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of the International Society of Soil Science

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INTERNATIONALE BODENKUNDLICHE GESELLSCHAFT

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Agroforestry in soil conservation: Contour hedgerows of **Leucaena leucocephala** on a hill farming demonstration station, Leyte, The Philippines. - From A. Young (1989) "Agroforestry for soil conservation", by permission of CAB international and ICRAF.

Soil - Agroforestry Research

Eleven Hypotheses

1 Agroforestry systems can control erosion, thereby reducing losses of soil organic matter and nutrients

2 Agroforestry systems can maintain soil organic matter at levels satisfactory for soil fertility

3 Agroforestry systems maintain more favourable soil physical properties than agricul ture, through a combination of organic matter maintenance and the effect of tree roots.

4 Nitrogen-fixing trees and shrubs can substantially augment nitrogen inputs in agroforestry systems

5 The tree component in agroforestry systems can increase nutrient inputs, both from the atmosphere and from the B/C soil horizons

6 Agroforestry systems can lead to more closed nutrient cycling, and so to more efficient use of nutrients

7 The cycling of bases in tree litter can help reduce soil acidity or check acidification

8 Agroforestry systems offer opportunities to augment soil water availability to crops

9 Agroforestry can be a useful component of systems for the reclamation of degraded soils

10 In the maintenance of soil fertility under agroforestry systems, the role of tree roots is at least as important as that of above-ground biomass
(A. Young, Agroforestry Today, 1989, 1, 13-16)

11 The shade influence of the tree canopy improves the rate of mineralization of soil nitrogen
(J.R. Wilson, Agroforestry Today, 1990, 2, 14-15)

(Based on A. Young, Agroforestry for Soil Conservation, 1990)

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ISSS-AISS-IBG

Announcement

Symposium "On the Importance of Micromorphology in Applied Soil Science", 10th and 11th of December 1991 in Braunschweig-Völkenrode/Germany.

This symposium will be organized by the Department of Plant Nutrition and Soil Science of the Federal Agricultural Research Centre in Braunschweig/Völkenrode (FAL),the German Soil Science Society (DBG) and the Subcommission B of ISSS on occasion of Dr. H.-J. Altemüller's retirement. - Only invited papers will be presented with the following topics: Concepts of modern soil micromorphology - Soils and mechanization; Compaction, sealing, crusting; *Processes and means of fabric regeneration - The rooted soil; Interactions of soil fabric and* root growth - Microbiological aspects - Organic matter decomposition and humification; importance of soil fauna - Soil and environment; Features of water movement, conducting-, and filter effects; pollution problems - Soil aspects of global change from the viewpoint of soil micromorphology. - Language of the symposium is English.

Please complete the enclosed Notice of Intent and return it to the Organizing Committee.

Notice of Intent

Symposium "On the Importance of Micromorphology in Applied Soil Science", Braunschweig-Völkenrode, 10th-11th of December 1991.

Surname:.....

First name:.....

Affiliation:.....

Mailing address:.....

.....

I intend to participate: yes no perhaps

I should like to receive the final program and information on hotel accommodation: yes no

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

Please return to:

Dr.M.Kücke, Institut für Pflanzenernährung und Bodenkunde, FAL, Bundesallee 50, D-3300 Braunschweig, Tel.:(0531)596-303/323, Fax: (0531)596368

ISSS-AISS-IBG

Announcement

2nd International Symposion on Forest Soils "Forest Soil-Essential Component of Land Management"

29 July to 3 August 1992 in Guri-Ciudad Guayana, Venezuela

The Working Group Forest-Soil Relationship, the Servicio Forstal Venezolano (MARNR-*SEFORVEN*), *the Sociedad Venezolana de la Ciencia del Suelo and the ULA-Fac. Ciencias* Forestales organize the 2nd International Symposium on Forest Soils from July 29th to August 3rd 1992 in Guri-Ciudad, Guayana, Venezuela

The Program will include invited papers, voluntary papers and posters. It will be organized under the following headings:

1. Role of Forest Soils in Multiple Land Use
2. Management of Soils under Agroforestry Systems
3. Forest Soils and Watershed Management and Conservation
4. Forest Soils and Natural Forest Management for Timber Production
5. Forest Soils and Plantation Forestry
6. Forest Soil Degradation and Ameliorative Measures
7. Forest Soils - Geography, Genesis, Classification, Study Methods and Relationships between Soils and Forests

Symposium languages will be English, Spanish and Portuguese. The papers will be published in the proceedings of the Symposium.
Please write to the following address for registration and further information:

2nd ISFS
Comite Organizador
Instituto de Silvicultura
Fac. Ciencias Forestales
Universidad de los Andes
Mérida 5101-Venezuela

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

Affiliation.....
Mailing address:
.....
.....
.....
.....

I would like to receive further information	yes	no
I intend to participate	yes	no
I intend to contribute with a paper/a poster	yes	no

(second announcement will be sent in September 1991)

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

ISSS-AISS-IBG

First Announcement

Symposium on Soil Resilience and Sustainable Land Use ,Budapest, 28 September - 2 October, 1992

The Hungarian Academy of Sciences, the Commonwealth Bureau of Agriculture (CAB International) and the International Society of Soil Science organize a Symposium on Soil Resilience and Sustainable Land Use (incorporating WEFSA II, the Second Workshop on the Ecological Foundations of Sustainable Agriculture) in Budapest/Hungary between 28 September and 2 October 1992.

The objectives of the Symposium are1. to review soil resilience and the ecological foundations of sustainable agriculture and land use; 2. to develop the findings of WEFSA I on biodiversity as they relate to soil management; 3. to determine priorities in research and development for enhancing the resilience of world soil resources to resist degradation and to aid recovery for sustainable increases of crop production; 4. to provide well-documented recommendations to national and international organizations, policy makers, research managers and donor agencies.

The language of the Symposium is English. - Papers will be presented by invited speakers, participants can exhibit posters and take part in the discussions. Two fullday excursions will take place to a state farm and to a national park, respectively.

The registration fee is 200 US$ (including Symposium materials, participation in Sessions and social events of the Symposium, exhibition of accepted poster), excluding excursion costs. Registration fee should be submitted to the address of the Organizing Committee by cheque or money transfer.

Please complete the enclosed Notice of Intent and return it to the Organizing Committee not later than 30 November 1991 to the following address: Prof.I.Szabolcs, Chairman of the Organizing Committee, Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, H-1022 Budapest, Herman O. ut 15. Tel.: (36-1)155-8829; Fax: (36-1)155-8839; Telex 22-7223 AGROK-H.

Notice of intent

***Symposium on Soil Resilience and Sustainable Land Use ,Budapest,* 28 September - 2 October, 1992**

Surname:..... First name:.....
Affiliation:.....
Mailing address:.....
.....

I intend to participate:	Yes	No	perhaps
I wish to submit a Poster:	Yes	No	

Title of poster:.....
.....
I will be accompanied by .....person(s).
Hotel reservation requested: Single room .....nights
Double room .....nights.
Date:..... Signature:.....

ISSS-AISS-IBG

ISSS COMMISSION V: SOIL GENESIS, CLASSIFICATION AND CARTOGRAPHY ANNOUNCEMENT

On behalf of Commission V, the South African Society of Soil Science invites participation on an international meeting to be held in South Africa **between 16 and 30 April 1993** on

PEDO-GEOMORPHIC RELATIONSHIPS IN THE TROPICS AND SUBTROPICS

The conference will focus on (i) assemblages of soils, palaeosols and pedocretes on geomorphic surfaces of varying age in the middle latitudes, (ii) the relative importance of geomorphic and pedologic processes in determining soil characteristics and distribution patterns, and (iii) implications for soil management and sustainable land use.

The meeting will take the form of a "Conference on Tour".

Delegates will have the opportunity to examine a wide diversity of soils and landscapes along the route commencing in Johannesburg and proceeding via the northern and eastern Transvaal, Natal and the southern Cape to end in Cape Town.

Sub-themes will be explored in a number of mini-symposia to be held en route for which respondents to this notice will be invited to offer papers (both oral and poster). Each sub-theme will be geared to the material seen on the preceding leg of the tour. The language of the conference will be English.

A full companion programme with scenic, cultural and wildlife emphases will be available for accompanying persons.

To receive the First Circular, please complete the tear-off slip and send to Mr.T.E.Dohse, Organising Secretary, P.O.Box 30030, Sunnyside, 0132, South Africa. Fax South Africa 012-3231157.

ISSS COMMISSION V CONFERENCE ON PEDO-GEOMORPHIC RELATIONSHIPS IN *THE TROPICS AND SUBTROPICS*

Request for further information

Name..... Title .....
Organization.....
Postal.address .....
.....
.....
.....

Telephone ..... Fax..... Telex.....

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

Notice of Intent/Registration Form
Note d'Intérêt/Fiche d'Inscription
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To: Organizing Committee of
.....
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From: Name and title
.....

full address:.....
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telephone: fax:

Dear Madam, Sir,

0 I intend to participate in the conference, meeting, seminar, workshop* mentioned above. Please send me detailed information.

0 I intend to present a paper/poster*, entitled:
.....

Comments:

0 I register for participation in the conference, meeting, seminar, workshop*, mentioned above.

Comments:

Date: Signature:

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* please delete if not applicable

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Committee on Statute and Structure (CSS), to ensure correct application of Statutes and Bylaws of ISSS, and to propose changes in the organizational structure as required.
Chairman: Prof.Dr. P.B. Tinker, NERC, Polaris House, North Star Avenue, Swindon SN2 1EU, England.
Members: Prof.Dr. W.E.H. Blum (Austria), Dr. S. El-Swaify (USA-Hawaii), Dr. N.N. Goswami (India), Prof.Dr. K.H. Hartge (Germany), Prof. Dr. K. Kyuma (Japan), Dr. F.N. Muchena (Kenya), Prof.Dr. I. Pla-Sentis (Venezuela), Prof.Dr. B.G. Rozanov (USSR), Dr. W.G. Sombroek (The Netherlands) and Dr. G. Varallyay (Hungary).

Committee on International Programmes (CIP), to liaise with international organiza- tions and to promote joint programmes.
Chairman: Prof.Dr. H.W. Scharpenseel, c/o Institut f. Bodenkunde, Univ. Hamburg, Allende-Platz 2, D-2000 Hamburg 13, Germany.Members: Prof.Dr. A. Aguilar Santelises (Mexico), Dr. I.P. Abrol (India), Dr. R.W. Arnold (USA), Prof.Dr. W.E.H. Blum (Austria), Prof.Dr. A.M. Elgala (Egypt), Dr. D.J. Greenland (UK), Prof.Dr. K. Kyuma (Japan), Prof.Dr. B.G. Rozanov (USSR), Prof.Dr. P.A. Sanchez (USA/Peru), Dr. W.G. Sombroek (The Netherlands), Prof. J.W.B. Stewart (Canada), Prof.Dr. P.B. Tinker (UK), Dr. G. Vachaud (France), Dr. G. Varallyay (Hungary), Prof.Dr. D.H. Yaalon (Israel).

Committee on Standardization (CST), to liaise with the International Standardization Organization (ISO, Geneve-Switzerland) and its Technical Committee on Soil Quality (ISO/TC 190, NNI, Delft, The Netherlands).
Chairman: Prof.Dr. H.P. Blume (Comm.V) c/o Inst. f. Pflanzenernährung und Bodenkunde, Olshausenstrasse 40, D-2300 Kiel 1, Germany.
Members: Dr. C. Dirksen (The Netherlands, Comm.I), Dr. P. Arnold (UK, Comm.II), vacancy (Comm.III), Dr. S.A. Barber (USA, Comm.IV), vacancy (Comm.VI), Prof.Dr. A. Herbillon (France, Comm.VII), vacancy (Subcomm.A), Prof.Dr. G. Stoops (Belgium, Subcomm.B), Dr. M. Romkens (USA, Subcomm.C) and Dr. M.B. Bouché (France, Subcomm.D). Technical Secretariat of ISRIC-Wageningen (Dr. J. Gerits).

Committee on Budget and Finances (CBF), instead of ad-hoc committees at Congresses.
Chairman: Dr. W.R. Gardner, College of Natural Resources, Univ. of California, Berkeley, CA 94720, USA.
Members: Prof.Dr. W.E.H. Blum (Austria), Dr. D. Gabriels (Belgium), Dipl.Ing.ETH P.U. Luescher (Switzerland), Dr. W.G. Sombroek (The Netherlands) and one representative of the regional Society of Africa, East/Southeast Asia and Latin America.

Committee on Education in Soil Science (CES), with particular attention to secondary school/college level.
Chairman: Prof.Dr. A. Ruellan, 2, Bd. Berthelot, F-34000 Montpellier, France.
Members: to be defined

ISSS Representatives in Committees/Commissions of International Organizations:

ICSU-SCOPE	Scientific Committee on Problems of the Environment: Dr. F. Fournier (France).
ICSU-CASAFA	Inter-Union Commission on the Application of Science to Agriculture, Forestry and Aquaculture: Prof.Dr. W.E.H. Blum (Austria).
ICSU-IBN	International Biosciences Networks: Prof.Dr. P.A. Sanchez (U.S.A.).
ICSU-IGBP	International Geosphere-Biosphere Programme:Prof.Dr.H.W. Scharpenseel (Germany).
ICSU-COSPAR	Committee on Space Research: Dr. Karale (India).
ICSU-CODATA	Committee on Data for Science and Technology: Prof.Dr. M.F. Baumgardner (U.S.A.).
IUBS-UNESCO -TSBF	Tropical Soil Biology and Fertility: Prof. Dr. H.W. Scharpenseel (Germany)

PRESENTATION OF NEW ISSS OFFICERS

Prof. Winfried E.H. Blum, new Secretary-General of the International Society of Soil Science

Prof. Blum was born in 1941 in Freiburg, Germany and studied forestry and natural sciences at the Universities of Freiburg, Göttingen (Germany) and Nancy (France) concluding with M.Sc. in forestry, 1965 and Ph.D. in soil science, 1968.

From 1968-71 he was research fellow of the German Research Foundation and lecturer of soil science and clay mineralogy at the University of Freiburg, from 1972-74 respectively associate professor of soil science, vice-dean of the Faculty of Forestry at the same university and vice-president of the German Council of Forest Faculties. From 1975-79 he worked at the Federal University of Parand in Curitiba, Brazil as a visiting professor and the director of an university partnership project.Since October 1979 he is professor of soil science, director of the Institute of Soil Research and Technical Geology at the University of Agriculture in Vienna, Austria and member of scientific advisory boards of federal ministries, research institutes and the Austrian Academy of Sciences. In May 1991 he was elected chairman of the Group of Specialists on Soil Conservation at the Council of Europe/Strasbourg. - From 1982-86 he was president, from 1986-90 past-president of the Austrian Society of Soil Science.

He has professional experience in many countries of Africa, America, Asia and Europe. Special fields of interest are soil chemistry and soil mineralogy related to soil genesis, soil classification, soil geography, soil ecology and soil and environmental protection, with more than 140 publications. He is co-editing two scientific journals of soil science.

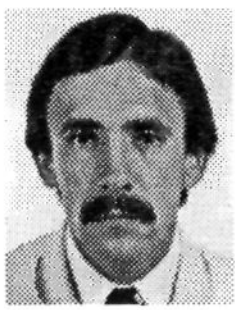
Ir. J. Hans V. van Baren, new Deputy Secretary-General of the International Society of Soil Science

Mr. van Baren was born in 1936 in The Hague, The Netherlands. After military service he studied at the Faculty of Earth Sciences, State University, Utrecht and at Wageningen Agricultural University, The Netherlands. After graduation in 1964 he joined UNESCO, and in 1966 FAO to mainly work on the FAO/UNESCO Soil Map of the World under the leadership of D. Luis Bramao and Dr. R. Dudal. After working in Bangladesh and Kenya for FAO, he joined the International Soil Reference and Information Centre (ISRIC) in Wageningen, in 1972. He was appointed Deputy Director in 1990, under Dr. W.G. Sombroek, Director of ISRIC, and past Secretary-General of the ISSS. He has been involved in ISSS matters since 1972, mostly for the preparation of the section "New Publications" in the Bulletin of the Society, and assisting the Secretary-General in various ways.

Dipl.-Ing. ETH Peter U. Lüscher New Treasurer of the International Society of Soil Science

Mr. Lüscher was born in 1948 in Bern, Switzerland. After conclusion of the secondary school in Bern, 1968, he studied forestry at the Swiss Federal Institute of Technology Zurich (ETH), Switzerland, and passed his final examination with the degree of dipl.-Forsting. ETH in 1974. From 1975-1983 he worked as a Research Assistant of Prof. Dr. F. Richard at the Institute for Forest and Wood Research, Division of Soil Physics, at the ETH in Zurich. Since 1984 he is Senior Scientist at the Swiss Federal Institute for Forest, Snow and Landscape Research, Division of Site Research, working in the field of forest sites.

Moreover, from 1985-91 he was officer and from 1987-89 president of the Swiss Society of Soil Science. From 1980-86 he was chairing the working group "Soil Classification and Nomenclature" of the Society. He gained experience in the field of international soil science as chairman of the Swiss Organizing Committee for the preparation and organization of the post-congress excursion through Switzerland and Austria at the 13th International Congress of Soil Science in Hamburg 1986.



Dr. Gabriel Alcantar Gonzalez, Chairman of Organizing Committee, 15th International Congress of Soil Science, Acapulco, México, 1994.

Dr. Alcantar Gonzalez was born in México City, México, on October 19, 1948. He received his undergraduate degree in the National School of Biological Sciences of the National Polytechnic Institute (IPN) in México in 1971. He obtained a Master of Soil Science degree in 1978 at Colegio de Postgraduados, Chapingo, México and his Doctorate in plant physiology in 1987 in the University of Paris, France.

From 1978 to 1980 he was in charge of the soil and plant analysis laboratory at CIMMYT (International Maize and Wheat Improvement Center) at El Batán, México. Since 1980 he has been a faculty member of the Edaphology Center in the Colegio de Postgraduados, Montecillo, México, where he presently teaches the course of Plant Nutrition and advises graduate students.

He has been an active member of the Mexican Society of Soil Science (SMCS) since 1977, serving a Secretary-General from 1989-1990. During that period he participated in the committee which promoted Acapulco, México as the venue for the 1994 ISSS Meeting.

Dr. Alcántar is a member of the Mexican System of Scientific Research (SNI), of the internal editorial board of the journals TERRA and AGROCIENCIA and an active member of several other scientific associations.

ACTIVITIES OF THE COMMISSIONS AND WORKING GROUPS

ACTIVITES DES COMMISSIONS ET GROUPES DE TRAVAIL

AUS DER TÄTIGKEIT VON KOMMISSIONEN UND ARBEITSGRUPPEN

COMMISSION I - SOIL PHYSICS

The main topics of soil physical studies at the present time are (i) soil hydrology as the component of the hydrological cycle, including water supply to plants, and (ii) soil and the environment.

Both topics are interconnected, especially in view of man's intention of the maximization of yields and the minimization of the environmental damage. the studies are realized through:
1. Field validation of models on (a) soil hydrology; and (b) transport of matter; both including tests on micro- macro- and mega-scale.
2. Interpretation of the soil heterogeneity, especially of the variability of the soil hydraulic functions in the region and in relation to the scale.
3. Man's activity as the influencing agent upon the deterioration of the physical properties of the pedosphere.

Combination of (i) and (ii) can finally contribute to a better understanding of the role of climatic changes in the soil processes in the past as well as in the future.
The above mentioned topics were discussed at four meetings sponsored and co-sponsored by Commission I:
1. International Workshop on Validation of Flow and Transport Models through the Unsatura ted Zone, Las Cruces, NM, USA, 23-26 May 1988.
2. Symposium on Land Qualities in Space and Time, Wageningen, The Netherlands, 22-26 August 1988.
3. International Conference on Soil Conservation and Environment, Bratislava, Czechoslova kia, 29 May - 2 June, 1989.
4. International Conference on Soil Compaction as a Factor determining Plant Production, Lublin, Poland, 5-9 June 1989.

Parallel to the discipline orientation, activities have been developed for the discussion of important regional problems:
1. In the past 20 years, Polish-Czechoslovak symposia on Soil Water Physics were organized. These have gradually developed to East-European meetings each even year. The organizers, J. Gli¨ski and J. ¨utor, propose to extend the activity to the Middle and East-European meetings in Soil Physics already under the sponsorship of Commission I of the Society.
2. In the framework of the European Science Foundation, the Network Committee has accepted the proposal for a Network on Soil Water Processes. The project is coordinated by G. Vachaud and a close cooperation with Commission I of ISSS is foreseen.
3. A couple of multilateral regional projects in Soil Physics is foreseen, e.g. the recent launching of the project on Structure Assessment in Agricultural Soils. The role of ISSS in those activities is indispensable.

M. Kutilek

COMMISSION II - SOIL CHEMISTRY

A first activity of the Commission for Soil Chemistry took place in 1986, immediately following the Hamburg Congress, when our Working Group 'Soil Colloid Surfaces' organized a workshop, directed towards composing a hopefully fairly complete summary of existing knowledge and beliefs concerning the processes occurring at the soil colloid - soil solution interface. In the years following this workshop a sizable volume covering this material was completed with the help of many workers in the field. We expect this volume to appear in print late 1990.

As the accent in the field of soil chemistry shifted somewhat in the direction offollowing the fate of pollutants in soil, our second external activity consisted of co-sponsoring the workshop on 'Validation of transport models concerning pollutants in soil', which was held in 1988 under the able guidance of Prof. Wierenga at Ruidoso, NM, USA. Anticipating on the tendency to mobilize inter-disciplinary cooperation between the Commissions, an initiative taken by several members of Commission II to form a new Working Group on 'Soil and Groundwater Pollution' was supported wholeheartedly. This Working Group 'SP' gained official recognition at the Kyoto Congress and it may well be regarded as a joined activity in cooperation with Commissions I and VII. Similarly, the need for exploration of biotic aspects of chemical processes in soil led also to the establishment of a second Working Group of Commission II, concerning the interactions of soil biota with and at soil mineral surfaces. In this case, Commissions III and VII are also involved.

Having thus assured the further exploration of soil chemical processes via two new Working Groups of Commission II, it was decided that the original Working Group 'Soil Colloid Surfaces' should be terminated pending the appearance of the printed volume(s) covering its activities in the past eight years, as announced before.

As a final aspect of its activities in the past four years, Commission II likes to mention its endeavour to organize a Symposium at the present Congress directed at the exploration of the kinetics of soil chemical processes. With the increasing emphasis on the transport of pollutants through the soil, the interaction between reaction half-times and residence time of the solution in soil during its transport implies the need for knowledge about the kinetics of soil chemical reactions, more specifically the different types of sorption reactions.

Altogether, while looking back with satisfaction at the period in which I was involved in the proceedings of the business of Commission II, it is with confidence and pleasure that I hand over the steering wheel of the Soil Chemistry Commission of ISSS to my successor Prof. Swift.

G.H. Bolt

During the 14th International Congress of Soil Science in Kyoto/Japan Commission II mounted a very full and varied programme. Paper reading sessions were in the form of symposia on selected topics including: heavy metal accumulation; chemical and physical processes soil-root system; dynamics of phosphorus accumulation; chemical and physical processes soil-root system; dynamics of phosphorus and nitrogen in soils with variable charge colloids and soil emissions affecting the environment. The same topics were covered in the poster sessions together with additional subjects such as soil acidity, organic matter dynamic phosphate adsorption and methods of chemical analysis.

The symposia were based on papers selected by the convenor and the material presented was generally up to date and interesting from a scientific viewpoint. The poster sessions were particularly good with a very high standard of presentation and some very lively discussion periods. We look forward to some of the poster material being published fully in the literature.

New working groups were established on "Soil Transport Processes (jointly with Commission I) and on "The Interaction of Soil Minerals with Organic Materials and Microbes". The latter will inevitably involve interaction with Commissions III and VII and participants in Commission II activities greatly welcomed the opportunity to interact more closely with colleagues from other Commissions.

The Working Group on "The Nature and Properties of Soil Colloid Surfaces" has produced two books which are to be published shortly. This Group considered that it had fulfilled its original objectives and has ceased to exist.

Those attending Commission II Meetings were exposed to some new ideas and new techniques and we look forward to seeing the outcome of the application of these developments in four years time in Mexico.

R.S.Swift

COMMISSION III - SOIL BIOLOGY

The Commission for Soil Biology organized the first "International Workshop on Denitrification in Soil, Rhizosphere and Aquifer" at Giessen, Germany, March 1989, in close cooperation with the ISSS Commission for Soil Fertility and Plant Nutrition (IV), the Commission for Soil Biology of the German Society of Soil Science, and the German Society for General and Applied Microbiology. The very fruitful and effective meeting was attended by ca. 200 scientists from the international "denitrification scenery". The Proceedings were published in the "Mitteilungen derDeutschen Bodenkundlichen Gesellschaft" 60, 1-420 (1990). Soil Biology was further involved at the 10th International Symposium on Soil Biology, Keszthely, Hungary, August 1989. This international congress was a successful completion of a regular series of meetings held during the last 20 years. Credits are due to Prof.Dr. J. Szegi, Head of the Department of Soil Biology, Research Institute of Soil Science and Agricultural Chemistry, Hungarian Academy of Sciences, Budapest, the major driving force and lasting "bridge" between soil biologists of the East and West.

*In Kyoto, August 1990, an excellent paper by Professor J.M. Tiedje on the "Role of microor*ganisms in the protection of the environment" illustrated the power of the techniques of molecular biology in investigating metabolic processes in soils. This was also a theme in various symposia and poster papers. The four symposia (Associative and Parasitic Microorganisms in Soil Biotechnology, Microbial Processes in the Rhizosphere and their Influence on Nutrient Uptake by Plants, Ecology of Soil Microorganisms in Microhabitat Environments, and the Role of Biological Nitrogen Fixation in a Sustainable Agriculture), along with poster displays were topical, well-presented and timely as judged by the large attendances. We gratefully thank our Japanese colleagues for the smooth and capable organization.

With the introduction of molecular biological techniques, soil biologists may find and develop relevant routes for their application in such areas as biodiversity studies, survival and fate of genetically manipulated organisms, biological pest control and degradation of xenobiotics. In addition, there are several new challenges ahead for soil biologists where such topics of global soil change must be investigated alongside the other commissions of our Society. Recent international initiatives by such agencies as FAO, UNESCO, OECD and CAB International will create opportunities for soil biologists.

J.C.G. Ottow / J.M. Lynch

The Commission was involved in one inter-congress workshop on "Denitrification in Soil, Rhizosphere and Aquifers" in Giesse-Rauischholzhausen (jointly with Commission IV, the German Soil Science Society and the German Society for General and Applied Microbiology).

In Kyoto, an excellent keynote paper by Professor J.M.Tiedje on the "Role of Microorganisms in the Protection of the Environment" illustrated the power of the techniques of molecular biology in investigating soil metabolic processes. This was also a theme in many of the symposia and poster papers. The four symposia (Associative and Parasitic Micro-organisms in Soil Biotechnology, Microbal Processes in the Rhizosphere and their Influence on Nutrient Uptake by Plants, Ecology of Soil Microorganisms in the Microhabitat Environments, and the Role of Biological Nitrogen Fixation in a Sustainable Agriculture), along with poster displays were topical, well-presented and timely as judged by the large attendances.

With the development of molecular biological techniques, soil biologists are finding many relevant routes for their application in such areas as biodiversity studies, biological pest control and degradation of xenobiotics. In addition there are many new challenges ahead for soil biologists where such topics of global soil change must be investigated alongside the other commissions of our Society. Important international initiatives by such agencies as FAO, UNESCO, OECD and CAB International will create many opportunities for soil biologists.

J.M.Lynch

COMMISSION IV: No report received

COMMISSION V - GENESIS, CLASSIFICATION AND CARTOGRAPHY

The activities of Commission V were conducted in the framework of the following major ventures:

1. The meetings of the Bureau of the Commission: three meetings took place: Rome (1987), Alma-Ata (1988) and Rennes (1989). These meetings were mainly devoted to the appraisal of ongoing activities and to the preparation of the Kyoto Congress.
2. The activities of the four Working Groups which are linked to Commission V: World Soils and Terrain Digital Database (DM); History, Philosophy and Sociology of Soil Science (HP); Paleopedology (PP); Remote Sensing for Soil Survey (RS).
3. The meetings devoted to the implementation of the International Reference Base for soil classification (IRB). Eight meetings took place: Rome (1987), Wageningen (1987 and 1988), Leuven (1988 and 1989), Alma-Ata (1988), Paris (1989) and Rennes (1989).An IRB Symposium took place at the Kyoto Congress.
4. The inter-congress symposia and workshops. The main ones were those of:
   - Budapest, Hungary (1988) concerning remote sensing (organised by the Working Group on Remote Sensing for Soil Survey);
   - Alma-Ata, USSR (1988), concerning soil classification;
   - Nagpur, India (1988), concerning the classification, management and potential use of swell-shrink soils;
   - Nairobi, Kenya (1989), concerning multipurpose use of soil survey information for efficient land use management;
   - Rennes, France (1989), concerning soil horizons.

At its first meeting in Rome, in February 1987, the bureau of the Commission concluded that the Commission should address three priority areas: (1) soil survey;
(2) international soil classification;and (3) the present development of soils as a result of human activities.

It is in line with these priorities that:

(1) the activities of the Working Groups were given support (mainly those on World Soils and Terrain Digital Database [DM] and on Remote Sensing for Soil Survey [RS]).
(2) special support was given to the workshops held at Budapest, Alma-Ata, Nairobi and Rennes.
(3) the Bureau of the Commission was deeply involved in the development of the IRB (see the results at the IRB Symposium of the Kyoto Congress), and
(4) the symposia and other activities at the Kyoto Congress were programmed and intensively prepared.

A. Ruellan

COMMISSION VI - SOIL TECHNOLOGY

During the Inter-Congress period 1986-90, Commission VI sponsored an International Symposium on the Management of Sandy Soils at Jodhpur, India in February, 1988 and promoted active participation in activities sponsored by Subcommission A (International Symposium on Saline and Alkali Soils and their Use through Afforestation, February 1987; International Symposium on Salinetzic Soils: Problems, Properties, Utilization, June 1988; and International Symposium on Dynamics of Salt-Affected soils, October 1989).

The Working Group on Land Evaluation and Information Systems (LI) remained quite active and cooperated with others in organizing and hosting two conferences and one symposium. These include: (1) Land Qualities in Space and Time, Wageningen, August 1988; (2) Soil Quality in Semi Arid Agriculture, Saskatoon, June 1989; and (3) Symposium on Geographic Information Systems, Cuba.

The Working Group on Acid Sulfate Soils (AS) remained active and initiated the publication of a Newsletter. Two Newsletters were published in 1987 and 1989 and distributed to over 300 addresses all over the world.

The Working Group on Pedotechnique (PT) cooperated successfully with Commission I in organizing the International Conference on Soil Compaction as a Factor determining Plant Production, in June 1989 in Poland. Brief reports on most of the activities were included in the Bulletins of the Society.

During the Congress in Kyoto, five symposia were organized. The symposia themes were as follows:
1. Evaluation of the changes in soil properties as related to various management practices
2. Pedotechnical approaches to present day soil tillage and field traffic problem
3. Movement and accumulation of salts and optimal irrigation scheduling
4. Irrigation, drainage and management of heavy clay soils
5. Soil management for sustainable agriculture in the tropics.

A large number of papers were also presented in the poster session during the Conference. The Symposia were well attended and the presented papers and the following discussions contributed substantially in consonance with the stated theme of the Congress "Optimum Utilization of the World's Soil Resources to Increase Biological Production and to Protect the Environment".

I.P. Abrol

COMMISSION VII-SOIL MINERALOGY

The major intercongress activity of Commission VII took place during the 9th International Clay Conference held in Strasbourg (France) in August 1989. Thanks to a specific agreement between the Organizing Committee of this Conference and the Officers of Commission VII, two events were organized on behalf of the Commission in Strasbourg: a three-day pre-conference tour in the Black Forest area and a symposium on the topic "Rock weathering and soil mineralogy".

Both events were very well attended. About fifty participants convened and examined soils of the Black Forest under the expert guidance of our Vice-President Prof. K. Stahr. In Strasbourg, the symposium provided the opportunity to inspect more than sixty posters and ended with a lively round-table.

During the same conference, more than thirthy soil mineralogists convened unformally to initiate discussions aiming at giving operational definitions of allophane and other short-range-order soil minerals. This unformal session was so successful that it was decided to proceed further with this subject during the Kyoto Soil Congress.

The intercongress period was also this during which plans had to be made regarding the Congress. Thanks to our very dedicated third Vice-Chairman, Professor Koji Wada, our Commission succeeded in being involved in the organization of four symposia. All were very well attended. On the other hand, Prof. R.J. Gilkes was invited to give a plenary lecture during which the mineralogy approach of the soil, its tools and its interest were adequately highlighted.

For the next future, Commission VII will again be involved in the organization of the next International Clay Conference (Adélaide, July 1993). Similarly, several soil mineralogists of the Commission are already planning to attend the next meeting of the subcommission B (Canberra, 1992). So, under the active chairmanship of Prof. R.J. Gilkes, Australia will be, during the next intercongress period, the location of several interesting activities for the members of Commission VII. Most rewarding should also be their participation in the newly founded Working Group dealing with theinteraction of biotic agents at soil interfaces both mineral and organic.

A.J. Herbillon

Report of the Working Group FT (Soil Fertility Trials), Subgroup Europe - for the period 1986 - 1990

Composition of the Executive Committee:
Chairman: Prof.Dr.Dr.h.c. von Boguslawski-Rauischholzhausen/FRG
Vice-chairman: Dr. Diez-München/FRG
Secretary: Dr. Wegener - Giessen/FRG
Furthermore belong to the board of directors:
Dr. Harmsen-Groningen/NL, Dr. Starcevic-Novi Sad/Yug.

Series of International long-term Nitrogen Trials
("Internationale Stickstoff-Dauerversuche, (ISDV)") 1972 - 1983

This series of trials was executed on a wide geographical basis with an uniform experimental design. The trials were executed at 26 locations in 14 countries all over Europe. The evaluation of the entire data set has been under way since 1984.

Series of International long-term trials on Organic Matter and Nitrogen
("Internationale-Organische-Stickstoff-Dauerversuchsreihe (IOSDV)") since 1984

This series of trials is running since 1984. Data have been collected, controlled and stored centrally in Giessen. Special evaluations are in preparation.

Working sessions:

Summer-session 1986 was held during the ISSS-Congress in Hamburg/FRG on August 15, 1986, with 16 participants. Topics were N-dynamics in soil and plant-soil interactions and some papers on the ISD- and IOSDV-trials.

Winter-session 1987 was held on February 18-21, 1987, at Rauischholzhausen (FRG) with 35 participants of 6 countries. Topics were modelling of N-Fertilization, leaching of nitrate in relationship to organic and mineral fertilizers, modelling of soil water-regime, VA mycorrhiza effects on yield, and results of the ISD- and ISDV-trials.

Summer-session 1987 was held on May 31-June 3, 1987, at madrid (Spain) with 15 participants. Topics were the situation of agriculture and agricultural production in Spain and the results and special problems of the ISDV and IOSDV in the experimental site near Madrid.

Winter-session 1988 was held on February 24-26, 1988, at Rauischholzhausen (FRG) with 60 scientists from 7 nations. Papers were presented about cropping systems in Turkey, problems of soil structure and melioration, soil analytical methods, nitrogen dynamics in top soil and subsoil, and evaluation of ISDV- and IOSDV-trials.

Summer-session 1988 was organized on June 8-12, 1988, at Vienna (Austria), Brno (CSFR), and Praha (CSFR). We visited field trials and agricultural production communities and we discussed general and special agricultural and environmental problems.

Winter-session 1989 was held on February 8-10, 1989, at Rauischholhausen (FRG) with 32 participants from 7 countries. Topics were the fertility of soils, organic manure and environment, nitrogen dynamics, theoretical yield models, results of ISDV- andIOSDV trials.

Summer-session 1989 was organized on May 31-June 5, 1989, at Vienna (Austria), Novi Sad (Yugoslavia), and Keszthely (Hungary). We discussed about agricultural and environmental conditions in the visited regions and informed us about the IOSDV and other field experiments.

Winter-session 1990 took place on February 21-23, 1990, at Rauischholzhausen (FRG) with 30 participants from 7 nations and dealt with the following topics: visual analysis of soil structure, national and international fertilizer recommendation, interactions between climat and yield, and results of the trials of the working group.

Summer-session 1990 was held on June 17-20, 1990, at Groningen (The Netherlands), Leuven (Belgium), Speyer (FRG), and Limburgerhof (FRG). We visited the experimental fields and discussed new developments in modelling nitrogen dynamics.

E. von Boguslawski and H.R. Wegener, Giessen, Germany

Report of the Working Group LI (Land Evaluation Information Systems)

During the 14th ISSS Congress in Kyoto, Japan, August 1990, the Li working group organised a business meeting attended by 15 participants. Representatives from other ISSS working groups were present, namely DM (World Soil and Terrain Digital Data Base). MV (Soil and Moisture Variability in Time and Space) and PT (Pedotechnique).

The chairman recalled the creation of the LI working group during the 13th ISSS Congress in Hamburg, 1986, resulting from the merging of two former working groups, LE (Land Evaluation) and SIS (Soil Information Systems).

Over the past years, activities focused mainly on the structuring of the new working group and included the following:

- Establishment of a mailing list, counting now 211 members representing 61 countries, from the lists of participants attending earlier meetings organised by the two parent working groups.
- Launching of a newsletter to promote the dissemination of information on land evaluation approaches and methods, land information systems and geographic information systems.
- Participation, as a co-organiser, in two inter-congress meetings, one on Land Qualities in Time and Space (Wageningen, 1988) and another on Land Quality in Semi-arid Agriculture (Saskatoon, 1989).

In the coming years, accent will be more on the consolidation of the working group through three main activity fields:

- Development of a framework for evaluation of sustainable land management (see former sections).
- The newsletter, whose frequency should be increased and scope expanded. The newsletter is an open platform allowing for exchange of news, information and opinions. Member contributions are warmly solicited.
- Inter-congress meetings co-organised by the working group in a sequence of three events on the common theme of the evaluation of sustainable land management in Thailand (1991), Argentina (1992) and Canada (1993).

J. Dumanski

Report of the Working Group PT (Pedotechnique)

The ISSS Working Group PT (Pedotechnique) was established in 1982, at the 12th Congress of ISSS in New Delhi, India. The reason for this was the recognition of the individuality and potential scope of engineering aspects of soil mapping results and soil scientists felt a strong need to incorporate mechanical soil properties in soil maps. During the 14th ISSS Congress in

Kyoto, Pedotechnique has been defined as the use of soil mechanical properties in technical activities in the pedon. However, this definition includes only a small portion of pedotechnique research, because the aims in pedotechnique concern soil qualities related to plant growth, traffic and erosion. The scientific core may be referred to as "mechanics of structured agricultural soil". Usually, prediction methods in pedotechnique are empirical and start from quantities from readily available sources like soil maps, data banks, etc. The working group objective is to improve and to broaden the use and development on pedotechnical principles and methods. Currently, the working group has 63 members from 25 countries.

When you like to obtain more information or to become a working group member, please contact the chairman, Prof.Dr. R. Horn, Christian Albrecht University, Institute for Plant Nutrition and Soil Science, Olshausenstrasse 40, D-2300 Kiel 1, Germany,or the secretary, Dr.Ir. A.J. Koolen, Wageningen Agricultural University, Department of Soil Tillage, Diedenweg 20, 6703 GW Wageningen, The Netherlands.

A.J. Koolen

REPORT OF THE WORKING GROUP SP (SOIL AND GROUNDWATER POLLUTION)

The first business meeting of the working group took place on August 15th 1990, at the 14th International Congress of Soil Science, Kyoto,-Japan. The meeting was attended by 18 members from 7 countries (Australia, Federal Republic of Germany, Japan, the Netherlands, New Zealand, United Kingdom and the United States of America). The group had a lively discussion on the following items:

Objectives

The group agreed that the primary objectives should be

(i) to perform integrated (interdisciplinary) studies on the impact of soil processes, properties and spatial variability on the quality of soil and water resources as affected by pollutants. The processes to be considered will be chemical, physical and biological processes. The group will deal with pollution problems caused by diffuse as well as point' sources.

(ii) to promote the use of the expertise of the various commissions of ISSS by other scientists dealing with pollution problems (hydrologists, engineers, geographers, a.o.).

Position within ISSS

The group aims at integrating the knowledge represented in the commissions of ISSS, such as transport of water (Commission I), chemical reactions (II), spatial variability (V) and GIS (VI). It will cooperate with related working groups, such as MV, LI and PM.

Activities

The group intents to organize scientific meetings in between congresses of ISSS, and symposia during these congresses. The first meeting is planned in '92, possibly in conjunction with the MV group.

Officers

Prof. P.J. Wieringa - from the University of Arizona (USA) was appointed chairman by the chairman of Commission II (Prof. G.H. Bolt). Dr. A. Breeuwsma will serve as secretary/ treasurer.

A. Breeuwsma

TOWARDS AN INTERNATIONAL FRAMEWORK FOR EVALUATION OF *SUSTAINABLE LAND MANAGEMENT*

A number of international agencies have recently pooled their respective talents and resources to develop an international framework to evaluate sustainable land management. This arises because currently no one is quite sure what sustainable means, but at the same time the concept is gaining importance in programme and policy decisions. The major international agencies collaborating in this effort are the International Society of Soil Science (ISSS), FAO, the International Board for Soil Research and Management (IBSRAM) and a number of donor agencies such as IDRC, USAID, Centre des Techniques Agricoles (CTA, EEC), Australian Centre for International Agricultural Research (ACIAR) and others. The ISSS is represented in this activity by the Land Evaluation Information Systems (LI) working group.

Procedures for quantifying and evaluating sustainability are urgently required. The FAO "Framework for Land Evaluation" provides a method for evaluating the productive capacity of land resources. A complementary method, or a framework with guidelines for ensuring the evaluation of sustainable land management, is the new challenge.

The framework will focus only on a portion of the sustainability concept, i.e. land management practises. It will attempt to provide guidelines and criteria to identify management practises which are environmentally and economically sustainable. It will also attempt to quantify the concept of sustainability and thereby introduce more science into the debate. Such a framework has been identified as high priority for donor agencies, but it is also very important for national governments and research organisations. The framework will be developed through a series of international workshops, which will be held over a number of years.

The first of these workshops is scheduled for Chang Rai, Thailand, 15-21 September, 1991. This workshop will "set the scene" for all the follow-up activities that will be necessary to develop the framework. For this workshop the concept of "sustainable land management (SLM)" is defined as:

"SLM demands a balance of economic and ecological imperatives. In agricultural development, SLM promotes agricultural productivity while ensuring the intergenerational equity of the resource base and the environment. In research, SLM challenges the researcher to integrate environmental and risk concerns in the development of new technologies".

The workshop will focus on guidelines for sustainable land management (SLM) for the developing world. The LI Working Group of ISSS is the co-organiser of the workshop, representing ISSS and responsible for developing the principles and structure of the framework.

The second in the series of workshops is being planned for Canada in 1993. Whereas the Thailand workshop focuses on SLM for the developing world, the Canadian workshop will evaluate SLM for developed agriculture. This workshop will be organised by the Canadian

Society of Soil Science (CSSS), in co-operation with the Agricultural Institute of Canada, FAO, IBSRAM, ISSS and the other international players.

The development of this framework is a major undertaking and it will require input from many different people and organisations. In reality, this task cannot be approached only from the standpoint of soil science, but will require input and advice from experts in all related disciplines which deal with land management.

J. Dumanski, Ottawa, Canada

ISSS ABSTRACTS - A NEW IDEA

In order to facilitate the exchange of scientific knowledge amon ; members of the International Society of Soil Science, the idea was launched to publish a journal entitled "ISSS ABSTRACTS".

After discussions and correspondence with the officers, chairmen of the commissions and sub-commissions of ISSS, taking into account the existence of abstracting journals, it was concluded that:

- ISSS ABSTRACTS would be beneficial for ISSS members and could be published twice a year (March and September).

- ISSS ABSTRACTS should be limited and reserved for members of ISSS.

- ISSS ABSTRACTS should be published in English. Abstracts in other official ISSS languages should be printed together with a translation in English. This translation should be reviewed and corrected.

- ISSS ABSTRACTS should only contain the already published abstracts of recently published articles (maximum 2 years old) in scientific journals with an editorial review board. Permission to copy should be received from the publisher of the respective journal by the author.

- ISSS ABSTRACTS should only publish abstracts of articles of which one author or co-author is a member of ISSS.

- ISSS ABSTRACTS will be subdivided according to the 7 Commissions and 4 Sub-commissions of the ISSS. Each abstract should contain 3 to 5 key-words.

- As the abstracts should have been recently published, no extra review or rewriting would be necessary with exception of the English translation. Therefore, no review load would be put on the chairmen of the ISSS Commissions or Sub-commissions although their eventual help in the selection of abstracts would be highly appreciated.

The ISSS ABSTRACTS would be published in cooperation with GANDA PUBLI PRODUCTIONS (Belgium) and coordinated by the former ISSS Treasurer Dr. D. Gabriels, University Gent, Coupure Links 653, B 9000 Gent, Belgium, tel 32-91-646037;
fax 32-91-646247.

A sample copy of the first issue of ISSS ABSTRACTS, could be send free of charge to all ISSS members. The subscription rate for the ISSS ABSTRACTS would be kept to a minimum depending on the work load and the printing and mailing costs.

We would highly appreciate your comments and suggestions about this idea to the address of the Secretary-General prior to January 1, 1992.

COMMISSION V: TASK FORCE ON SOIL HORIZONS - QUESTIONNAIRE

The desire for an "International Working Group on Soil Horizons" was the principal conclusion of the meeting of Commission V on Soil Horizons which was held in Rennes - France, from 4 to 6 September 1988. This conclusion was presented at the recent International Congress of Soil Science in Kyoto but the Council of the ISSS did not feel that there should be such a group at this time and put the proposal into abeyance until the next ISSS meeting in Mexico. In the period until the next meeting it is considered appropriate to have a "Task Force" authorized by Commission V but not restricted to that Commission. It is hoped that there will be many contributions from members of the other Commissions.

Generally soil horizons are considered mainly in the context of soil genesis and classification but recent research on catchments and the like have clearly demonstrated that they can form the basis of many research programmes particularly when the lateral movement of water is involved.

The objective of this Task Force will be to conduct a compre hensive interdisciplinary investigation into the complete set of properties of soil horizons with the view of producing a general consensus on soil horizons to be presented at the next International Congress of Soil Science to be held in Mexico in 1994.

A brief overview of the present concepts about soil horizons is given below and followed by a questionnaire. The results of the questionnaire will be analyzed and then a further memorandum will be circulated with a further questionnaire and so on. Hopefully by this process a fairly comprehensive set of data of agreement will accumulate but probably some key issues may remein unresolved. Then it will be necessary to have an international meeting to discuss these points and hopefully solve the problems. Subsequent memoranda will only be sent to those that reply to this first memorandum.

It is hoped that an overall philosophical framework will be achieved but it is possible that the complexities of soils can only be treated pragmatically to satisfy individual user requirements.

CONCEPTS ABOUT SOIL HORIZONS

1) Definition of the term "Soil Horizon"

At the outset it is absolutely essential to have a definition of the term "Soil horizon" that is acceptable to every one. It would seem that most workers are inclined to accept the definition: "A soil horzion is material that shows pedological organisation". There is also the concept of "Soil Material" used primarily in Australia. This is material of fairly uniform texture that mantles the landscape and most often has an array of different horizons developed in it as determined by position in the landscape etc. It may be useful to have both concepts, the concept of "Soil Horizon" being the fundamental concept and the "Soil Material" concept being useful for land use applications.

2) Shape of soil horizons

Soil horizons are commonly thought to be more or less parallel to the surface of the earth. While many horizons have this characteristic there are a significant number that depart from this simple arrangement. Most Vertisols have horizons that are irregular in shape while Podzoluvisols have tonguing of the leached horizon into the horizon below. Irregularities are common in areas of limestone where differential solution has produced a very irregular pattern including tubes. Irregularities are also caused by the action of fauna as in many Chernozems. Soils developed in pedisediments often show horizon irregularities due to variations in the thickness of the sediments. There are a number of irregular patterns due to surface features such as polygons and gilgai.

3) Soil horizons have lateral continuity

Soil horizons have varying degrees of lateral continuity and change from one to another. Thus horizons intergrade from one to another.

4) Soil horizons change in time

Soil horizons are constantly changing. These changes may be part of the normal dynamism of the horizons such as earthworm activity or the changes may be progressive leading to the creation of new properties. Argillic horizons may become calcified and oxic horizons may develop clay coatings. These may be regarded as "Compound Horizons" namely those horizons that show features resulting from contrasting processes.

5) There are no fixed juxtarelationships between horizons

Many horizons have more than one different horizon immediately above and below depending upon environmental conditions. Mollic horizons may occur above calcic as well as argillic horizons, similarly argillic horizons may occur beneath mollic and albic horizons. This may be the result of polygenesis which is probably more common than is generally realized.

6) Master horizons

This is the development of the original ABC concept introduced by Dokuchaev. Although used by the majority of soil scientists it has been severely criticised by many workers particularly those working in tropical areas where the soils tend to be highly polygenetic, thus many authors have produced alternative ideas and systems.

7) Diagnostic horizons

This concept was introduced by the USDA and has gained wide acceptance but it is difficult to know the exact meaning of the concept since it was not defined and therefore has taken on a variety of meanings. No diagnostic horizon is used as thesole criterion for creating the highest level of categorisation in any system of classification. At the same time the highest levels of categorisation may not have a diagnostic horizon as in the Vertisols. Furthermore many diagnostic horizons are polygenetic such as the kandic horizon, the definition of which is not mutually exclusive of the argillic horizon. The alternative suggestion of "Reference horizons" seems to be gaining favour.

8) Reference horizons

Some horizons have a unique set of properties apparently produced by a single set of processes, included in this class are oxic horizons of the Ferralsols and the mollic horizons of the Chernozems. Such horizons are termed "Reference horizons".

9) Antropogenic horizonts

A number of new horizons have been created through human activity, some of these horizons such as plaggen horizons and agric horizons are fully accepted but there are probably many others such as traffic pans, hard setting surfaces and crusts that need to be given horizon status.

10) All horizons appear to have equal status

Each and every horizon seems to have a position of dominance depending upon user requirements; mollic horizons may be of the utmost importance to farmers but of little importance to engineers who may be more concerned about the presence of a pan.

QUESTIONNAIRE
COMMISSION V: TASK FORCE ON SOIL HORIZONS

Please complete the following questionnaire and return it by 30. November 1991 to:

E. A. Fitz Patrick,
Department of Plant and Soil Science
Meston Building
Meston Walk
University of Aberdeen
SCOTLAND AB9 2UE

Name:.....
Address:.....
.....
.....
.....
Telephone:.....Telex:.....Fax:.....

1)	Should the definition of "Soil Horizon" be: "Material that show pedological organisation"?	yes	no
2)	Do soil horizons have a variety of shapes?	yes	no
3)	Do soil horizons have lateral continuity?	yes	no
4)	Are soil horizons continuous in time and undergoing progressive change?	yes	no
5)	Do soil horizons have fixed juxtarelationships?	yes	no
6)	Should all soil horizons be given equal status?	yes	no
7)	Should the validity of the concept of "Reference horizons" be tested?	yes	no
8)	Should provision be made for all of the various anthropogenic horizons?	yes	no

COMMENTS

Please make these as short as possible on a single side of A4.

SUBCOMMISSION B: Soil Micromorphology

Call for Nominations for Kubiena Award

The following is a call for nominations for the Kubiena Award. The Kubiena Award is a ISSS Award to commemorate an outstanding micromorphologist who has made distinguished and major contributions to the theory, application and utilization of micromorphology over his or her past career. It is intended that the individual to be recognized for this award should be senior in career status or someone who has recently retired.

The Kubiena award is traditionally presented at the intercongress IWMSM meetings of Subcommission B to be held in July, 1992, in Australia. A new procedure or selection of the awardee is being instituted under our Subcommission B Chairman, Dr. L.P. Wilding. Nominaions will be made according to the following procedures.

Nominations of Candidates for Kubiena Award

- **Eligible Candidates** - any member of ISSS who is currently active in the field of micromorphology or who has made significant contributions in the past but has not previously received the Kubiena Award.

- **Vita** - nominators should submit, (in English) a complete, typed biographical Vita of the candidate including prior schooling, employement history, work experience, honors received, offices held, publications, etc.

- **Justification** - in a separate document nominators should submit a detailed statement of the candidates qualifications that justify his or her consideration and selection as a recipient of the Kubiena Award. This statment should not exceed a double-spaced, two-page, typed document.

- **Selection of Nomination Recipient** - a nomination committee will be appointed by the current Chairmen of the ISSS, Subcommission B: Micromorphology. The committee will screen potential candidates and select the winning recipient. The recipient will be announced and presented with a medallion at the IWMSM-92 Business Meeting.

- **Deadline for Receiving Nominations** - Nominations shall be receaived at least six months before the next IWMSM meeting. Hence, for OWMSM-92, the nominations shall be received prior to January 1, 1992. Nominations should be sent to:

Dr. L.P. Wilding
Subcommission B Chairman
Dept. of Soil & Crop Sciences
Texas A&M University
College Station, TX 77843-2474; USA

Report on the First International Symposium on Forest Soils, 22-27 July 1980, Harbin, P.R. of China

This symposium was organized from 22-27 July 1990 as a satellite meeting of the 14th International Congress of Soil Science and was hosted by the Northeast Forestry University at Harbin, China. Mrs. Bo Qun Lin, Professor of Forest Soils at the Northeast Forestry University was the local organizer of the meeting. It was organized by the Working Group Forest - Soil Relationships (WG-FS) with assistance from the following organizations:

1. Soil Science Society of China
2. Chinese Society of Forestry
3. National Afforestation Committee, PRC
4. Forestry Bureaus of Daxinganling, Yichun, Dailing and Langxiang

About 120 scientists attended the symposium.

Theme of the symposium was 'Forest Soils and Modern Forest Management'. Symposium was organized around field excursions and discussions. There were three half-day sessions for oral presentations, two poster sessions and three days of field excursions and discussions. We were shown the management aspects of forest soils in Langxiang forest region and the research aspects in Dailing forest region. Both forest regions have cold temperate continental climate. Frost free growing period is 100-120 days and thus the management of forest is geared towards increasing the growing period. Soils in the area are generally rich but matching tree species with the site is presently the main management option of significance. Multiple use of forests is becoming the main land management option. Among the products from forests, marketing of birch juice is a notable success story worth mentioning. A hefty volume (493 pp) of voluntary and invited papers were published as proceedings of the symposium which can be obtained from Prof. Lin for US $ 15.00.

A number of resolutions were adopted by the participants of the symposium (copy available from Dr. P.K.Khanna) which suggested the need for intensification of efforts to study forest soils.

International efforts are required to resolve many issues concerning for example global climatic change, acid rain and forest firmes. Furthermore a need was felt to promote communication, exchange, teaching and training programmes and collaboration among forest soil researchers throughout the world.

Local organizers of the symposium deserve a word of appreciation for the marvelous job they did in showing the participants a highly remote area, its soils and management of man-made forest.

Partap K. Khanna, Chairman of WG-FS

Participants of the 1st International Symposium on Forest Soils, 22-27 July 1990, Harbin, P.R. of China

TARC International Symposium 1990: "Soil constraints on Sustainable Plant Production in the Tropics" - 14-16 August 1990 in Kyoto/Japan

The 24th International Symposium on Tropical Agricultural Research sponsored and organized by TARC took place at Kyoto International Conference Hall under quasi-tropical conditions during the period August 14-16 1990, in conjunction with the 14th International Congress of Soil Science (ICSS).

Dr. S. Tsuru, the Director General of TARC gave the inaugural address while Mr. T. Sugimoto, Deputy Director General, Secretariat of the Agriculture, Forestry and Fisheries Research Council welcomed all the participants. During the Symposium, 7 country reports and 10 technical reports were presented followed by a general discussion. The closing remarks were delivered by Dr. S. Sekiya, Chairman of the Organizing Committee of the TARC Int'l Symposium. About 140 participants from 31 countries including 61 Japanese attended the Symposium.

In the country reports, the delegates from China, Malaysia, India, Indonesia, Sri Lanka, Thailand and Japan described the soil constraints on sustainable plant production and measures taken to alleviate the constraints in the respective countries.

In the technical reports, the delegates from ICARDA, IITA, ILCA and CIAT outlined major soil constraints and sustainable systems of land utilization implemented in West Asia and North Africa, West Africa, sub-Saharan Africa, and South America, respectively. The ICRAF delegate emphasized the beneficial role of agroforestry systems in the preservation of soil fertility in the tropics. The five technical reports presented by the Japanese delegates covered the following topics: 1) Development of an economical system of fertilizier application(macro-pellets) for the introduction of legumes on Oxisols in the pastures of the Llanos Orientales of Colombia; 2) Nutritional Factors limiting crop growth in tropical peat soils; 3) Improvement of the productivity of Alfisols and Vertisols in the Indian Semi-Arid Tropics through cropping systems based on legumes (pigeon pea and chick pea); 4) Improvement of the productivity of Ultisols in Thailand by long-term application of organic matter and 5) Alleviation of soil salinity in sandy soils of Northeast Thailand through the planting of eucalyptus trees.

In the first part of the general discussion an animated debate took place on the definition of sustainability. It was eventually agreed that a balance should be struck between the need for promoting agricultural production while realising the importance of preserving natural environmental resources such as soil, water and vegetation.

In the second part, the physical and biological constraints on sustainable plant production in the various agro-ecological zones of the tropics as well as the measures adopted to mitigate them were indicated. In the arid region, it was considered that erosion control and conservation of the natural vegetation in grazing lands were essential. Agroforestry and crop rotation were recommended for land use. In the humid and sub-humid regions, the main constraints included acid poor soils, high biotic stress, deforestation and soil erosion. It was suggested that minimum tillage systems or proper crop residue management, ie. conservation farming could help alleviate the constraints in addition to the promotion of plant adaptation through manipulation by biotechnological procedures. In the lowland and wetland areas, it was indicated that although rice-based cropping systems may afford sustainability, recently, a yield decline presumably associated with nutrient loss and depletion of organic matter has been recognized.

H. Watanbe, Chiba, Japan

Symposium on Advances in Soil Organic Matter Research: The Impact on Agriculture and the Environment. 3-4 September 1990, University of Essex, United Kingdom.

The object of the symposium, sponsored by the Royal Society of Chemistry, the British Society of Soil Science and the International Humic Substances Society, was to provide a forum for the communication of new research and work in progress. The event was organised on the basis of four, half-day sessions for the oral presentation of 24 papers and augmented by the display of 14 scientific posters.

Each of the oral sessions had the following respective themes:

1. Recent advances in our understanding of the composition and structure of soil organic matter.
2. The influence of soil organic matter on the growth of plants and crops.
3. Environmental impact of soil organic matter.
4. The influence of soil organic matter on soil conservation.

Subjects of individual papers and posters ranged widely and included many topical issues. Among these were; novel methods of analysis, soil management and biochemical turnover, forest soils, soil erosion processes, global warming effects, anthropogenic chemicals in water supplies and nitrate leaching.

The attendance comprised approximately 150 participants from 17 countries; ten contributions were made by overseas participants.

Proceedings of the symposium featuring 38 full-length papers is due to be published in hard cover by the Royal Society of Chemistry in the spring of 1991.

W.S. Wilson,Colchester, England

IGBP SCIENTIFIC ADVISORY COUNCIL MEETING II (SAC II) September 3-7, 1990, Paris

The meeting was introduced by the French Minister for Research and Technology, H. Curien, in the ultra modern "Cité des Sciences et de l'Industrie". He reminded the auditory that France was one of the early members of the IGBP with a French national chapter since 1968. With presently 39 member countries IGBP forms a wide global association.

In temporary absence of ICSU President M.G.K. Menon, ICSU Secretary- General La Rivière was in the chair the first two days. ICSU pledged continued full support for IGBP, which it founded in 1986. IGBP chairman J.J. McCarthy confirmed that since SAC I, 1988, in Stockholm, a first set of Core Projects was established.

The Executive Director of IGBP, Th. Rosswall (Sweden), in his review-report and drive for project implementation admits a shortage of funding, even at the present limited scale and required for maintenance of the Stockholm coordinating office. This despite the fact, that in principal an international group of funding agencies for "Global Change", the IGFA, exists.

It was felt as being unfortunate by many participants, that at this prestigious SAC II Meeting, being proclaimed as the initiation of the execution phase of IGBP, donor representatives at appropriate level were absent.

The IGBP represents not only "climate change" but comprises all "global changes". The following topics were discussed:

(1) Presentation of IGBP core projects and interactions with other scientific programmes;
(2) the IGBP programmes: Science Programme; Implementation, Strategy and Financing; Global Change, Regional Centres (RRC's), Data and Information Systems; and Global Change Forum;
(3) Short reports by IGBP National Committee Representatives;
(4) Implementation Strategy and Financing; and
(5) General Recommendations and Conclusions

After SAC II the Core Projects will take over more and more the major responsibilities arising from the Programme execution.

At the 14th International Congress of Soil Science, August 1990 in Kyoto, soil scientists attending the V-8 Symposium on "Global Soil Changes and their Dynamics in a Changing Environment" and the adjacent Panel Discussion opted for a fully integrated interdisciplinary cooperation with the soil-related IGBP Core Projects. Soil Science was at the SAC II represented by the ISSS members Neue (IRRI), Scharpenseel (Germany, Chairman CIP), Sombroek (outgoing Secretary-General), Tinker (UK) and Yaalon (Israel). The important role of soils was clearly presented in an ISSS flyer "Do Soils Matter ...?", from which extra copies are available from W. Sombroek, ISRIC, P.O.Box 353, 6700 AJ Wageningen, the Netherlands.

The soil-related Core Projects of IGBP are:

IGAC, International Global Atmospheric Chemistry, Chairman R.G. Prinn (USA). Main soil science contribution in soil-born source and sink relations of ir-trapping trace gases such as CO2, CH4, N20 in soils of different climate belts. The Executive Director was asked to try bringing Neue in the Steering Committee to help coordinate soil-related CH4 and N20 studies besides of C-turnover measurements.

BAHC, Biospheric Aspects of the Hydrological Cycle, Chairman S. Dyck (Germany). Required contributions by soil science in soil water percolation and evaporation versus temperature in soils of different climatic belts and geomorphic sites. Soil scientists to be in the Steering Committee: Bouma (Netherlands) and Vachaud (France).

GCTE, Global Change and Terrestrial Ecosystems, Chairman B.H. Walker (Australia). This is for soil scientists probably the most relevant Core Project. It asks for studies of CO2-release, C-N-P-S nutrient change by forms of land use, terrestrial carbon pool changes, tree ecosystems as CO2 monitoring, C-sinks and -sources with land clearing, CO2-fertilization, elemental cycles and C-N-P-S balances with land use changes, especially in tropical areas, in semiarid ecosystems, in high latitude areas and in steeplands, changes in water and energy, Soil-Vegetation-Atmosphere-Transport Models (SVATs), agricultural considerations. Full work of the GCTE is supposed to begin 1992.

GCEC, Global Change and Ecological Complexity.
The release of the project under the chairmanship of F. di Castri, president of SCOPE, is still undecided. It may also be later extended to Ecotone and Genetic Diversity Variables. PAGES, Past Global Changes, Chairman H. Oeschger (Switzerland).

Besides of dating and isotope ratio testing of ice cores also studies of paleosols, ground water deposits, analytical advancements and modelling of paleodata are foreseen.
DIS, Data and Information Systems, Chairman S.I. Rasool (USA).
This standing committee of IGBP has a service function for the IGBP core projects such as IGAC, GCTE, BAHC and PAGES. Current programmes include a diskette project on Remote Sensing imagery and a series of land-cover change pilot studies. Its office is at the University of Paris-VI, and W.G. Sombroek (Netherlands) is member on behalf of ISSS.

A cooperation between PAGES and the Subcommission for Paleopedology of INQUA was suggested and may be initiated by inclusion of D.H. Yaalon (Israel), the Vice-chairman of INQUA's paleopedology group in the Steering Committee of PAGES. Production of paleomaps, reflecting environmental conditions of the past, is envisaged. PAGES follows two streams. Streams I, the last 2000 years and Stream II, the glacial cycles. The first full meeting of PAGES is planned for 1991.

IGBP is generally following the "Condominium" approach. The Stockholm Headquarters have a coordinating function. In all groups and Scientific Steering Committees of the Core Projects key scientists make project decisions and discuss priorities.Neither the Stockholm Headquarters, nor ICSU are funding agencies. Core Projects are to be paid by the national chapters of IGBP. Funding of contributions by the developing countries has to be cosponsored by developed/industrial countries, which is considered as being of very high importance for getting a real global coverage. RRC's (Regional Research Centres) serve the same purpose. Offers to host them exist already from New Zealand, Chile, Mexico, Argentina, France, China and Israel. In the RRC's the best scientist of the region should cooperate, most RRC's being serviceable to different Core Projects.

H.Scharpenseel, Chairman ISSS-CIP

Report of the 4th AABNF CONFERENCE ON "BIOLOGICAL NITROGEN FIXATION AND SUSTAINABILITY OF TROPICAL AGRICULTURE" Sept. 24-28, 1990, Ibadan, Nigeria

1. GENERALITIES

Mr. J.H. Davies, Director/DG's office, gave the welcome address on behalf of the IITA Director General. The Conference was declared open by Dr. O.A. Adegbaro, Ag. Director of Agricultural Sciences Department on behalf of the Honorable Minister of Science and Technology, Federal Government of Nigeria.

One hundred and six participants from 25 countries registered for the conference: 21 % from IITA, 29 % from Nigeria excluding IITA, 27 % from Africa excluding Nigeria, and 23 % from other continents. Fifteen percent of the participants were female. Forty oral papers were presented and thirty posters were displayed.

2. SCIENTIFIC SESSIONS

The major objectives of the conference were

* to define the role of nitrogen-fixing systems such as groundnut, soybean and cowpeas (herbaceous legumes in *multiple cropping systems*), *woody species like Leucaena leucocephala and Casuarina equisetifolia (in alley* farming and agroforestry), associative systems particularly cereals and Azospirillum, and the multipurpose Azolla in symbiosis with Anabaena, in present agricultural systems;

* to describe the potential of nitrogen fixing systems in ensuring sustainability and economical viability of tropical agriculture;

* to appraise and strengthen mechanisms of research and transfer of technologies based on the concept of sustainability.

2.1. Nitrogen-fixing systems

The conference clearly demonstrated that with the low input of fertilizers into African farming, the need to harness biological nitrogen fixation to the fullest extent is high. Of greatest potential, at least in the short term, is biological nitrogen fixation in grain and pasture legumes (30-300 kg ha^{-1} yr^{-1}), and in nitrogen fixing trees (250 kg ha^{-1} yr^{-1}). Economic profits when legumes are used in cropping systems were expressed in terms of fertilizer N equivalent and savings. But much more economic analysis is needed in farmers fields to convince policy makers and extensionists. The conference recognized also that African farmers are not deriving all the benefits from nitrogen fixation partly due to lack of awareness (e.g. inoculation technology is not widespread), due to limited problem-solving and farmer-oriented research and due to poor transfer of knowledge from research stations to farmers' fields via extensionists.

To maximize potential nitrogen fixation under various cropping systems requires intensified research on methodologies necessary for measurement of nitrogen fixed, on ecology of microbial nitrogen fixers, on the genetics and physiology of host plants, and on effects of management practices on nitrogen fixation. Although ^{15}N dilution methods are considered as the most accurate for estimating nitrogen fixation, they are quite expensive and cannot be used readily in farmers' fields where the information on nitrogen fixed is badly needed. ^{15}N methods also need to be calibrated and better understood particularly for trees. Research on methodologies must move from "test-tubes" to the real farms outside stations. Methods based on ^{15}N natural abundance and ureides must be encouraged because they can make use of existing vegetations with little need to establish reference crops at the same time as nitrogen fixers.

Factors limiting nitrogen fixation in tropical agriculture were reviewed. They consist principally of absence of appropriate rhizobia, drought, low P, pests and pesticides, and high nitrate at the onset of rains, high salinity and Aluminium toxicity. Corrective strategies were suggested through breeding of promiscuous legumes (a technology that obviates inoculation with rhizobia), inoculation with rhizobia and mycorrhizal fungi. In order to reach the expected results rapidly, models were presented to predict rhizobial numbers in soils, as well as quantitative methods were reported for engineering rhizobia having interesting traits and for manufacturing supernodulating plants, or plant symbioses tolerating environmental stresses.

Inoculation techniques and inoculum production on Africa are not yet advanced, and are not expected to do so until unequivocal proof for their need has been established. The present indication is that several native grain legumes do not respond to inoculation likely because highly competitive and effective rhizobia are present in soils. In Rwanda however, data presented showed a positive response to inoculation of soybeans in farmers' fields. This is the basis for a widespread use of rhizobial inoculants in that country where agronomic benefits drawn from inoculation are supported by economic data. There is a need for agronomic and socio-economic comparison of promiscuous varieties of soybean and varieties requiring inoculation with rhizobia.

Of equal or greater importance as the microbial component in biological nitrogen fixation is the exploitation of existing genetic variability within plants for increasing nitrogen fixation. Examples were presented for soybean varieties, gliricidia casuarina and leucaena provenances. A protocol for systematically screening legumes for their potential in soil improvement was presented. The desired effects of legumes include biological nitrogen fixation, increase of soil organic matter, protection against soil erosion, improvement of soil structure, supply of other nutrients, interruption of cycles of disease and insect pests. An application of such protocol was illustrated for inland valleys in West Africa. This protocol should be a basis for screening underutilized native legumes widespread in fallow lands and in forests.

2.2. Agricultural sustainability

The predominant farming systems in sub-Saharan Africa are based on shifting cultivation practices. This traditional agricultural production system is known to be stable and biologically efficient. Distribution and role of legumes in fallow land are topics that were unfortunately not covered in this conference. Shifting cultivation operates effectively only where there is sufficient land to allow a long fallow period to restore soil productivity. Today however, due to rapid demographic and economic changes, cultivated areas have expanded to marginal lands, and fallows periods are being reduced, resulting in land degradation and declining yields. Clearly new technologies must be developed which not only enhance food production but also maintain ecological stability and preserve the natural base. This is agricultural sustainability.

In defining measures of agricultural sustainability, a framework for classifying sutainability related research was presented based on biological, physical and socio-economic resource. The biological resource relates to germplasm, soil organisms (such as those responsible for nitrogen fixation and for sustaining the processes of nutrient cycling), and pests including weeds and diseases. The physical resource relates to sustainability of the soil (e.g. erosion, acidification, soil compaction), water (e.g. groundwater pollution), climate, and energy. The socio-economic resource relates to the infrastructure and markets, inputs, institutions (e.g. tenure, credits), prices and incentives, population, technology and the policy framework.

Papers illustrating most of these sustainability - related research topics were presented indicating that sutainability is a central concept in the work of most AABNF scientists. However, data presented only give distinct and partial indices of sustainability. The need for a multidisciplinary effort was emphasized as well as the need for socio-economic studies in cropping systems. A significant question in relation to sustainability was also stressed: to what extent can N gain by fixation replace the output of N within a cropping cycle ? The answer to the question requires not only measurements of nitrogen fixation rates but also investigation of the cycling of N between the soil and plant pools often in complex multiple systems. The use of ^{15}N tracer is clearly supplying reliable information on nitrogen fixation, N transfer, N losses and sparing of soil N.

Biological agriculture as practiced in Canada for instance was finally presented as a system that attempts to provide a balanced environment with moderate inputs of energy and resources while maintaining optimum productivity. The use of nitrogen fixing systems was advocated for soil fertility maintenance and pest and disease control. Socio-economic and agronomic considerations were included. In the concluding remarks, AABNF scientists were invited to work in multi-disciplinary teams to devise research themes and methods that will put nitrogen fixation to work for a sustainable agriculture for African farmers.

3. THE FIFTH AABNF CONFERENCE

The venue for the Fifth AABNF Conference is Rabat, Morocco (Dr. A. Hilali) proposed Rabat at the third AABNF Conference. Among others, Dr. Riveros (FAO) strongly supports this venue.

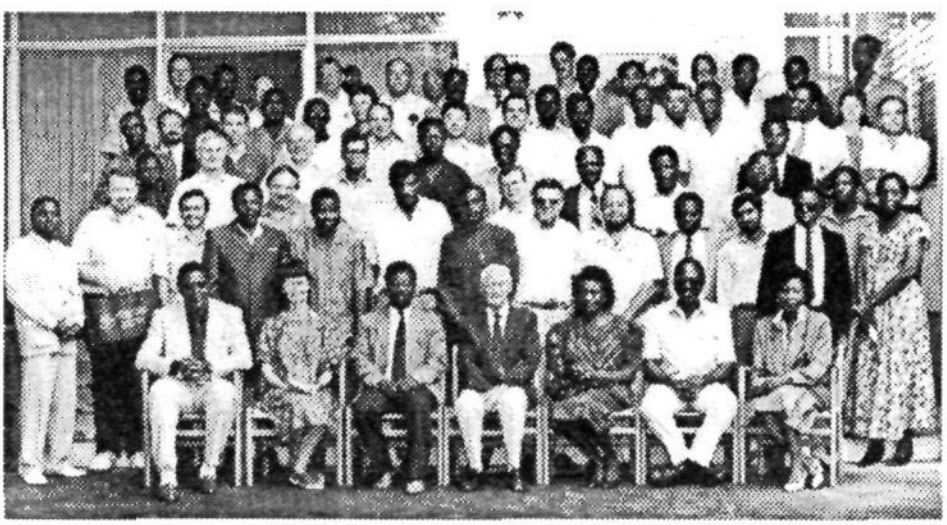
4. RECOMMENDATIONS

A need for multidisciplinary research was felt throughout the conference so that practical results that would demonstrate unequivocally the benefits from nitrogen fixation for the African farmers could be achieved in a short time. Coordinated research can be organized around the following three themes (1) agronomic and economic benefits of legumes in cropping systems; (2) response of legumes to inoculation with rhizobia; (3) utilisation of the multipurpose azolla in rural areas.

Theme 1 can be focussed on question "to what extent can N gain by fixation replace the output of N". This implies measurements of amounts of nitrogen fixed, assessment of fertilizer N savings, N transfer and residual effect of nitrogen fixed. This research is not only related to sustainability, it will also supply to policy makers the necessary justification for continued support of nitrogen fixation programmes and transfer of the technology to small farmers. The basic team required for a preproposal on theme 1 consists of a microbiologist and/or an agronomist, soil fertility specialist, and an economist.

Theme 2 will focus on understanding positive and no response of legumes particularly native grain legumes to inoculation with rhizobia. Extensive research will be carried out on the dynamics of native populations of rhizobia and survival of introduced rhizobia. Concomitantly, genetic variability of host plant species will be explored to identify plant species that will nodulate and fix nitrogen effectively under stress conditions. The use of predictive models will be encouraged as well as comparison of uninoculated promiscuous varieties of soyean and inoculated non-promiscuous varieties. Theme 2 was recommended at the third AABNF conference. But little was done in this area during the past 2 years.

Theme 3 is an investigation of the potential of the multi-purpose azolla (as soil improver, feed and substrate for biogas) in rural development in Africa.



Participants of the 4th AABNF Conference, 24-28 september 1990, Ibadan, Nigeria

It is suggested that A. Agboola (U.I., Nigeria) and K. Mulongoy (IITA, Nigeria), M. Gueye (Bambey MIRCEN, Senegal), the Director of Nairobi MIRCEN (Kenya) and P. Woomer (TSBF, Kenya) and C. Van Hove (LLN, Belgium) and Cairo MIRCEN coordinate the respective themes in 3 phases as follows: (1) submission of preproposals to donors (2) identification of collaborators and organization of a meeting of collaborators to define detailed tasks and workplans (3) implementation of the plans and presentation of data at the AABNF Conferences. Simultaneously, AABNF will take advantage of various networks in Africa like AFRENA, AFNETA, ABN to carry out research that will increase our understanding of nitrogen fixation in cropping systems and our uses of nitrogen-fixing systems to alleviate malnutrition and food shortage in Africa while maintaining or improving the resource-base.

5. FUNDING

The organizing committee received funds from some international organizations, the French Government, Nigeria banks and IITA to support participants and an interpreter, and to pay for limited expenses. Other organisations funded participants directly. They paid airtickets only in general. We had to cover local expenses including food and lodging. For most African participants, we had to waive registration fees and assist with most local expenses. Individual financial statements will be submitted to the donors.

We are still looking for funds for the publication of the Conference book, but IITA will certainly assist.

6. ACKNOWLEDGEMENT

Donors and sponsors were acknowledged in the Program and Abstract booklet, and individual letters have been forwarded to them. All the participants were also thanked for the high standard of their contributions.

K. Mulongoy, Ibadan, Nigeria

Jubile Scientifique S. Hénin, Paris, le 25 septembre 1990

Le Jubilé Scientifique de Monsieur Stéphane Hénin, organisé à l'occasion de ses 80 ans, s'est tenu à Paris dans les locaux de l'Institut National Agronomique le 25 septembre 1990 en présence de plus de 250 participants.

La journée s'est déroulée sous la présidence d'honneur de Monsieur H. Curien, Ministre de la Recherche et de la Technologie, qui a fait parvenir à cet effet un message personnel à M. Hénin.

Présidée par Monsieur A. Cauderon, secrétaire perpétuel de l'Académie d'Agriculture de France, la réunion a comporté, après la lecture de deux hommages en provenance de Monsieur le Doyen G. Millot et de Monsieur le Professeur J.J. Fripiat, une série d'exposés présentés par les élèves directs de Monsieur S. Hénin. Ceux-ci ont ainsi tenté de faire le point sur les apports enregistrés dans les différents secteurs de la Recherche que ce Maître a irrigués au cours de sa longue carrière.

Les thèmes traités ont été les suivants:

- Pédologie expérimentale et recherche sur les argiles: deux domaines clés de la Science des Sols (G. Pédro)
- Stabilité structurale et statut organique des sols (G. Monnier et J. Boiffin)
- Le "Profil cultural": une perspective nouvelle pour l'analyse du travail du sol (H. Manichon)
- Contribution de S. Hénin dans le domaine de la climatologie (R. Gras et L. Turc)
- Une pensée agronomique initiatrice d'interdisciplinarité (J.P. Deffontaines)
- Epistémologie et Agronomie: l'approche de S. Hénin (M. Sebillotte).

Monsieur Hénin a conclu lui-même la réunion scientifique par une brillante prestation, où, à côté des remerciements d'usage, il a tenu à préciser ses idées dans un domaine qui lui a été cher durant ces dernières années et qui a aujourd'hui beaucoup d'avenir: l'environnement.

Un cocktail amical a ensuite clôturé cette réunion, ce qui a permis à F. Fournier, au nom des élèves et amis, de remettre au Maître divers cadeaux et souvenirs en témoignage de gratitude.

L'Association Française pour l'Etude du Sol dont M. Hénin a été le Président entre 1968 et 1971 et dont il est toujours membre du Conseil, s'est beaucoup félicité de la mise sur pied de cette manifestation scientifique. Il en est de même de l'Association Internationale de la Science du Sol, qui n'a pas oublié l'action de M. Hénin lors de la reprise des activités dans le domaine international après 1945. C'est ainsi qu'il a présidé la Commission de Physique du Sol entre 1950 (Congrès d'Amsterdam) et 1954 (Congrès de Leopoldville) et qu'il a été le Vice-Président de l'Association entre 1954 et le 6 Congrès international de la Science du Sol à Paris en 1956, congrès au cours duquel a été créée à son initiative la Commission VII Minéralogie des sols.

L'AFES et l'AISS émettent le souhait que Monsieur Hénin puisse poursuivre ses activités et qu'il continue ainsi à faire profiter la Science des Sols, l'Agronomie et l'Environnement de son expérience, de ses réflexions et de ses projets.

Georges Pédro, Paris, France

Report of the 11th Meeting of CASAFA, from 26-28 September 1990 in Sofia, Bulgaria

The Eleventh Meeting of CASAFA was held at the invitation of the Bulgarian Agricultural Academy and of the Bulgarian Academy of Sciences in the Palace of Culture, Sofia, Bulgaria from 26 through 28 September, 1990.

The first day of the meeting was devoted to an overview of scientific research on Agriculture, Forestry and Aquaculture in Bulgaria, organized by Acad. Ts. Hinkovski, President of the Bulgarian Agricultural Academy. The main items considered under the Agenda were: Priorities for the future; the CASAFA contribution to the U.N. Conference on Environment and Development (UNCED), Scientific Committee status and the Constitution.

Because systems of agricultural production, especially in some developing countries, are under severe stress it was decided to concentrate future activities on ways of increasing productivity, reducing post-harvest losses and ensuring food quality and safety while promoting sustainable practices. Five main themes were selected:

1) Ecological foundations and constraints;
2) Energy efficiency;
3) Biological constraints;
4) Physical and chemical constraints;
5) Human resources.

It was felt that the preparation of the inputs to the UNCED, which had been requested from CASAFA by M. Strong, Secretary General of UNCED, would help to begin the process of developing these themes. J.H. Hulse accepted to begin to draft a paper, with the help of the Committee on Chemical Industry of IUPAC, IUNS, the International Society of Soil Science, the International Society for Plant Pathology, the International Union for Food Science and Technology and the Scientific Secretary, and using other appropriate documents, such as that by M.S. Swaminathan and by W. Bushuk on sustainable agriculture in Canada.

It was agreed to hold the first meeting of CASAFA as a Scientific Committee in Madras in October 1991.

The report of the meeting is available from the CASAFA Secretariat.

(from CASAFA NEWS, January 1991)

International Symposium on Mapping and Geographic Information Systems, June 21-22, 1990, San Francisco, California, USA

An international Symposium on Standards for Mapping,Remote Sensing and Geographic Information Systemswas held in Hyatt Regency, San Francisco,from June 21-22, 1990,sponsored by ASTM Committee D-18 andU.S. Geological Survey

Maps, remote sensing imagery, and geographic information systems (GIS) have combined to become the subject of much interest as many disciplines learn each day of the usefulness of spatially distributed data. These three items have become increasingly important in providing essential data for solving problems related to ground water contamination, water resources management, construction of all types, land use, waste management, minerals exploration, transportation routing, and many others.

GIS is evolving on an exponential scale, internationally as well in the United States, and it is almost impossible to keep up with those developments, as well as with the mapping and remote sensing developments that provide so much of the information fed into the GIS's. The proliferation of systems, hardware, software, techniques, interpretations and applications in GIS, mapping, and remote sensing, has emphasized the need for development of voluntary consensus-type standard methods, practices, guides, and terminology in order to ensure uniformly high quality and interchangeable products.

To develop information needed for an accelerated standard's development effort, the American Society for Testing and Materials (ASTM) Section D18.01.03 on Remote Sensing and D18.01.05 on Mapping and GIS, which are administratively under Subcommittee D18.01 on Surface and Subsurface Characterization, along with the U.S. Geological Survey, co-sponsored an International Symposium on Mapping and Geographic Information Systems in June 1990 in San Francisco. Cooperating organizations included the American Congress on Surveying and Mapping, American Society of Photogrammetry and Remote Sensing, AM/FM International, Association of American Geographers, Urban and Regional Information Systems Association, Canadian Geosciences Advisory Committee, and International Association of Hydrological Sciences.

These organizations are in the process of appointing liaison members to ASTM so they can cooperate in the development of standards.

The purpose of this symposium was to bring together an inter disciplinary and international group of engineers and scien
tists to (1) provide a forum for many professional disciplines to exchange experiences and findings related to the needs and methods for GIS, maps, and remote sensing and the potential for, and prioritization of, standardization of some elements of each; (2) learn from both successful and unsuccessful case histories; (3) promote technology transfer between the various disciplines and countries represented; and (4) provide an educational resource for those attendees who may be considering entering for the first time into use for the three elements (GIS, maps, and remote sensing) that make up an overall land information system.

Papers were presented orally or by poster (see photos) by nearly 40 international authors on each of the threee *main topics — mapping, remote sensing,* and GIS, with emphasis on the general state-of-the-art and the development of standards.

Persons desiring additional technical information on the activities of ASTM Sections on mapping, GIS, and remote sensing standards should contact Ivan Johnson, Chairman, ASTM Subcommittee D18.01, A. Ivan

Johnson, Inc., 7474 Upham Court, Arvada, Colorado 80003 USA (Phone: 303/425-5610). Persons desiring a copy of the STP 1126 on Mapping and GIS should contact the ASTM Marketing and Sales Office, 1916 Race Street, Philadelphia, Pennsylvania 19103 USA (Phone: 215/299-5536).

J. Johnson, Arvada, USA

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

Australian Society of Soil Science

The Federal Council of the Australian Society of Soil Science held its 153rd and 154th Ordinary Meetings on the 7th August and 7th September 1990, respectively, at the Division of Soils, CSIRO. The Federal Council office bearers are:

President:	Dr. K.R.J. Smettem
Vice-President:	Dr. A.S. Black
Secretary:	Mr. R.H. Merry
Treasurer:	Mr. P.M. Clayton

Address: Australian Society of Soil Science, CSIRO Div. of Soils, PMB 2 P.O. Glen Osmond, S.A. 5064, Australia.

Ethiopian Society of Soil Science

On the final day of the second Natural Resources Conservation Conference held in Addis Ababa (May 10-12, 1990) the Ethiopian Society of Soil Science was officially established. The meeting was attended by 80 participants and more than 3/4 th of them were registered as active members of the Society.

Prior to the elections and discussion of the draft constitution, Dr. Sahlemedhin Sertsu, Chairman of the Ad-hoc Committee responsible for organizing the general assembly gave a progress report on the tasks accomplished during the year in order to make the first assembly successful. Dr. Tamirie Hawando, formerly Vice-President for Research and Extension at Alemaya University of Agriculture, made an opening speech in which he strongly urged the need of having a soil science society that would help tackle the country's soils problems in a co-ordinated approach.

Following the discussion and adoption of the constitution the following scientists were elected to be executive committee members for 1990/91:

President	Dr. Sahlemedhin Sertsu
Vice President	Dr. Asnakew Wolde Ab
General Secretary	Dr. Tekalign Mamo
Treasurer	Mr. Fikru Abebe
Auditor	Dr. Asfaw H/Mariam
Editor	Mr. Kefeni Kejela
Associate editor	Mr. Messele Fisseha
Public Relations Officer ..	Mr. Getachew Alemu

The next meeting of the society will be held in 1991.

Address of the President: National Soil Laboratory, P.O. Box 5536, Addis Ababa, Ethiopia.

Address of the Secretary: Agricultural Research Center, P.O. Box 32, Debre Zeit, Ethiopia.

Indian Society of Soil Science

The 55th Annual Convention of the Indian Society of Soil Science was held at the Rajasthan College of Agriculture, Udaipur during December 22-25. About 200 delegates attended the Convention. Two special lectures were delivered by Dr. I.P. Albrol, DDG (Soils) IGAR, New Delhi and Dr. L.D. Swindale, Director General, ICRISAT, Hyderabad.

The following persons were elected in the Council for a period of two years (1991-92):

President:	Dr. I.P. Abrol
Vice Presidents:	Dr. S.S. Khanna, Dr. O.P. Meelu and Dr. R.P. Agrawal
Secretary:	Dr. N.N. Goswami
Joint Secretary:	Dr. T.G. Sastry
Treasurer:	Dr. G. Narayanasamy
Councillors:	Dr. M.S. Brar,
	Dr. Jagan Nath,
	Dr. P. Muthuswamy,
	Dr. K.N. Sharma,
	Dr. O.P. Sharma,
	Dr. A. Subba Rao,
	Dr. (Mrs.) L. Suseela Devi,
	Dr. M. Velayutham.

Address: Indian Society of Soil Science, Division of Soil Science and Agricultural Chemistry, Indian Agricultural Research Institute, New Delhi - 110 012, India.

Soil Science Society of Pakistan

The Soil Science Society of Pakistan with more than 500 members has a new Executive Council which will act until December 1992. The executive officers are:

President:	Mr. M. Tahir Saleem
Vice Presidents:	Dr. M. Iqbal Bajwa and
	Dr. Shamsuddin Tagar
Secretary:	Dr. Nisar Ahmad
Joint Secretary:	Mr. Jamat Ali Shah
Treasurer:	Dr. Mohammad Rashid

Since reactivation of the society in 1981, three national congresses were successfully held with a wide participation of national and international scientists. The proceedings of the congresses were published. Moreover, the Society publishes the quarterly Journal "Pakistan Journal of Soil Science" regularly.

Address: Soil Science Society of Pakistan, National Fertilizer Development Centre, 37, Street 11, F-6/3, Islamabad, Pakistan.

10th Annual General Meeting (AGM) of the Soil Science Society of East Africa, 3-7 December 1991, Arusha, Tanzania

The Soil Science Society of East Africa held its 10th AGM at Arusha, Tanzania from 3rd to 7th December, 1990.

The theme of the meeting was "THE ROLE OF SOIL RESEARCH ON LAND AND WATER MANAGEMENT". About 27 technical papers were presented covering aspects of soil fertility and plant nutrition, fertilizer use, soil chemistry, soil survey and land evaluation, soil structure, irrigation and soil waters, soil ersoion and conservation, nitrogen fixation and methodology development.

A full day excursion was organized for the participants to the northern part of Mbulu District, Arusha Region where most villages have had serious soil erosion and land degredation problems. The villages are currently considered to be priority areas for soil conservation and land use planning programmes aimed at sustainable agriculture. The soil characteristics at some of the visited sites were described in detail.

At the end of the workshop, the following recommendations were made:

i) In view of the extent of soil degradation observed during the excursion, concerted efforts should be made to urge responsible authorities (Government departments etc) to give more support to soil management research and priorities be given to protection of areas with degradable soils. If possible, the rehabilitation of the degradated areas be done taking into account the socio-economic structures of the communities in such areas.

ii) Need to give precise characterization of site soils, rainfall, temperature in research undertakings and to avoid generalization of such parameters of covered sites.

iii) Need to identify available local materials useful for soil amendment purposes to replace the unavailable and expensive inorganic fertilizers.

iv) Need to identify popular laboratory analytical methods in member countries and institute soil and plant analysis exchange programme based on the identified methods. A committee comprising of soil and plant analyses coordinators in member countries was appointed to deliberate on the issue.

v) Quality of papers and presenting skills be maintained at high standards to make the proceedings of the Annual General Meetings reputable.

vi) An acceptable format of presented papers be adhered to in future meetings. A committee was appointed to formulate such a format.

vii) Potential donor agencies be approached for sponsorship of future meetings and to relieve the Society of the financial constraints that have hampered its effective operations.

The following office bearers were elected for the year 1990-1991:

Chairman Dr.F.N.Muchena
P.O.Box 14733,
Nairobi, Kenya.

Vice-Chairman Mr. J.P.Magoggo,
P.O.Box 5088,
Tanga, Tanzania

Vice-Chairman Prof.J.Y.K.Zake,
P.O.Box 7062,
Kampala, Uganda

Secretary-General Mr.G.O. Ayaga
P.O. Box 14733
Nairobi, Kenya

Treasurer-General Ms S.T. Ikerra,
P.O.Box 5088,
Tanga, Tanzania.

Treasurer-Uganda Ms J.K. Tumuhairwe,
P.O.Box 7062,
Kampala, Uganda

Committee Members Kenya - Mr. J.N. Qureshi, Dr. B.O. Mochoge
Uganda - J.B.K. Kavuma, E.V. Ssendiwanyo
Tanzania - J.G. Mowo, Dr. P.N.S. Mukeni.

The next meeting is scheduled for the first week of December 1991 in Kampala, Uganda. - Current membership stands at about 200.

Address: Soil Science Society of East Africa, P.O. Box 14733, Nairobi, Kenya.

East and South-East Asia Federation of Soil Science Society (ESAFS)

On the occasion of the 14th International Congress of Soil Science in Kyoto/Japan the "East and South-East Asia Federation of Soil Science Society" was established, under the unanimous agreement of the delegates of 9 national Soil Science Societies.

The members of the societies are:
*Bangladesh, China-Mainland, China-Taiwan, India, Japan, Korea (-South), Malaysia, Sri Lanka, The Philip*pines and Thailand, thus covering a large area of Asia with rice farming as the main component of agricultural production. It is expected, that more national societies will join the Federation in the near future.

At the first meeting of the Federation at Kyoto, the Japanese Society of Soil Science and Plant Nutrition (JSSSPN) was chosen as the first office holder and, according to the general rules, the president of the Japanese Society was designated as the president of the Federation.

The Executive Office of the ESAFS is:

President:	Prof. Kazutake Kyuma, President of the Japanese Society of Soil Science and Plant Nutrition
Vice-President:	Dr. Zhao Qiguo, President of the Soil Science Society of China (next office holder)
Secretary-General:	Dr. Naoko Nishizawa, Member of the Board of Directors of JSSSPN.

The general rules for the East and Southeast Asia Federation of Soil Science Societies are:

1. Name
The name of the federation shall be the East and Southeast Asia Federation of Soil Science Societies, herein referred to as "The Federation".

2. Objectives
The Federation shall aim at promoting researches in soil and related sciences and disseminating the acquired knowledge and technology for the benefit of the member societies in the region of east and southeast asia. By so doing the Federation shall contribute to the sustainable development of the region through harmonization of

agricultural production and environmental protection.

The Federation shall also aim at promoting the effective participation of member societies and of individual soil scientists of the region in the work of the International Society of Soil Science.

3. Membership
Regular members shall consist of any scientific societies concerned with soil science, plant nutrition and fertilizer management and technology in any countries in east and southeast Asia where rice-based cropping system is an important component of agricultural production system.

4. Officers
The Officers of the Federation shall be:
(1) President
(2) Vice-President
(3) Secretary-General
(4) Society Representative
The Office of the Federation shall be moved from one member society to another every two years and the President of the society which holds the Office shall be automatically appointed as the President of the Federation. The President of the society which will hold the Office for the next term shall be appointed as the Vice-President of the Federation. Each of the member to attend the official meeting of the Federation (cf.6).

5. Activities
A newsletter shall be published and distributed biannually by the Office of the Federation as a medium to exchange information on research news and activities among the member societies.
Symposia and workshops shall be sponsored or co-sponsored by the Federation as frequently as possible.
Member societies shall be encouraged to organize activities under the umbrella of the Federation.

6. Official Meeting
The Society Representatives of the member national societies shall meet at the time of symposia or workshops, which shall be held occasionally, to discuss the matters related to the structure, finance and activities of the Federation.

7. Finance
The national society which holds the Office of the Federation shall finance the publication and distribution of the newsletters. The Officers shall make their best effort to raise funds for such activities as symposia and workshops.

The Federation is editing a newsletter. The first edition was published in January 1991.

Address: ESAFS-Office (1991-1992), c/o Japanese Society of Soil Science and Plant Nutrition, 202, 26-10, Hongo 6-chome, Bunkyo-ku, Tokyo 113, Japan.

Soil Scientists solicit potential Glossary Terms

The Soil Science Society of America, S877 Committee (Soil Testing and Plant Analysis) is collecting a list of soil testing terms for possible inclusion in a revision of the SSSA Glossary of Soil Science Terms. Send terms and definitions to:

Dr. William C. Dahnke
P.O. Box 5575,
North Dakota State University
Fargo ND 58105

The suggested terms will be discussed at the annual meeting of SSSA in Denver, Colorado, October/November 1991.

New Research Centres in Agriculture

The Consultative Group for International Agricultural Research (CGIAR) announced that it will pledge $ 10 million more than last year and will encourage greater emphasis on natural-resource management. Four new research institutions joined the network; the Kenya-based International Council for Research in Agroforestry (ICRAF), the International Network for the Improvement of Banana and Plantain (INIBAP), the International Centre for Living Aquatic Resources Management in the Philippines and the International Irrigation Management Institute in Sri Lanka. CGIAR is an informal association of governments, international organizations, and private foundations designed to boost the production of crops and livestock in developing countriesthrough research.

IMI Enters CGIAR Network

The International Irrigation Management Institute (IIMI) has been admitted to the Consultative Group of *International Agricultural Research (CGIAR). It is the only international organisation headquartered in Co*lombo, Sri Lanka.

IIMI was founded in 1984 and has been based in Sri Lanka since its beginning. IIMI's mission is to strengthen national efforts in developing countries to improve and sustain the performance of irrigation systems through the development and dissemination of management innovations. In addition to its headquarters in Sri Lanka, the Institute has eight country operations in Asia and Africa.

The decision to admit IIMI to the Washington based CGIAR network was made after rigorous scrutiny of the Institute's achievements since 1984 by an external review panel. The panel found IIMI's work had contributed greatly towards improving food sufficiency throughout the developing world.

For more information, please contact:
Information Office, IIMI HQ, P.O. Box 2075, Colombo, Sri Lanka(Tel.: 94-1-565601; Telex: 22318 and 22907 iimihq ce; Telefax: 94-1-562919)

IIASA Research Programme

The International Institute for Applied Systems Analysis (IIASA) has developed an international environment programme to investigate the interaction of human development activities and the environment. For further information please write to:

Prof. Bo R. DÖÖS,
Deputy Director and Leader, Environmental Programme,
International Institute for Applied Systems Analysis,
A-2361 Laxenburg, Austria
Fax: (022 36) 71313

New International Institute for Sustainable Development founded in Winnipeg, Canada

Creation of the new International Institute for Sustainable Development, a Winnipeg based non-profit organization dedicated to promoting sustainable development nationally and internationally, was announced in March by the federal Environment Minister Lucien Bouchard and Manitoba Premier Gary Filmon.

Lloyd McGinnis, well known in the environmental community as a member of the National Task Force on the Environment and the Economy, will chair the Institute's Board of Directors. Peter M. Kilburn, who has been named President and CEO, has had long experience in international development assistance as well as in the private sector.

The Board of Director shall be international in composition; it may reach 25 members, in which case 13 would be Canadian and 12 from other countries. The first meeting of the international board will be held in the fall.

"The institute is dedicated to making the vision of Dr. Brundtland and her fellow commissioners a reality" said Manitoba Premier Filmon. "This institution will help substantially to integrate these ideas into the decision-making process".

Policy analysis, education, research, scientific knowledge, local assessments and international exchanges are all within the scope of the new institute. The core operating budget is CAN $25 million over five years with 75 % from the federal government and 25 % from Manitoba. The annual federal contribution is $ 2,75 million from Environment Canada and $ 1 million from CIDA.

For more information, contact:
Peter M. Kilburn, Institute for Sustainable Development, P.O. Box 22027, Broadway Outlet, Winnipeg, Canada, MN R3C 4K6. Tel: (204) 945-0985.

International Fertilizer Development Center

The International Fertilizer Development Center (IFDC) has developed a fertilizer information database that will serve as a valuable decision-making tool for African policymakers, fertilizer marketing specialists, and researchers.

The system, which is presently in operation in Lomé, Togo, is an outgrowth of the IFDC Africa network, African Fertilizer Trade and Marketing Information Network (AFTMIN). It has been structured to maintain, update, and retrieve fertilizer data at the regional, subregional, country, and province level. The user can choose from menus that provide statistics on fertilizer supply, consumption, production, costs, and prices. Policymakers, scientists, and others can use this system in making decisions concerning crop production and fertilizer use, efficienca, and demand/supply.

At present the system contains information on 49 African countries pertaining to fertilizer production, export, import, and consumption. Information on fertilizer products include data on farm prices, marketing costs, storage, bagging, margins, and subsidy.

The aim of the data management system, which is being funded by the Directorate General for International Cooperation (DGIS) of the Netherlands, is to promote the use of reliable fertilizer data for detailed country and regional studies and to encourage African national institutions in the use of simple techniques to collect, store, update, maintain, exchange, and disseminate agricultural information.

In the future the data management system will become even more useful. The next step will be to expand the system to include information pertaining to fertilizer policy studies. This information will consist basically of indicators on the efficiency of fertilizer crop response, land use, agricultural development, and demographic and food nutrition factors.

For further information, please contact:
IFDC, P.O. Box 2040, Muscle Shoals, Alabama 35662, USA
Tel.: 205-381-6600; Telefax: 205-381-7408; Telex:
twx-810-731-3970 ifdec mchl

(from: IFDC Report, September 1990)

VANCOUVER COMMUNIQUE

* On the occasion of the 58th Annual meeting of the International Fertilizer Industry Association held in Vancouver, in May 1990, leaders of the industry discussed the future need for mineral fertilizers and the programmes required to ensure sustainable agriculture without environmental detriment, in view of current world population projections.

* Recognizing the different circumstances in:

- the developed world, where the availability of agricultural products is clearly adequate,

- the many developing regions, where increased agricultural output is required to meet the needs of growing populations.

- it was agreed that all mineral fertilizer activities, from production through distribution to use, must pass the Generation Test. This test requires that the needs of current populations must be met without any reduction in the ability to meet the growing needs of future generations.

* The industry's excellent record for technical innovation, in both production processes and agronomic systems, provides a strong base for the further development of the needed programmes, which are designed to:

- produce the required plant nutrients in an environmentally responsible way, including production site safeguards;

- ensure the safe storage and distribution of products;

- train all involved, from dealers to farmers, to assess the nutrient requirements of crops accurately, taking full account of soil nutrient contributions. It also requires the use of appropriate application techniques and the maintenance and enhancement of soil fertility status;

- establish international codes of Best Management Practices, both for production processes and fertilizer use, adapted to meet differing regional circumstances.

* To progress toward these objectives, the industry will enhance existing exchanges of information and ongoing technical programmes involving the USA, Canada, Western Europe and other regions.

Priority activities include:

- the further development of sustainable agricultural systems,

- the protection of water quality,

- the minimization of gaseous emissions to the atmosphere.

* The development of codes of Best Management Practices was discussed, the objective being to establish underlying principles which can be developed to meet site specific needs. Cooperation in the setting of research objectives and the implementation of specific programmes is included.

APPOINTMENTS, HONOURS
NOMINATIONS, DISTINCTIONS
ERNENNUNGEN, AUSZEICHNUNGEN

Dr. **Wim G. Sombroek**, Director of the International Soil Reference and Information Center (ISRIC) in Wageningen/The Netherlands and former Secretary-General of the International Society of Soil Science was appointed as Director of the "Land and Water Development Division" of the Food and Agriculture Organization (FAO) in Rome. - Dr. Sombroek will assume his post at the 15th of September 1991 replacing Dr. R. Brinkmann, Officer-in-Charge for the former Director Mr. G.M. Higgins, who retired with 31st of December 1990.

Prof.Dr. **M. Penkov**, Professor at the University "Kliment Ohridski" in Sofia/Bulgaria and active member of ISSS was appointed as Minister of Land Resources in his country in June 1990. - Amongst other duties he will be responsible for the privatisation of land in Bulgaria.

Dr. **Lukas Brader**, former director of FAO's Plant Production and Protection Division was appointed as Director General of the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria in December 1990. - He succeeded Dr. Laurence Stifel. Dr. Brader, citizen of the Netherlands, has extensive experience in agricultural research both in the tropics and in Europe.

Dr. **James G. Ryan**, former Deputy Director of the Australian Centre for International Agricultural Research (ACIAR), was appointed as new Director General of the International Crops Research Institute for the Semid-Arid Tropics (ICRISAT) in Hyderabad, India. He lead ICRISAT's economic programme from 1974 to 1982 and managed research activities in Africa and Asia. He joines also the technical advisory committee (TAC) of the CGIAR in 1989 and has served as a trustee of CIMMYT and AVRDC. Dr. Ryan will assume the new post in September 1991, replacing Dr. Leslie D. Swindale.

Dr. **Geoffrey Hawtin** was appointed as new Director of the International Board for Plant Genetic Resources (IBPGR) in Rome, Italy. Dr. Hawtin has a broad experience in plant genetic resources as well as in international development and in administration. He will assume his post in August 1991, as successor of Dr. Trevor Williams.

Prof.Dr. **Pedro A. Sanchez**, U.S. citizen, born in Cuba, was appointed as Director-General of the International Council for Research in Agroforestry (ICRAF) in Nairobi, Kenya. He will take up his duties on 1 October 1991, replacing Dr. Bjom Lundgren. Prof.Dr. Pedro A. Sanchez is an internationally known scientist with broad experience in agricultural and forestry research in tropical, subtropical and other ecologic regions of the world. He is also Board Chairman of the UNESCO/INBS programme on Tropical Soil Biology and Fertility (TSBF) and represents ISSS in the International Biosciences Networks (ICSU-IBN).

Dr. **Hubert G. Zandstra**, was appointed Deputy Director-General of the International Potato Center (CIP) in Lima, Peru. Dr. Zandstra worked for a long time in the International Rice Research Institute (IRRI) in Los Bañjos, Philippines. He succeeds Richard L. Sawyer, the center's first director and founder, who is retiring after more than 20 years. Dr. Zandstra is a specialist in the area of tropical farming systems.

Dr. **Kenneth S. Fischer** was appointed as new Deputy Director-General for Research at the International Rice Research Institute (IRRI) in Los Bañjos, Philippines. Dr. Fischer was former Deputy Director-General for research at the International Institute of Tropical Agriculture in Ibadan, Nigeria, since 1987. - He succeeds Dr. Hubert Zandstra, who was appointed new Director-General of the CIP in Lima, Peru.

Dr. **Samuel C. Muchena** was appointed as Managing Director of the African Centre for Fertilizer Development (ACFD) in Harare, Zimbabwe, which is a part of the International Fertilizer Development Center (IFDC). Dr. Muchena was former Deputy-Secretary, at the Ministry of Lands, Agriculture and Rural Resettlement in Zimbabwe.

Dr. **Howard E. Daugherty** has been appointed as Coordinator of the Natural-Resources Program at the Asian Institute of Technology (AIT) with January 1, 1991. Dr. Daugherty joined NRP in May 1990 on a long-term secondment to AIT through the Canadian Universities Consortium/AIT Partnership Program.

Dr. **Paul J. Stangel** has been appointed as president and Chief Executive Officer of the International Fertilizer Development Center (IFDC) in Alabama, USA. Dr. Stangel, a soil scientist and plant physiologist was formerly deputy managing director and has served with IFDC since 1975. He replaces Dr. David B. Parbery.

Dr. **A. Uzo Mokwunye** was appointed as director of the regional centre of the International Fertilizer Development Center (IFDC) in Lomé, Togo. Dr. Mokwunye, soil scientist and native of Nigeria, has been acting director since June. He succeeds Dr. Paul L.G. Vlek.

Dr. **Just Faaland** (Norway) has been appointed as Director General of the International Food Policy Research Institute (IFPRI), succeeding Dr. J. Keller.

Dr. **Roger G. Hanson** has been appointed as Director, Management Entity of the Soil Management Collaborative Research Support Program (TropSoils) headquartered at North Carolina State University, Raleigh, North Carolina, USA.

Dr. **Leslie D. Swindale**, Director General of the International Crops Research Institute for the semi-arid tropics (ICRISAT), Hyderabad, India was given India's third highest civilian award, the Padma Bhusan, during 1991 Republic Day ceremonies in India. Dr. Swindale, a soil scientist has been ICRISAT's Director General for 14 years. The award is presented to eminent public figures who have contributed significantly to the lives of the Indian people. Dr. Swindale was the only non-Indian to get the Padma Bhusan for 1991.

IN MEMORIAM

Prof. J. Baeyens (1895-1990)

Prof. J. Baeyens passed away on 11 April 1990. He was Emeritus Professor of Soil Science of the Katholieke Universiteit Leuven (Belgium) and Honorary President of the Belgian Society of Soil Science. Prof. Baeyens started his academic career in 1932 when he was appointed as Associate Professor at the Faculty of Agricultural Sciences of the University of Leuven. He became a fully fledged Professor in 1935 charged with the establishment of the new chair of soil science. At an early stage of his tenure he was entrusted with an 18 months mission in Central Africa where he acquired considerable experience with the characterization and management of soils of the tropics. He recorded his findings in a book: "Les Sols de l'Afrique Centrale" (1938) which was pioneering a new domain in soil science. The book was prefaced by two leading scientists of that time Sir John Russell and Prof. A. Demolon. This work was recognized with the gold medal of the "Académie d'Agriculture de France". Another major contribution of Prof. Baeyens was the creation, at Leuven, of the Soils Service of Belgium which carried out fundamental research in the field of soil fertility and provided advice to farmers for the efficient use of fertilizers. The results of this research were published by Prof. Baeyens in his bokk entitled: "Nutrition des Plantes de Culture" (1967), a scientific basis for plant nutrition.

Great tribute is due to Prof. Baeyens for his major contribution to soil science and agricultural research and for the institutional support which he created for the improved use of fertilizers.

Prof. Baeyens has inspired and encouraged many of his students and colleagues who witness for the work which he undertook.

R. Dudal, Leuven, Belgium

Eshel Bresler (1930-1991)

Eshel Bresler, 61, director of the Soils and Water Institute of the Agricultural Research Organization at Bet Dagan, Israel, died on 29 April 1991 while on a visit to the Chinese Academy of Sciences in Beijing.Dr. Bresler was born on 9 May 1930. He earned his M.S. in soil science and field crops at the Hebrew University of Jerusalem and his Ph.D. in soil physics from Colorado State University in 1968.
Dr. Bresler's work is characterized by his direct approach to problems, interconnecting disciplines and areas. His scientific efforts took many directions, but his penetrating vision, vast agronomic knowledge, and analytical-theoretical apporach, coupled with field expertise acquired during his work as an extension expert, underline his great achievements.During his 32 years as an active soil scientist, Dr. Bresler taugth basic and advanced courses on soil, water and plant relationships, soil salinity, and soil physics, at the Hebrew University and Tel Aviv University. He held the position of visiting professor at Comell University, the University of Hawaii, and Utah State University. Dr. Bresler was fequently invited to participate in conferences and workshops all over the world. He received the Joffe Award (1980) from the Israel Society of Soil Science, the Landau Award for distinguished research in Israel, and was a Fellow of SSSA. He advised and coached nine M.S. students and four Ph.D. students.
Dr. Bresler is survived by his wife Ruth, daughters Galit, Michal, and Yael, and two grandchildren.

(from: Agronomy News, July 1991)

Helmut Kohnke (1901-1991)

Helmut Kohnke, 89, Professor Emeritus of Agronomy at Purdue University, died 19 Feb. 1991 after a brief illness. Dr. Kohnke was born on 6 Aug. 1901 in Rostov, Russia. His German parents returned to Berlin with him when he was 2 years old. He received his education in Germany, culminating with bachelor of science and doctor of agriculture degrees from the University of Berlin in 1925 and 1926, respectively.

Dr. Kohnke immigrated to Canada where he received an M.S. in soils at the University of Alberta in 1932, and then came to the U.S. where he earned his Ph.D. in soils at Ohio State University in 1934. Upon graduation he worked from 1934 until 1943 for the U.S. Soil Conservation Service Hydrology Research Station located near Coshocton, OH, where he assisted in designing and installing "weighing" lysimeters to measure runoff and erosion; installations that remain in use today. He returned there to be honored for his research in 1987.

In 1943, Dr. Kohnke joined the Agronomy Department staff, where he worked until his retirement in 1970. During this period he taught and did research in soil and water conservation. He was author of three textbooks on soil conservation, soil physics, and soil science simplified (three editions), which were used around the world.

Dr. Kohnke had strong international interests and was highly respected by his international peers. He was a member of the Purdue team at the Universidade Rural do Estado de Minas Gerais, Brazil, for two years (1959-1961). He was guest professor at the Justus Liebig University, Giessen, Germany, in 1952; the Universidad Nacional de Tucuman, Argentina, in 1960; Universidad de Caldas, Colombia, in 1963; and the Universities of

Bonn and Göttingen, Germany, in 1967. He also assisted the Soil Conservation Department at the Pouskkarov Institute, Sofia, Bulgaria, for six months in 1972. He traveled in the Soviet Union on two occasions in recent years and was planning another trip for 1991.

Dr. Kohnke was a Fellow of ASA, SSSA, and AAAS. He also was active in the International Soil Science Society.

Dr. Kohnke was an arden conservationist. He served as president and held other offices in the Hoosier Chapter, Soil and Water Conservation Society. He was a founder of the Wildcat Park Foundation. He received an Oak Leaf, the highest award of the National Nature Conservancy.

Dr. Kohnke was a committed family man. He was married to Gerda Hagen, who survives. Also surviving are a son, Peter Kohnke of Bethel Park, PA; a daughter, Mrs. Ronald W. (Liesel) Witzel of Springfield, VA; and four grandchildren.

(from Agronomy News, June 1991)

Nelson Nyambia Nyandat (1937-1990)

Dr. Nelson Nyandat was born on 26th June 1937 in Sakwa location, Western Kenya. In 1964 he graduated at Makerere University College in Uganda. He obtained his Masters of Science degree in Agriculture in 1967 from the University of Reading (England) in Soil Science and his Doctor of Science degree from the Agricultural University Wageningen (The Netherlands) in 1984 with the thesis: "Climate and Soils of the South Kinangop Plateau of Kenya - their limitations on land use".

Since 1964 Dr. Nelson worked with the Ministry of Agriculture in Kenya and in 1972 he became Head of the Kenya Soil Survey. As such he was in the forefront in the establishment and development for Kenya's organization for soil survey and land evaluation services and worked closely with a number of Dutch tropical soil scientists, among them Dr. W.G. Sombroek, former Secretary-General of ISSS. From '78 onwards, he was appointed respectively assistant director of research (MoA), director of National Agricultural Laboratories, deputy director of Environment, and senior lecturer at Egerton University. In 1985 he was appointed Chief Scientific Secretary at the National Council for Science and Technology in charge of all research management in Kenya, a position which he held up to the time of his death.

Nelson Nyandat will be greatly missed by his former colleagues and their sympathy and condolences are extended to his family. His untimely death is a loss not only for the science community in Kenya but also for all soil science colleagues and friends in other parts of the world.

R.F. van de Weg, Wageningen, The Netherlands

Prof.Dr. I.G. Scheys (1919-1990)

Prof. I.G. Scheys passed away on 18 August 1990, victim of a tragic car accident. He was Professor Emeritus of Soil Science of the Katholieke Universiteit Leuven (Belgium) and past president of the Belgian Society of Soil Science. Prof. Scheys started his career in 1943 with the Laboratory of Soil Science at the Faculty of Agricultural Sciences of the University of Leuven. When the systematic soil survey of Belgium started in 1948, Prof. Scheys became the Group leader of the surveys conducted in the Central and Eastern regions of the Country. At an early stage he devoted much of his work to soil survey interpretation and laid the basis for land evaluation. In 1957 Prof. Scheys was appointed as Associate Professor of Soil Science. He became a fully fledged Professor in 1967 entrusted with teaching and research in Soil Science and Plant Production.

Prof. Scheys trained and guided a large team of researchers with whom he build up two important study centers, one dealing with land evaluation for horticulture and one for hydroponic crop production. Prof. Scheys' wide experience of both soils and agriclutre found numerous applications in landuse planning and improved land management. He was a faithfull colleague, a fine teacher and a true custodian of the land. A great tribute is due to him for his warm collegiality and for the many contributions which he made to establishing a close link between soil science and practical agriculture.

R. Dudal, Leuven, Belgium

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

Meetings etc. marked with (*), are organized or approved by ISSS.

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Important Notice

ISSS, as an associate member of the International Council of Scientific Unions, subscribes to the principle of free movement of bona fide scientists; patronage or sponsoring will therefore automatically be withdrawn if the country of venue denies or purposely delays visa awarding to any ISSS member who wishes to participate in the meeting concerned.

1991

14th International Conference on Plant Growth Substances,
Beijing, China, September 1991.
Information: Dr. J.H. Hulse, CASAFA, 1628 Featherston Drive, Ottawa, Ontario, Canada K1H 6P2.

24th General Assembly of the International Union of Biological Sciences (IUBS), and International Symposium "Biological Diversity and Global Change", Amsterdam, The Netherlands, 1-6 September, 1991.
Information: Dr. H.M. van Emden, The Organizing Committee, IUBS 24th General Assembly, c/o Biologische Raad KNAW, P.O. Box 19121, 1000 GC Amsterdam, The Netherlands (Tel.: 31-20-222902; Fax: 31-20-204941).

International Symposium on Environmental Control and Resources Development in China's Loess Plateau Region (ISLPR), Beijing-Xi'an, China, September 1-15, 1991.
Information: Gao Liuqing and Zheng Hongying, ISLPR, P.O. Box 767, Beijing 100101, China.

Workshop on Information Management for Natural Resources Development, Enschede, The Netherlands, 2-27 September 1991.
Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands (Tel.: 053-320 330; Fax: 053-304 569; Telex: 44525 itc nl).

ESSC-Conference on Soil Erosion and Degradation as a Consequence of Forest Fires, Barcelona & Valencia, Spain, 3-7 September 1991.
Information: Maria Sala, Department of Physical Geography, University of Barcelona, Ave. de Chile, E-08028 Barcelona, Spain; José L. Rubio, Desertification Research Unit, C.S.I.C., Jaime Roig 11, E-6010 Valencia, Spain.

*** International Symposium on Genesis and Control of Fertility of Salt Affected Soils,** Volgograd, USSR, September 9-15, 1991.
Information: Dr.sc. B.A. Zimovets, Organizing Committee of the Symposium, V.V. Dokuchaev Soil Institute, Pygevsky Per.7., 109017 Moscow, USSR.

International Symposium on Food and Nutrition in the Tropical Forest: Biocultural Interactions and Applications to Development, Paris, France, September 10-13, 1991.
Information: C.M. Hladik, CNRS Laboratoire d'Ecologie Générale, 4 avenue du Petit Château, 91800 Brunoy, France.

Seminar on Coastal Zone Management, Delft, The Netherlands, September 10-October 18, 1991.
Information: International Institute for Hydraulic and Environmental Engineering, P.O. Box 3015, 2601 DA Delft, The Netherlands (Tel.: +31-15-788021/3404; Fax: +31-15-122921; Telex: 38099 ihe nl).

International Workshop on Evaluation for Sustainable Land Management in the Developing World, Chiang Rai, Thailand, 15-21 September 1991.
Information: Dr. Marc Latham, Secretary, International Workshop on Sustainable Land Management, c/o IBSRAM, P.O. Box 9-109, Bangkhen, Bangkok 10900, Thailand (Tel.: (66-2) 579-7590, 579-4012, 579-7753, 561-2958; Fax: 66-2-5611230; Telex: 21505 IBSRAM TH).

2nd International Symposium on Environmental Geochemistry, Uppsala, Sweden, 16-19 September 1991.
Information: Prof.Dr. Mats Olsson, Department of Forest Soils, Swedish University of Agricultural Sciences, Box 7001, S-750 07 Uppsala, Sweden (Tel.: 46 18 672212; Fax: 46 18 300831).

10th World Forestry Congress, Paris, France, 17-26 September 1991.
Information: Centre Technique Forestier Tropical, 45Bis Avenue de la Belle Gabrielle, 94736 Nogent Sur Marne Cedex, France.

GEOTECHNICA International Congress for Geo-Sciences and Technology, Cologne, Germany; September 18-21, 1991.
Information: Alfred Wegener-Stiftung zur Förderung der Geowissenschaften, Wissenschaftszentrum, Ahrstraße 45, Postfach 20 14 48, D-5300 Bonn 2, Germany (Tel.: (0)228/302-260 (261); Fax: (0)228/302-270; Telex: 885 420 wzd).

15th ICA Congress, Bournemouth, U.K., 23 September - 1 October 1991.
Information: Conference Services Ltd, Congress House, 55 New Cavendish Street, London W1 M 7RE, U.K.

International Conference on Degradation and Restoration of Arid Lands, Lubbock, Texas, USA, September 24-25, 1991.
Information: International Center for Arid and Semiarid Land Studies and the College of Agricultural Sciences, Texas Tech University, Lubbock, TX 79409-1036 USA (Tel.: 806/742-2218).

1st European Meeting on Rational Fertilization, Strasbourg, France, September 26-27, 1991.
Information: Secrétarat COMIFER, Station ITCF, 91720 Boigneville, France (Fax: +33 1-64-99-33-30).

Japan-US Symposium on Snow Avalanches, Landslides, Debris Flow Prediction and Control, Tsukuba City, Japan, September 30-October 2, 1991.
Information: Masaki Tominaga, Secretary JUSSLDPC 1991, National Research Institute for Earth Science and Disaster Prevention, Science & Technology Agency, 1 Tennodai-3, Tsukuba, Ibaraki 305, Japan (Fax: +81 298 51-1622).

International Hydrology and Water Resources Symposium 1991, Perth, Australia, October 2-4, 1991.
Information: The Conference Manager, International Hydrology and Water Resources Symposium 1991, The *Institution of Engineers, Australia, 11 National Circuit, Barton ACT 2600, Australia (Fax: +61 6 270-6530).*

International Conference in Honour of Werner Stumm "Interfacial Phenomena in the Environment", Davos, Switzerland, October 6-11, 1991.
Information: Béatrice Schwertfeger, EAWAG, CH-8600 Dübendorf, Switzerland (Tel.: 0041-1-823 50 35; Fax: 0041-1-823 50 28).

1er Simposio Internacional Suelos Volcanicos Endurecidos (Uso y Manejo de Tepetates), II Simposio Nacional, Montecillo, México, 21-26 octubre 1991.
Contactos: Hector M. Arias Rojo, Colegio de Postgraduados, Centro de Edafología, Km 34, Carretera México-Texcoco, 56230 Montecillo, Edo. de México, (Fax: +(595) 45723); Claude Zebrowski, ORSTOM, Calle Homero 1804, Colonia los Morales, 11510 México, D.F. (Fax: +(5) 395-4227).

Annual Meeting of the Soil Science Society of America (together with the American Society of Agronomy and the Crop Science Society of America), Denver, Colorado, 27th of October to 1st of November 1991.

1st International Symposium on Global Warming and Human Health, Khartoum, Sudan, November 1991.
Information: Prof.Dr. Moneim Attia, IHSRC, P.O. Box 2020, Khartoum, Sudan.

International Symposium on Modeling in Agricultural Research in Developing Countries: Systems Approaches for Agricultural Development, Bangkok, Thailand, November 1991.
Information: Dr. F.W.T. Penning de Vries or Dr. P.S. Teng, IRRI, P.O. Box 933, 1099 Manila, Philippines.

International workshop on Dynamics of organic matter in relation to the sustainability of agricultural systems, Leuven, Belgium, November 3-6, 1991.
Information: R. Merckx, laboratory of Soil Fertility and Soil Biology, K.U. Leuven, Kardinaal Mercierlaan 92, B-3001 Heverlee, Belgium (Tel.: ** 32 16 220931 Ext. 1605; Fax: ** 32 16 205032; Telex: 25941 elekul b).

2nd African Soil Science Society Conference "Soil and Water Management for Sustainable Productivity", Cairo, Egypt, 4-10 November 1991.
Information: Prof.Dr. A.M. Elgala, Chairman of the Organizing Committee, Department of Soil Science, Faculty of Agriculture, Ain Shams University, Shobra El-Khaima, Cairo, Egypt (Tel.: 2201296 (261); Fax: (202) 3930595; Telex: 94070 USHMS UN).

***International Conference on Agriculture and the Environment**, Columbus, Ohio, USA, November 10-13,* 1991.
Information: Dr. Clive Edwards, Department of Entomology, The Ohio State University, 1735 Neil Avenue, Columbus, OH 43210, USA.

International Workshop on Correlation of the National Soil Classification Systems for Agro-technology Transfer, Osaka, Japan, November 10-16, 1991.
Information: Dr. Naoko Nishizawa, Secretary General, ESAFS Workshop Organizing Committee, Department of Agricultural Chemistry, The University of Tokyo, Tokyo 113, Japan (Tel.: +81-3-3812-2111 (Ext. 5107); Fax: +81-3-3812-0544).

International Workshop on Performance Measurement in Farmer-Managed Irrigation Systems, Mendoza, Argentina, 12-15 November 1991.
Information: Shaul Manor, IIMI, P.O. Box 2075, Colombo, Sri Lanka (Tel.: 94-1-565601-12; Fax: 94-1-562919; Telex: 22318 & 22907 IIMIHQ CE).

International Symposium on Soil Processes and Greenhouse Gas Emissions, Columbus, Ohio, USA, November 13-15, 1991.
Information: Dr. Rattan Lal, c/o Pat Gardner, Department of Conference and Institutes, Symposium on Soil Processes and Greenhouse Gas Emissions, The Ohio State University, P.O. Box 2701, Columbus, Ohio 43216-2701, U.S.A.

Argentine-Chilean International Congress on Arid Zones "Sustainability of Natural Resources of Arid Zones", San Luis Province, Argentina, 13-16 November 1991.
Information: Señor Presidente Dr. Ing. Oreste Moretto, Congreso Internacional Argentino-Chileno sobre Zonas Aridas 1991, Academia Nacional de Ciencias Exactas, Fisicas y Naturales, Avda. Alvear 1711, 4 piso, (1014) Buenos Aires, Argentina (Fax: (541) 416951); Señor Presidente Dr. Luis Vargas Fernández, Congreso Internacional Argentino-Chileno sobre Zonas Aridas 1991, Academia Chilena de Ciencias del Instituto de Chile, Almirante Montt 453, Santiago, Chile (Fax: (562) 332129).

8th Afro-Asian Regional Conference on Land and Water Management in Afro-Asian Countries, Bangkok, Thailand, 18-23 November 1991.
Information: Secretary General ICID, 48 Nyaya Marg, Chanakyapuri, New Delhi, India.

International Conference on Sustainable Land Mangement, New Zealand Association of Soil And Water Conservation/Ministry for the Environment/Ministry of Agriculture and Fisheries/Department of Conservation/ Department of Scientific and Industrial Research, Napier, New Zealand, 18-23 November 1991.
Information: Secretary, International Conference on Sustainable Land Management, c/o Hawke's Bay Regional Council, Private Bag, Napier, New Zealand (Tel.: (64-06) 835-3164; Fax: 835-3601).

Symposium on Sustainable Development: From concept to action, UNCED/UNDP/UNU/WIDER/Ministry of International Cooperation of the Netherlands, The Hague, The Netherlands, 18-23 November 1991.
Information: UNCED Secretariat, 4 chemin de Conches, P.O. Box 80, 1213 Conches, Switzerland (Tel.: (41-22) 789 16 76; Fax: 789 35 36).

*** International Workshop on Methods of Research on Soil Structure/Soil Biota Interrelationships**, Wageningen, The Netherlands, 25-28 November, 1991.
Information: Prof.Dr. L. Brussaard, Agricultural University, Department of Soil Science and Geology, P.O. Box 37, 6700 AA Wageningen, The Netherlands (Tel.: 31-837084145; Fax: 31-837082419).

International Council of Scientific Unions: ASCEND 21, Conference on the Agenda of Science for Environment and Development into the 21st Century, Vienna, Austria, December 1991.
Information: ICSU, 51 Boulevard de Montmorency, 75016 Paris, France (Tel.: (33-1) 45 25 03 29; Fax: 42 88 94 31).

IGU Seminar on Monitoring Geosystems Perspectives for the 21st Century, Delhi, India, December 6-13, 1991.
Information: Dr. R.B. Singh, Member IGU Commission, Dept. of Geography, University of Delhi, Delhi 110 007, India.

International Symposium on the Importance of Micromorphology in Applied Soil Science (Subcom. B., ISSS), Federal Agricultural Research Centre Braunschweig-Völkenrode (FAL), December 10-11, 1991.
Information: Dr. M. Kücke, Institute of Plant Nutrition and Soil Science, Bundesallee 50, D-3300 Braunschweig, FRG (Fax: +49/5 31/59 63 68).

1992

Congress of the Soil Science Society of South Africa, Elsenburg, South Africa, 28-30 January 1992.
Information: The Secretary, SSSSA Organising Committee, Private Bag, 7607 Elsenburg.

8th International Palynological Congress, Aix-en-Provence, France, early 1992.
Information: Prof. G. Nicolis, Secretary IUBS, Faculté des Sciences, Université Libre de Bruxelles, Campus Plaine, C.P. 226, 1050 Bruselles, Belgium.

International Conference on the Protection and Development of the River Nile and other major Rivers, Cairo, Egypt, February 3-5, 1992.
Information: Dr. Mohamed El Moattassem, Director High Aswan Dam Side, Effects Research Institute Water Research Center Building, Qanater, Egypt (Tel.: (202) 954163; Fax: (202) 778298).

5th International Drainage Workshop, Lahore, Pakistan, February 8-15, 1992.
Information: General Manager (Planning) WAPDA, Drainage Workshop Secretariat, Planning Division (Water), WAPDA, 228-WAPDA House, Lahore, Pakistan (Tel.: 92-42-213775; Fax: 92-42-869349; Telex: 44869 WAPDA PK).

International Symposium on Nutrient Management for Sustained Productivity, Ludhiana, India, February 10-12, 1992.
Information: Dr. N.S. Pasricha, Symposium Organising Secretary, Department of Soils Punjab Agricultural University, Ludhiana 141 004 (Tel.: (0161) 51960 Ext. 317; Telex: 386-473 COAE IN).

*** International Symposium on Strategies for Utilizing Salt Affected Lands**, Bangkok, Thailand, 17-25 February 1992.
Information: Dr. Somsri Arunin, Soil Salinity Research Section, Department of Land Development, Pahon Yotin Road, Chatuchak, Bangkok 10900, Thailand (Tel.: 579-5546; Fax: 66-2-5611230; Telex: 21505 IBSRAM TH).

1st International Congress on Current Facets in Crops Research, Hisar, India, February 26-18, 1992.
Information: Dr. Ved Pal Singh, Organizing Secretary, CFCR, c/o ARIC, 49, Priti Nagar, Hisar-125001, India.

International Symposium to highlight Future of Sulphur Markets, Washington, D.C., USA, April 1-3, 1992.
Information: The Sulphur Institute, 1140 Connecticut Avenue NW, Suite 612, Washington, D.C. 20036, USA (Tel.: 202-331-9660; Fax: 202-293-2940).

ESSC First International Congress, Conserving our Soil Resource, Bedford, U.K., April 6th-10th, 1992.
Information: Miss R.J. Rickson, Secretary, ESSC Congress, Silsoe College, Silsoe, Bedford MK45 4DT, U.K.

4th National Soils Conference of the Australian Society of Soil Science on "Soil Protection and Productivity", Adelaide, South Australia, April 19-23, 1992.
Information: Mr. Richard Merry, ASSSI Conference Committee, CSIRO, Div. of Soils, PMB 2, P.O. Glen Osmond, South Australia 5064 (Tel.: (08) 274 9224).

XII International Congress on Plastics in Agriculture, Granada, Spain, May, 3-8, 1992.
Information: Congresos Gestac, Gran Capitán, 12, 18002 Granada, Spain (Tel.: 58-28 71 51; Fax: 58-29 51 08).

International Symposium "Farm Lands Erosion in Temperate Plains Environments and Hills", Saint-Cloud, Paris, France, 25-29 May 1992.
Information: Centre de Biogéographie - Ecologie, M.S. Wicherek/Mme M.O. Boissier, Ecole Normale Supérieure de Fontenay - Saint-Cloud, Avenue de la Grille d'Honneur - Le Parc, 92211 Saint-Cloud, France (Tel.: (1) 47 71 91 11; Fax: (1) 46 02 39 11).

International Conference on Climate Impacts and Sustainable Development, Government of the Northeastern Ceara State/State Federation of Industries/Federal University of Ceara/Esquel Brazil Foundation, Fortaleza, Brazil, late May 1992.
Information: General Coordinator, Conference on Climate Impacts and Sustainable Development, SQS 315-BI A, Ap 104, 70384 Brasilia DF, Brazil (Tel.: (5561) 245-1081; Fax: 223-2902).

International Conference on Agricultural Engineering, Uppsala, Sweden, 1-4 June, 1992.
Information: Mr. Olle Norén, Swedish Institute of Agricultural Engineering, P.O. Box 7033, S-75007 Uppsala, Sweden (Tel.: +46 18 30 33 00; Fax: +46 18 30 09 56).

UN Conference on Environment and Development, Rio de Janeiro, Brazil, 1-12 June 1992.
Information: UNCED Secretariat, 4 chemin de Conches, P.O. Box 80, 1213 Conches, Switzerland (Tel.: (41-22) 789 16 76; Fax: 789 35 36).

WORLDLINK Foundation: Global Youth Summit (GYS), Rio de Janeiro, Brazil, 2-8 June 1992.
Information: WORLDLINK Foundation, 8755 W. Colgate Ave., Los Angeles, CA 90048, USA (Tel.: (213) 273-2636; Fax: 273-7408).

International Conference on Soil Compaction and Soil Management, *Tallinn, Estonia, , June 8-12, 1992.*
Information: Dr. Tech.Sci. E.J. Nugis, Conference Chairman, Nature Conservation Engineering Centre, Laari 5, 200031 Tallinn, Estonia.

IPC 9th International Peat Congress, Uppsala, Sweden, 22-27 June 1992.
Information: Mr. Reidar Pettersson, Uppsala Tourist & Congress, Box 216, S-75104 Uppsala, Sweden (Tel.: (+46) 18 27 48 07; Fax: (+46) 18 69 24 77).

International Symposium on Erosion, Debris Flows and Environment in Mountain Regions, Chengdu, China, July 5-9, 1992.
Information: Dr. Shang Xiangchao, Institute of Mountain Disasters & Envrionment, Chinese Academy of Sciences, Chengdu P.O. Box 417, Sichuan 610015, PR of China (Fax: +86 28-582846; Telex: 600321 sicd cn).

*** International Working Meeting on Soil Micromorphology**, Townsville, Queensland, Australia, July 12-18, 1992.
Information: Dr. Colin Chartres (IWMSM), CSIRO Division of Soils, GPO Box 639, Canberra, ACT 2601, Australia (Tel.: +61 6 246 5953; Fax: +61 6 246 5965).

ICSC International Crop Science Congress, Ames, Iowa, USA, July 14-22, 1992.
Information: Dr. Kenneth J. Frey, Chair Organizing Committee International Crop Science Congress, Department of Agronomy, Iowa State University, Ames, IA 50011-1010 U.S.A. (Tel.: (515)-294-7607; Fax: (515)-294-3163; Telex: 283359 IASU UR).

1992 Conference of Working Group MV of the International Society of Soil Science, Operational Methods to characterize Soil Behavior in Space and Time, Ithaca, New York, USA, July 26-29, 1992.
Information: Dr. R.J. Wagenet, Dept. of Soil, Crop and Atmospheric Sciences, 235 Emerson Hall, Cornell University, Ithaca, NY 14853, USA (Fax: USA 607-255-2106); Dr. J. Bouma, Dept. of Soil Science and Geology, Agricultural University, P.O. Box 37, 6700 AA Wageningen, The Netherlands (Fax: 31-837082419).

*** 2nd International Symposium on Forest Soils**, (hosted by CVG-EDELLCA), Guri-Ciudad Guayana, Venezuela, July 29-August 3, 1992.
Information: 2nd ISFS, Comite Organizador, Instituto de Silvicultura, Fac. Ciencias Forestales, Universidad de los Andes, Mérida 5101-Venezuela.

ISPRS Congress, Washington, DC, USA, 2-14 August 1992.
Information: 17th ISPRS Congress Secretariat, PO Box 7147, Reston, Virginia 22091-7147, U.S.A. (Tel.: (1703) 648 5110; Fax: (1703) 648 5565; Telex: 150443 usgs ut).

27th International Geographical Congress, Washington, DC, USA, 9-14 August 1992.
Information: Dr. Anthony R. de Souza, Secretary General, 27th International Geographical Congress, PO Box 727, Tulsa, Oklahoma 74101, U.S.A.

*** 11th International Colloquium on Soil Zoology (ISSS Subcommission D)**, Jyväskylä, Finland, August 10-14, 1992.
Information: Jyväskylä Congresses, Seminaarinkatu 15, SF-40100 Jyväskylä, Finland (Fax: +358 41 603621).

*** 1st meeting of the Working Group MO, "The Impact of Interactions of Inorganic and Microbiological Soil Components on Environmental Quality"**, Edmonton, Alberta, Canada, August 13-16, 1992.
Information: Prof.Dr. P.M. Huang, Chairman WG/MO, Department of Soil Science, University of Saskatchewan, Saskatoon, SK, Canada S7N OWO (Tel.: (306) 966-6838; Fax: (306) 966-6881).

8th International Colloquium on Apterygota, Helsinki, Finland, August 17-20, 1992.
Information: Pekka Vilkamaa, Museum of Zoology, University of Helsinki, P.-Rautatiekatu 13, SF-00100 Helsinki, Finland.

2nd Congress of the European Society of Agronomy, Coventry, UK, 23-28th August 1992.
Information: Dr. A. Scaife, ESA Congress Office, Horticulture Research International, Wellesbourne CV35 9EF UK.

International Symposium on Erosion and Sediment Transport Monitoring Programmes in River Basins, Oslo, Norway, August 24-28, 1992.
Information: Symposium Secretariat, Hydrology Dept., Norwegian Water Resources and Energy Administration, P.O. Box 5091, Majorstua, N-0301 Oslo 3, Norway (Fax: +47 2 959 000; Telex: 79 397 nveo n).

29th International Geological Congress, Kyoto, Japan, August 24-September 3, 1992.
Information: Dr. T. Sato, Inst. of Geoscience, The University of Tsukuba, Ibaraki 305, Japan.

1st Conference of the Working Group on Pedometrics of the International Society of Soil Science, Pedometrics-92: Developments in Spatial Statistics for Soil Science, Wageningen, The Netherlands, 1-3 September, 1992.
Information: Dr. Ir. J.J. de Gruijter, Winand Staring Centre, P.O.Box 125, 6700 AC Wageningen, The Netherlands (Tel.: +31-8370-74260; Fax: +31-8370-24812; Telex: 75230 visi nl).

*** National Conference of the Romanian Society of Soil Science, on the theme "The Ecological Management of the Danube Delta"**, Bucuresti, Romania, September 1992.
Information: Dr. C.I. Rauta, President of the Romanian Society of Soil Science, RISSAC, Bd. Marasti 61, 71331 Bucuresti, Romania.

VIII International Colloquium for the Optimization of Plant Nutrition, Lisbon, Portugal, 1-8 September 1992.
Information: Secretariado VIII Colóquio AIONP, LQARS Apartado 3228, 1306 Lisboa Codex Portugal (Fax: 351-1-363 64 60).

CHEMRAWN VII Conference, Chemistry and Sustainable Development - Towards a Clean Environment, Zero Waste and Highest Energy Efficiency, Moscow, USSR, September 6-9, 1992.
Information: Prof. V. Koptyug's Office, USSR Academy of Sciences, 14 Leninsky Ave., 117901 Moscow V-71, USSR (Fax: 007(095)230 20 43, 007(095)230 26 30; Telex: 411964 ANS SU).

ISME-6 6th International Symposium on Microbial Ecology, Barcelona, Spain, 6-11 September '92.
Information: Prof. Ricardo Guerrero, ISME-6, Apartado 16009, E-08080 Barcelona, Spain (Tel.: 343-334 0583; Fax: 343-334 1079).

EUROSOL European Conference on Integrated Research for Soil and Sediment Protection, MECC, Maastricht, The Netherlands, 6-12 September 1992.
Information: International Agricultural Centre, Section Organization Courses & Conferences, IAC-SOCC, *P.O.Box 88, 6700 AB Wageningen, The Netherlands (Tel.: 31 8370 90111; Fax: 31 8370 18552; Telex: 45888* intas nl).

4th International IMPHOS (World Phosphate Institute) Conference "Phosphorus Life and Environment from Research to Application", Louvain-la-Neuve, Belgium, 8-11 September 1992.
Information: Mr. M. Debbi, World Phosphate Institute, 19, Rue Hamelin, 75016 Paris, France (Tel.: 33 (1) 47 23 72 53).

INTECOL'S IV International Wetlands Conference, Columbus, Ohio, USA, 13-17 September 1992.
Information: William J. Mitsch, Chair Columbus '92-IV INTECOL Wetlands Conference, School of Natural Resources, The Ohio State University, 2021 Coffey Road, Columbus, Ohio 43210 USA (Tel.: 614-292-9773; Fax: 614-292-7162).

International Conference on "Advances in Planning, Design and Management of Irrigation Systems as related to Sustainable Land Use", Leuven, Belgium, 14-17 September 1992.
Information: Mrs. G. Camps, CIE-Conference Secretariat, Kardinaal Mercierlaan 92, 3001 Leuven (Heverlee), Belgium (Tel.: +32-16-22 09 31, Ext. 1550; Fax: +32-16-205032; Telex: 25491 elekul b).

International Conference on Organic Substances in Soil and Water, Lancaster, UK, 14-17th September, 1992.
Information: Conference Secretary, Miss C. Martin, Centre for Research on Environmental Systems, Institute of Environmental and Biological Sciences, University of Lancaster, Bailrigg, Lancaster, LA1 4YQ, UK (Tel.: 0524 65201).

International Symposium on Paddy Soils, Nanjing, People's Republic of China, September 15-19, 1992.
Information: Dr. Cao Zhihong, Secretary General of Organizing Committee, c/o Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing, 210008 China (Tel.: 712572; Fax: (0086) (025) 712663; Telex: 34025 ISSAS CN).

7th International Soil Conservation Conference, Sydney NSW, Australia, 28th-30th September 1992.
Information: Inez Tommerup, CSIRO, Division of Forestry and Forest Products, Private Bag, Wembley, Western Australia 6014.

International Symposium on Management of Mycorrhizas in Agriculture, Horticulture and Forestry, Perth, Western Australia, 28 September - 2 October 1992.
Information: Inez Tommerup, CSIRO, Division of Forestry and Forest Products, Private Bag, Wembley, Western Australia 6014.

*** Symposium on Soil Resilience and Sustainable Land Use**, Budapest, Hungary, 28 September - 2 October, 1992.
Information: Prof. I. Szabolcs, Chairman of the Organizing Committee, Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, H-1022 Budapest, Herman O. út 15, Hungary (Tel.: (36-1)155-8829; Fax: (36-1)155-8839; Telex 22-7223 AGROK-H).

ISOSC 8th International Congress on Soilless Culture, Rustenburg, South Africa, 2-9 October 1992.
Information: ISOSC, P.O. Box 52, 6700 AB Wageningen, The Netherlands.

International Congress on Agro-Ecosystem Modelling, Braunschweig, Germany, 5-9 October 1992.
Information: Institute of Geography and Geoecology, Technical University of Braunschweig, Langer Kamp 19c, W-3300 Braunschweig, Germany

*** International Workshop on Modelling Strength and Stress Distribution in Unsaturated Structured Soils**, Kiel, FRG, 5-9 October 1992.
Information: Prof.Dr. Rainer Horn, Institute of Plant Nutrition and Soil Science, Olshausenstr. 40, 2300 Kiel 1, FRG (Tel.: 0431 880 3190; Fax: 0431 880 2940).

Annual Meeting of the Soil Science Society of America (together with the American Society of Agronomy and the Crop Science Society of America), Minneapolis, Minnesota, 1-6 November 1992.

*** International Conference of Commission IV on Improving Soil Management for Intensive Cropping in the Tropics and Sub-Tropics**, Dhaka, Bangladesh, early December 1992.
Information: President of the Soil Science Society of Bangladesh Dr. A.K.M. Habibullah, 6/10, Lalmatia, Satmasjid Road, Dhaka-1207 Bangladesh (Tel.:325166-70).

*** International Colloquium "Volcanic Environment and Tropical Soils (VETS)"**, Martinique & Guadeloupe (F.W.I), 7-13 December 1992.
Information: STEV*VETS, Laboratoire Matière Organique des Sols Tropicaux, ORSTOM BP 8006, 97259 Fort-de-France Cedex, Martinique (F.W.I) (Tel.: (596) 630609; Fax: (596) 717316; Telex: 912 024 MR).

International Symposium on Land Reclamation: Advances in Research & Technology, Nashville, Tennessee, USA, December 14-15, 1992.
Information: Dr. William F. Ritter, Chair, Program Committee, Agricultural Engineering Department, University of Delaware, Newark, DE 19717-1303, USA (Tel.: (302) 451-2468; Fax: (302) 292-3651).

1993

*** International Conference on Pedo-Geomorphic Relationships in the Tropics and Sub-Tropics**, International Society of Soil Science, Commission V (Soil Genesis, Classification and Cartography), South Africa, 16-30 April, 1993.
Information: Mr. T.E. Dohse, Organizing Secretary, P.O. Box 30030, Sunnyside 0132, South Africa (Fax: 0027 12 323 1157).

International Symposium on Hydrological, Chemical and Biological Processes of Transformation and Transport of Contaminants in Aquatic Environments, Rostov-on-Don, USSR, 24-29 May 1993.
Information: Hydrochemistry 1993, Hydrochemical Institute, 198 Stachki pr., Rostov-on-Don 344104, USSR (Tel.: +7 863 22 4470; Telex: 123240 WODA SU).

*** 10th International Clay Conference** (ISSS Commission VII), Adelaide, Australia, July 18-25, 1993.
Information: R.W. Fitzpatrick, CSIRO, Division of Soils, Private Bag No.2, Glen Osmond, SA 5064, Australia.

*** International Workshop on Classification and Management of Desert Soils**, Wulumuqi, China, August 8-20, 1993.
Information: Dr. Gong Zitong, Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing 210008, PR of China (Fax: +86 25-712663; Telex: 34025 issas cn).

3rd International Conference on Geomorphology, Hamilton, Canada, August 23-29, 1993.
Information: 3rd International Conference on Geomorphology,, McMaster University, Hamilton, Ontario, Canada L8S 4K1 (Fax: +1 416 546-0463; Telex: 061 8347).

15th Congress and Exhibition "Water Management in the next Century", The Hague, The Netherlands, 30 August-12 September 1993.
Information: Netherlands National Committee ICID, Attn: Bart Schultz, P.O. Box 600, 8200 AP Lelystad, The Netherlands (Tel.: +31 3200 97440; Fax: +31 3200 34300; Telex: 40115 flevo nl).

3rd International Symposium on Plant-Soil Interactions at Low pH, Brisbane, Queensland, Australia, 12-16 September, 1993.
Information: Low pH Symposium, Australian Convention and Travel Services Pty Ltd, GPO Box 2200, Canberra A.C.T. 2601 Australia (Tel.: +61-6-2573299; Fax: +61-6-2573256).

*** 12th International Plant Nutrition Colloquium**, Perth, Australia, September 21-26, 1993.
Information: Plant Nutrition Secretariat, The Conference Office, The University of Western Australia, Nedlands WA 6009, Australia (Fax: +61 9-382-2029).

XII Congreso Latinoamericano de la Ciencia del Suelo, Salamanca, España, 23 al 26 setiembre 1993.
Information: I.E.T. / CSIC, Apartado 257, 37071 Salamanca, España (Fax: (9) 23-219609).

XI International Symposium on Environmental Biogeochemistry, Salamanca, España, 27 al 30 setiembre 1993.
Information: I.E.T. / CSIC, Apartado 257, 37071 Salamanca, España (Fax: (9) 23-219609).

INTERNATIONAL TRAINING COURSES/COURS INTERNATIONAUX DE FORMATION/ INTERNATIONALE FORTBILDUNGSKURSE

International Course on Soil and Water Conservation and Management, Logan, Utah, USA, August 18-September 21, 1991; August 16-September 19, 1992.
Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Course on Farmer Participation and Irrigation Organization, Logan, Utah, U.S.A., August 25-September 14, 1991.
Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Tour on Soil Conservation and Management Study Tour of U.S. Midwestern States, Logan, Utah, USA, September 5-21, 1991.
Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

MSc programme in Survey Integration for Resources Development with Specialization in Land Use *Planning and Resources Management, Project Planning and Implementation and Rural Energy and* Development, Enschede, The Netherlands, next course: 7 September 1991.
Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands (Tel.: (31) 53 874 444; Fax: (31) 53 874 400; Telex 44525).

International Course on Operation, Maintenance and Management of Irrigation Delivery Systems, Logan, Utah, U.S.A., September 29-November 9, 1991.
Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

Effective Irrigation Management Short Course, Southamptom, UK, 30 September-18 October, 1991.
Information: The Course Administrator, Effective Irrigation Management Short Course, Institute of Irrigation Studies, The University, Southampton SO9 5NH, UK (Tel.: (0703) 593728; Fax: (0703) 593017; Telex: 47661 (a/b sotonu g).

2nd International Postgraduate Course on Soil and Plant Analysis and Data Handling, Wageningen, The Netherlands, October 7-December 6, 1991.
Information: The Director, International Agricultural Centre, P.O. Box 88, 6700 AB Wageningen, The Netherlands (Tel.: (0)8370-90111; Fax: (0)8370-18552; Telex: 45888-INTAS NL).

A Series of Graduate Courses in: Theoretical and Experimental Aspects of Desert Ecology, Israel, February 22-April 10, 1992.
Information: Prof. J. Gale, Director, Blaustein International Center for Desert Studies, Midreshet Sede Boker, 84990, Israel (Tel.: 972-57-565749; Fax: 972-57-555058).

Forthcoming Course on "Environmental Management in Developing Countries", Norwich, UK, July-September 1992.
Information: Overseas Development Group, The Course Director, University of East Anglia, Norwich NR4 7TJ, UK (Tel.: (0603) 57880; Fax: (0603) 505262; Telex: 975197 UEACPC G for ODG).

Agricultural and Rural Technology Research and Development; Arid Lands and Pastoral Development, Norwich, UK, 13th July to 4th September 1992.
Information: The Course Coordinator, Overseas Development Group, University of East Anglia, Norwich NR4 7TJ, UK (Tel.: (0603) 57880; Fax: (0603) 505262; Telex: 975197 UEA CPC G for ODG).

ICRAF Training Materials for Agroforestry, Nairobi, Kenya.
Information: International Council for Research in Agroforestry, P.O.Box 30677, Nairobi, Kenya (Tel.: 254-2-521450; Fax: 521001; Telex: 22048).Courses

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).

Courses in Soil Conservation, Adelaide, Australia.
Information: The Chairman, Department of Soil Science, Waite Agricultural Research Institute, P.M.B. 1, Glen Osmond 5064, South Australia (Tel.: 08 372 2210; Fax: 08 338 1757; Telex: UNIVAD AA 89141).

2-Year Master Programme and 1-Year Diploma Programme in Irrigation Engineering.
Information: Center for Irrigation Engineering, Programme coordinator, K.U.Leuven, Kardinaal Mercierlaan 92, 3001 Leuven (Heverlee), Belgium.

M.Sc. Programmes at the Department of Agricultural Engineering, University of Nairobi, Kenya, 1991/1993.
Information: University of Nairobi, Dept. of Agricultural Engineering, P.O. Box 30197, Nairobi, Kenya.

Postgraduate Diploma Courses, M.Sc. and Ph.D. Programmes, Hydraulic Engineering, Hydrology, Sanitary Engineering, Water Quality Management, Environmental Science and Technology, Delft, The Netherlands, 1991-1992.
Information: International Institute for Hydraulic and Environmental Engineering, Oude Delft 95, P.O. Box 3015, 2601 DA Delft, The Netherlands (Tel.: +31-15-78 80 21; Fax: +31-15-12 29 21; Telex: 38099 ihe nl).

Post-Graduate Diploma Course in Forestry for Rural Development.
Information: The International Institute for Aerospace Survey and Earth Sciences (ITC), 350 Boulevard 1945, P.O. Box 6, 7500 AA Enschede, The Netherlands (Tel.: (31) 53 874 444; Fax: (31) 53 874 400; Telex 44525).

M.Sc. Courses in "Irrigation Engineering" and "Soil Conservation and Land Reclamation".
Information: Information: The Course Administrator, Effective Irrigation Management Short Course, Institute of Irrigation Studies, The University, Southampton SO9 5NH, UK (Tel.: (0703) 593728; Fax: (0703) 593017; Telex: 47661 (a/b sotonu g).

Course in "Soil Science, Plant Nutrition and Fodder Crops", Technical College of Tropical Agriculture Basel.
Information: Swiss Tropical Institute, Socinstrasse 57, 4051 Basel, Switzerland (Tel.: (061) 23 38 96); Technikum für tropische Landwirtschaft, Andreas Heusler-Strasse 41, 4052 Basel, Switzerland (Tel.: (061) 50 80 10).

Graduate Study and Training in Development, School of Development Studies, Norwich, UK.
Information: Senior Administration Assistant, School of Development Studies, University of East Anglia, Norwich, NR4 7TJ, U.K. (Tel.: (0603) 56161; Fax: (0603) 58553; Telex: 995801 GLOTLX-G).

Irrigation Engineering Principles, a videotape course, Logan, Utah, USA.
Information: Utah State University Foundation, Logan, Utah, 84322-9300, U.S.A. (Tel.: (801) 750-2603; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATEU).

Applied Hydaulics, a videotape course and textbook, Logan, Utah, USA.
Information: Utah State University Foundation, Logan, Utah, 84322-9300, U.S.A. (Tel.: (801) 750-2603; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATEU).

Soil and Water Management Research and Training, African Academy of Sciences, Nairobi, Kenya.
Information: Head of Programmes, African Academy of Sciences, P.O. Box 14798, Nairobi, Kenya (Tel.: 802182/3, 802176; Fax: (02) 802185; Telex: 25446 AFACS KE).

M.Sc.Course in Soil Science and Water Management, Wageningen, The Netherlands.
Information: Director of Studies of MSc-Courses, P.O. Box 453, 6700 AL Wageningen, the Netherlands.

International Course on Land Drainage, ILRI, Wageningen, The Netherlands.
Information: The Director, IAC, P.O. Box 88, 6700 AB Wageningen, The Netherlands.

Post-graduate Training Course in Soil Science, Agricultural University, Aas, Norway.
Information: Dr. B.R. Singh, Coordinator International Post-graduate Program in Soil Science, Box 28, 1432 Aas-NLH, Norway.

International Post-Graduate Course in Soil Science, Ghent, Belgium.
Information: The International Training Centre for Post-Graduate Soil Scientists, State University of Ghent, Krijgslaan 281, B-9000 Ghent, Belgium.

Cours de 3e cycle en Protection de l'Environnement, EPFL, Lausanne, Suisse.
Information: Prof. L.Y. Maystre, Inst. de génie de l'environnement, EPFL-Ecublens, CH-1015 Lausanne, Suisse (tél: (21) 693.27.15).

Sponsored Training Courses on Use of Isotope Techniques in Soil Research and Plant Nutrition, International Atomic Energy Agency, Seibersdorf, Austria.
Information: IAEA Headquarters, Joint FAO/IAEA Division, Vienna International Center, Wagramerstr. 5, P.O. Box 100, A-1400 Vienna, Austria.

M.Sc. in Conservation of Soil Fertility, Canterbury, England.Information: Dr. R.G. Burns, Biological Laboratory, University of Kent, Canterbury, Kent CT2 7NJ, U.K.

M.Sc. and Post-graduate Diploma courses in Agricultural Engeneering and Land and Water Management, Silsoe College, Cranfield Institute of Technology, England.
Information: The Student Recruitment Executive, Silsoe College, Silsoe, Bedford MK45 4DT, England.

Post-graduate Training Courses in Soil Science and Plant Biology, Granada/ Sevilla, Spain.
Information: Dr. M.L. Garrido, Estacion Experimental del Zaidin, Avenida de Cervantes, Apdo. 419, Granada, Spain.

Interuniversity Post-graduate Programme in Hydrology, *Free University of Brussels, Belgium.*
Information: Prof.Dr.Ir. A. van dr Beken, Director of the Hydrology Programme, Laboratory of Hydrology, Vrije Universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium.

Farming Systems Approaches to Upland Conservation and Watershed Management in the Tropics, University of Hawaii.
Information: S.A. El-Swaify, Chairman, Dept. of Agronomy and Soil Science, College of Tropical Agriculture and Human Resources, University of Hawaii, Honolulu, Hawai 96822.

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Dynamics of Soil Organic Matter in Tropical Ecosystems. D.C. Coleman, J.M. Oades and G. Uehara, editors. Niftal Project, University of Hawaii Press, Honolulu, 1989, xxx + 249 p. ISBN 0-8248-1251-4. Hardbound.

In the tropics, many areas are dominated by poor soils, unfavourable climates, or both. The impoverished and stressful state of many soils in the tropics stems from their high degree of weathering. Soil minerals which normally hold plant nutrients have been eroded to such an extent that they are no longer capable of retaining added nutrients. Consequently, highly leached tropical soils have high levels of acidity and toxic metals and low amounts of available nitrogen, phosphorus and the bases.

It is generally agreed that organic matter can play an important function in alleviating nutrient and stress problems in soils. But, very little is known about the specific biological processes involved in transformation of soil organic matter (SOM) and organic matter inputs into the ecosystem. This is particularly true of those tropical soils dominated by variable-charge clays and subjected to heavy rainfall over a long period of time.

This book is the result of a process that began with a questionnaire in 1986 and ended with a workshop in October 1988. The primary purpose of the whole effort was to produce a book; a book that attempted to identify gaps in knowledge, prescribe corrective measures and formulate research priorities related to ecological interactions that regulate organic matter dynamics in tropical ecosystems. Another important objective was to bring together scientists from diverse disciplines and provide them the opportunity to interact and "brainstorm" on controversial issues related to quantity and quality of organic matter in tropical soils and the role it might play in restoring fertility and productivity of agricultural and forestry systems in the tropics.

This book is the result of a unique interactive process which brought together more than 50 expert authors and reviewers to produce the manuscript. It presents current knowledge on seven key topics on the subject of tropical soil organic matter dynamics which include: (1) constituents of organic matter in temperate and tropical soils; (2) SOM as a source and a sink of plant nutrients; (3) interactions of SOM and variable-charge clays; (4) biological processes regulating organic matter dynamics in tropical soils; (5) organic input management in tropical agroecosystems; (6) modelling SOM dynamics in tropical soils; and (7) methodologies for assessing the quantity and quality of SOM.

Each chapter ends with research imperatives suggested for future exploration. An extensive section provides a comprehensive bibliography of SOM dynamics.

Price: US$ 30.00

Orders to: Order Dept., University of Hawaii Press, 2840 Kolowalu Street, Honolulu, HI 96822, USA.

The Engineering Geology of Ancient Works, Monuments and Historical Sites. Preservation and Protection. P.G. Marinos and G.C. Koukis, editors. Proceedings of an International Symposium, Athens, September 1988. In four volumes. A.A. Balkema, Rotterdam, Brookfield, 1988/90, 2312p. ISBN 90-6191-793-X (set).

During the last years people have become more and more interested in the protection and restoration of ancient monuments and structures and have appreciated the value of historical sites.

These four volumes of the proceedings of the international symposium held by the Greek National Group of the International Association of Engineering Geology in Athens, relate the experience acquired so far worldwide in this field. The contribution afforded by the geosciences and geotechnical engineering has often been shown to exceed expectations.

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The Silent Countdown. Essays in European Environmental History. P. Brimblecombe and C. Pfister, editors.Springer-Verlag, Berlin, Heidelberg, 1990, xi + 265p. ISBN 3-540-51790-1 (German edition); 0-387-51790-1 (U.S.A. edition). Hardbound.

Today, the public increasingly perceives humanity as a part of the biosphere where continued rapid transformation and modification of the global environment could endanger the human race. A new type of threshold has been reached in many sectors of the economy: neither capital, market, nor labour, but the stress placed upon the environment has become the limiting factor. The current public debate focuses on the formulation and justification of a policy which is likely to be appropriate and sufficient for containing and avoiding this threat. How can a society be brought about to change its abuse of the environment? Do humans respond to rational arguments about environmental issues? The answers which are given to those questions will draw from a variety of images of humankind and make implicit assumptions about the kind of interactions which have taken place between societies and their natural environment in the past.

In this situation the historian must participate in the debate and try to give an answer as to (1) the roots of the present crisis when fundamental thresholds have been crossed, and (2) under which conditions past societies have managed to maintain a dynamic stability in their environments. Unlike their colleagues in North America, historians in Europe have long been reluctant to explore the dimensions of past relations between societies and their natural habitat. However, the recent years have brought about a vast increase in the amount, the quality, and the scope of scholarship on historical interactions between human (social and economic) development and the biosphere. In Europe, where a network for exchanging information and ideas was still lacking, the time was ripe for bringing the relevant scholars and fields together.

Twenty-one scholars from 11 European countries, east and west, gathered in Bad Homburg in 1988 at a first international workshop on European Environmental History. Three scientists, a physicist, a chemist and a biologist, joined the group of historians.

One of the greatest problems for the understanding of ecological problems is the lack of communication between the social and natural sciences. Environmental history may serve as an area for dialogue between the two disciplines, which traditionally have their own methods of analysis and theories about how the world works.

The essays contained in the present volume were written in the context of the Bad Homburg symposium. They provide a good illustration of the different approaches to understanding and writing environmental history.

The book explores relations between societies and their natural environment from the Middle Ages to the present. Global views or long-term ecological history are provided as well as sophisticated models quantifying the flow of energy across regional ecosystems.

The impact of production and consumption processes upon the natural habitat are demonstrated, e.g. the clearing of forests, soil erosion, high pollution densities in urban centers caused by smoke, odour, and water pollution. But what is also shown is how people have reacted to the destruction of their environment, and how efficient the measures they instigated have proved.

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Managing Soil Resources. Proceedings of First National Congress on Soil Science, Lahore, October 1985. Soil Science Society of Pakistan, Lahore, 1988, 485p.

Soils for Agriculture Development. Proceedings of Second National Congress on Soil Science, Faisalabad, December 1988. Soil Science Society of Pakistan, Lahore, 1990, 269p.

These publications contain the papers presented at the national congresses of the Soil Science Society of Pakistan, and the recommendations in techniques, policy and planning issues. In the country, about 6 million ha. are salt-affected, of which about one half is sodic. Besides this menace, soil erosion in the Province of Punjab alone is affecting about 1.5 million hectares.

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Statistics in Scientific Investigation. Its Basis, Application, and Interpretation. Springer Texts in Statistics. G. McPherson. Springer-Verlag, New York, Berlin, 1990, xxvi + 666p. ISBN 0-387-97137-8 (U.S.A. ed.); 3-540-97137-8 (German ed.). Hardbound.

In this book the author has taken on the challenge of providing an insight into Statistics and a blue print for statistical application for a wide audience. For students in the sciences and related professional areas and for researchers who may need to apply Statistics in the course of scientific experimentation, the development emphasizes the manner in which Statistics fits into the framework of the scientific method. Mathematics students will find a unified, but non-mathematical structure for Statistics which can provide the motivation for the theoretical development found in standard texts on theoretical Statistics. For statisticians and students of Statistics, the ideas contained in the book and their manner of development may aid in the development of better communications between scientist sand statisticians.

The demands made of readers are twofold: (1) a minimal mathematical prerequisite which is simply and ability to comprehend formulae containing mathematical variables, such as those derived from a high school course in algebra or the equivalent; and (2) a grasp of the process of scientific modelling which comes with either experience in scientific experimentation or practice with solving mathematical problems.

The base on which this book is developed differs from that found in the myriad of standard introductory books on 'Applied Statistics'. The common approach takes what might be termed the statistician's view of Statistics. The reader is presented with the tools of Statistics and applications of those tools based on a

methodological taxonomy.
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SCUAF, Soil Changes Under Agroforestry. *Computer Program with User's Handbook. Version 2.* A. Young and P. Muraya, Nairobi, 1990, 124p. ISBN 92-9059-081-5.

SCUAF is a computer program, Soil Changes Under Agroforestry, which estimates changes in soil properties under specified agroforestry systems within given environmental conditions. The soil properties included in Version 2 are rates of erosion, changes in soil organic matter (represented by carbon), and nitrogen cycling. The effects of soil changes upon plant growth and harvest are also estimated.

The model can be employed to assist in the design of agroforestry systems for field trials; to investigate whether a proposed agroforestry system is likely to be sustainable, from the aspect of soil conservation; to indicate what data are required from experiments, if soil changes are to be forecast; and for exploratory conceptual work and agroforestry training. It can be used to extend results from experimental work, for example, to study the probable effects of changing one or more variables. The effects on soils of other land use systems, in agriculture or forestry, can be compared with those of agroforestry.

The computer program on diskette accompanies, and forms an integral part of, this handbook.
Price: US$ 25 for program and diskette, including airmail postage.
Orders to: ICRAF, P.O. Box 30677, Nairobi, Kenya.

Clay Mineralogy and Chemistry of Soils formed in Volcanic Material in Diverse Climatic Regions. ISRIC Soil Monograph 2. C. Mizota and L.P. van Reeuwijk. ISRIC, Wageningen, 1989, 185p. ISBN 90-66-72-035-2.

Ando soils are relatively young soils with very distinctive properties, usually (but not exclusively) developed in pyroclastic material, notably volcanic ash but also tuff, pumice, cinders, lahars, and other volcanic ejecta of all varieties of composition, the rare ultrabasic excepted. They are, therefore, confined to the volcanic regions of the world. Ando soils, being intrazonal soils, are found in a wide range of climates from the cool humid climates of Alaska or Hokkaido to subtropical Kyushu and tropical semi-arid parts of Hawaii.

This monograph originally was intended to be a report on an investigation into the chemical and mineralogical characteristics of soils on volcanic material in different climatic regions of the world. However, in the course of the preparation of the report, it was decided to expand its coverage. The main reasons for this were the appearance of a large number of publications with information related to the subject, the rapid progress in the revision of the classification of Ando soils and the recent acquisition by ISRIC of a considerable number of monoliths of soils on volcanic material.

As a result, the present work now encompasses the following items: 1) A treatise on the present knowledge of the chemistry and mineralogy of soils on volcanic ash in general, and a review of case studies of soils from various regions of the world; 2) A discussion of the commonly used methods of chemical characterization of Ando soils; 3) A reproduction of the "andic soil properties" and the basic arrangement of the new Order of "Andisols" as prepared by ICOMAND for Soil Taxonomy, and of the Major Soil Grouping "Andosols" in the Revised Legend of the FAO- Unesco Soil Map of the World; 4) A report on the investigation into the composition of some sixty soil profiles developed in volcanic material in various regions of the world.
Price: Hfl 15.-, plus mailing charges.
Orders to: ISRIC, P.O. Box 353, 6700 AJ Wageningen, the Netherlands.

Assessment of Soil Nutrient Depletion in Sub-Saharan Africa: 1983-2000. The Staring Centre Report 28. J.J. Stoorvogel and E.M.A. Smaling. Volume 1, Main report, 137p; Volume 2, Nutrient balances per crop and per land use system, 228 tables; Volume 3, Literature review and description of land use systems, 162p. Volume 4, Computer programs. Staring Centre, Wageningen, *1990. ISSN 0924-3062.*

On request of FAO a methodology was developed to assess the state of soil nutrient depletion under agriculture in Sub-Saharan Africa for 1983 and the year 2000. The nutrient balance is described with five input and five output factors, which result in a nutrient-loss rate. Production figures and data on fertilizer consumption for 1983 and projections for the year 2000 were provided by FAO. Data on nutrient balances as well as additional country information were collected from the literature. Nutrient-depletion rates for Sub-Saharan Africa are approximately 20 kg N, 10 kg P2O5 and 20 kg K2O per ha on average, up to a maximum of 40 kg N, 20 kg P2O5 and 40 kg K2O per ha in East Africa.
Price: Hfl 45 per volume
Orders to: Staring Centre, P.O. Box 125, 6700 AC Wageningen, The Netherlands.

Design for Sustainable Farmer-managed Irrigation Schemes in Sub-Saharan Africa. Introductions and contributions to the international workshop, Wageningen Agricultural University, 5-8 February 1990. 2 Volumes.

The workshop was the result of a long period of involvement and research of the Dept. of Irrigation and Soil and Water Conservation of the Wageningen Agricultural University in irrigation development in Africa. the workshop mainly dealt with the technical design of irrigation schemes. A framework is presented in which socio- economic factors are related to the technical characteristics of irrigation systems. This framework also enables a discussion of the way in which technical choices influence scheme performance and the resultant social, economic, and cultural changes.

The conceptual framework is enriched and illustrated with a wide range of contributions, particularly from people who worked at development projects themselves. On the basis of this confrontation of scientific insights and field experiences, the organizers hoped to come to concrete solutions, not only as regards the design of irrigation systems, but also regarding specific elements of irrigation policies.

These volumes contain the papers of about forty people from a wide range of organizations.

Orders to: Dept. of Irrigation and Soil and Water Conservation, Agricultural University, Nieuwe Kanaal 11, 6709 PA Wageningen, The Netherlands.

Hydrological Research Basins and the Environment. Proceedings and Information No.44. J.C. Hooghart, C.W.S. Posthumus and P.M.M. Warmerdam, editors. TNO Committee on Hydrological Research, The Hague, 1990, 347p. ISBN 90-6743-176-1.

Much of our basic knowledge on hydrological processes has come from studies in research basins. These well-instrumented basins have also produced much very suitable data for hydrological investigations and water resources management studies. In recent years the significance of the role of research basins in hydrology has considerably changed. It was found that research basins also constitute an irreplaceable tool for studying anthropogenic effects on water resources and the environment.

Detailed observations and measurements have strongly increased the awareness of the effect of human activities on the quality of the environment and consequently the threat to life. Studying the changes caused by anthropogenic effects is most useful when carried out in well-equipped research basins, supported by basin experiments. Such studies are also a valuable starting point for sound future environmental management.

The main objective of the International Conference on Hydrological Research Basins, held in Wageningen, September 1990, was to bring together scientists involved in hydrological basin research, to stimulate the exchange of information and to encourage international cooperation in research projects. The present publication contains the presented papers.

Price: Hfl 110.-, including mailing charges; in the Netherlands and Belgium Hfl 80.-

Orders to: CHO-TNO, P.O. Box 297, 2501 BD The Hague, The Netherlands.

The Living Mantle - Soils in the New Zealand Landscape. Slide set. Division of Land and Soil Sciences, D.S.I.R., Lower Hutt.

This set of 48 high quality colour slides has been selected from photographs which appear in the Living Mantle - Soils in the New Zealand Landscape by Les Molloy, photographs by Quentin Christie (published by Mallinson Rendel in association with the New Zealand Society of Soil Science). The selection was made with teaching institutes in New Zealand at primary, intermediate and secondary level in mind. An explanatory text of 11 pages is added. The set contains slides showing landscapes, land use, and soil profiles.

Price: NZ$ 45.00, plus postage.

Orders to: Div. of Land & Soil Sciences, D.S.I.R., Private Bag, Lower Hutt, New Zealand.

Handbuch des Bodenschutzes. Bodenökologie und - belastung Vorbeugende und abwehrende Schutzmassnahmen. H.-P. Blume, Herausgeber. Ecomed, Landsberg, München, 1990, xviii + 686S., mit Farbtafeln. ISBN 3-609-65850-9. Leinen-Hardcover.

Charakteristische Bodenformen sind als Naturkörper grundsätzlich in gleichem Maße schützenswert wie die verschiedenen Tier- und Pflanzenarten unserer Erde. Die Bodencharta des Europarates aus dem Jahr 1972 zählt Böden zu den kostbarsten Gütern des Menschen. Inzwischen wurden wichtige Schritte zum Bodenschutz eingeleitet.

Im 'Handbuch des Bodenschutzes' befassen sich 19 Autoren mit den Grundlagen der Bodenökologie und -hygiene, und erläutern Modellen zu vorbeugenden und abwehrenden Schutzmaßnahmen.

Im ersten Teil des Buches werden die Funktionen von Böden als Naturkörper, als Lebensraum von Organismen und Wurzelraum von Wild- und Kulturpflanzen, als Regulatoren des Landschaftswasserhaushalts, als Filter, Puffer und Transformatoren für sauberes Grundwasser und saubere Gewässer sowie als landschaftsgeschichtliche Urkunden dargestellt.

Der zweite Teil befaßt sich mit den vielfältigen Veränderungen und Belastungen, die Böden bei ihrer Nutzung durch den Menschen erfahren. Hier werden der Bodenverbrauch durch Verslegeln, Abgraben und Überdecken ebenso behandelt wie bewußte Veränderungen durch Bearbeiten, Bewässern, Entwässern, Düngen sowie den Einsatz von Pflanzenschutzmitteln. Einen breiten Raum nimmt die Darstellung der Belastung durch Säuren, Schwermetalle, Salze, Organika, Gase, Temperturveränderungen und Radionuklide ein. Es folgen Veränderungen bei der Entsorgung von Abfällen, von Abwasser und Klärschlamm, Müll und Baggergut. Nachweismethoden werden erläutert und Klassifizierungen der Empfindlichkeit verschiedener Böden gegenüber Belastungen vorgenommen. Das Kapitel schließt mit einer Darstellungder Eigenschaften und Klassifikation anthropogener Böden als Ergebnis aller Einflüsse.

Der dritte Teil des Buches befaßt sich mit dem Schutz von Böden. Hier wird die aktuelle Gesetzgebung ebenso behandelt wie deren Berücksichtigung in der Landschaftsplanung. Möglichkeiten der Vorsorge gegenüber künftigen Belastungen sowie der Sanierung, Rekultivierung und Renaturierung bereits veränderter Böden werden erläutert.

Preis: DM 148

Bestellungen an: Ecomed, Justus-von-Liebig-Strasse 1, D-8910 Landsberg, Deutschland.

Genesis and Ecology of the Vertisols of Eastern Sudan. A.A.R. Khalil. Doctors thesis, Christian-Albrechts-Universität, Kiel, 1990, xix + 485p.

Large areas of the Sudan are covered by clay plains, most of which have developed into Vertisols. This is also applicable for the area of Gedaref in Eastern Sudan, which is covered by Acacia savanna thorn-trees, short bushes and tall grass, and lies within the semi-arid climatic zone with 450-750 mm rainfall.

The Sudan clay plain, which is dominated by the cracking clays (Vertisols), is of economic importance for Sudan, since it is assumed to have the most productive soils in Sudan.

A project was initiated due to the scarcity of information about the potential of one of the most extensive soils in the Sudan. The study was carried out in order to throw some light on the development (genesis) and origin of the Eastern Clay Plain of the Sudan. The influence of the surrounding rocks on the Vertisols and Alfisols is also

investigated. Vertisols of the plain, associated soils and inselberg of four different areas in East Sudan were selected for investigation in a catena sequence.

To reach this aim four different areas were investigated, with soils formed on basalt, Nubian Sandstone, granite and ultra basic metamorphic rock of serpentine. The areas of the basalt and Nubian Sandstone are discussed in the present study.

Two soil catenas which consist mainly of Vertisols associated with red soils, Alfisols, were investigated, surveyed, and intensively studied. Seventy five profiles were dug down to the rocks, of which eleven typical soil profiles were sampled in a catenary sequence.

Requests to: Institut für Pflanzenernährung und Bodenkunde, Christian-Albrechts-Universität, Olshausenstrasse 40,
D-2300 Kiel, Germany.

Management of Vertisols in Sub-Saharan Africa. Proceedings of a conference held at ILCA, Addis Ababa, Ethiopia, August-September 1987. S.C. Jutzi, I. Haque, J. McIntire and J.E.S. Stares, editors. ILCA, Addis Ababa, 1988, xiii + 435p. ISBN 92-9053-095-2.

This volume contains 19 papers and 26 abstracts from an international conference on the management of Vertisols in sub-Saharan Africa and other parts of the world. Three papers and one abstract overview the importance, distribution, agroclimatology and properties of Vertisols and the Indian Vertisol technology experience.Eight papers and 10 abstracts deal with resource assessment, while six papers and 15 abstracts review the resource management of Vertisols. Two papers highlight inter-institutional modes of operation and networking concepts in Vertisol research and development. Opening and closing addresses to the conference, and recommendations, are also presented.

Orders to: International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ehtiopia.

Greenhouse Effect, Sea Level and Drought. NATO ASI Series C-325. R. Paepe, R.W. Fairbridge and S. Jelgersma, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1990, xix + 718 p. ISBN 0-7923-1017-9. Hardbound.

During a four-days workshop, held in Fuerteventura, Canary Islands, March 1989, climatologists and geologists exchanged ideas on the causes of the Greenhouse Effect and discussed in particular the general opinion that the warming of the climate during the last century is a direct result of industrial pollution and in particular of the burning of fossil fuels. It is, and becomes more and more controversial whether this trend in the Earth's climatic evolution is naturally biassed and if so, how to disentangle its cyclicity from man-induced temperature rise. Once again the lack of proxy data was held responsible for the weakness of modelling of the past and future climatic conditions. Particular stress was put upon the lack of continental geo-data on the long term or last three million years, the middle term or the last interglacial/glacial cycle, the short term of Holocene record of say the last 10,000 years, and even only of historical times.

Other questions regarding the direct consequences of global warming (such as desertification processes and sea level rise) have been discussed in the same spirit of controversial possible explanations. It clearly came to the fore that, whereas desertification was generally recognized ass a global ongoing process, sea level rise was not. Indeed, it was stated that in many places of the world even a drop in sea level is observed. Historical desertifications have been detected by studying a number of archaeological sites in Greece and Israel where droughts seem to respond to a 100 year cycle.

From the technical papers on case studies and management in the various fields of greenhouse effects and sea level changes it became evident that the control of e.g. sea level rise is not economically feasible for the next decades. Other, more efficient measures might be worked out in the meantime to mitigate drought in badly affected parts of the globe, such as the Chad basin.

The session reports, the panel discussions as well as the recommendations were reviewed and finally endorsed during a one-morning plenary session. The entire results are reproduced here as an annex at the end of this volume. Aspects of the feasibility, rainfall distribution, general climate, deserts and droughts, environmental changes and hazards, continental water, planning techniques in coastal areas are highlighted as well as engineering solutions and their cost-benefit ratios.

Price: Hfl 320. US$ 198, £ 110
Orders to: see below

Introduction to Modelling of Transport Phenomena in Porous Media. Theory and Applications of Transport in Porous Media volume 4. J. Baer and Y. Bachmat. Kluwer Academic Publishers, Dordrecht, Boston, 1990, xxiv + 553p. ISBN 0-7923-0557-4. Hardbound.

This book offers practising engineers and scientists a theoretical background for the modelling of transport phenomena in porous media, applied to specific engineering problems. It will also serve as a text for senior and graduate courses on transport phenomena in porous media in disciplines such as civil engineering, chemical engineering, reservoir engineering, agricultural engineering and soil science.

The book presents a systematic methodology for constructing mathematical models of transport problems in a porous domain on the basis of the continuum approach.

It is divided in two parts: Part A presents the general theory of modelling transport phenomena in a porous medium domain. The first chapter presents the continuum approach, defines microscopic and macroscopic levels of description, introduces the concept of spatial averaging and defines some macroscopic characteristics of porous media and their constituents. Chapter 2 continues to develop this approach by presenting a description of transport phenomena at the microscopic level, and by deriving averaging rules for transforming the microscopic level of description of any transport problem to a macroscopic quantities. Thermodynamic concepts and quantities are introduced whenever necessary. Finally, by adding macroscopic initial and boundary conditions, a complete mathematical statement, or *mathematical model*, of any transport problem at the macroscopic level of description is obtained. This is discussed in Chapter 3.

In Part B, the general theory presented in Part A is applied to specific problems of transport of mass and volume of a phase, mass of a component and heat in single and multiphase fluid systems in a porous medium domain. The appropriate models are developed at the macroscopic level.

The mathematical models developed in this part are applicable to problems such as water flow and transport of pollutants in aquifers and in the unsaturated zone, flow of soil, water and gas in petroleum reservoirs, radioactive waste disposal in deep geological formations, land subsidence due to pumping from aquifers, heat storage in aquifers and solute transport in reactors in the chemical industry.

In each case, the discussion leads to the construction of a complete mathematical statement of the problem, in terms of appropriate macroscopic state variables and parameters. Problems in which several extensive quantities, such as mass and heat, are transported simultaneously, are also discussed. The hydraulic approach, which, under certain circumstances, is a very useful approximation for treating transport phenomena in relatively thin layers, is also presented.

Price: Hfl 340, US$ 198, £ 124

Orders to: In U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.
Elsewhere: Kluwer Academic Publ. Group, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

1988 World Food Conference. Proceedings Volume I: Policy addresses, Volume II: Issue papers. J.W. Helmuth and S.R. Johnson, editors. Iowa State University Press, Ames, 1990. Vol.I: 286p., ISBN 0-8138-0897-9, hardcover. Vol.II: 336p., ISBN 0-8138-0898-7, hardcover.

The goal of the Conference was to bring together world leaders from private industry, government, and academia to promote cooperation and the coordination of worldwide economic and agricultural policies through the exchange of ideas and information. The theme of the conference was "Hunger in the Midst of Plenty" A world Policy Dilemma".

Volume I contains the full exchange of ideas and information between the public an private sectors, and the academicians. The participants at the conference tested new ideas and new approaches to the problem of world hunger, rather than performing international negotiations. These participants believed that much could be gained from a world food conference stressing economic and political policy coordination and cooperation.

Volume II includes 18 issue papers from experts in economics, public policy, trade, finance, nutrition, and health. Most of these papers were divided among all the participants at the beginning of the conference, enabling a thorough discussion and formulation of the recommendations later. Volume II contains the papers as they were updated, refined, and revised by the presenters at the conference.

Both volumes examine the following: Food and Agricultural Policies of Major Countries; Impact of Economic Reform for Food Policy; Moral and Ethical Issues of Hunger and Malnutrition; World Hunger, Malnutrition, and Food Production and Distribution Systems; and Policy Options for Improving the Functioning of the World Food Production and Distribution Systems.

It is clear from these proceedings that much could be and was gained from a world food conference emphasizing economic and policy coordination and cooperation.

Price: US$ 34.95 per volume

Orders to: Iowa State University Press, 2121 S. State Avenue, Ames IA 50010, U.S.A.

Agroforestry for Sustainable Production, Economic Implications. R.T. Prinsley, editor. Commonwealth Science Council, London, 1990, 416p. ISBN 0-85092-342-5, paperback.

The book is a collection of papers presented at the Commonwealth Science Council's meeting in Swaziland in 1989.

Price: £ 6.50

Orders to: Commonwealth Secretariat Publications, Marlborough House, London SW1Y 5HZ, U.K.

Soil, Crop, and Water Management Systems for Rainfed Agriculture in the Sudano-Sahelian Zone. ICRISAT, 1989, 385p. ISBN 92-9066-169-0. Paperback.

This book is the proceedings of the International Workshop held at the ICRISAT Sahelian Centre in Niger, January 1987. There are 32 papers of which 7 are in French with English summaries; the other papers presented in English have a French summary. The papers are grouped into 5 sections: Overview of rainfed agriculture in the Sudano-Sahelian zone (4 papers); Soil/water management for conservation/production systems in low rainfall areas (9 papers on soil-water relationships, water use, erosion control, research needs); Crop/livestock relationships, residue management and agroforestry (8 papers); Cropping systems and cultural practices (8 papers on tillage practices and weed management, discussion of alternative cropping systems for the zone); Systems modelling and economic considerations.

This book is a useful compilation of information and experience of research workers, extension workers and agricultural administrators from the ten African countries represented at the Symposium.

Price: LDCs US$ 20; HDCs US$ 60

Orders from: ICRISAT, Patancheru, Andhra Pradesh 502 324, India.

Soil Acidity. B. Ulrich and M.E. Sumner (editors). Springer Verlag, Berlin, Heidelberg, 1991. xiii + 224p. ISBN 3- 540-50782-5 (German edition) 0-387-50782-5 (U.S. edition). Hardbound.

Processes of acidification or alkalization of soils are treated, taking the qualitative changes in soil chemistry into consideration. Following a theoretical background of ecosystem proton budgets, the application for assessing external and internal acid loads are demonstrated.

The chemistry of organic matter and the oxides of aluminum, iron, and manganese are treated in the context of being sources and sinks for acid loads in soils. Special attention is payed to the assessment of solubility and reaction kinetics of aluminous minerals.

The formation of toxic elements in soil solution resulting from the solubilization of inorganic oxides as well as aspects of changes in the nutrient status of soils, changes of fertility and processes leading to a transfer of acidity

from soils to surface are discussed.
Price: DM 138
Orders to: see below.

Advances in Soil Science, Volume 15. B.A. Stewart, editor. Springer Verlag, New York, Berlin, 1991. ix + 262p. ISBN 0-387-97354-0 (U.S. edition), 3.540-97354-0 (German edition). Hardbound.

The study of soils has taken an increased importance because a rapidly expending population is placing demands on the soil never experienced before. This volume is a mixed-topic volume in this series; it consists of five critical review articles: (1) Vesicular-Arbuscular Mycorrhizae as modifiers of soil fertility; (2) Argillic horizons in modern loess soils in an ustic soil moisture regime: comparative studies in forest-steppe and steppe areas from Eastern Europe and the United States; (3) Myths and scientific realities of agroforestry as a strategy for sustaining management of soils in the tropics; (4) Land evaluation: from intuition to quantification; and (5) Crop residue management.
Price: DM 156
Orders to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Germany; or: Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

Soils in the Urban Environment. P. Bullock and P.J. Gregory, editors. Blackwell Scientific Publications, Oxford, 1991. ix + 174p. ISBN 0-632-02988-9. Hardbound.

Urban areas contain a wide variety of open spaces including gardens, playing fields, waste lands, spoil heaps and islands of natural land. Recently there has been growing interest in the problems of contamination, erosion, acidification and compaction of these open spaces and also in the planning of an attractive urban environment. A sound knowledge of soil is essential to the solution of these problems and to planning a future land use.

This book provides a scientific base for the investigation of soils in the urban environment. It reviews the physical, chemical and biological properties of the soils, and considers topical environmental problems including waste materials and metal contamination. It provides also a classification of urban soils as a framework for future research and as a basis for further discussion.

With contributions from some of the leading workers in this area, this book breaks new ground in addressing the problems of urban soils in the U.K.
Price: £ 35
Orders to: Blackwell Scientific Publications, Osney Mead, Oxford OX2 0EL, U.K.

Growth and Mineral Nutrition of Field Crops. N.K. Fageria, V.C. Baligar and C. Allen Jones. Marcel Dekker, New York, Basel, 1991. ix + 476p. ISBN 0-8247-8386-7. Hardbound.

Emphasizing soil as the substrate for plant growth, this volume examines climate-soil-plant relationships governing growth and mineral nutrition of most vital temperate and tropical field crops around the world - including cereal, legume, and pasture crop. This work also reveals the practical application of new concepts and principles via discussions on modern agricultural practice and presentations of experimental evidence.

Showing how a simulation model of crop growth and soil fertility elucidates the overall requirements of a given plant species, this guide covers recent knowledge of, among others: (1) genetic, physiological, and agronomic bases of crop growth, nutrient uptake, and use efficiency; (2) plant and soil processes and socioeconomic factors that constrain or enhance crop production; (3) conservation tillage and organic farming useful for Low Input System Agriculture and similar systems.
Price: in U.S.A. and Canada $ 150; Elsewhere: $ 172.50
Orders to: see below.

Biosynthesis and Biodegradation of Cellulose. C.H. Haigler and P.J. Weimer, editors. Marcel Dekker, New York, Basel, 1991. xi + 694p. ISBN 0-8247-8387-5. Hardbound.

Unifying cellulose biosynthesis and biodegradation in one presentation, this work reviews and synthesizes current literature on major aspects of the field and describes its newest research methods and advances. This book discusses how various microbial groups and their component enzymes facilitate cellulose degradation and covers fungal and other enzymes, giving a wider view of the range of cellulose biodegradation systems for comparisons.

Encompassing such areas as cell, developmental, and molecular biology; biophysics; and biochemistry, this volume also probes emerging topics, explores techniques useful for future scientific investigations, examines cellulose biosynthesis in in vitro and in vivo systems, supplies about 3000 citations to publications on the subject and provides informative micrographs, graphs and tables.

This book, suitable for novices and established workers, serves as a key resource for biochemists, biologists, biotechnologists, environmental scientists and technologists, plant physiologists and chemical engineers interested in biomass conversion.
Price: in U.S.A. and Canada: $ 175; Elsewhere: US$ 210.00.
Orders to: Marcel Dekker Inc., 270 Madison Avenue, New York NY 10016, U.S.A.

Quantitative Methods in Landscape Ecology. Ecological Studies 82. M.G. Turner and R.H. Gardner, editors. *Springer Verlag, New York, Berlin, 1991. xv + 536p. ISBN 0-387-97326-5 (U.S. edition); 3-540-97326-5* (German edition). Hardbound

Landscape ecology as a modern interdisciplinary science is increasingly making use of quantitative research techniques adopted from other fields. This book is a synthetic reference to those wishing to acquaint themselves with new approaches to quantitative analysis of spatial heterogeneity at the landscape level. It provides a conceptual framework and illustrates potential applications for methods such as pattern analysis, spatial statistics, fractals, spatial modelling, broad-scale studies, and extrapolation across scale. Each technique is discussed in sufficient detail to be adaptable to a variety of research problems.

This book will be a useful resource for researchers and students of landscape and ecosystem ecology, as well as related areas of geography and biology, in understanding and analyzing the dynamics of complex spatial systems.
Price: DM 188
Orders to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Germany; or: Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

Physique du Sol. A. Musy et M. Soutter. Collection Gérer l'Environnement No.6. Presses Polytechniques et Universitaires Romandes, Lausanne, 1991. x + 335p. ISBN 2-88074-211-0. Broché.

Les processus de transfert d'eau, de substances, d'air ou de chaleur dans les sols, ainsi que les échanges avec les végétaux et l'atmosphère, jouent un rôle primordial dans la gestion de ces milieux naturels. Une utilisation rationnelle et une protection efficace des terres et des eaux impliquent une bonne compréhension de ces phénomènes.

Les ingénieurs du génie rural, du génie civil, agronomes, forestiers ou de l'environnement se voient de plus en plus, et à divers titres, confrontés à des problèmes relevant de cette discipline. Il leur est donc nécessaire d'en connaître les fondements afin de mieux cerner les réactions du sol à diverses sollicitations ou contraintes.

Cet ouvrage, qui présente selon un schéma classique les bases scientifiques et techniques de la physique du sol, en s'attachant plus particulièrement aux questions relatives aux écoulements en milieu poreux, leur est par conséquent destiné. Il est à la fois accessible au profane et au spécialiste.

Cet ouvrage tire son originalité de son orientation vers la description des phénomènes physiques rapides caractérisant la dynamique des sols, tout en limitant les éléments relevant de la pédologie au strict nécessaire. Il se caractérise également par les développements relativement importants concernant les mécanismes d'échange hydriques, au sein des plantes et à l'échelle de l'ensemble du système sol-plante-atmosphère.

Les développements théoriques, conduits de manière rigoureuse et illustrés par des exemples, se prêtent bien à l'enseignement de cette discipline, mais fournissent également une base solide à la recherche dans différents domaines. Ce livre constitue donc un support précieux pour l'étudiant comme pour le chercheur ou l'ingénieur, soucieux d'élargir son champ d'activité.
Prix: SFr 69
Commandes à: Presses Polytechniques et Universitaires Romandes, EPFL-Ecublens, CH-1015 Lausanne, Suisse.

Nitrates-Agriculture-Eau. Symposium International, Paris-La Défense, Novembre 1990. R. Calvet, éditeur. INRA, 1990, 576p. ISBN 2-7380-0284-6. Relié. (Français 55%, Anglais 45%).

Les nitrates et les conséquences de leur présence ne constituent certes pas un problème nouveau mais plusieurs conditions d'ordre agronomique, économique et sociologique se trouvent réunies aujourd'hui pour que des solution soient recherchées avec un maximum d'efficacité. C'est dans le but d'apporter une contribution à la recherche de ces solutions que ce colloque a été organisé avec trois objectifs: (1) faire le point des connaissances et du savoir-faire dans les domaines économique, phénoménologique et agronomique; (2) dégager les principales questions auxquelles il importe de répondre le plus complètement et le plus rapidement possible; et (3) recueillir les opinions de spécialistes de plusieurs pays pour mettre à profit la diversité des situations et des expériences acquises.

Ce livre est destiné aux personnes travaillant dans la recherche ou l'enseignement supérieur ainsi qu'aux professionnels concernés par les problèmes de l'environnement.
Prix: FF 250
Commandes à: INRA Editions, Route de St Cyr, 78026 Versailles Cedex, France.

Soil Testing and Plant Analysis. Third edition. R.L. Westerman, editor. SSSA Book Series No.3. Soil Science Society of America, Madison, 1990. xxvii + 784p. ISBN 0-89118-793-6. Hardbound.

Soil testing and plant analyses have proven to be invaluable tools in the diagnosing of nutritional deficiencies and problems related to plant growth. Each advance in our basic understanding of plant physiology and soil chemistry, and each advance in instrumentation leads to improvements in methodology and interpretation.

This volume represents a significant advance from previous editions and reflects the updated analytical methods available, a better understanding of plant nutrition, and a need to use fertilizers and soil amendments even more efficiently and safely.
Orders to: Soil Science Society of America, Inc., 677 South Segoe Road, Madison, WI 53711, U.S.A.

Sustainable Agriculture in Temperate Zones. C.A. Francis, C. Butler Flora and L.D. King, editors. John Wiley, New York, Chichester., 1990. xiii + 487p. ISBN 0-471-62227-3. Hardbound.

This book is about alternatives and options in the use of agricultural technology. The focus is on research that supports the hypothesis that agriculture can be made more productive, environmentally sound, and resource efficient. While much of the material presented here is based on the concepts of stewardship, biodiversity, and a reliance on mixed farming systems, the authors do not advocate a return to the past methods. Rather, they focus on an integrated approach incorporating state-of-the-art biotechnology, engineering, systems studies, and other relevant scientific application.

Among the topics covered in the wide ranging volume are hybrids, sustainable pest and weed management, sustainable soil fertility practices, legumes and crop rotation, management and soil biology, and pasture management. It also examines major practical, economic, and policy issues confronting the conversion from traditional agricultural practices to sustainable, low-input farming systems. Of particular interest is a case study that presents a view of a resource-efficient farm with livestock. And while coverage is slanted toward farming in temperate zones, the principles explored are applicable to agriculture in any region.
Price: £ 63.10 in U.K.

Orders to: John Wiley & Sons, 605 Third Avenue, New York NY 10158-0012, U.S.A. or: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England.

Plant Analysis Handbook. A practical sampling, preparation, analysis, and interpretation guide. J. Benton Jones Jr., B. Wolf, H.A. Mills. Micro-Macro Publishing, Athens, 1991. v + 213p. ISBN 1-878148-001. Hardcover.

This handbook is a guide to those applying the plant analysis technique for either evaluating the nutrient element status of plants and/or the soil-plant environment. Those procedures required to obtain and prepare a plant tissue sample for laboratory analysis are described. Various assay methods are discussed, including details on the more useful and important procedures.

This book includes tables of interpretative plant analysis data for 306 individual crop plants, which are grouped into seven major categories. The element concentration data found in these tables were obtained from a variety of both published and unpublished sources.

Price: US$ 69.95.

Orders to: Micro-Macro Publishing, Inc., 183 Paradise Blvd, Suite 108, Athens GA 30607, U.S.A.

Modern Techniques in Soil Ecology. D.A. Crossley, D.C. Coleman et al., editors. Elsevier Science Publ., Amsterdam, New York, 1991, vii + 510p. ISBN 0-444-88119-0. Hardbound.

The study of ecology of soil biota, and its impact on ecosystems of importance to human activities, requires a broader base of measurements often of a multidisciplinary nature. This volume review current methods and provides an overview of emerging techniques in major areas of soil ecology. It is based on papers presented at the International Workshop "Modern Techniques in Soil Ecology Relevant to Organic Matter Breakdown, Nutrient Cycling and Soil Biological Processes". Seven overview papers were followed by 40 contributed papers describing new developments in the measurement of soil properties, the organisms inhabiting the soil and their impacts on soil processes. This volume is arranged in seven sections: Methods for assessing soil microbial population, activity and biomass (12 papers); Methods for assessing populations of soil-inhabiting invertebrates (9 papers); Methods used in Rhizosphere Ecology (4 papers); Assessment of the effects of the biota on soil structure (8 papers); The identification and evaluation of food webs in soil (2 papers); Organic matter and nutrient cycling (8 papers); and The use of remote sensing in following soil processes (2 papers).

Price: US$ 174.50 or Hfl 305

Orders from: In USA and Canada: Elsevier Science Publ. Comp., P.O. Box 882, Madison Square Station, New York NY 10159, U.S.A.; Elsewhere: Elsevier Science Publishers, P.O. Box 211, 100 AE Amsterdam, the Netherlands.

Geographic Information Systems. Developments and Applications. L Worrall, editor. Belhaven Press, London, New York, 1990. xi + 251p. ISBN 1-85293-140-X. Hardbound.

The use of GIS is a rapidly growing and important field of information science. To date, most publication has been concerned with the technological and methodological development of the systems themselves, and relatively little attention has been paid to practical applications, the interpretation of the results that powerful GIS techniques produce and the planning frameworks and organisational settings in which GIS must operate.

The aim of this book is to present state-of-the-art examples of GIS applications and to demonstrate how the powerful manipulation of spatial data at a variety of resolutions and levels can produce solutions to practical planning and management problems in the human and natural environment, as well as enabling the development of new research directions.

Contributions have been obtained from the leading workers in GIS from around the world to produce the most up to date and wide ranging survey of the field from a practical point of view. This is both a manual of precept and practice for planners and environmental mangers who use GIS in their works and a text book for academic researchers who wish to keep abreast of the developments in this field.

Orders to: Belhaven Press, 25 Floral Street, London WC2E 9DS, U.K.

Nitrogen Turnover in the Soil-Crop System. Development in Plant and Soil Sciences No. 44. J.J.R. Groot, P. de Willigen and E.L.J. Verberne, editors. Kluwer Academic Publishers, Dordrecht, Boston, London, 1991. vii + 248p. ISBN 0-7923-1107-8. Hardbound.

The challenge to agricultural research is to devise production methods which carry no risk of nutrient losses causing pollution but which at the same time lead to economically acceptable yield levels. Simulation models which describe in sufficient detail the turnover of nitrogen in the soil-crop system can be of great assistance in understanding the interactions between the different processes involved. Also, they can indicate gaps in our knowledge, and in doing so they can help in designing experiments that aim at clarification of parts of the problem that are poorly understood.

To celebrate its centennial, the Institute for Soil Fertility Research organized a workshop on 5-6 June 1990. The purpose was to compare various simulation models of nitrogen turnover in the soil-crop system. The participants were requested to run their model with data provided by the Institute prior to the workshop in order to demonstrate the performance of the respective models.

Price: Dfl 170; US$ 115; £ 59.

Orders to: In the USA and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell MA 02061, USA. *Elsewhere: Kluwer Academic Publishers Group, P.O.Box 17, 3300 AA Dordrecht, the Netherlands.*

Soil Water Balance in the Sudano-Sahelian Zone. M.V.K. Sivakumar, J.S. Wallage, C. Renard and C. Giroux, editors. IAHS Publication No. 199. IAHS, 1991. xiii + 628p. ISBN 0-947571-87-6. Paperback.

This volume is the proceedings of a workshop held in Niamey, Niger, in February 1991. The Sudano-Sahelian zone of West Africa is one of the harshest climatic regions of the world, with low and highly variable rainfall, high soil and air temperatures, high evaporative demand, and poor soils. Water availability is a major constraint

limiting food production, which over the past two decades has lagged behind the population growth rates in this region.

The soil water balance is of interest to many disciplines, e.g. soil science, agrometeorology, agronomy, agroforestry, hydrology, and plant physiology. One aim of the workshop was to bring together scientists from different disciplines to share their experience and to contribute to discussions towards evolving an effective synthesis of the state of soil water balance research in the Sudano-Sahelian zone.

This volume contains 52 papers which provide a state-of-the-art review of the relevant problems, methodologies and results from soil water balance research in the Sudano-Sahelian zone. The papers are divided in five sections: (1) Current Research and Future Implications; (2) State-of-the-art of Soil Water Balance Research; (3) Soils of the Sudano-Sahelian zone; (4) Soil Water Balance Studies in the Sudano-Sahelian zone; and (5) Operational Applications of Soil Water Balance Monitoring and Prediction. Over half of the papers are in French. The volume has a sixth section containing translations of all the abstracts.

Price: US$ 60

Orders to: Office of the Treasurer IAHS, 2000 Florida Avenue NW, Washington DC 20009, USA; or: IAHS Press, Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, U.K.

Irrigation with Treated Sewage Effluent. Management for Environmental Protection. Advanced Series in Agricultural Sciences No.17. Springer Verlag, New York, Berlin, 1991. x + 224p. ISBN 3-540-50804-X (German edition), 0-387-50804-X (US edition). Hardbound.

Properly treated sewage effluent becomes an alternative source of irrigation water, and at the same time it provides a convenient means of sewage disposal through land treatment to prevent potential health and environmental hazards caused by uncontrolled flow of wastewater.

The objective of this volume is to provide the reader with a comprehensive up-to-date overview of the principles and practices of irrigation with treated sewage effluent, including special reference to arid quality of the water (e.g. pathogenic organisms, salt, nutrients).

The present volume describes the main components of effluent-soil-plant systems involved in the development of appropriate irrigation-fertilization-cropping management for optimizing crop production. Comprehensive information is provided on the following subjects: (1) source, treatment and properties of sewage effluent; (2) mainprocesses of different effluent constituents on soil-plant systems; (3) irrigation-fertilization management; (4) irrigation systems for sewage effluent.

The book is intended especially for the field irrigation manager (agronomists, engineers and farmers), but it can also be used as a general reference for students and other specialists interested in the use of sewage effluent for irrigation. The reader will find valuable information on soil and plant processes taking place in the irrigated field, and on management methods suitable for effluent irrigation.

Price: DM 228

Orders to: Springer Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Germany; or: Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

One Earth, One Future. Our Changing Global Environment. National Academy of Sciences, Washington, 1990. xii + 196p. ISBN 0-309-04141-4. Hardbound.

Most concerned people know something about the urgency of deforestation, ozone depletion, global warming, and other matters concerning the global environment. But how is the public to make sense of these issues? Are they tied together? And what direction is public policy to take to resolve them? This volume can help individuals understand the basic science behind such changes in the global environment and the resulting policy implications that the entire planet must face. From the perspective that humankind is an increasingly powerful agent changing the planet, the volume describe the Earth as a unified system - exploring the interactions between the atmosphere, land, and water and the snowballing impact that human activity is having on the system - and points out the seemingly paradoxical need for economic growth to alleviate such global environmental problems.

Price: US$ 14.95

Orders to: in the USA and Canada: National Academy Press, 2101 Constitution Avenue NW, Washington DC 20418, USA; in Japan: Maruzen Co., Ltd, 3-10 Nihonbashi 2-chome, Chuo-Ku, Tokyo 103, Japan. *Elsewhere:* John Wiley & Sons, Ltd., 1 Oldlands Way, Southern Cross Trading Estate, Bognor Regis, West Sussex PO22 9SA, England.

Australian Soil and Land Survey Handbook. Guidelines for Conducting Surveys. R.H. Gunn, J.A. Beattie, R.E. Reid and R.H.M. van de Graaff, editors. Inkata Press, Melbourne, Sydney, 1988. xv + 300p. ISBN 0-909605-44-0. Hardbound.

This handbook provides guidelines to promote the development and implementation of consistent methods and standards for conducting soil and land resource surveys in Australia. These surveys are primarily field operations that aim to identify, describe, map, and evaluate the various kinds of soil or land resources in specified areas.

The methods of surveying soil and land have much in common but the attributes of land concern several disciplines that need to be integrated. Land is characterized by distinctive assemblages of attributes that include the atmospheric and soil climates, the lithology o underlying rocks, landform and surficial features, soils, vegetation, fauna and waterbodies.

Subjects covered in this book include: soil classification, land classification, soil survey specifications, developing land survey specifications, map-ping, field operations, vegetation and faunal surveys, subsurface investigations, groundwater, survey equipment, laboratory analysis, data analysis, the role of computers, soil properties and soil performance, land evaluation, and survey reports.

Price: $ 69.95 (plus $ 12 for postage/handling overseas)

Orders to: see below.

Australian Soil and Land Survey. Field Handbook. Second edition. R.C. McDonald, R.F. Isbell, J.G. Speight, J. Walker and M.S. Hopkins. Inkata Press, Melbourne, Sydney, 1990. xv + 198p. ISBN 0-909605-64-5. Paperback with plastic jacket.

This handbook specifies methods, standards and terminology for the description of sites in the field. It provides Australia with one reference set of definitions and has been designed for field use.

Consensus is not the only basis for the recommended survey practice. The book advocates that a comprehensive suite of land and soil attributes be recorded in a uniform manner. This approach is held to be more useful than the allocation of land or soil to preconceived types or classes. Its usefulness is enhanced where computer facilities are available. The second edition has been extensively revised and contains a number of new sections, in particular a much expanded chapter on substrate.

Price: $49.50 (+$12 for postage/handling overseas).

Orders to: Inkata Press, 13/170 Forster Road, Mount Waverly, Vic. 3149, Australia.

Guidelines for Training in Rapid Appraisal for Agroforestry Research and Extension. N.O.J. Abel, M.J. Drinkwater, J. Ingram, J. Okafor, and R.T. Prinsley. Commonwealth Science Council, 1989. viii + 117p. ISBN 0- 85092-337-9. Paperback.

These guidelines are for training research and extension personnel in rapid appraisal methods for development of agroforestry in peasant land use systems. They are illustrated through reference to a training and research exercise where an agropastoral farming system in Shurugwi Communal Area, Zimbabwe was appraised in 1988.

Four key principles underlie the methods used: (1) agroforestry interventions are identified and developed through working with and learning from farmers and the local community, as well as through conventional resource assessment (interactive research); (2) interactive research is best learned through real application, not lectures or classroom exercises and simulation (learning by doing); (3) "interdisciplinarity" is a key to successful interactive research; and (4) agroforestry interventions are developed from an understanding of constraints and conflicts existing within the rural community over access to production resources.

Price: £ 10.95

Orders to: Commonwealth Secretariat, Publications Section, 10 Carlton House Terrace, London SW1Y 5AH, U.K.

Correlations of Soil Properties. M. Carter and S.P. Bentley. Pentech Press, London, 1991. 130p. ISBN 0-7273-0317-1. Hardcover.

This book provides guidance for civil engineers faced with the problem of having to estimate soil behaviour from little or no laboratory test data. It presents typical values of engineering properties for various types or classes of soil, together with correlations between different properties. Particular emphasis is given to correlations with soil classification tests and to the use of classification systems. Included in the correlations are properties that are difficult to measure directly, such as frost susceptibility and swelling potential. In addition, explanations are given of the engineering relevance of the various properties which are discussed.

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Lane, Chichester, West Sussex PO19 1UD, England.

Bodenbiologische Arbeitsmethoden. F. Schinner, R. Öhlinger, E. Kandeler. Springer Verlag, Berlin, New York, 1991. xi + 213 S. ISBN 3-540-53143-2 (German edition) 0-387-53143-2 (US edition). Paperback.

In terrestrischen Ökosystemen sind Bodenmikroorganismen und Bodentiere für den Abbau der Streu, die Bodenbildung und die Verfügbarkeit von Nähr- und Spurenstoffen von essentieller Bedeutung. Die Masse der Stoffumsetzungen beruht auf mikrobiellen Aktivitäten. Die Messung biologischer Parameter von Böden erlaubt eine rasche Beurteilung der Auswirkungen chemischer und physikalischer Einflüsse auf den Boden. Dieses Buch stellt eine Vielzahl von Methoden vor, die zur Erfassung von Aktivitäten aus dem Kohlenstoff-, Stickstoff-, Phosphor- und Schwefelkreislauf und der mikrobiellen Biomasse geeignet sind. Bei der Abfassung der Arbeitsvorschriften wurde großer Wert auf die verständliche und vollständige Beschreibung der experimentellen Abläufe gelegt.

Das vorliegende Methodenbuch berührt Forschungs- und Anwendungsinteressen der Agrar- und Forstwissenschaften, Bodenkunde, Biologie, Ökologie, Ingenieurwissenschaften und des Umweltschutzes. Das Buch eignet sich als Quelle standardisierter Methoden für bodenbiologische Untersuchungs- und Forschungsaktivitäten, für die praktische Ausbildung von Studenten an Universitäten, Fachhochschulen und für Teilnehmer an Leistungskursen in der gymnasialen Oberstufe. Für Untersuchungsanstalten bietet dieses Methodenbuch eine Anregung zur Erweiterung der klassischen Bodenuntersuchung.

Bestellungen an: Springer Verlag, Heidelberger Platz 3, W-D-1000 Berlin 33, Germany; *oder:* Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

Forests: Elements of Silvology. R.A.A. Oldeman. Springer Verlag, Berlin, New York, 1990. xxi + 624p. ISBN 3-540- 51883-5 (German edition); 0-387-51883-5 (US edition). Hardbound.

Silvology is the general science of forest ecosystems, without the usual division between Man and Nature. This systematic treatment of forests intends to integrate and harmonize existing approaches with the help of systems modelling in a hierarchy of close system levels, according to criteria of biological architecture, biomass production and species composition.

Scientists and practitioners will appreciate this synoptic treatment of forests and their ecology, allowing the balance of holistic and reductionist viewpoints, and the placement of phenomena and techniques.

Topics covered include: introduction of the methods; sections on forest organisms; a special chapter on trees; eco-units, i.e. forest ecosystems developing after some zero-event like fire, storm or waterlogging; silvatic

mosaics built by the eco-units of different size, architecture and species composition; a summary of silvological rules determining system's behaviour at every level, e.g. fragmentation and fusion, transfer of functions, irreversibility and process oscillation.
Orders to: see below.

Nitrogen in Terrestrial Ecosystem. Questions of Productivity, Vegetational Changes, and Ecosystem Stability. C.O. Tamm. Ecological Studies 81. Springer Verlag, Berlin, New York, 1991. xii + 116p. ISBN 3-540-51807-X (German edition) 0-387-51807-X (US edition). Hardbound.

Nitrogen is a key element in ecosystem processes. Aspects of local and global changes in nitrogen in both undisturbed and disturbed conditions are discussed. Environmental changes resulting from pollution from nitrogenous compounds and changes in landuse are also described. Organisms, plants, animals and microorganisms all affect nitrogen supply. Emphasis is placed on natural and anthropogenic transfer of nitrogen between ecosystems and also on the interaction of nitrogen with other bioelements.
Orders to: Springer Verlag, Heidelberger Platz 3, W-D-1000 Berlin 33, Germany; or: Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

Hydrology and the Management of Watersheds. K.N. Brooks, P.F. Ffolliott, H.M. Gregersen, J.L. Thames. Iowa State University Press, 1991. x + 392p. ISBN 0-8138-0137-0. Hardbound.

This book provides fundamental information and practical methodology necessary to solve hydrologic problems on watersheds, and to understand and develop watershed management programs. Parts 1 and 2 are basic to courses on forest hydrology, range hydrology, or watershed management, as taught in many forestry and natural resource management programs. Part 3 deals with watershed management planning, implementation, and evaluation and emphasizes the multidisciplinary aspects, including social and economic factors. Part 4 consists of special topics that provide emphasis tailored to specific problems and to different regions of the United States and elsewhere in the world.

This book also is intended as a reference for administrators, planners, managers, and technicians who deal with the management and utilization of natural resources, but who may not be educated formally in hydrology and watershed management. It should be useful for national and international agencies in the development of short courses and continuing eduction programs. Most parts of this book have been used in formal college courses taught in the United States and training courses offered for international audiences.
Orders to: Iowa State University Press, Ames IA 50010, U.S.A.

John Bennet Lawes. The Record of his Genius. G.V. Dyke. Research Studies in Botany and related applied Fields No.8. Research Studies Press, Taunton, 1991. xiv + 482p. ISBN 0-86380-103-X. Hardbound.

The researches of J.B. Lawes and his colleague J.H. Gilbert extended from 1843 to 1900. Their work on the nutrition of crops is well known to modern workers. Their equally important work on the chemical composition of farm animals, on the efficient feeding of animals during fattening, on the sources of fat in animals, and on the disposal of sewage, is less well known. This book lists their publications on these subjects, indicating the increased understanding achieved during the long collaboration between the two men.

In addition, Lawes wrote several hundred less formal articles, which have been rediscovered and described for the first time in this book. The enrichment of the atmosphere by carbon dioxide and the leaching of nitrate from the topsoil to the aquifer below were dealt with by Lawes a century ago. The quotations from these informal articles show Lawes's lively style and his attitudes to many aspects of Victorian life.

This volume is a reference book for those whose interests are in botany, animal husbandry, general agriculture and the history of science.
Price: £ 69.50
Orders to: John Wiley & Sons, 605 Third Avenue, New York NY 10158-0012, U.S.A. or: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England.

The Food Resource. J.T. Pierce. Themes in Resource Management. Longman Group, Harlow, 1990. xx + 334p. ISBN 0-470-21512-7. Paperback.

Although science, technology and human ingenuity play an important role in the development of food production, it is ultimately dependent upon the quantity and quality of natural and environmental resources. During the last fifty years, however, humans in their quest for more and better quality food have exerted an enormous influence over the biosphere. Improvements in levels of productivity and nutrient have been achieved at a price - the worsening state of the resource base.

This wide-ranging text analyses the impact of human induced physical factors upon the supply and adequacy of food produced, an moves on to discuss their implications for future agricultural output on a global basis. These factors include non-agricultural demands for farm land, availability and quality of water for irrigation, the problem of land degradation, climatic change, issues such as development and dependency, and the role of energy in agriculture. The book concludes with a discussion of the prospects and strategies for sustainable food production. Most important will be the willingness and capacity of humans to modify their approaches to the use of the environment.

This volume will be a core textbook for advanced undergraduate courses in development and agricultural geography and resource analysis, and of interest to all those studying man/land relationships.
Price: US$ 35.95
Orders to: Longman Scientific & Technical, Longman Group UK Ltd., Longman House, Burnt Mill, Harlow, Essex CM20 2JE, U.K.

Earth. The Stuff of Life. F.E. Bear. Second edition, revised by H.W. Pritchard and W.E. Akin. University of Oklahoma Press, Norman, London, 1962, 1986. xviii + 318p. ISBN 0-8061-2002-9. Paperback.

First written by scientist Firman Bear in 1962, this revised basic resource retains his original analyses of

geological transformations, soil chemistry, volcanic activity, climatic changes on the earth, and agricultural activity. It also maintains the clarity of Bear's vision, whereby he saw the demands that increased population would place on the earth's resources. Pritchard and Akin have added new material to the text to reflect their concern about issues such as acid rain, land management, hazardous-waste disposal, and feeding the world.

It is a useful book for the general reader and will serve effectively to introduce students to the complexity of soils, the importance of the biota in soils and how soils can be used to benefit mankind in the face of rapidly rising human populations and an urgent need for increasing food production.

Price: £ 11.95

Orders to: University Press Group, 3 Henrietta Street, Covent Garden, London WC2E 8LU, U.K.

Understanding Soils, The Experience of an Adviser. N.H. Pizer. Wye College, Ashford, 1990. x + 242p. ISBN 0- 86266-111-0. Paperback.

This book gives a unique account of the work of a soil adviser whose working life spanned many of the major developments in soil science. In fact he played an important role in these developments.

The book explains his belief not only in diagnosis and treatment of the problems of farmland but in explaining to the farmer why the problem had arisen and how to recognise and treat symptoms. The author was amongst the first to realise the extent to which factors other than soil chemistry affected fertility. The book stresses the need to look at the whole soil/plant system and to assess the structure of the soil profile. The author has, throughout his career, an abiding interest in improving his understanding of soils problems by laboratory and field studies and in seeking ways of passing this knowledge on to those involved in farming.

The book also describes the historical development of advisory work on soils and plant nutrition; the examples given are from the Eastern and South Eastern Advisory Regions in which the author worked but the principles discussed could be and were applied by other soil advisers in other regions on different soils and farming conditions. Many references are made by the author to the importance of the work of the Soil Survey of England and Wales.

This book should be of interest to farmers, advisers, environmentalists and students who aim to become advisers.

Price: £ 10 (£10.63 including postage).

Orders to: Publications, Department of Agricultural Economics, Wye College, Wye, Nr. Ashford, Kent, TN25 5AH, U.K.

The Ecology of Mycorrhizae. M.F. Allen. Cambridge Studies in Ecology. Cambridge University Press, Cambridge, New York, 1991. xii + 184p. ISBN 0-521-33531-0 (Hardback) 0-521-33551-1 (Paperback).

A great many terrestrial plants live in close association with fungi. The features of this association, which is known as a mycorrhiza, are those of a mutualistic symbiosis whereby the fungus provides soil resources to the plant in exchange for energy provided by the plant. This is the first book to relate mycorrhizal biology to considerations of ecosystem dynamics, plant competition and succession. It addresses the diverse and complex ways in which mycorrhizae affect plant survival as individuals and populations, and community structure and functioning. An evolutionary/ecological approach is used to describe how and under what conditions mycorrhizae influence basic ecological processes. Applications of mycorrhizae range from managing natural and agricultural lands to biotechnological processes that enhance agricultural productivity and sustainability.

This will be an invaluable book to undergraduates, graduates and researchers in the fields of agronomy, botany, ecology, environmental microbiology, and plant pathology.s for the zone); Systems modelling and economic considerations.

Price: £ 32.50 or $ 62.50 (Hardback); £15.95 or $ 27.95 (Paperback)

Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, U.K.

Scientific Basis for Soil Protection in the European Community. H. Barth and P. L'Hermite (editors). Commission of the European Communities, Brussels, Luxembourg, 1987. ix + 630p. ISBN 1-85166-109-3. Hardbound.

This book represents the proceedings of a symposium devoted to the issue of soil protection, which was held in Berlin from 6-8 October 1986. While the public and governments of several European countries recognise the growing importance of the complex problem of soil protection, this symposium highlights the need for an *overall community policy to protect the soil.*

The objectives of the symposium were to discuss the present state of soils in the European Community in order to see whether soils are being degraded, and if so, in which way, to what extent and with what *consequences, recommending measures to protect, rehabilitate where necessary, finding ways if implementing* and monitoring these measures, and by identifying the gaps in knowledge and determining research priorities.

The authors address the problems of soil damage through various means such as the use of single crop farming n modern agriculture; the intensive use of chemicals and fertilisers; heavy machinery and intensive livestock farming. Other human activities also generating problems discussed in this book include: the disposal of solid or liquid waste, particularly toxic waste in tips; widespread atmospheric pollution from burning fossil fuels in power plants and motor vehicles; pollution abatement measures and nuclear accidents.

Several recommendations for action are discussed. These include the reinforcement of the links between various Community Policies; the encouragement of less intensive livestock production systems and the use of chemicals; proper management of agricultural waste; prevention of soil erosion and excessive run-off; the identification and clean-up of waste disposal sites and the reduction of the hazards to soil from current disposal practices; the encouragement of the recovery and re-use of contaminated or derelict land; the development of innovative soil protection techniques and the transfer of the available know-how.

Price:

Orders to: in the USA and Canada: Elsevier Science Publishing Co., Inc., 52 Vanderbilt Avenue, New York NY

10017, U.S.A. *Elsewhere:* Elsevier Applied Science Publishers Ltd., Crown House, Linton Road, Barking, Essex IG11 8JU, U.K.

State of the World 1991. L.R. Brown et al. Worldwatch Institute, New York, London, 1991. xvii + 254p. ISBN 0-393- 02934-4 (Hardbound), 0-393-30733-6 (paperback).

As the dust from the cold war settles, the battle to save the planet will replace the battle over ideology as the organizing theme of the new world order. During the twenty years since the first Earth Day in 1970, the earth lost tree cover over an area nearly as large as the United States east of the Mississippi River. Deserts claimed more land than is devoted to crops in China. Thousands of plant and animal species with which we shared the planet in 1970 no longer exist. The world's farmers lost as much topsoil as covers India's cropland. And more people joined the world's population than inhabited the planet in 1900.

How can we design a vibrant world economy that does not destroy the natural resources and environmental systems on which it depends? That is *the* question of the 1990s, and the question that this book sets out to answer.

This volume examines the options for restoring our planet's health. From energy production to urban transportation, and from forest management to the reuse of common materials like glass and paper, it details how we can provide the energy and goods the world needs in a way that is sustainable - that does not consume the resource base of future generations. The authors conclude that partially replacing income taxes with environmental taxes is the key to quickly transforming our environmentally unsustainable global economy into one that is sustainable. Such 'green' taxes would add charges to the burning of fossil fuels, the use of nonrecyclable materials, and the discharge of toxic wastes while generating income for environmentally sound development.

This book has been translated into all major languages, including Arabic, Chinese, French, German, Japanese, Russian, and Spanish.

Price: $ 10.95

Orders to: W.W. Norton & Company, 500 Fifth Avenue, New York NY 10110, USA; or: W.W. Norton & Company, 10 Coptic Street, London WC1A 1PU, U.K.

Soils of China. Li Chingkwei and Sun Ou, editors. Science Press, Beijing, 1990. x + 894p + soil map. ISBN 7-03- 000520-1 / S.12. Hardbound.

This is the first volume dealing with the soils of China written in English since the foundation of the People's Republic of China in 1949.

The book involves three parts, totalling 46 chapters. The first part covers the general genetic characteristics, classification and geographical distribution of the soils in China. The second part deals with the relationship between fertility conditions and plant growth on various soils, and the physical, chemical and biological characteristics of the soils in China. The third part elaborates the improvement and utilization of various low-yield soils in China.

One of the most important characteristics of this book is that all the chapters in this volume were written on the basis of the data and results from the research work of institutions all over the country in the last 35 years. It deals with the achievements and advances in soil geography, soil physics, oil chemistry, soil biology and soil pollution and their branch disciplines in China. This volume can actually be considered as a summary of soil researches of the country since 1949.

Price:

Orders to: Institute of Soil Science, Academia Sinica, ... or Science Press, Beijing??

The Great Ascent; the Rural Poor in India. I. Singh. The World Bank, Washington, 1990. xxvii + 444p. ISBN 0- 8018-3954-8. Hardbound.

Some 400 million people, mostly small farmers and agricultural laborers, live in poverty in India, Pakistan, and Bangladesh. To address this critical problem, South Asian governments and international agencies have introduced a strategy to raise the productivity of small farms and increase opportunities for rural employment. This strategy, however, has long been criticized for doing the poor more harm than good.

The author challenges that pessimistic vies. By critically reviewing a wealth of evidence from recent academic literature and the operational experience of the World Bank, he shows that rapid agricultural growth has benefited all classes of the poor. He also points out that the "great ascent" from poverty to a more materially rewarding life has begun.

The report examines in detail a variety of programs intended to help the poor. It evaluates agricultural research,extension, and training activities, as well as programs in dairying, poultry farming, commercial fishing, and forestry, and argues that policymakers have neglected these potentially profitable activities. Finally, it discusses the dismal failure of land reforms in reducing poverty.

Price: $ 39.95

Orders to: The International Bank for Reconstruction and Development, The World Bank, 1818 H Street, N.W., Washington DC 20433, U.S.A.

The People's Role in Wetland Management. M. Marchand and H.A. Udo de Haes, editors. Centre for Environmental Studies, Leiden, 1990. xiii + 872p. ISBN 90-5191-038-X. Paperback.

In June 1989 an international conference was held on the topic of wetland management focusing on the role of local people. The complex interfaces between people and their environment have been tried to unravel in order to reach at conclusions which may help improving man's relationship with wetlands. This book presents both these conclusions and a large variety of local experiences in wetland management, theoretical reflections on the concept of people's participation and much more. The material has been structured along the lines of the conference set-up. The keynote lectures are preceded by a short Introduction and the General Conclusions. The

large number of presentations held in the workshop sessions have been grouped according to the 15 workshop themes: Mangroves; Coastal wetlands and lagoons; Floodplains; Man-made wetlands; Poaching, wildlife cropping and sport hunting; Traditional uses: risks and potentials for wise use; People and national parks; Perception, awareness, eduction and communication; Enhancing participation in planning and development processes; People's reactions towards regulations and incentives; Conflict handling; Integrated water- and wetland management; Ramsar, participation and wise use; Science and participation; and Regional development and the role of donor agencies in participatory wetland management. Each workshop section starts with an overview paper, which includes the summaries of the discussions held in each workshop. Finally, a number of posters at the end of this book give an impression of the variety of new results and ideas presented at the poster session.

Price:

Orders to: Centre for Environmental Studies, Leiden University, P.O. Box 9518, 2300 RA Leiden, the Netherlands.

Raising and Sustaining Productivity of Smallholder Farming Systems in the Tropics. W.C. Beets. AgBé Publishing, Alkmaar, 1990, xvi + 738 p. ISBN 974-85676-1-3 (hardbound); 974-85676-4-8 (paperback). Also available in French.

This book brings together relevant knowledge on the various tropical farming systems. The approach is multidisciplinary and emphasis is placed on the interactions between agro-technical, environmental, economic, sociological, institutional, and political aspects. Information on climate, soils, plant breeding, institutions, etc. is given when these factors are crucial in the context of overall development.

The purpose of the book is to provide a framework for agricultural development in the tropics and an emphasis on raising the overall productivity of farming systems in a sustainable manner.

The book advocates consideration of the farmer's point of view, and also development within existing systems, rather than recommending the adoption of Western-style systems heavily dependent on fossil energy, good communications, and institutions.

Self-reliance and self-sufficiency are recommended rather than dependence on external inputs, and export-oriented economics. Another philosophy is that farming systems should be environmentally balanced, even if only marginally economical in the short-run. Considering the limited scope for opening up new land and global environmental deterioration, medium and long-term considerations should weigh heavier than quick profits and spectacular production gains that cannot be sustained.

Special emphasis is placed on the limitations imposed by natural and financial resources, and administrative or social structures. Those aspects of the agricultural production process that lend themselves to improvement are identified and the prerequisites and mechanisms of change discussed. Particularly, the effects of land-tenure and land-use, fertilizers, irrigation, cultural practices, rational crop selection, timeliness of planting, extension programmes and infrastructure are emphasized.

The complex subjects of this book are presented in such a way as to provide each professional group with the necessary insight into the interrelationships between factors from various disciplines in the process of agricultural development. Extensive use is made of research and project experience in Africa and Asia and a balanced picture is presented by comparing this with conditions in other tropical areas.

The book is written at different levels, that is, some parts are quite elementary, whereas others are detailed and specialized. Consequently, different sections are meant for different audiences. It is thus expected that most will read selectively, but graduate students and those specialized in agricultural systems might want to read the entire book. The organization and style are such that the book is particularly useful to readers who may not have time to read through numerous publications to obtain the information they need.

Price: US$ 65.00 (hardback), plus postal charges.

Orders to: AgBé Publishing, P.O. Box 9125, 1800 GC Alkmaar, The Netherlands.

Processes of Vegetation Change. C.J. Burrows. Unwin Hyman, London, Boston, 1990, xix + 515 p. ISBN 0-04-580012-X (hardbound); 0-04-580013-8 (paperback).

This book is about ideas on the nature and causes of temporal change in the species composition of vegetation. In particular it examines the diverse processes of interaction of plants with their environment, and with one another, through which the species composition of vegetation becomes established. The first chapter considers the general nature of vegetation and the ways in which vegetation change is perceived by ecologists. chapters 2 and 3 provide essential background about the relationships between plants and their abiotic and biotic environment.

Sequences of development of vegetation on new volcanic rocks, sand dunes and glacial deposits, respectively, are outlined in Chapters 4-6. Chapter 7 is about the patterns of vegetation change which occur in severe habitats around the world, and Chapter 8 discusses wetlands. Chapter 9 discusses the diverse responses of temperate forests to a variety of disturbing influences, and Chapter 10 deals with change in the species-rich forests of the Tropics. Chapter 11 treats, in detail, the empirical and inferential data on the biological processes occurring during vegetation change sequences. Chapter 12 considers the plant community phenomena which are implicated in the development of theory about vegetation change. The final chapter, Chapter 13, draws the diverse themes together into a unified theoretical structure by which the vegetation change phenomena may be understood.

The text contains many original illustrations and makes use of worldwide example data from the tropics to sub- polar regions and from sea shores, through deserts, grasslands and forests to alpine regions, but with particular emphasis on North American locations.

Price: GBP 60.00 hardback, GBP 19.95 paperback.

Orders to: Harper Collins Academic, 77-85 Fulham Palace Road, Hammersmith, London W6 8JB, England.

Soil Biology. M. Wood. Blackie, Glasgow and London and Chapman and Hall, New York, 1989, 154 p. ISBN 0-216- 91786-7 (U.K., paperback); 0-412-00951-X (U.S.A., paperback).

There is currently great interest in the biology of soil, stimulated by increased concern to conserve natural resources, not only in agriculture, but also in natural ecosystems. Recent developments in molecular biology have raise the possibility of manipulating soil organisms in order to improve food production and the quality of the environment. Such important environmental issues can be discussed sensibly only in the light of a thorough understanding of naturally occurring organisms in soil.

This volume in the Tertiary Level Biology series provides an integrated account of the organisms in soil - from viruses to trees, the environments in which they live, and the ways in which they can modify soil by their biochemical processes. The ways in which organisms interact, particularly with plant roots, and the methods of manipulating soil organisms are also discussed.

This book has been written for advanced undergraduate and postgraduate students of biology, microbiology, agriculture and environmental science.

Price: US$ 29.95.

Orders to: Chapman and Hall, 29 West 35th Street, New York, NY 10001, U.S.A.; or: Blackie & Son, Bishopbriggs, Glasgow G64 2NZ, U.K.

Rain Forest Regeneration and Management. Man and the Biosphere Series Volume 6. A. Gómez-Pompa, T.C. Whitmore and M. Hadley, editors. Unesco, Paris and the Parthenon Publishing Group, Carnforth and Park Ridge, 1991, xxiii + 457 p. ISBN 1-85070-261-6 (Parthenon); 92-3-102647-X (Unesco) Hardbound.

The aim of this book is to explore the implications to management of present scientific knowledge on rain forest regeneration. In addition to providing an overview of scientific information on rain forest regeneration, subsidiary aims are to identify gaps in information and understanding, in respect to both scientific hypotheses and the needs of management, and to explore directions for future collaborative research and action. The intention is not to present an encyclopedic or comprehensive literature review. Rather, the concern is with a review of selected technical issues and ecological processes within the context of management. The motivation is to help bridge the gap between the sciences associated with the wet tropics and on-the-ground management.

The book is based on thematic reviews, complemented by case studies. Synthesis reviews deal with such topics as sylvigenesis and architectural diversity, regeneration dynamics at various spatial scales, physiology of fast-growing species, reproductive biology and genetics, fruit and seedling ecology, nutrient cycling, current management programmes. Case studies deal with research and management experience in particular locations and regions. A dual challenge to the authors of case studies is to inform a wider audience of the experience gathered in a particular project or technical field, but also to suggest what might be the wider practical applications of a given case study for rain forest management.

The intended audience spans research scientists, resource managers and persons involved in teaching and education who are interested in land-use planning and resource management issues in the forested lands of the humid and subhumid tropics. the concern is with natural rain forest ecosystems, but not with plantations.

Price: GBP 35.00 or FF 350.

Orders to: In U.K. Parthenon Publishing Group, Casterton Hall, Camforth, Lanc. LA6 2LA, U.K. In U.S.A. Parthenon Publishing Group, 120 Mill Road, Park Ridge, NJ 07656, U.S.A. *Elsewhere:* Unesco's official distributors.

Expected Effects of Climatic Change on Marine Coastal Ecosystems. Developments in Hydrobiology 57. J.J. Beukema, W.J. Wolff and J.J.W.M. Brounds, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1990, 221 p. ISBN 0-7923-0697-X. Hardbound.

Our atmosphere is overloaded with carbon dioxide and other gases. This accelerating man-made disturbance is bound to change our climate. Temperature will go up owing to the 'greenhouse effect' and UV radiation will be intensified by the breakdown of the ozone layer.

The coastal environment is and will be affected in a variety of ways by the large-scale changes in the concentrations of atmospheric gases and probably resulting climatic changes. Some of these effects might be mainly beneficial (e.g. the increased productivity due to higher availability of carbon dioxide), others could be exclusively detrimental (e.g. increased levels of UV-B irradiation). Consistent changes in temperature will cause shifts in areas of distribution of great numbers of species of plants and animals, changing the composition of ecosystems with risks of imbalance and extinction of rare and sensitive species. Global temperature rises are bound to be followed by rises in sea level, even from thermal expansion alone. The precise effects of sea-level rise in coastal environments will depend largely on geomorphological processes, in particular on the net result of changing rates of sedimentation and erosion. Such decisive but indirect effects make predictions highly uncertain. Nevertheless, it is a worthwhile exercise to consider possible effects of climatic changes, in particular to realize in time the gaps in our knowledge and to be prepared when climatic changes become greater.

This book reports the results of an international workshop which discussed the effects to be expected of climatic changes in coastal areas (including salt marshes, tidal flats and open water). More than 20 experts present their expectations of how coastal areas will change under a regime of higher levels of carbon dioxide (3 papers); temperature changes (6 papers); sea-level rises (9 papers); and UV-B radiation (2 papers).

Price: NLG 200, USD 117.50 or GBP 72.50.

Orders to: see below.

Land Use Changes in Europe. Processes of Changes, Environmental Transformations and Future Patterns. The Geo Journal Library Volume 18. F.M. Brouwer, A.J. Thomas and M.J. Chadwick, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1991, xiv + 528 p. ISBN 0-7923-1099-3. Hardbound.

The patterns of land use that have evolved in Europe reflect the boundaries set by the natural environment and socio-economic responses to the needs of the population. Over the centuries man has been able to overcome increasingly the constraints placed on land use by the natural environment through the development of new

technologies and innovations, driven by an increasing population and rising material expectations. However, activities are still ultimately constrained by natural limitations such as climatic characteristics and edaphic and vegetational features.

A major problem for land management, in its broadest sense, can be a reluctance to foresee the consequent ecological changes. This means that mitigating strategies will not be implemented in time to prevent environmental degradation and social hardship, although in may parts of Europe, over some centuries, demands have been met in a sustainable way, by sound, prudent and temperate expectations that have dictated management regimes.

The management of land in Europe has always been a complex challenge: land is the primary, though finite resource. Decisions regarding the use of land and manipulation of ecosystem dynamics today may affect the long- term primary productivity of the resource. Decisions to change land use may be virtually irreversible; urbanization is an illustration of the influence of population density on the land resource. A workshop was held in Poland in September, 1988 to consider all these interacting features of European land use against the background of possible global climatic change. the workshop was the source of draft papers and these, in an edited form, constitute the majority of chapters in this book. The meeting focused on six topics: (1) major land use determinants; (2) present land use patterns; (3) the main processes of change of major importance for future land use; (4) historical land use changes in Europe; (5) likely future land use patterns; and (6) policy implications and the identification of management strategies. Thus, this book covers a wide spectrum of issues. Most are related to the potential impact of climatic change and how this must be considered in the long-term and on a broad-scale. Some of the questions that need to be addressed include the topics listed. How will the characteristics of the land resource change and what are the implications of those changes on the environment and its capacity to supply these? What policies need to be introduced to encourage sensitivity to environmental supply limitations? What scale of response is required?

Price:

Orders to: see below.

The RAINS Model of Acidification. Science and Strategies in Europe. J. Alcamo, R. Shaw and L. Hordijk, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1990, 402 p. ISBN 07923-781-X (hardback); 07923-0782-8 (paperback).

The extent of Europe's acid rain problem became known in the 1970s and early 1980s. In response, the scientific community amassed a wealth of information about the problem in the 1980s. Now the 1990s will be a time for utilizing this information for taking action. With this science-policy link in mind, an East-West team of scientists at IIASA has been working since 1983 to translate scientific information into a form useful for making decisions about control of acidification in Europe. To accomplish this goal they have built an integrated model called RAINS (Regional Acidification INformation and Simulation). The model is integrated in the sense that it links public policy alternatives with their consequences in nature, and also because it brings information about costs of control, emissions, atmospheric transport, and ecological impacts together in one place in a consistent manner.

The goal of the b9ook is to describe comprehensively and clearly the scientific basis of the RAINS model, and to review major findings from using the model. In doing so, the book provides a comprehensive and quantitative overview of European-scale acidification from a system analysis perspective.

Orders to: In U.S.A. and Canada: Kluwer Academic Publ., 101 Philip Drive, Norwell, MA 02061, U.S.A.
Elsewhere: Kluwer Academic Publishers Group, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

Problems of Soil Science. Soviet Pedologists to the 14th International Congress of Soil Science. Editors-in-chief V.A. Kovda and M.A. Glazovskaya; editorial board: I.V. Alexandrova, Ye.A. Andreyeva et al., compiled by M.I. Gerasimova and N.P. Chizhikova. Nauka, 1990, 288 p. ISBN 5-02-007279-6.

The book presents recent achievements of Soviet scientists in pedology, agricultural chemistry, reclamation, development of rational farming systems and of fertility models. The updated theoretical concepts on soil chemical properties and processes are considered, which are important for soil fertility and conservation; original data on nitrogen, phosphorus, potassium transformations in soils are given; fundamental features of clay mineralogy are described; problems of genetic pedology are discussed. This compilation will be of interest to soil scientists, agrochemists, and agriculturists.

Requests to: All-Union Society of Soil Scientists .....

Plant Life under Oxygen Deprivation. Ecology, Physiology and Biochemistry. M.B. Jackson, D.D. Davies and H. Lambers, editors. SPB Academic Publishing, the Hague, 1991, xii + 326 p. ISBN 90-5103-051-7. Hardbound.

A remarkable feature of plant life on land is the ability of some species to survive and to grow and reproduce vigorously in over-wet conditions that would asphyxiate the vast majority of plants. This capability of the few to succeed in the face of oxygen deprivation, together with the contrasting vulnerability of the majority of species are of inestimable importance for agriculture and for the many varied and sometimes vast wetland ecosystems throughout the World. This book captures the excitement and challenge inherent in a subject that is of paramount social and economic significance and which demands scientific understanding at ecological, physiological, biochemical and molecular biological levels. These areas are dealt with in the three sections entitled (1) Ecological and Environmental Perspectives (7 papers); (2) Biochemical Processes in Oxygen-deficient Tissue (9 papers); and (3) Root-Shoot Relationships of Flooded Plants (4 papers). Authors have been chosen for their expertise in research, and for their insights into this growing and fascinating subject. Interest in oxygen stress in plants has gained even greater significance from recent predictions of raised water levels resulting from global warming. The book is written primarily for research workers, university and college teachers and students with interests in plant physiology, biochemistry, agronomy and ecology.

Price: NLG 135 or USD 75.00.

Orders to: SPB Academic Publishing, P.O. Box 97747, 2509 GC The Hague, the Netherlands.

Paleopedology Manual. J.A. Catt, guest editor. Quaternary International, The Journal of the International Union for Quaternary Research, Vol. 6, 1990. Pergamon Press, Oxford, New York, 1991, 95 p. ISSN 1040-6182.

This Manual has been prepared by a Working Group consisting of members of INQUA Commission 6 - Paleopedology; Working Group WG-6B, and ISSS Working Group on Paleopedology. Drafts were discussed at INQUA and ISSS Congresses, lately in Kyoto.

As was originally proposed at the X INQUA Congress in 1977, the manual initially outlines field and laboratory techniques for the investigation of paleosols, including their dating. However, it is not intended to be used primarily either in the field or at the laboratory bench. Excellent manuals for both purposes have already been published for the study of soils, and can be used directly or adapted easily for the description and analysis of paleosols. Instead this manual summarizes the wide range of techniques likely to be useful for dating and interpreting buried and relict soils, and provides selected references to more detailed descriptions of appropriate methods.

The final section tackles the thorny subject of paleoenvironmental interpretations of paleosols, though the Working Group felt it was necessary first to consider the changes in buried soils caused by diagenesis, as these may modify characteristics known to have some environmental significance in recent surface soils. Although the final section should be the most useful part of the manual for many users, the Working Group is conscious that paleoenvironmental interpretation is still complex and imprecise. Yet paleosols offer considerable virtually untapped potential for such interpretation. Extensive further research is required before this section can be rewritten in a more direct and helpful way. The research needed is at the meeting point of many sub-disciplines in earth science - soil science, stratigraphy, petrography, geochemistry, geomorphology, paleontology, etc., and if this handbook does nothing more than stimulate such multidisciplinary work it will be judged a worthwhile exercise.

Price:

Orders to: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England; or: Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.

The Quaternary Perspective. Official Newsletter of the International Union of Quaternary Research (INQUA). Chr. Schlüchter, editor. Pergamon Press, Oxford, New York.

This Newsletter contains news about INQUA, and its Commissions, ongoing and planned activities, reports of meetings, a meeting calendar, and information on the journal Quaternary International.

For information: Dr. Chr. Schlüchter, Eng. Geology, ETH-Hönggerberg, CH-8093 Zürich, Switzerland.

Soil Analysis. Modern Instrumental Techniques, Second edition. Books in Soils, Plants, and the Environment. K.A. Smith, editor. Marcel Dekker, New York, Basel, 1991, viii + 659 p. ISBN 0-8247-8355-7. Hardbound.

The theme of the revised and enlarged second edition is the same as that of the first edition, that is, to fill the gap between books covering traditional methods of analysis and specialist monographs on individual instrumental techniques, which are usually not written with soil or plant analysis specifically in mind. The principles of the techniques are combined with discussions of sample preparation and matrix problems, and critical reviews of applications in soil science and related disciplines.

In the 7 years since the Preface to the first edition was written, there have been many developments in the instrumental techniques applied to the analysis of soils and other environmental materials. Some techniques that were not used widely enough to merit inclusion in the first edition have become of much greater significance. For example, inductively coupled plasma (ICP) spectrometry has now become the favoured technique for routine multielement analysis in major soil- and plant-testing laboratories. Another new inclusion is the chapter on ion chromatography, which has married the long-established procedures of ion-exchange separation to the technology of high-pressure liquid chromatography to provide a powerful way of determining ionic species in solution, especially anions which were, hitherto, difficult to measure. The last new addition is the chapter on analysis of soil functional groups by NMR spectroscopy. This is a developing area, which seems destined to expand as equipment and awareness of its potential become more widespread.

All 11 chapters of the first edition are retained in revised form. The scale of the revisions varies. One general feature of the revisions is the extent to which microprocessor control systems feature in the descriptions of the current generation of instruments. The explosive growth of microprocessors in instrumental control and operation, in all forms of analysis, and concurrent developments in software for data analysis and microcomputers for running that software, are the most significant new features of the field. Not only has the sophistication of what can be done increased greatly, but the cost for doing it has fallen dramatically in real terms.

This book is aimed at the researcher working in soil science or a related field who is faced with the problem of making a new determination, or of replacing old analytical equipment to make a routine determination more accurately or more efficiently.

The book will help in evaluating the available techniques so that the optimum choice in terms of speed, cost, or sensitivity may be selected. It will also be useful to teachers and students of post-graduate courses in soil chemistry and soil analysis.

Despite these attempts at standardization, the choice of appropriate soil physical measurement techniques is often still uncharted ground full of pitfalls. There are certainly many books, reviews, and technical notes that provide listings and descriptions of soil physical methods. However, most users require a brief guide to any necessary theory and to the techniques most suitable to their own particular application before they can make a choice and are ready to consult one of the many available compilations of methods. This book is written with the research scientist, agricultural or environmental adviser, and postgraduate student in mind: people who have some general background in soils but may not have received training in soil physics. It provides the information required to allow the user to choose the technique most suited to his or her desired application. Each chapter

contains a review of relevant theory and of measurement methods. Particular emphasis has been given to the merits, limitations, and range of application of each method. As well as the consideration of accuracy, this includes measurement time, ease of use, and cost. Lists of suppliers and references to construction details and to papers that describe the detailed use of each method are also provided.
Price: US$ 150.00 in U.S.A. and Canada; US$ 180.00 elsewhere.
Orders to: Marcel Dekker, Inc., 270 Madison Avenue, New York, NY 10016, U.S.A.

Earth Observations and Global Change Decision Making, 1989: A National Partnership. I.W. Ginsberg and J.A. Angelo, editors. Krieger Publ., Comp., Malabar, 1990, xii + 355 p. ISBN 0-89464-489-0. Hardbound.

Fossil and geologic records bear ample evidence that Earth, as a global system, has experienced major changes during the millions of years of biological evolution. Short-term and long-term climatic changes have occurred; species have appeared and disappeared; the chemistry of the atmosphere and oceans has changed; and the life-sustaining capability of Earth's surface has varied. For the most part these changes came about through natural causes. Now, however, anthropogenic agents are capable of changing, in a relatively short time, the whole global environment in a way that threatens our existence as well as that of other species.

Mankind consumes resources at an exponential rate, and in the process destroys habitat and pollutes the planet with the byproducts and end-products of that consumption. The results include acid rain, destruction of *tropical rain forests, desertification, depletion of the ozone layer, and much more.*

To make the right choices and take the appropriate steps, those of us concerned with global change must better understand and be able to predict global change and its impact accurately. Satellite Earth observations and the development of a concomitant scientific data and information system are critical to establishing the research *base necessary to setting the parameters of the discussion and providing the opportunity for sound policy* making.

Success in the scientific areas and curtailment of the most environmentally harmful actions will depend on national and international cooperation in conformance with clearly established policies. This cooperation, of *necessity, will require communication among the communities involved in forming and implementing national* decisions on global change. That communication is the primary goal of the annual meeting "Earth Observations and Global Change Decision Making: A National Partnership."

This publication contains transcripts from the meeting, as well as some submitted papers. In addition, the editors felt it would be helpful to include a glossary to aid in understanding the terminology and a section summarizing physical and economic facts (geo-factlets) about various countries. The intent is to expand these two sections in subsequent proceedings.
Price: US$ 64.50.
Orders to: Krieger Publ. Comp., P.O. Box 9542, Melbourne, FL 32902, U.S.A.

Special IFA/ANDA Meeting on Fertilizers and Agriculture, Rio de Janeiro, Brazil, March 1988. Proceedings, 6 volumes. International Fertilizer Industry Association (IFA), Paris, 507 p.

This meeting on Fertilizers and Agriculture was jointly organised by IFA (The International Fertilizer Industry Association) and by ANDA (The Brazilian National Association for the Promotion of Fertilizers and Limning Materials). The programme included 6 open sessions.

The present proceedings include only the main papers given during the six open sessions. As for previous IFA meetings, and to preserve the informal, frank and spontaneous nature of the discussions, the proceedings do not include the discussions and the preliminary remarks by the Session Chairmen.

One of the objectives of the meeting was to examine the situation of the fertilizer industry in Brazil and in the Latin American region in a very broad context including agricultural development, international competition and policies adopted to promote fertilizer use. An other purpose of the meting was to promote the exchange of experience between various countries of the world.
Requests to: see below.

The Role of Fertilizers in Agricultural Production. Agrochem-IMEMO-IFA Seminar, Moscow, June 1990. *International Fertilizer Industry Association, Paris, 1991, 317 p.*

This publication contains the 21 papers presented at the Seminar. They mainly deal with fertilizer production and -use, fertilizer recommendations, and the use of agrochemicals in the USSR.
Requests to: Ms. Hélène Righetti, IFA, Rue Marbeuf, F-75008 Paris, France.

Study week on **A Modern Approach to the Protection of the Environment,** November 2-7, 1987. Pontificiae Academiae Scientiarum Scripta Varia 75. G.B. Marini-Bettolo. Pergamon Press, Oxford, New York, 1989, xxi + 606 p. ISBN 0-08-040816-8. Hardbound. Softcover ed. by Pontifical Academy of Sciences, ISBN 88-7761-033-6.

The protection of the environment represents today a priority in both research and action to avoid the disruption of the ecosystems forming the biosphere, which may lead to an unlivable plant.

Concern about the environment was clearly expressed by Pope John Paul II in his allocution to the Academy *on October 28, 1986:*

"The harmonious relationship between man and nature is a fundamental element of civilisation, and it is easy to grasp all the contribution that science can bring to this field of ecology, in the form of defence against violent alterations of the environment and of growth in the quality of life through the humanisation of nature!.

The Pontifical Academy of Sciences, which since 1970 had made a choice of studying the scientific problems concerning ecology, following the suggestion of the Pope, organized a Study Week, where the papers included in this publication were presented.

Among the multifaceted topics and aspects of ecology, it was decided that on the basis of the data so far obtained through research in the last twenty years and the analysis of the state of the biosphere, the object of the meeting should be that of suggesting solutions in order to protect our environment, that is, how to go into action.

Price: UK£ 35.00.
Orders to: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England; or: Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.

Global Alert. The Ozone Pollution Crisis. J. Fishman and R. Kalish. Plenum Press, New York and London, 1990, xviii + 311 p. Hardbound.

This book discusses today's most compelling environmental threats: the triple menace of high levels of ozone pollution, global warming, and the erosion of the ozone layer. In this book, written for the general public, the authors recount the story of global ozone pollution and its influence on forests and humans, and that of climatic change induced by the accumulation of greenhouse gases. The authors then offer a revolutionary course designed to protect our environment on a national and international scale.
Price: US$ 24.50.
Orders to: Plenum Publ. Corp., 233 Spring Street, New York, NY 10013, U.S.A.

Evaluation of Land Resources in Scotland. J.S. Bibby and M.F. Thomas, editors. Macaulay Land Use Research Institute and Royal Scottish Geographical Society, 1990, 105 p. ISBN 0-7084-0504-5.

This publication contains the proceedings of the Royal Scottish Geographical Society Symposium, held in the University of Sterling, September 1989. Ten years earlier a similar symposium had been held and the Society felt that the time was appropriate to review progress and to identify the future directions of land evaluation in Scotland.

The past decade has been one of far reaching changes in attitudes to the use of land, largely driven by a close scrutiny of economic implications of policies adopted from 1960 onwards, in a European context rather than from the United Kingdom or Scottish national viewpoint. Simultaneously a stronger environmental lobby developed. As the decade witnessed the conflicts which changing views engender, it also saw the emergence of data handling and manipulative powers on a scale previously only dimly envisaged, the development of which holds promise for the future.

In 1979 it was apparent that no single interest had an over-riding priority in the use of land in Scotland. In 1989, it can be said that the breadth of interest in rural affairs has clearly proved that view to be correct. Changes are in train which will result in a more diversified land use spectrum than has been the case for many years. Do we have the information to recognise, and the tools to control, the emergent pressures? The symposium was offered as a forum for the expression and exchange of views on these matters. The papers presented will serve to illustrate the initiatives taken in Scotland and to encourage discussion of the issues identified.
Price: UK£ 7.00 including postage.
Orders to: Land Use Division, Macaulay Land Use Research Institute, Craigiebuckler, Aberdeen AB9 2QJ, Scotland, U.K.

Information Systems for Land Resource Management in Developing Countries. Noragric Occasional Papers Series C - Development and Environment No. 7. Noragric, Aas, 1991, 350 p. ISSN 0802-0957.

This M.Sc. thesis describes and analyses the development and use of three computerized information systems for land resource management in Africa: the Global Resource Information Database (GRID), the system developed for the Soil Survey Unit in Zambia, and the system developed for the Regional Inventory of Agricultural Resource Base 9RIARB) for use in the SADCC member states.
Orders to: Noragric, P.O. Box 2, N-1432 Aas-NLH, Norway.

Field Tunnel Erosion: Its Characteristics and Amelioration. S.C. Boucher. Monash University, Clayton, 1990, 64 p. and 1 colour map. ISBN 0-7306-0613-9.

Natural tunnelling as opposed to tunnelling in earthworks, is an insidious form of subsurface erosion, with much development proceeding before surface manifestations are evident. It occurs in many countries throughout the world, apparently transcending climatic boundaries. Site characteristics and associated soil types may vary considerably between tunnelled areas. Hydrological studies have shown that tunnel discharge can be the dominant component of a drainage basin hydrography. Two main forms of tunnelling can be defined according to whether or not a free face is present. The effects of this process have wide-ranging significance in agriculture, soil conservation, civil engineering and property development. Its development is not uniquely related to sheet erosion, and in a broad geomorphic sense, tunnelling should be seen as a natural process, owing to its occurrence under uninhabited natural forest. Tunnel erosion occurs in all over Australia (proving widespread in Victoria), exhibiting many differences from incidence elsewhere in the world. A strong variation in soil structural stability over short horizontal and vertical distances within affected areas has only been found in the last decade. The role of exchangeable sodium for soil stability is significant in the Australian context. Prediction of the dispersive potential of a clay contributes to the development of a suite of tests needed to accurately assess the susceptibility of a soil to tunnel erosion, and indicates appropriate reclamation requirements.
Price: Austr.$ 30.00, plus postage and handling.
Orders to: The Publications Secretary, Dept. of Geography and Environmental Science, Monash University, Clayton, Victoria 3168, Australia.

Laboratory & Analysis Technology International 1991. Cornhill Publications Ltd., London, 1991, 120 p. ISBN 0- 946300-68-2.

This second issue of this publication contains contributions on laboratory automation (mainly Laboratory Information Management System or LIMS), biotechnical and clinical chemistry, instrumentation technology, and laboratory equipment.
Price: on strictly controlled basis free of charge; or £ 55 or US$ 80 per copy.
Orders to: Cornhill Publ. Ltd., Kings Court, 2-16 Goodge Street, London W1P 1FF, England.

Fundamental of Soil Science, 8th edition. H.D. Foth. John Wiley & Sons, New York, Chichester, 1990, 360 p. ISBN 0-471-52995-8. Paperbound.

The eighth edition of this well-known textbook is a major revision in which there has been careful revision of the topics covered as well as changes in the depth of coverage. Many new figures and tables are included. Summary statements are given at the ends of the more difficult sections within chapters, and a summary appears at the end of each chapter. Many nonagricultural examples are included to emphasize the importance of soil properties when soils are used in engineering and urban settings. The topics relating to environmental quality are found throughout the book to add interest to many chapters. Several examples of computer application are included.

Topics covered in Chapter 1 include factors affecting plant growth, root growth and distribution, nutrient availability, and soil fertility and productivity. Chapter 2 covers the basic soil formation processes of humification of organic matter, mineral weathering, leaching, and translocation of colloids. The important theme is soil as a three- dimensional body that is dynamic and ever-changing.

The next five chapters relate to soil physical properties and water. The material on tillage and traffic was expanded to reflect the increasing effect of tillage and traffic on soils and plant growth. Chapters 8 and 9, "Soil Ecology" and "Soil Organic Matter", are complimentary chapters relating to the biological aspects of soils.

Chapter 10, "Soil Mineralogy", and Chapter 11, "Soil Chemistry", are complimentary chapters relating to the mineralogical and chemical properties. Chapter 12 through 15 are concerned with the general area of soil fertility and fertilizer use. Throughout these four chapters there is a greater emphasis on the importance of soil fertility and fertilizers and on the environmental aspects of growing crops.

Chapters 16-19 relate to the areas of soil genesis, soil taxonomy, soil geography and land use, and soil survey and land use interpretations. In this edition, the subjects of soil taxonomy (classification) and of soil survey and land use interpretations have received increased coverage. the emphasis in the soil geography and land use chapter is at the suborder level. References to lower categories are few.

The final chapter, "Land and the World Food Supply", includes a section on the world grain trade and examines the importance of nonagronomic factors in the food-population problem.

Both English and metric units are used in the measurement of crop yields, and for some other parameters. Using both kinds of units should satisfy both United States and foreign readers.

Price: £ 14.95.

Orders to: John Wiley & Sons, 605 Third Avenue, New York NY 10158-0012, U.S.A. or: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England.

Soil Classification. Reports of the International Conference on Soil Classification, 12-16 September 1988, Alma-Ata, USSR. Boris G. Rozanov, editor. Centre for International Projects, USSR State Committee for Environmental Projection, Moscow, 1990, 348 p.

The problem of soil classification has taken a central place in the history of soil science. It is well known that *soils are identified through a system of soil classification. But many systems differ widely because they are* based on different principles and criteria.

The conference was planned as a meeting providing the experts in the area of soil classification with an opportunity for exchange of the views and ideas on the existing systems of, and approaches to, the classification of soils at a world scale. It was also expected that this exchange of views and ideas would lead to coordination of the positions of different scientific schools before the 14th ISSS Congress in 1990.

The International Conference on Soil Classification was organised by the All-Union Society of Soil Science of the USSR in cooperation with the ISSS within the framework of the activity of their respective Commissions V.

The reports presented in this book are subdivided into four groups: (1) Principles and general aspects of soil classification; (2) Systematics of soils of the world; (3) National and regional systems of soil classification; and (4) Classification of separate soil types. Together they accommodate the world knowledge in this branch of soil science. This book would be very useful both for professional soil scientists and students.

Requests to: V.V. Dokuchaev Soil Institute, 7, Pyzhevsky Lane, 109017 Moscow, USSR.

Vladimir S. Stolbovoy, Moscow, USSR

Dissolution and Adsorption Properties of Soil Iron Oxides. O.K. Borggaard. Royal Veterinary and Agricultural University, Frederiksberg, 1990, 122 p.

Iron oxides (used here as a group name for all iron compounds of the Fe2O-H3-H2O system) occur in almost all soils. In many soils iron oxides are present in low concentrations and consist of more minerals. Other iron-bearing compounds may also be present. Soil iron oxides can therefore often be estimated only by techniques based on their dissolution properties, because such techniques have high sensitivity and low detection limit.

Due to their hydroxylated surface and high specific surface area soil iron oxides are very reactive adsorbents for numerous chemicals of agricultural and environmental importance. Besides iron oxides most soils contain other adsorbents such as aluminium oxides, clay silicates, and organic matter. To understand adsorption by soils the adsorption properties of the individual soil components should be known, although these properties may be modified in soils due to mutual interactions between the components. If, however, such modifications lead to interactions that can be identified, they can give useful information about the nature of the components in soils; for example, whether soil iron oxides occur as discrete particles or as coatings on other constituents, i.e. whether adsorption properties are additive or not.

Dissolution and adsorption both act at the solid-liquid interface, emphasizing the importance of the surface of iron oxides and thus of their surface area or crystallinity. The surface area rather than the type of mineral seems to determine the capacity of iron oxides as adsorbents. Unfortunately, direct determination of the surface area of soil iron oxides is nearly never possible. Dissolution properties and surface area are, however, related; the least "insoluble" iron oxides such as the poorly crystalline ferrihydrite have the smallest particle size and thus the largest specific surface area. Therefore, dissolution techniques may be used to give indirect information about

the surface area and thus adsorption capacity of soil iron oxides, provided certain iron oxides fractions are dissolved selectively by these techniques. Determination of adsorption before and after such selective dissolution treatments of soils (the difference method) together with studies of well known iron oxides, which are often synthetic samples, may give useful information about soil iron oxides and their adsorption properties.

The main purpose of this cursory review is to discuss dissolution and some dissolution techniques (particularly the EDTA, oxalate, and dithionite methods) in relation to adsorption properties of soil iron oxides. It is attempted to fill in some of the gaps in these investigations scattered over several papers by discussing their main results together. Information about dissolution and adsorption properties will be considered and compared to show their mutual character. Therefore, considerable attention will be paid to processes at the iron oxide surface and factors affecting them. In an attempt to explain some observations, particularly about dissolution, information not commonly found in soil science literature will be incorporated and considered in some details. *Requests to:* Dr. O.K. Borggaard, Chemistry Dept., Royal Veterinary and Agricultural University, 40 Thorvaldsensvej, DK-1871 Frederiksberg C, Denmark.

Chronosequences of Volcanic Ash Soils. Hamburger Bodenkundliche Arbeiten Band 15. G. Miehlich. Schriftleitung P. Becker-Heidmann. Verein zür Förderung der Bodenkunde in Hamburg, 1991, 207 p. ISSN 0724-6382.

A survey of the literature on volcanic ash soils reveals that interest has primarily focused on areas within the humid tropics and in the temperate zone. Comparatively little work has been done in the peripheral tropics.

Investigations on the stratigraphy of pyroclastics have shown that the volcanic ash soils in the Sierra Nevada de Mexico are very suitable for the study of soil-chronosequences. The ashes originate from a single eruptive center, the Popocatépeti, a volcano which was active over large intervals and dispersed its pyroclastics in overlapping regions of the Sierra Nevada Mountain Range. These ash layers can be dated easily and are comparable to each other with respect to primary mineral composition and particle size distribution.

Moreover, the distribution of the ashes along the slopes of the Sierra Nevada makes it possible to study the soil formation of a particular ash in different climatic zones.

Under such favourable conditions, it seemed adequate to apply a broad spectrum of analyses to an extensive soil sampling in order to study the effects of age and climate on the formation of soil properties.

The publication contains site and soil descriptions and analytical data, discussions and a long list of references.

Price: DM 30.00.

Orders to: Verein zür Förderung der Bodenkunde, Allende-Platz 2, W-2000 Hamburg 13, Fed. Rep. of Germany.

Qualitative and Quantitative Physical Land Evaluation: an Operational Approach. H.A.J. van Lanen. Doctoral thesis, Wageningen Agricultural University. 1991, xiv + 195 p.

Physical land evaluation methods are crucial for evaluating potentials and constraints of land for intended land use. Physical resources, such as soil, climate, hydrology, and topography are evaluated. Different technical procedures are used for physical land evaluation ranging from simple methods based on expert knowledge to more complex methods based on simulation models. The expert knowledge is derived from farmers' experiences. The methods using expert knowledge provide broad descriptive answers regarding land qualities and suitability and, therefore, they are described as qualitative evaluation methods. Qualitative physical land evaluation methods are developed and applied to screen possibilities of Dutch land for injection of slurry from animal manure, and to assess the growth potential of sugar-beet in the European Communities. Quick answers are obtained if the knowledge is captured into expert models in a computer system and when they are linked to a geographical information system.

The more complex methods are based on computer models simulating transient soil-water flow and crop growth. These methods are described as quantitative because they produce specific expressions in quantitative terms, such as occurrence probabilities of soil-water deficits, average crop yields, and temporal variabilities of crop yields. Quantitative methods are elaborated and their abilities are illustrated with the assessment of growth potential of potatoes in the Netherlands, and of sugar-beet and wheat in the European Communities. The impact of some land use options on crop production is explored, such as set-aside of land. Quantitative evaluation yields more specific results than qualitative evaluation, but it is more time-consuming and requires more specific input data. Because of these higher demands, a mixed qualitative/quantitative evaluation approach is introduced. In this approach expert models are used to screen land for severe restrictions for a defined use, and, subsequently, simulation models are applied to the remaining potentially suited land. An analysis of required efforts for various evaluation approaches is presented.

Finally, a quantitative physical land evaluation is elaborated to assess the effects of soil management on soil structure degradation and regeneration on farm scale. The major role of the land characteristic "soil macrostructure" is described. Several soil-structure types resulting from different soil management systems are recognized in sandy loam and clay loam soils, and characterized quantitatively in soil-morphological and soil-physical terms. The data are used as input for a soil-water flow model to calculate water-associated land qualities for land units with different soil-structure types. Differences in land qualities are interpreted as effects of soil-structure change. The modifications of the soil-water flow model to account for bypass flow and internal catchment (subsurface infiltration) are described.

Orders to: Dr. H.A.J. van Lanen, T.M.C., Asserplantsoen 16, 6671 BL Zetten, the Netherlands.

Soil Use and Management. Vol. 7, No. 2, June 1991. Blackwell Scientific Publications, Oxford. ISSN 0266-0032.

Nitrate leached from the soil is a loss to the farmer and a most unwelcome addition to surface- and groundwaters.. The leaching of nitrate results from a complex interaction of physical, chemical and biological processes and to control it we need to understand it and predict it. This need has stimulated the development of

a series of models for leaching that dates back to the Rouselle equation of 1913.

This issue of Soil Use and Management brings together some of the widely-varying current approaches to modelling nitrate leaching. The main emphasis is on the physical aspect of the process, but two of the contributors include the effects of the crop and the micro-organisms in the soil. Modelling they physics of leaching is relatively simple in a uniform medium, and equations based on classical mechanistic physics can be made to apply very well to laboratory columns of sieved soil. Soils in the field, however, are usually anything but uniform, which can make the mechanistic approach very difficult to apply.

Orders to: Blackwell Scientific Publications, P.O. Box 88, Oxford, England.

ILEIA Newsletter for Low External Input and Sustainable Agriculture (LEISA). Special Issue, 91 1&2, Assessing Farming Techniques. ILEIA, Leusden, 1991, 72 p.

The need for sustainability of farming systems is generally accepted. Low-external-input and traditional techniques such as agroforestry, multiple cropping, crop-livestock integration, integrated pest management, organic matter management, and water and nutrient harvesting are being given greater attention in agricultural development. They are seen as technology options that could help create sustainable systems and decrease the need for expensive, imported inputs. However, nongovernmental organisations (NGOs), policy makers and project planners are increasingly demanding documented evidence of technical feasibility and economical and environmental viability.

Many farmers who have left their traditional context have lost their feeling for traditional farming. Those who have adapted chemical farming are now confronted with an increasing threat of nonsustainability. How could they reorient their farming? Which techniques should be used? There are no "sustainable techniques" as such, but there are techniques that can contribute to making farm systems sustainable, if used in the right context and in the right way.

Being an information centre for Low-External-Input and Sustainable Agriculture (LEISA), ILEIA was confronted with the need to gain greater clarity about how low-external-input farming techniques could be assessed with a view to sustainability. For this reason, ILEIA organised a workshop to find relevant and acceptable methodologies. What alternative methodologies have been developed, and are improvements possible? What conclusions can be drawn about the viability of low-external-input techniques, based on the quantitative or qualitative data available?

Twenty-eight persons from different backgrounds (policy, research, development, practical farming) were invited to share their experiences and deepen insights at the workshop held 11-13 December 1990 in the ILEIA office. This Newsletter has grown out of that meeting.

Price: NLG 15.00.

Orders to: ILEIA, c/o ETC Foundation, P.O. Box 64, 3830 AB Leusden, the Netherlands.

Introduction to the Petrology of Soils and Chemical Weathering. D.B. Nahon, John Wiley & Sons, New York, Chichester, 1991, xviii + 313 p. ISBN 0-471-50861-6. Hardbound.

Since R. Brewer published his benchmark book entitled *Fabric and Mineral Analysis of Soils* in 1964 the petrographic,mineralogic, and geochemical analysis of soils and alterites has made great advances. Numerous investigations were undertaken, particularly on the weathering mantle in tropical areas, and physical and physicochemical analytical techniques steadily improved. Consequently, minerals and textures can be studied today in the most minute details, resulting in an increased sophistication of numerical modeling and of the monitoring of laboratory experiments. In other words, modern petrological analysis of soils and alterites at all levels of observation at last reveals genetic processes and allows their quantification.

Today, soils and alterites can no longer be studied without the interdisciplinary approach of petrography, mineralogy, and geochemistry. Soils and alterites represent the same biogeochemical system whose understanding is critical for the future of humanity. Therefore, the composition and "organization" of the pedologic cover (soils and alterites) is the basis for the study of this system.

The pedologic cover is a complex system that evolves through geological time by self-development or under the influence of the changes of external climatic and tectonic factors. This book does not pretend to cover everything in terms of subject matter and examples. for instance, it does not include the study of the various aspects of organic matter. Its aim is to stress the organization of the pedologic cover at all scales of observation and, whenever possible, to unravel its geochemical significance. From crystal to field sequence, this book shows the interweaving of organizations in time and space, the appearance of order among structures and textures, and how this order has changed to disorder and back again to order.

Another purpose of this book is to promote a closer collaboration between pedologists, geologists, and geochemists in a teamwork investigation of a unique geochemical system.

Price: £ 47.50.

Orders to: John Wiley & Sons, 605 Third Avenue, New York NY 10158-0012, U.S.A. or: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England.

Guidelines: land evaluation for extensive grazing. FAO Soils Bulletin 58. FAO, Rome, 1991, 158 p. ISBN 92-5-103028-6.

This publication is the fourth in a series of FAO guidelines for land evaluation for major land uses. Previous publications have covered Rainfed Agriculture (Soils Bull. 52, FAO, 1984), Forestry (Forestry Paper 48, FAO, 1984) and Irrigated Agriculture (Soil Bull. 56, FAO, 1985). The present Guidelines were produced in response to a recommendation from the International Workshop on Land Evaluation for Extensive Grazing, cosponsored by ISSS, ILCA, FAO and ITC, and held in Addis Ababa, Ethiopia, in November 1983.

Land evaluation is used to identify alternative land uses or changes in management that will better meet national or local needs, and to estimate the consequences of each feasible change. In terms of extensive grazing, it encourages the promotion of sustainable land uses that integrate land, livestock and people for their mutual benefit.

These Guidelines are intended to assist three groups of users: (1) land resources surveyors not familiar with rangeland science; (2) rangeland experts with limited exposure to the FAO land evaluation methodology; and (3) land use planners.

A land resources surveyor is often responsible for the subsequent land evaluation, which will usually include cropping as well as grazing land utilization types. The land use planner may have to request or commission a land evaluation for livestock production systems, and will be in a better position to do so if he understands the principles of evaluation for extensive grazing.

To date only a limited number of land evaluations for extensive grazing have followed the FAO Framework. Although valuable as examples, they do not provide universal factor ratings for this land use, because of the great variety of environments in which extensive grazing may be practised throughout the world, and these Guidelines are only a starting point for national or regional guidelines, from which detailed ratings can be established.

It is likely that these Guidelines will be updated after more experience has been gained in applying the Framework in extensive grazing areas. A useful follow-up would be the development of a series of Manuals for Land Evaluation for Extensive Grazing, each relating to a specific region (e.g. African Sahel). Comments and suggestions for improvement should be sent to the Chief, AGLS, Land and Water Development Division, FAO, via delle Terme di Caracalla, 00100 Rome, Italy.

Price: US$ 14.00.

Les retombées radioactives dans les sols, les cultures et les aliments. Bulletin Pédologique de la FAO 61. F.P.W. Winteringham. FAO, Rome, 1991, 99 p. ISBN 92-5-202877-3.

Malgré ses tragiques conséquences humaines, l'accident survenu en avril 1986 à la centrale nucléaire de Tchernobyl nous a rappelé à point nommé qu'il fallait exercer une vigilance constante et maintenir en permanence un degré de préparation adéquat. Il a surtout prouvé l'importance des communications et de la collaboration internationales au niveau des institutions des Nations Unies et montré comment le rejet de substances radioactives dans l'environnement pouvait avoir rapidement des répercussions internationales et même planétaires. Les problèmes ont été particulièrement graves pour l'agriculture et les approvisionnements alimentaires, pour les communautés qui en dépendent et, par conséquent, du point de vue des préoccupations et des responsabilités de la FAO.

La Partie 1) de la présente étude s'attache à donner un exposé actualisé de la question du point de vue des préoccupations et des responsabilités de la FAO, rédigé dans des termes scientifiquement exacts, main non spécialisés.

La Partie 2) s'attache plus particulièrement aux problèmes des retombées radioactives sur les pâturages et sur les sols cultivés. De plus, elle traite principalement des problèmes revêtant une importance internationale en temps de paix et ne pouvant se poser qu'à la suite d'un accident majeur de réacteur nucléaire ou, éventuellement, d'une quelconque explosion nucléaire non intentionnelle. Or, divers types d'accidents, comme la rupture d'une enceinte terrestre de confinement de déchets ou l'écrasement au sol d'un avion militaire ou d'un véhicule spatial ayant à son bord des substances radioactives, peuvent provoquer (et ont provoqué) des contaminations relativement localisées des sols.

Prix: US$ 8.00

Orders to: FAO sales agents, or: Distribution and Sales Section, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

Commandes à: Points de vente des publications de la FAO, ou: Section Distribution et Ventes, FAO, Via delle Terme di Caracalla, 00100 Rome, Italie.

Methods Manual for Forest Soil and Plant Analysis. Information Report NOR-X-319. Y.P. Kalra and D.G. Maynard. Forestry Canada, Northwest Region, 1991, 116 p. ISBN 0-662-18665-6.

This manual is a compilation of methods used for soil and plant analysis at the Analytical Services Laboratory of the Northern Forestry Centre of Forestry Canada's Northwest Region. The intent of this manual is to so much to recommend certain procedures over others, but to indicate methods used in our laboratory, why these methods are used, their expected precision and accuracy, and their strengths and weaknesses.

The publication is available at no charge.

Requests to: Forestry Canada, NoFC, 5320-122 Street, Edmonton, Alberta, Canada T6H 3S5.

Working Documents of Soil Science & Plant Nutrition Section, International Livestock Center for Africa, Addis Ababa, Ethiopia.

Staff members and consultants at ILCA, write working documents at several stages during their research on a topic. Publication of the final results may not occur until several years after the research started. Working Documents are available to anyone requesting them, in order to provide access to data and ideas as early as

possible.

The following three Working Documents have been published recently:

Abstracts/Summaries of Publications of Soil Science and Plant Nutrition Section: 1984-1991. ILCA Working Document B10. I. Haque and T. Amare, ILCA, 1991, 60 p.

This booklet contains abstracts and summaries of 66 papers, contributions to journals and other publications.

Soil Physics Manual. ILCA Working Document B12. C.S. Kamara and I. Haque. ILCA, 1991, 79 p.

The manual is intended for the field and laboratory staff of the Soil Science and Plant Nutrition Section of ILCA. The method of soil analysis described in the manual are the same as used in most of the Soil Physics Laboratories. Some adaptations have been effected to suit the local needs and also to amplify the methods.

Data recording forms have been developed and included in the manual to provide for a systematic and easy data collection and preliminary calculations. The equipment discussed in the manual are those currently possessed by the Section. As more equipment is acquired in the future, new procedures will be included. The manual may find acceptance with the other scientists and analytical technicians as well, since methods described in the manual are based on simple and easily available equipment.

Soil, Plant, Water, Fertilizer, Animal Manure & Compost Analysis Manual. ILCA Working Document B13. Tekalign, T., I. Haque and E.A. Aduayi. ILCA, 1991, 260 p.

The manual describes simplified step-by-step procedures, the analyses of chemical constituents in soil, plant, water, fertilizer, animal manure and compost samples. It contains simple procedures for collecting, preparing and storing samples, including information on the need to care for field and laboratory materials such as sampling tools, glassware and other general precautions required for adequate and reliable analytical results. Some of the procedures for the determination of the elements in the manual include organic matter, total and available nitrogen, and phosphorus, exchangeable cations, cation exchange capacity, micronutrient elements, exchangeable aluminum, lime requirement, gypsum content in soil, plant and water analysis for mineral nutrients and moisture in fertilizers, animal manure and compost.

While the methods outlined in this manual are intended for use by analysts in the laboratory of the Soil Science and Plant Nutrition Section of ILCA, research scientists, quality control and analytical technicians, irrigation experts, agronomists, soil scientists, research associates and other interested scientists would find this booklet a useful guide.

Requests to: single copies of these Working Documents are available, free of charge, from the Librarian, ILCA, P.O. Box 5689, Addis Ababa, Ethiopia.

Bibliography on the International Network of Biosphere Reserves. U.S. MAB Coordinating Committee for Biosphere Reserves. US Department of State, 1990, 52 p. Dept. of State Publ. 9799; NTIS PB-90-215518.

Since the first biosphere reserves were designated in 1976 as part as Unesco's Man and the Biosphere Programme, they have continued to demonstrate the value of conservation in sustaining society. A considerable body of literature has been produced concerning the concept of biosphere reserves and its implication through research and special programmes. This bibliography references that literature. It contains general references and geographical references of more than 60 countries.

Most often, MAB committees and associated organisations are the principal sources of the cited literature. A list of addresses for these principal sources is provided at the end of the bibliography.

Orders to: NTIS, U.S. Dept. of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, U.S.A.

Hydrology of Moist Tropical Forests and Effects of Conversion: A State of Knowledge Review. L.A. Bruijnzeel. Unesco, Paris, 1990, 224 p.

It has been estimated that the population of the countries within the humid tropics will more than double between 1980 and the year 2000 and by that time will make up almost 50 percent of a total world population of about 6.5 billion. Because of this increase there is a consequent rise in demands on water and land resources for food production, often at the expense of the remaining natural vegetation.

Although estimates of the areal extent of natural forests in the humid tropics and the rate at which these are disappearing vary considerably between investigators, there is a general feeling that the disappearance of tropical rain forest constitutes a major environmental problem to mankind.

In theory, forest land in the humid tropics can be used in the following ways: The first is to maintain the forest with little or no disturbance by man for protection purposes. The second is the sustained management of the natural forest for continuous production of wood and other commodities and services such as soil- and water conservation, wildlife, genetic resources and recreation. The third is to clear the forest and to use the land for farming or grazing, plantation forestry, etc. Clearance for settlements, roads, mines and the like also belong to this category.

In view of the rapidly increasing pressures on tropical forest land, large tracts of land will be converted to other uses in the years to come. Clearly, if today's development activities are not to jeopardise the needs of future generations such development must be sustainable, i.e. minimise adverse impacts on the environment. It is part of the responsibility of the scientific community to help resource managers take the right decisions by providing them with the maximum amount of relevant information. As a first step towards this goal the present report aims to critically review the role of tropical forests with respect to climate, soil and water.

First, a quantitative description is given of the various components of the hydrological cycle in undisturbed moist tropical forest. This is followed by a discussion of nutrient input-output budgets for a number of tropical forest ecosystems, which also examines the commonly held notion of tropical rain forests as having a relatively rich nutrient economy perched on a nutrient poor substrate and only able to maintain themselves via a "tight" nutrient cycle.

Having presented the forest hydrological "baseline" information in the preceding chapters, the hydrological, hydrochemical and soil chemical aspects of forest disturbance and conversion to other uses are addressed.

The last chapter summarises the current scientific consensus about the hydrological role of tropical forest, indicates gaps in our knowledge and offers suggestions for further research. The report concludes with a list of

about 700 literature references, most of them recent.
Orders to: Dr. J.S. Gladwell, Division of Water Sciences, IHP, Unesco, 7 place de Fontenoy, F-75700 Paris, France.

Proceedings of Soil Erosion and Productivity Workshop, W.E. Larson, G.R. Foster, R.R. Allmaras, and C.M. Smith, editors. The University of Minnesota, St. Paul, 1990, 142 p. Hardback.

The Resources Conservation Act of 1977 (RCA) required the periodic assessment of the US natural resources and their ability to meet the needs of the nation. In these assessments it quickly became apparent that the effect of soil erosion on agricultural productivity had not been adequately studied, and as a result research on this topic was very greatly increased during 1980s. By 1989 it was apparent that much progress had been made, and to give a lead and direction, a major workshop was convened to review and discuss this topic. More than 100 US soil scientists and conservationists participated. In reviewing and reporting the proceedings of this workshop an innovative and very effective technique has been used. The first five chapters present the conclusions of the five working groups into which the workshop was divided, and combine the keynote papers and the group s discussion and recommendations. The topics are: (1) Landscape processes, soil erosion, and soil and productivity; (2) Erosion and soil properties; (3) Evaluation of productivity changes due to erosion; (4) Tools for conservation; (5) Technology transfer. The other four chapters are the keynote addresses to plenary sessions and the topics are (6) Role of the research community in influencing public policy; (7) Soil landscapes and erosion processes; (8) The role of geographic information systems; and (9) Soil erosion prediction and technology. The book gives an excellent overview of current research and information in the US on the links between soil erosion and productivity.
Orders to: The University of Minnesota, St. Paul, Minnesota, U.S.A.

N.W.Hudson,Ampthil,U.K.

Atlas de Suelos de la Republica Argentina. Escala 1:500.000 y 1:1.000.000. Tomos I y II. Secretaria de Agricultura, Ganaderia y Pesca, INTA, Proyecto PNUD, 1990, Tomo I, 731 p., Tomo II, 677 p. ISBN 950-432964-1.

This voluminous overview about the soils of Argentina consists of two books with an explanatory text on the taxonomy used, the mapping units, the evaluation of the soil, chapters on the soils of the separate provinces of the country, and 38 soil maps. All chapters on the provinces have descriptions and maps on geomorphology, physiography, climate and parent material.

Tables with data on soil erosion, salinity and alkaline(????), and soil capability, give useful information. The mapping units give coded information on the constituting soils, their physiographic position and the area they occupy, the limitations for agricultural use, and soil capability.

The authors, under the general coordination of Lic. G. Moscatelli, are to be congratulated with this accomplishment.
Price: US$ 180 for America and Europe; US$ 220 for Asia and Africa; including airmail charges. Prepayment required.
Orders to: Proyecto ARG 85/019, Paseo Colón 922-3er. piso, of. 334, C.P. 1305, Buenos Aires, Argentina.

Soil Map of the Republic of Botswana, 1:1,000,000. Soil Mapping and Advisory Services, Botswana, Gaborone, 1990. With explanatory note, 48 p. and typifying pedons and soil analytical data, 167 p.

The Ministry of Agriculture began a systematic survey, mapping and classification of the country's soils in 1977. The FAO/Unesco Soil Map of the World legend was adopted and up to 1990 the FAO/UNDP soil mapping projects, in cooperation with the Soil Survey Unit has covered about 60 percent of the country at a scale of 1:250,000. The present national soil map was also made to facilitate the transfer of technology within the SADCC region.

The information consists of the soil map, a separate physiographic map, and an explanatory note consisting of two parts: (1) an explanation to the map with all soils correlated in the FAO/Unesco legend and Soil Taxonomy, and (2) soil analytical data of 76 representative profiles. It is hoped that the other countries in the region will take this map as an example.
Price:
Orders to:

Development of Conservation Farming on Hillslopes. W.C. Moldenhauer, N.W. Hudson, T.C. Sheng and San-Wei Lee, editors. Soil and Water Conservation Society, Ankeny, 1991, 332 p. ISBN 0-935734-24-4. Hardbound.

The island nation of Taiwan, Republic of China, has more than three decades of experience measures on hillslope farms. That experience has proved extremely successful, and it should prove useful to scientists, natural resource managers, and policy makers in other countries, particularly developing nations.

Because of human population increases and food shortages, marginal land, especially hillslope land, is being brought into cultivation in many countries around the globe. In some of these countries, the unwise use of hillslopes has been a result of socioeconomic conditions. Proper policy and planning, along with the development of appropriate infrastructure, conservation farming systems, and machinery, are imperative when hillslopes are developed for agricultural purposes. The Taiwan experience offers a model to emulate in these situations.

Particularly significant in the Taiwan experience is the fact that many things need to occur simultaneously, with full government support, if success is to be achieved in hillslope farm development. Governments also must respond as socioeconomic conditions change if agriculture is to remain viable. This point is valid worldwide, in developed and developing nations.

The present book exemplifies what Taiwan and other nations have achieved in the development of agriculture on hillslopes. Such information should prove valuable in devising strategies for hillslope development in other

settings.
Price: US$ 30.00 or $ 27.00 for SWCS members.
Orders to: SWCS, 7515 NE Ankeny Road, Ankeny, Iowa 50021-9764, U.S.A.

Diversity of Environmental Biogeochemistry. Developments in Geochemistry 6. J. Berthelin, editor. Elsevier Science Publishers, Amsterdam, Oxford, 1991, xi + 537 p. ISBN 0-444-88900-0. Hardbound.

Major and trace elements undergo continual cycling within the earth environment. At the interfaces between atmosphere, hydrosphere and lithosphere the cycles are on the dependence of the biosphere where living organisms (plants, animal and mainly microorganisms) influence directly or indirectly the chemical and, eventually, physical changes.

Environmental Biogeochemistry is a young interdisciplinary science which studies the reactions catalyzed or controlled by living organisms and, mainly, by microorganisms in natural and disturbed environments. These studies are more often performed in the context of geochemical cycles, but at different scales, i.e. from the mechanisms and kinetics of the reactions at a molecular or cellular level to the study of mass transfer and energy flow at an ecosystem or continental level. Such earth surface processes including cycling of elements and pollution controls are more often time considered and studied under their own field of interest by different specialists.

In order to develop the exchange of results, ideas, etc. the International Symposia on Environmental Biochemistry - ISEB, was founded to organize international symposia which bring together microbiologists, biologists, chemists, geochemists, soil scientists, oceanographers, ecologists, and environmental engineers interested in the biogeochemistry of terrestrial, aquatic and atmospheric environments.

After the 8th ISEB held in Nancy, fifty manuscripts were submitted for review to produce a volume presenting the diversity of, and also providing a common framework for, this discipline.

The book is devoted to the history and actual functioning of soils, sediments and waters of the superficial or relatively superficial terrestrial layers. The main topics are: (1) Paleoenvironments and paleomicrobiota; (2) Natural and xenobiotic organic indicators in different environments; (3) Organic matter and carbon cycle in actual sedimentation processes; (4) Deep reservoirs and extreme environments; (5) Sulfur and nitrogen oxido-reduction processes; (6) Weathering and formation of minerals; and (7) Soil functioning processes with reference to carbon, nitrogen, minerals evolution in the "soil-plant-microorganisms-fauna" systems.

Among the different chapters, the reports presented also concern the management and the protection of natural environments that can be modified, disturbed or polluted by anthropogenic activities that introduce xenobiotic compounds, heavy metals, and radioactive wastes.

Although identical or similar processes may be introduced in different sections of the book, it seemed important in such a volume to show that, in recent sediments or soils or in extreme environments, the same type of reactions and mechanisms controlled by microbial activity occur.

Finally these contributions intend to underline the diversity and the importance of the direct or indirect interactions of living organisms with their abiotic (organic and inorganic) environments and the interest of an integrated interdisciplinary approach in this emerging subdiscipline of earth sciences, life sciences and chemistry.
Price: Hfl 250.00.
Orders to: In U.S.A. and Canada: Elsevier Science Publ. Comp., P.O. Box 882, Madison Square Station, New York, NY 10159, U.S.A. Elsewhere: Elsevier Science Publishers, P.O. Box 211, 1000 AE Amsterdam, the Netherlands.

Residuos organicos urbanos. Manejo y utilización. F. Costa, C. Garcia, T. Hernandez y A. Polo. CSIC, Murcia, 1991, 181p. ISBN 84-404-9422-X.

Este libro tiene como fin primordial resaltar, por un lado, la importancia de la materia orgánica del suelo en las múltiples facetas en las que interviene y, por otro, poner de manifiesto el valor intrínseco que ciertos residuos orgánicos urbanos tienen como fuente de materia orgánica, los cuales, en general, necesitan ser sometidos a un proceso compostaje que incremente sus cualidades positivas y disminuya o haga desaparecer aquellas otras que puedan ser perjudiciales, lo que se detecta determinando adecuadamente su grado de madurez. Seguidamente se da una definición de compost basándose en unas características cualitativas y cuantitativas, haciendo posteriormente unas consideraciones sobre su utilización.

Por último se presenta un extracto de las disposiciones legales vigentes en esta materia.
Ordenes: CSIC, Avda. de la Fama 1, E-30003 Murcia, España.

Denitrification in Soil, Rhizosphere and Aquifer. Mitteilungen der Deutschen Bodenkundlichen Gesellschaft, Band 60. Deutsche Bodenkundliche Gesellschaft, 1989, 420p. ISSN 0343-107X.

The International Workshop on Denitrification in Soil, Rhizosphere and Aquifer held in Giessen (Germany) on March 17-19, 1989, was intended to assess the state of art, particularly with respect to: Methods and techniques to evaluate denitrification in situ; Sink and source mechanisms of denitrification products in soils; Direct and indirect effects of plants on denitrification; Denitrification losses caused by manuring and fertilization; Ecological prerequisites and mechanisms of denitrification in subsoil and aquifer; Ecophysiology and kinetics of denitrification; Organism-specific denitrification products; and Modelling of denitrification.

The major part of the contributions presented at the Workshop in form of key notes, original papers, panel discussion as well as of posters has been compiled in this volume. Both for participants and other colleagues this information may be valuable in providing an overview of the scientific progress in the field of denitrification and a useful base for interdisciplinary contacts.
Orders to: Deutsche Bodenkundliche Gesellschaft, Wilhelmstrasse 19, DW-2900 Oldenburg, Germany.

Wetlands of the Biebrza Valley, their value and future management. H. Okruszko, Polish Academy of Sciences, Warsaw, 1990, 107p. ISBN 83-00-03461.

The Biebrza Wetlands occupy a large depression of the ice - marginal - valley type, in NE Poland, and is about 100 km in length and 10-30 km in width. Wetlands area in this depression is 116 000 ha. For ages these terrains constituted a nature state frontier, protected by prohibition of carrying out reclamation works. Now it is an extensive, poorly populated and minimally managed area.

The value of Biebrza Wetlands results from the character and the uniqueness of its water and swamp ecosystems. No similar natural environment on such a scale with dominance of wetland exists anywhere else in Poland or in other countries of central Europe.

From 1976 to 1983, investigators from several universities and institutes conducted many studies on this region. Results of these studies afforded a basis for a programme of spatial management of these territories.

The book presents the attitude of scientists towards activities concerning the future management of these wetlands.

Price: US$ 15, including postage.

Orders to: ORPAN-Export, Palac Kultury i Nauki, 00-901 Warszawa, Poland.

The Brazilian Rainforest. Politics, Finance, Mining and the Environment. The Economist Intelligence Unit Special Report No. 2100. D. Cleary. The Economist Intelligence Unit, London, 1991, 66p. ISBN 0-85058-514-7.

In his first year in office President Collor attempted to demonstrate his commitment to protecting the environment in the most dramatic fashion: by blowing up the airstrips used by the freelance miners (garimpeiros) of the Amazon. This EIU Special Report considers whether President Collor's commitment to the environment is as strong as this gesture would seem to suggest and whether it will translate into effective action in the 1990s.

The Report addresses the key questions for the future: the prospects for deforestation and for the protection of Indian tribes. It considers whether Brazil's huge foreign debt could be exploited for environmental protection. In addition it examines the phenomenon of garimpo mining. Some mining experts see garimpo output falling because of repressive measures by the government and the working out of deposits. The Report, however, sees garimpeiros finding ways around these problems. It forecasts garimpo gold and cassiterite output over the next few years and the likely impact on world tin prices.

The Report looks too at the causes of the influx of poor Brazilians into the Amazon in search of a living. The murder of the rubber-tappers' leader, Chico Mendes, and of numerous other leaders of rural workers shows that land is an issue that provokes anger and violence throughout Brazil.

Sr Collor's predecessor as president, José Sarney, rejected Western concern about Amazonia, raising the banner of national sovereignty. The new president on the contrary recognises that world concern for the environment can be turned to Brazil's advantage. One way in which this could happen is through debt-for-nature swaps. Early in 1991 the Inter American Development Bank announced that it was going to retire $300mn of Mexico's debt in a swap of this kind.

More generally, in the run up to the UNCED in 1992, which Brazil is to host, the government is looking to its environmental policies to generate goodwill from creditors and aid donors and not least from the multilateral aid agencies, now turning "green" in their own right.

Price: £ 130 in Europe, Africa and M. East, US$ 275 elsewhere.

Orders to: Ms. Sarah Clegg, Subscription Dept., The Economist Intelligence Unit, P.O. Box 154, Dartford, Kent DA1 1QB, U.K.

Occurrence, Characteristics, and Genesis of Carbonate, Gypsum, and Silica Accumulations in Soils. SSSA Special Publication No. 26. W.D. Nettleton, editor. Soil Science Society of America, Madison, 1991, 149p. ISBN 0-89118-794- 4.

The processes involved in soil genesis provide unique modifications of the biogeochemical cycles of various elements, minerals, and compounds. These processes result in characteristic distributions and accumulations of elements and minerals throughout soil profiles. Carbonates, gypsum, and silica accumulate in horizons of dryland soil profiles covering more than one third of the earth's land area. Extensive areas are located in Australia, Africa and Asia.

Soil management, whether for agricultural or nonagricultural purposes, is predicated on knowledge about the character and distribution of soils. The potential use and response of dryland soils to management strategies are very much tied to the properties imparted to these soils by the accumulation of carbonates, gypsum, and silica. This publication offers an up-to-date review of the distribution and genesis of these characteristic soil horizons.

Carbonate is the most common of the accumulations. The carbonate chapters describe the effect of climate on the movement of carbonate in soils, and the rate of accumulation and the macro- and micromorphological forms of carbonate in soils.

Silica accumulates in the low latitude drylands of Australia and portions of Africa. Silica also accumulates in soils of middle latitude drylands on other continents where volcanic glass is part of the soil parent material. The silica chapter covers the duripans of Australia and related them to the massive silcretes that formed as saprolite and sediments became cemented by different forms of quartz, chalcedony, and opal.

Gypsum appears to be the least common of the three to accumulate in soils but gypsic soils make up about 5 million square miles of the earth's surface. This chapter examines laboratory methods for the determination of gypsum, classification of gypsic soils, accumulation and morphology of gypsum in soils, and distribution of gypsic soils.

Price: US$ 18.00, advance payment and 10 percent per book for postage on all order outside the U.S.A.

Orders to: SSSA Headquarters, Book Order Dept., 677 South Segoe Road, Madison, WI 53711-1086, U.S.A.

Stadtökologie. Das Beispiel Berlin. H. Sukopp (Hg.). Dietrich Reimer Verlag, Berlin, 1990, 455 S. ISBN 3-496-00970-5.

Dieses Buch ist aus der langjährigen Zusammenarbeit der Autoren an ökologischen Problemen in Berlin entstanden. Die erste Fassung erschien als Exkursionsführer für das zweite Europäische Ökologische Symposion

im September 1980 in Berlin.

Berlin hat sich zu einem der Zentren stadtökologischer Forschung entwickelt. Die abgeschlossene Lage von Berlin (West) in der Nachkriegszeit erschwerte Untersuchungen außerhalb der Stadt und führte zu einer Konzentration der Forschungen auf das Stadtgebiet. Weil Ökologen und Biologen sich bisher wenig mit Städten beschäftigt hatten, waren die Ergebnisse unerwartet und neuartig und führten zur Entstehung der Stadtökologie. Bevor erste Untersuchungen von Großstädten vorlagen, hatte man die Lebensgemeinschaften in Städten für Zufallsprodukte gehalten, stellte dann jedoch fest, daß auch diese Lebensräume von charakteristischen, unter ähnlichen Umweltbedingungen regelhaft wiederkehrenden Artenkombinationen besiedelt werden.

Im Zentrum von Städten sind bei vielen Organismengruppen etwa die Hälfte der Arten mit direkter oder indirekter Hilfe des Menschen in das Gebiet gelangt. Allein dadurch unterscheiden sich heute dicht besiedelte Gebiete grundsätzlich von denen traditioneller Kulturlandschaften der vorindustriellen Zeit. Die Untersuchung dieses Floren- und Faunenwandels ist eine der wichtigsten Aufgaben der Gegenwart und trägt wesentlich zum Verständnis der städtischen Ökosysteme und ihrer Besonderheiten bei.

In diesem Buch werden bisherige Ergebnisse zusammengefaßt und bilden den Ausgangspunkt für kommende Arbeiten über Berlin und seine Umgebung. Für andere Städte besitzen die Untersuchungen Modellcharakter, weil in Berlin alle Ökosysteme einer Stadt in ihrem räumlichen und historischen Zusammenhang und nicht nur einzelne Aspekte behandelt wurden. Die Historische Ökologie mit ihren verschiedenen Arbeitsmethoden wurde hier weiterentwickelt. Auch die Böden einer Großstadt sind erstmalig in Berlin systematisch untersucht worden. Eine Karte der 'Stadtökologischen Raumeinheiten' zeigt die Gliederung des Gebietes in 69 Raumeinheiten.

Preis: DM 48.00

Bestellungen an: Dietrich Reimer Verlag, W-1000 Berlin 45, B.R. Deutschland.

Zur Bewertung von Bodenverbesserungsmitteln durch Bestimmung von Zersetzungsgrad und Rotte der organischen Substanz. Geologisches Jahrbuch, Reihe F, Heft 24. J. Schwaar, H. Jacob und H. Hufnager. Bundesanstalt für Geowissenschaften und Rohstoffe, und Geologische Landesämter, 1990, 160 S. ISSN 0341-6445.

Die Bewertung von Bodenverbesserungsmitteln durch Bestimmung von Zersetzungsgrad und Rotte der organischen Substanz ist grundsätzlich möglich. Nur gestalten sich die Aussagen schwieriger als erwartet. Eine Charakterisierung aller Substrate ist nicht mit einem einzigen Parameter möglich. Dazu bedarf es mindestens ihrer drei. Unbedingt erforderlich sind auch Keimversuche.

Torfe und Torfkultursubstrate sind mit Rinden- und Müllkomposten nicht direkt vergleichbar, denn eine geringe Zersetzung hat nach den Ergebnissen des Keimtests bei den Torfkultursubstraten eine hohe biologische Wertigkeit zur Folge. Bei den Rinden- und Müllkomposten trifft in den meisten Fällen das Gegenteil zu: je geringer die Zersetzung, desto geringer die biologische Wertigkeit. Dies muß bei einer Charakterisierung unbedingt bedacht werden.

Der Remissionsgrad (Pulver-Remission) ist ein hinreichend brauchbarer Parameter, solange die Aschengehalte gering bleiben; dies trifft für Torfkultursubstrate zu, für die Rindenkomposte nicht immer. Für die Müllkomposte ist er deshalb nicht anwendbar. Da er methodisch keinen großen Aufwand erfordert, führt er zu raschen Ergebnissen.

Von den mikrophotometrischen Parametern ist die Reflexion weitgehend unbrauchbar, während die Fluoreszenz gute Ergebnisse liefert. Die Mikro-Remission ist ebenfalls einsetzbar, nur ist zu bedenken, daß die Bestimmung dieser Parameter methodisch aufwendig ist.

Eine zentrale Bedeutung hat der Keimtest, der etwas über die tatsächliche biologische Wertigkeit aussagt. Denn dem Pflanzenwachstum hinderliche Schadstoffe werden mit der Bestimmung der Zersetzung nicht erfaßt. Ergänzende Aussagen kann die Leitfähigkeit geben. Die Untersuchungen zeigen auch, daß die "Quetschmethode" als Schnellverfahren zur Charakterisierung des Zersetzungsgrades von Torfen und Torfkultursubstraten brauchbar ist. Das gleiche gilt für fluoreszenzmikroskopische Photographien.

Mikoskopische Untersuchungen und Bestimmung von Schwermetallgehalten besagen, daß Müllkomposte der gegenwärtigen Generation als Kultursubstrate unbrauchbar sind. Sie müssen vielmehr für Pflanze, Tier und Mensch von Fall zu Fall mehr oder weniger als Schadstoffträger bewertet werden.

Bestellungen an: Severin-Verlag, Postfach 3208, W-3400 Göttingen, B.R. Deutschland.

Nährstoffaufnahme höherer Pflanzen aus dem Boden. Ergebnis von Verfügbarkeit und Aneignungsvermögen. N. Claassen. Severin Verlag, Göttingen, 329 S. ISBN 3-928144-00-6.

In diesem Buch stellt der Autor Forschungsergebnisse und -methoden vor, die Antworten auf die Frage geben: welche Faktoren beeinflussen ursächlich die Nährstoffaufnahme höherer Pflanzen?

Zur Beantwortung der Frage wird der Gesamtvorgang der Nährstoffaufnahme in drei Prozesse gegliedert: (1) Nährstoff-Freisetzung von der festen Phase; (2) Transport zur Wurzeloberfläche durch Diffusion und Massenfluß in der flüssigen Phase des Bodens; und (3) Übertritt aus der Bodenlösung in die Wurzel.

Alle Prozesse werden vom Autor untersucht, ihre Gesetzmäßigkeiten mathematisch beschrieben und die zugrundeliegenden Einflußfaktoren von Boden und Pflanze quantifiziert. Durch deren Einbeziehung in mathematische Modelle wird zugleich die Wechselwirkung von Boden und Pflanze quantitativ berücksichtigt. Zur Charakterisierung der Bodeneigenschaften wird der Begriff Verfügbarkeit verwendet. Die Pflanzeneigenschaften werden unter dem Begriff Aneignungsvermögen zusammengefaßt. Verfügbarkeit und Aneignungsvermögen entscheiden über das Ausmaß des Nährstoffaufnahme-Prozesses.

Die Gegenüberstellung von Rechten- un Meßergebnissen zeigt, daß die K-Aufnahme von Mais sowie die K-Verteilung um Rapswurzeln durch die mathematischen Modelle zufriedenstellend beschrieben werden. Durch systematische Variation von verschiedenen Boden- und Pflanzenparametern wird deren Wirkungsweise und Bedeutung für die Nährstoffaufnahme verdeutlicht.

Nach der gleichen Betrachtungs- und Vorgehensweise werden Versuchsergebnisse zur P- und K-Aufnahme verschiedener Pflanzenarten ausgewertet. Die interessantesten Ergebnisse dieser Auswertungen werden jeweils

ausführlich diskutiert.
Bestellungen an: Dr. Zhang Wei-Li, Severin-Verlag, Postfach 2308, W-3400 Göttingen, B.R. Deutschland.

Le Sol des Forêts Claires du Cameroun. P. Brabant. ORSTOM, Paris. Tome I, 530p., ISBN 2-7099-1000-4; Tome II, 278p., ISBN 2-7099-1001-2; Edition complète, ISBN 2-7099-0999-5.

Cet ouvrage est le fruit d'un long travail de terrain effectué au Cameroun, dans le Sud-Benoué, travail qui a comporté trois phases successives. La première, de 1967 à 1974, a consisté en la réalisation d'un inventaire pédologique général à 1/200 000 de la zone (Garoua, Poli, Rey-Bouba, Béré). Durant la deuxième phase, l'auteur a poursuivi une étude approfondie (structurale et fonctionnelle), au cours de trois années consécutives, dans divers sites dont l'un a été retenu comme "site représentatif" du système pédologique caractéristique des forêts claires: le site de Ndock. Enfin, au cours d'une troisième phase, les résultats des travaux précédents ont permis à l';auteur de réaliser, en collaboration avec M. Gavaud, une synthèse générale sur les Sols et les Ressources en Terres au Nord- Cameroun (publié en 1985).

Au cours de son exposé, l'auteur insiste sur le fait que la couverture pédologique du domaine des forêts claires est constituée effectivement par un seul "système-sol": le système ferrugineux tropical; d'où le titre (au singulier) qu'il a voulu donner à cet ouvrage: "Le sol des forêts claires du Cameroun". L'auteur s'en explique d'abord, puis montre comment chaque système-sol peut à son tour être divisé en un certain nombre de compartiments verticaux ou horizontaux.

Le mémoire présenté ici est composé de deux Tomes. Le premier est consacré à l'étude de la constitution, de la structure et du fonctionnement du système-sol considéré. Le second traite de l'inventaire cartographique, expose la façon dont cet inventaire peut être réalisé à l'aide de la notion de système-sol, puis propose une méthodologie mise au point en vue de l'évaluation des terres pour le développement rural.

L'interprétation des données suivant ce nouveau concept est naturellement valable pour la zone des forêts claires du Nord-Cameroun, mais elle intéresse aussi l'ensemble des milieux équivalents de l'Afrique, au nord comme au sud de l'équateur, soit une superficie de 850 000 km2 (12% du continent africain). Enfin, il est bon de préciser que la méthode présentée ici est suffisamment générale pour servir de modèle à l'étude des sols dans beaucoup d'autres zone écologiques de la Planète.
Commandes à: Editions de l'ORSTOM, 70 route d'Aulnay, F-93140 Bondy, France.

Ecologie Opérationnelle Assistée par Ordinateur. M. Bouché. Masson, Paris, Milan, 1990, 572p. ISBN 2-225-82183-6. Cartonné.

Les difficultés locales, régionales, nationales ou planétaires résultant de nos actes vont croissant avec la puissance utilisée via les moyens chimiques (pesticides, engrais, ...), physiques (mécaniques, nucléaires, grands travaux, ...) ou biologiques (monocultures, cultivars, biotechnologies, ...). L'appréciation effective de ces actes agissant sur les systèmes spontanés complexes est présentement réduite à l'étude de quelques variables sélectionnées depuis le jugement sectoriel de quelques spécialistes. Malgré une demande sociale forte pour une connaissance globale des effets de nos actes, l'absence de moyens d'intégration a rendu celle-ci impossible.

L'ouvrage démontre que, grâce aux progrès de l'intelligence artificielle, l'écologie, cette science globale proximale de l'homme, peut et doit aujourd'hui être mise en oeuvre. Elle est dorénavant pleinement opérationnelle moyennant une réévaluation rigoureuse de ses pratiques et de ses moyens comme science exacte indispensable et permet donc les études tant fondamentales qu'appliquées dans notre environnement. Cet ouvrage concerne tous les acteurs agissant ou étudiant notre milieu. L'agronome, le forestier, l'aménageur ou le gestionnaire y trouveront le moyen d'accéder aux connaissances intégrées indispensables aux décisions qu'ils doivent prendre. Le biologiste y trouvera une évaluation de la place des organismes dans les écosystèmes.

Cet ouvrage a été divisé en 3 parties. La première partie traite fondamentalement de la nature des systèmes écologiques en exposant un minimum de concepts indispensables à une écologie opérationnelle générale. La deuxième partie traite des modalités pratiques d'acquisition, de conservation, d'interprétation et d'optimisation de l'usage des données et connaissances écologiques. La troisième partie traite des conséquences appliquées que permettrait la mise en oeuvre systématique d'une écologie opérationnelle.

L'auteur est président de la sous-commission de zoologie de l'Association Internationale des Sciences du Sol et secrétaire de la section de zoologie du sol à l'Union Internationale des Sciences Biologiques.
Prix: FF 530
Commandes à: Masson, 120 Bd. Saint-Germain, F-75280 Paris Cedex 06, France.

Tone und Tonminerale. Grundlagen der Sedimentologie und Mineralogie. D. Heim. F. Enke Verlag, Stuttgart, 1990, 157 S. ISBN 3-432-98741-2.

Die Tonminerale gehören u.a. wegen ihrer hohen Reaktionsempfindlichkeit gegenüber Milieuveränderungen zu den eigentümlichsten Erscheinungen unserer anorganischen Welt. Sie nehmen in einigen Bereichen der gegenwärtigen Umweltproblematik geradezu (nicht immer klar erkannte) Schlüsselpositionen ein - so z.B. bei den Waldschäden. So wurde in diesem Buch versucht, nach einleitenden Betrachtungen zur Verbreitung und Genese von Tongesteinen und neben einer zusammenfassenden Darstellung der heutigen Tonmineralogie, vor allem das Verhalten der Tone und Tonminerale durch Ableitung von ihren Struktureigenschaften auch einem breiteren Interessentenkreis verständlich zu machen.
Preis: DM 49.00
Bestellungen an: F. Enke Verlag, Postfach 101254, W-7000 Stuttgart 10, B.R. Deutschland.

Advances in Soil Organic Matter Research: The impact on agriculture and the environment. W.S. Wilson, editor. The Royal Society of Chemistry, 1991, x + 400p. ISBN 0-85186-387-6. Hardcover.

This book provides a balanced account of recent developments in the field, reflecting the fundamental and theoretical, as well as applied and practical aspects of the subject. It gives special emphasis to new information and data, novel methods of analysis, and changing approaches to outstanding problems, and provides comprehensive coverage of the main themes and topics now occupying scientists involved in soil organic matter

research.

The book, based on the proceedings of a symposium of the same title held in September 1990 at the University of Essex, is divided into five sections, containing papers that are well documented with details of experimental procedure and appropriate instrumentation. The five sections are the following: (1) Advances in our understanding of the composition and structures of soil organic matter; (2) Soil organic matter and water quality; (3) Organic matter and soil structure; (4) Soil organic matter turnover; and (5) Fertility and soil organic matter. The papers included are written by authors from a wide variety of geographical locations, illustrating the universal interest and involvement of scientists in this important area.

Price: £ 52.50

Orders to: Royal Society of Chemistry, Turpin Transactions Ltd., Blackhorse Road, Letchworth, Herts SG6 1HN, U.K.

Principles of Soil-Plant Interrelationships. V.V. Rendig and H.M. Taylor. McGraw-Hill, Hamburg, 1989, xv + 277 S. ISBN 0-07-051879-3.

This book gives a state-of-the-art understanding of both the water and mineral nutrition aspects of soil-plant relationships. Comprehensive in scope, it reviews virtually all current findings on the interaction of biological, chemical, and physical factors to supply the water and ions necessary for plant growth and maintenance.

It gives a detailed, up-to-date treatment of plant-root system development and functioning - along with recent insights into how the plant root affects ion development. Helpful water and ion uptake models bring the latest research advances into sharp focus. The role of microorganisms in aiding uptake - especially that of phosphorous - receives thorough scrutiny.

Numerous tables, figures and graphs help assimilate and analyze essential information. This book is of interest to soil scientists, plant scientists and professors and students of this subjects.

Price: DM 93,90

Orders to: McGraw-Hill Book Co. GmbH, Lademannbogen 136, Postamt 65, D-2000 Hamburg 63, Germany.

Carbon dioxide and other greenhouse gases: Climatic and associated impacts. R. Fantechi and A. Ghazi, editors. Commission of the European Communities, Brussels, 1989, ix + 279p. ISBN 0-7923-0191-9. Hard-cover.

The book contains the proceedings of a EC symposium held to discuss the climatic and associated impacts of the accumulation in the earth's atmosphere of carbon dioxide (coming from the combustion of fossil fuels) and other greenhouse gases. An important climate change is foreseen during the 21st century - a mean global heating of 1.5- 4.5°C is expected. This heating will cause a thermal expansion of the ocean waters and a consequent rise in sea level of about 20 to 165 cm. Vegetal biomass may increase, while at the same time climate difficulties for agriculture are foreseen, together with a geographical shift of crops and forests due to perturbations in mean annual precipitation and temperature patterns. An increased frequency of meteorological anomalies (storms, droughts) is also to be feared. Counteracting measures could include the development of renewable energy sources, reduction in the production of greenhouse gases, intensive reforestation, a better management of land and water resources, the protection and restoration of degraded/threatened soils. The book, thus, deals with the main environmental issue of our time, reviewed at the symposium by about 60 leading European and US scientists.

Price: Dfl 175.00, US$ 94.50, £ 54.55

Orders to: in U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.
Elsewhere: Kluwer Academic Publishers Group, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

Abrégé de Pédologie: Sol, Végétation, Environnement. Ph. Duchaufour. 3è édition. Masson, Paris, 1984, 1991, vii + 289p. ISBN 2-225-82421-5. Cartonné.

Cette troisième édition de l'abrégé de pédologie n'est pas une simple révision de la précédente: c'est en fait, un nouvel ouvrage qui aborde des sujets d'actualité tels que la nutrition des plantes et la protection de l'environnement.

L'auteur entend également montrer que la pédologie est une science de synthèse qui s'appuie aussi bien sur la biologie que la géologie, en passant par la physique et la chimie: ces différents aspects de la pédologie sont complémentaires et étroitement liés à l'histoire des sols; les classifications de sols doivent les prendre en compte et mettre en évidence leurs relations avec le milieu. L'auteur aborde de façon nouvelle ce sujet controversé mettant en parallèle les "classifications" et les "référentiels", les systèmes basés sur la statistique et ceux qui s'appuient sur les processus évolutifs.

Ces considérations théoriques débouchent sur des applications pratiques variées, telles que la mise en valeur des terres, la croissance des végétaux, la protection de l'environnement: elles n'ont pas été négligées dans cet ouvrage. Ainsi on apprendra que, sous certaines conditions précises, le sol peut jouer le rôle d'épurateur de l'atmosphère et de l'eau.

Pour réaliser tous ces objectifs, l'auteur a fait appel aux données les plus récentes de la recherche internationale. Son but est d'élargir le domaine d'intérêt de la science du sol et de montrer qu'elle concerne tous ceux qui s'intéressent à la mise en valeur et la conservation du milieu naturel.

Prix: FF 150

Commandes à: Masson, 120 Bd. Saint-Germain, F-75280 Paris Cedex 06, France.

Nematodes of Plants and Soils. N.I. Sumenkova. Oxonian Press Pvt., New Delhi, 1988, xi + 280p. ISBN 90-04-08921- 7. Hardcover.

This book presents information on the morphology, ecology, and taxonomy of nematodes of the superfamily Neotylenchoidea, which live in the rhizosphere and root system of cultivated and wild plants. An analysis of the different morphological and ecological characteristics of neotylenchoids is given, and the basic principles of

their classification reviewed. The book has been written for phytohelminthologists, plant-protection specialists, and soil zoologists.
Orders to: in U.S.A. and Canada: E.J. Brill Inc., 24 Hudson Street, Kinderhook, NY 12106, U.S.A. Elsewhere: E.J. Brill Publishing Company, P.O. Box 9000, NL-2300 PA Leiden, the Netherlands.

Toxic Organic Chemicals in Porous Media. Ecological Studies 73. Z. Gerstl, Y. Chen, U. Mingelgrin and B. Yaron, editors. Springer-Verlag, Berlin, New York, 1989, xiv + 343p. ISBN 3-540-50799-X (German edition) 0-387-50799-X (U.S. edition). Hardcover.

Basic research, engineering and management applications are all concerned with the pollution of the vadose zone and groundwater by toxic organics and the fate of these chemicals released into soils by human activities, agriculture and industry. This volume strikes a balance, treating the various interactions of agrochemicals, pesticides and organic pollutants from disposal sites with various soil components, their biotransformation or abiotic degradation from both theoretical and practical viewpoints.

The behaviour of toxic organics is influenced by the various properties of the unsaturated zone such as pH, humidity of soils or possible interactions with minerals.

These effects are discussed along with case studies on the cleanup and reclamation of polluted aquifers and groundwater.
Price: DM 148
Orders to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Germany.

Interactions at the Soil Colloid - Soil Solution Interface. NATO ASI Series. G.H. Bolt, M.F. De Boodt, M.H.B. Hayes and M.B. McBride, editors. Kluwer Academic Publishers, 1991, xv + 603p. ISBN 0-7923-1066-7. Hardcover.

About 20 years ago the emphasis in soil chemistry research switched from studies of problems related to scarcities of plant nutrients to those arising from soil pollutants. The new problems have come about because of the excessive uses of fertilizers, the inputs from farm and industrial wastes, the widespread applications of anthropogenic xenobiotic chemicals, and the deterioration of soil structure resulting from certain modern agriculture practices.

The International Society of Soil Science recognized these problems and challenges, and its Working Group on Soil Colloid Surfaces convened two workshops on the matter. The second one, held in 1986 at Ghent, Belgium, has given his title to the book. Although the present book is based on presentations at this workshop, it cannot be considered to be a conference proceedings. Chapters and Sections were added at a later stage as the subject matter in the four parts of the book demanded.

In Part One fundamental aspects of the interaction processes which take place at the soil colloid-soil solution interface are reviewed in detail. Part Two gives some specific examples of the interactions at the solid-liquid interfaces relevant to the surfaces of soil inorganic components. Part Three deals with interaction processes in soil involving organic substances, while Part Four focuses attention on the inputs to soil, and eventually to water, of the waste products of the industrialized society.

In broad terms, the four essential resources for the continuation of life are soil, sunlight, air, and water. Because of the inputs from the industrialized society, the qualities of three of these are threatened. It is important that there is an awareness of the damage which is being caused to soil, and if this is not brought under control it could become irreversible.

To solve any scientific problem requires an understanding of the interactions and of the mechanisms involved. Soil scientists have gone some considerable way in understanding many of the problems of soil pollution. It is our hope that this book will provide an appropriate reference for those who share our concern.
Price: Dfl 280, US$ 184, £ 96
Orders to: in U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.
Elsewhere: Kluwer Academic Publishers Group, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

Fast Growing Trees and Nitrogen Fixing Trees. D. Werner and P. Müller, editors. Gustav Fischer Verlag, Stuttgart, New York, 1990, xvi + 396p. ISBN 3-437-30623-5 (German edition), 1-56081-306-7 (US edition). Soft cover.

This volume summarizes the knowledge on the physiological and generical basis for "Fast Growth" in trees as presented on an International Conference in Marburg in October 1989. It includes chapters on other plant and cell systems which have been studied in more detail concerning phenomena of fast growth.

Special emphasis is given to the relation between N2-fixing and VA-mycorrhiza symbioses and fast growth in trees. Ecological and forestry impact of fast growing trees for preservation strategies of the world's forest areas as well as for reforestation is another major topic.

As experts from temperate an tropical forest areas were invited, the contributions present an up-to-date survey of forest ecology world-wide.
Price: DM 128
Orders to: Gustav Fischer Verlag, Postfach 720 143, D-7000 Stuttgart 70, Germany.

Handbook of Applied Mycology. Volume 1: Soil and Plants. D.K. Arora, B. Rai, K.G. Mukerji and G.R. Knudsen, editors. Marcel Dekker, New York, 1991, xiii + 720p. ISBN 0-8247-8380-8. Hard cover.

Mycology, the study of fungi, has in some respects only recently emerged from the shadows of natural history. More and more, mycologists are embracing studies in such diverse areas as physiology, genetics, and evolution, and finding new applications for this knowledge. This new volume details the latest knowledge concerning the ecology, molecular biology, and biotechnology of fungi - highlighting their important role in the fertility of soil and plant yield.

The first three parts of this book cover a wide range of topics within three categories: mycorrhizal symbionts,

fungi as biological control agents against plant pathogens and weeds, and fungi as degradative agents in nature. The fourth and final part concentrates on applications of mathematical modelling in mycology. Since modelling focuses on understanding systems and making predictions about them, it serves as a link between basic and applied mycology. Although the scope of this volume makes omission of a few topics inevitable, our aim was to represent the current progress in these areas as comprehensively as possible.
Price: $ 150 (US and Canada); $ 172 elsewhere.
Orders to: Marcel Dekker Inc., 270 Madison Avenue, New York, NY 10016, U.S.A.

Phosphorous in Agriculture. Volume 1. An annotated bibliography. J.L. Nowland, editor. CAB International and the World Phosphate Institute. ISSN 0960-2976. Paperback.

The extent of the literature on phosphorus reflects the complexity of its reactions and solubility in soils. The historic challenge to understand the behaviour of this major plant nutrient continues undiminished. Residual levels of applied phosphorus are growing in many intensively farmed soils of the industrial nations. On the other hand, many developing nations are having to consider the extremely P-deficient acid soils in the tropics and the subtropics for expansion or farming. This bibliography helps provide answers to many of these challenges. Its compilation of abstracts summarizes current knowledge of all phases of phosphorus technology and manufacture, the status of raw materials, reactions and interactions of P in soils, methods for predicting P needs of crops, and nutrition of major crops and animals.
Price: £ 36.00
Orders to: CAB International, Wallingford, Oxon OX10 8DE, U.K.

International Symposium on Peat/Peatland Characteristics and Uses. S.A. Spigarelli, editor. Bemidji State University, Bemidji, 1989, vi + 622p. ISBN 0-943090-02-4. Paperback.

This book is the Proceedings of the International Symposium on Peat/Peatland Characteristics and Uses, held at Bemidji State University (Minnesota, USA) in May 1989. The goal of the meeting was to overview recent information on characteristics and uses of peat and peatlands, with a focus on non-energy uses and conservative development of peat resources. The papers are arranged in six sections: (1) Peatland ecology and utilization; (2) Peat structure and composition; (3) Peat chemistry and analysis; (4) Industrial products from peat; (5) Plant-peat relationships; and (6) Biological properties and uses of peat.
Price: US$ 60, including postage
Orders to: Center for Environmental Studies, Bemidji State University, 1500 Birchmont Dr. NE, Bemidji, MN 56601- 2699, USA

Ecology of Arable Land: Organisms, Carbon and Nitrogen Cycling. Ecological Bulletins 40. O. Andrén, T. Lindberg, K. Paustian and T. Rosswall, editors. Ecological Bulletins, 1990, 222p. ISBN 90-16-10227-4. Hard cover.

This volume presents the results of the project "Ecology of Arable Land. The Role of Organisms in Nitrogen Cycling" which was carried out during 1979-1988 with field studies concentrated to 1980-1985. The main project objective was to investigate and synthesize the contributions of the soil organisms to nitrogen and carbon circulation in four contrasting cropping systems. Scientists from disciplines including soil hydrology, crop production ecology, soil microbiology, soil zoology, soil chemistry and systems analysis, were involved in the project.

In view of the integrated nature of the studies of carbon and nitrogen cycling carried out within the project and the large number of separate project publications in the scientific literature, it was considered important to summarize the results in one volume .this volume may be considered as a final report of project findings, although additional scientific papers from the project will be published in the years to come.

This volume is essentially meant for ecologists, agronomists and biologists in general.
Price: DKK 300
Orders to: Munksgaard International Booksellers and Publishers, P.O. Box 2148, DK-1016 Copenhagen K, Denmark.

Acid Deposition: Sources, Effects and Controls. J.W.S. Longhurst, editor. British Library and Technical Communications, Letchworth, 1990, x + 348p. ISBN 0-7123-0765-6. Hard cover.

This volume reviews our understanding of the cause and effect of acid deposition, to present new data that *assists in the provision of a fuller understanding of cause, process and implication and thus to assist in defining* the research agenda of the future. The book will serve both as a course text in undergraduate studies for many disciplines and as a reference text to libraries or researchers wishing to see a wider perspective than their own narrow disciplinary competence. The materials presented are deliberately European in perspective, drawn from the Federal Republic of Germany, Hungary, Norway, Sweden and the United Kingdom. The current position as regards deposition monitoring, ecological effects and control technologies is presented in five sections: (10 Acid deposition, chemistry and monitoring; (2) freshwater acidification; (3) soils and forest systems; (4) Structural materials; and (5) Control technologies. Each section is introduced by an overview paper outlining the contemporary understanding and identifying areas requiring future work. Specialist papers presenting new data or re-interpretations of existing information comprise the remainder of each section.
Orders to: Technical Communications, 100 High Avenue, Letchworth, Herts SG5 3RR, England.

Atlas of Opaque and Ore Minerals in their Associations. R.A. Ixer. R.A. Ixer, 1990, 208p. ISBN 0-335-15217-1. Hard cover.

This atlas contains nearly four hundred colour photomicrographs, each accompanied by a description and used to illustrate common mineral assemblages. The photomicrographs are grouped together into blocks of associations under a broad genetic classification scheme, and each block is preceded by a text that is intended as a brief background and introduction to the figured examples and an expansion of their mineralogy and

petrography. The text, therefore, is biased towards descriptive petrography and away from economic geology, detailed descriptions of deposits or ore genesis. The majority of the references reflect this bias. However, for the more important classes of mineral deposits, some recent generalized references are included.

This atlas includes seven sections: (1) Preparation of material; (2) Opaque and ore minerals associated with basic and ultrabasic igneous rocks; (3) Opaque and ore minerals associated with intermediate and acid igneous rocks; (4) Volcanogenic massive sulphide deposits; (5) Vein-style deposits and associations; (6) Opaque and ore minerals associated with sedimentary rocks; and (7) Opaque and ore minerals associated with metamorphic rocks. It comprises also an index of minerals.

Price: £ 85

Orders to: Open University Press, Celtic Court, 22-26 Ballmoor, Buckingham, MK18 1XW, England.

Irrigation of Agricultural Crops. Agronomy Monograph 30. B.A. Stewart and D.R. Nielsen, editors. ASA, CSSA, SSSA, Madison, 1990, xxvii + 1218p. ISBN 0-89118-102-4. Hard cover.

This monograph, which replaces the Agronomy Monograph 11 "Irrigation of Agricultural Lands", is divided into eight sections. The first section offers an overview of the monograph while the second section discusses philosophical and technical questions that must be answered before the decision to irrigate is reached. The next three sections examine the basic principles of soil-water, plant-water and soil-plant-atmosphere relations. These chapters are designed to translate knowledge and principles of soil and crop science into useful irrigation practices.

The sixth section emphasizes the application of principles to the field level. Emphasis is placed on the capabilities of systems to apply water in space over time. The effects of climates, soils, and water sources for various irrigation practices are reviewed. Authors in the following section address irrigation requirements and responses of selected agricultural crops, as well as the cultural practices, that result in the efficient use of water resources. The final section deals with the effects of irrigation on the environment.

International specialists contributed to this monograph in areas such as trends in irrigation, dynamics of soil water, field soil-water relations, movement of water in plants, water uptake, water deficits, evaporation, transpiration, evapotranspiration, and irrigation systems and scheduling. Salinity, soil erosion on irrigated lands, and pollution and public health problems caused by irrigation are also covered. This volume provides detailed information on the irrigation of alfalfa, corn, wheat, soybean, peanut, sorghum, cotton, sunflower, sugarbeet, tobacco, sugarcane, potato, turfgrass, vegetables, citrus trees, deciduous fruit and nut trees, and grapevines.

Price: US$ 66 (plus 10 percent per book for postage). Advance payment required.

Orders to: ASA, CSSA, SSSA Headquarters Office, Attn. Book Order Dept., 677 South Segoe Road, Madison WI 53711, USA.

Soil Fungicides. Volume 1 and 2. A.P. Sinha, K. Singh, A.N. Mukhopadhyay. CRC Press, Boca Raton, 1988, xv + 187p. (vol.1), xv + 174p (vol.2). ISBN 0-8493-4548-0 (vol.1), 0-8493-4548-9 (vol.2). Hardcover.

Of the many aspects of pesticide behaviour in the soil environment which have currently received scientific attention, there has been a notable acceleration in the microbiological field in research institutions globally. The vas amount of information generated is widely dispersed in diverse scientific journals, in several languages. This set represents an attempt to bring this information together in two volumes, to summarize and evaluate recent developments, to integrate them with significant developments of the past, and to attempt some projections for the future.

These volumes contains 13 chapters. In Volume 1, the first chapter deals with introduction, definitions, history, classification, formulations, and methods of application. Chapters 2 through 8 deal with individual groups of fungicides and their members, with regard to their manufacturers, chemical name, toxicological information, mechanism of action, and disease control developed for commercial use of experimental work. In Volume 2, chapters 9 through 12 deal with the various aspects of soil fungicides, such as factors affecting their efficacy, microbial interactions, nontarget effects of pesticides on soil borne plant pathogens, and development of resistance to fungicides. In the last chapter, evaluations of fungicides have been included because of their significance in the fungicidal recommendation. Literature pertaining to each chapter has been cited in the last, so that the reader can obtain more detailed information on the topic(s).

Price: £ 100.50 (Vol.1); £ 88.50 (Vol.2)

Orders to: Wolfe Medical Publications Ltd., 2-16 Torrington Place, London WC1E 7LT, England; or: CRC Press Inc., 2000 Corporate Blvd. N.W., Boca Raton, FL 33431, USA

Comparative Hydrology. An ecological approach to land and water resources. M. Falkenmark and T. Chapman, editors. Unesco, Paris, 1989, 479p. ISBN 92-3-102571-6. Paperback.

With out continuously shrinking world goes an increasing need to understand similarities and differences in environmental opportunities and problems. At present a wealth of issues have to be addressed regarding land and water degradation and other environmental impacts from land use, water pollution and water resources development, and involving exchanges of water related or ecological experience between high- and low-latitude countries. As a consequence, hydrologists, ecologists and land-use planners have started to interact on an unprecedented scale. This has increased out awareness of considerable climate-related ecohydrological differences, and raises a question as to what extent hydrological predictions may indeed be transferable from one region to another. As a result of all this, there is a great need for improved understanding of the relationship between hydrological phenomena and different ecosystems.

This volume aims at providing guidance in this respect. It is based on the assumption that hydrological phenomena are the result of an interaction between climate as the forcing function, geology as a basic constraint, and man as a major manipulating agent. The book is composed of three parts: it starts with a section on the theoretical and methodological basis for comparative hydrology, followed by two sections on the main characteristics of sloping lands with catchment response on the one hand, and flatlands on the other. Small islands and deltalands are also treated. Distinction is made between snow-controlled, temperate and warm

climates under humid as opposed to arid conditions.

The book has been written as a graduate text, addressing a broad multidisciplinary target group of hydrologists, ecologists, engineers, soil conservationists, environmental scientists and land-use planners.

Price: FF 180

Orders to: Unesco Press, Commercial Services, 7, place de Fontenoy, F-75700 Paris, France.

Les Sols, faciles à perdre, difficiles à regagner. Dossiers de l'Environnement No.3. G. Pillet et R. Longet. Georg Editeur SA, Genève, 1989, 135p. ISBN 2-8257-0171-8. Cartonné.

Quoi de plus solide que le sol, pense-t-on souvent. Or, cette solidité n'est qu'apparente. Ce sol à qui nous devons tout, c'est le moment que nous en prenions soin. Car il disparaît en bien moins de temps qu'il ne peut se reconstituer, et il ne porte ses fruits qu'à certaines conditions. La technique moderne certes peut beaucoup, mais elle a aussi ses limites. A vues humaines, les fonctions du sol dans l'écosystème Terre resteront absolument irremplaçables.

L'espèce humaine a beau apprivoiser les eaux et les airs: elle n'y fait toujours que passer. Pour vivre, il nous faut le sol, la terre. Nous sommes des terriens, des êtres liés à la terre, et c'est la terre qui nous fait vivre. Cette terre va mal, et une prise de conscience des menaces comme des mesures à prendre est urgente.

C'est l'ambition de ce troisième volume de la collection "Les Dossiers de l'Environnement" que de contribuer à cette prise de conscience, en réunissant en cet ouvrage les témoignage de la pédologie, de l'agronomie, de l'écologie, de l'histoire et de l'économie.

Commandes à: Société Suisse pour la Protection de l'Environnement, 6 rue Saint-Ours, CH-1205 Genève, Suisse.

Karst Geomorphology and Hydrology. D.C. Ford and P.W. Williams. Unwin Hyman, London, 1989, xv + 601p. ISBN 0-04-551105-5 (Hardback) 0-04-551106-3 (Paperback).

For the first time, the distinctive and often dramatic landforms of karst limestone scenery are treated together with karst hydrology as an integrated system in this comprehensive text. Thus, the essence of the karst system is explored and explained: the rocks are slightly soluble in water and the natural plumbing of the landscape develops largely or entirely underground, creating cave systems and distinctive surface features.

The first half of the book is a systematic presentation of the dissolution kinetics, chemical equilibria and physical flow laws pertaining to karst waters. It includes details of the many environmental factors that complicate their chemical evolution, with a critique of measurement of karst erosion rates. Methods of evaluating the structure and water resources of karst aquifers are explained, including recent advanced research in France.

The second half of the book begins with the account of the origin of solutional caves and their features. The nature and distribution of surface landforms are then related to each other and to the aquifer in terms of scale and of function as recharge or discharge components. Unusual characteristics of coastal zones, deserts, glaciated and permafrozen regions are explained. Practical applications of karst studies are stressed throughout the text and are brought together in a final, well documented, review chapter.

Designed for advanced undergraduate and graduate students, this book includes many illustrations and figures. It is international in coverage, describing work from many nations. It will be a reference work for oil, gas and mineral-exploration geologists, working in carbonate regions and for engineers and environmental scientists concerned with design, construction, management and conservation in karst terrains.

Price: £ 24.95 (paperback), £ 75 (hardback)

Orders to: Unwin Hyman Ltd., 15-17 Broadwick Street, London W1V 1FP, U.K.

Ecology, community and lifestyle. A. Naess. Cambridge University Press, Cambridge, 1989, xiii + 223p. ISBN 0-521- 34406-9 (hardback) 0-521-34873-0 (paperback).

The basic thesis of the work is that environmental problems are only to be solved by people - people who will be required to make value judgements in conflicts that go beyond narrowly conceived human concerns. Thus people require not only an ethical system, but a way of conceiving the world and themselves such that the intrinsic value of life and nature is obvious, a system based on 'deep ecological principles'. The book encourages readers to identify their own series of such parameters - their own ecosophies. It will appeal to philosophers, specialists working on environmental issues, and the more general reader who is interested in learning some of the foundational ideas of the rapidly expanding field of environmental philosophy.

Price: £ 14.95 or US$ 17.95 for the paperback edition.

Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, U.K.

New Journals/Nouveaux Périodiques/Neue Zeitschriften

Global Environmental Change. Human and Policy Dimensions. J.K. Mitchell, editor. Butterworth-Heineman, March 1991. ISSN 0959-3780.

This international journal addresses the human ecological and public policy dimensions of environmental processes that threaten the sustainability of life on Earth. These processes include, but are not limited to, deforestation, desertification, soil degradation, species extinction, sea level rise, acid precipitation, groundwater contamination, destruction of the atmospheric ozone layer, atmospheric warming/cooling, marine pollution, nuclear hazards, the emergence of new technological hazards, and the worsening effects of natural disasters. The journal emphasizes human contributions to worldwide environmental changes and explores the diversity of human responses to impacts of global change.

In addition to the refereed articles and papers, each issue will contain viewpoints, book reviews and conference reports. This journal will be of interest to academics and researchers working in the policy sciences, environmental sciences and social sciences; to the policy makers and managers in government agencies, intergovernmental bodies and non-governmental organisations that are affected by or concerned with global change; to investors and produces in industries that contribute to global environmental change and are affected by global environmental change strategies.

Subscription Price: £ 93 in U.K.; £ 102 elsewhere.
Orders to: Turpin Transactions Ltd, The Distribution Centre, Blackhorse Road, Letchworth, Herts SG6 1HN U.K.

Tropinet. Quarterly published by the Association for Tropical Biology and the Organization for Tropical Studies. Elizabeth Baker, editor.

The Association for Tropical Biology is an international society to promote investigation of tropical biology in its broadest sense, and to promote and support the strengthening of personnel to obtain this end. The Organization for Tropical Studies is a consortium of 53 institutions of higher learning in the U.S., Costa Rica and Puerto Rico. It provides leadership in education, research and the wise use of natural resources in the tropics.

The quarterly contains information on worldwide developments, meetings and publications in the fields mentioned above.

Subscription price: US$ 5.00 per year, $ 9 for 2 years, and $ 12 for 3 years.
Orders to: Dr. L. McDade, OTS, P.O. Box DM, Duke Station, NC 27706, U.S.A.

Newsletter of the East and Southeast Asia Federation of Soil Science Societies. Dr. T. Inoue, editor. ISSN 0917-2092.

For the establishment of this new Federation, see elsewhere in this Bulletin. The Newsletter is intended to be a medium of information exchange and a forum of scientific discussions.

For further information: Dr. T. Inoue, editor Newsletter, ESAFS-Office, c/o Japanese Society of Soil Science, 202, 26-10, Hongo 6-chome, Bunkyo-ku, Tokyo 113, Japan.

The Plant Journal for Cell and Molecular Biology. ISSN 0960-7412.

This journal publishes reports of significance to the understanding of plant biology. It includes papers across the spectrum of modern plant biology, encompassing work that addresses fundamental issues in developmental biology, molecular biology, plant pathology, genetics, physiology, biochemistry, cell biology and botany.

Subscription price: £ 25 (US$ 49.50) for individuals, £ 60 (US$ 126) for institutions
Orders to: Anna Rivers, Blackwell Scientific Publications Ltd., Osney Mead, Oxford OX2 0EL, U.K.

Climate Research. Interactions of Climate with Organisms, Ecosystems, and Human Societies. V. Meentemeyer, G. Esser and T. Oikawa, editors. ISSN 0936-577X.

This international and multidisciplinary journal focuses on the effects of climate on nature and human life, and on the impacts of organismic and human activities on climate. It covers both basic and applied research. It presents research articles, reviews and notes concerned with: (1) Interactions of climate with organisms, populations, ecosystems, and human societies; (2) Short- and long-term changes in climatic elements; (3) Methodological problems in model development and application; (4) Climate effects on biotic diversity; (5) Historical case studies; (6) Analyses of extreme climatic events, their physicochemical properties and their time-space dynamics. Climatic hazards; and (7) Land-surface climatology.

The focal points of applied research are climate effects on: agriculture, forestry, fisheries and aquaculture; surface and groundwater quality and supply; pests and pest control; urbanization and economic developments; environmental protection; human health.

Subscription price: DM 285 per volume (3 numbers) including surface postage.
Orders to: Inter-Research, P.O. Box 1120, D-2124 Amelinghausen, Germany.

ISSS-AISS-IBG

ANNOUNCEMENT

Internatinoal Symposium on Strategies for Utilizing Salt Affected Lands - 17 - 25 February 1992, Bangkok, Thailand

The symposium will be organized by the Agricultural Society of Thailand, the Soil and Fertilizer Society of Thailand, the Department of Land Development of the Ministry of Agriculture and Cooperatives and the ISSS Subcommission on Salt Affected Soils, concentrating on genesis and classification of salt affected soils, including mapping techniques - physical and chemical properties of salt affected soils - utilization and management of salt affected lands - prevention measures against the salinisation of soil and water - reclamation of salt affected lands for agricultural uses - tolerant crop cultures and management. - Language of the symposium is English.

Registration fee: 200 US $,accompaning persons 50 US $

Notice of intent

"International Symposium on Strategies for Utilizing Salt Affected Lands", 17-25 February 1992, Bangkok, Thailand

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0 I register for participation

I will be accompagnied by ..... persons

I need single room:.....nights
double room:.....nights

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

Please return to: Dr.Somri Arunin, Soil Salinity Research Station, Department of Land Development, Pahon Yotin Road, Chatuchak Bangkok 10900, Thailand

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

A. Salt Affected Soils/Sols Salins/Salzböden
Prof.Dr.Zhao Qi-guo, Inst.of Soil Science, Academia Sinica, P.O.Box 821,Nanjing, 21008,PR of China

B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
Prof.Dr.L.P.Wilding, Dept.of Soil & Crop Science, Texas A&M Univ., College Station TX 77843, USA

C. Soil Conservation and Environment/Conservation du Sol et Environnement/Bodenerhaltung und Umwelt
Prof.Dr.I.Pla-Sentis, Las Acacias, Apartado 1131, Maracay, Venezuela

D. Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit IUBS)
Dr.M.B. Bouché, CEPE-CNRS, B.P. 5051, F-34033 Montpellier, France.

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

AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden
Dr.S.Sadio, ISRA/ORSTOM, B.P. 1386, Dakar, Senegal

DM World Soils and Terrain Digital Data Base/Carte Internationale Numérique des Sols et des Terrains/ /Digitalisierte Internationale Boden- und Landkarte (SOTER)
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FS Forest-Soil Relationships/Relations Sol-Forêt/Beziehungen Wald-Boden
Dr.P.K.Khanna,CSIRO,Div.of Forest Research,P.O.Box 4008,Canberra ACT 2600,Australia

FT Soil Fertility Trials/Essais de Fertilité des Sols/Bodenfruchtbarkeitsversuche
Dr. S.K.De Datta, IRRI, P.O.Box 933, Manila, Philippines

HP History, Philosophy and Sociology of Soil Science/Histoire, Philosophie et Sociologie de la Science du Sol/Geschichte, Philosophie und Soziologie der Bodenkunde
Prof.Dr. D.H.Yaalon, Dept. of Geology, Hebrew University, Jerusalem 91000, Israel

LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/Informationssysteme zur Landbewertung
Dr.J.Dumanski, Land Resources Research Institute,Agric.Canada,Ottawa,Ontario,Canada K1A 0C6

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.,Canada S7N 0W0

MV Soil and Moisture Variability in Time and Space/Variabilité du Sol et de l'Humidité dans le Temps et l'Espace/Boden- und Feuchtigkeitsvariabilität in Raum und Zeit
Prof.Dr.J.Bouma, Dept. of Soil Science and Geology, Agric.University, P.O.Box 37, 6700 AA Wageningen, The Netherlands

PM Pedometrics/Pedométrique/Pedometrik
Prof.Dr.D.E. Myers, Dept.of Mathematics, Univ. of Arizona, Tucson AZ 85721, USA

PP Paleopedology/Paléopédologie/Paläopedologie
Prof. Dr. J.A. Catt,Rothamsted Exp. Station, Soil Science Department, Harpenden,Herts,AL5 2JQ, United Kingdom

PS Paddy Soils Fertility/Fertilité des Sols Rizicoles Irrigués/Fruchtbarkeit von Reisböden
Prof.Dr.Zhu-Zhaoliang,Inst. of Soil Science, Academia Sinica, P.O.Box 821, Nanjing, 21008, PR of China

PT Pedotechnique/Pédotechnique/Pedotechnik
Prof.Dr. R.Horn, Inst. für Pflanzenernährung und Bodenkunde, Olshausenstrasse 40-60, D-2300 Kiel 1, Germany

RS Remote Sensing for Soil Survey/Pédologie et Télédétection/Fernerkundung für Bodenkartographie
Dr.Karale,Remote Sensing Service Centre,NBSS&LUP Campus,Amravati Road,Nagpur 440010,India

RZ Rhizosphere/Rhizosphère/Rhizosphäre
Prof.Dr.A.Jungk,Inst.f.Agrikulturchemie,Von Sieboldstrasse 6,D-3400 Göttingen, Germany

SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin
Prof.Dr J.Låg, Dept. of Soil Science - AUN, P.O.Box 28, 1432 Ås-NLH, Norway

SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Grundwasserverschmutzung
Prof.Dr. P.J. Wieringa, Univ. of Arizona, Soil & Water Science, Tucson AZ 85721, USA

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

CSS Committee on Statute and Structure/Comité sur Statuts et Structures/Komitee für Statuten und Struktur
Prof.Dr.P.B.Tinker,NERC, Polaris House,North Star Avenue, Swidon SN2 1EU, England

CIP Committe on International Programmes/Comité sur les Programmes Internationaux/Komitee für Internationale Programme
Prof.Dr.H.Scharpenseel, Inst.für Bodenkunde,Allende-Platz 2,D-2000 Hamburg 13, Germany

CST Committee on Standardization/Comité sur la Standardisation/Standardisierungskomitee
Prof.Dr. H-P.Blume, Inst.für Pflanzenern.u.Bodenkunde, Olshausenstr.40-60,D-2300 Kiel 1,Germany

CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee
Prof.Dr.W.R.Gardner, USA, College of Natural Resources,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. A. Ruellan, 2, Bd. Berhelot, F-34000 Montpellier, France

Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften
ARID SOIL RESEARCH AND REHABILITATION; BIOLOGY & FERTILITY OF SOILS; CATENA; GEODERMA; SOIL BIOLOGY & BIOCHEMISTRY; SOIL TECHNOLOGY;

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