hardcover.
This is the 30th book in the FDCO series of practical and reference publications on soils, crops, fertilizers and integrated nutrient management in agriculture and horticulture. The present sourcebook with special reference to India strengthens the information base and dissemination of information on organic fertilizers and biofertilizers. These are valuable farm inputs and should be taken into account in the mainstream of modern farming practices. The book is very broadbased to include an array of organic fertilizers, biofertilizers, bio-control agents, compost accelerators, etc.
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posh Enclave, New Delhi 110048, India. Fax: +91-11-6417801.

Living with Drought. Drought mitigation for sustainable livelihoods. A. von Kotze and A. Holloway. With video. David Philip Publishers, Cape Town and Intermediate Technology Publications, London, 1999, xi + 206 p. ISBN 0-86486-388-8 (South Africa), and 1-85339-470-X (UK). Softcover.
This pack of book and video is called Living with Drought for a reason. It is a signal that recurrent drought is a normal part of life and living in southern Africa. In this way, it assumes that sustainable development in this region is achievable only if drought risk is included in current development education, policy and practice. The sub-title underlines this link between efforts to reduce risk of drought, and responsible planning for community development. The publication recognizes that the concepts of drought mitigation and risk reduction are poorly understood. It starts off from the commonly held perception that drought is a disaster event that needs to be managed, and that drought ends with the next season's rains. In southern Africa this perception has been reinforced by repeated and prolonged food and other relief programmes. Times of drought-induced food and water insecurity demand urgent intervention to avert hardship and starvation. There is also a need for policy and practice that incorporates drought mitigation into sustainable development policy and practice. This pack aims at complementing other 'disaster management training" materials. It will strengthen the understanding, skills and knowledge of development and aid-workers necessary for including risk reduction into the development practice. The video material along with the developed and tested activities introduces a creative and constructive approach to drought and sustainable development in at-risk communities.
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Urban Soils. Applications and Practices. P.J. Craul. John Wiley & Sons, New York, Chichester, 1999, xiv + 366 p. ISBN 0-471-18903-0. Hardcover.
In the introduction of this book, the author states that a review of scientific publications, personal experience, and contact with many landscape architects, scientists and contractors over the years indicate that new views and approaches must be taken toward the treatment of soil in urban landscape design. Much unused technology and original experience exist that provide some of the more successful approaches. Also, the context in which much landscape design is accomplished is changed. No longer are there many "virgin" undisturbed sites for development; most are now restoration sites that require new approaches to handling the soil question. Pollution and contamination elimination have become watchwords of the process. The purpose of this book is to provide detailed information on some of the more commonly used procedures and applications of urban soils. Much of the information can be used to develop specifications or preliminary criteria for a design application. The book has various case studies. The appendix mentions standard tests for analyses of designed soil. A short glossary is added.
Price: GBP 51.95.
Orders to: see below.

Cycles of Soil. Carbon, Nitrogen, Phosphorus, Sulfur, Micronutrients. Second edition. F.J. Stevenson and M.A. Cole. John Wiley & Sons, New York, Chichester, 1999, xvi + 427 p. ISBN 0-471-32071-4. Hardcover.
Living organisms and the transformations they perform have a profound effect on the ability of soils to provide food and fiber for an expanding world population. Soil organisms also have diverse influences on the quality of air and water. Of paramount importance is the cycling of carbon, nitrogen, phosphorus, sulfur, and micronutrients (B, Cu, Fe, Mn, Mo and Zn). An understanding of the various cycles and their interactions is essential for the intelligent use of soil as a medium for plant growth, for the rational use of natural and synthetic fertilizers, for disposal of wastes in soil, and for the prevention of soil-derived pollution of air and water. Information relevant to the functioning of biochemical cycles in terrestrial soils has a direct application to other ecosystems. This book is exclusively devoted to the biochemical cycles in soils. Many facets of the C, N, P, S cycles, as well as micronutrient behavior, are covered, including fluxes among soil, water and air, biochemical pathways and chemical transformations, plant availability, gains, losses, recycling, and environmental pollution.
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Headwaters. Water Resources and Soil Conservation. Proceedings of Headwater '98, the Fourth International Conference on Headwaters Control. M.J. Haigh, J. Krecek, G.S. Raiwar, M.P. Kilmartin, editors. A.A. Balkema, Rotterdam, Brookfield, 1998, xx + 459 p. ISBN 90-5410-780-4. Hardcover.
Headwaters Control is founded in the belief that: (1) headwaters are fragile environments and threatened by human action; (2) that direct intervention can mitigate these impacts; and (3) that solutions demand the practical application of co-ordinated and integrated environmental management. The Headwaters Control movement is a coalition of field workers. The bulk of the work reported in this publication is based on targeted, long-term investments in fieldwork and environmental monitoring. Its target is the locally integrated understanding of headwaters processes and their management. The volume contains a selection of the papers presented at the conference, held in Merano, April 1998.
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Red and Lateritic Soils. Volume 1. Managing Lateritic Soils for Sustainable Agriculture. Volume 2. Red and Lateritic Soils of the World. J. Sehgal, W.E.H. Blum, K.S. Gajbhihye, editors. A.A. Balkema, Rotterdam, Brookfield, 1998, xx + 453 p and xii + 113 p. resp.. ISBN 90-5410-771-5, vol. 1; 90-5410-772-3, vol. 2; 90-5410-271-3, set. Hardcover.

Red and lateritic soils are the third-most important group of soils of the world, covering about 13 percent of the land area. In India they cover about one quarter. These soils cover large areas with potentially arable and lands. Experimental evidences and experience have shown hold a great promise under proper management. Due to aberrant weather, soil-related constraints and poor management, crop production has remained low and unsustainable. The deliberations at a conference organised under the auspices of the IUSS focuses on soil resource base, land evaluation , resource utilization and management of these soils towards increased agricultural production on a sustainable basis. The tow volumes are based on the papers presented and discussed during the conference.

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Palaeohydrology and Environmental Change. G.Benito, V.R.Baker and K.J. Gregory, editors. John Wiley & Sons, Chichester, New York, 1999, xiv + 353 p. ISBN 0-471-98465-5. Hardback.

This book presents recent advances in the study of global changes in the hydrological regime during the last 20000 years. It brings together new contributions on regional palaeohydrology with case studies from all over the world, concentrating on sensitive areas such as the Mediterranean, tundras and the tropics. The book also contains chapters on interdisciplinary methodologies and techniques used in palaeohydrological reconstructions, including palaeoecology, pollen and lychen analysis, identification with modelling studies and conceptual and mesoscale models for reconstructing palaeoenvironments during the Quaternary.

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Tropical Agroforestry. P. Huxley. Blackwell Science, 1999, x + 371 p. ISBN 0-632-04047-5. Hardcover.

Agroforestry – the cultivation of trees and other woody plants with crops or pastures – is attracting great interest and funding because of its possibilities for increasing the productivity and sustainability of tropical lands. This book provides a comprehensive, analytical account of the principles and the practical implications of agroforestry. The focus is on understanding how agroforestry systems function whilst taking into account the conflicts and compromises that arise because farmers' requirements and the biological potentials and restraints of growing woody plants with crops. The book is divided into six sections. After an introduction about the nature and need for agroforestry and a discussion about aspects of animal agroforestry and its use in soil and water conservation, the book covers various functional topics concerned with arranging and managing plants and plant mixtures, emphasising how they may better capture and utilise available environmental resources. Section III outlines the nature of tree-crop interfaces and reviews issues of competition and facilitation; often the key success of an agroforestry system. Useful common characteristics of woody plant components and the need to group them according to an appropriate scheme for agroforestry purposes, and the relevance of knowing about above- and below-ground behaviour is discussed in Section IV. In the next section the author elaborates on the changes that trees can confer on their immediate environment above and below ground, and discusses 'sustainability' and the place of agroforestry in sustainable land use. In Section VI ideas about agroforestry research are given.

In his introduction the author states "Reading about agroforestry should be an enjoyable and stimulating experience" This lavishly illustrated book fulfils this statement.

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Managing Agrobiodiversity. Farmers' changing perspectives and institutional responses in the Hindu Kush-Himalayan region. T. Partap and B. Sthapit, editors. International Centre for Integrated Mountain Development and International Plant Genetic Resources Institute, Kathmandu, 1998, x + 439 p. ISBN 92-9115-841-0. Softcover.

In the present paradigm of sustainable development, conservation of agricultural biodiversity is a prerequisite to sustaining agricultural production for both global and local food securities. Nowhere is this more apparent as in the Hindu Kush-Himalayas (HKH), which cover an altitudinal range of from 200-8,800 metres, spanning 3,500 km. The region has about 140 million inhabitants. It is one of the important centres of origin and diversity of crop genetic resources. The agroecological diversity of the region has been important in the evolution of diverse farming systems that are built on distinct knowledge systems, which the native farming communities tried and refined over generations. These farming communities also developed conservation and management strategies to ensure sustainable use of bioresources.

Agriculture in the HKH is in transition. On the one hand, people and institutions are faced with a predominant situation of deteriorating conditions in subsistence farming in which the farm economy, ecological environment and agrobiodiversity are adversely affected. On the other hand, farmers, replacing old ones adopt new cash crops. In between, a range of changing scenarios can be counted. Due to the lack of adequate knowledge and information, it is difficult to indicate the extent of loss, replacement, or replenishment of agrobiodiversity in the region. Therefore, an initiative was launched to document knowledge and information about the status of management issues concerning agricultural biodiversity in the region. The present book is the outcome of this initiative. After assembling 2500 pages of text, the authors succeeded to put the key subjects and facts in the present publication with 40 chapters grouped into seven themes and an introduction with an overview of the issues.
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Proceedings of International Conference on Soil Condition and Crop Production. Gödöllö, 2-5 September 1998. M. Birkás and A. Murányi, editors. Hungarian Branch of ISTRO, 246 p. ISBN 963-8140-77-1. Softcover.
Sustainable land use and proper soil management ensuring normal soil functions have particular significance in agricultural production, soil conservation and environmental protection. Development in Central and Eastern Europe is at the crossroads after the political and institutional changes. Since 1990 the change of the centrally organised large-scale agriculture to a market-oriented eco-social economy and the re-privatisation of agricultural lands have resulted in both positive and negative consequences. The environmental aspects and soil and water conservation requirements are often forgotten in the short-term and directly profit-oriented concepts. Soil structure is an important item in soil degradation, moisture regime, changes in the biogeochemical cycle of various elements, pollution of soil and water, decrease of biodiverity. Up-to-date soil tillage practices are important tools in the development and maintenance of favourable soil physical conditions. These new challenges were discussed at the above mentioned conference and these proceedings contain the texts of the 57 papers
presented.
Requests to: Hungarian branch of ISTRO, H-2103 Gödöllö, Hungary.

Feeding the Ten Billion. Plants and population growth. L.T. Evans. Cambridge University Press, Cambridge, 1998, xiv + 247 p. ISBN 0-521-64685-5, softcover; 0-521-64081-4, hardcover.
At the current rate of increase, the world's population is likely to reach ten billion by the middle of the 21st century. What will be the challenges posed by feeding this population and how can it be addressed. Written to mark the 200th anniversary of the publication of Malthus' seminal "Essay on the the Principles of Population", this book looks at the intimate links between population growth and agricultural innovation over the past 10,000 years, providing a series of vignettes which illustrate how the evolution of agriculture has both shaped and been shaped by the course of world population growth. This historical context serves to illuminate our present position and to aid understanding of possible future paths to food security for the planet. This book will be of interest to all who are concerned with global population, food supply, agricultural development, environmental degradation and resource depletion.
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Modelling Global Change. The Art of Integrated Assessment Modelling. Advances in Ecological Economics. M. Janssen. Edward Elgar, Cheltenham and Northampton, 1998, xv + 262 p. ISBN 1-85898-763-6. Hardcover.
Integrated assessment modelling is an active and rapidly developing field, triggered by the debate on climate change and the move towards the goal of sustainable development. This book provides an integrated approach to modelling, using a transdisciplinary approach. The main issues involved in the changing global system are summarised and an overview is given of the emerging field of integrated assessment. After a general discussion of the methodological principles of a multidisciplinary integrated modelling approach, exiting tools are examined and new methodological approaches are applied to various aspects of the problem of global change. The case studies focus on optimising climate change mitigating policies, the allocation of emission rights and the adaptive behaviour of social and biological agents. Special attention is given to the role of uncertainty, especially the subjective interpretation of uncertainties, and the role of adaptive multiagent modelling. The book concludes with a discussion on future uses of integrated assessment modelling of the global environment.
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Nutrient Disequilibrium 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 recognised that nutrinet imbalances have a substantial impact on the productivity and sustainability of agrosystems. Fertiliser and manure use, atmospheric deposition, international transportation 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. Case studies from many ecosystems are given. The increasing amount of legislation and the urgent need for the development of integrated nutrient management technologies are emphasised. The future for global level research in soil fertility management and nutrient flow analysis is considered. The book should enhance research and the adoption of national and international policies on soil fertility maintenance with a global, multi-scale, multi-disciplinary approach.
Price: GBP 60.00, USD 110.00.
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Agriculture, Fertilizers and the Environment. M.Laegreid, O.C. Bockman and O. Kaarstad. CABI Publishing, Wallingford, in association with Norsk Hydro ASA, Oslo, 1999, xxiv + 294 p. ISBN 0-85199-385-3. Softcover.
World food production depends on supplementing plant nutrient obtained from the soil. Mineral fertilizers are indispensable for ensuring sufficient food production and preventing declines in soil productivity through nutrient depletion. The rapid increase in human population and the consequent rise in consumption have rendered fertilizers an integral part of the food supply chain. Current food production is putting a serious strain on the environment. Agriculture is a source of pollution and other environmental problems and questions are raised as to whether our agricultural practices are sustainable and how we can cope with the needs of a growing population. The challenge is to provide food, whilst maintaining soil fertility and taking care of a precious natural environment. The intention of this book is to present environmental and sustainability issues related to fertilizer use and its role in ensuring adequate food supplies. It is written for anybody with an interest in agriculture and the environment, although some familiarity with science and environmental topics would facilitate comprehension.
Price: GBP 22.50, USD 40.00.
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Soil Erosion at Multiple Scales. Principles and methods for assessing causes and impacts. IBSRAM Proceedings no. 18. F.W.T. Penning de Vries, F.. Agus and J. Kerr, editors. CABI Publishing, Wallingford, in association with the International Board for Soil Research and Management (IBSRAM), Bangkok. xii + 390 p. ISBN 0-85199-290-0. Hardcover.
Soil erosion by water is the most important land degradation problem in the humid tropics. The accumulative effects of erosion on soil productivity are soon reflected in declining crop yields. Off-site impacts on hydrology and sedimentation are also soon felt by communities living at lower levels in the landscape. The problem is complex because it results from human actions influenced strongly by key parameters of the ecological, biophysical, sociological, economic and policy environment. Despite the seriousness of the erosion problem, our knowledge base on the causes and impacts of erosion is fragmented across disciplines and across scales. The results of small plot studies do not extrapolate easily to the catchment level. The inadequate attention to the need to draw together the latest thinking in soil erosion research across a range of disciplines resulted in a workshop, held in Indonesia in 1997.
This book contains the texts of the papers presented. The latest developments in soil erosion studies are considered from a plot level to river basins and from farm to national policy. Some chapters review background issues, while others consider specific methods. Progress is reported about the integration of social, economic and biophysical dimensions of the erosion problem in a holistic analysis and in identifying bottlenecks requiring further research. The conclusions of six working groups are also included.
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Agricultural Drainage. ASA Monograph 38. R.W. Skaggs and J. van Schilfgaarde, editors. American Society of Agronomy, Crop Science Society of Agronomy and Soil Science Society of America, Madison, 1999, xxv + 1328 p. ISBN 0-89118-141-5. Hardcover.
Drainage of land has been an important beneficial water management tool for improving crop production around the world. Its importance is reflected in the fact that this volume represents the third time that the ASA, CSSA and SSSA have published a monograph on this topic in the past 40 years. Much has changed in the field of drainage since the last edition of 1975. Our ability to describe the performance of drainage systems has improved with the continued evolution of drainage theory and with the development of computer simulation models that enable prediction over time of the performance of drainage systems, including effects of drainage design on yields and profits. At the same time, recognition of the importance of wetlands and the effect of agricultural drainage on loss of fertilizer nutrients and other potential contaminants has placed new constraints and additional objectives on the design and operation drainage systems. Drainage is now seen as an integral part of total water management. This monograph is an attempt to summarise the important elements of the theory and practice of agricultural drainage. It reviews material presented in the previous monographs and introduces new developments, such as environmental impacts and water table management. This book will be useful for understanding how drainage may modify the natural ecosystems and enhance the productivity of the land for agricultural purposes. This voluminous handbook has thirteen sections: 1. Introduction; 2. Overview of drainage and crop production (2 papers); 3. Soil water movement in drained lands (5 papers); 4. Movement and fate of solutes in drained lands (4 papers); 5. Modeling the performance of drainage systems (3 papers); 6. Drainage for salinity control and reclamation (4 papers); 7. Water table control (3 papers); 8. Hydrologic and water quality impacts of drainage (3 papers); 9. Planning and design of drainage systems (2 papers); 10. Drainage methods and materials (5 papers); 11. Special drainage

problems (4 Papers); 12. Determination of soil properties for drainage design (3 papers); and 13. Socio-economic impacts of agricultural water management systems (3 Papers).
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Orders to: ASA, CSSA, SSSA Headquarters Office, Book Order Department, 677 South Segoe Road, Madison, Wisconsin 53711-1086, USA. Fax: +1-608-273-2021. E-mail: books@agronomy.org. Homepage: www.agronomy.org.

The Contribution of Soil Science to the Development of and Implementation of Criteria and Indicators of Sustainable Forest Management. SSSA Special Publication Number 53. M.B. Adams, K. Ramakrishna and E.A. Davidson, editors. Soil Science Society of America, Madison, 1998, xvii + 156 p. ISBN 0-89118-831-2. Softcover.
Meeting the growing demands for fuel, timber, pulpwood, clean and abundant water, wildlife and recreation requires close monitoring of the elements that is central to sustainable forest management. As the notions of best management practices in forestry are refined, the status of forest soils and the services they provide must be rigorously evaluated. Good infiltration, ample soil organic matter, lack of compaction, and occurrence of faunal activity are recognized as good indicators of a healthy soil. Several international initiatives are in progress to define Criteria and Indicators (C&I) of forests that are likely to form the basis of international agreements on the management, conservation and sustainable development of forests. Soil is a strong candidate for providing key criteria and indicators of sustainable forestry. The SSSA sponsored a symposium, held in St. Louis in 1995, where forest soil scientists examined proposed C&I and offered their opinions as to whether policy negotiations were on the right track. This publication lays out the scientific basis as it now stands so that the expectations of policies based on implementation of C&I will be realistic in the short term and so that research needs for further improvement can be identified for the future.
Price: USD 18.00, Advance payment and 10 % per book for postage on all orders outside the USA.
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Linking Genetic Resources and Geography: Emerging Strategies for Conserving and Using Crop Biodiversity. CSSA Special Publication Number 27. S.L. Greene and L. Guarino, editors. American Society of Agronomy and Crop Science Society of America, Madison, 1999, xix + 110 p. ISBN 0-89118-548-8. Softcover.
Geography, through climate and landscape, influences natural selection and gene flow. Recognizing this relationship, plant genetic resource workers have always used the geographic information available to them to guide the exploration, collecting, and use of genetic diversity. This information has traditionally taken the form of paper maps and narrative decriptions. At present, more information is now available in digital format and the GIS technology provides tools for the effective and efficient manipulation and analysis of such spatially referenced digital data. A symposium, held in Anaheim in 1997, took an in-depth look at GIS developments. The objectives were to review the application of spatial analysis to genetic resource conservation and use issues, and discuss the successful implementation of geographic analysis in individual projects as well as the institutional adoption of GIS practice. This publication contains the papers presented at the symposium.
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Molecular Microbial Ecology of the Soil. Developments in Plant and Soil Sciences 83. G. Hardarson and W. Broughton, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1999, 184 p. ISBN 0-7923-5252-1. Hardcover.
Grain legume crops, e.g. common bean (Phaseolus vulgaris L.) and soyabeans (Glycine max L.) are among the main sources of protein in Africa, Asia and Latin America. Their high protein content derive from their ability, in symbiosis with Rhizobium bacteria, to fix atmospheric nitrogen. Incorporating contributions from molecular biologists, microbiologists, plant breeders and soil scientists, this volume reports the results of an FAO/IAEA Co-ordinated Research Programme (1992-1996),whose main objective was to develop molecular biological methods to study rhizobial ecology. Use of better tracking methods will help enhance biological nitrogen fixation and thus grain legume yields, while reducing their reliance on soil-and/or fertilizer-nitrogen. This book will be valuable to scientists working on biological nitrogen fixation, soil microbial ecology and legume production. The volume is partly reprinted from the journal Plant and Soil.
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Pesticides and the Future: Minimizing Chronic Exposure of Humans and the Environment. R.J.Kuhr and N. Motoyama, editors. IOS Press, Amsterdam and Ohmsha, Tokyo, 1998, viii + 332 p. ISBN 90-5199-388-9 (IOS Press); ISBN 4-274-90212-9 C3050 (Ohmsha). Hardcover.
This book contains over 30 contributions in a variety of disciplines related to the topic. Although efforts continue toward reduction or elimination of pesticide chemicals in the management of pests in agriculture, public health and the urban arena, chemicals will con-

tinue to be one of the main weapons in control of insects, weeds, nematodes, plant diseases, etc. for some time to come. While considerable information is known about the acute toxicity of these compounds, information on the chronic effects from exposure to minute amounts of pesticide residues in food, water, air and soil is often very limited. This book approaches the topic from several vantage points including pesticide epidemiology, new modes of action to minimize nontarget exposure, bioremediation of contaminated areas, molecular biology of the modes of action and detoxication of pesticides and the dynamics of pesticide movement in the environment. This book will help to remove barriers of distance and language and should lead to new cooperative research effort across country lines and discipline lines. This is the book edition of the journal Reviews in Toxicology, vol. 2, nos. 1-4 (1998) ISSN 1382-6980.
Price: NLG 300.00, USD 149, GBP 88.00, DM 263.00. Orders to: IOS Press, van Diemenstraat 94, 1013 CN Amsterdam, The Netherlands. Fax: +31-20-620-3419. E-mail: market@iospress.nl. Homepage: www.iospress.nl.

Advances in Agronomy. Volume 67. D.L. Sparks, editor. Academic Press, San Diego, London, 1999, ix + 320 p. ISBN 0-12-000767-3. Hardcover.
This volume in the well-known series contains four comprehensive reviews of topics that should be of interest to professionals and students in crop and soil sciences. Chapter 1 addresses one of the most active areas in agronomic research – precision agriculture. All aspects of the topic, including technologies, management and economic and environmental impacts, are discussed. Chapter 2 is a review of surface charge and solute interactions in soils. In addition to a theoretical treatment of the topic, practical applications, including surface charge effects on solute interactions and dispersion/flocculation and manipulation of surface charge by amendment additions, are included. Chapter 3 is a review of allelopathy; which can be defined as chemical interactions between and among both plants and micro-organisms via releases of biologically active chemical compounds into the environment. Principles, procedures, processes and promises for biological control are discussed. Chapter 4 covers advances in the use of molecular genetics to enhance abiotic/edaphic stress resistance in turfgrass.
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The Soil as a Strategic Resource: Degradation Processes and Conservation Measures. A. Rodrigues Rodriguez, C.C. Jimenez Mendoza and M.L. Tejedor Salguero, editors. Geoforma Ediciones, Logroño, 1998, 479 p. ISBN 84-87779-32-8. Softcover.
The soil as a non-renewable natural resource in the short and medium term and as the basis for the functioning of all terrestrial ecosystems and agrosystems possesses important world-wide environmental regulatory functions while producing, at the same time, important goods and services for mankind. Consequently, in certain situations, the soil becomes a strategic resource for the survival of the population, to the same extent as potable water and clean air. It is therefore necessary to know the dynamics of the processes responsible for soil degradation, both in quantity and in quality, as well as the causal factors, in order to establish suitable measures for conservation, prevention of soil degradation and rehabilitation of degraded soils. These were the main objectives of the meeting held in the Canary Islands in July 1995 under the auspices of the European Society for Soil Conservation (ESSC). From the total of 111 contributions a selection is presented in the following sections: (1) Water and wind erosion processes and other processes of physical degradation as a consequence of the abandonment of traditional agricultural practices (19 papers); (2) Salinisation-sodification processes related to irrigation agriculture and the use of low quality water (6 papers); (3) Chemical pollution and acidification as a consequence of the intensification of agriculture (8 papers); and (4) Measures of environmental protection of soil and water conservation practices in fragile ecosystems.
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Working the Sahel. Environment and Society in Northern Nigeria. Routledge Research Global Environmental Change, volume 2. M. Mortimore and W.M. Adams. Routledge, London and New York, 1999, xiv + 226 p. ISBN 0-415-14096-X. Hardcover.
Since the 1970s the Sahel has been portrayed as a place of actual and threatening disaster, where people suffer from and in turn cause environmental degradation and desertification. This book goes beyond the stereotypes to describe the ways in which farming households in the Sahelian region organise themselves economically to secure their livelihoods. Today, in many areas of the Sahel, more people maintain a hold on livelihoods, at greater population and livestock densities, than before the drought of 1974. This suggests that there is much to be learned from a better understanding of Sahelian production systems. Drawing on four years of field research in the Sahelian region of NE Nigeria, and building on work with these communities over several decades, this book looks at how people in the semi-arid conditions of the Sahel cope with their harsh environment, and in particular examines the way sin which they organise their labour to manage field, crops and other resources. The diversity, flexibility and adaptability that are critical attributes of successful Sahelian systems of resource management are analysed on the basis of studies of four village communities in their natural environment. The authors look at how farmers manage biological resources, crop and non-crop biodiversity and soil fertility, and transform the landscape through agricultural intensification. They conclude with an examination of differentiation between households, and try to define poverty in the rural Sahelian context, as well as placing issues in a broader policy context. The book presents important new evidence to indicate that the "crisis" of degradation in the Sahel can be con-

tained, and indeed is being contained in some areas, through the work of rural communities themselves.
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Eco-Hydrology. Plants and water in terrestrial and aquatic environments. A.J. Baird and R.L. Wilby, editors. Routledge, London and New York, 1999, xviii + 402 p. ISBN 0-415-16273-4, Softcover; 0-415-16272-6, hardcover.
We live in a time when boundaries between academic disciplines are becoming increasingly blurred. Many contemporary environmental problems and important research questions can only be addressed by collaboration between allied disciplines. This volume is an attempt to formalise an area of overlap between ecology and hydrology. The book introduces and explores diverse plant-water interactions in a range of environments – drylands, freshwater wetlands, temperate and tropical forests and woodlands, and streams, rivers and lakes. The authors provide background information on the water relations of plants, from individual cells to stands together with an in-depth review of scale issues and the role of mathematical models in eco-hydrology.
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Karst Hydrology and Human Activities. Impacts, Consequences and Implications. International Contributions to Hydrogeology, volume 20. D. Drew and H. Hötzl, editors. A.A. Balkema, Rotterdam and Brookfield, 1999, xv + 322 p. ISBN 90-5410-463-5. Hardcover.
The increasing pollution of our environment as deliberate or unintentional consequences of human activities has to a great extent spoiled sensitive karst ecosystems. This has led, for example, to distortions of landscapes, to soil erosion, to increased solution processes and to input of contaminants into the underground system. Karst areas cover large parts of our earth and in many regions the karst aquifers are the only available water resources for drinking water. Changes to karst are a serious challenge, not only to hydrologists, but also to soil scientists and agriculturists working in karst regions. The book is divided into three parts. The first part provides an overview of the characteristics of karst terrains and a summary of the historical relationship between human activities and karst waters and the adverse consequences of mismanagement. The core of the book is treated in part 2, which examines the consequences of major groups of human activities on karst waters. Attention is given agricultural driven impacts, industrial-urban impacts, effects of extractive industries and the effects of karst groundwater exploitation. Part 3 attempts to view the human impacts on karst groundwater within a broader legislative and societal framework. Finally, future trends that are likely to significantly impact upon the interaction between human activity and karst water resources are examined. The book contains a consolidated list of hundreds of references.
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Permeable Barriers for Groundwater Remediation. Design, Construction, and Monitoring. A.R. Gavaskar, N. Gupta, B.M. Sass, R.J. Janosy and D. O'Sullivan. Battelle Press, Columbus, 1998, 1998, xiii + 176 p. ISBN 1-57477-036-5. Hardcover.
Recent studies have shown the limitations of conventional pump-and-treat systems in remediating groundwater contaminated with dissolved chlorinated solvents, which can persist in the unsaturated zone for several decades. The permeable barrier technology is an emerging alternative for addressing such contamination within the ground itself in a more cost-effective manner. Other contaminants, such as chromium and other soluble heavy metals, can also be treated with this technology. This book provides guidance for the design and construction of such barriers and how they can be monitored to evaluate compliance. In addition, this book serves as a compilation of the existing knowledge base (published and unpublished) regarding the use of this technology for groundwater remediation.
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Biopile Design, Operation, and Maintenance Handbook for Treating Hydrocarbon-Contaminated Soils. F.M. van Fahnestock, G.B. Wickramanayake, R.J. Kratzke and W.R. Major. Battelle Press, Columbus, 1998, xi + 163 p. Plus CD-ROM. ISBN 1-57477-035-7. Softcover.
Biopile technology involves forming petroleum-contaminated soils into piles or cells above ground and stimulating aerobic microbial activity within the soils through aeration. The microbial activity degrades the petroleum-based constituents adsorbed to soil particles, thus reducing the concentrations of these contaminants. The advantages of this technology include the following: the contaminants are destroyed, making this a toxicity reduction process that is preferred by the regulators; and biopile systems are relatively easy to design and construct. This handbook gives the reader the knowledge and tools to efficiently select, design, construct, operate, maintain, and close out a biopile system. As an added feature, the included Biopile Cost Estimator software on CD-ROM, enables easy estimation of the costs involved. The book includes ready-to-use calculation sheets with complete problem checklists, and data sheets. Other appendices include a general health and safety plan and a troubleshooting guide.
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Macro Trends and Determinants of Fertilizer Use in Sub-Saharan Africa. MSU International Development Working Paper No. 73. A. Naseem and V. Kelly. Michigan State University, East Lansing, 1999, viii + 36 p. ISSN 0731-3438. Papercover.

To reverse the declining trends in soil fertility levels in Sub-Saharan Africa (SSA), the use of fertilizers and other land augmenting technologies needs to increase. While overall fertilizer consumption in SSA has increased, this growth has been highly variable across countries, regions and time. Data for the 1990s suggests that the overall fertilizer consumption in SSA has been declining. Designing appropriate policies and interventions to stimulate fertilizer demand and supply calls for a good understanding of past trends and factors that have been associated with changes in use. It is the objective of this paper to seek a better understanding of the dynamics of fertilizer use, specifically with regards to: the trends in fertilizer consumption at the continental, regional and country level; and the factors associated with changes in fertilizer use. Although the analyses provide some important insights into recent fertilizer use trends and determinants at an aggregated level, there are still many unknowns.

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Soil Indicators for Critical Areas of Phosphorus Leaching. Rapporten Programma Geïntegreerd Bodemonderzoek, vol. 22. W.J. Chardon and H.G. van Faassen. The Netherlands Integrated Soil Research Programme, Wageningen, 1999, vi + 38 p. ISBN 90-73270-37-5. Softcover.

The loss of phosphorus from farm land can lead to eutrophication of surface waters, causing algal blooms, anoxia of the water and bottom sediments, the growth of toxic organisms, fish mortality and a decrease of attractiveness for recreation. This study, conducted as a part of The Netherlands Integrated Soil Research Programme, concerns an analysis of pathways of soil phosphorus to surface waters and of indicators for the identification of critical source areas. The study is based op a literature review, an enquiry among experts and the analysis of already available data sets. For the Netherlands leaching of phosphorus via the subsoil to surface waters is the main cause of phosphorus pollution of surface water by farmland. The best indicator of critical source areas for the Dutch situation is clearly water-extractable soil-P of the topsoil or subsoil, depending on the local situation.

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GCIP Global Energy and Water Cycle Experiment (GEWEX) Continental-Scale International Project. A review of progress and opportunities. National Academy Press, Washington, DC, 1998, 93 p. ISBN 0-309-06081-8. Softcover.

The Global Energy and Water Cycle Experiment (GEWEX) Continental-Scale International Project (GCIP) is a joint effort of atmospheric scientists and hydrologists to develop data sets, models, and a research framework to understand land-atmosphere interactions on climatic time scales (i.e., seasonal, annual) in the Mississippi River basin. The overall goal of he GCIPP is to demonstrate skill in predicting changes in water resources on time scales up to seasonal and annual, as an integral part of the climatic system. The present report is the text of the evaluation of the research strategy for GCIP and to suggest revisions to the overall program, particularly the U.S.-based effort.

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Making Climate Forecasts Matter. P.C. Stern and W.E. Easterling, editors. National Academy Press, Washington, DC, 1999, xii + 175 p. ISBN 0-309-06475-9. Hardcover.

The climate of 1997-1998 attracted the attention of people and governments world-wide not only because of the large number of extreme weather events, but also because the climate anomalies that caused many of them were accurately predicted months in advance. The El Niño- Southern Oscillation (ENSO) episode is linked with a number of catastrophic events all around the world. There is now an improved ability to model ocean-atmosphere interactions and thereby predict seasonal to interannual climate variations across broad reaches of the planet, and forecasts will allow individuals and organizations to prepare for climatic events and be better off as a result. In this book the state of knowledge is given and the needed research identified. The major finding and the scientific questions are grouped under three thematic categories: (1) the potential benefits of climate forecast information; (2) improved dissemination of forecast information; and (3) the consequences of climatic variations and climatic forecasts.

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The Economics of Soil Conservation in Developing Countries: The Case of Crop Residue Mulching. O.C.A. Erenstein, Thesis, Wageningen University, Wageningen, 1999, x + 302 p. ISBN 90-5808-089-7. Softcover. Also published as Mansholt Studies, Wageningen University.

This study contributes to the search for a methodology to assess soil conservation, particularly in developing countries. The study first assesses the economics of soil conservation in general – with emphasis on the relationships between technology, economic analysis and policy implications. The quantification and valuation of soil erosion and soil conservation are highly controver-

sial and present considerable analytical challenges that have been tackled in various ways. By implication, government intervention is controversial too – and has typically been unsuccessful. This has direct implications for both the development of conservation technology and the implementation of conservation interventions. The study subsequently assesses the economics of one particular technological conservation option: crop residue mulching (also known as conservation tillage). An analytical framework is developed to assess the socio-economics of the technology in developing countries. The technology assessment framework follows a stepwise expanding analysis along a three-tier hierarchy: crop production, the farm household and the institutional setting. This results in a private and a social assessment of the technology, and the formulation of corresponding policy implications. The framework is applied in crop residue mulching in Mexico and Central America. Conclusions are drawn regarding the technology assessment framework and crop residue mulching.
Orders to: Dr. O. Erenstein, Department of Social Sciences, Wageningen University, Hollandseweg 1, 6706 KN Wageningen, The Netherlands. Fax: +31-317-484037. E-mail: olaf_erenstein@usa.net.
Homepage: www.sls.wageningen-ur.nl/oe/

Manual on Test Sieving Methods. Guidelines for Establishing Sieve Analysis Procedures. 4th edition. ASTM Manual Series MNL32. L.R. Pope and Ch.W. Ward, editors. ASTM, West Conshohocken, 1998, iii + 43 p. ISBN 0-8031-2495-3. Softcover. Stocknumber MNL32.
This manual on test sieving methods is intended for use as a supplement to and not a substitute for the many ASTM standards relating to the sieve analysis of materials, including soils. There has been a need for a manual that would bring together from many sources proven methods for making reliable sieve analyses to serve as a guide for the novice and as a reference for the more advanced. This publication has a listing of all ASTM published standards on sieve analysis procedure for specific materials or industries and on sampling of particulate materials.
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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 croppping. 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.
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Prof.Dr. S. Shoba, MSU, Dokuchaev's Soil Institute, Pygevsky per 7, 109017 Moscow, Russia

C. Soil and Water Conservation/Conservation des Sols et des Eaux /Boden- und Wasserschutz
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E. Forest Soils/Sols forestiers/Waldböden
Dr. P.K. Khanna, CSIRO, Div. of Forest Research, P.O.Box 4008, Queen Victoria Terrace, Canberra, ACT 2600, Australia

F. Land Evaluation/Evaluation du Terrain/Landbewertung
Prof.Dr. D. Dent, Land&Water Sciences Division, Bureau of Rural Sciences, Agr., Fisheries&Forestry – Australia.

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CR Cryosols/Cryosols/Frostböden
Dr. C. Tarnocai, 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. Sequi, Istituto Sperimentale per la Nutrizione delle Piante Via della Navicella 2-4, 00184 Roma, Italy

GC Soils and Global Change/Sol et Changements Globeaux/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

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PT Pedotechnique/Pédotechnique/Pedotechnik
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RB World Reference Base for Soil Resources/Base de référence mondiale pour les ressources de sol/weltweite Referenzbasis fuer Bodenressourcen
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SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin
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SM Environmental Soil Mechanics/Mechanique 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 Bergbaugebieten
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Dr. J. Kimble SCS/NSSC, Federal Bldg., Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866, USA.

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CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee
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