75 YEARS ISSS/IUSS
1924–1999

Bulletin

of the International Union of Soil Sciences

Bulletin

de l'Union Internationale de la Science du Sol

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Full Members, Associate Members, Individual Members and Sustaining Members since/Membres à part entière, Membres Associés, Membres à titre Individuel et Membres Bienfaiteurs depuis/ Vollmitglieder, assoziierte Mitglieder, Einzelmitglieder und fördernde Mitglieder seit: August 1998.
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EDITORIAL

75 YEARS ISSS/IUSS

What are the next steps?

On 19 May 1924, the International Society of Soil Science (ISSS) was founded in Rome, Italy. This year, we are celebrating our 75th anniversary. In our next Bulletin, we will publish an extensive article on this occasion.

Looking back, it becomes evident that in the last decade we have prepared well for the challenge of the next century, by joining the International Council for Science (ICSU) in 1993, and by restructuring our administration, transforming the International Society of Soil Science into an International Union of Soil Sciences (IUSS) in 1998 (during the 16th World Congress of Soil Science in Montpellier). The members of IUSS are now mainly national soil science societies instead of individual members, who, nevertheless, are still welcome from those countries that do not have a national soil science organization.

Looking ahead, at the development of our Union in the next century, the question arises, what the next steps in our common endeavours should be.
Two main goals have to be reached within the next two years:

- clarifying and defining the financial situation of our Union, especially the financial contributions from national societies;
- developing a new scientific structure for the Union, aiming at creating Divisions as main operational units, with Commissions, Working Groups associated to them, as well as Committees, so as to make our scientific structure more operational.

A meeting of the Standing Committee of Structure and Statute (CSS) and the Standing Committee of Budget and Finances (CBF) will take place in Vienna, from October 7-10, 1999, in order to elaborate strategies for fulfilling both tasks. The proposals developed during this meeting will be published in the next Bulletin, No. 96/1999-2, for further discussion amongst Union members.

Final decisions on both issues will be taken by vote during the Extraordinary Council Meeting in Bangkok, Thailand, from April 17-22, 2000, to which the Executive Committee and accredited representatives from all national soil science societies, as well as three Honorary Members will be invited.

By these further steps, we will not only create an operational basis for the 17th World Congress of Soil Science in Thailand, in 2002, but also a sound and long-lasting scientific, administrative and financial structure of our Union, in order to meet the challenges of the next century.

Winfried E. H. Blum
Secretary-General

REPRESENTATIVES of the HONORARY MEMBERS at IUSS COUNCIL MEETINGS

RESULT OF THE ELECTIONS

May 1999

The 19 Honorary Members of our Union were asked to elect three representatives who are to take part in the future IUSS Council Meetings.

These are the three Honorary Members elected for the period 1998-2002:

Prof. Dr. R. Dudal, Belgium
Prof. Dr. E.G. Hallsworth, Australia
Prof. Dr. K.-H. Hartge, Germany

ANNOUNCEMENTS

FIRST INTERNATIONAL CONFERENCE: SOILS OF URBAN, INDUSTRIAL, TRAFFIC AND MINING AREAS

July 12 - 18, 2000 Essen (near Düsseldorf Airport) Germany

The first International Conference of the IUSS Working Group "Soils of Urban, Industrial, Traffic and Mining Areas (SUITMA)". Objective: to get a first overview about the activities in this field and to bring together soil scientists who are already working in the field of urban soils or who are planning to do so.

Scientific programme: (July 14,15,17). Within the framework of »urban areas« it will deal with: City management and soils; Soil heritage in urban areas; Reports on soils observed in urban sites; Methods and examples of field survey; Analytical methods and their applicability; Classification - soil substrate, soil development, soil use; Relationships of soil use and history to soil features and development; Man-made materials, their features and quality as soils; Application of soil informations; Communal and industrial sludges and wastes; Storm-water infiltration, ground-water recharge, drainage, irrigation; Vegetable garden areas, food supply; Green, park and urban forest areas; Playing and sporting ground; Burial ground; City planning; Quality of urban soils; Soil protection and soil as biotop/pedotop; Soil degradation (chemical, physical, biological); Soil remediation; Specific problems of industrial sites; Specific problems of traffic sites (sealing, de-icing, wetting, emmissions, roads, railway, airport, harbour); Specific problems of mining sites.

One day excursions:

A (July 12)	- Modified soils (through mixing, compaction, translocation, humus-accumulation etc.)
B (July 16)	- Soils from man-made substrates (rubble, waste, sludges, ashes, slags)
C (July 18)	- Urban soil use - garden, playing ground, burial ground, storm water infiltration
D (July 13)	- Extreme contaminated soils
E (July 16)	- Soils from hard-coal mining and soil reclamation.

Other events:

SM	- Small group discussions on the objectives of the programme
RP	- Research partner mediation event.

Registration:
The registration fee will be about US$ 200. The fees of each excursion will be approximately US$ 80. A notice of intent should be sent to the Organizing Committee before October 1, 1999. The second circular, including the scientific programme, details of payment of registration and excursion fees etc. will be sent after receiving the notice of intent.

More information will be available at our home-page **http://www.uni-essen.de/bodenkunde** or contact:

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Notice of intent should be send to Prof. Dr. Wolfgang Burghardt (adress above).

Notice of Intent

First International Conference on
"Soils of Urban, Industrial, Traffic and Mining Areas"
July 12 - 18, 2000, Essen, Germany

Surname: ..... First name: .....

Affiliation: .....

Mailing adress:

.....

.....

Fax-No.: ..... e-mail: .....

Proposed title of paper for presentation (☐ oral / ☐ poster) :

.....

.....

To be presented in programme: .....

Interest:

- in excursion: A B C D E
- in other events: SM RP

Accompanying person(s):

.....

.....

.....

Remarks: .....

Date: ..... Signature: .....

International Symposium on

Balanced Nutrient Management Systems for the Moist Savanna and Humid Forest Zones of Africa

Cotonou, Benin, October 9-12, 2000

Organised by the **International Institute of Tropical Agriculture, Ibadan, Nigeria,**
and the **Department of Land Management of the K.U. Leuven, Belgium**
Under the auspices of the **Belgian Admin. for Development Cooperation (BADC)**

Scope of the symposium

1. Variability in biophysical and socio-economic factors and its consequences for selection of representative areas for nutrient balance experiments, possibilities and techniques for extrapolation.
2. Soil processes determining nutrient dynamics, in particular nitrogen and phosphorus, modelling nutrient fluxes in tropical farming systems.
3. Interactions between organic and inorganic nutrient sources, functions of soil organic matter.
4. Improved utilisation of rock phosphate, capitalisation of soil phosphorus.
5. Decision support systems to improve fertiliser use efficiency at farm level.
6. On farm testing of technologies improving the soil nutrient balance.

Organisation

The symposium is organised by the International Institute for Tropical Agriculture and the "Katholieke Universiteit Leuven" (K.U.Leuven) at the end of a first phase of collaboration on balanced nutrient management systems for maize based farming systems in West-Africa. The present symposium is supported by a grant from the Belgian Administration for Development Co-operation. Through this grant a number of participants will be sponsored to allow them to take part in the activities. This holds in particular for participants from West Africa where the main emphasis of this symposium resides.

Important dates and deadlines

August 31,	1999	Submission of abstracts and preliminary registration form
September 30,	1999	Second circular distributed
January 31,	2000	Submission of manuscripts, registration and payment for symposium and reservations for accommodation
October 9-12,	2000	Symposium and field trip

If you are interested in participating in this event and would like to receive the 2nd Circular, please contact:

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Proceedings 16th World Congress of Soil Science,
Montpellier, France, August 1998.

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- List of Participants

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TRENDS IN INTERNATIONAL SOIL CONGRESS PARTICIPATION

CONGRESS Year	1909[1]	1927[2]	1960[3]	1990[4]	1998[5]
NUMBER OF PARTICIPANTS and COUNTRIES					
Total	90	500	1100	1600	2600
not including locals		350	470	880	1800
Countries	11	43	74	75	99
NUMBER of PRESENTATIONS					
Oral	20	230	322	301	350
Posters	—	—	—	675	1500
DISTRIBUTION AMONG MAIN SPECIALIZATIONS (in % of total)[6]					
Pedology	40	26	21	17	28
Soil physics		10	12	10	11
Soil chemistry		20	14	13	17
Soil mineralogy			5	11	4
Soil biology		22	12	13	10
Soil fertility		12	25	26	19
Soil technology		10	11	10	11
INTERNATIONAL SOCIETY OF SOIL SCIENCE MEMBERSHIP					
Individuals		1000	3500	6500	7000
National societies	3	30	60	65	

Notes:

1) First International Conference on Agrogeology, Budapest, Hungary, 1909.

2) First International Congress of Soil Science, Washington, USA, 1927.

3) Seventh International Congress of Soil Science, Madison, WI, USA, 1960.

4) 14th International Congress of Soil Science, Kyoto, Japan, 1990.

5) 16th World Congress of Soil Science, Montpellier, France, 1998.

6) Essentially following the major Commissions. Since many presentations can be assigned to two or more of them, the percentage distribution is approximate only. Besides soil genesis and mapping, the second major topic at the Agrogeology Conference was methods of soil analysis.

Source of data:

Mostly reports published in Bulletins of the International Society of Soil Science and I. Szabolcs (1997, in History of Soil Science – International Perspectives) with some additional communications. Compiled by D.H. Yaalon, 1999.

MISCELLANEOUS

PUBLISHING IN SOIL SCIENCE

Publish or Perish (1) – Journal Prices and Impact

by

Alfred E. Hartemink*

Science knows only one commandment: contribute to science.
Bertolt Brecht (1898-1956)

1. Introduction

Despite the great importance of publications for individual careers as well as the prestige of research centres and universities, there seems to be little discussion in the soil scientific community on this subject – this as opposed to some other disciplines where lively debates are held on the pros and cons of the present "publish or perish" culture. In the weekly journal of science, Nature, there are regular contributions on the subject and they are of an absorbing interest. Therefore, I thought it might be useful to report some of this discussion, particularly in relation to soil science publications. No doubt there is little new information for some of the readers of this Bulletin but hopefully there is enough news for others, and overall it may perhaps stimulate some discussion.
This is the first of a series of contributions to the IUSS Bulletin on publishing and publications in soil science. A wide range of subjects will be treated like: number of soil science publications, author's role in a paper, fraud, journal covers, web journals et cetera. In this first note, we have a look at the price of journals and their impact factor.

2. Journal Prices

Many publishing houses in the world have originated from publishing activities of universities, like for example: Oxford University Press, Iowa State University Press, and PUDOC (Wageningen Agricultural University). In the past decades most universities privatised the publishing of their scientific achievements and handed this over to commercial publishers. The publishers have been very successful, doubled the number of scientific journals in the past 25 years and as an overall result publishing science is big business. Currently there about 160,000 scientific journals with a total value of more than two billion USD (Woestenburg, 1999).
In the past decade, journal prices have steadily increased and this has spurred controversy and some action around the globe. Universities discovered that journals by commercial publishers are of such high standard that they cannot do without and need to accept the price increase. For most libraries journal subscriptions account for a major part (>75%) of their annual budget. Early 1999, a letter was sent out to leading specialist science journals regarding the announced increase in the price of journals subscriptions (Abbott, 1999). The letter, which was signed by German, Austrian, Swiss and Dutch university libraries, was asking how the publishers propose to keep prices affordable in the future. Announced price increases were ranging from 19 to 27%. The increases were deemed necessary because of changes in exchange rates and rising number of submissions to some journals which means that the number of pages published has to be increased, according to the publishers. The libraries pointed out, however, that even if the increase in journal subscriptions is around 10% it still is far beyond the annual budget increase for most institutions. For example, the annual budget of the library of Wageningen Agricultural University was 1.8 million guilders (NLG) in 1991 and this had increased to

2.7 million NLG in 1997 (+50%) but during the same period the average subscription price for a journal increased from 426 to 710 NLG (+67%). As a result, the university library reduced its number of subscription from 4222 to 2800 between 1991 and 1997 (Woestenburg, 1999).
The problems are even more severe in developing countries where libraries have smaller budgets and costs of shipping journals are commonly higher. Reduction in the number of subscriptions has therefore widely occurred in libraries in developing countries. For example, the library of the University of Technology in Papua New Guinea slashed in 1998 the subscription to more than 300 international journals following year after year price increases, a frozen library budget, and a decreasing foreign exchange rate.
Scientists can do very little about library budgets and exchange rates but some argue that scientists need to change their attitudes towards publishing and boycott over-expensive journals. Recently an unpaid referee resigned for the journal Nuclear Physics published by a commercial publisher in protest at inflation in the price of the journal. The referee added to this that "other referees should think about what they are doing in refereeing for expensive journals, and remember that the serials crises is affecting their home institutions" (Butler, 1999).
In the past few years I have heard also colleagues muttering over papers to be reviewed for soil science or agronomy journals from commercial publishers. I even met soil scientists refusing to review manuscripts within reasonable time (i.e. < 3 months) for reasons that only the commercial publishers benefit from their review activities. Much depends on the personal circumstances but I think the argument holds no water and is more detrimental to colleagues than to the commercial publishers. Assume Dr X has 5 journal publications per year of which 3 are in journals of commercial publishers. Hence, at least 6 reviewers will have a look at the manuscripts of Dr X (and quite likely it improves the manuscript contents). Now it is reasonable that Dr X also reviews 6 manuscripts from journals of commercial publishers per year. If one really wants to go to the extreme and undertake action against commercial publishers than it can be considered not submitting manuscripts to their journals. But that is not happening and biological scientists tend to select their journals more on impact factor than on its price when submitting their manuscripts (Abbott, 1999).

3. Impact Factor

Some recent correspondence to Nature suggested that journal prices and impact factors are inversely related. It was found that the most expensive chemical/medical journals had the lowest impact factors. What about soil science journals? A list of soil science journal was compiled from publishers which are commercial (n=8) and non-commercial (n=6), i.e. national soil science societies, see Table 1. This list, by no means complete, could be relatively easily assembled. Most journals published by national soil science societies are, however, published in close cooperation with commercial publishers, for example Soil Use and Management from the British Society of Soil Science is published by CAB International. Likewise, there are journals of commercial publishers that are published in cooperation with the International Union of Soil Science, like for example Biology and Fertility of Soils, but such cooperation is merely a formality. The distinction between commercial and non-commercial soil science journals is somewhat vague.
For each journal the impact factor for 1997 as well as the price and number of pages and papers was assembled.

Journals with the highest impact factor in 1997 were the European Journal of Soil Science and the Soil Science Society of America Journal – both published by national soil science societies. In this list, commercial and non-commercial soil science journals are equally distributed across the ranking of the impact factor but journals published by national soil science societies are on average six times cheaper than those of commercial publishers. Some of the journals by national soil science societies have, however, page charges which affects the price picture. As mentioned, prices quoted are institutional subscription rates (libraries) and personal subscriptions for members are even lower. Also the journals published in cooperation with the IUSS are considerably cheaper for IUSS members than for institu-

Table 1. Soil science journals, their impact factor and prices for 1997

Rank †	Journal	Published by:	Impact factor	Price USD ‡	number of: pages	papers
1	European Journal of Soil Science	National Soil Science Societies	1.811	209	766	82
2	Soil Science Society of America Journal	National Soil Science Society	1.336	137	1814	238
3	Soil Biology and Biochemistry	Commercial	1.326	1314	2341	251
4	Soil Science	Commercial	1.253	195	966	103
6	Plant and Soil	Commercial	1.193	2645	3098	305
7	Applied Soil Ecology	Commercial	1.127	593	636	58
9	Australian Journal of Soil Research	National Soil Science Society	0.868	300	1407	97
10	Geoderma	Commercial	0.839	1667	2395	111
11	Catena	Commercial	0.639	787	1194	68
12	Journal of Soil and Water Conservation	Soil and Water Conservation Society	0.617	60	464	55
13	Canadian Journal of Soil Science	National Soil Science Society	0.613	113	721	83
14	Soil and Tillage Research	Commercial	0.610	1099	1474	94
15	Soil Use and Management	National Soil Science Society	0.595	195	304	45
17	Land Degradation and Rehabilitation/Development	Commercial	0.574	295	362	22

† ranking based on impact factor of ISI
‡ institutional prices in US Dollars

tions or for non-IUSS members. Despite these confounding factors, there seems little relationship between the impact factor of a journal and its annual subscription rate – this contrary to the report in Nature on chemical/medical journals (Abbott, 1999).

An important factor when correlating impact factors to the price of a journal is the actual number of pages published. For example the subscription price for Soil Use and Management was USD195 and 304 pages were published in 1997. Geoderma was in 1997 nearly nine times more expensive but it also published nearly eight times more pages. Hence the price difference seems justifiable. Less well compare the Soil Science Society of America Journal and Soil Biology and Biochemistry which had about a similar impact factor in 1997. The Soil Science Society of America Journal published 1817 pages in 1997 and its subscription rate was USD137. Soil Biology and Biochemistry published 29% more pages but its price was more than 800% higher than the Soil Science Society of America Journal. The commercial journals published on average 1.8 page per USD whereas the national soil science society journals averaged 6.2 pages per USD. Society journals are on average three times cheaper.

Correlating the pages/USD to the impact factor showed no obvious pattern, but there is a relation between the number of pages published and the annual subscription rate, and this depicted in Fig. 1. Journals from national soil science societies show almost no price increase with increasing number of pages published. However, there is almost a linear price increase for journals from the commercial publishers.

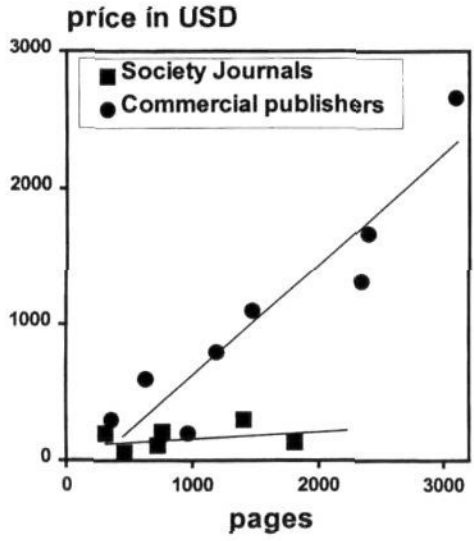

Fig. 1 Relationship between number of pages published and annual subscription rate for 14 soil science journals in 1997.

A less obvious but interesting relationship exists between the average length of a soil science paper and the impact factor of the journal. At first sight there seems no relation as papers of 10 to 12 pages are found in journals across the entire impact factors ranking. Likewise, journals with impact factors between 0.5 and 1.0 publish papers ranging in average length from 3 to 22 pages. However, journals with high impact factors publish on average shorter papers. Not surprisingly and conform the general believe: if you want to be read – make it short.

Admittedly, there is a discomfiting factor in this relationship, being the number of words per page. For example about a 1000 words fit on a page in the Soil Science Society of America Journal (Hatfield et al., 1998) whereas less than 500 words are published per page in Geoderma. Correcting for the number of words per page does, however, only slightly alter the graph as few data points move down the vertical axis.

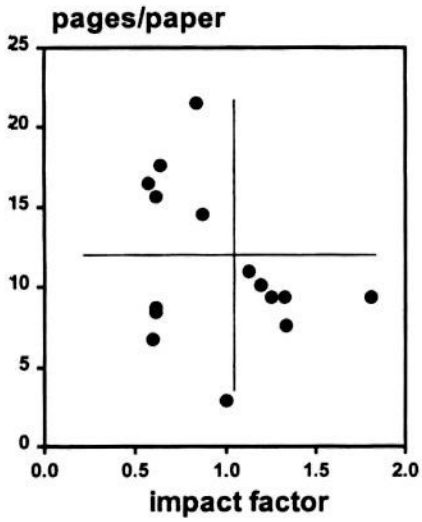

Fig. 2 Relationship between impact factor of 15 soil science journals and the average length per paper (data of 1997).

In conclusion, there is great variation in the price and impact factor of soil science journals - but these are not related. Also no relation exists between the impact factor on one hand and the publisher (commercial, national soil science societies) on the other - but journals from national soil science societies are on average much cheaper. It also seems apparent that journals with shorter papers have more impact, but that is no great news.

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Cryosol Working Group Meeting
Copenhagen, Denmark, March 19, 1999

This working group meeting was held in Copenhagen on the day following the Circumpolar Soil Database Meeting. Seven members of the Cryosol Working Group (CWG) from Russia, Germany, Denmark, the USA and Canada attended it.

The chairman of the meeting informed the members of policy changes that concern the working groups of both IPA and IUSS, and about the election of co-chairs for the IPA CWG and the chair and secretary for the IUSS CWG.

The participants discussed the tentative table of contents of the proposed Cryosol book and revised it. The chair will distribute the revised table of contents to the chapter leaders. The table of contents now includes approximately fifty papers organized into eight chapters. These chapters are: (1) History of polar science research, (2) Geography of Cryosols, (3) Cryogenic soil-forming processes, (4) Properties of Cryosols, (5) Soil ecological processes, (6) Classification of Cryosols, (7) Long-term dynamics and climate change, and (8) Utilization and management of Cryosols. The plan is that all of the manuscripts will be submitted to the chapter leaders, who will arrange for the reviews. When these reviews have been completed, the chapter leaders will submit the papers to the editor, who will combine them and carry out a final review on the completed manuscript. It is planned that the book will be printed and made available at the upcoming Third International Conference on Cryogenic Soils to be held in Copenhagen in August 2001.

It was necessary to change the dates of this conference and the associated field trip since they overlapped with the International Conference on Geomorphology. Therefore, the date of the Third International Conference on Cryogenic Soils was changed to August 20–24, 2001 and the post-conference field trip was changed to August 25–31. The themes of this conference, which will be held in Copenhagen, Denmark, are cryogenic processes, genesis of Cryosols, soil ecology, carbon storage and cycling, Cryosols and the hydro-geochemical cycle, and the response of Cryosols to anthropogenic impact and global change.

The abstract and report containing the soil sampling and analysis prepared specifically for the ITEX vegetation study sites were distributed to the participants at this meeting. This work was initiated at the ITEX conferences held in London and, recently, in Lansing, Michigan. The participants were asked to review this material and forward their comments to the authors of this report.

Coordination of the soil temperature work that the IPA requested this working group to carry out, was discussed and it was decided that further information is required. This will probably be obtained during the International Monitoring Conference to be held in Pushchino, Russia this spring. It is planned that Sergey Goryackin, the co-chair of the IPA CWG, will attend and represent this working group at this conference.

The chair reported on the special Cryosol issue of PPP. The seven papers submitted for this issue are now being reviewed. This issue will be published sometime during the fall of 1999.
Lastly, a lengthy discussion was carried out aimed at formulating the CWG's plans for the next four years. It was agreed that the Cryosol book and the circumpolar database will be completed by 2001,

when the Third International Conference on Cryogenic Soils will take place. These projects will be the main activities of the CWG. In addition, the CWG will continue cooperating with and providing data for the Circumpolar Active Layer Monitoring Project (CALM) and also will cooperate with the European Soil Bureau (ESB), the Nordic countries soil database project and ITEX. Further, the CWG will work to bring out the importance of soil processes within the integrated terrestrial arctic system science, by formulating key problems and projects in cooperation with other bio and geo sciences. We would also like to have an international symposium at the next IUSS conference to be held in Bangkok in 2002.

Circumpolar Soil Database Meeting
Copenhagen, Denmark, March 16 – 18, 1999

Global climate change is predicted to have its major impact on northern ecosystems, which are expected to undergo significant increases in surface air temperatures. The resulting partial loss of continuous and discontinuous permafrost will cause many complex changes, further upsetting the delicate balance of the ecosystems in these areas.

In order to address these issues, a meeting was held in Denmark at the University of Copenhagen's Institute of Geography. Approximately twenty-five participants from ten countries were present, *including scientists from five EU countries (Sweden, Finland, Denmark, Germany and France) and* from Norway, Russia, Iceland, the USA, and Canada. The purpose of this meeting was to bring together experts from various countries to determine the availability and quality of the soil data that is essential for both the Circumpolar Soil Database and the Soil Geographical Database of Europe. Other important goals were to exchange information, to develop common methodologies and to formulate cooperative projects for the near future.

At the beginning of the meeting, presentations were made on the progress of the European Soil Database by the representatives of the European Soil Bureau (ESB-Ispra) and INRA-France. Representatives of Agriculture and Agri-Food Canada (AAFC) and the US Department of Agriculture (USDA) reported on the Circumpolar Soil Database. These were followed by presentations of representatives from Russia, Greenland, Denmark, Finland, Sweden, Norway and Iceland on the availability and quality of their soil data. Each presentation was followed by lengthy discussions concerning the soil classification system used, data availability, and the gaps in soil data that will require further work.

The later part of the meeting was spent on discussions aimed at formulating possible cooperative projects and recommendations relating to future work on these databases. The proposals and recommendations made at this meeting are as follow:

1. It was proposed that a user-oriented proposal for the Nordic countries and the Murmansk Kolskiy region of Russia be developed by November 30,1999. This proposal will deal with the collection of soil and terrain information for areas where gaps in data were identified, with special emphasis on determining the possible extent of permafrost-affected soils (Cryosols) occurring in these countries. It was recommended that this project be linked to ongoing ecological studies and monitoring in these areas. These studies, which are partially or wholly funded by EU, include: the Arctic Monitoring and Assessment Program (AMAP), the Arctic–Alpine Terrestrial Ecosystems Research Initiative (ARTERI), the Barents Sea Impact Study (BASIS), the Conservation of Arctic Flora and Fauna (CAFF), the Northern Trace Gas Studies (CONGAS), the Circumpolar Protected Areas Network (CPAN), the International Tundra Experiment (ITEX), Land Arctic Physical Processes (LAPP), and the Terrestrial Transect for Scandinavia/Northern Europe (SCANTRAN). It was also recommended, and agreed, that Mr. Arnold Arnoldussen (Norway) be responsible for developing this proposal and that he coordinate this project. The ESB will look into the possibility of establishing, within this project proposal, a test area for use of the newly-released Georeferenced Soil Database for Europe Manual of Procedures, Version 1.0, for the 1:250 000 scale soil map of Europe.

2. It was proposed that the databases for the Nordic countries (Norway, Sweden, Finland and Iceland) be updated by December 31, 1999. This will include soil border correlation among neighboring countries and the setting up of a pilot project in one of these countries, both to develop the methodology to be used and then to upgrade the soil information, especially in relation to permafrost-affected soils.
3. It was recommended that development begin on a uniform structure for the analytical database associated with both the European and Circumpolar soil databases. Initially, this database will include the compilation of existing laboratory data from representative profiles.
4. A number of scientists and, collectively, the Nordic countries, emphasized that the soil classification system used in the 1998 publication of the World Reference Base for Soil Resources (WRB; World Soil Resources Report No. 84) is not satisfactory for use in these databases. It was specifically pointed out that it is important to recognize a third level in the WRB soil classification, specially in the Cryosol major soil group, and to integrate the current Cryic Histosols with the Cryosols. It was recommended that the WRB Soil Classification Working Group of IUSS cooperate in these specific Nordic projects.
5. It was recommended, and agreed, that soil data for the permafrost-affected areas of Mongolia, China, Kazakhstan, Svalbard, Denmark, Greenland, Iceland, the Faeroe Islands, Scotland, Estonia, Latvia, and Byelorussia also be included in the Circumpolar Soil Database. It was also recommended that work begin on the Southern Circumpolar Soil Database, centered around Antarctica.
6. It was strongly recommended that cooperation be continued between the USDA, AAFC, ESB, Russia and the Nordic countries through cooperative projects, meetings and joint publications.
7. It was recommended that well-known experts on permafrost-affected soils prepare a short manual (or booklet) containing the criteria to be followed for the identification of Cryosols during fieldwork. This publication will be particularly useful for the Nordic countries, where experience in the subject is lacking.

The participants from the USA and Canada expressed appreciation to the European Commission for organizing this meeting and for sponsoring the participation of eight people, including three Russian scientists. This meeting provided very much-needed contacts for the exchange of ideas, the development of networking, and for further cooperation in relation to the development of soil databases.
The participants at this meeting expressed special appreciation to Dr. Pandi Zdruli of the ESB for organizing the meeting and to the University of Copenhagen's Department of Geography, specifically to Dr. Bjarne Jakobsen and his coworkers, for providing the facilities. Their efforts led to the smooth running of this meeting and ensured that success was achieved.

Charles Tarnocai John Kimble Bjarne Jakobsen Pandi Zdruli

WORKING GROUP LAND DEGRADATION AND DESERTIFICATION

Recommendations of the 2nd International Conference on Land Degradation

The degradation of the land resource base is rapidly emerging as an agricultural and environmental concern of major proportions. Its importance transcends the deterioration of the land per se, particularly as it impacts several critical issues of our time: food security, diminishing quality and quantity of water resources, loss of biodiversity, and global climate change. The decline in the land resource base, in important areas of developing countries, will significantly increase the challenge to feed a growing population from a diminishing land area of declining quality, resulting in food insecurity, reduced agricultural income, and slower economic growth. The use of fragile ecosystems by resource poor farmers, the continuing conversion of forests to agriculture, the systematic loss of water storage capacity of soils and in reservoirs through siltation, the systematic loss of biodiversity require monitoring and attention. Further, problems associated with the increasing urbanization including the conversion of quality agricultural lands are issues to be dealt with in the debate on sustainable land management. It is imperative, therefore, that concerted action at the local, national and global level is taken in partnership with farmers and land users to maintain and enhance land quality. Investments in land quality are an essential component to

meet a wide range of environmental, economic and welfare goals as we move into the 21st Century.

Recommendations

In this context, the participants of the 2nd International Conference on Land Degradation deliberating on the theme of »Meeting the Challenges of Land Degradation in the 21st Century« recommend that:

1. The Working Group on Land Degradation and Desertification of the International Union of Soil Sciences (IUSS) should pursue the following actions:

- ⇨ Initiate and coordinate the development of a database of research activities (evaluation, remedial action, rehabilitation) on land degradation and desertification, including a state-of-the-art bibliography on the subject;
  - ⇨ Interact with other appropriate Sub-Commissions and Working Groups of the IUSS;
- ⇨ Develop a set of guidelines for survey, assessment and monitoring of land degradation, including early warning indicators of pressure, state, and response that can be used for local, national and global reporting on the state of the land resources;
- ⇨ Establish a dedicated web-site on internet to serve as a clearing house on information on land degradation and mitigation technologies related activities to service the scientific community;
- ⇨ Continue to publish the Newsletter on Land Degradation and Desertification;
- ⇨ Provide the international inputs in the organization of the 3rd Conference on Land Degradation and Desertification to be held in Rio de Janeiro, Brazil in 2001.

2. The Convention to Combat Desertification (CCD) should:

   a. Expand the geographic area of its activities to include all global land resources;
   b. Involve a wider range of land resource scientists and land users in its deliberations; and
   c. Support financially and otherwise the Working Group on Land Degradation and esertification of the IUSS.3. In order to assist countries in developing pertinent policies and legal instruments to combat land degradation, should lend support to the »Tutzing Group« in their efforts to develop a »Soil Convention« designed to

- ⇨ Provide fundamental principles to guide nations on sustainable land management,
- ⇨ Facilitate international linkages between environmental and other related treaties and conventions,
- ⇨ Initiate a common basis for future legislation and policy making efforts,
- ⇨ Coordinate a legal and policy framework for addressing land resource issues,
- ⇨ Consolidate the variety of 'soft laws' associated with soil and water conservation, and
- ⇨ Identify and promote other policy instruments to support farmers and other land users in their efforts to improve land.

4. International institutions such as the Food and Agriculture Organization, United Nations Environment Program, and the Global Environmental Facility of the World Bank, the International Agricultural Research Centers such as International Rice Research Institute, and International Crops Research Institute for the Semi-Arid Tropics, others such as the International Board for Soil Research and Management and the International Soil Research and Information Center, the regional institutes such as the Asian Institute of Technology, and appropriate Non-Governmental Organizations:

- ⇨ Incorporate land degradation and desertification as an integral part of their research and developmental efforts in sustainable agriculture,
- ⇨ Develop a program, which integrates land quality improvement with productivity enhancement technologies, in the context of the needs and aspirations of the affected populations and the qualities of the resource base, and
- ⇨ Recognize that declining land productivity is real in developing countries and as they play an important role in agricultural supplies, economic development and the welfare of the poor, it must be emphasized more to alleviate food insecurity

Dr. Hari Eswaran, USDA Natural Resources Conservation Service
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CALL FOR COLLABORATION BY THE WORKING GROUP »SOIL ORGANIC FERTILIZERS AND AMENDMENTS«

The Working Group » Soil Organic Fertilizers and Amendments« of the International Union of Soil Sciences started its work in 1994 and was approved by the Council of the International Society of Soil Science during the 15th World Congress of Soil Science in Acapulco, Mexico. The group has been very efficient so far, but we are trying to increase its efficiency still more by inviting a more active international participation.

This is the main reason why we are asking for your cooperation in filling the »Short Questionnaire« and sending it back to me. An early answer will be appreciated.

Please note that the Italian Society of Soil Science has also established a Technical Committee on Compost. Your possible interest in it, as well as the possibility of introducing us other scientists in order to facilitate cooperation with similar groups in your country would also be appreciated.

Thank you for your attention and help.

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

»Soil Organic Fertilizers and Amendments«

Name .....

Address ..... Country .....

Short Questionnaire (cross whenever applicable)

I am available to participate in the activities of

- ❑ IUSS Working Group Soil Organic Fertilizers and Amendments
- ❑ Technical Committee on Compost

In my professional activity I am specially interested in

- ❑ organic fertilizers (high nutrient content)
- ❑ organic amendments (low nutrient content)
- ❑ mineral fertilizers (please specify your main interests) .....
- ❑ other (specify) .....

- ❑ production processes
- ❑ trade (statistics, monitoring, etc.)
- ❑ other (please specify) .....

- ❑ analyses, general
- ❑ organic C analysis, including fractionation and characterization
- ❑ organic N analysis, including fractionation and characterization
- ❑ analyses, other nutrients
- ❑ analyses, undesired elements
- ❑ analyses, other (please specify) .....

- ❑ crop production, yield and quality
- ❑ behaviour in soil of nutrients
- ❑ influence on soil physical properties
- ❑ use for bioremediation
- ❑ other (please specify) .....

- ❑ sanitary features
- ❑ heavy metals
- ❑ other undesired substances
- ❑ other health or environment related topics (please specify) .....

Please list 5 items you consider the most relevant among your papers (author[s], title, journal or book, pages, year)

(add further sheets if necessary)

Send to Prof. Paolo Sequi: by e-mail psequi@uni.net - ask for this file (Word 2, 6, 97?) if you need it
or fax to (*39) 06.700.57.11
or mail to ISNP - Via della Navicella, 4 - 00184 ROMA (Italy)

ISSS - Working Group
'Urban Soils - Soils of Urban, Industrial, Traffic and Mining Areas (SUITMA)'

Most of us live in cities nowadays. Thus the city has become our normal environment. This concerns also the urban soils. But our experiences with these soils are rather limited. During the 16th ISSS World Congress in Montpellier ISSS commission V-soil genesis, classification and cartography and commission VIII-soil and environment decided to reestablish the working group urban soils with an extension to the demands to soil since of industrial, traffic and mining areas. The result is the ISSS-Working Group SUITMA.

At its first meeting 34 colleagues of 16 countries came together. In addition colleagues of 5 more countries encouraged us with the announcement of their support. We believe and hope that there are much more soil scientists are already working on urban soils. Please contact us when you are already active or when you plan to start with it.

We are aware of the limited knowledge about these soils and the numerous difficulties connected with the investigation of them. For this reason it is important to exchange the experiences even when they are just from first results.

Due to the rapid growth of cities to megacities there is an urgent need that soil science finds its way into cities. Most of the services originally fulfiled for the smaller cities from the surrounding rural landscape and its soils must be delivered now in the cities itself.

An international working group can be in this situation only successfull for the demands of urban population when the working group has a regional basis. Our idea and explicit wish is, that under the roof of the national and regional soil science societies, working groups of soils of urban, industrial, traffic and mining sites will be established.

The role of soil science for health care is evident. But there are much more fields of problems to be solved in urban areas. To our experience there must be numerous which are not known today. For that reason we have beside the technics of our investigations also to develop the tasks and the demands to this new field of research.

In this situation the task of SUITMA will be
- to settle soil science in urban, industrial and mining areas
- to develop the fields of practical use of soil informations
- to bring together soil scientists working about urban soils
- to train soil scientists
- to collect the already existing knowledges and to distribute them
- to include the user of soil informations in our work.

SUITMA was established by commission V and VIII. The reason is that we first have to learn how these soils are looking like, what is their morphology, distribution and development. We must be able to map them and their properties. This needs contributions and assistance of commission V. The gathering and use of soil information for protection and fulfilment of human needs is closely connected to commission VIII. That means not that the activities are restricted to this two commissions. Numerous problems are related to the work of the other ISSS-commissions, subcommissions and working groups. We hope for their interest and co-operation in urban soils problems.

SUITMA should become a forum for managing urban soils and soil use. It also should attract collagues from other fields. Our search for a proper development of the soil resources in the steady growing cities needs awareness of the socio-economic and cultural facts.

More information will be available from our home-page. We are planning a conference in July 2000, and training courses.

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Pedobiologia

Cooperating Journal of the International Society of Soil Science

Founded in 1961 by E. von Törne

Editor-in-Chief
Prof. Dr. Stefan Scheu, Darmstadt, Germany
Prof. Dr. John Lussenhop, Chicago, U.S.A.
Dr. Jürgen Schauermann, Göttingen, Germany

Aims & Scope
Soil biology is a rapidly developing field in ecology and ecosystem studies. Analysis of biological structures, interactions, functions, and processes in soil is fundamental for understanding natural and managed terrestrial ecosystems. Such an understanding is a prerequisite for appropriate soil management. Pedobiologia publishes papers in the field of soil biology (soil zoology and soil microbiology). The scope of this journal consists in fundamental and applied aspects of soil biology. Structural characteristics of the community of soil biota, interactions of soil organisms and the effect of organisms on soil processes are key focal points. There are also included experimental studies. More theoretically or descriptively oriented studies, papers on methods or techniques, and review article are also included.

Society
Deutsche Bodenkundliche Gesellschaft
International Society of Soil Sciences

Audience
Researchers in soil and agriculture science and forestry, microbiologists, biologists, ecologists, phytopathologists, zoologists

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URBAN & FISCHER

el/ott '99

Symposium on the "Fate of Radionuclides". Within the framework of the 5th International Conference on Biogeochemistry of Trace Elements Vienna, 11th to 15th of July 1999

Within the framework of the 5th International Conference on Biogeochemistry of Trace Elements, which was held in Vienna from 11th to 15th of July 1999 the International Union of Radioecologists organised a symposium on "Fate of Radionuclides". Within one and a half day (12th and 13th of July) in total 18 oral and 10 poster contributions were presented. The symposium started with an introductory talk by the president of IUR, Dr. Gilbert Desmet highlighting research needs for radioecology within the field of soil science and an overview of the UIR action on environmental models and data (F. Carini). The individual contributions covered a wide range of topics including the impact of micro-organisms on the mobility of radionuclides in different ecosystems (J. Remacle, O. Kostyuk), rhizosphere processes influencing RN adsorption in soil (S. Staunton), speciation studies and studies on soil inventories (N. Gri, I. Yousfi, D. Claval, P. Bossew) methods to predict plant uptake of radionuclides (N. Waegeneers, S. Denys, T. Herren, A. Zichner, H. Tsukada, F. Pinel, A. Mikheev), radionuclide dynamics in the soil – plant system (M. Gerzabek, A. Gommers) and the food-chain (C. Feidt), possible remedial measures (H. Vandenhove, S. Dushenkov), the fate of radionuclides in forest ecosystems (B. Delvaux, F. Strebl, G. Zibold, C.-Y. Chiu) and catchments (P.Bossew) and the influence of climate on the behaviour of radionuclides (F. Carini). The main conclusions, which can be drawn from the presentations are: (i) the role of micro-organisms is well identified, but needs more quantification, (ii) the idea of investigating inventories and fluxes is already widely applied in radioecological studies leading to a better understanding and quantification of certain processes, as e.g. phytoextraction, (iii) discussions between modellers should be intensified to make clear e.g. the advantages and disadvantages of compartment versus convection-dispersion models for estimating radionuclide migration.

F. Carini/Piacenza M.H. Gerzabek/Seibersdorf

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

Australian Society of Soil Science Incorporated

A new committee of the Australian Society of soil Science Incorporated was elected for the period ending on the 31st December 2000:

Federal President:	Mr. Graham Price
Honorary Secretary:	Dr. Steven Raine
Honorary Treasurer:	Mr. David Lester
Honorary Editor:	Ms. Jonnie White
Executive Officer:	Ms. Alice Bass

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Canadian Society of Soil Science Annual Meeting, Vancouver

The 44th Annual Meeting of the Canadian Society of Soil Science (CSSS) was held at the University of British Columbia (UBC), Vancouver, BC, July 5-8, 1998 during the 78th Annual Conference of the Agricultural Institute of Canada (AIC) and its affiliated societies. UBC is the third largest university in Canada with more than 32,000 students. The campus setting, with views of the Pacific Ocean and snow-capped mountains is one of the most spectacular in the world. The Gage Residence and UBC Conference Centre is the largest university conference centre in Canada.

There were two pre-conference tours: (1) »Field Crops - From Sea to Mountains«: The tour offered a unique perspective on farming all along the lower Fraser Valley and (2) »Hortiulture in the Fraser Valley«: The tour included a drive through the largest raspberry production area in North America. British Columbia boasts the third largest cranberry industry in the world, with the highest yield/hectare on the planet. The post-conference tour on July 9 was on »Animal Production – Waste Management«. New and innovative methods of waste treatment and application for both liquid and solid wastes were highlighted.

The BC Grown opening reception on July 5 was an excellent opportunity to make new friends and become reacquainted with old ones. The theme of the conference, co-hosted by the British Columbia Institute of Agrologists and the Canadian Society of Animal Science, was »Agriculture for a Healthy Society«. It was aptly chosen, and certainly reflected the variety seen in the technical program. It highlighted the positive impact of agriculture on the economic, social, and physical well-being of Canadians. From the production of healthy, wholesome food to the generation of jobs and capital, from land stewardship to the rural lifestyle, agriculture is a major factor in Canada's high standard of living. The

opening ceremonies and plenary session were held at the magnificent Chan Centre for the Performing Arts, a state-of-the-art facility. The thought-provoking plenary session featured notable speakers who addressed the role of agriculture in a healthy society from the local, national, and international perspectives.

A total of 840 delegates from Canada and abroad participated in the conference including 125 registrants for the CSSS meeting. The CSSS program included 124 papers. Oral papers were presented in the following technical sessions: Water quality, manure and compost, time domain reflectometry - field experiences and new developments, environmental soil science, nutrient management, soil chemistry, nutrient cycling in forested agricultural and urban soils, and soil quality and soil science education. In addition, three joint symposia were held (1) Manure management in relation to sustainable animal production systems, (2) Mycorrhizae and plant nutrition, and (3) Nutrient cycling in crop cultural systems. A special wrap-up session on July 8 discussed the future of soil science research in Canada.

The highlight of the CSSS meeting was the Awards Banquet on July 7 in the Asian Center in Nitobe Garden. Charlie Arshad, Marvin Nyborg, and Gordon Webster were elected CSSS Fellows in recognition of their exemplary contributions to soil science. Taumey Mahendrappa received the Soil Science in Society Award for his significant contribution towards development of public awareness of the importance of soils. The C.F. Bentley and President's Awards were presented to students in recognition of excellence in oral and poster presentations. Venessa Bailey, Jackie Heaman, and Mitchell Timmerman received the Bentley Award and Dan Simard received the President's Award. Roland St. Arnaud, a CSSS member , was one of the scientists who received the AIC Fellowship. Banquet speaker Don Gayton gave a very entertaining and educational talk on »Starfish, soils, and sustainability: Premillennial speculations«.
We acknowledge the hard work and dedication of Art Bomke, Dave Clements, Marie-Claude Fortin, Maja Krzic, John Paul, and all other people involved in the organization of the meeting. The next meeting will be held in conjunction with the 79th AIC Annual Conference in Charlottetown, Prince Edwards Island, August 8-11, 1999. The theme of the conference is »Knowledge and Creativity: Key to Agriculture's Future«. Information is available from Kais Deelstra, phone (902) 368-4880, fax (902) 368-4856, e-mail kdeelstra@gov.pe.ca or Carl Willis, phone (902) 566-6818, fax (902) 566-6821 (homepage http://www.upei.ca/~aic99). The August 15-19, 2000 AIC Annual Conference (theme Agri-Food 2000: Key to the Future) in Winnipeg, Manitoba will be held jointly with the Canadian Institute of Food Science and Technology and the Canadian Society of Agricultural Engineers.

Yash P. Kalra, Edmonton, Alberta, Canada

Association Française pour l'Étude du Sol
(French Soil Science Society)

Le Conseil d'Administration, réuni le 22 janvier 1999, a procédé au renouvellement de son bureau. Le bureau de l'Association se compose donc de la façon suivante:

Président:	Marc LATHAM, Directeur du CNEARC
Trésorier:	Pierre FAIVRE, Professeur à l'Université de Savoie CISM
Secrétaire Général:	Micheline EIMBERCK, Ingénieur de Recherche à l'INRA

Adresse: AFES
Avenue de la Pomme de Pin, B.P. 20619
Ardon, 45166 Olivet, France

Indian Society of Soil Science

The composition of the new Executive Council of the Indian Society of Soil Science for 1999 as per election results confirmed in the 63rd Annual General Meeting of the Society held in November 1998 is as follows:

President:	Dr. M. Velayutham
Vice Presidents:	Dr. P.K. Chhonkar and Dr. G.U. Malewar
Secretary:	Dr. G. Narayanasamy
Joint Secretary:	Dr. R.K. Rattan
Assistant Secretary:	Dr. A.K. Singh
Chief Editor:	Dr. T.D. Biswas

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Web site: members.tripod.com/~soilsocindia

G. Narayanasamy, New Delhi, India

Annual Convention of the Indian Society of Soil Science

The 63rd Annual Convention of the Indian Society of Soil Science was held at the Chaudhary Charan Singh Haryana Agricultural University (CCS HAU), Hisar, Haryana, India, November 16-19, 1998 under the auspices of the Hisar Chapter of the Indian Society of Soil Science. The theme was »Developments in Soil Science«. Dr. J.B. Chowdhury, Vice-Chancellor, welcomed the 400 delegates from India and abroad and gave a thought-provoking presidential address. Dr. D.K. Das, President of the Indian Society of Soil Science gave a short description of the achievements of Indian Soil Scientists. *He also discussed the challenges to Soil Scientists in the 21st Century.*

Inaugurating the Convention, Dr. D.R. Bhumbla, former Vice-Chancellor of the Haryana Agricultural University, discussed food security and management of land and water resources. The 16th Prof. J.N. Mukherjee - ISSS Foundation Lecture, given by Dr. S.R. Poonia, Dean, Agriculture, CCS HAU, discussed sorption/ exchange of some nutrient and non-nutrient cations in soils. The 25th Dr. R.V. Tamhane Memorial Lecture by Dr. S.N. Saxena, former Vice-Chancellor of Rajasthan Agricultural University, Udaipur dealt with the fertilizer management strategy for breaking crop yield plateau. About 300 papers were presented, including oral papers on November 16-18 (four concurrent sessions each day) and poster papers in four sessions.

Honorary membership is the highest honour the Society bestows on Soil Scientists. Drs. S.S. Khanna and G.S. Sekhon received this award. Four scientists (Drs. G. Narayanasamy, V.S. Tomar, V.K. Nayyar, and K.R. Sonar) were made Fellows of the Society. In addition, other awards were presented.

Hisar is about 180 km north-west of New Delhi. The Haryana Agricultural University, founded in 1966, is a major research and educational institution that played a significant role in bringing green revolution in Haryana. The University hosted the 48th Annual Convention in 1983.

The Convention provided a unique opportunity to Soil Scientists to interact and to learn about different research activities on various aspects of Soil Science throughout India. I was impressed by the signs in the auditorium eg. » Healthy soil, wealthy nation«, »There is the land, where is the soil?«, etc. I found the Convention very useful, both professionally and socially. I got the opportunity of meeting some of the 27 Indian Soil Scientists (e.g., Drs. R.P. Agrawal, M.S. Brar, D.K. Das, Achla Kumar, Raj Kumar, Mukul Masih, Kuldip Singh, and B.N. Swami) whom I had met at the 16th World Congress of Soil Science in Montpellier, France, August 20-26, 1998. I met Dr. Sant Singh who was my thesis examiner in 1963. I met several old friends. I even met a classmate of mine Dr. R. Yamdagni, whom I saw after 35 years. What a memorable Convention! The local Organising Committee included Drs. J.B. Chowdhury (Patron), R.P. Agrawal (Chairman), S.R. Poonia (Executive Chairman), M.S. Kuhad (Organising Secretary), and other members. I congratulate the local organizing committee and Dr. G. Narayanasamy, Honorary Secretary on doing a superb job. The next Convention will be held in Coimbatore. Further information is available from Dr. G. Narayanasamy, Indian Society of Soil Science, Div. of Soil Science and Agricultural Chemistry, Indian Agricultural Research Institute, New Delhi - 110 012, Phone : 91-11-5720991, Fax: 5755529, E-mail: isss@vsnl.com

Yash P. Kalra, Edmonton, Alberta, Canada

Sociedade Portuguesa da Ciência do Solo

The Portuguese Soil Science Society (PSSS) held its Annual Meeting on last 28-30 June 99 under the theme »Research on Soil Science in Portugal (1996-1998)«. The topics of the meeting were: Soil mapping and land capability of Northeast Portugal, soil technology and water management, soil chemistry and fertility, soil biology and ecology, soil degradation and rehabilitation, soil management in agricultural and forest systems.

The meeting was held at Vila Real University (Northern Portugal) and was attended by 170 participants who contributed with 80 communications (oral posters). A special issue of »Revista de Ciências Agrárias« on this event will be published next December 99. Forty four new members were admitted during the event.

The next Annual Meeting of the PSSS will be held at Évora University (Southern Portugal) on 15-17th June 2000 under the theme »Soil and Water Management«

Manuel Madeira
President of the PSSS
Sociedade Portuguesa da Ciência do Solo
Instituto Superior de Agronomia
Departamento de Ciências do Ambiente
Tapada da Ajuda
1399 Lisboa Codex
Portugal

OUR FIRST CENTENNIAL

100 Years Soil Survey in the USA

I don't know how long a science stays young, but I know that we are not old, or decrepit, or even over the hill. I am representing the soil survey program of the United States and I'm here to speak for all the many people who have made the program develop as it did and what it has become. We have had our ups and downs but we are really proud of who we are, so please let me explain a little.

We are fortunate that several good reviews of the nature and progress of the soil survey in America have been presented over the years (Miller, 1949; Kellogg, 1949, 1974; Cline, 1977; Simonson, 1987; Klingebiel, 1991)) and if you are interested in details, I hope you will refer to some of these authors.

In the mid-1800s as America embarked on learning about its land resources, many geologists were hired to undertake general inventories of regions and states. Eugene W. Hilgard mapped and described conditions in Louisiana and Mississippi (1855-1873) revealing a concern about the physical makeup of the land relative to problems of scientific understanding and to its application to land utilization. As such, Hilgard laid the foundation for modern soil science in America and linked it with agriculture. Some people refer to this as the agro-geological approach but whatever it's name, it got people thinking about soils as having differences that were important to biomass production.

In the late 1880s Milton Whitney, an aggressive, tough-minded young professor in South Carolina espoused a thesis that physical soil properties related to moisture were the primary controlling factors in crop production. Hilgard, then a Professor of Agricultural Chemistry at the University of California did not agree. Whitney moved to the University of Maryland in 1891 as Professor of Geology and Soil Physics. In 1892 Mark Harrington, the Chief of the Weather Bureau in the Department of Agriculture authorized publication of the first three bulletins relating soils to meteorology. Hilgard wrote about the relations of soils to climate; Whitney wrote about physical properties and moisture supplying capacity, and F. H. King (Univ. of Wisconsin) wrote about groundwater movements.

In 1894 Whitney was appointed the first head of the Division of Agricultural Soils in the Weather Bureau, USDA. A small staff set up a lab, collected samples and got organized in 1895-97, then did a trial map in Maryland and tested a soil salinity meter in Montana in 1898. A budget of $16,300 was authorized for soil mapping and in 1899 three two-man crews mapped four area, two in the humid east and two in the arid west. They mapped 1125 square miles using topographic maps (1:63,360) and horse and buggy. The survey was off and running; 4500 sq. mi. in 1900, 10,246 in 1901 and 17,990 in 1902.

As I recall 1901 was a banner year for the soil survey program. On July 1 the Division was reorganized as the Bureau of Soils with Milton Whitney as the director. Later that year he added a division of soil management with King as its chief. We had labs for soil physics and soil chemistry, did tobacco investigations and set up a director of Insular soil surveys (Puerto Rico, Cuba, and so forth) in addition to east and west soil survey units. Our report for that year mentions that it was the policy to cooperate as fully as possible with the various State organizations such as Experiment Stations, Boards of Agriculture and State Departments of Agriculture. The main purpose of the soil survey was to provide an accurate basis for the adaptation of soils to crops. Of course, we eventually found the adaptation to be a two way street; soils to crops, and crops to soils.

Prof. King and Whitney disagreed on some findings about soil management and King returned to Wisconsin. The debate about the influence of soil texture versus fertility on crop productivity fueled the disagreement with Hilgard and others about soil nutrient management; it was a difficult time for all of us.

Soil surveys expanded rapidly into areas with important field crops and fruits, both rainfed and irrigated. By 1910 they had mapped 214,000 sq. mi. of detailed surveys and 210,000 sq.mi. of reconnais-

sance surveys (1:380,180). The initiation of a detailed (1:63,360) scale soil survey program stands as Whitney's lasting monument.

The standards and guidelines for conducting soil surveys developed year by year as the teams gained experience in recognizing and mapping soil series and types. The early concepts assumed most soils to be weathering products of the underlying geology with in turn were associated with physiographic and climatic regions. Curtis F. Marbut, a geologist by training and experience, joined the Bureau of Soils in 1910 and became the Scientist-in-Charge of the Soil Survey Division in 1913 making only minor changes in the program then. George Coffey, a surveyor who obtained a PhD while in Washington, DC was aware of the Russian ideas about soils. He paraphrased them in his dissertation, however; neither his advisor, Prof. Merrill, nor his supervisor, Marbut, paid much attention. Whitney reluctantly permitted him to publish a bulletin that drew on these concepts.

Whitney's 1909 map of the US at 1:7M scale had 14 units showing the soil provinces. A 1912 map prepared by Coffey had 22 units: one unit for undifferentiated soils in the arid west, and in the humid east there were 11 units of dark colored prairie soils and 10 units of light colored timbered soils. Marbut's map of 1913 did not differ greatly from Whitney's except for names of the provinces. But once Marbut assumed responsibility for directing the National Soil Survey , his thinking changed rapidly from that of a geologist to that of a soil scientist. After becoming familiar with Glinka's work, we saw efforts directed toward developing a soil-based classification scheme and a new map of the US based on knowledge of the soils themselves. Dr. Marbut didn't really get either one completed before his retirement in 1934. It is interesting that Dokuchaev's ideas, as conveyed by Glinka, rather than those expressed by Hilgard or Coffey are evident in the focus and writing of Marbut beginning in the 1920s. His scheme for soil classification presented at the First International Congress of Soil Science in 1927 gave soil scientists world-wide an abstract of that model and marked him as a leader in the field. Marbut's genius seems to have been his ability to synthesize ideas in an organized model of soil that brought order to the thinking of other people. His influence on our soil survey and on soil genesis, morphology and taxonomy was substantial. Under his leadership we advanced from more or less empirical procedures to those of a scientific system.

The cooperative nature of the soil survey was made clear when in 1920 soil surveyors and associates formed an American Association of Soil Survey Workers to deal with field problems and improve communications among themselves. From 1922-1935 Bulletins of their Association recorded the trends in ideas about all phases of field work as well as the debates on soil genesis and classification. The work of that Association was a major factor in promoting the scientific study of soils and in the development of the soil survey. In 1935 the Association agreed with the Soils Section of the American Society of Agronomy to form the Soil Science Society of America with Division V corresponding to Commission V of the International Society of Soil Science.

The Dust Bowl and the Great Depression of the 1930s prompted the government to form the Soil Erosion Service, which became the Soil Conservation Service (SCS) in 1935 with H. H. Bennett (a former soil surveyor with the Bureau) as the Chief. In 1934 Charles E. Kellogg succeeded Dr. Marbut as chief of the Federal Soil Survey Division. In 1936 E. A. Norton issued a soil survey manual for producing the utilitarian conservation surveys of the SCS, and in 1937 Kellogg issued a soil survey manual to guide the scientific soil surveys of the National Soil Survey. Just imagine it. From 1935 until 1952 we had two soil survey organizations. That was also a rather difficult time for all of us, as the controversy of single factor mapping versus natural genetic entity mapping raged. It was resolved in 1952 when the Secretary of Agriculture consolidated the soil survey activities in the SCS but under the leadership of Kellogg. His mental toughness and respect allowed him to maintain the principles that we accept as fundamental to our science. The National Cooperative Soil Survey as we know it today with collaborative work among federal, state, local and private groups, emerged from the consolidation of the two federally funded soil survey groups.

In the 1950s there were three philosophies about soils in the US. Conservationists conceived soil as an assemblage of properties associated with independent variables affecting use and management, such as slope, erosion, and stoniness, which tended to downplay genetic theory. Jenny's book, Factors of Soil Formation, focused on genetic theory in terms of functional relationships and conceived soil as a continuum of sets of properties. The soil survey conceived soil as relatively homogeneous soil bodies

that could be mapped by large scale. Genetic explanations were through geographic correlation of sets of properties with soil forming factors under which they occurred. Over time this third philosophy dominated and we moved from qualitative to quantitative procedures using the functional relationships as important tools.

Technological changes have always enhanced our collection and presentation of soil data. Airphotos as base maps moved us away from making our own plane table maps or using the topographic maps of the Geological Survey and cartographic innovations have kept pace with changing techniques of preparing and publishing soil surveys. Infra-red, black and white, and now digital orthophotography enable us to more accurately locate and delineate soils. Although field tools now include ground penetrating radar, geographic positioning systems, gas powered ice augers, and power take-off probes, we still use hand augers and spades to examine soils in much of our routine work.

The Soil Survey Manuals of 1951, 1962, and 1993 have been major contributions toward quantitative morphology, and Soil Taxonomy of 1975, 1999, and its numerous Keys have transformed our data gathering from mainly qualitative to mainly quantitative. The number of soil series, as members of the lowest category of the classification system, has steadily grown to about 18,000 and over the years all the early ones were re-described to conform to the standards established by Soil Taxonomy. Since 1978 a number of International Committees have taken on the tasks of evaluating and when appropriate, modifying definitions of various aspects of Soil Taxonomy so that they more closely fit conditions in other parts of the world. For all the marvelous help from colleagues around the world, we are extremely grateful.

The Soil Survey Division is now part of the re-organized and re-named Natural Resources Conservation Service which reflects the broader mission and scope of the agency in land use planning of privately owned land for a sustainable future. Here at the end of our first century we are feeling a new vigor and vitality that we equate with those of youth. Today 93% of privately owned land has had a detailed soil survey however it is estimated that 41% is in need of some updating to meet today's demand for additional interpretations. About 80% of public lands are mapped, thus there are still challenges and opportunities ahead. Of the 3200 survey areas about 2500 have had surveys published and a major effort at digitizing many of them for use with geographic information systems is underway. With all of this accomplished we are now focusing our attention on using the information in a broader suite of environmental concerns. At one period we had almost 1600 soil scientists in the US soil survey program, and as we head into the 21st century, we estimate that we are about 1000 strong.

Throughout this year we have had several celebrations commemorating our colorful past, looking at our accomplishments, and anticipating the excitement that lies ahead. If I could sum it up, I think we have been privileged to have had the three F's: Flexibility, Fun, and a Future.

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THE CENTENNIAL JUBILEE OF »POCHVOVEDENIE« - *THE OLDEST SOIL SCIENCE JOURNAL IN THE WORLD*

V. Targulian, M. Gerasimova

A memorial session devoted to the Centennial Jubilee of the Russian journal »Pochvovedeniye« - Soil Science - Eurasian Soil Science, was held on March, 26, 1999 at the Faculty of Soil Science of the Moscow Lomonosov State University. It was organized by the Editorial Board of the journal and by the Dokuchaev Soil Science Society of Russia; a valuable contribution was made by the Academy of Sciences and its Publishing House »Nauka«.

More than 250 soil scientists, ecologists, geographers, geologists, and agronomists from many regions of Russia and from other countries participated in the ceremony.

The session was opened by the Editor-in-Chief, President of the Dokuchaev Soil Science Society, Academician G. Dobrovolsky. He gave a comprehensive outline of the history of the journal in the context of scientific, social and political events in the country. Academician Dobrovolsky presented the major scientific problems and the evolution of the concepts, which were discussed on the pages of the journal in one hundred years.

»Pochvovedenie« is the first and the oldest scientific journal of »purely pedological« orientation, it greatly contributed to the birth of soil science as a scientific and historical discipline, and later on to its development as a fundamental science and to the maintenance of its interdisciplinary mentality.

From left to right: Prof. S.A. Shoba, Prof. S.V. Zonn, Prof. G.V. Dobrovolsky, Prof. A.N. Kashtanov, Prof. L.J. Reintam

Prof. A.M. Shterbakov, Prof. T.F. Urushadze, Prof. W.E.H. Blum, Prof. R. Arnold, Prof. A.I. Smeyan.

»Pochvovedeniye« was founded by the Independent Economic Society,
known for its diverse social and scientific activities. A Professor of the St. Petersburg University, V.Dokuchaev, initiated the foundation of a scientific journal in 1888, and was enthusiastically supported by internationally renowned scientists of those times: Vernadsky, Voeikov, Mendeleyev, Sibirtsev. The journal always had tight bonds with the Academy of Sciences: its authors were members of the Academy, some of them received academic awards, many research projects discussed in the journal were carried out by academic scientists or in joint teams; in 1939 »Pochvovedenie« formally acquired its academic status. It is noteworthy that even the jubilees of »Pochvovedenie« and the Academy of Sciences coincide - this year it is celebrating its 275th anniversary.
Nevertheless, during its long history the journal was not only once severely criticized for insufficient attention to applied issues, or for the »global« problems of soil geography and mapping presented on its pages. The global orientation of the journal was formally justified by its international status - this qualification was given as early as in 1910.
Now, at the threshold of the 21 century the major challenge for »Pochvovedenie« is to facilitate the further development of the conceptual basis of soil science, combining this with promoting the research in the fields of interdisciplinary and applied problem-oriented branches of soil science, studies of the numerous and diverse functions of the soil mantle in nature and life of humans, in global environmental control issues.
Professor S.V.Zonn mentioned in his lecture 'History and Life of »Pochvovedenie«' many important and unknown events, that happened during the long life of the journal, and in which he was frequently participating: since the 1960ies until now he has been a member or Secretary of the Editorial Board.
Many famous scientists took the floor and conveyed greetings during the session: Professors M.A.Glazovskaya, V.N.Kudejarov, S.A.Shoba, V.O.Targulian, B.F.Aparin, the Vice-President of the Russian Agricultural Academy, Professor A.N.Kashtanov, the Secretary General of the IUSS, Professor W.E.H. Blum, the senior scientist of the NRCS, Professor R. Arnold, the Presidents of the National Societies of Soil Science, Professors: N. Smejan (Belorussia), T. Urushadze (Georgia), L. Reintamm (Estonia), M. Vaichis (Lithuania), A. Travleev (Ukraine).
In total, more then 15 scientists from different universities and institutions, from various regions of Russia conveyed their greetings to the session and about 20 scientists were in the line but could not

speak because of the time limit. More then 50 written greetings were sent to the journal from the Russian Academy of Sciences and the State Duma, the allied scientific journals, Honorary Members of the IUSS and DSSS, from many scientific institutes and national Soil Science Societies (USA, Armenia, Moldova, Kazakhstan, Uzbekistan). In many of the greeting addresses common ideas were stressed: The journal »Pochvovedenie« is the oldest regular publication in soil science in the world: the Centennial of »Pochvovedenie« is a real feast of Russian and international soil science; through all its history, the journal has been propagating the concept of a harmonic combination of both the basic and applied branches of soil science, and pedology, in particular, as its most important issue (geneticheskoe pochvovedenie in Russian).
Some exhibitions were especially prepared for the Centennial: the first issues of the journal with the papers of the founder fathers of soil science and the journal (Dokuchaev and others); many historical documents concerning the 100 years of »Pochvovedenie«.
Quite original information was presented by I. Ivanov and T. Lukovkaya, who made a thorough analysis of all publications in the journal and developed a database which permitted them to analyze a number of scientific and personal aspects, such as: the most frequently mentioned soils and areas, a citation index, the sequence of authors in terms of the number of publications in the journal (with\without co-authors), topics, etc. As curious facts we can mention that Dokuchaev is the first to be cited, and is among the last in the number of his papers published in the journal. This Bibliographical Guide will be published in 1999.
The one-day session was about 3.5 hours long, and ended in a very friendly and cordial party with a lot of fun and songs.

CARIS
(Current Agricultural Research Information System)

CARIS was created by FAO in 1975 to identify and facilitate the exchange of information about current agricultural research projects being carried out in, or on behalf of, developing countries.

What CARIS does

The System identifies projects dealing with all aspects of agriculture. CARIS is an international cooperative system in which participating countries input references to the research conducted within their boundaries and, in return, draw on similar information provided by other participants. FAO has developed a microcomputer package for the inputting centres based on the UNESCO CDS/ISIS program, which facilitates exchange of data with the WAICENT (World Agriculture Information Centre) resource and helps to build up local databases which are compatible with the CARIS system itself.

Where are the participating centres?

132 national and 19 international and intergovernmental centres participate in CARIS. Centres have submitted exhaustive information on around 30,000 currently active projects. In addition, two regional centres submit input on behalf of sic countries in their respective regions.

The data provided by CARIS

The basic unit in CARIS is a set of data describing a single project. The data includes: title and objectives; starting and termination dates; duration of the project; name and address of the institute or research station; names of researchers and their specializations.
The system records data in English, French or Spanish indexed with the multilingual agricultural thesaurus AGROVOC, which allows for retrieval of information using any of the three languages.

The on-line database, together with other resources mentioned above, is available at http://www.fao.org/library.

DIVERSITAS/IBOY

What is DIVERSITAS?

DIVERSITAS is an international programme of biodiversity science which was created in 1991. It is cosponsored by six international scientific organisations: the International Union of Biological Sciences (IUBS), the Scientific Committee on Problems of the Environment (SCOPE), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the International Union of Microbiological Societies (IUMS), the International Council for Science (ICSU), and the International Geosphere-Biosphere Programme (IGBP).
DIVERSITAS promotes the study of biodiversity in all its dimensions: the study of origins and maintenance, inventorying and classification, assessment and monitoring, the role played in ecosystem functioning and conservation and restoration, including the socio-economic-anthropological aspects. The Programme, through its unified approach, provides an international framework in order to compare the various ongoing activities and attempt to eliminate duplication and redundancy, and present coherent syntheses that can be used by both scientists and policy-makers. DIVERSITAS has formed a close working relationship with the Secretariat of the Convention on Biological Diversity.

What is DIVERSITAS/IBOY?

As part of its programme, DIVERSITAS is proposing an initiative entitled the »International Biodiversity Observation Year« (IBOY). DIVERSITAS/IBOY is an important step in the effort to know and better understand the biological diversity of our planet, and to bring biodiversity science to the forefront of the scientific agendas of nations and international organizations interested in this subject. One of the most important objectives will be to educate the general public. There is an urgent need to fill the gaps of information about biodiversity, at every level from the genetic variability of individual species to the workings of ecosystems - and to add that to data about how human societies interact with, and depend on, natural systems. IBOY would cover the levels of biological diversity (genetic, species and ecosystems), surveying the field for the most obvious lacks in our knowledge of global patterns of biodiversity, focusing on those areas most amenable to a short term, intensive year of international cooperation in data collection. The results of the integrated products of such a programme would be of great value in managing the Earth System and providing tools for stemming the tide of diversity losses.

How to become involved?

Scientists are asked to send ideas and proposals to the DIVERSITAS Secretariat. These projects should be short term (three years) and should be international in character but can be complemented by national and regional efforts. They must be designed to achieve concrete results and deliver a product in the years's duration of the Programme. An idea should be given of the major players to be involved.

Send your ideas and suggestions to help this initiative achieve the success it deserves! A copy to the IUSS Secretary General would be appreciated.
Diversatas Secretariat: UNESCO-MAB, 1 rue Miollis, F-75015 Paris, France. Tel. +33-1-4568 4054/4090; Fax: +33-1-4568 5832; E-mail: c.adam@unesco.org/; diversitas@unesco.org/; diversitas2@unesco.org.
(From Science International, no. 69, December 1998. ICSU, Paris.)

WORKSHOP ON CARBON SEQUESTRATION IN SOILS

Nearly 100 natural and social scientists, program managers, policy makers, and farmers met for a 2-1/2 day workshop from 3-5 December 1998 at St. Michaels, USA.

Carbon dioxide, the principal greenhouse gas emitted by fossil fuel combustion and deforestation, is adding about 3.5 billion metric tonnes (Gigatonnes) of carbon (GtC) to the atmosphere annually. Scientists of the Intergovernmental Panel on Climate Change (IPCC) have calculated that over the course of the next 50 to 100 years between 40 and 80 GtC might be absorbed in agricultural soils by applying tried-and-true land management practices. These practices involve substitution of plowing by reduced tillage, increased use of legumes such as alfalfa, clover, and soybeans in rotation and by returning animal wastes to the soil. When crop lands are planted to perennial grasses or formerly cultivated land is
planted to switchgrass, a biomass crop, between 0.5 and 1.5 tonnes per hectare (1 hectare =2.47 acres) of carbon are added to the soil annually. And when agricultural land reverts to forest, soil carbon can accumulate at even greater rates, especially in the tropics.
Four papers were prepared in advance: (1) Science Needs and New Technology for Soil Carbon Sequestration, (2) Monitoring and Verification of Soil Organic Carbon Sequestration, (3) Desertification Control to Sequester C and Mitigate the Greenhouse Effect, and (4) Soil Carbon: Policy and Economics. Authors made oral presentations of their papers, followed by respondents'
critiques and open participant discussion. Participants met in cross-disciplinary and diverse breakout sessions to identify strategies and recommendations for each of the topic areas.
The papers will undergo revisions based on comments and discussion at the workshop, then be published in a proceedings. The recommendations from the breakout sessions will constitute a portion of an issue paper to be published by the Council for Agricultural Science and Technology (CAST).

Participants at the workshop concluded that:
-Soil carbon sequestration is one of the tools needed to reduce accumulation of carbon in the atmosphere, thereb by reducing the risk of climatic change. They agreed that efforts should be made to include soil carbon sequestration in the list of acceptable offsets under the Kyoto Protocol.
-There are practical and economically viable agronomic methods that increase the carbon content of soils, but that research is needed to develop methods that increase the rate at which soils sequester carbon and the quantities that can ultimately be stored. Molecular biotechnology and plant genetics research offers such possibilities.
-It is currently possible to monitor changes in soil carbon content, but crudely and with considerable expense. The scientific basis for monitoring already exists in high-resolution remote sensing and continuous direct measurements of CO2 exchange between the atmosphere and terrestrial ecosystems. Technological development is needed to make these methods widely applicable at reasonable cost. There is urgent need for »carbon-probes«, devices for direct and
immediate field measurements of changes in soil carbon content.
-There are vast areas of degraded and desertified lands throughout the world, much of them in developing countries. Afforestation and improvements in rangeland management, dryland farming and irrigation add carbon to the soil, stabilize it against erosion, and increase its fertility and productivity. Thus combating climate change offers a means of combating desertification and vise versa.
-Costs of initial investment in equipment and reluctance to adopt new technologies will impede further and widespread adoption of soil carbon sequestration practices. Financial incentives could substantially increase the rate of adoption of such practices and potentially provide a significant addition to farmer income. Policy mechanisms including government payments, tax credits, and/or emissions trading within the private sector can provide needed incentives. Programs designed to accomplish these objectives should be developed and tested.

For more information: Council for Agricultural Science and Technology, 4420 West Lincoln Way, Ames, Iowa, USA. Fax: +1-515 292-4512, e-mail: cast@cast-science.org. World Wide Web: www.cast-science.org

Soil and Environmental Chemistry Workshop, Tacoma, USA

The Soil and Environmental Chemistry Workshop took place during the 18th Annual Meeting of the Pacific Northwest Regional Section of the Association of Official Analytical Chemists (AOAC INTERNATIONAL) . Some 200 individuals registered for the meeting that was held on the campus of the University of Puget Sound, Tacoma, Washington, USA on June 11-12, 1998.

Since the 1970's, the Pacific Northwest Regional Section has provided a forum for analysts to meet and exchange new ideas, technology, and experiences. That annual tradition was continued with the 1998 meeting. I found the entire meeting — from the formal presentations by distinguished chemists to the informal workshops, from the relaxed ambience of the scientific expo and banquet to the informative training sessions – a rewarding and enjoyable experience.

The general meeting consisted of the following eight informal discussion workshops: Food analysis, general chemistry, metals chemistry, microbiology, microscopy, organics and pesticide residues, pharmaceutical chemistry, and soil and environmental chemistry. The workshop presentations were designed to stimulate discussion and questions. The Soil and Environmental Chemistry Workshop program included presentations on electrode maintenance and care, reference materials for data quality control, interpreting ion exchange membrane data for use in agriculture, determination of cation exchange capacity of forest soils using a mechanical vacuum extractor, and design of crop rotational studies and impact of food residues.

A key feature of the AOAC meeting was the vendors' scientific exposition, with 19 exhibitors, held in the afternoon of the first day. Four half-day training courses were held on the second day. These included analytical quality control, ion chromatography/ pressurized fluid extraction, TOC analysis, and scientific applications for Microsoft EXCEL.

The planning committee, chaired by Steve Pope, is to be complimented for an outstanding meeting. The next meeting will be held at the same location on June 17-18, 1999. Further information is available from Steve Pope, US Environmental Protection Agency Region X, 7411 Beach Drive East, Port Orchard, WA 98366, USA; Phone (360) 871-8717; Fax (360) 871-8747; E-mail: pope.steve@epamail.epa.gov.

Yash P. Kalra, Edmonton, Alberta, Canada

SOILS IN EUROPE

Elaboration and Application of Investigation Methods

Workshop under the Patronage of the German Ministry of the Environment, Nature Protection and Nuclear Safety

4-5 October 1998, Berlin, Germany

Conclusions

Preamble

There has been a long recognition of the need to maintain and improve air and water quality. It is now recognised that there are the same needs with respect to soil quality. There is now a clear recognition that there are two major needs in protection of soil and soil quality; the first is to protect the soil and

its current functions, and the second and equally important need, is to improve damaged or contaminated soils and increase and improve their functions. There is a recognition that decisions on soil protection are the responsibility of national governments, but it is anticipated that there may be a move towards Europe-wide harmonisation of the national methods and procedures.

Conclusions

Conclusion 1
There is an urgent need for standards in the investigation and evaluation of soils and soil materials which are harmonised and publicly agreed across Europe. Such standards should be prepared by ISO/TC 190 in order to avoid duplication of work.

Conclusion 2
Also in the context of standardisation and method development, preventive soil protection and aftercare are closely linked and should not be separated.

Conclusion 3
Soil related aspects dealt with in standards in related fields of technical interest, for example waste, sludge, fertilizers, soil improvers and water, should make greater reference to soil matters in future work programmes.

Efforts should be made to achieve horizontal standardisation and common working groups between technical committees for standardisation and strategy development in these fields.

Conclusion 4
There is an urgent need for information about the many activities being undertaken in the area of soil and soil protection to be made more public and to ensure that there is a better co-operation between the programmes.

Conclusion 5
There are research and development needs

The Scientific Community and the Biological and Toxin Weapons Convention Protocol End-Game

The 1972 Biological and Toxin Weapons Convention (BTWC) bans the development, production, acquisition, stockpiling, and retention of an entire class of weapons. Unlike existing arms control regimes that relate to nuclear and chemical weapons of mass destruction, however, the BTWC which came into force in 1975, lacks verification measures to ensure that states parties are in compliance with the Convention.

Since 1994, an Ad Hoc Group, meeting at the United Nations in Geneva, has been mandated to inter alia: *»consider appropriate measures, including possible verification measures, and draft proposals to strengthen the Convention, to be included, as appropriate, in a legally binding instrument, to be submitted for the consideration of the States Parties »*

Requirements for declarations, procedures for visits to facilities, provisions for investigations together with safeguards for confidential information have emerged from the negotiations as central and essential elements of the Protocol. They are also the elements of the Protocol that are of greatest relevance to the scientific community.

There exists the real possibility that agreement on strengthening the Biological and Toxin Weapons Convention (BTWC) will be reached over the next 12 to 18 month period although the final details have yet to be negotiated before the Protocol can be successfully completed.

For the past four years, the Bradford-based Project on Strengthening the Biological and Toxin Weapons convention has been engaged in disseminating information relating to the negotiations to interested parties. To date, the Project has provided some 19 Briefing Papers on issues of key importance to the negotiations to strengthen the Convention. The Briefing Papers have been prepared to aid the negotiators of the Protocol in successfully meeting the objectives of their mandate. Electronic versions of the above Briefing Papers and related information has been posted on the Project's Website at <http://www.brad.ac.uk/acad/sbtwc>, and in the near future, in order to raise the profile of this issue amongst the scientific community on a world-wide basis, the Project will launch an expert-level online discussion forum on issues facing the Ad Hoc Group during the final stages of the negotiations.

It is everyone's interest that the Biological and Toxin Weapons convention is strengthened through the successful implementation of a compliance protocol and it is important that the scientific community are aware of and can monitor developments in Geneva during the final stages of the negotiations.

Web-page: HTTP://WWW.BRAD.AC.UK/ACAD/SBTWC

Simon Whitby, U.K.

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

Prof. Dan H. Yaalon of the Hebrew University of Jerusalem, Chair of the IUSS Standing Committee on the History, Philosophy and Sociology of Soil Science, was awarded the 1999/2000 Sarton Medal in the History and Pilosophy of Science by the University of Gent, Belgium. This distinction was for the first time granted to a soil scientist.

Prof. Jaume Bech, Barcelona, Spain, was elected to be a member of the Catalonia Academy of Sciences and Arts.

Prof. Wayne Hudnall, professor of soil classificaion and morphology at the Louisiana State University, was the recipient of the Doyle Chambers Research Award.

Dr. Rob Fitzpatrick of CSIRO Land and Water was awarded the prestigious J.A. Prescott Medal for Soil Science in August 1998.

Dr. Bernardo van Raij, Director General of Embrapa Meio Ambiente, Brazil, was presented with the 1999 IFA International Fertilizer Award at the IFA Annual Conference in Manila on 18 May, 1999.

Dr. Esa Tirkkonen was elected President of the International Fertilizer Industry Association (IFA).

Mrs. Rita de Ridder-Helder left as secretary of the IUSS Dep. Secretary General Hans van Baren in April 1999 for a new job at the office of the Municipality of Renkum. Soon after her employment she became especially involved in the preparation of the book review section in our Bulletin, an activity which she carried out with care and enthousiasm. She will be missed, also for her other secretarial and editorial work. A farewell reception was held, during which she was thanked for her dedicated work. The IUSS wishes her well!

IN MEMORIAM

Die Internationale Arbeitsgemeinschaft für Bodenfruchtbarkeit (IOSDV)
trauert um ihren Vorsitzenden

Prof. Dr. Dr. h. c. mult. Eduard von Boguslawski

Prof. Dr. Dr. h. c. mult. Eduard von Boguslawski, langjähriger Vorsitzender der Internationalen Arbeitsgemeinschaft für Bodenfruchtbarkeit (IOSDV) in der Internationalen Bodenkundlichen Union, ist am Montag, dem 1. Februar 1999, nachmittags, im Kreis seiner Familie nach einem erfüllten Leben entschlafen. Am 30. Dezember 1998 konnte er noch mit seinen Angehörigen, seinen Schülern und Freunden seinen 93. Geburtstag feiern.

Prof. von Boguslawski wurde 1905 in Köthen/Anhalt geboren und begann seine mehr als 70-jährige Tätigkeit für die Landwirtschaft und die Agrarwissenschaften im Jahre 1924 mit der praktischen Lehrzeit. Zum Wintersemester 1925/26 wurde er an der damaligen Friedrich-Universität (Fridericiana), heute Martin-Luther-Universität Halle-Wittenberg in Halle (Saale), für das Studium der Natur- und Agrarwissenschaften immatrikuliert.

Diese Studien setzte er ab 1928 an der Albertus-Universität in Königsberg (Ostpreußen) fort und schloß sie hier mit dem Diplomexamen ab. Die danach begonnene Dissertation fertigte er im Königsberger Pflanzenbau-Institut an und wurde 1932 mit der Arbeit »Ein Beitrag zur Dispersoidchemie der Kaolinerde« zum Dr. phil. promoviert. Im Jahre 1935 wechselte er nach Breslau an das Institut für Pflanzenbau und Pflanzenzüchtung der Friedrich-Wilhelm-Universität und habilitierte sich 1936 mit der Habilitationsschrift "Untersuchungen über das Bodenkali sowie seine Aufnahme und Verwertung durch Hafer" und erlangte die Venia legendi für das Fachgebiet "Ackerbau, Pflanzenbau und Pflanzenzüchtung". Im Jahre 1943 wurde er zum außerplanmäßigen Professor an der Universität Breslau ernannt.

Am 1.5.1946 wurde Eduard von Boguslawski in Vertretung mit der Wahrnehmung des Pflanzenbau-Lehrstuhls in Gießen beauftragt und im Jahre 1948 als Nachfolger von Prof. Dr. George Sessous als Ordentlicher Professor auf den Lehrstuhl für Pflanzenbau und Pflanzenzüchtung der Justus-Liebig-Hochschule in Gießen berufen. Hier entfaltete der Berufene eine intensive Lehr- und Forschungstätigkeit. Während seiner Amtszeit hat er den Ausbau des Instituts für experimentellen Forschungsarbeiten durch den Aufbau von drei Versuchsfeldern in Gießen, Rauischholzhausen, Groß-Gerau, der Gefäßversuchsstation, einer Lysimeteranlage und vor allem die Errichtung des Phytotrons mit acht Wachstumskammern sowie der apparativen Ausrüstung der agrochemischen Labors erfolgreich vorangetrieben.

Seine wissenschaftliche Forschungstätigkeit erstreckte sich hauptsächlich auf die Pflanzenbau-wissenschaft und war vornehmlich auf ökologische und ökophysiologische Fragestellungen ausgerichtet, so daß er dieses Fachgebiet durch mehr als 250 Publikationen seiner eigenen Forschungsbefunde und die seiner Schüler in hohem Maße mitgestaltet hat. Davon zeugen auch zahlreiche Veröffentlichungen in Lehr- und Handbüchern sowie die unter seiner Anleitung entstandenen 123 Dissertationen und sechs Habilitationsschriften.

Professor von Boguslawski war als Mitglied der Deutschen Bodenkundlichen Gesellschaft (Mitgliedsnummer M 127) und der Internationalen Bodenkundlichen Union (Mitgliedsnummer ????) Mitinitiator und Mitbegründer der Internationalen Arbeitsgemeinschaft für Bodenfruchtbarkeit (IOSDV) in der Kommission IV der Internationalen Bodenkundlichen Union und - seit 1978 bis zu seinem Tod - Vorsitzender der Arbeitsgemeinschaft. Seine Verdienste um diese internationale Arbeitsgruppe sind

äußerst vielfältig: Die "Internationalen Organischen Stickstoff-Dauerdüngungsversuche IOSDV" wurden und werden aufgrund seiner Initiative an europaweit mehr als 20 Standorten durchgeführt, die Ergebnisse bilden eine wesentliche Grundlage für eine zukunftsorientierte Agrar- und Umweltforschung.
Seine stete wissenschaftliche Kreativität und sein universelles Wissen regten zu weiterführenden Forschungen auf dem Problemfeld "Bodenfruchtbarkeit und Bodenschutz" an und konnten immer wieder - auch jüngere Kolleginnen und Kollegen - begeistern. Bei wissenschaftlichen Problemen war er stets bereit, mit seiner großen Erfahrung und mit fundierten Beiträgen Lösungsstrategien zu entwickeln und Lösungsansätze umzusetzen. Ebenfalls außerordentlich bedeutend für die Arbeitsgemeinschaft in ihrem -international einmalig- mehr als 40jährigen Bestehen war sein integratives Wirken, das immer wieder - manchmal auch autoritär - unterschiedlichste Meinungen und Interessen zusammenführte.

Wir werden versuchen, seine Verdienste und sein wissenschaftliches Vermächtnis auf dem Gebiet der Bodenfruchtbarkeits- und Kulturpflanzenforschung zu würdigen, und wir werden die Arbeit der Internationalen Arbeitsgemeinschaft für Bodenfruchtbarkeit (IOSDV) in seinem Sinne fortsetzen.
Wir trauern mit seiner Gattin, seinen Angehörigen und seinen Freunden um einen bedeutenden Wissenschaftler und Hochschullehrer, um eine große Führungspersönlichkeit und um einen väterlichen Freund.

Gießen, im Februar 1999 *Dr. Hans-Richard Wegener*

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

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1999

Symposium »Soil Geochemical Processes of Radionuclides«, during the Soil Science Society of America Annual Meeting 1999, Salt Lake City, UT, USA, October 31-November 4, 1999.
Information: Dr. Pengchu Zhang, MS 0750, Sandia National Laboratories, Albuquerque, NM 87105, USA, Tel: +1-505-844-2669; E-mail: pzhang@ sandia.gov.

XIV Congreso Latinoamericano de la Ciencia del Suelo CLACS-99, Pucón, Chile, 8 al 12 de noviembre de 1999.
Información: Itilier Salazar-Quintana,Presidente, Sociedad Latinoamericana de la Ciencia del Suelo, Dpto. Ciencias Químicas, Universidad de La Frontera, Av. Fco. Salazar 01145, Casilla 54-D, Temuco, Chile; Fono: +56-45-3254-32 or -33; Fax: +56-45-325-440 or -950; E-mail: clacs99@werken.ufro.cl. Website: http://www.ufro.cl/eventos/clacs99.html

International Conference: Wetlands & Remediation, Salt Lake City, Utah, USA, November 16-17, 1999.
Information: Karl Nehring, Tel: +1-614-424-6510; Fax: +1-614-424-3667; E-mail: nehringk@ battelle.org.

International Symposium on Hydrological and Geochemical Processes in Large-Scale River Basins (with special emphasis on the Amazon and other tropical basins), Manaus, Brazil, November 16-19, 1999.
Information: Dr. Jean Loup Guyot, ORSTOM, CP 7091 Lago Sul, CEP 71619-970 Brasilia DF, Brazil. Tel: +55-61-248-5323 or –312-5862; Fax: +55-61-248-5378; E-mail: jean.guyot@apis.com.br.; http://www.unb.br/ig/hibam/hibam.htm.

3rd International Conference on Environmental Chemisty and Geochemistry in the Tropics – GEOTROP '99, Hongkong, November 24-26, 1999.
Information: The Conference Secretariat, GEOTROP '99, Institute for Natural Resources and Waste Mangement, Hongkong Baptist University, Kowloon Tong, Hongkong; Tel: 852-233-970-54; Fax: 852-233-614-00; E-mail: geotrop@hkbu.edu.hk; Website: Geotrop://www.hkbu.edu.hk/~biol/

Colloque International: L'Homme et l'Erosion, Cameroun, 9-18 décembre 1999.
Information: Zachée Boli Baboulé/R. Ambassa-Kiki, Irad, BP 2123 Yaoundé, Cameroun; Fax: (+237)23-35-38; Tél: 22-33-62, E-mail: iita-hfs@cgnet.com.
ou: E. Roose, G. de Noni, J.-M. Lamachère, Orstom, BP 5045, 34032 Montpellier, France; Fax: +(33)(0)467-41-62-94, Tél: -65 ou 61 ou 68, E-mail: roose ou denoni@mpl.orstom.fr

2nd International Conference on Contaminants and the Soil Environment in the Australia Pacific Regions, New Delhi, India, December 12-17, 1999.
Information: Dr. Nanthi S. Bolan, Institute of Natural Resources, Massey University, Palmerston North, New Zealand;
Tel: +64-6-35-69099; Fax: +64-6-35-05632; E-mail: N.S.Bolan@massey.ac.nz.

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)
website: http://www.weihenstephan.de/bk/index.htm

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.

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, Artesianoú 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 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.

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: Prof. Peter Bullock, Silsoe College, Cranfield University, Silsoe, Beds. MK45 4DT, UK.
Tel: +44-1525-863300; Fax: +44-1525-863001: E-mail: p.bullock@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

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.

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/

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.

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.

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 and Gent, Belgium, August 16-31, 2000.
Information: Dr. J.J.M. van der Meer, Fysisch Geografisch en Bodemkundig Laboratorium, University of Amsterdam, Nieuwe Prinsengracht 130, 1018 VZ Amsterdam, The Netherlands. Tel: +31-20-525-7451; Fax: -7431; E-mail: j.j.m.meer@frw.uva.nl.

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/CROPS-CIENCE.

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.

31st International Geological Congress and GEOEXPO'2000, Rio de Janeiro, Brazil, August 2000.
Information: FAGGA Eventos, R. Conde de Irajá, 260/1o andar, Rio de Janeiro 22271-020 Brasil. Tel: +55-21-537-4338; Fax: +55-21-537-7991; E-mail: geoexpo@fagga.com.br.

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.

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.

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.

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.

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/.

2001

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.

1st 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 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, E-mail: CIEC2001@pb.fal.de, Website: http://www.pb.fal.de.

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.

III International Conference on Cryogenic Soils, Copenhagen, Denmark, August 27-31, 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.

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Information: ITC Student Registration Office, P.O.Box 6, 7500 AA Enschede, The Netherlands. Fax: +31.53-4874238; E-mail: education@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.

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.

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:

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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.

The University of Reading, Department of Agriculture, offers 6 week courses for Laboratory Managers, Supervisors and Senior Technicians in:

- Plant and Soil Analysis (August 16 - September 24, 1999)
- Animal Feed and Products Analysis (August 14 - September 2000)

Information: Dr I Mueller-Harvey, Faculty Analytical Laboratory, Department of Agriculture, The University of Reading, Earley Gate, P O Box 236,
Reading, RG6 6AT, U.D. Tel +44-118 931-6619, Fax +44-118 935-2421. Telex +44-118 984-7813; E-mail: i.mueller-harvey@reading.ac.uk

The University of East Anglia, Norwich, UK, offers a short course on »Crop Research Techniques and Management« in August-September 1998.
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.

9th International Postgraduate Course on Soil and Plant Analysis and Data Handling
Wageningen, the Netherlands, September 20-November 21, 1998.
Organized by the Wageningen Agricultural University (WAU), 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.
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International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) offers a wide range of short- and long-term studies in the field of
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- 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:
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- 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.
8

The International Training Centre PHLO - Wageningen Agricultural University – DLO Winand Staring Centre offer a course on:
Modelling Water Flow and Solute Transport for Agricultural and Environmental Management, Wageningen, 9-14 November 1998

Information: International Training Centre (PHLO), Wageningen Agricultural University, P.O. Box 8130, 6700 EW Wageningen, The Netherlands; Tel: +31-317-484-092 or –093; Fax: +31-317-426-547; E-mail: geralda.fonteijn@secr.phlo.wau.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**
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- **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.
Centre National d'Etudes Agronomiques des Régions Chaude (CNEARC), B.P. 5098, F-340033 Montpellier Cedex 01, France.
Fax: +33-467-410232.

Deutsche Lehranstalt für Agrartechnik
Irrigation and Drainage Management Training, Germany, 2 months.
Deutsche Lehranstalt für Agrartechnik, Training Centre, Krefelder weg 41, D-47906 Kempen, Germany.
Fax: +49-2152-205799; Email: deula@t-online.de.

CATIE
- Desarrollo rural basado en el manejo de ecosistemas naturales tropicales, Costa Rica,
- Gestión Ambiental, Costa Rica, 2 semanas.

Information: CATIE, Coordinator, Programma de Educación, Apartado 126, Area de Capacitación, Turrialba, Costa Rica. Fax: +506-5561533; E-mail: capacita@computa.catie.ac.cr.

CIRAD
Relation Elevage/Agriculture pour la Gestion des Terroirs, France, 1 mois.
Information: CIRAD, Dép. d'Elevage et Médecine V_térinaire, B.P. 5053, F-34000 Montpellier, France.
France: +33-467-593797; E-mail: devallet@cirad.fr.

Université des Sciences Agronomiques
Diplôme en Gestion et Développement des Milieux Intertropicaux, Belgique, 1 année.
Information: Université des Sciences Agronomiques, Passage des Déportés 2, B-5030 Gembloux, Belgique.
Fax: +32-81614544; E-mail: boudoin@fsagx.ac.be.

INSTITUTO NACIONAL DE CIENCIAS AGRICOLAS, Cuba
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Master Courses in Applied Environmental Geoscience at the University of Tuebingen, Germany
Information: Dr. C.I. McDermott M.Sc. (AEG Course Administrator) Chair of Applied Geology, Sigwart Str. 10, 72074 Tuebingen, Germany; E-mail: chris.mcdermott@uni-tuebingen.de; Tel: (+49) (0)7071-2978921; Fax: (+49) (0)7071-5059.
"

The University of Newcastle upon Tyne, Department of Agricultural Economics and Food Marketing *offers*
- MSc courses in **»Rural Resource and Countryside Management«**
- MSc courses in **»International Agricultural and Food Marketing«**

Information: MSc Degree Director, Dpt. of Agricultural Economics and Food Marketing, University of Newcastle, Newcastle upon Tyne NE1 7RU, UK. Tel: +44-(0)191-222-6900; Fax: +44-(0)191-222-6720; E-mail: AEFM-MSc@newcastle.ac.uk.

IUSS COOPERATING JOURNALS/JOURNAUX COOPERANTS DE L'UISS/IBU KOOPERIERENDE ZEITSCHRIFTEN

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Size: Four issues per year in one volume of ca. 400 pages.
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2. BIOLOGY & FERTILITY OF SOILS
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3. CATENA, an interdisciplinary journal of Soil Science-Hydrology-Geomorphology, focusing on Geoecology and Landscape Evolution.
Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands
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5. JOURNAL OF PLANT NUTRITION & SOIL SCIENCE/ZEITSCHRIFT FÜR PFLANZENERNÄHRUNG UND BODENKUNDE, international journal covering all aspects of plant nutrition and soil science.
Size: 6 issues per year.
Publisher: Wiley-VCH, Weinheim, Germany.
Editors-in-chief: Prof.Dr. W. Fischer, Hannover, Germany, Prof.Dr. H. Beringer, Hofgeismar, Germany.
Personal subscription rate for IUSS members: 115.00 DM, including postage.

6. PEDOBIOLOGIA, international journal, focusing on soil biology, especially on soil zoology and microbiology.
Size: 6 issues per year, in 1 volume with 450 pages.
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Editors-in-chief: Prof.Dr. M. Schaefer and Dr. J. Schauermann, Göttingen, Prof.Dr. G. Weigmann, Berlin.
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7. SOIL BIOLOGY & BIOCHEMISTRY
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Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands
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8. SOIL TECHNOLOGY, journal concerned with applied research and field applications on soil physics, soil mechanics, soil erosion and conservation, soil pollution, soil restoration, drainage, irrigation and land evaluation.
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NEW PUBLICATIONS
NOUVELLES PUBLICATIONS
NEUE VERÖFFENTLICHUNGEN

Changement du Climat et Production Agricole. F. Bazzaz et W. Sombroek. FAO, Rome et Polytechnica, Paris, 1997, ix + 406 p. ISBN 92-5-203987-2. Traduit de l'anglais par L.W. de Backer.
Il est à présent avéré que les activités humaines affectent le climat. Les changements du climat affectent à leur tour l'agriculture qui est la source de l'alimentation des hommes et des animaux. Le résultat de l'accroissement actuel de l'effet de serre est plus important que n'importe quelle variation climatique naturelle des derniers millénaires. Le changement global du climat sur les prochaines décennies consiste en: une augmentation des concentrations de dioxyde de carbone et de l'ozone troposphérique (près de la surface terrestre), une augmentation du rayonnement ultraviolet ainsi qu'une hausse des températures. Cet ouvrage étudie l'impact de ces changements. Il présente une analyse des effets prévisibles sur la nature des sols et leur utilisation, sur le cycle hydrologique et les disponibilités en eau, sur la croissance des végétaux et les rendements des cultures, et finalement sur la production agricole et la sécurité alimentaire. L'intérêt - et l'objectif - de ce livre est de permettre la prise en compte de cet élément essentiel qu'est le changement de climat dans les prévisions sur la situation de l'agriculture et sa capacité de continuer à assures la sécurité alimentaire des populations pour les décennies à venir.
Demandes à: Polytechnica, 15, rue Lacépède, F-75005 Paris, France.

Ecological Economics. Concepts and Methods. M. Faber, R. Manstetten and J. Proops. Edward Elgar, Cheltenham, 1998, 368 p. ISBN 1-85898-998-1. Paperback.
Ecological economics as a practice seeks to comprehend the evolving interactions between humans and the natural world. The discipline ranges from its conceptual and philosophical foundations to problems of global warming and waste production.
This book, now available in paperback, offers an overview of a rapidly developing discipline lying at the interface of economics, natural science and philosophy. It focuses on the concepts and methods required to integrate sciences and humanities in order to build ecological economics.
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Summaries of Presentation and Deliberations. From the International Workshop on Development of National Strategies for Soil Fertility Recapitalization in Sub-Saharan Africa. 22-25 April 1997, Lomé, Togo. IFDC and World Bank, 1997, 49 p.
Low soil fertility associated with deficiencies in nitrogen and phosphorus and low soil organic matter is a major case of low productivity and soil degradation in Sub-Saharan Africa (SSA). The improvement of the soil organic matter status and increased but judicious use of nutrient inputs/fertilizers can provide the foundation for addressing the important issue of soil fertility in SSA.
Although investments in the restoration of soil fertility may not be privately profitable and feasible for African farmers, the social benefits associated with such investments appear to be significant. Social benefits include the arrest of the cycle of slash-and-burn, prevention of encroachment into nonagricultural land, the prevention of land degradation and resulting erosion, and the protection of habitat and biodiversity, among others. Most developed countries use these principles to support their farming sectors. Cost-sharing mechanisms, which may be used to stimulate SSA farmers to invest in soil fertility and to help to carry the burden of the efforts required, need to be studies, tested, and discussed in the African context. The formulation of long-term soil fertility action plans, which include an investment component for restoring soil fertility, can be an important policy instrument. Such national action plans should identify and implement incentives to investments in soil fertility improvement and accompanying measures (e.g., erosion control, provision for agricultural credit, establishing farmer's organizations). To develop long-term strategies, the IFDC-Africa division and the World Bank, organized a workshop in Lome, Togo, in April 1997. Summaries of the workshop deliberations, which served as the foundation for the development of strategic framework and steps for the implementation of national action plans are given in this publication.
Requests to: see below.

Framework for National Soil Fertility Improvement Action Plans. IFDC and the World Bank, 1997, 10 p.
The importance of recapitalization, maintenance, and improvement of soil fertility as a foundation for agricultural growth, rural development and environmental conservation was emphasized at the above mentioned Workshop. discussions in plenary and in working groups formed the basis for elaborating a »framework for a national soil fertility improvement action plan«. This publication also treats the steps to be taken for transforming the »framework« into a real action plan per country.
Requests to: IFDC-Africa, B.P. 4483, Lomé, Togo. Fax: +228-217817; E-mail: ifdctogo@cafe.tg.

IECA Soil Stabilization Series. 6 Volumes. International Erosion Control Association, Steamboat Springs. Papers from IECA Proceedings and articles from the Erosion Control Journal were selected for the present series of 6 volumes about erosion problems. Previously published: Volume 1, Methods and Techniques for Stabilizing Channels and Streambanks; Volume 2, Methods & Techniques for Stabilizing Steep slopes; Volume 3, Methods & Techniques for Stabilizing Gul-

lies and Using Check Dams; Volume 4, Erosion control Product Performance and Evaluation. New are Volume 5, Methods and Techniques for Using Bioengineering to Control Erosion. this volume includes sixteen papers on plant selection, design guidelines, low-cost alternatives, shore protection and slope repair. *Price:* USD 39. Volume 6, Strategies and Practices for Making Best Management Practices Work. This eleven papers volume lists successful and cost-effective approaches to using best management practices. Topics include maintenance strategies, highway construction, water quality, stormwater management, and some education programs. *Price:* USD 35.
The entire Six volume Soil Stabilization Series costs USD 195.
Orders to: IECA, P.O. Box 774904, Steamboat springs, CO 80477-4904, USA; Fax: +1 970-879-8563; E-mail: ecinfo@ieca.org.

Improving Fertilizer Use Efficiency. Controlled-Release and Stabilized Fertilizers in Agriculture. M. E. Trenkel. International Fertilizer Industry Association (IFA), Paris, 1997, 151 p. ISBN 2-9506299-03. Paperback.
This publication presents agronomic reasons which have led to the development of controlled-release and stabilized fertilizers. The characteristics, the advantages and the possible disadvantages of controlled-release and nitrification/urease inhibitors are discussed. Particular attention is given to problems of legislation, registration, methodology and standardization. Leading manufactures and their product ranges are listed. A comprehensive bibliography is added. As regards controlled-release fertilizers, the publication presents the reason why their production and their distribution costs are significantly higher than those of conventional fertilizers. *The difference in cost is identified as the main* reason restricting their use to high value crops, specific cultivation systems and non-agricultural sectors.
Copies can be obtained from: IFA, 28 rue Marbeuf, 75008 Paris, France; Fax: +33-1-53930545; mail: ifamail@worldnet.fr.; http://www.fertilizer.org

Plant-Soil Interactions at Low pH: Sustainable Agriculture and Forestry Production. Proceedings of the Fourth International Symposium on Plant-Soil Interactions at Low Ph, Belo Horizonte, Minas Gerais, Brazil, 17-24 March 1996. Brazilian Soil Science Society, Campinas, 1997, viii + 314 p. ISBN 85-86504-01-7. Hardcover.
Acid soils have been considered, for a long time, less suitable for highly productive agriculture. Less than adequate soil and crop management practices have often contributed to aggravate the typical problems of acid soils, by promoting losses of bases, thus decreasing the pH and increasing aluminum saturation. Today, the acid soils, represented by hundreds of millions of hectares of uncultivated or marginal land in several continents can be used in sustainable agriculture production thanks to many new technologies and management strategies. Four Symposiums have been held up till now around the world to discuss and to exchange information on ideas on agriculture in acid soils. This volume contains the major themes of the sessions: Sustainable agriculture and forestry production systems on acid soils; Plant tolerance to acid soils constraints; genetic resources, breeding methodology, and plant improvement; Nutrient use efficiency in acid soils; nutrient management and plant efficiency; Mechanisms of plant adaptation and tolerance to acid soils; Ecological and agricultural benefits of the soil biota under acid soil conditions; Management of subsoil acidity and Procedures used for diagnosis and correction of soil acidity: a critical analysis.
Price: USD 50.
Orders to: Brazilian Soil Science Society, C.Postal 231, CEP 36571-000 Viçosa, MG, Brazil; Fax: +55 31 8992471.

Geographic Objects with Indeterminate Boundaries. P.A. Burrough, A.U. Frank, editors. GISDATA Series II. Taylor & Francis, London, Bristol, 1996, xix + 345 p. ISBN 0-7484-0386-8 (Hardbound); ISBN 0-7484-0387-6 (paperback).
A key feature of the GISDATA programme is the series of specialist meetings that has been organized to discuss each of the issues outlined in the research agenda to stimulate research networking at the European level on the issues involved and also to produce high quality output in the form of books, special issues of major journals and other materials. This volume is the second of a series arising from the work of the ESF Scientific Programme of Geographic Information Systems: Data Integration and Database Design (GISDATA). The material included presents a cross section of up-to-date opinion from many different related disciplines and cultures on the problems of describing 'geographic reality' and capturing that reality for applications using GIS. The different chapters raise issues that can form *the basis of future research programmes; ideas have* emerged that must affect the way geographic data are collected and stored in future if future GIS are to deal with multi-scale, polythetic phenomena in 4D space-time.
Price: GBP 24.95.
Orders to: Taylor & Francis, Rankine Road, Basingstoke, Hampshire, RG24 8PR, UK.

Biomass Energy Systems. Proceedings of the International Conference 26-27 February 1996, New Delhi. P.V. Ramana and S.N. Srinivas, editors. Tata Energy Research Institute, New Delhi, 1997, xi + 478 p. ISBN 81-85419-25-6. Hardcover.
Biomass has traditionally been the most important source of energy in rural areas and a major fuel even in the urban areas. In spite of rapid increases in the supply of, and access to, fossil fuels, biomass is likely to continue to play a dominant role in India, in the foreseeable future. The main focus of the International Conference on Biomass Energy Systems, held in 1996, was to develop and promote techno-economically viable technologies to utilize biomass in an efficient manner. These proceedings contain 50 papers grouped into seven sections. Section I covers issues relating to the production, supply and demand of various biomass sources, and also the policies for biomass management.

Section II deals with biomass processing for fuel purposes, including conversion to liquid fuels. Sections III, IV and V deal with various aspects of biomass gasification, improved cookstoves, and biogas technology. Section VI contains papers on the fast-growing subject of biomethanation of municipal solid wastes. Section VII looks at biomass-based power generation including co-generation at sugarmills. The papers range from highly technical to application-oriented to location-specific case studies.
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Orders to: Tata Energy Research Institute, Darbari Seth Block, Habitat Place, Lodhi Road, New Delhi 110 003, India; E-mail: premam@teri.res.in.

Chromium Environmental Issues. S. Canali, F. Tittarelli, P. Sequi, editors. FrancoAngeli, Milan, 1997, vii + 295 p. ISBN 88-464-0421-1. Hardcover.
Chromium is a heavy metal, subject in recent years to study and research due to its peculiar chemical behaviours. Its two main oxidation forms (trivalent and hexavelant) have completely different effects of living organisms. The trivalent form is essential in human and animal diets while the hexavelant form is extremely toxic.
This publication represents an up-to-date collection of reports by scientists involved in chromium research and is especially intended for soil scientists, but it can be useful also to researchers specialised in different branches of biological sciences. The aim is to address the problem scientifically, gathering the contribution of scientists who have studied the positive and negative effects of chromium in the environment as a whole. The first chapter analyses the chromium redox mechanisms in soil which are the critical point for a potential risk of environmental pollution. The following chapters deal with the effects of chromium on soil microbial biomass, the pathways of chromium uptake and translocation in plants, the need of chromium in animal and human diet, its metabolism in humans, the transfer of the food chain and the potential toxicological effects of any of its oxidation forms.
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Some geomedical consequences of nitrogen circulation processes. J. Låg, editor. The Norwegian Academy of Science and Letters, Oslo, 1997, 261 p. ISBN 82-90-888-24-4. Hardcover.
The IUSS Working Group Soils and Geomedicine and the Norwegian Academy of Sciences and Letters organized a meeting in Oslo on 12 and 13 June 1997 to discuss various aspects of nitrogen vis-a-vis health. It is the 11th volume in this interesting series, published since 1980 by the Norwegian Academy of Science and Letters, since 1986 in cooperation with the Working Group. The book contains 19 papers about general aspects and case studies from around the world.
Orders to: The Norwegian Academy of Science and Letters, Drammensveien 78, N-0271 Oslo, Norway.

Naturschutz in der Kulturlandschaft. Schutz und Pflege von Lebensräumen. U. Wegener, Hrsg. Gustav Fischer Verlag, Jena, 1998. 456 S.,ISBN 3-437-35250-4. kt.
Das Ziel des Naturschutzes - die Erhaltung der Arten- und Formenvielfalt der Organismen - ist in den letzten Jahren gleichgeblieben, die Lösungsansätze von Naturschutzaufgaben jedoch haben sich stark gewandelt. Einen höheren Stellenwert bekommt beispielweise das Zulassen der natürlichen Dynamik in Nationalparks und Kulturlandschaften. Dieses Buch bietet fachübergreifenden Einblick in die Naturschutzthematik für Landschaftsplaner, Biologen, Naturschutzpraktiker in Land-, Forst- und Wasserwirtschaft sowie für Naturschutzverwaltungen und Naturschutzhelfer. Die Problematik des Arten- und Biotopschutzes in einer vielfältig genutzten Landschaft wird an Beispielen verdeutlicht. Von der Alpen bis zur Küste werden die wichtigsten geschützten Lebensräume Deutschlands vorgestellt. Auf des Basis ökologischer Analysen werden Schutzstrategien entwickelt.
Preis: DEM 88; CHF 80; ATS 642
Bestellungen an: see below.

Methoden der Bodenbiologie. 2., neubearbeitete Auflage. W. Dunger, H.J. Fiedler, Hrsg. Gustav Fischer Verlag, Jena, Stuttgart, 1997, 539 S. ISBN 3-437-35050-1. Gebunden.
Die Bodenbiologie befaßt sich mit Organismen und ihren Leistungen, soweit sie im Kontakt mit dem Boden leben und diesen oder die in ihm ablaufenden Prozesse beeinflussen. Zur Untersuchung an Bodenorganismen werden primär biologische Methoden herangezogen. Für ihren Erfolg ist es aber ausschlaggebend, daß die Arbeitshypothese sowohl biologisch als auch bodenkundlich gut konzipiert wird. Unter Mitarbeit von 21 Wissenschaftlern ist die zweite Auflage gründlich überarbeitet und ergänzt. Dieses Buch bietet nun einen Überblick über weltweite erprobte bodenzoologische und -mikrobiologische Methoden zur Lösung ökologischer und produktionsbiologischer Problemen. Die Schwerpunkte sind nachfolgendes: Gemeinsame Behandlung bodenmikrobiologischer und bodenzoologischer Verfahren mit detaillierten Arbeitsanweisungen; Bodenbiologische Methodik für alle Bodentypen; Planung und Auswertung der Untersuchungen; Anleitung zum praktischen Arbeiten mit allen Teilgruppen der Bodenorganismen und Determination von Bodenbakterien und -tieren.
Preis: DEM 98; CHF 89; ATS 715.
Bestellungen an: Gustav Fischer Verlag, Wollgrasweg 49, 70599 Stuttgart, Germany; Fax: +49 711 458 809.

Regional Land Cover Changes, Sustainable Agriculture and their Interactions with Global Change. (with focus on South Asian countries). Proceedings of an International Workshop held in Chennai, India, 16-19 December 1996. V. Ravichandran, editor. COSTED, ICSU, UNESCO, IBN, Chennai, 1997, xvi + 208 p.
Sustainable agriculture involves concurrent attention to environmental, social and economical parameters. It therefore requires a systems approach. The prevailing

trend toward commodity-centred land use planning has led to considerable land diversion and erosion. The removal of forest canopies has not only accelerated genetic erosion, but has also resulted in micro-level climate change. Unsustainable land cover changes increase the gap between carbon emission and carbon absorption.

This book is the result of the International Workshop organised by the Committee on Science and Technology in Developing countries (COSTED). The proceedings bring forth the research needs and institutional capacities, regional issues, global scenarios, technological advance opportunities for management cooperation, networking, concerted actions and delivery systems role of government, public policies, world trade agreement. It focused on the heavily populated Southern Asian Region where there is an urgent need to address food security through sustainable agricultural practices.

Price: INR 450; USD 13.

Orders to: COSTED Secretariat, 24, Gandhi Mandapam Road, Chennai 600025, India; Fax: + 91-44.4914543; E-mail: costed@giasmd01.vsnl.net.in.

Performance of Agricultural Extension Organizations of Bangladesh. M. Hassanullah, M. Ahmad, H.G.A. Siddiqui and S. Huq. The University Press Limited, Bangladesh, 1996, xx + 168 p. ISBN 984-05-1322-2. Hardcover.

Agriculture is the back-bone of the Bangladesh economy, as it accounts for close to 50% GDP and employs about 80% of its labour force. It provides the bulk of raw materials to the agro-based industries such as sugar, food, jute, textile, tea and leather, and agriculture shares about 87% of all exports. Therefore, agricultural development is crucial to provide food for its large and growing population, to maintain a minimum level of living and to provide labour and capital to the poorly developed industrial and service sectors of the economy.

With recently developed technologies the growth potential of agriculture seems to be very high in Bangladesh both in terms of cropping intensity and per unit production. Crop production studies revealed that HYV seeds, fertilizers and irrigation could significantly increase agricultural productivity. It appears that the growth potentials of major crops are two to three times more than the present levels of production. The same is true for other agricultural commodities. Agriculture has the potential to provide increased production, helping to reduce food deficit as well as shortage of industrial raw materials. The failure to achieve a desired level of agricultural development is partly due to a low rate of diffusion of innovative technologies, the adoption of which would lead to an increase of agricultural productivity. This book sets out the importance which should be given to an improved agricultural extension service in order to diffuse innovations to the large farming community.

Price: Tk. 400.00

Orders to: The University Press Limited, G.P.O.Box 2611, Dhaka 1000, Bangladesh. Fax: +88 02 9565443; E-mail: upl@bangla.net.

Crop Evapotranspiration: Guidelines for Computing Crop Water Requirements. FAO Irrigation and Drainage Paper 56. FAO, Rome, 144 p. ISBN 92-5-104219-5.

This publication presents an updated procedure for calculating reference and crop evapotranspiration from meteorological data and crop coefficients. The procedure, first presented in FAO Irrigation and Drainage Paper No. 24 'Crop Water Requirements' in 1977, allows the estimation of the amount of water used by a crop taking into account the effects of climate and crop characteristics. The publication incorporates advances in research and more accurate procedures for determining crop water use, as recommended by a panel of experts organized by FAO in May 1990. The first part of the publication includes procedures for determining reference crop evapotranspiration according to the FAO Penman-Monteith method. These are followed by updated procedures for estimating the evapotranspiration of different crops for different growth stages and ecological conditions.

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World Reference Base for Soil Resources.

Since 1980 the International Society of Soil Science has been working to develop a vital common language for naming the soils of the world, a universally accepted system of soil classification: the World Reference Base for Soil Resources (WRB). WRB is designed as an easy means of communication amongst scientists interested in or dealing with soils and land, to identify, characterise and name major types of soils. WRB will serve as a common denominator through which national soil classification systems can be compared and correlated. WRB is presented in three publications: (1) The Introduction to the Reference Soil Groups, (2) the Atlas (both volumes published by ACCO, 1998) and (3) the Technical Key (published by FAO: World Soil Resources Reports nr. 84, 1998). The work was carried out as a joint project with the participation of the IUSS, FAO, and The International Soil Reference and Information Centre (The Netherlands), in cooperation with a large group of soil scientists from around the world.

Price: Vol. 1: BEF 1500; NLG 82.

Vol. 2: BEF 1450; NLG 79.

Orders to: ACCO, Tiensestraat 134-136, B-3000 Leuven, Belgium. Fax: +32.16.207389.

Price: Vol. 3: USD 11.

Orders to: Sales Agents of FAO, or Publications and Sales, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy; E-mail: Publications-sales@FAO.ORG.

All volumes also available from ISRIC, P.O.Box 353, 6700 AJ Wageningen, the Netherlands; Fax: +31 317471700; E-mail:soil@isric.nl.

Soil Conservation Extension. From Concepts to Adoption. S. Sombatpanit, M.A. Zöbisch, D.W. Sanders and M. G. Cook, editors. Science Publishers, Enfield, 1997, xx + 488 p. ISBN 1-886106-85-1. Hardcover; ISBN 1-886106-86-X. Paperback (student edition)

The initiative of the first editor for a comprehensive book on the very alive subject of soil conservation extension is a commendable one. He and some co-editors have been associated for more than thirty years with soil conservation services, on various capacities and as such it had been possible for them to deepen their insight on different aspect of soil conservation extension, and at the same time get in contact with the various stalwarts of their field. This book is the result of a conference organised in Thailand in June 1995. The book meanders through four major themes namely concept of soil conservation, various strategies to be followed, how to implement them and finally the adoption phase, and glues together some new and some old ideas with fascinating arguments. It also deals with the case study of extension system of Kenya, Japan, Taiwan, Australia, China, etc. focusing on different aspects under broader perspective. Globally speaking, the very fact that 50 billion tons of soil loss valued roughly at USD 275 billion annually takes place should be an eye opener for scientists, planners and politicians, etc. The examples cited in this book on failures of many soil conservation projects should help future planners to avoid similar projects elsewhere.
Price: USD 65.00
Orders to: Outside Thailand: Science Publishers, P.O. Box 699, Enfield, New Hampshire 03748, USA; Fax: +1-603-632-5611.

Biochemical Cycles. A Computer-Interactive Study of Earth System Science and Global Change. W.L. Chameides, E.M. Perdue. Oxford University Press, New York, Oxford, 1997, x + 224 p. Software included. ISBN 0-19-509279-1. Cloth.
Biogeochemical cycles determine to a large extent our global environment. The present book, grown out of experience with teaching Global Biogeochemical Cycles at Georgia Tech, integrates all important elements of biogeochemical cycles in an attempt to study the past and future course of the earth. The first three chapters provide an introduction and review of the fundamentals: basic chemical, physical and biological concepts and processes, and the relevant features of the earth's system. Chapter 4 presents a review of the mathematical formalism representing biogeochemical cycles in terms of a system of differential equations and the techniques to solve these equations. As an aid, a user-friendly computer program *BOXES* is included for constructing numerical models of biogeochemical cycles. This program allows students to work interactively with their teacher and may also serve as a basis for individual and group projects. The next chapters discuss the global cycles of P, C, S, and N, with key features illustrated with *BOXES*. The final chapter integrates the cycles of P, C, S, and N to investigate the stability of atmospheric oxygen, a molecule whose presence on earth is unique in our solar system.
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People, Land and Water in the Bilad-Ash Sham, The Arabian Peninsula. Indigenous Systems in the Countryside. W. Lancaster and F. Lancaster. Harwood Academic Publishers, London, 1998, 380 p. ISBN 90-57-332-9.
The result of twenty-five years of research with different tribal groups in the Arabian peninsula this study *focuses on ethnographic descriptions of Arab tribal* societies in five regions of the peninsula with comparative material from others. The authors have developed a view of Arabic tribal discourse where »tribe« is seen as essentially an identity that confers access to a social structure and its processes. This insight enables the authors to clarify tribal processes of land use and resource management which are normally »invisible«, as they leave few written records and the archaeological remains are notoriously difficult to date.
This monograph incorporates many theoretical aspects, including concepts of indigenous theories; scarce resources; ownership, living, use and access; the relationship between society and animals; the nature of political power; the »boom and bust« economy of herding; ideas about labor and investment for production and distribution; and ideas about towns and villages.
Price: GBP 48; USD 75.
Orders to: The Gordon and Breach Publ. Group, 197 Knightsbridge, 8th Floor North Wing, London SW7 1RB, U.K. Fax: +44.171 823-7969; E-mail: andrew.hansen@gbhap.com *or* Brian Brash, IPD, Two Gateway Center, 11th Floor, Newark, NJ 07102, USA; Fax: +1.212 691-6583; E-mail: bbrash@erols.com.

Soil Science Priorities for the Future. D.C. Bachtel and D.E. Kissel. Soil Science Society of America, Madison, 1998, iv + 62 p. Hardcopy or on SSSA Webpage.
The report contains the results of a survey conducted by the Soil Science Society of America. The report addresses a wide range of issues within the discipline of soil science and its implications to society as a whole. The survey instrument collected information on whether soil science should be more closely aligned with earth science, natural resource, or environmental disciplines. It also dealt with issues the membership deemed to be important, for not only future research, but applied activities as well.
The survey results establish how soil scientists from different subject areas and employment backgrounds view research priorities. The report can be used to inform the membership, funding agencies, and policymakers on the areas of research considered most important by scientists. The survey results may also be used to create new programs to stimulate and encourage innovative soils research. The report is not only of interest to persons in the USA, but also to others.
The report may be found in its entirety on the SSSA Webpage: http://www.soil.org/sssa.html. A limited number of hard copies of the report is also available.
Requests to: SSSA Headquarters Office, 677 S.Segoe Road, Madison, WI 53711-1086, USA.

World Atlas of Desertification. Second Edition. N. Middleton and D. Thomas, co-ordinating editors.

Arnold, London; co-published with John Wiley, New York, 1997, x + 182 p. ISBN 0-340-69166-2 and 0-470-24972-2 (Wiley Ed.).
Desertification is land degradation in arid, semiarid and dry subhumid areas resulting from various factors, including climatic variations and human activities. It directly affects the livelihoods of more than one billion people who are dependent on the land for their survival. The first edition was published in 1992 and this new edition reflects major advances in the understanding of desertification and, especially, the availability of more and better data, covering some parts of the world in more detail. The atlas deals not only with information on the extent of desertification and its impact on food security; it also illustrates approaches and technologies for soil conservation in the semiarid and arid lands through the WOCAT programme, coordinated by the Centre for Development and Environment (CDE), Switzerland. This edition covers a broader range of topics and covers almost twice its original size. Much information is derived from work carried out at the International Soil Reference and Information Centre (ISRIC), the Netherlands. The atlas indicates that the scientific knowledge on susceptible drylands lays behind the urgent environmental problems in these regions.
Price: USD 235.
Orders to: SMI, P.O.Box 119, Stevenage, Hertfordshire SG1 4TP, England. Fax: +44-1438 748 844; E-mail: Anthony@smibooks.com.

The Role of Environmental Degradation in Population Displacement. Research Report 1. S. Lonergan. Global Environmental Change and Human Security Project. International Human Dimensions Program on Global Environmental Change.
The role of environmental degradation and resource depletion as causes of population movement has received increasing interest in recent years. The purpose of this paper is to clarify the myriad of issues surrounding the linkage between environmental degradation and population displacement, to determine whether there is justification for linking environment and migration. The paper adopts a problem-based approach, attempting to answer crucial questions regarding, for example, the evidence of a link and the potential policy implications of the existing research. In addition, the concern is only with environment as a possible cause of, or contributor to, population movement, as opposed to the potential environmental repercussions associated with population movement. The paper is divided into five chapters and four appendices. Following the introduction, the second chapter addresses a set of questions regarding the role of the environment as a cause of - or contributor to - migration. Chapter three presents preliminary results from an effort to map regions of ecological stress and human vulnerability, and relate this to refugee movements. Chapter four presents two sets of policy recommendation. The last chapter summarizes the discussion from a workshop based on this report. The appendices provide a discussion of traditional theories of migration and environmental stresses, presenting case studies of environment/migration linkages, and detailing a predictive model for determining vulnerable regions.
Requests to: IHDP, Walter-Flex-Strasse 3, D-53113 Bonn, Germany. Fax: +49-228-739054; E-mail: lonergan@uvic.ca.

Maintenance and improvement of soil productivity in the highland of Ethiopia, Kenya, Madagascar and Uganda. AHI Technical Report Series no. 6. African Highlands Initiative. A.R. Braun, E.M.A. Smaling, E. I. Muchuga, K.D. Shephard, H.D. Corbett, editors. AHI, Nairobi, 1997, x + 129 p.
The African Highlands Initiative (AHI) is an ecoregional effort to improve natural resources management in the eastern and central African highlands, through research and development. It is made up of a consortium of national agricultural research systems, international research centres and non-governmental organizations working in the region. AHI aims to improve interaction with farming communities and other stakeholders in the rural sector, and to develop and evaluate joint technology for the sake of maintaining and improving land productivity. A major theme in AHI is Maintenance and Improvement of Soil Productivity (MISC). The MISC programme focuses on the ability or inability of land users to maintain soil productivity, a major factor contributing to the lack of sustainability of farming systems in the highlands. A recommendation of an AHI workshop in 1993 was to make a regional overview of current knowledge on the soils resource base, soil processes and adoption of soil management practices. The purpose of the review is to ensure that research under the AHI proceeds from a solid foundation of knowledge based on 70 years of agricultural research in the region. The present synthesis gives a state-of-the-art report in the four countries and is meant to avoid 'reinventing wheels' and should assist in further MISC priority setting by identifying critical knowledge gaps.
Requests to: African Highland Initiative, AH coordinating Office, ICRAF, Box 30677, Nairobi, Kenya. Fax: +254 2521001; E-mail: ah@cgnet.com.

Dimensions of Sustainability. Proceeding of the Congress Challenges of Sustainable Development, Amsterdam 22-25 August 1996. Ph. Smith and A. Tenner, editors. Nomos Verlagsgesellschaft, Baden Baden, 1997, 576 p. ISBN 3-7890-4828-3. Hardback.
The International Network of Engineers and Scientists for Global Responsibility (INES) organized a congress with the title »Challenges of Sustainable Development«. The central subject of this congress was the question: »How can scientific approaches, economic practice, societal structures and personal behaviour be transformed worldwide in order to assure global survival in balance with nature?« In plenary sessions, keynote speakers addressed themselves to social, ethical, political, scientific, technological and economical problems. In workshops, twenty subjects were treated, grouped together under the headings: Foundation and basic attitudes; Concepts and strategies for sustainable economies; Sustainable development on a local, regional and global scale; and Elements of a safe and

secure world. The book contains the full text of the plenary sessions, reports of the workshops and a number of selected papers pertaining to the subjects of the workshops. It contains useful information about tropical subjects like agriculture, water management, energy supply, industrial design and production, transportation, telecommunication, conflict control and the inequality of development in the world.
Conclusions of the workshop and abstracts can be obtained from: www.frt.fy.chalmers.se/amsterdam.
Price: DEM 138
Orders to: Nomos Verlagsgesellschaft, Postfach 100310, D-76484 Baden-Baden, Germany. Fax: +49 7221 2104-27. E-mail: nomos@nomos.de

Environmental Indicators for Agriculture. Organisation for Economic Co-operation and Development (OECD), Paris, 1997, 62 p. ISBN 92-64-15315-2. Paperback.
Little quantitative information is available on the impacts of agriculture on the environment and on how different policy measures affect the environment. This study outlines an analytical framework to further the analysis of agri-environmental linkages and sustainable agriculture. It describes the main environmental issues in agriculture and the indicators that need to be calculated: the use of nutrients, land use and conservation, water and soil quality, greenhouse gases, biodiversity and environmental impacts related to farm management practices. The study is mainly directed to OECD policy makers.
Price: FRF 75.
Orders to: see below.

Sources of Cadmium in the Environment. Organisation for Economic Co-Operation and Development (OECD), Paris, 1996, 482 p. ISBN 92-64-15343-8. Paperback.
This publication contains the papers presented at the OECD Cadmium Workshop held in Saltsjobaden, Sweden, in October 1995. The workshop consisted of an opening plenary session, followed by two subsidiary workshops: **The Sources Workshop**, which addressed all sources of cadmium inputs to the environment (with the exception of fertilizers); and **The Fertilizer Workshop,** which specifically addressed phosphate fertilizers as a source of cadmium inputs to agricultural soil (see below). The papers published here were given during the Sources Workshop and deal with natural and anthropogenic sources; sources of inputs to the environment; products containing cadmium; various non-product sources of cadmium; other sources of cadmium; and cadmium in waste. The final reports of each of these sessions are included, as well as the papers given during the plenary session. They concern sources and pathways of cadmium in the environment; the fate of cadmium in the environment; environmental concentrations and trends; transboundary pollution and bioavailability; routes of human exposure and trends; exposure of ecosystems and trends; cadmium in waste; and trade aspects.
Price: FRF 340.
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Fertilizers as a Source of Cadmium. Organisation for Economic Co-Operation and Development (OECD), Paris, 1996, 482 p. ISBN 92-64-15343-8. Paperback.
This publications contains the papers given during the Fertilizer Workshop. Addressed are the following issues: measures and techniques to reduce the cadmium content of fertilizers; implications of measures to reduce the levels of cadmium in fertilizers; accumulation in agricultural soils and cadmium content in food and human uptake; and uptake into crops and bioavailability. The final reports of each session are also included.
Price: FRF 180.
Orders to: OECD Publications, 2 rue André Pascal, F-75775 Paris Cedex 16, France. Fax: + 33.1.491042767; E-mail: compte.pubsinq@oecd.org. Or National Distributors of OECD Publications; see also www.oecd/ehs/.

Agricultural Extension in Africa. Proceedings of an International Workshop Yaoundé, Cameroon, January 1994. Volume I, Keynote Papers; Thematic Papers; Annexes, 196 p.. **Volume II,** In-country Surveys. J.N Wolf, editor. Technical Centre for Agricultural and Rural Co-Operation (CTA), Wageningen.
At a regional seminar held in 1991, during which the agricultural information needs of Central African countries were discussed, it was recommended that an international workshop be organized to discuss the different experiences in agricultural extension and the challenges faced in the current economic climate. The objectives of the workshop were, held in 1994, to exchange experiences on mainstream and alternative extension approaches; to become familiar with current scientific thinking and available research on agricultural extension issues. Some of these issues were presented in plenary and others in small working groups; to examine ways of building up and strengthening relations between the agricultural extension service and other actors like research, farmers' organizations, education, input suppliers etc., to make an action plan for the establishment of a structure to facilitate the exchange of information on extension experiences. The proceedings contain in Vol. 1 the seven keynote papers as well as several thematic papers on topics such as the role of women in agricultural extension, farmers organization, changing perspectives in agricultural extension and networking for sustainability. Vol. 2 contains reports of country surveys and a description of the Agricultural Knowledge and Information System (AKIS) used in these surveys.
Prices: Vol. I, 1995, 196 p. ISBN 92-9081-134-X, ECU 20 (outside ACP countries); Vol. II, 1996, 392 p., ISBN 92-9081-145-5, ECU 80 (outside ACP countries)
Orders to: see below.

Hydrobiological aspects of fisheries in small reservoirs in the Sahel region.
E. Baijot, J. Moreau and S. Bouda. Technical Centre for Agricultural and Rural Cooperation ACP-EU, Wageningen, 1997, xiv + 238 p. ISBN 92 9081 138 2. Paperback.
This publication records the results of eight years of research on small and medium-sized reservoirs in

Burkina Faso. The main aim of the work was to study reservoirs which, though originally created for various purposes other than commercial fishing, have progressively come to support this activity as the main source of income for many people. Research carried out by the International Centre for Living Aquatic Resources Management (ICLARM, Manila) led to the development of methods for fish-population analysis that are particulary relevant to tropical waters. The implementation of these methods enables field data to be analysed to an extent greater than had been planned at the outset of this research. Surveys of economic and cultural aspects of the various fish exploitation schemes helped to point out the necessity for understanding the dynamics of fish communities. This publication provides much information of general interest on small-scale reservoir fisheries, including data on climate, soils, phusiographic setting, etc.
Price: ECU 80
Orders to: CTA, P.O.Box 380, 6700 AJ Wageningen, The Netherlands. Fax: + 31 317 460067; E-mail: cta@cta.nl.

***Remote Sensing and GIS for Natural Resource* management.** C.H. Power, L.J. Rosenberg and I. Downey. Natural Resources Institute, Chatham Maritime, 1997, vi + 133 p. ISBN 0 85954 454-0. Paperback.
This publication is the Proceedings of a one-day Technical Workshop jointly organized on behalf of the Remote Sensing Society by the Natural Resources Institute and the University of Greenwich School of Earth Sciences. The theme and structure of the meeting were designed to bring together both users and practitioners of remote sensing and GIS in natural resource management and enable them to gain awareness of other activities and to discuss the issues, problems and solutions they have encountered. The data, techniques and methodologies provided by GIS and remote sensing are capable of assisting the implementation of environmental monitoring systems. Developments in the technology for earth observation and spatial information analysis have often concentrated on more expensive, high precision and spatial resolution systems and have sometimes overlooked more affordable effective methods and technology.
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Orders to: Natural Resources Institute (NRI), Chatham Maritime, Kent ME4 4TB, UK. Fax: +44 1634 883551.

Symposium on Sulphur in Balanced Fertilisation. Proceeding of the TSI/FAI/IFA Symposium, February 13-14, 1997, New Delhi. B.C. Biswas, N. Prasad, S. Das, editors. Fertiliser Association of India, New Delhi, 1997.
The current emphasis is on balanced fertilisation for achieving sustainable high yield of cereals, oilseeds and pulses. The major fertilisers currently being used are urea, diammonium phosphate, muriate of potash and single superphosphate. With increasing cropping intensity, high crop yields and increasing use of sulphur free fertilisers, the process of soil mining of sulphur has been accelerated. Although the role of fertiliser sulphur in sustainable agricultural production in India is generally appreciated, the data of sulphur status of soils and crop response to fertiliser sulphur are not adequate to arrive at a scientific basis for fertiliser sulphur recommendations. There is a need to generate a data base relating to sulphur deficiency in soils and crop response to sulphur application. The FAI, in collaboration with TSI and resources provided by the International Fertilizer Industry Association (IFA), therefore, decided to launch an integrated programme to advance the cause of sulphur fertiliser use in India. This publication contains the proceedings of the Symposium, held in 1997, which includes the papers presented, the discussions held as well as the conclusions and recommendations.
Requests to: The Fertiliser Association of India, 10, Shaheed Jit Singh Marg, New Delhi 110 067, India. Fax: +91 11 6960052.

Indicators of Land Quality and Sustainable Land Management. An Annotated Bibliography. J. Dumanski, S. Gameda and Chr. Pieri. Environmentally and Socially Sustainable Development. Rural Development. *The World Bank, Washington, 1998, viii + 123* p. ISBN 0-8213-4208-8. Paperback.
This bibliography is a review of available information on indicators of sustainable land management and land quality. The emphasis is on agricultural land management, but references to forest land management and, to a lesser extent, to conservation, are also included Only those references describing specific indicators of those describing the results of indicator programs (agrienvironmental, forestry programs) are included. The report review data and information available in the scientific literature and on the World Wide Web. Unpublished literature is included when judged to be reliable and peer-reviewed. The reviews are annotated to provide the reader with expanded interpretations of the information. In addition a review of available URL sites was conducted, and the most useful sites relating to sustainable land management and land quality are annotated. These sites are intended as points of departure (bookmarks) for anyone wanting further information from the internet. Also available via Internet.
Orders to: The World Bank, 1818 H Street, N.W. Washington, D.C. 20-433 USA. Fax: +1 202 477 6391; E-mail: books@worldbank.org; http://www.worldbank.org/

Land Use and Cover Change (LUCC). Open Science Meeting Proceedings. Amsterdam, The Netherlands, January 29-31, 1996. LUCC Report Series No. 1. L. Fresco, R. Leemans, B.L. Turner II, D. Skole, A.G. van Zeijl-Rozema, V. Haarmann, editors. Institut Cartogràfic de Catalunya, Barcelona, 1997, 143 p.
This publication was compiled directly from the presentations and discussions which took place at the LUCC Open Science Meeting, held at the Royal Netherlands Academy of Arts and Sciences, Amsterdam. Over de past half decade the International Geosphere- Biosphere Programme (IGBP) and the International Human Dimension Programme on Global Change (IHDP) have been jointly supporting the

development of a Core Project on Land Use and Cover Change (LUCC), which is aimed at understanding the complex patterns and processes of land use and cover change through basic scientific and scholarly research. The culmination of the work of a jointly-convened Core Project Planning Committee was this IGBP/IHDP report and the formation of a full Core Project by the two parent programs.
Requests to: see below.

Electronic Conference on Land Use and Land Cover Change in Europe. 21 November-19 December 1997. LUCC Report Series No. 2. E. Lambin, Günther, J. Jäger and X. Baulier, editors. International Project Office, editor. Institut Cartogràfic de Catalunya, Barcelona, 1998, 51 p. ISSN 1138-7424.
The conference was divided into three parts. The first session, on »Issues and priorities of LUCC in the European context«, took the results of the First Electronic Conference as a basis for discussion with the objective of better defining a LUCC framework in Europe and to identify research priorities. The second session aimed to discuss the scientific understanding and results that could contribute to LUCC-related European policies. The general discussion reflected on how research activities should be oriented to support the implementation of EU policies with a territorial dimension. With this perspective, an improved knowledge of processes governing the changes in land use and land cover, as well as the impacts of the changes, is essential. The outcome of this conference was foreseen as an input to the Barcelona GCTE-LUCC Conference: »The Earth's Changing Land« (European Forum) as a starting point for further discussion, exchange of views and recommendations that might contribute to define research issues on land use and land cover change to be tackled in the perspective of new European programmes.
Requests to: see below.

The Earth's Changing Land. GCTE-LUCC Open Science Conference on Global Change. Abstracts. Barcelona, Spain, 14-18 March 1998. GCTE-LUCC Open Science Conference. Institut Cartogràfic de Catalunya, Barcelona, 1998.
This publication contains the abstracts of the conference. The major topics of the conference were: Impacts of climate and atmospheric composition change on ecosystem functioning and the implications for the Earth System; Driving forces of land use change and its ecological consequences; vegetation/land cover changes at local, landscape and global scales; global change impacts of agricultural production, forestry, biodiversity and other issues of importance for human well-being; symposium on »Regional Approach to Global Change Research« with special sessions on Europe, Asia, Africa, North America, Latin America, and others. The objectives were: To present the latest understanding on global change impacts on the terrestrial biosphere and feed backs to climate; to understand the regional implications of global change to develop strong links between research community and the policy and resource management sectors; to meet like-minded colleagues from around the world to discuss scientific progress and possibilities for future collaborations; to identify future research needs and strategies for »Living with global change«.
Requests to: Caroline Nunes, LUCC IPO, Generalitat de Catalunya, Institut Cartogràfic de Catalunya, Parc de Montjuïc s/n, E-08038 Barcelona, Spain. E-mail: lucc@icc.es

Soil Fertility Management in West African Land Yse Systems. Gestion de la fertilité des sols dans les systèmes d'exploitation d'Afrique de l'Ouest. Proceedings of the Regional Workshop University of Hohenheim, ICRISAT Sahelian Centre and INRAN, 4-8 March 1997, Niamey, Niger. G. Renard, A. Neef, K. Becker and M. von Oppen, editors. Margraf Verlag, Weikersheim, 1998, xi + 600 p. ISBN 3-8236-1272-7. Paperback.
This is the proceedings of the regional workshop, held in Niamey, with more than 250 participants who deliberated and exchanged information. Most of the papers of the proceedings has been written in English, having abstract in French, conversely if in French an English abstract is accompanied to it. The proceedings covers a vast numbers of field of studies related to agricultural management system. The papers cover as diversified aspects of soil and crop sciences as inorganic and organic fertilizers, soil fertility, its management on various types of land pattern, soil conservation, erosion control, crop rotation, fallow cropping system, economic use of water, agroforestry in general, evaluation of degraded land and crop land, and strengthening crop and livestockssystem. At the end of the conference, group discussions were organised, and the recommendations stemming are also included. This book is especially for those interested to know more about soils, land management and crop productivity inthe vast Sahel region of West Africa. Many data used are of recent experiments, conducted mostly after 1990.
Price: DEM 120; USD 80.
Orders to: see below.

Dare to Share. Dare-to-Share Fair at the 9th Conference of the International Soil Conservation Organisation (ISCO), Bonn, Germany, 26-30 August 1996. Margraf Verlag, Weikersheim, 140 p. ISBN 3-8236-1273-5. Paperback.
A novel way of presenting knowledge and experiences was tested in the form of an exhibition, the Dare-to-Share Fair. Projects, government organisations, NGOs and research institutions in the field of soil conservation and natural resource management have displayed their work. Media devices such as posters, photos, publications, maps, videos, slide shows and topographic models helped to illustrate the experience. This publication is conceived as an illustrative and concise presentation of the highlights and major issues of the Fair. Twenty booths are described in brief, including 9 of the 10 award-winning booths. The others were selected on the basis of successful presentation or innovative elements.
Price: DEM 36.
Orders to: Margraf Verlag, P.O.Box 1205, D-97985 Weikersheim, Germany. Fax: +49 7934/8156. E-mail: Margraf@compuserve.com.

Environmental Chemical Analysis. B.B. Kebbekus, S. Mitra. Blackie Academic & Professional, London, Weinheim, 1998, xiv + 330 p. ISBN 0-7514-0456-X. Paperback.
Study of the environment requires the reliable and accurate measurement of extremely small quantities of chemicals, deemed as either pollutants or naturally occurring species. This book presents details of the basic analytical science involved in making these measurements. It offers a thorough grounding by concentrating on the basic principles of sampling and sample preparation, followed by the chemical principles of the major instrumental methods used in chemical analysis, and augmenting this with detailed discussions of the major environmental matrices. All ten chapters have lists of recent references and study questions.
Price: GBP 24.99
Orders to: International Thomson Publishing, Cheriton House, North Way, Andover, Hampshire SP10 5BE, UK. E-mail:direct.orders@itps.co.uk. *or* home page: www.finechemistry.com.

Advanced Soil Mechanics. Second Edition. B.M. Das. Taylor & Francis, Washington, London, 1997, xiv + 455 p. ISBN 1-56032-561-5. Hardcover.
This second edition has gone through some restructuringand the inclusion of the most recent developments in this field. Chapter one provides a general review of the grain-size distribution, plasticity, and the AASHTO and Unified soil classification systems. Chapter 2 is a new chapter and provides fundamental concepts of elasticity, equations of equilibrium, and compatibility as they relate to the determination of stress in a soil medium. »Permeability and Seepage« is presented in Chapter 5. Additions to this chapter are discussions on various types of permeameters for testing of clayey soils and procedures developed and refined during the last decade for the determination of in situ coefficients of permeability for compacted clay. Chapters 6,7, and 8 discuss consolidation, shear strength, and settlement of soil, respectively. The shear strength chapter is moved ahead of the settlement chapter, which makes it easier to explain the use of stress path in the estimation of settlement. The text is extensively illustrated and a number of example problems are given in each chapter for greater perception. This list can be used by readers for in-depth review and/or research.
Price: GBP 29.95.
Orders to: Taylor & Francis, 1900 Frost Road, Suite 101, Bristol, PA 19007-1598, USA. Fax: +1-215 785-5515; homepage: http://www.tandfdc.com/ *or* Taylor&Francis, 1 Gunpowder Square, London EC4A 3DE, UK. Fax: +44-171-5830581.

Ecology of Arctic Environments. S.J. Woodin and M. Marquiss, editors. Special Publication Series of the British Ecological Society Number 13. Blackwell Science, Oxford, 1997, vi + 286 p. ISBN 06 3204218 4. Hardback.
Concerns about the effects of global warming are driving research in a number of fields. Recently, there have been predictions that the Arctic will be subject to major climatic change as a result of global warming - it may be that the first changes attributable to global warming will be detected in this region. Many ecologists are currently seeking for further our understanding of how arctic ecosystems function, and to detect and predict anthropogenic changes which may occur with them.
This book, resulting from a Symposium on the Ecology of Arctic Environments, held in Aberdeen in 1995, addresses these issues. Early chapters provide a background to the soils and periglacial processes of the Arctic, and to the role of microbial and plant communities in ecosystem function. Relationships between individual arctic species and their environment are considered in Chapters 5-7, which also have climatic variation as a common theme. Chapter 5 suggests that the character traits which enable arctic plant species to survive in a very fragile and variable environment preadapt them to the consequences of climate change. Chapter 6 describes the environments, physiological adaptations and life-cycle biology of arctic terrestrial arthropods, and reports population responses to simulated climatic change. Chapter 7 summarizes data collected over nearly 30 years showing associations between the reproductive variability of polar bears, ringed seal populations and environmental fluctuations, including climate. The volume ends with four chapters concerning man's impacts on the arctic environment. Such as the sources, pathways and effects of radionuclides, toxic metals and persistent organochlorines. The final chapter describes the effects of increasing atmospheric CO_2 concentration and changes in climate on the net CO_2 flux of arctic ecosystems.
Price: GBP 35.
Orders to: see below.

Earth Surface Processes. P.A. Allen. Blackwell Science, Oxford, 1997, xi + 404 p. ISBN 0632 03507 2. Paperback.
Over the last century reductionism, the method of understanding the whole by examining its parts, has served science and society well. The emergence of holistic disciplines such as Earth system science, however, signals the decline of the preeminence of reductionism. Holistic approaches to the Earth emphasize the linkages and feedbacks between its different components, and stress the connecting fluxes. They do not relegate reductionist approaches to redundancy, but rather draw on advances irrelatively narrow sub disciplines in building a multidisciplinary picture of how complex systems work as a whole. This is the emphasis of this publication. It is important to appreciate the global, interactive models of the Earth's surface, but it is equally important to understand the physics underpinning individual component processes, such as the instability of a slope. This then, is the broad rationale for the two-part subdivision of the book, the global and the local, which together give a dynamic and physically based appreciation of Earth surface processes. This book transcends traditional boundaries between sedimentology, physical geography and fluid mechanics, as part of a new agenda in the earth sciences.
Price: GBP 24.95.
Orders to: see below.

Principles and Practice of Soil Science. The Soil as a Natural Resource. Third Edition. R.E. White. Blackwell Science, Oxford, 1997, x + 348 p. ISBN 0-86542-960-X. Paperback.

In this new edition the content of the text has been fully revised and updated. Emphasis has been placed on the applications of soil science to the solution of a wide variety of practical problems in soil and land management. Contemporary material has been introduced on productivity, fertilizers and agro-chemicals, problem soils and soil information systems. A new chapter on soil quality and sustainable land management has been added which reviews current issues in the sustainable use of natural resources at national and international levels. The author maintains the tradition of clarity and conciseness set by previous editions, and the text is extensively illustrated with photographs and diagrams.

Price: GBP 22.50.

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New IBSRAM Publications

Methods for the economic assessment of the on- and off-site impacts of soil erosion. Th. Enters. Issues in Sustainable Land Management no. 2. International Board for Soil Research and Management (IBSRAM), The Soil, Water, and Nutrient Management Programme (SWNM), 1998, viii + 60 p. ISBN 974-7722-62-3. Paperback.

Soil erosion has attracted the attention of soil scientists and conservationists for more than a century. Studies on indigenous and modern soil-conservation practices indicate that the proper management of soil can reduce soil erosion substantially and decrease its on- and off-site impacts. Yet, while the negative consequences of soil erosion and degradation are widely recognized, and the number of soil-conservation projects and programmes is mushrooming, adoption rates of improved land-management practices are disappointing. One is tempted to ask why so little has been achieved since soil and land degradation continue to make headlines. The processes of soil erosion and degradtion are physical, and may be accelerated considerably by economic activities. Their impacts are social and can be assessed in financial or economic terms, as can be the costs and benefits of other activities and their effects. Thus, soil conservation competes with other activities, projects or programmes for scarce resources. It will not receive the attention that it may deserve, as long as conservationists rely on emotional appeals. Instead, strong arguments for soil conservation need to be built on thorough economic assessments of the on- and off-site impacts of soil erosion, in order to understand what happens at various hierarchical landscape levels and to provide the necessary input to environmental decision making. This review addresses part of the problematic contentious issues that have been raised in the past. Practical issues that research needs to address are discussed in order to make cost-benefit analysis an appropriate methodology for translating physical variables and processes into monetary values. The intention of the author was to bring the reader up to date on the issues surrounding economic assessments of soil erosion, to point out gaps of knowledge, and to stimulate a constructive discussion.

Orders to: see below.

Indigenous Technical Knowledge for Land Management in Asia. Issues in Sustainable Land Management no. 3. International Board for Soil Research and Management (IBSRAM), The Soil, Water, and Nutrient Management Programme (SWNM), Bangkok, 1998, 151 p. ISBN 974-86345-3-1. Paperback.

In the assembly of the Management of Soil Erosion Consortium (MSEC) that was held in Nan, Thailand, from 28 January to 2 February 1997, representatives from eight countries reported on indigenous technical knowledge (ITK) in their countries in the field of sustainable agriculture and natural resources management. The review of the state of the art of ITK in this volume is a collection of baseline information on ITK in Asian countries. The eight countries are all involved in MSEC which is part of the CGIAR system-wide programme on soil, water, and nutrient management. The cross country comparison and exchange of ITK information should be most useful in the planned MSEC activities at model catchment sites where most of the consortium work will be done. Diverse sources have been used by the authors. Some authors utilized existing available secondary data and a few collected primary data to produce the case study reports, while others combined both. The publication should be of interest to researchers and practitioners concerned with sustainable land management in the area and a good example for comparable work in other regions.

Orders to: see below.

International Workshop on Resource Management Domains. J.K. Syers, J. Bouma, editors. IBSRAM Proceedings no. 16. International Board for Soil Research and Management (IBSRAM), Bangkok, 1998, viii + 322 p. ISBN 974-89592-8-7. Paperback.

Future generations will depend for their livelihoods on our careful husbandry of the natural resource base for agriculture. Effective fulfilment of this obligation and the attainment of sustainable development will require a proper inventory and characterization of the resource base. Great progress has been made at the national and global levels in agro-ecological characterization and land resource mapping, but few databases also capture the dynamics of demographic, social, and economic

changes that often have an overriding influence on development impacts. IBSRAM developed the concept of Resource Management Domains (RMD) to improve the integration and interpretation of biophysical and socioeconomic data and assist decision-makers in resource inventory and management, research priority setting, and technology transfer. The workshop in Kuala Lumpur was planned to elaborate the RMD concept and define future research needs. Responsible national agencies in Asia and the Pacific and their partners in the international agricultural research centres have a vital interest in these issues. The 23 papers in this volume and the 4 working group reports reflect a high level of interest in RMD.
Orders to: see below.

Farmers' Adoption of Soil-conservation Technologies. Proceedings of the 9th Annual Meeting of the ASIALAND Management of Sloping Lands Network. Bogor, Indonesia, 15-21 September 1997. IBSRAM Proceedings no. 17. International Board for Soil Research and Management (IBSRAM), Bangkok, 1998, 144 p. ISBN 974-7722-67-4. Paperback.
The 9th annual meeting of the ASIALAND Management of Sloping Lands network was held under the theme »Farmers' adoption of soil-conservation technologies«. Since the network is maturing towards the extension phase, it is timely that the network should know more about the success and failure of past projects that introduced soil-conservation technologies to farmers. Ten papers relating to the theme were presented by the network cooperators and invited speakers. This proceedings contains the papers presented, relating to the theme, and two reports from discussions groups about »Enhancing government and others' support for soil conservation« and »soil-conservation development project«. While the two reports identify and recommend strategies and approaches to be taken, the papers discuss technology adoption and dissemination, policies, approaches, and constraints relating to sustainable agriculture on sloping lands.
Orders to: The Information Office, IBSRAM, PO Box 9-109, Jatujak, Bangkok 10900, Thailand; Fax +66 2 561-1230; E-mail: ibsram@cgnet.com.

Diagnostic Procedures for Crop N Management. Poitiers (France, November 22-23, 1995. G. Lemaire and I.G. Burns, editors. Les colloques series, no 82, INRA Editions, Paris, 1997, 158 p. ISBN 2-7380-0757-0. Paperback.
This book aims to provide a forum for examining current research on ecological aspects of plant nutrition and their relevance to the development and application of diagnostic procedures for crop N management and decision making. The first part deals with the principles and mechanisms relating to N uptake and allocation, and the way in which these combine to control how N supply influences plant N concentration and growth rate. The second part deals with the use of plant and soil measurements for diagnostic purposes, where particular attention was paid to the advantages and disadvantages of measuring only one of the may pools of N in a plant as opposed to its total N concentration, and to sampling only selected tissues rather than the whole shoot. The last part examines the use of diagnostic measurements as the basis for decisions on crop N and fertiliser management, in which both direct and indirect methods of assessing the N status of crops and the use of modelling techniques to interpret the results of spot soil and plant measurements were considered.
Price: FRF 110 + 30 francs de port.
Orders to: see below.

Maîtrise de l'azote dans les agrosystèmes. Reims (France) 19-20 novembre 1996. G. Lemaire and B. Nicolardot, éditeurs. Les colloques séries, no 83, INRA Editions, Paris, 1997, 333 p. ISBN 2-7380-0764-3. Paperback.
Ce colloque présente les acquis des recherches menées sur le cycle de l'azote dans les agrosystèmes et identifie les problèmes que rencontrent les professionnels ainsi que leurs attentes dans ce domaine. Il explicite les stratégies de recherche et de développement à mettre en place pour répondre aux défis posés par les nouvelles contraintes environnementales et socio-économiques qui pèsent sur l'activité agricole.
Dans une première partie, il traite de la dynamique de l'azote dans l'écosystème cultivé, à savoir les flux d'azote provenant des agrosystèmes et leurs impacts environnementaux (émission gazeuses, qualité des eaux de surface et de lessivage, bilans environnementaux des cultures) mai aussi le cycle de l'azote à l'échelle de la parcelle cultivée (dynamique de l'azote dans les sols, devenir des engrais, prélèvements d'azote par les plantes, nutrition azoté et qualité des produits). Il fait ensuite le point sur la gestion de l'azote dans les systèmes de culture et d'élevage: cultures annuelles de plein champ, systèmes prairiaux, systèmes horticoles, valorisation des effluents d'élevage, des effluents urbains ou agro-industriels, maîtrise de l'azote pendant l'interculture et les jachères, prévention de la pollution à l'échelle du bassin d'alimentation.

Contaminated Soils. 3rd International Conference on the Biogeochemistry of Trace Elements. Paris (France), May 15-19, 1995. R. Prost, editor. Les colloques séries, no. 85, INRA Editions, Paris, 1997, 528 p. ISBN 2-7380-0775-9. Hardback. Full text also on enclosed CD-ROM.
The objective of the above mentioned conference was to establish the state of knowledge concerning the biogeochemistry of trace elements and to discuss the risks to human health and biodiversity posed by toxic elements in soils and sediments. There were three themes. A: biogeochemistry of trace elements; B: Impacts and pathways of exposure; C: Evaluation and management of risk. The book includes 34 plenary lectures; the CD-Rom all the accepted scientific papers as well as the three volumes of abstracts distributed during the conference, the three circulars sent to all interested persons, and a complete list of participants and posters.
Price: FRF 380 + 30 francs de port.
Orders to: see below.

Teneur totales en éléments traces métalliques dans les sols (France). D. Baize. Institut National de la

Recherche Agronomique, Paris, 1997, 408 p. ISBN 2-7380-0747-3 (Livre de poche); ISSN 1250-5218.
Cet ouvrage présente les principaux résultats des travaux menés dans le cadre du programme ASPITET. Il a été rédigé afin de: fournir des références sur les teneurs totales en éléments traces métalliques mesurées dans divers sols francais; transmettre des informations utiles sur les relations entre ces teneurs et d'autres données pédologiques en géologiques; proposer et expliquer des démarches d'interprétation applicables partout. Les principaux éléments étudiés sont Cd, Co, Cr, Cu, Ni, Pb, Zn et, dans une moindre mesure, Hg et Se; aussi les autres paramètres analytiques classiquement mesurés en pédologie (granulométrie, capacité d'échange cationique, pH, calcaire, carbone organique); et un chapitre au thallium dans les sols. Ce livre intéressera tous les professionnels qui doivent interpréter des résultats d'analyse de métaux lourds dans les sols et/ou gérer des épandages de déchets sur les terrains agricoles.
Prix: FRF 360 + 30 francs de port.
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Groundwater/Surface Water Ecotones: Biological and Hydrological Interactions and Management Options. J. Gilbert, J. Mathieu and F. Fournier, editors. International Hydrology Series. Cambridge University Press, Cambridge, New York, 1997, xiii + 246 p. ISBN 0-521-57254. Hardback.
This volume of the International Hydrological Series, is derived from an international conference of the Ecotone project, established under the dual responsibility of the UNESCO International Hydrological Programme (IHP) and the Man and the Biosphere Programme (MAB), and summarises the results of activities devoted to the study of groundwater/surface water interactions. Topics covered include interrelationships between surface water and groundwater in riparian forests, wetlands, areas surrounding lakes and alluvial flood plains. this book defines strategies for the integration of data obtained by different disciplines in order to provide a scientific basis for the sound ecological management of water resources leading to sustainable development of the environment. It addresses areas of active research in hydrology and biology and also discusses challenges in groundwater/surface water ecotone analysis in the future.
Price: GBP 65 (plus postage and packing); USD 115.
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Accomplishments and Future Challenges in Dryland Soil Fertility Research in the Mediterranean Area. J. Ryan, editor. International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, and Institut Mondial du Phosphate (IMPHOS), Casablanca, 1997, ix + 369 p. ISBN 92-9127-040-7. Soft bound.
The papers presented in this publication represent the proceedings of the Soil Fertility Meeting at Tel Hadya in November 1995. The terms of reference for the participants were to review and take stock of what had been accomplished in soil fertility research, and to look to the future and assess what needs to be done. The meeting agenda represented a large degree of success in both endeavours. New issues to be addressed included a holistic concept of soil fertility as reflected in rotation trials; the use of N-15 to elucidate the dynamics of supplemental irrigation; the use of P in rangelands; assessment of micronutrient stress in terms of deficiency and toxicity; breeding to adapt crops to nutrient stresses assessment of soil tests and laboratory management; practical considerations for soil fertility trials; aspects of soil fertility education; and economic assessment of fertilizer use policy.
Price: USD 35 (HIC); USD 20 (LIC), including mailing charges.
Requests to: see below.

Wind Erosion in Africa and West Asia: Problems and Control Strategies. M.V.K. Sivakumar, M.A. Zöbisch, S. Koala, T. Maukonen, editors. International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, v + 198 p. ISBN 92-9127-077-6. Soft bound.
The dry parts of Africa and West Asia experience tremendous pressures on their land resources. Population increases in these regions are some of the highest in the world. At the same time, signs of serious land degradation are apparent every where in the region. Without appropriate land management practices, these lands will deteriorate beyond the state of useful rehabilitation, and users need to adopt more appropriate ways of management of the land.
Wind erosion is one of the most damaging effects of wind in many parts of the world. The occurrence of wind erosion is a function of weather events interacting with soil (intrinsic properties) and land management (past and present practices) through its effect on soil structure, tilth, and vegetation cover. Wind erosion presents multiple challenges: identifying where wind erosion is most threatening to sustainable agricultural productivity; what practicable farmer-friendly measures can be devised to contain it; and how these measures can be transferred and implemented within agricultural land-use systems. During the Expert Meeting on Wind Erosion in Africa and West Asia held in Cairo, 1997, the causes, effects and impacts of wind erosion in the region were analyzed and evaluated. Strategies and approaches to fight wind erosion were proposed by professionals who have an interest in halting land degradation and are presented in this book.
Requests to: ICARDA, P.O. Box 5466, Aleppo, Syria. E-mail: ICARDA@cgnet.com; Website: http://www.cgiar.org/icarda.

Farmer-led Extension. Concepts and practices. V. Scarborough, S. Killough, D.A. Johnson, and J. Farrington, editors. Intermediate Technology Publications, London, on behalf of Overseas Development Institute, 1997, x+ 214 p. ISBN 1-85339-417-3. Paperback.

The majority of the poor in developing countries live in rural areas, rely on agriculture for their employment, and spend much of their income on food. Moreover, labour constraints, particularly in households headed by women, often limit farmers' ability to expand the area they cultivate. Thus sustainable increases in land an labour productivity in agriculture, through technological and managerial innovation, continue to be crucial ways of reducing poverty and fostering economic growth. This book is based on a one-week workshop, organized in July 1995 by the Overseas Development Institute (ODI), the International Institute for Rural Reconstruction (IIRR) and World Neighbours in the Philippines. The aims of the workshop were to: share experiences between those working in farmer-led extension programmes, thus enabling information on innovative approaches to extension to be synthesized and disseminated; enable leaders of conventional extension services to learn more about more responsive approaches, and particularly how public-sector services might incorporate, or better relate to, farmer-led initiatives. More than 50 papers were submitted; together with the discussions, these form the basis of this book. It is an introduction to farmer-led approaches, and a mine of ideas for extension managers and project staff seeking to promote agricultural development
Price: GBP 12.95.
Orders to: see below.

Field Hydrology in Tropical Countries. A practical introduction. H. Gunston. Intermediate Technology Publications, London, 1998, xi + 108 p. ISBN 1-85339-427-0. Paperback.
Among global ecologists there has been some consistency in the views that shortages of water supplies in the tropical developing countries will be the first of the crises arising from their rapid population growth. This is due only in part to consumption by the growing numbers of people and livestock. A more serious threat is the increasing damage to the upper watersheds. As uncontrolled subsistence farming spreads uphill into steeper lands, both soil erosion and flood flows increase. As population increase in the lower lands of tropical river basins the need for the management of water resources becomes more critical. The key to water resource management is measurement. Making hydrological measurements in the field is an essential part of water resources planning and management. This book is a practical introduction to the skills and knowledge required to make measurements, and to manage data-collection programmes. It is well illustrated with diagrams of hydrological equipment and how to use it, together with photographs of field installations. After describing the general principles of working with observers, teams and road vehicles in the remote areas, the author discusses in detail various methods of measuring rainfall, streamflow and evaporation.
Price: GBP 12.95; USD 22.50.
Orders to: Intermediate Technology Publications, 103-105 Southampton Row, London WC1B 4HH, UK; Fax: +44 171 436 2013; E-mail: orders@itpubs.org.uk; *or* Stylus Publishing LLC, 22883 Quicksilver Drive, Sterling VA 20166-2012, USA; Fax: +1 703 6611501; E-mail: Styluspub@aol.com.

Nitrogen Fixation with Non-Legumes. Developments in Plant and Soil Sciences 79. Proceedings of the 7th International Symposium on Nitrogen Fixation with Non-Legumes, held 16-21 October 1996 in Faisalabad, Pakistan. K.A. Malik, M.S. Mirza and J.K. Ladha, editors. Kluwer Academic Publishers, London, Dordrecht, 1998, 350 p. ISBN 0-7923-4873-7. Hardbound.
Diazotrophic bacteria convert atmospheric nitrogen to plant-useable form and this input of nitrogen through biological fixation is of great agronomic importance. The contributions presented in this volume relate to free-living nitrogen fixers and the diazotrophs associated with plants. Symbiotic association of Frankia with non-legumes and cyanobacterial associations are also discussed. Research topics covered include the biochemistry and genetics of diazotrophs, recent developments in improvement of plant-microbe interactions and their molecular basis, the use of molecular probes in taxonomy and ecology of diazotrophs and reports on field applications agronomic importance and improvement in methodologies for assessing their contribution to plants. This book provides valuable information not only for researchers working in the field of biological nitrogen fixation but also for biochemistry molecular biologists, microbiologists and agronomists.
Price: NLG 295; USD 169; GBP 99.
Orders to: see below

Fertilizer Manual. R.G. Lee and D.I. Gregory, technical editors. United Nations Industrial Development Organization (UNIDO) and International Fertilizer Development Center (IFDC). Kluwer Academic Publishers, UNIDO, IFDC, Dordrecht, Vienna, Muscle Shoals, 1998, xii + 615 p. ISBN 0-7923-5032-4. Hardbound.
The last revision of this manual was published in 1979. Since that time major advances in fertilizer technology have occurred, resulting in more energy-efficient processes and reductions in the cost of production. This third edition is a new, updated, comprehensive reference on the technology of fertilizer production. The manual contains engineering flow diagrams and process requirements for all major fertilizer processes including ammonia, urea, phosphates, potassium products and others. Environmental considerations, which are becoming increasingly more important, are addressed clearly. Equally important, the manual includes chapters on fertilizer use, production and distribution economics, raw materials, and the status of the fertilizer industry with demand-supply projections. the manual ends with a chapter on the challenges facing the fertilizer industry.
Price: NLG 650; USD 349; GBP 219.
Orders to: see below.

Magnesium Deficiency in Forest Ecosystems. Nutrients in Ecosystems, Volume 1. R.F. Hüttl, W. Schaaf, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1997, xvi + 362 p. ISBN 0-7923-4220-8. Hardbound.
The scope of this new book series is to show results of ecosystematic studies providing new insight into the

complex interactions of mineral and organic nutrients including CO_2 and water related to the vitality, stability and/or elasticity of terrestrial ecosystems, whether managed or not. The series also aims at closing the gap between well-established text book knowledge and single research results published in numerous journal contributions in this interdisciplinary field of ecological research. The importance of magnesium in the element cycling of forest ecosystems has only been fully recognized since the widespread symptoms of forest magnesium deficiency were identified to be a major component in the damage phenomena. This book tries to summarize the knowledge about magnesium and its role as a nutrient in forest ecosystems, gathered from recent studies as well as from historical experiences and findings. The results of these studies in most cases point to the activity of man and his influence on the ecosphere. The book has three parts. I. Magnesium deficiency. Symptoms and development; Part II. Magnesium in forest ecosystems; Part III. Recuperation of magnesium deficiency through fertilization.
Price: DFL 375; USD 233; GBP 139.
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Boron in Soils and Plants. Developments in Plant and Soil Sciences Volume 76. Proceedings of the International Symposium on Boron in Soils and Plants, held at Chiang Mai, Thailand, 7-11 September 1997. R.W. Bell, B. Rerkasem, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1997, xiv + 270. ISBN 0-7923-4705-6. Hardbound.
This symposium is the fourth in a series of symposia focusing the behaviour in soils and plants of four trace elements, copper, manganese, zinc and boron, selected for their importance in agriculture. This volume reports significant new findings on B functions in cell walls, B uptake and translocation. Contributed papers also indicate significant current interest in documenting the incidence of B deficiency in Asia, and developing procedures for the prediction of B deficiency and for correcting it in horticultural and field crops.
Price: DFL 280; USD 159; GBP 95.
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Boron in Soils and Plants: Reviews. Developments in Plant and Soil Sciences Volume 77. B. Dell, P.H. Brown, R.W. Bell, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1997, x + 219. ISBN 0-7923-4729-3. Hardbound.
This volume is the most up-to-date and comprehensive reviews of our knowledge of boron in soils, plants and animals. The thirteen review papers are written by leading scientists, and coincides with a period of significant progress in boron research. The book covers recent advances in the identification of the physical and chemical role of B in the cell wall, the characterisation of the genetic basis for differences in B accumulation and tolerance to B excesses and deficiencies, and the identification and characterisation of the mechanisation of phloem B transport.
Reprinted from Plant and Soil, 193:1-2.
Price: DFL 210; USD 120; GBP 72.
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Soil and Water Quality at Different Scales. Developments in Plant and Soil Sciences, Volume 80. P.A. Finke, J. Bouma, M.R. Hoosbeek, editors. Proceedings of the Workshop »Soil and Water Quality at Different Scales« held 7-9 August 1996, Wageningen, The Netherlands. Kluwer Academic Publishers, Dordrecht, Boston, 324 p. ISBN 0-7923-4994-6. Hardbound.
Soil and water quality are recognized as important indicators to assess ecosystem vulnerability, agricultural sustainability and the health of rural and urban environments. To obtain a state-of-the-art picture of interdisciplinary research in the context of soil and water quality, a workshop was organised which focused on integrated case studies on soil and water quality, with special emphasis on scale aspect. The Workshop was organized by the three ISSS Working Groups MW, PM and SP. The first part of this publication covers keynote papers describing the scope of the workshop and the relevance, current issues and methodologies within scale-related soil and related spatial research. The second part covers agro-ecological and hydrological case studies in which scale transforms ared an important part of the research chain. The third part consist of papers focusing on methodologies for up- and downscaling in the context of soil- and ecosystem research. Part four consists of three papers giving a thorough and critical picture of the state-of-the art from the perspective of modellers and statisticians. The fifth part consists of research notes based on the presented posters which offered valuable food for discussion during the workshop. The book is dedicated to Prof. Jeff Wagenet, who was one of the initiators of the conference.
This volume is reprinted from Nutrient Cycling in Agroecosystems, Volume 50, Nos. 1-3(1998).
Price: DFL 320; USD 170; GBP 109.
Orders to: see below.

Understanding Options for Agricultural Production. Systems Approaches for Sustainable Agricultural Development. Volume 7. G.Y. Tsuji, G. Hoogenboom, P.K. Thornton, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1998, xiii + 397 p. ISBN 0-7923-4833-8. Hardbound.
This series brings together and integrate disciplines related to systems approaches for sustainable agricultural development, in particular from the technical and socio-economic sciences, and presents new developments in these areas.
The first premise of this book is that farmers need access to options for improving their situation. The second is that systems analysis and simulation have an important role to play in fostering this understanding of options, traditional field experimentation being time-consuming and costly. This volume summarizes the activities of the International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT) project, an attempt to demonstrate the effectiveness of understanding options through systems analysis and simulation for the ultimate benefit of farm household in the tropics and subtropics. It starts with an overview of the project, followed by seven chapters, outlining the tools that were developed. The next nine chapters describe a variety of applications of the DSSAT (Decision Sup-

port System for Agroetechnology Transfer) and crop models, and show the diversity of technical problems that have been addressed using the crop models both within and without the DSSAT package. The last chapters concern training and education, project documentation, and a synthesis of the lessons learned from the IBSNAT project for future research and development activities.
Price: DFL 350; USD 200; GBP 119.
Orders to: Kluwer Academic Publishers, Order Dept., P.O.Box 989, 3300 AZ Dordrecht, The Netherlands. E-mail: services@wkap.nl *or:* Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, USA.

Multiple Objective Decision Making for Land, Water, and Environmental Management. Proceedings of the First International Conference on Multiple Objective Decision Support Systems (MODSS) for Land, Water, and Environmental Management: Concepts, Approaches, and Applications. S.A. El-Swaify and D.S. Yakowitz, editors. Lewis Publishers, CRC Press, Boca Raton, 1998, xii + 743 p. ISBN 1-57444-091-8. Hardcover.
This book is the postconference Proceedings of MALAMA 'AINA (Preserve the Land) 1995, the »First International Conference on Multiple Objective Decision Support Systems (MODSS) for Land, Water, and Environmental Management: Concepts, Approaches, and Applications« held in Honolulu in 1995. The ISSS was a co-sponsor of this important event.
It addresses the potential conflict between production-driven and environment-driven objectives of natural resource use and management. It presents Multiple Objective Decision Support Systems (MODSS) as a holistic, eco-system-based approach to urgent environmental management problems, giving alternative strategies and emerging innovations for addressing natural resources management and environmental problems. Case studies demonstrate how MODSS have addressed, or can address, critical needs in land use planning and management in various countries and regions. The book includes the rationale and relevance of MODSS; resolving conflict in resource management using the decision support system GMCR. It also addresses diverse client needs, one on MODSS *methodology, tools, components and integration*; SMART PITCHFORK (the Northeast decision model); WATERSHEDSS (C) (Decision support system for nonpoint source pollution control in agricultural watersheds); CERES and PARI DSS models in the multiple objective decision making process and integrated decision making for sustainability issues and another section shows the applicability to national, regional and global issues. An significant publication about integrating research results of various resource management issues and environmental disciplines.
Price: USD 79,95; GBP: 64; DEM 166.
Orders to: CRC Press, 2000 Corporate Blvd, N.W. Boca Raton, Florida, 33431, USA *or* Springer Verlag, Orders Department, P.O.Box 311340, D-10643, Germany; E-mail: orders@springer.de.

Modelling Soil Erosion by Water. J. Boardman, D. Favis-Mortlock, editors. *NATO ASI* Series. Series I: Global Environmental Change, Vol. 55. Springer-Verlag, Berlin, Heidelberg, 1998, 531 p. ISBN 3-540-64-34-7; ISSN 1431-7125. Hardcover.
This publication is the Proceedings of the NATO Advances Research Workshop 'Global Change: Modelling Soil Erosion by Water', which was held in September 1995, in Oxford, UK. The meeting was organised by the IGBP-GCTE Soil Erosion Network. One aim of the Network is to evaluate the suitability of existing soil erosion models for predicting the possible impacts of global change upon soil erosion. Due to the wide range of erosion models currently in use or under development, it was decided to evaluate models in the following sequence: field-scale water erosion models; catchment-scale water erosion models; wind erosion models; models with a landscape-scale and larger focus.
Following the introductory first section, the second and third of this book's seven sections deal with the results of the GCTE model evaluation exercise. It was recognised that the use of common datasets offers a systematic and objective approach to model comparison. The fifth section presents descriptions of specific erosion models or modelling approaches. These include both field-scale models and models or methodologies with a larger focus. The sixth section presents potential or actual applications of models in areas where modelling is new, or has not yet been applied. Section seven draws some conclusions.
Price: DEM 328; USD 199; GBP 126.
Orders to: see below

Soil Fertility Management for Sustainable Agriculture. J.F. Power and R. Prasad. Springer-Verlag, Berlin, Heidelberg, 1997, 352 p. ISBN 1-56670-254-2. Hardcover.
This book addresses the key to the development of sustainable agriculture management of soil fertility. Combining data from temperate and tropical regions, it presents a picture of how various soils can best be managed under widely different environmental conditions. This book serves as reference for professionals as well as a textbook for undergraduate and graduate students *preparing for a career in agriculture or soil fertility management*. It addresses the soil fertility problems of developing countries, including both temperate and tropical zones and exposes students to the basics of soil fertility, including soil chemistry and soil biology, and the various problems encountered in different parts of the world.
Price: DEM 130; GBP 50; USD 69.95.
Orders to: Springer-Verlag, Postfach 14 02 01, D-*14302 Berlin, Germany; Fax: +49 30 821 40 91;* E-mail: orders@springer.de *or* Webmaster@springer.de.

Landforms of the Earth. Cause, Course, Effect, Animation. Multimedia Program on CD-ROM for Macintosh and PC. H. Frater. Springer electronic media, Berlin, Heidelberg, 1998. CD-ROM with booklet.
The CD-ROM gives an insight into the remarkable

variety of the Earth's landforms. In each chapter different multimedia techniques demonstrate aspects of surface formation. Beginning with plate tectonics, numerous photos document the individual landscapes and their origin. Using selected typical landscapes an animated model illustrates how the changes take place. In a separate chapter, numerous movies introduce the most interesting landscapes of the American West Coast (California). The built-in »navigator« allows movement within the application from one chapter to another without loss of orientation.
System requirements: Windows 3.x, Windows '95, 486/33 or higher, 4 MB RAM (8 MB recommended), soundcard, monitor 640x480, 256 colours, CD-ROM drive (double speed). Mac: system 7 or higher, 68030/25 or higher, 6 MB RAM (8 MB recommended), monitor 640x480, 256 colours, CD-ROM drive (double speed).
Price: DEM 58,51; GBP 24.36; USD 34.95.
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Manual of Soil Laboratory Testing. Volume 3: Effective Stress Tests. Second Edition. K.H. Head. John Wiley & Sons, Chichester, New York, 1998, xii + 428 p. ISBN 0-471-97795-0. Hardbound.
This volume covers testing in terms of effective stress, for which the measurement of pore water pressure is the essential feature. The principle and theory of effective stress are explained, practical applications are outlined, and the apparatus used, including its calibration and checking, is described. Most of the procedures described are those covered by BS 1377:1990; Parts 6 and in the UK. Reference is also made to relevant ASTM methods used in the USA. Routine consolidated-undrained and consolidated-drained triaxial test procedures for determination of effective shear strength parameters and some related procedures are given in detail. Tests in the triaxial cell for isotropic consolidation and permeability measurements are included. The advantages of using the hydraulic consolidation cell (Rowe cell) for one-dimensional consolidation is explained, and tests with several arrangements for loading and drainage are described. Measurements of vertical and horizontal permeabilities are also described. The procedures make use of manual methods of observation and recording, but a reference is made to electronic instrumentation and automatic data-logging facilities. The scope of this volume is considerably wider than that of Volume 2, and it is intended not only for technicians and supervisors responsible for executing laboratory tests but also as a work of reference for geotechnical engineers and designers, and for undergraduate and postgraduate students.
Volume 1: Soil Classification and Compaction Tests, covers the basic tests for soil classification and compaction, as given in BS 1377:1990; Parts 1, 2, 3 and 4. Reference is also made to relevant ASTM procedures. Some additional procedures are included.
Volume 2: Permeability, Shear Strength and Compressibility Tests, covers standard laboratory tests for the measurement of soil permeability, CBR value, shear strength and one-dimensional consolidation characteristics. Most procedures relate to those given in BS 1377:1990: Parts 1, 4, 5 and 7. Reference is also make to, and comparisons with, relevant ASTM procedures. Some additional miscellaneous tests are included.
Price: GBP 75.
Orders to: see below.

Land Degradation in Mediterranean Environments of the World. Nature and extent, causes and solutions. A.J. Conacher and M. Sala, editors. John Wiley & Sons, Chichester, New York, 1998, xxviii + 491 p. ISBN 0-471-96317-8. Hardcover.
This publication is an integrated geographical assessment of land degradation in the world's Mediterranean regions as there are: Iberian Peninsula and Balearic Islands; the south of France and Corsica; Italy; the Croatian Adriatic coast; Greece; the eastern Mediterranean; North Africa; Greater California, Chile; The southwestern cape of South Africa; Southern Australia. In Part I information is given about the land, the people, the economy and administrative and social conditions of these regions. Part II discusses the nature, extent, history, causes and implications of land degradation in the regions. Major problems include soil, vegetation and water degradation, fire, drought, flooding and sedimentation. Historical and contemporary human responses to these problems are also considered and become part of the problem. In Part III solutions - actual and potential - are evaluated and include those dealing with animals, cultivation, horticulture, engineering-type practices, agroforestry, whole farm planning, integrated catchment management and regional planning. There is an emphasis on the distinctive nature of the Mediterranean-type environments.
Price: GBP 85.
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Structure & Surface Reactions of Soil Particles. P.M. Huang, N. Senesi, J. Buffle, editors. IUPAC Series on Analytical and Physical Chemistry of Environmental Systems. Volume 4. John Wiley & Sons, Chichester, New York, 1998, xiv + 492 p. ISBN 0 471 95936 7. Cloth.
The main purpose of the IUPAC series on Analytical and Physical Chemistry of Environmental Systems is to make chemists and other scientists aware of the most important bio-physico-chemical processes which influence the behaviour of environmental systems, in terms of sound quantitative theoretical concepts. The various volumes of this series emphasize processes which are specifically related to environmental systems, and which are therefore often unfamiliar to chemists with a main background in homogeneous reactions in solutions. The second issue is to discuss in parallel (either in the same book or in separate books), the important bio-physico-chemical processes and structures discussed above, and the analytical tools which exist or should be developed to study them.
This volume addresses the issues on fundamentals of structure and surface fractions of soil particle dimensions, aggregation and surface chemistry, the structure and reactivity of humics, modern advanced instrumen-

tation in analysis of soil particles, and abiotic and enzymatic reactions and processes at the soil particle-solution interface. Each chapter tries to give a critical overview of the state of the art on its specific topic. A few chapters report recent developments in science.
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Écologie. Approche scientifique et pratique. 4e Edition. C. Faurie, Chr. Ferra, P. Médori, J. Dévaux. Tec&Doc-Lavoisier, Cachan, 1998, xviii + 339 p. ISBN 2-85206-976-8. Livre de Poche.
Face à l'intérêt grandissant pour une véritable éducation à l'environnement, il devenait indispensable de mettre à la disposition de tous un soutien pédagogique, évitant tout à la fois d'être trop spécialisé ou trop simpliste. Tel est l'objectif de ce grand classique de l'écologie qui paraît dans une nouvelle édition actualisée et augmentée. Expliquant clairement et concrètement les interrelations régulant l'organisation et le fonctionnement des écosystèmes, ce livre synthétise les connaissances et les méthodes de nombreuses autres disciplines (biologie,chimie, physique, pédologie, physiologie, systémique..), pour aider le lecteur à mieux comprendre la logique du vivant. 1e partie: les écosystèmes, organisation, fonctionnement, approche pratique; 2e partie: dynamique des écosystèmes.
Prix: FRF 285.
Commande à: ci-dessous.

Evaluation du risque écologique des sols pollués. J.-L. Rivière. Tec&Doc Lavoisier, Paris, Association RE.CO.R.D., 1998, viii + 230 p. ISBN 2-7430-0220-4. Livre de poche.
L'évaluation du risque écologique est née du besoin de prévoir les effets de la pollution et d'assurer une base scientifique aux décisions en matière de gestion environnementale. Cette recherche s'avère particulièrement complexe, tant par son caractère interdisciplinaire que par la relative méconnaissance des écosystèmes naturels et de leur fonctionnement. Cet ouvrage est le premier à présenter une vue d'ensemble des principes fondamentaux et des méthodes utilisables dans le cas particulier des sols pollués. Il propose un ensemble de définitions avant de développer les différents aspects de l'évolution des polluants dans le sol et de leur toxicité. Le livre consiste de cinq chapitres: 1. Définitions, concepts et modèles généraux de l'évaluation; 2. Caractérisation de l'exposition; 3. Caractérisation des effets; 4. Caractérisation du risque; 5. Formulation et gestion du risque.
Ce livre est un introduction à tout décideur, praticien, et étudiant confronté aux risques de pollution.
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GEODERMA

Management of Carbon in Tropical Soils under Global Change: Science, Practice and Policy. Special Issue Geoderma, Vol. 79 (1997), nos. 1-4, September 1997, pp. 1-278. E.T. Elliott, J. Kimble and M.J. Swift, editors. Elsevier, Amsterdam. ISSN 0016-7061.
Growing interest in studying the organic carbon cycle in which CO_2 contributes ca. 50% and CH_4 ca. 18% of the anthropogenic greenhouse forcing and with annual 0.5% rises of CO_2 and 1.1% increase of CH_4, was triggered by the classic works of Arrhenius (1896) at the end of the past century and the vision by Callendar (1938) of the anthropogenic CO_2 impact on the temperature regime. During the 1980s and especially since the first Scientific Advisory Committee (SAC) conference on the IGBP, in Stockholm (1988) global circulation models and many local and regional studies emerged with emphasis on the greenhouse forcing trace gases, tropospheric ozone, and CFCs. A meeting about the role of carbon in the tropics during global change was thought to be of importance, especially to discuss stocks and annual inputs in the different subtropical ecosystems. The workshop was held at ICRAF in Nairobi and nine papers presented are given in this special issue of Geoderma.

Contaminants and the Soil Environment. Special Issue of Geoderma, Vol. 84 (1998), no. 1-3, June 1998, pp. 1-264. R. Naidu, editor. Elsevier, Amsterdam. ISSN 0016-7061.
The Australia-Pacific region supports approximately 50% of the world's population. The last 50 years have witnessed a rapid increase in the regional population, agricultural productivity, industrial activities and trade within the region. Coupled with this increase in activity there has been a marked decline in the state of environment. This special issue presents key selected papers that were submitted at the 1996 First International Conference on Contaminants and the Soil Environment in Adelaide, Australia. The increased use of chemicals in agriculture and industry has led to increased contamination of soil and water throughout the region. Naturally occurring mineral and exploration processing and marketing is an ongoing attractive foreign-exchange marked in many of the regional developing countries where as much as 40% of the export may be controlled by these operations. Mining operations lead to two major types of environmental problems: (a) destruction of land, and (b) the generation of enormous quantities of wastes leading to air, soil and

water pollution. Increased reliance on agrochemicals to enhance crop production has also led to significant contamination of surface and subsurface soil environment. There is also concern amongst the public on the potential impact of heavy metals and pesticides on crop quality. Papers relating to these issues form part of this special issue.

Pesticides in the Hydrologic System is a series of comprehensive reviews and analyses of the current knowledge and understanding of pesticides in the water resources of the United States of America and of the principle factors that influence contamination and transport. The goal of the series if to provide readers from a broad range of backgrounds in the environmental sciences with a synthesis of the factual data and interpretive findings on pesticides in the hydrological systems.
The series is presented according to major components of the hydrologic system - the atmosphere, surface water, bed sediments and aquatic organisms, and ground water. Each volume characterizes hundreds of studies conducted during the past four decades. Detailed summary tables include such features as spatial and temporal domain studied, target analyses, detection limits, and compounds detected for each study reviewed. The analysis of national and regional patterns of pesticide occurrence, and their relation to use and other factors that influence pesticides in the hydrologic system, provides a synthesis of current knowledge. The interpretive analysis and summaries facilitate comparisons of past finding to current and future findings. Data of specific nature can be located for any particular area of the country. Through its focus on the United States, the series covers a large portion of the global database on pesticides in the hydrologic system and international readers will find much that applies to other areas of the world. Three volumes are published up to now.
Volume 1: Pesticides in the Atmosphere by M.S. Majewski, P.D. Capel, ISBN 1-57504-002-2; Volume 2: Pesticides in Ground Water by J.E. Barbash, E.A. Resek, ISBN 1-57504-005-0; Volume 3:: Pesticides in Surface Waters, by S.J. Larson, P.D. Capel, M.S. Majewski; Volume 4 (will be published in 1999): Pesticides in Bed Sediments & Aquatic Biota in Streams, by L.H. Nowell, P.D. Dileanis and P.D. Capel, ISBN 1-57504-007-7. .
Price: Volume 1: GBP 36.95; USD 54.95; Volume 2: GBP 46.95; USD 69.95; Volume 3: GBP 39.95; USD 69.95; Volume 4: GBP 39.95; USD 59.95. The 4 volume set GBP 115.
*Orders to:*see below

Integrated Weed and Soil Management. J.L. Hatfield, D.D. Buhler, B.A. Stewart,editors. Ann Arbor Press, Chelsea, 1998, 385 p. ISBN 1-57504-069-7. Hardcover.
Weeds are considered to be one of the largest problems facing farmers each year. They include a wide range of plants, ranging from cultivated plants growing in the wrong field to noxious plants that can cause injury of even death. Many methods have been proposed to control weeds, but modern agriculture has come to rely on herbicides as the major means. The use of herbicides has not reduced weed problems, and some weeds have become resistant to chemicals, requiring different herbicides to be developed. This book, based on the Fifth Long-Term Soil Management Workshop, explores the connection between soil management and weed management and will learn how to apply cutting edge weed management technologies; evaluate new management tools and alternative control options; apply new modeling techniques; create environmental protection strategies; integrate your understanding of soil and weed science; and apply economic considerations to management decisions.
Price: GBP 39.95.
Orders to: see below.

Animal Waste Utilization: Effective use of manure as a soil resource. J.L. Hatfield, B.A. Stewart, editors. Ann Arbor Press, Chelsea, 1998, 320 p. ISBN 1-57504-068-9. Hardcover.
There is an increasing social dilemma over the use of manure because of the odor problems and costs of application and handling of manure compared to commercial fertilizers. It is considered as a waste and its decomposition is referred to as waste disposal rather than resource utilization. This has led to the misunderstanding of how we could use this resource to supply crop nutrients and increase soil organic matter.
This volume is intended to help promote interest in the use of manure and captures our current knowledge base to develop effective research programs that build upon this existing knowledge. The chapters on swine, dairy and poultry manure show examples of current problems and the limitations of technology specific to a given livestock industry. Manure is often considered to be a cropland resource. Environmental concerns from the use of manure are often associated with ground and surface water quality. One chapter deals with the impacts of nitrate-nitrogen and phosphorus movement from different manure sources and the potential environmental impacts. De final chapters describe the use of system engineering principles to help develop manure management and utilization scenarios.
Price: USD 59.95; GBP 39.95
Orders to: see below.

The Potential of U.S. Cropland to Sequester Carbon and Mitigate the Greenhouse Effect. R. Lal, J.M. Kimble, R.F. Follet and C.V. Cole. Ann Arbor Press, Chelsea, 1998, 128 p. ISBN 1-57504-112-X. Hardcover.
This publication assesses the potential of U.S. cropland to sequester carbon(C). It concludes that properly applied soil restorative processes and best management practices (BMPs) can mitigate the greenhouse effect both by decreasing the emissions of greenhouse gases from agricultural activities and by making U.S. cropland a major sink for C sequestration. Worldwide soil restoration and adoption of BMPs has a potential to mitigate effectively a large proportion of the annual increase in atmospheric concentration of CO_2. Projected global warming is a national and international issue - a major environmental threat which we can address

through reduced use of fossil energy, increased C storage in agricultural soils, and expanded biofuel production to offset fossil fuel use. This report concludes, that adoption of science-based and best management practices on U.S. cropland can indeed create a win-win situation and to encourage widespread adoption of proper agricultural practices for sustainable use of our natural resources and improvement of the environment.
Orders to: see below.

Agroecology. Ecological Processes in Sustainable Agriculture. S.R. Gliessman. Ann Arbor Press, Chelsea, 1997, 357 p. ISBN 1-57504-043-3. Hardcover.
Agroecology is defined at the application of ecological concepts and principles to the design and management of sustainable agroecosystems. This publication provides the theoretical and conceptual framework for the study and analysis of agroecosystems. It builds upon the understanding of the environmental complex and factors of the environment as they affect agricultural crops and animals. Informative case studies demonstrate how ecology can be applied to agriculture. The concept of agricultural sustainability is used as a unifying approach for the application of agroecology. Each chapter concludes with questions to ensure a complete understanding of the text. A useful glossary and index are included. The book is well-illustrated with figures and black and white photographs.
Price: USD 49.95; GBP 33.95
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Groundwater and Soil Remediation. Practical Methods and Strategies. E.K. Nyer. Ann Arbor Press, Chelsea, 1998, xi + 226 p. ISBN 1-57504-088-3. Hardcover.
This publication is a compilation of columns published over the last five years in »Ground Water Monitoring and Remediation«. The papers cover many subjects from commentary to advanced technologies. Used are the costs as a basis to compare between technologies and to present practical approaches for the entire remediation process. The papers are organized into five section: The Basics-The only way to Save Real Money; Pump and Treat Remediation; Working with Regulators; Biological Remediation; and Advanced Remediation Techniques.
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Advances in Soil and Water Conservation. F.J. Pierce, W.W. Frye, editors. Ann Arbor Press, Chelsea, 1998, xv + 239 p. ISBN 1-57504-083-2. Hardcover.
This publication is an scholarly treatment of the most important development and influences shaping soil and water conservation in the last 50 years. The book addresses not only the technological developments relating to an understanding of erosion processes and to methods for their control but also the policy and social forces that shaped the research agenda through that period and how this history may influence soil and water conservation in the future. Topics covered include key governmental agencies and programs, research on processes of soil and water degradation, development of control practices and soil quality enhancement with emphasis on conservation tillage, the connection between soil and water conservation and sustainable agriculture, and the ways in which technology and social influences have and will shape soil and water conservation in the USA. The concluding chapter explores what the future of soil and water conservation might be in the next 50 years.
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The Environment Dictionary. D.D. Kemp. Routledge, London, New York, 1998, 464 p. ISBN 0-415-12753-X paperback and 0-415-12752-1, hardback
This dictionary especially caters on the needs of students as well as general reader on ecological themes in general. It provides meaning, in many cases gives the definition of the ecological terminologies, and in numerous cases illustrations have also been provided. Moreover it contains the peripheral definition of environmental terminology used in populist as well as in scientific literature. It is divided in three divisions, that is the main dictionary portion, subject and index sections. A useful list of additional reading material has been added and is recommended for those who would like to go beyond the definition and seek additional information furnished with every definition.
It can also serve the purpose as a good reference book for those who would not like to consult cumbersome encyclopedia. It has many attractive illustrations and is a good addition to the few dictionaries available on this topic.
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Orders to: Routledge, 11 New Fetter Lane, London EC4P 4EE, UK *or* Routledge, 29 West 35th Street, New York, NY 10001, USA. Homepage: www.routledge.com/routledge.html.

Physical Nonequilibrium in Soils, Modeling and Application. H. Magdi Selim and Liwang M., editors. Ann Arbor Press, Chelsea, 1998, xxi + 492 p. ISBN 1-57504-049-2. Hardcover.
There exists inconsistent distribution of sand, silt, and clay particles in soils, which is responsible for the existence and distribution of pore sizes of various magnitude. The transport of solutes under hydraulic gradient takes place through, macro, meso and micropores under a few processes such as hydrodynamic etc. This relationship has been mathematically formulated in several articles under several themes by various authors. Most of the articles are meant for agrophysisists who have interest and inkling in higher mathematics and are especially interested in the solute transport system. But at the same time there is also conceptual summery for non mathematicians who would like to remain at the surface and would not acquaint themselves so deep with the problem.

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Roots in the African Dust. Sustaining the Drylands. M. Mortimore. Cambridge University Press, Cambridge, New York, 1998, xvii + 219 p. ISBN 0 521 451736 (hardback); 0 521 457858 (paperback).
The image of Africa in the modern world has come to be shaped by perceptions of the drylands and their problems of poverty, drought, degradation and famine. This publication is a clear synthesis of much of the best work that has emerged over the past decade. It offers an alternative and revisionist thesis, dismissing both on theoretical and empirical grounds the conventional view of runaway desertification, driven by population growth and inappropriate land use. It suggests a more optimistic model of sustainable land use which is based on researched case studies from East and West Africa, where indigenous technological adaptation has put *population growth and market opportunities to advantage*. There should be a more appropriate set of policy priorities to support dryland peoples in their efforts to sustain land and livelihoods.
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Land resources. Now and for the future. A. Young. Cambridge University Press, Cambridge, New York, 1998, xii + 319 p. ISBN 0 521590035. Hardcover.
The author is well-known for his publications on tropical soils, soil survey and agroforestry. The present publication is a review of land resources: their evaluation, management, and conservation, and their role in human welfare. Land resources are the environmental resources of climate, water, soils, landforms, forests, pastures, and wildlife, on which agriculture, forestry, and other kinds of rural land use depend. Renewable natural resources is an alternative name. It improves awareness of the critical role of land resources as a major element in the development of agriculture and the rural sector. It reviews the progress that has been made in different aspects of land resources, and points out priorities for the future and draws attention to the urgent need for action to improve the management of land resources, if they are to be conserved for the benefit of future generations; and shows how land resources interact with wider aspects of development, including food security, poverty, and population policy. But lasting improvements will ultimately depend on awareness, concern, and action by governments, scientists, and people of the developing nations. The international community can provide technical guidance and assistance, but lasting progress depends on political will in the developing countries themselves. The book which is focused on developing countries, is well-written and carefully structures. Each chapter has a summary paragraph and an appendix with notes. An innovative approach is to give the conclusions of the book and their policy implications, including the summaries of all chapters, together with news and updates on the site: http://www.land-resources.com.
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Cooperating with Nature. Confronting Natural Hazards with Land-Use Planning for Sustainable Communities. R.J. Burby, editor. National Academy Press, Washington, 1998, viii + 356 p. ISBN 0-309-06362-0. Hardbound.
A select group of experts was invited to present works on major themes in the natural hazards and disasters field, including insurance, risk assessment, disaster preparedness and response, and mapping. This volume focuses on the breakdown in sustainability that is signaled by natural disaster. The authors chronicle the long evolution of land use planning and identify key components of sustainable planning for hazards. The book describes the promise of land use management for achieving sustainability, explores reasons why this *promise is not being realized uniformly by government* at various levels, and proposes ways to foster sound land use decision making. They explain why sustainability and land use have not been taken into account in the formulation of public policy.
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Weathering. An Introduction to the Scientific Principles. W. Bland and D. Rolls. Arnold, London, 1998, x + 271 p. ISBN 0-340-67745-7 (hb); 0-340-67744-9 (pb).
Our landscape is constantly changing, but before the dramatic effects of erosion and mass movement take place, more subtle forces work on the rocks, minerals and soils around us. Weathering is the initial process which alters and often weakens the top layers of the Earth's land surface. This publication provides an introduction to the scientific principles behind mechanical, chemical and biological weathering. Starting with a consideration of the chemical and physical properties of rocks and water, the authors proceed to an accessible explanation of the weathering processes themselves. This leads into a review of weathering rates and intensities, followed by a survey of the contribution of weathering to the development of landforms. Assuming little background knowledge, the authors develop ideas from first principles to provide a clear introduction to weathering for students of geography, geology and earth and environmental sciences. The book ends with a glossary of term, a list of named compounds and their chemical composition in each of the eleven chapters a list of useful further readings is given.
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Introduction to Geomorphology. F. Ahnert. Arnold, London, 1998, viii + 352 p. ISBN 0340 69259 6, paperback; 0340 69260 X, hardback.
This book presents and explains the science of landforms, linking empirical results with theoretical models of landform development. The central theme is the functional interdependence of form, material and process. It includes a wide range of examples from around the world, together with a superb collection of photographs, maps and diagrams. This book was first published in 1996 under the title »Einführung in die Geomorphologie«.
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Ecoregions. The Ecosystem Geography of the Oceans and Continents. R.G. Bailey. Springer-Verlag, Heidelberg, New York, 1998, ix + 176 p. ISBN 0-387-98311-2. Paperback.
This book is intended to provide detailed descriptions, illustrations, and examples that will assist the user of the ecoregion maps in interpreting them. Most environmental concerns cross boundaries. Borders that separate countries, ecosystems, or jurisdiction of regulatory agencies are not respected by problems such as air pollution, declining anadromous fisheries, forest diseases, or threats to biodiversity. Environmental planners and decision makers must consider how geographically related systems are linked to form larger systems. Issues that may 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. Understanding the continental systems requires a gasp of the ocean systems that exert enormous influence on terrestrial climatic patterns. The global extent of this book and its maps dictates that its ecoregion classification scheme be kept as simple as possible, recognizing only principle ecoregion types. Numerous photographs of representative ecoregions and colour figures are complemented by two maps showing the major ecoregions of the continents and of the oceans.
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Mercury from Gold and Silver Mining: A chemical Time Bomb? L.D. de Lacerda and W. Salomons.Environmental Science. Springer-Verlag, Berlin, New York, 1998, x + 146 p. ISBN 3-540-61724-8. Hardcover.
Mercury contamination is considered one of the hazards among the anthropogenic impacts upon the environment. It is one of the metal pollutants which has already caused human deaths due to ingestion of contaminated food. Mercury is easily transformed into stable and highly toxic methyl-mercury by numerous organisms. This Hg species typically shows very long residence times in aquatic biota. This publication focuses on the utilization of mercury in gold and silver mining. The use of mercury is associated with large losses to the environment, in particular to the atmosphere. In this way it ends up in places far away from where it is in use. Both the hot spots and its widespread distribution in the environment cause effects which have been called colloquially chemical time bombs. This concept deals with the limited capacity of soils and sediments to reduce the mobility and bio-availability of pollutants. Several properties of the soil, e.g. organic matter content and variables like pH and redox, contribute to these inherent soil and sediment properties.Although much information is already available on the fate and effects of mercury in temperate climate systems and on delayed effects, relatively little information is available for the more sensitive tropical ecosystems. In this publication are the widespread use of mercury in gold mining, its distribution in the tropical environment, and its impact on the ecosystem and on humans.
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Environmental Interactions of Clays. Clays and the Environment. A. Parker and J.E. Rae, editors. Springer-Verlag, Heidelberg, New York, xii + 271 p. ISBN 3-540-58738-1. Hardcover.
The importance of clays in environmental research is reflected in the increasing number of meeting which address this topic. A growing awareness of the key role played by clays.
Natural assemblages of clays frequently control the behaviour of pollutants in the environment and sometimes they may even be the pollutants themselves. They may also be added to the environment for remediation purposes to act as adsorbents and/or catalysts. This publication is the companion volume of Bruce Velde's book on Origin and Mineralogy of Clays, which deals with the occurrence of clays in nature. This volume is the second in the Clays and the Environment series. Subject covered by international experts are radioactive waste disposal, trace metals, soil quality and productivity, pesticides, landfill, fibrous minerals and health.
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Chemistry of Variable Charge Soils. T.R. Yu, editor. Oxford University Press, Oxford, New York, 1998, xi + 505 p. ISBN 0-19-509745-9. Hardcover.
In the vast areas of tropical and subtropical regions there is a category of widely distributed weathered soils known as »Red Earths«, also referred to as Ferralsols, Oxisols, Latosols, Lateritic Soils, Krasnozems, Ferrisols, and Ferrallitic Soils. The relatively large amounts of reddish coloured iron oxides and aluminum oxides cause the surface charge carried by the clay to become markedly variable - the soils are variable charge soils. Because of this feature, the soils possess certain properties different from those of the constant charge soils in temperate regions. It would be helpful to have a comprehensive understanding of the chemical properties of these soils, and the results from research on these soils can enrich our present knowledge that comes primarily from research on constant charge soils. Since 1982 the Institute of Soil Science of the chinese Academy of Sciences carried out research of the chemical properties of variable charge soils. This book sum-

marizes the research results, with emphasis on the interactions among charged particles and their chemical consequences in soils.
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An introduction to Tropical Rain Forests. T.C. Whitmore. Oxford University Press, Oxford, New York, 1998, xiii + 282 p. ISBN 0 19850148 X (Hbk); 019 850147 1 (Pbk).
This second edition has comprehensively revised and updated, reflecting the changes which have taken place since it was first published in 1989. It links rain forest biology and ecology with silviculture, and with concerns over sustainable resource utilizaiton and the future of the tropical rain forests. The sections on human impact have been extended to include a new global assesment of deforestation as well as details of new research on biodiversity and conservation. Discussions on international initiatives to make logging sustainable. It includes sections on the diverse animal and plant life forms which are found in the rain forest, and the interconnections between them. Nutrient cycles and forest dynamics are fully explained, with new data on ecophysiology and forest microclimates. The geologic and climatic history of rain forests, and the widespread canopy disturbances now understood to have occurred in the past, are explored. It is well written and illustrated with line drawings and photographs.
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Climate Change and the Global Harvest. Potential Impacts of the Greenhouse Effect on Agriculture. C. Rosenzweig, D. Hillel. Oxford University Press, Oxford, New york, 1998, 324 p. ISBN 0-19-508889-1. Hardcover.
This book explores some of the complex interactions among biophysical and socioeconomic factors than might affect agriculture in a greenhouse world. The methodological issues involved in both simulation studies and field experiments are discussed and some of the limitations and the strengths of the methods employed by researchers of climate change impacts. It informs the readers regarding the reciprocal relationship between agriculture and climate, as well as on how the practice of agriculture in the various regions of the globe may adapt to the eventuality of climate change and to the challenge posed by it.
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Orders to: Oxford University Press, Saxon Way West, Corby NN18 9ES *or* Oxford University Press, 198 Madison Avenue, New York, NY 10016, USA. Fax: +44 1865 56646.

Soil Processes and the Carbon Cycle. Advances in Soil Science. R. Lal, J.M. Kimble, R.F. Follett and B.A. Stewart, editors. Springer-Verlag, Heidelberg, CRC Press, Boca Raton, 609 p. ISBN 0-8493-7441-3. Hardcover.
A symposium entitled, »Carbon Sequestration in Soils« was held at The Ohio State University in July 1996. Three volumes contain the paper covering the information presented at the symposium. These volumes are the state-of-the-art compendium on this topical issue of global significance and point out »Knowledge Gaps« and researchable issues related to »Soils and the Carbon Cycle«, pedospheric processes and their interactions with other natural spheres, and relevant strategic and policy considerations. Information concerning soil organic carbon pool in different ecosystems, the impact of land use and management on this pool, relationships of soil organic matter to soil structure, soil quality, and to mechanisms governing carbon sequestration in soil are presented. However, it also points out that much more knowledge is needed to improve our understanding of these fundamental processes that govern the dynamics of soil organic carbon and their accompanying effects on the entire fabric of life on earth. Papers dealing with the global C cycle and pools in different ecoregions are compiled in the first volume, those dealing with C sequestration in soil in relation to management and land use in the present second volume, and those dealing with site-specific issues in the third volume.
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Florida 33431, USA.

Atlas of Micromorphology of Mineral Alteration and Weathering. J.E. Delvigne. The Canadian Mineralogist, Special Publication 3. Mineralogical Association of Canada, ORSTOM édition, Ottawa, Paris, 1998, 495 p. ISBN 0-921294-43-3 (Mineralogical Association of Canada); 2-7099-1420-4 (ORSTOM). Hardbound.
This publication provides a comprehensive statement of problems and gives an overview of the main problems of weathering, and specifically provides insight into the way parent mineral weather, the nature of weathering products, and their variability in a vertical profile and in a lateral sequence, applied to some West African and Brazilian examples. This complete coverage is representative of the petrographic approach in the study of lateritic alterites.
This book differs from others by presenting first the rocks, with their inheritance of hydrothermal alteration, then the relationship between parent minerals and the products of their weathering. A non-genetic terminology is developed to facilitate textural classifications and communication of findings. The book shows 619 high quality coloured photomicrographs with their captions, geographical origins, magnifying scales, many plates of drawings and schematic sketches, bibliography, content and index. The book is a very useful reference manual for soil scientists. *Price:* USD 125 (non members); USD 100.
Orders to: Mineralogical Association of Canada, P.O.Box 78087, Meriline Postal Outlet, 1460 Merical Road, Ottawa, Ontario, Canada, K2E 1B1; Fax: +1 613 226-4451; E-mail: canmin.mac.ottawa@sympatico.ca. *or* Orstom éditions, 213 rue la Fayette, 75480 Paris Cedex 10, Fax +33 1 40346913. E-mail: diffusion@bondy.orstom.fr.

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Petrology of Laterites and Tropical Soils. Y. Tardy. A.A. Balkema, Rotterdam, Brookfield, 1997, 420 p. ISBN 90-5410-678-6.
This is a translation of the well-known textbook »Pétrologie des latérites et des sols tropicaux«, which was published in 1993 by Masson in Paris (ISBN 2-225-84176-4). A petrological investigation, based on the study of the hydration states of the weathering minerals, seeks to establish the climatic conditions of stability or instability of lateritic mantles and to discover the mechanisms governing genesis, development or dismantlement of tropical soils.
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Saving Our Soils: Raising Funds for the Struggle Against Desertification. Environment Liaison Centre International, Nairobi and Both ENDS, Amsterdam.
This publication is a two-section book offering clear, comprehensive advice on how to go about attracting funding and other support for project. It is geared towards anti-desertification projects in particular but could be of great practical value to any set of activities related to natural resources. Section one deals with fund raising in practice, types of grants available, proposal writing, identifying and approaching donors and post-funding issues. Section two provides details on multilateral funds and funding agencies, with addresses and eligibility criteria to guide the reader towards the most appropriate support.
Requests to: ELCI, Desertification Coordinator, P.O. Box 72461, Nairobi, Kenya. Fax: +254 2 562175; E-mail: riod@elci.sasa.unon.org **or** Both ENDS, Coordinator, Sustainable Land Use, Damrak 28-30, 1012 IJ Amsterdam, The Netherlands. Fax: +31 20 6208049,; E-mail: bothends@bothends.antenna.nl.

Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes. IAHS Publication no. 249. W. Summer, E. Klaghofer, W. Zhang, editors. IAHS Press, Wallingford, 1998, x + 454 p. ISBN 1-901502-50-3.
The International Symposium on Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes held in Vienna, Austria, 13-17 July 1998, focused on the developments in erosion and sediment transport modelling. The 50 papers selected for this publication consider theoretical aspects of modelling, the validation of these models including necessary monitoring strategies, and model applications on various scales, as well as in different global regions. The papers are essential reading for scientists and engineers active in the field of hydrology, hydraulics, hydrogeology, geomorphology, earth and environmental sciences to focus on relevant achievements, and are arranged under the following topics: General aspects of modelling soil erosion, sediment transport and relevant hydrological processes; Soil erosion modelling and related models; Assessment of erosion processes, model validation and project evaluation; Sediment transport in mountain streams; and Analysis of suspended sediment transport characteristics.
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Water Resources Variability in Africa during the XXth Century. (Variabilité des Ressources en Eau en Afrique au XXème Siècle). IAHS Publication no. 252. E. Servat, D. Hughes, J-M. Fritsch and M. Hulme, editors. IAHS Press, Wallingford, 1998, x + 462 p. ISBN 1-901502-65-1.
During the XXth century dry and wet periods have alternated in West, East and southern Africa. These periods have not necessarily been concurrent in different regions. This important spatial and temporal variability creates, for the whole continent, numerous problems in all areas of water resources management, namely, traditional and irrigated farming, hydroelectric production, domestic consumption, without mentioning risks related to floods in rural and urban areas. In the environmental domain these fluctuations might lead to serous disturbance for the fauna and flora of Africa. Focusing chiefly on the XXth century the Abidjan'98 Conference (held in November 1998) contributed to reviewing the situation of water resources variability in Africa and its consequences. The following topics were dealt with: variability of rainfall and flow regimes (25 papers); Rainfall-runoff relationship (15 papers); Human activities-environment relationship (11 papers). Therefore the conference provided decision-makers and managers with a collection of scientific contributions (about half are in French) to be taken into account before setting up any project dealing with water resources uses and management. Thus, it joined the world context of concerns over the relationships between Water, Development and Environment.
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Hydrology in the Humid Tropic Environment (La Hidrología en el Medio Tropical Húmedo). A.I. Johnson and C. A. Fernandez-Jauregui, editors. IAHS Publication no. 253. International Association of Hydrological Sciences, Wallingford, 1998, xi + 457 p. ISBN 1-901502-70-8.

It is estimated that the humid tropics make up 22% of the globe's land area. They hold most of the world's uncut forest, most of the unharnessed hydroelectric power and most of the world's genetic riches. They also contain vast, untapped supplies of minerals. Especially coastal areas are under increasing pressure from expanding human populations and it is only recently that our population has begun to realize the extent of damage caused to the many coastal areas, and to islands as a whole, in the humid tropics. Because of a rise in population and the concomitant need to sustain the economies and the environments, it is urgent that water resource managers have the hydrologic understanding and the appropriate methods to cope with the impacts of the water-related activities that will accompany the inevitable socio-economic and technical changes in the humid tropics. This proceedings volume is the printed products of the »International Symposium on Hydrology in the Humid Tropic Environment« which took place in November 1996 in Kingston, Jamaica. The objective was to bring together international specialists, scientists, engineers, and water managers to a forum for exchange of experiences and theories and transfer of technology related to hydrologic and environmental impacts, conflicts, and solutions related to the uniqueness of the humid tropics, with emphasis on Latin America and the Caribbean. The topics and numbers of papers include (1) Environmental Contamination and Impacts, five papers; (2) Hydrologic Methods and Analysis, seven papers; (3) Modelling and Statistical Analysis, eight papers; (4) Information and Data Systems, five papers; (5) Legal and Societal Impacts, three papers; (6) Urban Drainage, four papers; (7) Karst and the Environment, eight papers; and (8) Coastal and Island Hydrology, seven papers. All papers have summaries in Spanish.

Price: GBP 62.

Orders to: Mrs. Jill Gash, IAHS (International Association of Hydrological Sciences), Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, UK; fax: +44 1491 692448; e-mail: jilly@iahs.demon.co.uk.

LEISA in perspective. 15 years ILEIA. ILEIA Newsletter for low external input and sustainable agriculture. C. Reijntjes, M. Minderhoud-Jones, P. Laban. ISBN 90-804349-1-4.

Written for the jubilee of the ILEIA project (1984-1999), this publication sets subsistence as well as market-oriented agriculture in the perspective of ecological sustainability. It discusses the problems of intensifying agricultural production to meet the world's growing demand for food and other agricultural raw materials. In surveying the macro-processes that support the rapid integration of all types of farming systems into the international market, it focuses on the pressures experienced by small farm households that are unable or unwilling to enter market-oriented agriculture or who cannot maintain their position in an increasingly competitive global market. The book raises the question of whether an ecologically sustainable intensification of agriculture is possible and examines LEISA (Low External Input and Sustainable Agriculture) approaches found in subsistence and market agriculture. Using case studies, the authors explore how LEISA can contribute to solving the agro-technical problems faced by small farmers and indicate how, in its social and cultural dimensions, LEISA has the capacity to preserve the continued independence and vitality of rural communities. The authors show how LEISA draws on the stores of knowledge that small farmers have accumulated over centuries of agriculture and which have largely been ignored by modern technological research and development. They argue that farmers, researchers and development agencies need to use participatory methods in working together to develop LEISA further and to tests its resilience in practice.

Requests to: TRIOPS - Tropical Scientific Books. E-mail: Triops@booksell.com *or* ILEIA, P.O.Box 65, 3830 AB Leusden *or* www.oneworld.org/ileia. E-mail: iliea@iliea.nl.

Internet au Sud. P. Renaud, Éditeur scientifique. ORSTOM, Paris, 1998. A CD-ROM for PC, Macintosh and UNIX training resource from the French research group ORSTOM is a resource for training programmes run by organisations in the South,: system engineers, network administrators, librarians, teachers, researchers, public service administrators and the private sector. It is a guide to Internet services in many ACP countries and elsewhere in the South, with training aids and references.

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Handbook of Pedology. Soils, Vegetation, Environment. Ph. Duchaufour. Translated from French by V.A.K. Sarma. A.A. Balkema, Rotterdam, Brookfield, 1998, ix + 264 p. ISBN 90 5410 782 0. Hardcover.

This publication is a translation of THE Fifth French Edition of 1997. This edition has been entirely revised and enlarged by covering new domains. It is based on the new international classification - the World Reference Base for Soil Resources (WRB). The most recent results in the area are presented and sets up a wide panorama of their practical applications - land improvement, plant growth, protection of the environment. It takes a global approach to the study of land, for production of plant and animal biomass, the purifying medium of groundwater, base for food production, reservoir of an internal biomass. It shows the inter-relationships between the soil, its environment and the vegetation. It considers pedology as the meeting point of data that depend equally on biology, geomorphology, physics and chemistry as on pedogenesis and soil properties.

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Headwaters. Water Resources and Soil Conservation. Proceedings of Headwaters '98, the Fourth International Conference on Headwaters Control, Merano, April 1998. M.J. Haigh, J. Krecek, G.S. Rajwar, 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, meticulous and long-term investments in fieldwork and environmental monitoring. Its target is the locally integrated understanding of headwaters processes and their management. This volume contains a selection of the presented at the Conference in 1998. It stresses the scientific aspects of water resource management issues like water quality, water resource management, erosion control, and soil conservation, and problems of economically effective integrated land management.

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Red & Lateritic Soils. Volume 1. Managing Red and Lateritic Soils for Sustainable Agriculture. Volume 2. Red & Lateritic Soils of the World. J. Sehgal, W.E. Blum, K.S. Gajbhiye, editors. A.A. Balkema, Rotterdam, Brookfield, 1998, xx + 453 p. and xii + 113 p. ISBN 90 5410 771 5, volume 1; ISBN 90 5410 772 3, volume 2; ISBN 90 5410 271 3, Set. Hardcover.

Red and lateritic soils are the third-most important group of soils in the world, covering 13 percent of the land area. In India they cover about 25 percent.They cover large areas of potentially-arable and grazable lands and are widely spread in the semi-arid to humid tropical climates. Experimental evidences and experience have shown that these soils hold a great promise under proper management. Due to aberrant weather, soil-related constraints and poor management, crop production on red and lateritic soils has remained low and unsustainable. In this context an International Seminar was organised by the Indian Society of Soil Survey and Land Use Planning under the auspices of International Society of Soil Science. The deliberations focused attention on soil resource base, land evaluation, resource utilisation and management of red and lateritic soil towards increased agricultural production on sustainable basis. These two volumes are based on the papers presented and discussed during the Seminar. Volume 1 deals with the extent, distribution, morphological characteristics, physical and chemical properties of these soils, their constraints and potential; agroclimatic conditions, land evaluation, sustainability etc.; Volume 2 describes the global status of these soils.

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Microclimate for Cultural Heritage. Developments in Atmospheric Science 23. D. Camuffo. Elsevier Science, Amsterdam, New York, 1998, xiv + 415 p. ISBN 0-444-82925-3. Hardcover.

This publication is based on experience on a large number of case studies as well as lectures of atmospheric physics and those on microclimate and physical weathering of

monuments. A number of original contributions that were published in scientific journals or presented at international symposia are summarized. It contains practical examples of ways in which micrometeorological knowledge can help in assessments of the deterioration of surfaces that have been exposed to the environment over long period of times. To this aim, suggestions are given on the fundamental principles in designing heating, air conditioning, lighting and in reducing the deposition of pollutants on works of art. Urban meteorology, air-surface interactions, atmospheric stability, dispersion and deposition of airborne pollutants are key topics. The first part is a concise treatise on micro physics. The second is devoted to the practical utilization and shows how measurements should be performed. *Price:*

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Price: NLG 395; USD 227.

Acid Atmospheric Deposition and its Effects on Terrestrial Ecosystems in the Netherlands. The Third and Final Phase (1991-1995). Studies in Environmental Science 69. G.J. Hey, J.W. Erisman, editors. Elsevier Science, Amsterdam, New York, 1997, ix + 705 p. ISBN 0-444-82037-X. Hardcover.

This publication describes the results and conclusions of the third phase of the Dutch Priority Programme on Acidification (DPPA-III) carried out from 1991 to 1994. It marks the end of the coordinated acidification research in The Netherlands. The report begins with an overview of the research topics in the three different phases of the programme executed between 1985 and 1994. The next chapter deals with the emissions of acidifying substances, the concentrations and the deposition to forest and nature conservation areas. Prognoses are given for the acid deposition in 2000 and 2010; also for the countries surrounding the Netherlands. The differences in the results of the DPPA-II are analysed. The third chapter deals with the effects of exposure and load on forests. It moves from small-scale to large-scale: first the effects in laboratory-scale, and then the effects in the field, both at stand level and on a regional scale. In addition the critical threshold are discussed. The fourth chapter covers terrestrial ecosystems as well as weakly buffered surface waters, springs and other streams. Chapter 5 gives the summary and conclusions. In the appendices, reports on deposition, stand modelling and effects on forests are presented which describe in more detail the scientific work performed in the third phase of the DPPA.

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Towards Sustainable Land Use. Furthering Cooperation Between People and Institutions. Volume I and II. Advances in Geoecology 31. H-P. Blume, H. Eger, E. Fleischhauer, A. Hebel, C. Reij, K.G. Steiner, editors. Catena Verlag, 1998, xxxii + 1560 p. Volume I and II. ISBN 3-923381-42-5. Hardcover.
These two volumes contain the selected papers of the 9th Conference of the International Soil Conservation Organisation (ISCO) in Bonn, 1996. The Conference showed that developing sustainable forms of soil use and combating soil degradation are seen as urgent international tasks on the way towards sustainable development in line with Agenda 21. Combating soil degradation and active steps to conserve soils for future generations are part of important international environment policy challenges. The set contains the following papers: Introductory statements (6 papers); Soil degradation- diagnosis, appraisal and reversing measures (65 papers); Growing impacts of industrialized agriculture and urbanization on soils (36 papers); From soil and water conservation to stainable land management (90 papers). Also included are the conclusions and recommendations of the Conference. The editors are to be congratulated to publish these proceeding before the 10th ISCO Conference.
Orders to: Catena Verlag, Ärmelgasse 11, D-35447 Reiskirchen, Germany. Phone + Fax: +49-6408-64978; E-mail: catenaverl@ael.com; http://members.aol.com/catenaverl.

Bodenchemie. G. Sposito. Übersetzt von J. Niemeyer und A. Eifert. Ferdinand Enke Verlag, Stuttgart, 1998, vi + 230 S. ISBN 3-432-29671-1. Kartoniert.
Das vorliegende Buch wurde in 1989 veröffentlicht und in 1998 ins Deutsche übersetzt. In den ersten vier Kapiteln wird eine Einführung in die Grundlagen des chemischen Aufbaus von Böden gegeben. In den anschliessenden sechs Kapiteln folgt die Beschreibung und die Anwendung wichtiger bodenchemischer Vorgänge. Die drei letzten Kapitel befassen sich mit speziellen Bodenchemischen Anwendungen in Hinblick auf Bodenazidität, Bodensalinität und Bodenfruchtbarkeit. Grundlegende Kenntnisse auf dem Gebiet der reinen Chemie werden vorausgesetzt. Ebenso sind Grundkenntnisse auf dem Gebiet der Differential- und Integralrechnung von Nutzen, da der mathematische Teil des Buches fast ausschliesslich algebraische und numerische Aspekte umfasst. Ein Anhang umfasst die SI-Einheiten und physikalischen Konstanten. Dies erleichert die Benutzung der wissenschaftlichen Nomenklatur.
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Lehrbuch der Bodenkunde, Scheffer/Schachtschabel. 142 Auflage. P. Schachtschabel, H.-P. Blume, G. Brümmer, K.H. Hartge, U. Schwertmann, u.a. Ferdinand Enke Verlag, Stuttgart, 1998, vi + 494 p. ISBN 3-432—84774-2. Gebunden.
Nahezu alle Kapitel dieser 14. Auflage wurden überarbeitet und auf den neuesten Stand gebracht, z.B. die Bodenbiologie. Abbildungen und Tabellen wurden ausgetauscht. Die Literatur erscheint am Ende der Kapitel in alphabetischer Form und ist in Sammel- und Spezialwerke untergliedert. Bodenkundliches Grundwissen geht nicht nur den Bodenkundler an, sondern wird auch benötigt von Landwirten, Forstwirten, Gärtnern, Landespflegern, Ökologen, Kulturtechnikern, Hydrologen, Limnologen, Geographen, Geologen, Mineralogen, Chemikern, Biologen, Archäologen sowie von allen, die mit Problemen des Naturschutzes, des Umweltschutzes und der Bodensanierung beschäftigt sind. In all diesen Gebieten ist der Scheffer/Schachtschabel als Quelle bodenkundlichen Wissens unentbehrlich geworden. Dies gilt auch für die Lernenden und für den wissenschaftlichen Nachwuchs.
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Chemical Speciation of Heavy Metals in Sandy Soils in Relation to Availability and Mobility. Thesis. E. Temminghoff. Wageningen Agricultural University, 1998, 183 p. ISBN 90-5485-833-8.
The environmental risk of heavy metals which are present in the soil at a certain total content is highly dependent on soil properties. Chemical speciation is a comprehensive term for the distribution of heavy metals over all possible chemical forms (species) in soil solution and in the solid phase. The chemical behaviour of heavy metals depends among others on the quantity and type of sorption sites at the solid surface (e.g. organic matter) and environmental conditions (e.g. Ph, competitors, complexes). In this thesis, emphasis is given to the effects of pH, solid and dissolved organic matter, inorganic complexation, and calcium competition on the speciation of the heavy metals cadmium and copper in sandy soils. Copper binding by dissolved organic matter (DOC) and by (soil) solid organic matter could be described well with the Non-Ideal Competitive Adsorption (NICA) model and with the Two Species Freundlich (TSF) model. Both models accurately predicted the copper concentration at different depths in a field. Leaching experiments revealed that copper mobility depends on DOC concentration. Understanding of the chemical behaviour of cadmium and copper makes it possible to estimate the available and mobile contaminant fraction from routine accessible parameters such as total content, pH and organic matter.
Requests to: Dr.ir. E.J.M. Temminghoff, Dreyenplein 10, 6703 HB Wageningen, the Netherlands; E-mail: Erwin.Temminghoff@Bodhyg.Benp.wau.nl.

Environmental Soil and Water Chemistry. Principles and Applications. V.P. Evangelou. John Wiley & Sons, New York, Chichester, 1998, xv + 564 p. ISBN 0-471-16515-8. Hardcover.
This book contains reviews of the fundamental principles of chemistry required for understanding soil-water chemistry and quality and soil-water treatments of chemically polluted soils and waters, for example,

heavy-metal contaminated soil-water, acid drainage, and restoration of sodic soils and brackish waters. Its purpose is to educate college seniors and beginning graduate students about the toxicity, chemistry, and control of pollutants in the soil-water environment and about the application of such knowledge to environmental restoration. The book covers: (1) Water Chemistry and Mineral Solubility; (2) Soil Minerals and Surface Chemical Properties; (3) Electrochemistry and Kinetics; (4) Soil Dynamics and Agricultural-Organic Chemicals; (5) Colloids and Transport Processes in Soils; (6) Land-Disturbance Pollution and its Control; (7) Soil and Water: Quality and Treatment Technologies. It is tailored specifically to the disciplines of soil science, environmental science, agricultural engineering, environmental engineering, and environmental geology.
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Analytical Chemistry. The Approved Text to the FECS Curriculum Analytical Chemistry. R.Wiley & Sons, New York, Chichester, 1998, xv + 564 p. ISBN 0-471-16515-8. Hardcover. Kellner, J.-M. Mermet, M. Otto, H.M. Widmer, editors. Wiley-VCH, Weinheim, New York, 1998, xxv +
This textbook contains reviews of the fundamental principles of chemistry required for 916 p. ISBN 3-527-28881-3 (brosch.); ISBN 3-527-28610-1 (Gb.).understanding soil-water chemistry and quality and soil-water treatments of chemically polluted
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Le Sol Vivant. Bases de pédologie. Biologie des sols. J.-M. Gobat, M. Aragno, W. Matthey. Presses Polytechniques et Universitaires Romandes, Lausanne, 1998, xviii + 519 p. ISBN 2-88074-367-2. Broché.
La science des sols intègre de plus en plus l'action des organismes vivants à son champ d'activité. Les rôles irremplaçables de la racine, des bactéries, des champignons et des animaux dans la formation, l'évolution et le fonctionnement des sols sont de mieux en mieux connus. Tout en apportant les bases nécessaires de pédologie générale, cet ouvrage met l'accent sur la diversité des aspects biologiques du sol, à différents niveaux d'organisation des écosystèmes: molécules organiques, microorganismes, rhizosphère, populations et communautés microbiennes et animales, relations sol-végétation. Cet ouvrage intègre des domaines variés de la pédologie et de la biologie, trop souvent séparés ou fortement déséquilibrés dans d'autres publications. Un soin particulier a été apporté à la définition et à l'explication cohérentes de plus de 1000 termes et concepts, issus de domaines aussi variés que l'enzymologie, la biologie moléculaire, la microbiologie générale, la systématique animale, la pédologie générale, l'écologie systémique ou encore la phytosociologie. Ce livre est organisé en deux parties: la première, à lecture linéaire, fournit les connaissances essentielles de pédologie générale. La seconde, à lecture modulaire, traite de sujets variés de biologie des sols, se rattachant tant à la pédologie fondamentale qu'appliquée. De nombreux exemples concrets illustrent les notions théoriques.
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SCUAF Version 4: A Model to Estimate Soil Changes Under Agriculture, Agroforestry and Forestry. ACIAR Technical Reports Series No. 41. A. Young, K. Menz. P. Muraya and C. Smith. ACIAR, *Canberra, 1998, 49 p. ISBN 1 86320 224 2. Paperback.*
SCUAF is a process-response model which estimates changes in soil erosion, in the soil organic matter (carbon) balance, and in nitrogen and phosphorus cycling, under specified land use systems in given environments. The consequences of soil changes for plant growth are also modelled. The land use systems may

include pure agriculture (cropping), forestry, or agroforestry with any specified proportion of trees and crops. Outputs are given as tables showing changes in soil properties, together with the internal cycling, and external balances, of carbon, nitrogen and phosphorus. The principal changes from earlier versions of the model are: a more flexible specification of land use systems; the capacity for tree-to-crop transfers of tree litter or prunings, and for growth of tree roots into soil beneath crops; separate modelling of soil changes under trees and under crops; the addition of phosphorus cycling; and graphical representation of the external carbon, nitrogen and phosphorus flows. Compared with many models; SCUAF is relatively simple in its simulation, but possesses two advantages: first, experience has shown that it readily be used; secondly, all processes are visible, and all constants and variables are displayed to, and can be altered by, the user.
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Orders to: ACIAR, GPO Box 1571, Canberra ACT 2601, Australia. Alternatively, both the program and handbook can be downloaded from: http://cres.anu.edu.au/imperata/imperat1.htm.

International Erosion Control Association 1998 Conference Proceedings. International Erosion Control Association (IECA), Steamboat Springs, 1998, 542 p. or CD-ROM.
These proceedings contain 44 papers presented at the 1998 annual conference. A wide array of subjects related to erosion is discussed, mostly on conditions in the United States.
Price: USD 39 (members); USD 49 (non-members), (specify book or CD ROM).
Orders to: IECA, P.O. Box 774904, Steamboat Springs, CO 80477-4904, USA. Fax: +1 970-879-8563; E-mail: ecinfo@ieca.org; Web Site: http://www.ieca.org.

Humic Substances, Peats and Sludges. Health and Environmental Aspects. M.H.B. Hayes and W.S. Wilson, editors. The Royal Society of Chemistry, Cambridge, 1997, x + 496 p. ISBN 0 85404 699 2. Hardbound.
In this publication is taken into account the ways in which humic substances, which are present in all soils and water, peats (which are a big carbon sink) and sludges affect the environment and the health of plants and animals. It has five sections. The first two, Compositions and Aspects of the Structures of Humic Substances and Interactions of Humic Substances, serve to put the subject matter in a scientific perspective, dealing with the compositions, structures and interactions of humic substances. Section 3, Environmental Impacts of Humic Substances and Organic Matter, considers how humic substances and peats influence aspects of the environment. Section four, Biological Impacts of Humic Substances considers the health damaging effects caused by the chlorination of water rich in humic substances, balanced with the health promoting effects of humic substances per se. The last section, Composts, Peats, and Sludges, deals with the influences which sludge amendments have on soils, plants and waters.
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Orders to: The Royal Society of Chemistry, Turpin Distribution Services, Blackhorse Road, Letchworth, Herts SG6 1HN, UK: fax:+ 44 1462 480947; E-mail: turpin@rsc.org; homepage http://www.rsc.org *or* Springer Verlag New York, P.O.Box 2484, Secaucus, New Jersey 07096 2485, USA; fax: +1 202 348 45-5; e-mail: sales@springer-ny.com.

Soil Erosion at Multiple Scales. Principles and Methods for Assessing Causes and Impacts. F.W.T. Penning de Vries, F. Agus & J. Kerr, editors. CABI Publishing, Wallingford, New York, 1998, vi + 390 p. ISBN 0 85 199290 0. Hardcover.
Approaches to research on the cause and impacts of soil erosion have changed significantly of the recent years. This book is based on papers presented at a workshop held in Indonesia in 1997. It reviews the latest developments in soil erosion studies based on a matrix of scales, from plot to river basin, and from farm to national policy. The papers cover a wide range of disciplines and levels or scales of research. Papers in the biophysical arena discuss research methods ranging from the intricacies of measuring runoff rates and nutrient fluxes, to the uncertainties of measuring streamflows integrated across large river basins. The socio-economic dimensions include such problems as understanding farmer decisions about soil conservation and improving the economic analysis of soil erosion impact. Some papers of the working group discussions report progress in integrating the social, economic, and biophysical dimensions of the erosion problem in a holistic analysis and in identifying bottlenecks requiring further research. Some chapters review background issues while others consider specific methods. the book is published in association with the International Board for Soil Research and Management (IBSRAM), Bangkok, as IBSRAM Proceedings no. 18.
Price: GBP 60; USD 110.
Orders to: CABI Publishing, Wallingford, Oxon OX10 8DE, UK; fax: +44 1491 829292; E-mail: orders@cabi.org; homepage: http://www.cabi.org/ *or* CABI Publishing, 10 E 40th Street, Suite 3203, New York, NY 10016, USA; fax: +1 212 686 7993; E-mail: cabi-nao@cabi.org.

Seeds of Choice. Making the most of new varieties for small farmers. J. Witcombe, D. Virk and J. Farrington. Intermediate Technology Publications, London, 1998, xxi + 271 p. ISBN 1 8 5339 447 5. Paperback.
This book provides an in-depth analysis of the regulatory framework that cover varietal testing, release and dissemination. It analyses the varietal testing system used by the All India Co-ordinated Crop Improvement Projects. The study reveals that reforms are needed, if a greater choice of varieties is to be provided to meet the diverse needs of farmers in widely differing agro-ecological situations. An important feature of the book is the addition of papers relating to participatory breeding involving plant breeders and farmers. It is now widely accepted that participatory breeding is an effective pathway for incorporating environmental and social

parameters in the breeding and selection of crop varieties. The challenge is to incorporate farmer participation as an integral part of the varietal testing system.
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Des Paysans en Mal d'Alternatives. Dégradation des terres, restructuration de l'espace agraire et urbanisation au bas Bénin. A. Floquet et R. Mongbo. Margraf Verlag, Weikersheim, 1998, vi + 190 p. ISBN 3-8236-1287-5. *Livre de Poche.*
Au sud du Bénin, croissance démographique, urbanisation, vente de terre, dégradation du potentiel des superficies cultivables entrainent une réduction préoccupante des superficies cultivables par actif agricole. Les paysans du bas Bénin touchés par ces phénomènes développent des stratégies mais les auteurs se demandent si celles-ci constituent de réelles alternatives à la paupérisation et à la destruction des ressources naturelles de leur environnement. Mieux que des enquêtes à grand échantillon, quatre études de cas approfondies replacées dans leur contexte révèlent l'ampleur de la crise que vivent aujourd'hui les paysans de la zone soutien économique, institutionnel et politique vigoureux à l'agriculture vivrière, sinon les paysans du Sud ne seront dans un proche avenir plus à même d'approvisionner les grands marchés urbains en pleine expansion sur la zone côtière.
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Climate, Biodiversity, and Forests. Issues and Opportunities Emerging from the Kyoto Protocol. P. Brown. World Resources Institute in collaboration with IUCN (The World Conservation Union), Washington, 1998, iv + 36 p. ISBN 1-56973-285-x.
The 1997 Kyoto Protocol to the Framework Convention on Climate Change is a key step towards the mitigation of climate change - it was the first international agreement to place legally binding limits on greenhouse gas emissions from developed countries. Although the Protocol significantly advanced the cause of climate protection, it left many questions unanswered, including the role of forests and land-use change in meeting obligations to slow global warming. Just as the negative effects on biological diversity of global warming and deforestation reinforce each other, there are considerable positive synergies between reducing greenhouse gas emissions and stepping up efforts to forests. This report discusses the potential of forests to advance both climate and biodiversity goals throughout the world. The treatment of forests and land-use change should be consistent with credible greenhouse gas reductions and biodiversity and social benefits.
Requests to: World Resources Institute, 1709 New York Avenue, N.W., Washington, D.C. 20006, USA; homepage: http://www.wri.org/wri *or* IUCN, 28 Rue de Mauvernay, CH-1196 Gland, Switzerland; World Wide Web: http://www.iucn.org.

Use of ^{137}Cs in the study of soil erosion and sedimentation. Proceedings of a consultants meeting organized by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture and held in Vienna, 13-16 November 1995. IAEA-TECDOC-1028. International Atomic Energy Agency, Vienna, 1998, 123 p. ISSS 1011-4289.
Soil erosion and sediment deposition represent serious threats worldwide because of their impact on agricultural production and environmental conservation. Erosion and deposition are recognized to have occurred throughout the history of agriculture, and not withstanding a half-century of research into its causes and effects, considerable uncertainty persists about extent, magnitude and actual rates, as well as on the economic and environmental consequences. The use of radionuclides in soil erosion/deposition research overcomes many of the problems associated with traditional approaches and is now being applied successfully in several developed countries. Among these, the ^{137}Cs technique allows the assessment of both soil loss and deposition in the same watershed from a single site visit without the need for long-term financial commitments. Caesium-137, an artificial radionuclide, provides a unique tracer of soil movement. Experts discussed the possibilities of exploiting radionuclide methodologies for the assessment of soil erosion and sedimentation. The state-of-the -art reports presented are contained in this publication which, as the first comprehensive treatment of the subject, is expected to serve as a source of information to underpin future research on soil conservation and environmental protection.
Price: ATS 100
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The use of nuclear techniques in the management of nitrogen fixation by trees to enhance fertility of fragile tropical soils. Results of a co-ordinated research project organized by the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture. IAEA-TECDOC-1053. International Atomic Energy Agency, Vienna, 1998, 141 p. ISSN 1011-4289.
Increasing population pressure on arable land in the tropics is replacing of traditional shifting cultivation with unsustainable systems such as those with shorter-duration fallow periods, sedentary agriculture on small-scale land holdings and expansion onto marginal areas, causing soil degradation and deterioration of the environment. Some 65% of tropical soils are fragile and lose fertility rapidly under cultivation leaching and run-off. Loss of soil organic matter accompanies cultivation with concomitant decrease in desirable soil physical properties and increased erosion. Depletion of soil nutrients can be arrested by addition of fertilizers, but financial considerations preclude this as a solution for most farmers. Therefore, it is imperative to explore alternative integrated soil and nutrient-management approach-

es with minimum or zero risk of environmental degradation. In this context, the use of trees is particularly attractive. In the humid tropics leguminous and actinorhizal trees have been incorporated into agroforestry systems, thereby enhancing their contributions due to fixation of atmospheric nitrogen. Depending on the type of agroforestry system and management practices, substantial portion of this fixed nitrogen can be transferred to soil and to arable crops. Despite broad recognition of the value of nitrogen-fixing trees in agroforestry, there are few reliable data on the magnitude of fixed nitrogen contributions or on the potential to manage and maximize nitrogen fixation. The joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture initiated a Co-ordinated Research Project in 1990 on this subject. This project was underpinned by extensive experience in the use on ^{15}N-labelled fertilizer in quantifying nitrogen fixation by food and pasture legumes. The present publication contains the outcome of the project and contains nine papers.
Price: ATS 100.
Requests to: INIS Clearinghouse, International Atomic Energy Agency, Wagramerstrasse 5, P.O.Box 100, A-1400 Vienna, Austria. Only microfiche copy.

Earthworm Ecology. C.A. Edwards, editor. Soil and Water Conservation Society, and Ankeny, St. Lucie Press, Boca Raton, 1998, vi + 389 p. ISBN 1-884015-74-3. Hardcover.
Charles Darwin was the first scientist to bring earthworms to the attention of scientists and the general public. He noted the importance of earthworms in breaking down dead plant materials, recycling the nutrients they contain, and turning over soil. His book » Formation of Vegetable Mould through the Action of Worms« in 1881 summarized his conclusions on earthworms, reached after 40 years of observation and experimental work. The importance of his contributions to our knowledge of earthworms cannot be stressed enough and led to a great upsurge of work on the morphology, histology, and taxonomy of earthworms in the late 19th and early 20th centuries. However, it was only in the last 25 years that interest in and research into the ecology and the importance of earthworms to soil fertility has increased at an extremely rapid rate. The present book owes its origin to the Fifth International Symposium on Earthworm Ecology, held in Columbus, Ohio, in July 1994. It contains the eight invited review papers and the eight final overviews of the same subjects, covering all the major aspects of earthworm ecology. The book represents a state-of-the-art summary of the ecology and importance of earthworms, in both natural ecosystems and agroecosystems, with special attention to the maintenance of soil structure and soil fertility.
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Ecology and the Crisis of Overpopulation. Future Prospects for Global Sustainability. A. Shah. Edward Elgar, Cheltenham, 1998, ix + 174 p. ISBN 1-85898-463-1. Hardcover.
Current population growth is leading to a depletion in natural resources and could eventually cause irreversible damage to the environment. This multidisciplinary book attempts to explain trends in the growth of the global population and the ecological consequences by blending the insights of analytical economics and behaviourial ecology. The book begins by looking at population from a long term perspective and considers the ecological influences before going on to examine the economics of population growth. Reproduction decisions of the family are then analysed, and the welfare effect of these decisions on society as a whole are considered. Particular attention is given to policies which could try to prevent or cure overpopulation. The author asks whether there is a case for intervening in order to prevent overpopulation, and suggests that one way of reducing the effects of population growth is through technological advances which can help compensate for the adverse external effects. Finally the future of urban centres in the light of population growth is examined.
Price: GBP 45.
Orders to: Edward Elgar Publishing, Glensanda House, Montpellier Parade, Cheltenham, Glos GL50 1UA, UK; Fax: +44 1242 262111; E-mail: info@e-elgar.co.uk; Website: http://www.e-elgar.co.uk.

Physical Geography and Global Environmental Change. O. Slaymaker and T. Spencer. Addison Wesley Longman Publishers, Harlow, Amsterdam, xv + 292 p. ISBN 0-582-29829-6. Paperback.
Contemporary physical geography is increasingly fragmented into the sub-fields of climatology and meteorology, geomorphology, hydrology, biogeography and soils. This tendency has inhibited physical geography's potential contribution to Earth system dynamics, climate modification and global environmental change, and human modification of the environment that characterizes many of the scientific, and popular, agendas as we move to a new millennium. Furthermore, the emphasis on sub-fields has loosened the links with societal application and human geography. This volume attempts to place physical geography within a modern and timely context by firstly, re-exploring how the pools, fluxes and budgets established for biogeochemical systems can aid in an understanding of the complex interlinkages of the atmosphere-ocean-Earth surface-biosphere systems. It identifies datasets that monitor environmental change, particularly those derived from satellite imagery, and that show the dynamism and global variability of large-scale environmental processes. Secondly, it shows how the reconstructions of Quaternary history over the last 50 years have deepened our understanding of the various time-scales and impacts of environmental change and have given us pointers as to how the Earth may respond to climate change in the near-future. Thirdly, in regional chapters environmental issues of great general concern are discussed, such as deforestation, desertification and climate change at high latitudes.
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Longman, Concertgebouwplein 25, 1071 LM Amsterdam, The Netherlands; Fax: +31 20 66453 34; E-mail: info@mail.aw.nl.

Identification of Deforestation Hot Spot Areas in the Humid Tropics. Synthesis of the results of an Expert Consultation Meeting organised at JRC, Ispra on the 24-25 November 1997. Trees Publications Series B. Research Report No 4. F. Achard, H. Eva, A. Glinni, P. Mayaux, T.
Richards and H.J. Stibig, editors. Joint Research Centre, European Commission, Luxembourg, 1998, 99 p. Publication no: EUR 18079 EN.
A group of experts (list of names in section 1.2) met at the Joint Research Centre in Ispra, at the invitation of the TREES (Tropical Ecosystem Environment Observations by Satellites) projects to identify areas of current and potential deforestation in the moist zone of the tropical belt. This approach of assessing deforestation is rather unconventional (in the sense that it does not directly lead to quantification) but was deemed important for the progress of the TREES project work-plan. The task of the group was to locate on a map, areas of current or impending deforestation and to characterise the main drivers. The resulting »hot spot« maps (one for each of the three tropical continents) are presented in this document. The evidence on which the areas were designated was based on the personal experiences of the participants. Information on potential criteria for deforestation modelling was also collected in order to define a set of indicators by which deforestation areas can be stratified at broad scales (e.g. active fires, roads, forest fragmentation). The fire information, which can be derived from Earth observation data, has been considered as a useful indicator for a few main regions. The use of these spatial indicators in future spatial modelling exercises will allow a more automatic identification of hot spot areas.
Information about the TREES Project:http://www.mtv.sai.jrc.it/projects/treeswww/trees2.html.
Requests to: Office for Official Publications of the European Commission, Luxembourg.

Ecology of Microarthropods in Arable Soil. M. Vreeken-Buijs. Ph.D. Thesis, Wageningen Agricultural University, Wageningen, 1998, 113 p. ISBN 90-54858-53-2.
The role of microarthropods was studied in relation to the functioning of the soil food web of agro-ecosystems. Soil inhabiting mites and collembolans were divided into seven functional groups. In order to assess their effects on the decomposition of organic matter in the soil and the mineralization of nitrogen, their mutual relationships and their relationships with other faunal groups within the soil food web were studied at three different abstraction levels. Field sampling of microarthropods as part of a two year soil food web sampling program in two wheat fields under conventional and integrated management revealed no striking differences in the annual mean biomass, but large variation in the within year dynamics. In a comparative field study in ten sites, differing in soil type and land use, relationships between functional groups were studies, as well as relationships between functional group biomass and land use, soil type, soil pore distribution and organic matter quality and dynamics.
Requests to: M. Vreeken-Buijs, Wageningen Agricultural University. Dept. of Environmental Sciences, soil Biology Group, Bornsesteeg 69, 6708 PD Wageningen, The Netherlands.

Atlas of the Soils in Bulgaria. V. Koinov, I. Kabakchiev, K. Boneva, editors. Nicola Poushkarov Institute of Soil Science and Agroecology, Sofia, 1998, 317 p. ISBN 954-05-0116-4. Hardcover.
This atlas contains onformation and data of 41 representative soils in Bulgaria within their environment. Illustrated with colour plates of soils, landscapes and land use, accompanied with full chemical, physical and mineralogical data, and their distribution. This well-produced atlas gives an excellent overview of the various main soils in Bulgaria. All soils are correlated within the Russian, German, French, US and FAO systems.
Price: USD 250.
Orders to: Prof. Dr. V. Valev, Director of the N. Poushkarov Institute of Soil Science and Agroecology, 5, Shosse Bankya, P.O. Box 1369, Sofia 1080, Bulgaria.

Polygenetic Oxisols on Tertiary surfaces, Minas Gerais, Brazil. Soil genesis and landscape development. PhD Thesis. C.C. Muggler. Agricultural University, Wageningen, 1998, 186 p. ISBN 90-5485-907-5.
In geologically old landscapes of the humid tropics, soils usually have a very complex history. Brazil has large areas of such polygenetic soils developed on surfaces that have been exposed since the Tertiary or longer. A significant part of these long-time exposed landscapes is related to areas of fine- and medium-textured sedimentary and metamorphic rocks. The soils found in the state of Minas Gerais are under growing pressure from various forms of use and are very susceptible to erosion. These soils are mainly Oxisols that are not well known, especially with regard to their (poly)genesis. Unraveling the genesis of such polygenetic soils is a complex task because of the overprinting of various phases of soil formation. The combination of continuously exposed (stable) landscapes with sedimentary deposits in graben zones offers the possibility of interpreting the history of the soils found at the present day surface. Research was aimed to understand the main aspects of soil genesis in relation to landscape development in this kind of tropical environment. Soil processes were reconstructed by studying differences in physical, chemical, mineralogical and micromorphological properties of soils developed on continuously exposed surfaces and on sedimentary layers from graben zones. This was achieved by the study of soil sequences on landscapes affected and not affected by neotectonism.
Requests to: Department of Soil Science and Geology, Wageningen University, P.O.Box 37, 6700 AA Wageningen, The Netherlands. Fax: +31 317.482419.

Guide to Global Environmental Statistics. D.Baker, C. Curtis, A. Neiman, A. Tohill-Stull and D. Tunstall. World Resources Institute, Washington, 1998, 150 pp. More and more governments, international organizations, and NGOs are using environmental data in assessments of environmental conditions and trends, impact analysis, planning, and decisionmaking. Relating national data to regional and global conditions and trends requires access to high-quality, timely data and information, but often such data and information are difficult to locate and acquire. This guide meets the need for a single source that identifies what environmental statistics are available and where or how to acquire them. At a time when global environmental monitoring efforts are expanding and the number of users of global environmental data is increasing, the guide fills a growing need for a comprehensive reference to environmental statistical programs worldwide, including pertinent metadata. Subject categories include: human population, health, and economy; natural resources (e.g. soil, agriculture, forests, rangelands, aquatic resources, protected areas, and wildlife); water quality; atmosphere and climate; energy, materials, and waste; and indicators of the relation between the economy and environment. The guide can be consulted at the homepage of the WRI: http://www.wri.org/sdis.
Orders for hard copies: World Resources Institute, 1709 New York Ave., NW, Washington, D.C. 20006. USA; fax: +1 202-638-0036.

Landmarks and Forms. S.S. Augustithis, editor. Theophrastus Publications, S.A., Athens, 1998, 376 p. ISBN 960-7457-11-0. Clothcover.
This book presents about 275 mostly large size, colour plates with simplified descriptions of landscapes, geomorphological features, erosion, large and small-size rocks, weathering phenomena, and other earth surface features. Most photographs are of good quality and taken all over the world. The author is well-known for his publications on laterites and bauxites.
Price: USD 60.
Orders to: Theophrastus Publications, 33 J. Theologou Str., Zogrophou 157 73, Athens, Greece.

Atlas of Caesium Deposition on Europe after the Chernobyl Accident. European Communities, Luxembourg, 1998, 45 p. and 65 plates. M. DeCort, G. Dubois, et al. ISBN 02-828-3140-X. EUR report 16733
The European Commission and the Ministries responsible for Chernobyl Affairs in Belarus, Russia and Ukraine have carried out a collaborative programme of research on the consequences of the Chernobyl Nuclear Power Plant accident. This programme was implemented between 1992 and 1995. Within this programme some 16 projects were carried out on the health and environmental consequences of the accident, their long term management and with emergency management in general. The results of this programme have been published in 16 volumes. One of the projects was concerned with the preparation of a comprehensive Atlas (in English and Russian) of the deposition, over the whole territory of Europe, of radioactive material released during the Chernobyl accident. Various compilations, of differing resolution and quality, of the deposition in particular countries or regions are available but, prior to this project, no attempt had been made to bring the many data together and develop a coherent and comprehensive picture of the deposition across the whole of Europe. The atlas will be the authoritative reference on this subject for many years to come and it will have wide public and scientific interest. Most reader will be interested in a particular region, others will be interested by the large scale over which material was dispersed and by the very irregular patterns of deposition. The data on which the atlas is based have been compiled in an electronic form and will be an important resource for further scientific work; in particular they will contribute to a better understanding of the complex processes of dispersion and deposition and to the optimisation of environmental monitoring in the event of any future accident.
Price: ECU 100
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Bundes-Bodenschutzgesetz (Deutschland), Handkommentar, Holzwarth F., Radtke H. und B. Hilger, aus der Reihe: Bodenschutz und Altlasten, Band 5, Erich Schmidt Verlag, Berlin, Bielefeld, München, 1998, 237 Seiten, DIN A5, kartoniert,
ISBN 3 503 04395 0
Das Bodenschutzgesetz der Bundesrepublik Deutschland hat die Voraussetzungen für einen wirksamen Bodenschutz und die Sanierung von Altlasten zum Ziele. Die bundeseinhheitlichen Anforderungen sind somit die Grundlage für eine bundesweite Rechtssicherheit sowie entsprechende Vorgehensweisen von Behörden. Der vorliegende Handkommentar erläutert das Gesetz im einzelnen, wobei in einem ersten Teil die allgemeinen Vorschriften erläutert werden, in einem zweiten Teil Grundsätze und Pflichten, in einem dritten Teil ergänzende Vorschriften für Altlasten, sowie in einem vierten Teil die landwirtschaftliche Bodennutzung. Ein fünfter Teil schließt als Schlußvorschriften den Kommentar ab.
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Plant-Soil Interactions at Low pH: Sustainable Agriculture and Forestry Production, Proceedings of the Fourth International Symposium on Plant-Soil Interactions at Low pH, Belo Horizonte, Minas Gerais, Brazil, 17-24 March 1996, edited by A.C. Moniz, A.M.C. Furlani, R.E. Schaffert, N.K. Fageria, C.A. Rosolem, and H. Cantarella.
These proceedings, published by the Brazilian Soil Science Society, contain an important set of contributions, starting with an overview paper by Borlaug and

Dowswell on »The acid lands: one of agriculture's last frontiers« and dealing subsequently with sustainable agriculture and forestry production systems on acid soils, plant tolerance to acid soil constraints: genetic resources, breeding methodology and plant improvement, nutrient use efficiency in acid soils: nutrient management and plant efficiency, mechanisms of plant adaptation and tolerance to acid soils, ecological and agricultural benefits of the soil biota under acid soil conditions, management of sub-soil acidity, procedures used for diagnosis and correction of soil acidity: a critical analysis.
This publication allows for an excellent overview over the actual state of knowledge on the agricultural and forest use of acid soils, published in 1997. Addressed to all those who are interested in the use of acid soils.
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To be obtained from: Sociedade Brasileira de Ciência do Solo, Caixa Postal 231, CEP 36571-000, Viçosa MG, Brazil; Fax: (+55-031)899-2471; E-mail: sbcs@solos.ufv.br.

Hoher P-Gehalt im Boden – mögliche Folgen für die Umwelt – Konsequenzen für die Ausbringung von phosphorhaltigen Düngemitteln - VDLUFA (Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten):
VDLUFA-Schriftenreihe 50/1999, ca. 120 Seiten ISBN 3-922712-74-6
In der vorliegenden Broschüre werden von verschiedenen Autoren aktuelle Probleme, verursacht durch hohe P-Gehalte in landwirtschaftlichen Böden, insbesondere deren Auswirkungen auf die Umwelt diskutiert. So werden z.B. die hohen P-Gehalte in Böden vor dem Hintergrund der Düngeverordnung von 1996 und der Eutrohierung von Gewässern einschließlich der gegenwärtigen Belastung von Gewässern mit Phosphat sowie Zielvorgaben hinsichtlich der Eutrohierung von Gewässern behandelt, ebenso die Fragestellung, wieviel P-Eintrag durch Bodenerosion in Oberflächengewässer erfolgt. Darüber hinaus werden Phosphorgehalt und -verlagerung in nord-west-deutschen Böden angesprochen und die Frage, mit Hilfe welcher P-Fraktionen eine Vorhersage von P-Austrägen möglich ist. Schließlich werden die P-Sättigung des Bodens und der P-Konzentration in der Bodenlösung zur Prognose der P-Verlagerung innerhalb des Bodens und die vertikale Verteilung von DL-löslichem P in Ackerböden angesprochen. Eine Diskussion von Handlungszielen angesichts hoher Phosphorgehalte in Böden vor dem Hintergrund eines nachhaltigen Phosphorhaushaltes der Landwirtschaft rundet das Werk ab, das eine sehr wertvolle Darstellung aktueller Nutzungsprobleme landwirtschaftlicher Böden darstellt und daher allen, die sich mit dieser Fragestellung befassen, zur Lektüre sehr empfohlen werden kann.
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Management of Tropical Agroecosystems and the Beneficial Soil Biota. Vikram Reddy, editor. Oxford&IBH Publishing Co. Pvt. Ltd., New Delhi, 1999, 387 p.
This book provides the first comprehensive review and analysis of the effects of different agricultural management practices, mainly soil management on the beneficial soil organisms such as micro-, meso- and macroorganisms in the tropics. While data are available on the deleterious effects of agrochemicals, particularly insecticides, on the ecosystem structure and function of these organisms, very little is known regarding their response to other agricultural management practices.
This book includes contributions from leading scientists in agricultural and applied soil ecology, covering a wide range of topics including the response of edaphic abiotic factors and processes to management practices. This publication deals not only with future research needs but also with appropriate management practices for sustainable agriculture.
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Interactive Soils. CD-ROM. E. A. FitzPatrick.
This CD-ROM on soil science is intended for the final year at schools and first year at universities. It contains 744 pages and over 1800 files and is presented in the following sections: Introduction,, Properties of soils, Fundamental concepts, Soil fertility Factors of soil formation, World soils, Processes in the soil system, Soil geography, Land use and soil degradationIt is fully illustrated with both colour photographs and colour diagrams from around the world including soil profiles, landscapes and soil photomicrographs. There are many special features including animations to illustrate processes in soils and a fairly comprehensive set of colour illustrations of plant nutrient deficiency symptoms. This CD runs in Windows 95 or 98., with at least 16 MB ram. It requires 2000 KB free hard disk space to load the operational files since it is designed to be run from the Disc.This will-presented large amount of information is not only an excellent teaching tool, but also of interest to many (soil) scientists.
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See also: www.abdn.ac.uk/pss.
Orders to: Interactive Soils, P.O. Box 10298, Aberdeen, AB10 6WW, Scotland, UK.

Humic Substances in the Environment. An International Journal. Polish Humic Substances Society. S.S. Genet, editor-in-Chief. The Chapter of the International Humic Substances Society (HISS).
This new international journal intends to publish research papers on chemistry, physics and biology of humic substances. In 1999 the first issue will be published.
For more information: Prof. S.S. Genet, University of Technology and Agriculture, Dept. of Soil Chemistry, 6 Bernardynska Street, PL 85-029 Bydgoszcz, Poland. Fax: +48 52 3736601; E-mail: humus@rol.atr.bydgoszcz.pl.

Umweltwissenschaften und Schadstoff-Forschung/Zeitschrift für Umweltchemie und Ökotoxikologie (UWSF) mit Environmental Science and Pollution Research - International (ESPR). Ecomed Verlagsgesellschaft. Herausgeber O. Hutzinger; Chefredaktion: A. Heinrich. ISSN 0934-3504 und 0944-1344.
UWSF und ESPR ist die erste Zeitschrift, in der sich die Wissenschaften schadstofforientiert und inderdisziplinär mit dem Verhalten, den Wirkungen und der Bewertung chemischer Stoffe beschäftigen. Alle Umweltbereiche sind einbezogen: Wasser, Boden, Luft, Biota sowie humantoxikologische Bereiche. Im Mittelpunkt steht der chemische Stoff, der zum Schadstoff wird und der zentral aus der Sicht der Chemie, doch unter Berücksichtigung von Ökologie, Toxikologie, Analytik, Technologie und Gesetzgebung beurteilt wird. Behandelt werden alle umweltrelevanten Aspekte stoffbezogener natur, wobei der Begriff Stoff/Schadstoff den anthropogene wie den natürlichen Stoff berücksichtigt; wichtige Entwicklungen aus Forschung und Technologie, aus Chemie- und Umweltpolitik und neue Regelwerke aus der Gesetzgebung. Beiträge aus dem Bereich Bodenwissenschaften werden zusätzlich im Internet-Forum »Bodenwissenschaften« als PDF-Dateien vorgelegt. Der Zugang erfolgt über die UWSF-Homepage (www.ecomed.de/journal.htm) und ist kostenlos. Die Datenbank im Internet stellt die ab 1998 in UWSF-ESPR publizierten Beiträge als Volltexte zur Verfügung. Die Zugriff auf die Volltexte ist an das Abonnement von UWSF-ESPR gebunden: der Zugang zu Schlagwörtern und Zusammenfassungen ist dagegen frei. Die Zeitschrift erscheint 10mal im Jahr (6 deutschsprachige UWSF- und 4 englischsprachige ESPR-Ausgaben). Publikationssprachen sind jeweils Deutsch und Englisch.
Abonnement UWSF-ESPR 1996: DEM 548; *ESPR 1999:* DEM 264, zzgl. Versandkosten.
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The European Society for Ecological Economics (ESEE) and Inderscience Enterprises Ltd (IEL) are taking an initiative to establish a major international network of researchers, professionals, policy-makers, business leaders and non-government organizations for the coordination of input to five of Inderscience's international scientific journals:
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Tanzania Journal of Agricultural Sciences (TAJAS). Sokoine University of Agriculture, Morogoro. ISSN 0856-664X.

The first issue of this new journal was published in June 1998. Aiming to be a new leading source of information and knowledge in all fields of agriculture, TAJAS is a joint publication of the Faculty of Agriculture at the Sokoine University of Agriculture, and the Ministry of Agriculture and Cooperatives. The twelve papers in the launch issue cover seeds, livestock welfare, water division devices, water harvesting, and economic analysis of agricultural alternatives. Published twice yearly.

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Subcommissions/Sous-Commissions/Subkommissionen - Chairpersons/Présidents/Vorsitzende:

A. Salt Affected Soils/Sols Salins/Salzböden
Dr. S. Arunin, Soil Salinity Research Section, Land Development Dpt., Pahon Yotin Rd., Chatuchak, Bangkok 10900, Thailand

B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
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
Prof.Dr. S.C.F. Dechen, Escola Superior «Luiz de Queiroz», Av. Padua Dias, 11 - Cx.P.9, 13400 Piracicaba - SP, Brazil

D. Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit IUBS)
Prof.Dr. H. Frijsackers, Nat. Inst. of Public Health & the Environment, A. van Leeuwenhoeklaan 9, P.O.Box 1, 3720 BA Bilthoven, The Netherlands

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, University of EastAnglia, School of Env. Sci., Norwich, Norfolk NR4 7TJ, UK

G. Soil Remediation/Restitution des sols/Bodensanierung
Dr. S. Mcgrath, IAR Rothamsted, Harpenden, Herts., AL5 2JQ, UK

Working Groups/Groupes de Travail/Arbeitsgruppen - Chairpersons/ Présidents/Vorsitzende:

AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden
Dr. F. Cook, CSIRO, Dpt. for Environm. Mechanics, Canberra, ACT 2601, Australia

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

MO Interactions of Soil Minerals with Organic Components and Microorganisms/Interactions entre les Minéraux du Sol, les Composées Organiques et les Microbes/Wechselwirkungen zwischen Bodenmineralen, organischen Substanzen und Mikroorganismen
Prof.Dr. P.M. Huang, Univ. of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask. S7N 0W0, Canada

PM Pedometrics/Pedométrique/Pedometrik
Prof.Dr. M. Van Meirvenne, University of Gent, Dpt. of Soil Management and Soil Care, Coupure 653, 9000 Gent, Belgium.

PP Paleopedology/Paléopédologie/Paläopedologie
Prof.Dr. Arnt Bronger, Dpt. of Geography, University of Kiel, 24098 Kiel, Germany

PS Paddy Soils Fertility/Fertilité des Sols Rizicoles Irrigués/Fruchtbarkeit von Reisböden
Dr. Rogelio N. Concepcion, Bureau of Soils and Water Management SRDC Building, Elliptical Road, Diliman, Quezon City, Philippines.

PT Pedotechnique/Pédotechnique/Pedotechnik
Prof.Dr. J. Koolen, Dept. of Soil Tillage, Wageningen Agric. Univ., Diedenweg 20, 6703 GW Wageningen, The Netherlands

RB World Reference Base for Soil Resources/Base de référence mondiale pour les ressources de sol/weltweite Referenzbasis fuer Bodenressourcen
Prof.Dr. J. Deckers, Wildenhoge 13, 3020 Winksele, Belgium

RS Remote Sensing for Soil Survey/Pédologie et Télédétection/Fernerkundung für Bodenkartographie
Dr. M. Mulders, Dept. of Soil Science & Geology, Wageningen Agric. Univ., P.O. Box 37, 6700 AA Wageningen, The Netherlands

RZ Rhizosphere/Rhizosphère/Rhizosphäre
Dr. Ph. Hinsinger, INRA UFR de Science du Sol, Place Viala, 34060 Montpellier Cedex 2, France

SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin
Prof.Dr. J. Lag, Dept. of Soil Sci., AUN, P.O.Box 28, 1432 Ås-NLH, Norway.
Prof.Dr. E. Steinnes, Dept. of Chemistry, Norw. Univ. of Sci. & Techn., 7034 Trondheim, Norway (co-chair)

SM Environmental Soil Mechanics/Mechanique du Sol et l'Environnement/Bodenmechanik und Umwelt
Prof.Dr. R. Horn, Inst. f. Pflanzenernahrung 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
Prof.Dr. W. Burghardt, Univ. GH Essen, Inst. of Ecology, Universitatsstr. 5, 45117 Essen, Germany

Standing Committees/Comités Permanents/Ständige Komitees - Chairpersons/Présidents/Vorsitzende:

CSS Committee on Statute and Structure/Comité sur Statuts et Structures/Komitee für Statuten und Struktur
Prof.Dr. P.B. Tinker, GCTE Associate Project Office, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, UK

CIP Committee on International Programmes/Comité sur les Programmes Internationaux/Komitee für Internationale Programme
Dr. J. Kimble SCS/NSSC, Federal Bldg., Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866, USA

CST Committee on Standardization/Comité sur la Standardisation/Standardisierungskomitee
Prof.Dr. S. Nortcliff, Dept. of Soil Sci., Univ. of Reading, Whiteknights, P.O.Box 233, Reading RG6 2DW, UK

CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee
Prof.Dr. W.R. Gardner, USA, College of Natural Res., Univ. of California, Berkeley, Calif. 94720, USA.

CES Committee on Education in Soil Science/Comité pour l'Enseignement de la Pédologie/ Komitee für Bodenkundeausbildung
Prof.Dr. M. Dosso, CNEARC, 1101 Av. Agropolis, B.P. 5098 Montpellier Cédex, France

CHP Committee on the History, Philosophy and Sociology of Soil Science/Comité sur l'Histoire, Philosophie et Sociologie de la Science du Sol/Komitee für Geschichte, Philosophie und Soziologie der Bodenkunde
Prof.Dr. D.H. Yaalon, Inst. of Earth Sci., Hebrew Univ., Givat Ram Campus, Jerusalem 91904, Israel

Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften

ARID SOIL RESEARCH AND REHABILITATION; BIOLOGY & FERTILITY OF SOILS; CATENA; GEODERMA; JOURNAL OF PLANT NUTRITION AND SOIL SCIENCE; PEDOBIOLOGIA; SOIL BIOLOGY & BIOCHEMISTRY; SOIL TECHNOLOGY

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