



Bulletin

of the International Society of Soil Science

Bulletin

de l'Association Internationale de la Science du Sol

Mitteilungsblatt

der Internationalen Bodenkundlichen Gesellschaft

Boletín

de la Sociedad Internacional de la Ciencia del Suelo

No. 82/83

1992/2 1993/1

INTERNATIONAL SOCIETY OF SOIL SCIENCE
ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL
INTERNATIONALE BODENKUNDLICHE GESELLSCHAFT

Founded/Fondée/Gegründet: 19-05-1924. Individual membership/Membres individuels/Individuelle.
Mitgliedschaft: 7000. Affiliated national and regional Societies/Associations nationales et régionales affiliées/
Angeschlossene nationale und regionale Gesellschaften: 65.

A scientific-associate member of ICSU since/Membre associé scientifique de l'ICSU depuis/Wissenschaftlich-
assoziiertes Mitglied der ICSU seit: 1972.

Seat/Siège/Sitz: c/o Institut für Bodenforschung, Universität für Bodenkultur, Gregor-Mendel-Strasse 33,
A-1180 Vienna, Austria. Phone: +43 1 3106026; Fax.: +43 1 3106027.

Officers/Bureau/Vorstand

President/Président/Präsident

Prof.Dr. A. AGUILAR Santelises, Universidad Autonoma de Chapingo, Apartado Postal 45, 56230
Chapingo, Mexico.

Vice President/Vice-Président/Vizepräsident

Prof.Dr. R. NUNEZ Escobar, Colegio de Postgraduados, 56230 Montecillo,
Chapingo, Mexico.

1st Past President/1er Ancien Président/1. Altpräsident

Prof.Dr. A. Tanaka, Hokkaido Univ., Faculty of Agric. Kita 9 nishi 9 Kita-ku, Sapporo 060,
Japan

2nd Past President/2ème Ancien Président/2. Altpräsident

Prof.Dr. K.H. Hartge, Institut für Bodenkunde der Universität Hannover, Herrenhäuser Strasse 2,
D-3000 Hannover 21, Germany

3rd Past President/3ème Ancien Président/3. Altpräsident

Dr. J.S. Kanwar, Plot No. 17, Krishna Nagar, ICRISAT Colony-Phase II, Hashmathpet Road,
Secunderabad 500 011 A.P., India

Secretary-General/Secrétaire Général/Generalsekretär

Prof.Dr. W.E.H. Blum, Institut für Bodenforschung, Universität für Bodenkultur,
Gregor-Mendel-Strasse 33, A-1180 Vienna, Austria.

Deputy Secretary-General/Secrétaire Général adjoint/Stellvertretender Generalsekretär

Drs. J.H.V. van Baren, ISRIC, P.O.Box 353, 6700 AJ Wageningen, The Netherlands.

Treasurer/Trésorier/Schatzmeister

Dr. P.U.Lüscher, Eidg. Forschungsanstalt für Wald, Schnee u. Landschaft (WSL), Zürcherstr. 111,
CH-8903 Birmensdorf, Switzerland

Honorary Members/Membres d'Honneur/Ehrenmitglieder

Prof. Dr. G. Aubert (France), Dr. G. Barbier (France), Prof.Dr. Ph. Duchaufour (France), Prof.Dr. W. Flaig
(Germany), Prof.Dr. E.G. Hallsworth (Australia), Dr. V. Ignatieff (Canada), Dr. Y. Ishizuka (Japan), Dr. J.S.
Kanwar (India), Dr. D. Kirkham (USA), Prof.Dr. E. Mückenhausen (Germany), Dr. S.K. Mukherjee (India), Dr.
L.A. Richards (USA), Prof.Dr. E.W. Russel (UK), Prof.Dr P. Schachtschabel (Germany), Dr. R. Simonson,
(USA), Prof.Dr.I. Szabolcs (Hungary), Prof.Dr. R. Tavernier (Belgium).

Commissions/Commissions/Kommissionen - Chairmen / Présidents/Vorsitzende:

I. Soil Physics/Physique du Sol/Bodenphysik

Dr. G. Vachaud, Institut de Mécanique (IMG), B.P. 53 X, F-38041 Grenoble, France

II. Soil Chemistry/Chimie du Sol/Bodenchemie

Prof. Dr. R.S. Swift, CSIRO DIVISION OF SOIL, PBM2, Glen Osmond, Adelaide, 506U AUSTRALIA

III. Soil Biology/Biologie du Sol/Bodenbiologie

Prof. Dr. J.M. Lynch, University of Surrey, Guildford, Surrey GU2 5XH, United Kingdom

**IV. Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und
Pflanzenernährung**

Prof.Dr. C.J. Asher, Dept. of Agriculture, University of Queensland, QLD 4072, Australia

**V. Soil Genesis, Classification and Cartography/Genèse, Classification et Cartographie du Sol/
Boden-genetik, Klassifikation und Kartographie**

Dr. H. Eswaran, USDA Soil Conservation Service, P.O. Box 2890, Washington DC 20013, USA

VI. Soil Technology/Technologie du Sol/Bodentechnologie

Prof.Dr. G.S. Sekhon, Dept. of Soils, Punjab Agric. Univ., Ludhiana 141 004 Punjab, India

VII. Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie

Prof.Dr. R.J. Gilkes, University of W.A., Dept. of Soil Science, Nedlands, WA 6009, Australia



Bulletin

of the International Society of Soil Science

Bulletin

de l'Association Internationale de la Science du Sol

Mitteilungsblatt

der Internationalen Bodenkundlichen Gesellschaft

Boletín

de la Sociedad Internacional de la Ciencia del Suelo

No. 82/83

1992/2 1993/1

Edited and published by/rédigé et publié par/redigiert und publiziert von:
International Society of Soil Science (ISSS)
Association Internationale de la Science du Sol (AISS)
Internationale Bodenkundliche Gesellschaft (IBG)
Sociedad Internacional de la Ciencia del Suelo (SICS)

Editor: Prof.Dr. Winfried E.H. Blum
Secretary-General of ISSS
Universitaet für Bodenkultur
Gregor Mendel-Str. 33
A-1180 Wien/Austria

Co-Editor and Book Review Editor:
Drs. J. Hans V. van Baren
Deputy Secretary-General of ISSS
ISRIC, P.O. Box 353
6700 AJ Wageningen/The Netherlands
(all correspondance concerning book
reviews should be sent to this address)

ISSN: 0374-0447

Copyright: ISSS, Gregor-Mendel-Str. 33
A-1180 Wien/Austria
Tel.: +43-1-3106026
Fax: +43-1-3106027

Printed by: Soil Fertility Research Institute
827 13 Bratislava, Gagarinova 10
Slovakia

Layout: Stefan Moro
Soil Fertility Research Institute
827 13 Bratislava, Gagarinova 10
Slovakia

Orders to: Dr. P.U. Lüscher, ISSS Treasurer
WSL, Zürcherstr. 111
CH-8903 Birmensdorf / Switzerland
Subscribers are requested to notify Dr. Luscher
of changes of address

Price of a single copy: 25.00 US\$

CONTENTS - SOMMAIRE - INHALT

15 th World Congress of Soil Science - Invitation Programme	
15 ^{ème} Congrès Mondial de la Science du Sol - Programme d'Invitation.....	7
15. Bodenkundlicher Weltkongress - Einladungsprogramm	
15º Congreso Mundial de la Ciencia del Suelo - Programa de Invitation	
Registration Form for ISSS-Meetings	
Fiche d'Inscription pour des réunions de l'AISS.....	28
Anmeldeformular für IBG-Tagungen	
Addresses of the Officers and Chairmen of Commissions, Subcommissions, Working Groups and Standing Committees of ISSS.....	30
The New York Earth Room.....	36
ISSS Mid-Term Meeting Report.....	37
UNCED - The Earth Summit.....	40
Activities of Commissions and Working Groups	
Activités des Commissions et Groupes de Travail.....	44
Aus der Tätigkeit von Kommissionen und Arbeitsgruppen	
Soil Pedon is not a suitable term.....	52
News from regional and national Societies	
Nouvelles des Associations régionales et nationales.....	53
Berichte der regionalen und nationalen Gesellschaften	
<i>Reports of Meetings</i>	
Compte-rendus de Réunions.....	58
Tagungsberichte	
Katra's Soil Analysis Crossword.....	66
International Relations	
Relations internationales.....	75
Internationale Beziehungen	
Appointments, Honours	
Nominations, Distinctions.....	87
Ernennungen, Auszeichnungen	
In memoriam.....	88
Announcement of Meetings	
Annonces de réunions.....	93
Ankündigungen von Tagungen	
Meetings, Conferences, Symposia	
Réunions, Conférences, Symposia.....	95
Tagungen, Konferenzen, Symposien	
International Training Courses	
Cours internationaux de Formation.....	102
Internationale Fortbildungskurse	
New Publications	
Nouvelles Publications.....	112
Neue Veröffentlichungen	

ISSS Cooperating Journals	
Journaux coopérants de l'AISS.....	154
IBG kooperierende Zeitschriften	
Subscription Form - Cooperating Journals	
Fiche d'Abonnement - Journaux Coopérants.....	155
Bestellformular - Kooperierende Zeitschriften	
ISSS Life Members.....	156
New ISSS Members.....	157
ISSS Membership Application Form	
AISS Fiche de Demande d'Affiliation.....	163
IBG Aufnahmeantragsformular	

XVth INTERNATIONAL CONGRESS OF SOIL SCIENCE

July 10-16, 1994

Acapulco, Guerrero, Mexico

SOIL UTILIZATION IN HARMONY WITH NATURE

Learning from the past to face the future



The Earth's GODDESS

The Earth's GODDESS

The Earth's Goddess is nurtured by the blood of the gods in sacrifice, Macuilxóchtli, Lord of the flowers (to the right), and Quetzalcóatl, the Feathered Snake (to the left). The corn plant emerges from the center of the Earth's Goddess, leant on Cipactli, the crocodile, showing the male and female duality manifested by the red and yellow colors of its cobs. Quetzatlólotl, the rich feathered bird, poses on the top of the plant.

The Earth's Goddess destroys and builds, circled by dark aureoles which represent a lake.

(Original picture in colour)

Codex Borgia

DÉESSE DE LA TERRE

La déesse de la terre est nourrie par le sang des dieux sacrifiés, Macuilxóchtli dieu des fleurs à droite et Quetzalcóatl le serpent à plumes à gauche. Une plante de maïs émerge du centre de la Déesse de la Terre qui reste couchée sur Cipactli, le crocodile, en montrant la dualité masculine et féminine par les couleurs rouge et jaune des épis. Sur la partie supérieure de la plante reste Quetzatlólotl, l'oiseau aux plumes luxueuses.

Avec une aureole des cercles représentant un lac, la Déesse de la Terre détruit et reconstruit au même temps.

(Tableau original en couleurs)

Codice Borgia

GÖTTIN DER ERDE

Die Göttin der Erde wird durch das Blut von zwei Göttern, Macuilxóchtli, Gott der Blumen (rechts) und Quetzalcóatl, dem Gott der Gefiederten Schlange (links) ernährt. Eine Maispflanze wächst aus der Göttin der Erde empor die auf Cipactli, dem Krokodil ruht. Die Pflanze zeigt durch die rote und braune Farbe der Maiskolben die männliche und weibliche Dualität auf. Oben auf der Pflanze sitzt Quetzatlólotl, der reich befiederte Vogel.

Die Göttin der Erde baut auf und zerstört zur selben Zeit, umgeben von dunklen Kreisen, die einen See darstellen.

(Original Bild in Farbe)

Kodex Borgia

ACAPULCO, MEXICO
July 10-16, 1994

Invitation Program

15th WORLD CONGRESS OF SOIL SCIENCE

Programme d'invitation

15^{ième} CONGRES MONDIAL DE LA SCIENCE DU SOL

Einladungsprogramm

15. BODENKUNDLICHER WELTKONGRESS

Programa de invitación

15º CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO



FOREWORD

The Organizing Committee of the 15th World Congress of Soil Science (formerly International Congress of Soil Science), received during the previous meeting at Kyoto, Japan, in August 1990, valuable information and suggestions from Professors Tanaka, Takai, Kumazawa, Kiuma, as well as from other officers of the Japanese Society of Soil Science, extremely useful in setting a tentative program for the next World Congress at Acapulco, Mexico. This tentative program was analyzed by the Executive Committee of the International Society of Soil Science, especially gathered for this purpose in Mexico in November, 1992 at the place selected as the venue for the event. The Executive Committee made several recommendations which were considered for preparing the present Invitation-Program.

The Invitation-Program contains useful information for those planning to attend the 15th World Congress of Soil Science. It is expected that the main problems related to food production and to the use and conservation of the soil resource will be analyzed at the meeting and proper solutions to deal with these problems will be proposed. It is also expected that a comprehensive analysis will be made on the global changes that are taking place in the world.

All of us who feel as ours the responsibility to contribute to the improvement of the quality of life on earth are hoping that this World Congress will be an appropriate forum to learn more about the role of soils in the above enterprise and to voice solutions for present and future problems. For these reasons the theme:

**Soil utilization in harmony with nature
Learning from the past to face the future**

was selected, expecting to set a motivating stage for a productive meeting.

The Organizing Committee of the 15th World Congress of Soil Science and the Mexican Society of Soil Science invite you to participate in this, the most important meeting on soil science in the world. With your valuable participation the proposed goals can be achieved.

See you in Acapulco 94

Gabriel Alcántar-González
President of the Organizing Committee

Roberto Núñez-Escobar
Technical Committee

Jorge Tovar-Salinas
Internal Organization Committee

PRESENTATION

Lors du XIV Congrès Mondial de la Science du Sol, qui a eu lieu à Kioto, Japon, en Août 1990, nous avons compté avec l'aimable assistance des professeurs Tanaka, Takai, Kumazawa, Kiuma et de beaucoup d'autres collègues japonais. Ils nous ont transmis informations et suggestions très précieuses pour commencer nos travaux d'organisation du XV Congrès Mondial de notre société.

Deux ans après, du 9 au 16 Novembre 1992, le Comité Exécutif de la "ISSS" s'est réuni à Acapulco, Mexique, pour analyser et approuver, entre autres affaires, le programme du Congrès Mondial de 1994.

Les résultats de ces réunions ont été d'importantes recommandations que le Comité Organisateur a pris en compte pour élaborer le Programme-Invitation présentant les activités principales qui seront développées lors du Congrès.

Dans ce document nous présentons l'information générale qui sera d'une grande utilité pour les collègues ayant l'intention d'assister au XV Congrès Mondial de la Science du Sol. Il y sera analysé les principaux problèmes relatifs à la production d'aliments, conservation et bonne utilisation des sols ainsi que les changements globaux dans le milieu ambiant.

Nous, qui sommes engagés pour l'amélioration de la qualité de vie sur notre planète, avons l'espoir que ce Congrès nous permette de connaître mieux les sols et de faire face aux défis du présent et du futur prochain.

Avec la devise:

**Utilisation du sol en équilibre avec la nature
Apprendre du passé pour faire face au futur**

nous prévoyons d'organiser un Congrès d'un grand intérêt de telle sorte qu'au nom du Comité Organisateur et de la Société Mexicaine de la Science du Sol, nous vous invitons à participer activement au XVème CMSS, car, uniquement avec votre collaboration nous atteindrons les objectifs prévus.

En attendant de vous voir à Acapulco 1994

**Gabriel Alcántar-González
Président du Comité Organisateur**

**Roberto Núñez-Escobar
Comité Technique**

**Jorge Tovar-Salinas
Comité d'Organisation interne**

VORWORT

Das Organisationskomitee des 15. Bodenkundlichen Weltkongresses (vormals Internationaler Bodenkundekongress), hat waehrend der vorgaengigen Zusammenkunft in Kyoto, Japan, im August 1990, wertvolle Informationen und Vorschlaege von den Professoren Tanaka, Takai, Kumazawa, Kiuma, sowie auch von anderen fuehrenden Mitgliedern der japanischen bodenkundlichen Gesellschaft erhalten, die aeusserst nuetzlich waren, um das provisorische Programm fuer den naechsten Weltkongress in Acapulco ausarbeiten zu koennen. Dieses provisorische Programm, das zugeschnitten ist, fuer den neuen Kongressort, wurde vom Vorstand der Internationalen Bodenkundlichen Gesellschaft in Mexico, im November 1992, analysiert. Der Vorstand hat verschiedene Empfehlungen gemacht, die beim Vorbereiten dieses Programmes beruecksichtigt wurden.

Das Einladungsprogramm enthaelt nuetzliche Informationen fuer diejenigen, welche beabsichtigen, am 15. Bodenkundlichen Weltkongress teilzunehmen. Es wird erwartet, dass waehrend des Kongresses, die Hauptprobleme im Zusammenhang mit der Nahrungsmittelproduktion und Verwendung und Konservierung der Bodenschaeetze, analysiert und geeignete Loesungen, diesen Problemen zu begegnen, vorgeschlagen werden. Es wird auch erwartet, eine tiefgruendige Analyse der globalen Wechselwirkungen machen zu koennen, die auf unserem Planeten stattfinden.

Alle unter uns, welche sich verantwortlich fuehlen und zur Verbesserung der Lebensqualitaet beitragen moechten, hoffen, dass dieser Weltkongress das geeignete Forum ist, um in dieser Problemstellung mehr ueber die wichtige Rolle, die unser Erdboden spielt, zu lernen und um Loesungen fuer die Gegenwart und Zukunft vorzuschlagen.

Aus diesem Grunde, wurde das folgende Leitmotiv:

**Bodennutzung in Einklang mit der Natur
Aus der Vergangenheit lernen, um die Zukunft zu bewaeltigen**

ausgewaehlt, in der Hoffnung, damit die Grundmotivation zu einem erfolgreichen Kongress gelegt zu haben.

Das Organisationskomitee des 15. Bodenkundlichen Weltkongresses und die Mexikanische Bodenkundliche Gesellschaft laden Sie ein, an diesem wichtigsten Anlass ueber Bodenkunde in der Welt teilzunehmen. Nur mit Ihrer wertvollen Teilnahme koennen die gesteckten Ziele erreicht werden.

Auf Wiedersehen in Acapulco 94

Gabriel Alcántar-González
Praesident des Organisationskomitees

Roberto Núñez-Escobar
Technisches Komitee

Jorge Tovar-Salinas
Internes Organisationskomitee

PRESENTACION

Durante el XIV Congreso Internacional de la Ciencia del Suelo, que tuvo lugar en Kioto, Japón, en agosto de 1990, contamos con el amable apoyo de los profesores Tanaka, Takai, Kumazawa, Kiuma, entre otros colegas japoneses quienes nos transmitieron información y valiosas sugerencias para iniciar nuestros trabajos de organización para el XV Congreso Mundial de nuestra Sociedad.

Dos años después, del 9 al 16 de noviembre de 1992, se reunió en Acapulco, México, el Comité Ejecutivo de la ISSS para analizar y aprobar, entre otros asuntos, el programa del Congreso Mundial de 1994. Como resultado de esas sesiones se generaron importantes recomendaciones que el Comité Organizador tomó en cuenta para elaborar el Programa de Invitación que describe las principales actividades que tendrán lugar durante nuestra reunión.

En este documento presentamos la información general que será de utilidad para los colegas que planean asistir al XV Congreso Mundial de la Ciencia del Suelo, en donde se analizarán y plantearán propuestas de soluciones a los principales problemas relacionados con la producción de alimentos, conservación y uso óptimo de los suelos y cambios globales en el medio ambiente.

Quienes estamos comprometidos con la calidad de vida en nuestro planeta, tenemos cifradas grandes esperanzas en este Congreso, para aprender más de nuestros suelos y así contribuir a la solución de los retos de nuestro presente y futuro cercanos.

Bajo el lema:

**Uso del suelo en armonía con la naturaleza
Aprender del pasado para enfrentar el futuro**

esperamos realizar una reunión interesante y productiva, por lo que a nombre del Comité Organizador y de la Sociedad Mexicana de la Ciencia del Suelo los invitamos a participar en el XV CMCS, ya que sólo con su colaboración se alcanzarán los objetivos planteados.

En espera de saludarles en Acapulco 94

Gabriel Alcántar-González
Presidente del Comité Organizador

Roberto Núñez-Escobar
Comité Técnico

Jorge Tovar-Salinas
Comité de Organización Interna

Invitation Program

15th WORLD CONGRESS OF SOIL SCIENCE

Programme d'invitation

15^{ième} CONGRES MONDIAL DE LA SCIENCE DU SOL

Einladungsprogramm

15. BODENKUNDLICHER WELTKONGRESS

Programa de invitación

15° CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO

ACAPULCO, MEXICO

July 10-16, 1994

1. GENERAL INFORMATION

Date and Venue:

July 10th (Sun) - 16th (Sat), 1994
International Convention Center
Acapulco, Guerrero, Mexico.

Addresses:

- For general information:

15th WCSS Secretariat
Centro de Edafologia
Colegio de Postgraduados
P.O. Box 45, 56230 Chapingo, Mexico.
Fax.: +52(595) 4-57-23
Phone: +52(595) 4-57-01

- For pre-registration, mailing of extended summaries, hotel reservation, Mexican tours reservations and payments contact the Official Travel Agency:

15th World Congress of Soil Science
Congresos 2000/Viajes Kuoni de Mexico,
Hamburgo No. 66/Col. Juarez
Apartado Postal 6/856
06600 Mexico, D.F.
Mexico.

Phone numbers in Mexico City

+ 52(5) 533 62 75 to 79 and

+ 52(5) 533 63 37 to 39

Toll free number from the U.S.A.:

1-800-642 20 61

Fax: + 52(5) 511 09 71 and + 52(5) 207 09 57

Official Languages:

The official languages of the congress will be English, French, German and Spanish. English-Spanish simultaneous translation will be available during symposia presentations and English-French-German-Spanish at opening and closing ceremonies only. Authors are encouraged to present their papers in English for operational purposes.

2. REGISTRATION:

Registration is open to all ISSS members. Pre-registration can be made by mail. Nevertheless, late registration will be possible at the Acapulco Convention Center during the Congress. The registration fee includes Congress program and Proceedings, admittance to all scientific programs and social events, except Congress dinner. The fee also includes all coffee breaks, from Monday to Friday at the Convention Center. Registration of accompanying persons includes participation in the opening and closing ceremonies, social events (except Congress dinner), and accompanying persons program.

Registration fee (in U.S. currency):

Category	On or before Dec. 31, 1993.	After Dec. 31, 1993.
Participant (Delegate)	400	450
Accompanying person	50	70

Participants are urged to register early in order to avoid late fees and to ensure accommodation. No hotel accommodation will be arranged for any person who has not registered to the Congress.

Send registration form, hotel reservations, Mexican tour reservation, and payment not later than March 31st, 1994 to the Official Travel Agency.

Cancellations:

Registration cancellations should be made in writing to the Official Travel Agency. The amount of refund will depend on the date of cancellation. All refunds will be made after the Congress. Until March 31st, 1994: 50% of the registration fee will be refunded. After March 31st, 1994: No refund will be guaranteed.

Important deadlines

July 31, 1993: Reception of Extended Summaries (voluntary papers) intended to be considered in Symposia.

November 30, 1993: Reception of Extended Summaries for poster presentation (voluntary papers).

November 30, 1993: Reception of full texts of Symposia and Plenary Lectures papers.

December 31, 1993: Payment of registration to qualify for reduced pre-registration fee and for having the Extended summaries included in the Proceedings books.

March 31, 1994: Deadline for Congress pre- registration by mail at late-registration fee.

3. SCIENTIFIC PROGRAM:

The program will include Plenary Sessions, State-of-the-art lectures, Symposia, Workshops and Poster Sessions. Symposia are to be structured with both invited and voluntary papers.

The voluntary papers to be included in the Symposia will be selected entirely based on their fitness to the Symposia themes as expressed in the Extended summary. Authors of the selected papers will be further requested to contribute a full paper and send it to the secretariat (see deadlines). All other accepted voluntary papers will be presented at the Poster Sessions and their Extended summaries will be published in the Congress proceedings. Authors willing to contribute a paper to a Symposium are requested to fill out the Extended Summary Form and send it to the Official Travel Agency together with the Application Form by July 31st, 1993. Thereafter, reception of extended summaries, directly for poster presentation, will proceed until November 30, 1993.

Only participants who have paid the registration fee by December 31st, 1993, will be included in the Congress program. Each participant can submit only one paper to Symposia or Poster Session as main author.

Lectures:

During the inauguration and closing ceremonies, as well as on specific daily schedules, lectures will be held covering the state-of-the art on the different disciplines of Soil Science. These lectures will be presented by leading scientists of international recognition.

Symposia Themes:

(Sub-) Commission Symposia

- Ia** Impact of intensive irrigation practices on degradation of soil quality
Convenors: M. Vauclin, L. Rendón Pimentel
- Ib** Soil physics and environmental protection
Convenors: R. Van Genuchten, H. Arias Rojo
- IIa** Modern physico-chemical techniques in soil chemistry
Convenors: N. Senesi, L.J. Cajuste
- IIb** Soil chemistry and the environment
Convenors: W.H. Van Riemsdijk, M.E. Gutiérrez Ruiz
- IIIa** Rhizosphere microbiology and plant nutrition
Convenors: A. D. Robson, R. Ferrera Cerrato
- IIIb** Role of the biota in sustainable agriculture
Convenors: L. Brussaard, R. Ferrara Cerrato
- IVa** Soil productivity and nutrient cycling in relation to LISA
Convenors: H. Hirata, J.Z. Castellanos
- IVb** Integrated nitrogen management in relation to leaching and groundwater quality
Convenors: R. F. Follet, P. Wieringa
- Va** Utilization of soil's information in systems modelling for sustainable agriculture and global climate change
Convenors: F. H. Beinroth, V. Sorani
- Vb** Modelling soil genetic processes
Convenors: R. Bryant, E. Peña Cervantes
- VIa** Soil technology for sustainable agriculture
Convenors: S. M. Virmani, L. Tijerina Chávez
- VIb** Modern agrotechnology: Productivity, energetical efficiency and low environmental impact
Convenors: G. S. Sekhon, G. Asteinza Bilbao
- VIIa** Mineral reactions in the soil environment
Convenors: J. Wilson, M.A. Valera
- VIIb** Weathering and the formation of soil minerals
Convenors: C. G. Olson, N. Aguilera Herrera
- A** Impacts and hazards of salinization on ecological, environmental issues and sustainable agriculture
Convenors: Zhao Qiguo, M. Ortega Escobar
- B** Micromorphological indicators of anthropological effects on soils
Convenors: L. P. Wilding, K. Oleschko
- C** Assessment of long term soil degradation and rehabilitation. Field methodology and modelling
Convenors: I. Pla Sentis, J.L. Oropeza
- D** Soil function changes resulting from faunal alterations
Convenors: D. Colman, I. Barois

Interdisciplinary Symposia (ID)

- ID1** Soil testing and plant analysis: Methodology and interpretation.
Convenors: B. Jones, X. Uvalle Bueno
- ID2** Stressed soil systems and soil resilience
Convenors: I. Szabolcs, M. Ortega Escobar
- ID3** Global advances of sulphur research in soils and plant nutrition
Convenors: D. Messick, R. Núñez Escobar
- ID4** Soils and archaeological research
Convenors: P. Baveye, L. Manzanilla
- ID5** Research for maximum economic yield in harmony with nature
Convenors: A. Ludwick, J. Velázquez Mendoza

- ID6** Alternatives to slash-and-burn agriculture
Convenors: P. A. Sánchez, M. Anaya Garduño
- ID7** Education in Soil Science
Convenors: A. Ruellan, R. Rodríguez García
- ID8** An international framework for evaluating sustainable land management
Convenors: J. Dumanski, E. Ojeda Trejo
- ID9** The role of soil scientists in the design and development of soil conservation policies
Convenors: R. Puentes, J. Rey Contreras
- ID10** Use of nuclear and related techniques in soil-plant studies for sustainable agriculture and environmental preservation
Convenors: Ch. Hera, J.J. Peña Cabrales
- ID11** Soil acidity and its amelioration in the tropics
Convenors: R.J.K Myers, A. Aguilar Santelises
- ID12** Organo-minerals associations and their effects on soil properties
Convenors: R. S. Swift, N.E. García Calderón
- ID13** Indurated volcanic soils: use and management
Convenors: P. Quantin, Ch. Prat
- ID14** Soils and biodiversity
Convenors: W. G. Sombroek, I. Barois
- ID15** Soil data needs for expressing land qualities at different scales
Convenors: J. Bouma, M. C. Lenom Cajuste
- ID16** Origin and transmission of ideas in soil science
Convenors: D.H. Yaalon, R. Rodríguez García
- ID17** Impact of soil on the carbon cycle in the managed and natural ecosystems
Convenors: H. W. Scharpenseel, C. Leo Jacques
- ID18** Rational use of sewage sludge and city waste materials in agriculture
Convenors: A. C. Chang, J. Leal Diaz
- ID19** Fertilizer technology and its efficient use for crop production
Convenors: A. Turrent Fernández, R. Aveldaño Salazar
- ID20** Interactions of soil components, agricultural ecosystems and health issues.
Convenors: P. M. Huang, J. Låg, J. Finkelman
- ID21** Representing soil spatial variability in GIS for resource assessment and environmental modelling.
Convenors: P.H.T. Beckett, R. Ponce Hernández
- ID22** A world reference base for soil classification (WRB)
Convenors: A. Ruellan, C. Leo Jacques
- ID23** Soil science and the challenges of Agenda 21 of UNCED
Convenors: H. Eswaran, S. Funes
- ID24** Agricultura Prehispánica
Convenours: M. Aliphath, T. Rojas

Workshops (WS):

WS 1 Biological nitrogen fixation (BNF) for sustainable agriculture

Chairman: J.K. Ladha

WS 2 Soil Bio-remediation

Chairman: J.M. Tiedje

WS 3 Analysis of the WRB for soil classification

Chairman: H. Eswaran

Poster Exhibition:

The Organizing Committee expects to display about 250 posters daily. The available space for each poster will be 124 cm high and 240 cm wide. Poster presentation will be held from Tuesday 12 to Friday 15, July, 1994 and each block of posters will be displayed during one day. Authors will be

requested to stay aside their posters during at least one hour in the day of presentation and they will assume full responsibility for displaying and taking off their posters. Please ensure that letters and numbers are readable from a distance of at least 2 m. The best poster of each (sub-) commission will be selected and awarded at the closing session.

Congress Schedule:

Sunday 10	Monday 11	Tuesday 12	Wednesday 13	Thursday 14	Friday 15	Saturday 16
R	Opening <i>ceremony</i>		State of the art lectures			Plenary <i>conferences</i>
E			Symposia			
G			Poster Sessions			
I	Plenary conferences		Workshops			Closing ceremony
S			<i>Exhibitions</i>			
T			ISSS Council Meetings			
R			ISSS-(Sub-) Commission Meetings			
A			One Day Technical/Touristic Tours			
T			Social and Cultural Activities			
I			Accompanying Persons Program			
O						
N	Welcome Mixer		Congress Dinner			

Visual Aids:

For symposia, only a 35 mm slide projector will be available. Please use 35 mm slides in 50 mm x 50 mm metal, plastic or paper mounts. All slides should have a serial number, the name of the speaker and an arrow, showing the direction to be inserted. The figures and tables must be prepared in either English, French or German, although English is recommended.

Proceedings:

All papers accepted by the Program Committee to participate in Symposia and Poster Sessions, will be published in the Proceedings in traditional printed books, and distributed to all Congress participants when they register at the Congress place. According to the interest of the registrants, Congress proceedings would also be available in electronic form. However if less than 300 copies are requested in CD-ROM format, Proceedings will only be available in printed books. *Please indicate in the registration form if you want to get, in addition, the Congress Proceeding in CD-ROM format.*

4. TECHNICAL TOURS:

Pre- and post-congress tours will be conducted in cooperation with colleagues from the Soil Science Societies of America, Canada, Cuba and Venezuela. PLEASE SEND YOUR

TOUR APPLICATION FORM DIRECTLY TO THE ADDRESS INDICATED IN THE CORRESPONDING TOUR REGISTRATION FORM.

The technical tours are planned to visit different soil types, production fields, research stations and agricultural enterprises. Additionally some cultural and archaeological sites will also be visited.

The number of participants in the tours will be limited; therefore, they will be offered on a "first-come-first-served basis". However, the tours will proceed only if there is a sufficient number of participants.

4.1 Pre-congress tours:

MEXICO

TOUR 1. GUADALAJARA - MEXICO CITY

(8 days, July 3 to 10)

Central and western Mexico, visiting intensive production systems and rainfed agriculture in Guadalajara, Zamora, Uruapan (Luvisols); Patzcuaro, Morelia (Andosols, Histosols); Celaya, Queretaro (Vertisols, Phaeozems), Tula (Xerosols), Teotihuacan; Mexico City (Solonchaks, Phaeozems). Air transportation from Mexico City to Acapulco.

TOUR 2. CANCUN - VILLAHERMOSA - ACAPULCO

(10 days, 9 nights, July 1 - 10)

Southeast Mexico; tropical pastures and cattle raising; Cancun, Valladolid, Chichen-Itza (Cambisols, Rendzinas); Merida (Luvisols, Nitosols); Uxmal, Campeche (Solonchaks, Vertisols); Escarcega, Palenque (Arenosols, Acrisols); Teapa, (Gleysols, Cambisols). Air transportation from Villahermosa to Acapulco.

TOUR 3. MEXICO-CITY - ACAPULCO

(5 days, 4 nights, July 6 to 10)

From Central to southwest Mexico. Characterization, erosion and management of "tepetates" (indurated volcanic soil), Texcoco, (Fragipan, Duripan). Horticultural and legume crops under intensive agriculture and experimental station. Mexico City (Solonchaks, Phaeozems), Cuernavaca (Andosols), Taxco, Acapulco (Cambisols).

Conditions for tours in Mexico:

Tour dates include the day previous and the day after technical activities.

See tour prices in the corresponding registration forms.

The tours include the following services:

- Accommodation in first class or best available economy class hotel in the area.
- Breakfasts, box lunches and dinners.
- Transportation in air conditioned 40-seat motorcoach.
- All transfers and sightseeings.
- Entrance fees to museums.
- Assistance at the airport.
- English speaking local guide.
- Tips to porters, chambermaids and bellboys at hotels.
- Guidebook.
- Federal Tax.

Not included:

- All extras such as, drinks, laundry, phone calls, airport taxes, tips to guide and drivers.

Minimum number of participants: 35

Maximum number of participants: 70

CUBA

TOUR 4. PINAR DEL RIO-LA HABANA- MATANZAS-VILLA CLARA

(6 days)

Erosion and soil management in forest soils. Coffee, tobacco and horticultural crops. Expert systems applied to water management in rice intensive production. Reclamation and management of eroded soils under intensive pasture production. Studies and classification of soils under intensive sugar cane production. Excursion to Varadero Beach.

TOUR 5. LA HABANA - GUANTANAMO- SANTIAGO-CIEGO DE AVILA- VILLA CLARA.

(6 days)

Saline soils reclamation through drainage systems. Management of saline soils under intensive sugar cane production. Management of Vertisols under monocropping system with sugar cane. Description of profile horizons in coffee and banana production areas. Dairy production in low fertility soils. Intensive agriculture with citrus crops. Excursion to Varadero Beach.

Conditions for tours in Cuba:

Single room 350 U.S. dollars. Double room 280 U.S. dollars. Tour fare includes: Mixer hotel room in single or twin basis, all meals, bus transportation and transport from and to the airport, guidebook. A maximum of 100 participants will be admitted in each tour.

Additional nights, 50 U.S. dollars single occupancy
 40 U.S. dollars double occupancy

Please add 60 U.S. dollars for air transportation in tour 5 and 14.

VENEZUELA

TOUR 5A. GUAYANA - ORINOCO - CENTRAL PLAINS-ARAGUA VALLEY-COSTAL AREA - EASTERN VENEZUELAN ANDES - WESTERN PLAINS.

(8 days, July 1-8)

(Single 800 U.S. dollars, double 650 U.S. dollars) Land use and soils, deforested Ultisols. Strong erosion problems. Drainage and reclamation of swampy delta lands. Acid sulphate soils. Rainfed crops in randy Ultisols. Pastures and rainfed crops in rolling lands with Alfisols and Vertisols. Soil conservation practices. Intensive irrigated agriculture in Mollisols and Histosols. Irrigated crops on Inceptisols and Alfisols. Erosion and salinity problems. Coffee in highly sloping lands with Entisols. Closing dinner in Maracay.

Conditions for tour in Venezuela:

Tour fare includes: Transportation by air- conditioned bus from Puerto Ordaz to Maracay. Lodging for eight nights in tourist class hotels with air-conditioned rooms and private bathroom. Closing dinner, surface transportation from Maracay to Caracas airport. Guidebook.

Does not include: any meals (except closing dinner) during the tour

Number of participants: 20 minimum, 40 maximum.

4.2 Post-congress tours:

U.S.A.

TOUR 6. SOUTHERN AND CENTRAL CALIFORNIA-SAN DIEGO TO SAN FRANCISCO.

(8 days, July 17-24)

(825 U.S. dollars double 1125 U.S. dollars single)

(7 breakfasts, 7 lunches, and 4 dinners included)

Soils, landscapes, irrigated agriculture and sightseeing in the Imperial Valley. Citrus and date culture, University of California, Riverside, USDA Salinity Laboratory; Mojave desert, San Andreas fault zone and the California aqueduct; irrigated cotton, pistachio and fruit trees on aridisols and alfisols sightseeing in Yosemite National Park; management of duripans for trees and vines, histosols and delta levee management; Napa valley soils, land use and wine making; sightseeing in San Francisco.

TOUR 7. WEST TEXAS - NEW MEXICO - ARIZONA - EL PASO - PHOENIX.

(8 days, July 16-23)

(1000 U.S. dollars single, 700 U.S. dollars double)

(0 breakfasts, 6 lunches, 0 dinners included)

Landscapes, soils and land use in southern New Mexico; the Desert Project of the USDA-Soil Conservation Service, including a chronosequence of soils containing calcic and petrocalcic horizons (Las Cruces); visit Carlsbad Caverns in southeastern New Mexico; soils and landscapes in West Texas, southern and central New Mexico and eastern Arizona; Haplargids, Calciorthis, Paleorthis and Gypsiorthids will be examined; Andisols and forest land use in northern Arizona; visit Grand Canyon National Park and view a meteor crater; tour ends at Phoenix, Arizona.

**TOUR 8. NEW ORLEANS - BATON ROUGE- ALEXANDRIA, LA - NATCHEZ, MS
- LONGVIEW-DALLAS, TX.**

(5 days, 6 nights)

(720 U.S. dollars double, 1000 U.S. dollars single)

(0 breakfasts, 5 lunches and one dinner included)

Fly into New Orleans- Fly out of Dallas/Forth Worth Airport.

Landscapes and urban use on Histosols in New Orleans; sugar cane and rice farming on experiment stations in the scenic Acadian country in south Louisiana, a Udult in a National Forest; cotton, soybeans, and livestock on a Vertisol on an experimental station in central Louisiana; the classic loess profiles at Vicksburg; a Fragiudalf developed in loess in north Louisiana; vegetation changes with decreasing rainfall, urban soil use and a Vertisol on an experiment station in Texas.

USA-CANADA

TOUR 9. CHICAGO - DETROIT - TORONTO

(8 days, July 17-23)

(875 U.S. dollars single, 675 U.S. dollars double)

(6 breakfasts, 4 lunches and 5 dinners included)

Soil and crop production on Mollisols and Alfisols in the Corn Belt region of northern Indiana; environmental and agricultural research on Alfisols and Inceptisols at the Kellogg Biological Station, southwest Michigan; Henry Ford Museum and Greenfield Village, Detroit area, conventional tillage systems and conservation farming on paired watersheds in southern Ontario; research on soil structure, plant nutrition, tillage, and soil stewardship cropping systems on Luvisols and Brunisols at the Elora (Ontario) Research Station; fruit, vegetable, and specialty crop production in the lake area; and tour Niagara Falls.

Conditions for tours in U.S.A.:

Tour dates include the day of arrival and the day of departure. Tour fare includes: (1) Hotel rooms on half-twin or single basis; (2) Meals as specified in each itinerary; (3) Motor coach from point of origin to point of departure; and (4) admission fees to points of interest if required. The minimum and maximum numbers of participants for each tour are 35 and 75, respectively. Participants will be accepted in the order of receipt of payment. Multiple entry visas may be required.

MEXICO

TOUR 10. ACAPULCO - MEXICO CITY - GUADALAJARA

(8 days, 7 nights, July 16 to 23)

Same as tour 1 but in opposite direction.

TOUR 11. VILLAHERMOSA - CANCUN

(10 days, 9 nights, July 16 to 25)

Same as tour 2 but in opposite direction.

TOUR 12. ACAPULCO - MEXICO CITY

(5 days, 4 nights, July 16 to 20)

Same as tour 3 but in opposite direction.

CUBA

TOUR 13. PINAR DEL RIO - LA HABANA - MATANZAS - VILLA CLARA

(6 days).

Same as tour 4

TOUR 14. LA HABANA - GUANTANAMO - SANTIAGO - CIEGO DE AVILA - VILLA CLARA

(6 days)

Same as tour 5

5. ACCOMPANYING PERSONS PROGRAM:

From July 10th to 16th several activities will be offered daily:

- o Traditional music of Guerrero State
- o Art exposition
- o Folk Ballet
- o Camera Orchestra
- o Mexican Jazz
- o Acapulco City tours

6. HOTEL ACCOMMODATION:

We have prepared for you a very advantageous Congress package from July 10 to 16, 1994, in the four following hotel categories:

- "A" Deluxe
- "B" First
- "C" Economy
- "D" Tourist

Because of the many Congresses that are held in Acapulco, reservations must be made well in advance. To secure a reservation in the best hotels of each category, the travel agency requests you to send your hotel reservation as soon as possible, but not later than March 31st, 1994.

The Hyatt Regency Acapulco category "A" Hotel will be the headquarters of the Organizing Committee.

All rooms offered are furnished with private bathroom and balcony, air-conditioned and color cable TV. Hotel's facilities: swimming pool, telephone, water sport facilities, restaurant and bar, safe deposit boxes and parking lot. Some hotels: tennis courts, golf, jacuzzi, sauna and private beach.

Hotel package:

We have prepared a hotel package that includes:

- 6 nights of accommodation (arriving July 10th and leaving July 16th, 1994)
- 6 buffet breakfasts
- Transfers airport-hotel-airport
- Tips to bellboys, chambermaids and porters at the airport
- Welcome cocktail
- 10% Federal Tax

7. EXHIBITIONS.

Commercial Exhibitions:

A commercial exhibition of equipment, books and other materials will be held at the Acapulco Convention Center. Those wishing to exhibit please contact the Organizing Committee.

Academic-Scientific Exhibitions:

Institutions (Universities, Research Centers, Scientific Associations, etc.) wishing to exhibit books, maps, research results or projects are also requested to contact the 15th WCSS secretariat.

The Committee on Education in Soil Science will present a permanent exposition of documents on soil education.

8. MISCELLANEOUS:

When arriving in Acapulco, assistance and transfer service will be provided at the airport by CONGRESOS 2000. During the whole day, on Saturday July 9th, Sunday July 10th, and Monday July 11th 1994.

For all participants who have sent their arrival and departure flight information in/from Acapulco, CONGRESOS 2000 will be at the airport to provide reception, assistance and information.

Foreign Currency Exchange:

Major banks that exchange foreign currencies are located in the downtown area. Banks are open to the public from 9:00 a.m. to 1:30 p.m. on weekdays. In Mexico there are no restrictions for money exchange.

Traveller's checks and Credit Cards:

Traveller's checks are accepted by most of the banks and major hotels in big cities, but you should be aware that using traveller's checks in Mexico is not as popular as in some other countries.

Major credit cards such as American Express, Visa, Master and Diners Club are more widely accepted. However, attendees are advised to have some Mexican Pesos in cash.

Passports and Visas:

Every foreign visitor entering Mexico must be in possession of a valid passport. Delegates from countries requiring visas should apply to the Mexican Consulate offices or diplomatic missions in their countries before their departure. Visas are valid for 30 to 60 days for tourists. For details, participants are advised to contact their local agents or carriers.

Important

Besides clothing and travel articles Mexican customs authorities allow each foreign visitor to bring with him a photo camera, a video camera and up to 300 U.S. dollars in presents (December 1993). Visitors entering by car from neighboring countries are requested to get a car insurance.

ORGANIZING COMMITTEE

Gabriel Alcantar-Gonzalez	Chairman
Roberto Nuñez-Escobar	Technical Committee
Jorge L. Tovar-Salinas	Internal Organization Committee
Said Infante-Gil	Financial Advisor
Juan Estrada Berg-Wolf	Treasurer
Alejandro González-Molina	Logistic Advisor
Víctor Volke-Haller	Program
Jorge D. Etchevers-Barra	Publications
Francisco Takaki-Takaki Jorge Rivera Francisco Orozco	Technical Tours
Antonio Trinidad-Santos	Exhibitions
Angel Torres Estrada William Gandoy-Bernasconi	Registration
Roberto Quintero-Lizaola	Press and Diffusion
Angeles Mendoza-Cruz	Public Relations
Octavio Rodriguez-Curiel Armando Legaspi-Guzman	Local Committee Acapulco
Lydia Lagarda	Cultural Activities
Juan L. Tirado-Torres	Social Activities

INSTRUCTIONS FOR PREPARING EXTENDED SUMMARIES, SYMPOSIA FULL PAPERS, AND PLENARY LECTURES

General Information

1. The Proceedings books will be published with all the Extended Summaries, Symposia Full Papers, and Plenary Lectures available on the established deadline date.
2. To be included in the Proceedings books containing the Extended Summaries, your paper must reach the Secretariat of the 15th World Congress of Soil Science before **November 30, 1993**. However, if you want your paper to be considered for oral presentation in one of the Symposia the Extended Summary must reach the Secretariat before **July 31, 1993**.

To be included in the Proceedings books containing the contributions selected or requested to be presented at the disciplinary or interdisciplinary Symposia and Plenary Lectures the full manuscript must be received by the Symposium Convener before **November 30, 1993**.

Send your contribution to: 15th World Congress of Soil Science, c/o Congress 2000, Viajes Kuoni de México, Hamburgo 66, Col. Juárez, P.O. Box 6/856, 06600 México D.F. It is strongly recommended to use a fast delivery service (DHL, Federal Express, Fast Air, etc.).

The Secretariat of the 15th World Congress of Soil Science, c/o Mexican Society of Soil Science, Colegio de Postgraduados, km 35.5 Carretera México-Texcoco, México. (address for fast delivery service), Fax +52(595) 4-57-23, is ready to answer any question concerning the preparation of your contribution. If you prefer to use regular mail service please write to Secretariat of the 15th World Congress of Soil Science, c/o Mexican Society of Soil Science, P. O. Box 45, 56230 Chapingo, Mex., México.

3. The organizers of the 15th World Congress of Soil Science have agreed with the Society Secretariat to change the form used in presenting the Summaries of your contributions to be printed in the Proceedings of the Congress. The new form will be the so called Extended Summary. The reasons for adopting this new format are both economical and strategic. On the one hand, more information can be included at the same or even lower cost of production and, on the other, relevant information for quotation will be available to potential users of the Proceedings. An additional advantage of the Extended Summary policy is preservation of valuable information that on numerous occasions is never formally published. The experience of many scientific societies in changing from the publication of traditional summaries to Extended Summaries has been considered in making this decision.

4. Make sure your paper is adequately protected against damage in transit. Do not fold the formats. When mailing them, please enclose a cardboard to protect them. The Proceedings will be produced directly from your original. Send the original summary and two photostatic copies.

5. You are responsible for ensuring that your paper is correct in every way and conforms to the formalities required by the ISSS. Papers will be printed as received.

Language

6. The extended Summaries, the Symposia Full Papers, and the Plenary Lectures contributions must be written in one of the official languages of the ISSS: English, French or German. The use of English is encouraged since most Society members use this language for formal communications.

Content

7. The structure of the Extended Summaries and the Symposia Full Papers is the same. Extended Summaries and Symposia Full Papers differ in extension. The structure of both must comprise: title, Author(s), Sponsoring Institution(s) and address(es), Introduction, Materials and Methods, Results and Discussion (use of Tables and Illustrations is encouraged), Conclusions, and Literature Cited. If the Extended Summary is written in an official language other than English an Abstract

in the latter language must be included. An Abstract must be included in all Symposia Full Papers. Some of the suggested sections may be adjusted to individual needs, particularly Materials and Methods and Results and Discussion, or new sections (Theory, Literature Review, etc.) may be included. Please feel free to make the needed changes according to the nature of your contribution.

8. The complete address of the corresponding author must be written at the bottom of the first summary sheet, in the space specifically provided outside the bottom blue line, including city, zip code (when appropriate), and country. If available include your FAX number (see example).

9. The title should be as short as possible, however it should adequately indicate the subject of the paper. Remember you are making a scientific contribution and not writing for a newspaper.

10. Authors' names must include given names or the initials and family name(s). Do not include courtesy titles, honours, distinctions, academic degrees, etc. Mark with an asterisk the name of the corresponding author.

11. The main text should consist of the following:

(a) **Abstract.** (Only where needed) must be a concise and accurate summary of the content of the main text (of no more than 150 words for Extended Summaries written in a language other than English and no more than 350 words for Full Papers).

(b) **Introduction.** It must include a statement (brief in the case of the Extended Summaries) of why the work was performed, its importance, previous contributions on the subject (quotation of two or three relevant papers is enough in the case of the Extended Summaries; in Symposia Full Papers include as many references as you need), and the objectives. Reference quotations with numbers to save space.

(c) **Materials and Methods.** Explain in a summarized form the most relevant features of the methodology and the materials employed. Make reference to the original source of the procedures when possible, or use common names of well-known procedures without describing them. It is important to mention how the data were analyzed and interpreted.

(d) **Results and Discussion.** Make the best possible use of the space. The inclusion of short tables and/or figures is strongly recommended. Tables and figures can be pasted on the form provided. Black and white pictures are acceptable. Describe in this section the most important observations. Do not repeat the information presented in tables and figures. Discuss the relevant results, particularly those related to the hypotheses being tested, and when necessary make use of a limited number of references to support your arguments.

(e) **Conclusions.** Draw one or more conclusions at the end of the contribution.

(f) **Literature Cited.** In the Extended Summaries include only a few references, those you consider most adequate to support your work. In Symposia Full Papers include as many references as you need. All citations must appear in the body of the paper. Give them consecutive numbers and use these numbers to reference in the text. In preparing the references follow the format used in the Soil Science Society of America Journal.

Method of Production

12. The Extended Summaries, Symposia Full Papers, and Plenary Lectures must be prepared on the special sheets of US Letter paper preprinted with format lines in non-reproducible blue, which are supplied by the Organizing Committee. In case you need extra copies you may copy the format of the sheet supplied using a light blue pencil. Be sure to use a high quality paper. The size of the sheet with the layout corresponds to US Letter which is slightly smaller than A4. There is no problem if A4 size is used, as long as the layout size is respected.

13. If you are using a printer that will not accept the layout sheets furnished, you may prepare text on other paper and then cut and paste in position on the layout sheets supplied. Be sure that every piece of the text is firmly pasted in position. If possible, type the main copy of your text directly

on the forms supplied by the Organizing Committee. Use of laser or inkjet printers is highly encouraged. Dot matrix printers, except of very high quality, are not acceptable. If you use a typewriter make sure the ribbon is new and of high quality.

Length

14. Extended Summaries should have a maximum length of two pages (US Letter). Symposia Full Papers and Plenary Lectures Papers **should not exceed 20 pages**. Use of all the available space is encouraged to prevent "blanks" in the text.

Format

15. The text, including tables, pictures and figures, must be contained within the area defined by the blue-ruled frame. Nothing written outside the frame will be reproduced. The size of the blue frame is 171 x 232 mm and will accommodate 55 lines of standard typewritten text. The number of characters per line will depend on the face, size, pitch and printer used.

16. Do not write page numbers on the front of the page. Page numbers must be written on the back of the page with a light blue pencil.

Typography and Layout

17. Use single line spacing.

18. Right justify your text. Please remember that no writing is allowed on the blue margins.

19. Avoid hyphenation. If you need it, be sure to follow appropriate rules of hyphenation.

20. Use a typeface which is clear and solid. Remember that the text will undergo a reduction by 20 %. The 10-pitch is advised when using a fixed-pitch typewriter. This pitch accommodates 67 characters per line or approximately 10 words to the full line (in English). Text processors with a proportional-spaced font will adjust automatically the number of letters per inch. If you use a word processor, select a character size similar to that of a typewriter (12-point) and verify that you are printing 10 characters per inch (10-pitch). Times Roman and Helvetica are good examples of fonts which produce neat text easy to read. Do not use condensed fonts or 15-pitch typewriter faces or font sizes bigger than 12-points, except for headings or quotations. Headings and quotations should not use characters bigger than 12-point or smaller than 10-point, respectively. Headings within the text, like Introduction, Materials and Methods, etc. can be better depicted by using bold face and the same character size of the text (**Introduction, Materials and Methods**, etc.). The title should be written in a character size no larger than 18-points. Authors' names, addresses and affiliations should be no larger than 14-points.

21. Do not underscore either text or heading, except latin names when there is no possibility of using a different type of characters, like italics.

22. Type the title on line 1 of page 1, in bold face if available. Use a maximum of two lines for the title, i.e. approximately 100 -110 characters of a 16 or 18-point type size. Center title lines.

23. After a blank line, type the authors' names, in 14-point type - bold face if available - right justified. For each author write first the given name or the initials, as he/she wants to be recognized by the community, and then the family name(s). Use a smaller character size (12 or 14-point type) than the one used for the title. Immediately after the authors' names write the affiliation in 12 or 14-point type and italics, if available. Use upper case (capitals) characters only for the initial letter of each main word and lower case (small!) for the remainder of the word. Do not use capitals for articles, prepositions, etc. Example:

**Subsoiling, Row Spacing, Manuring and Fertilization
of Maize under Dryland Farming**
(Times, 18-point type, bold face)

R. Núñez, J.J. Martínez, and J. Sánchez. Department of Soil Science, Colegio de Postgraduados, 56230 Chapingo, Mex., Mexico. (Times, 14-point type, bold and italic faces).

24. Leave two blank lines under the last line, then begin typing the Introduction. If available use 12-point type and bold face for the heading. Start at the left hand margin. Do not indent the heading or any paragraph. Place a period after the word Introduction and leave a space before the beginning of the text.

25. Leave one blank line between the end of one section and the beginning of the following. Write the rest of the sections using the same format indicated for Introduction.



ISSS-AISS-IBG

NOTICE OF INTENT
XV INTERNATIONAL CONGRESS OF SOIL SCIENCE
10-16 JULY, 1994, ACAPULCO, Guerrero, Mexico
(Please, type or print in block letters)

Prof., Dr., Mr., Mrs., Miss.

Surname	First name	Middle initial
---------	------------	----------------

Mailing Address: _____

Telephone No. _____ Fax No. _____

I expect to attend the XV ICSS Sure _____ probably _____

I expect to be accompanied by _____ persons

I expect, yes _____ or not _____ to present a voluntary paper to the (Sub-) Commission

Tentative title: _____

My preferences for technical tours are: (X)
Pre-congress tours: (1) (2) (3) (4) (5)
Post-congress tours: (6) (7) (8) (9) (10) (11) (12) (13) (14)
One day tours in Acapulco ()

My hotel preferences are:

Category	in U.S. currency	
	Single room	Double room
A	() \$80 or more	() \$100 or more
B	() \$70 - 80	() \$ 90 - 100
C	() \$60 - 70	() \$ 80 - 90
D	() \$30 - 60	() \$ 40 - 80

Please, mail this form before December 1992 to:
XV ICSS Secretariat, Centro de Edafología,
Colegio de Postgraduados, P.O. Box 45
56230, Chapingo, México.
Fax +52 (595) 457-23
Keep a copy for your files.



ISSS-AISS-IBG

**Notice of Intent/Registration Form
Note d'Intérêt/Fiche d'Inscription
Absichtserklärung/Anmeldeformular**

To: Organizing Committee of

.....
.....
.....

From: Name and title

.....

full address:

.....
.....

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:

* please delete if not applicable

ADDRESSES

of

THE OFFICERS AND CHAIRMEN OF COMMISSIONS, SUBCOMMISSIONS, WORKING GROUPS AND STANDING COMMITTEES OF ISSS

OFFICERS:

- President: Prof. Dr. A. Aguilar Santelises, Apartado Postal 45, 56230 Chapingo, Mexico.
Vice president: Prof. Dr. R. Nunez Escobar, Colegio de Postgraduados, 56230 Montecillo, Chapingo, Mexico.
1st Past president: Prof. Dr. A. Tanaka, Hokkaido Univ., Faculty of Agric. Kita 9 nishi 9 Kita-ku, Sapporo 060, Japan.
2nd Past president: Prof. Dr. K. H. Hartge, Institut für Bodenkunde der Universität Hannover, Herrenhäuser Strasse 2, D-3000 Hannover 21, Germany.
3rd Past president: Dr. J. S. Kanwar, Plot No. 17, Krishi Nagar, ICRISAT Colony-Phase II, Hashmathpet Road, Secunderabad 500 011 A.P., India.
Secretary general: Prof. Dr. W. E. H. Blum, Institut für Bodenkunde der Universität für Bodenkultur, Gregor Mendel-Str. 33, A-1180 Wien, Austria.
Deputy-Secret. Gen.: Ir. J. H. V. van Baren, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands.
Treasurer: Dipl. Ing. ETH P. U. Lüscher, Eidg. Forschungsanstalt für Wald, Schnee u. Landschaft (WSL), Zürcherstr. 111, CH-8903 Birmensdorf, Switzerland.

COMMISSION I:

- Chairman: Dr. G. Vachaud, Institut de Mécanique (IMG), B.P. 53 X, F-38041 Grenoble, France.
Past Chairman: Prof. Dr. M. Kutilek, Faculty of Civil Engineering, Technical Univ., Thakurova 7, 166 29 Prague 6, Czechoslovakia.
1st Vice Chairman: Prof. Dr. S. Iwata, Ibaraki University, Faculty of Agriculture, Ami-Machi, Inashiki, Ibaraki 305, Japan.
2nd Vice Chairman: Prof. Dr. D. E. Rolston, University of California, Dept. of L.A.W.R., Davis, CA 95616, USA.
3rd Vice Chairman: Prof. Dr. L. Rendon Pimentel, Colegio de Postgraduados, Centro de Hidrociencias, 56230 Chapingo, Mexico.
Secretary: Dr. Hector Arias Rojo, Mexico.

COMMISSION II:

- Chairman: Prof. Dr. Roger S. Swift, Chief, Division of Soils, CSIRO, PMB 2, Glen Osmond, Adelaide, South Australia 5064, Australia
Past Chairman: Prof. Dr. Ir. G. H. Bolt, Dept. of Soil Science and Plant Nutrition, De Dreijen 3, 6703 BC Wageningen, The Netherlands.
1st Vice Chairman: Prof. Dr. N. Senesi, Instituto Chimica Agraria, Via Amendola 165/A, I-70100 Bari, Italy.
2nd Vice Chairman: Prof. Dr. W. H. van Riemsdijk, Dept. of Soil Science and Plant Nutrition, Agric. Univ., P.O. Box 8005, 6700 EC Wageningen, The Netherlands.
3rd Vice Chairman: Prof. Dr. L. J. Cajuste, Colegio de Postgraduados, Centro do Edafologia, 56230 Chapingo, Mexico.
Secretary: M. Sc. Margarita E. Gutiérrez Ruiz, Mexico.

COMMISSION III:

- Chairman: Prof. Dr. J. M. Lynch, Head, School of Biological Sciences, University of Surrey, Guildford, Surrey, GU2 5XH, United Kingdom.
Past Chairman: Prof. Dr. J. C. G. Ottow, Inst. f. Mikrobiologie, Justus-Liebig-Universität, Senckenbergstrasse 3, D-630 Giessen, Germany.

- 1st Vice Chairman:** Prof. Dr. J. M. Tiedje, Michigan State University, Dept. of Crop & Soil Science, East Lansing MI 48824, USA.
- 2nd Vice Chairman:** Dr. J. A. van Veen, Inst. for Soil Fertility Research, P.O. Box 48, 6700 AA Wageningen, The Netherlands.
- 3rd Vice Chairman:** Prof. Dr. R. Ferrera-Cerrato, Colegio de Postgraduados, Centro de Edafología, 56230 Chapingo, Mexico.
- Secretary:** Dr. Carlos Casas Campillo, Mexico.

COMMISSION IV:

- Chairman:** Prof. Dr. C. J. Asher, Dept. of Agriculture, The University of Queensland, St. Lucia, QLD 4072, Australia.
- Past Chairman:** Dr. N. N. Goswami, Indian Agricultural Research Institute, New Delhi 110 012, India.
- 1st Vice Chairman:** Prof. Dr. H. Hirata, Tokyo University Agr. Techn., 3-5-B Saiwai-cho, Fuchui, Tokyo 183, Japan.
- 2nd Vice Chairman:** Dr. S. S. Khanna, Planning Commission, New Delhi-110 001, India.
- 3rd Vice Chairman:** Dr. Javier Z. Castellanos, CAEB, INIFAP, P.O. Box 112, 38000 Celaya, Gto., Mexico.
- Secretary:** NN

COMMISSION V:

- Chairman:** Dr. H. Eswaran, USDA Soil Conservation Service, P.O. Box 2890, Washington DC 20013, USA.
- Past Chairman:** Prof. Dr. A. Ruelhan, 2 Boulevard Berthelot, F-34000 Montpellier, France.
- 1st Vice Chairman:** Prof. Dr. H.-P. Blume, Inst. für Pflanzenernährung und Bodenkunde, Olshausenstr. 40-60, HS 20 A, D-2300 Kiel 1, Germany.
- 2nd Vice Chairman:** Prof. Dr. V. O. Targulian, Inst. of Geography, 29 Staromonetny Lane, Moscow 109017, USSR.
- 3rd Vice Chairman:** Dr. Charles Leo Jacques Depto. de Suelos, Universidad Autonoma Chapingo, 56230 Chapingo, Mexico.
- Secretary:** M. Sc. Carlos A. Ortiz Solorio, Mexico.

COMMISSION VI:

- Chairman:** Prof. Dr. G. S. Sekhon, Dept. of Soils, Punjab Agric. University, Ludhiana 141 004, Punjab, India.
- Past Chairman:** Dr. I. P. Abrol, c/o ICAR, Krishi Bhavan, New Delhi 11001 India.
- 1st Vice Chairman:** Dr. R. C. Dalal, Queensland Wheat Research Inst., 13 Holberton Street, Toowoomba, QLD 4350, Australia.
- 2nd Vice Chairman:** Prof. Dr. N. Ahmad, Univ. of the West Indies, Fac. of Agriculture, St. Augustine, Trinidad & Tobago.
- 3rd Vice Chairman:** Prof. Dr. Fernandez Gonzales, Colegio de Postgraduados, Centro de Edafología, 56230 Chapingo, Mexico.
- Secretary:** Dr. Antonio Trinidad Santos, Mexico.

COMMISSION VII:

- Chairman:** Prof. Dr. R. J. Gilkes, University of W. A., Dept. of Soil Science, Nedlands, WA 6009, Australia.
- Past Chairman:** Prof. Dr. A. Herbillion, CNRS Centre de Pédologie Biol., B.P. 5, 54501 Vandoeuvres-les-Nancy.
- 1st Vice Chairman:** Ms. Dr. C. G. Olson, USDA Soil Conservation Service, 100 Centennial Mall North, Lincoln NE 68508-3866, USA.
- 2nd Vice Chairman:** Prof. Dr. K. Stahr, Univ. Hohenheim/Bodenkunde, Emil-Wolff-Str. 27, D-7000 Stuttgart 70, Germany.

3rd Vice Chairman: Prof.M.Sc.N.Aguilera Herrera, Instituto de Geologia, Departamento de Edafologia, UNAM, Ciudad Universitaria, 04515, México D.F., Mexico.
Secretary: Dra.Norma Eugenia Garcia Calderón, Mexico.

SUBCOMMISSION A:

Chairman: Prof.Dr.Zhao Qi-guo, Nanjing Inst. of Soil Science, Academia Sinica, P.O.Box 821 Nanjing, P.R. of China.

1st Vice Chairman: Mrs.Dr.M.Redly, Res.Inst. Soil Science and Agricultural Chemistry, Herman Otto ut 15, 1022 Budapest, Hungary.

2nd Vice Chairman: Prof.Dr.J.Brebuda, Justus Liebig Univ., Otto Nehagel Str.10/D - 6300 Giessen, Germany.

3rd Vice Chairman: Prof.Dr.M.Ortega Escobar, Colegio de Postgraduados, Centro de Hidrociencias, 56230 Chapingo, Mexico.

Secretary: Lyubimova, USSR;
Lic.Beatriz Vera López, Mexico.

SUBCOMMISSION B:

Chairman: Dr. C. J. Chartres, CSIRO Division of Soils, P. O. Box 639, Canberra City, ACT 2601, Australia.

1st Vice Chairman: Prof.Dr.P.Goldberg, Hebrew Univ., Inst. of Archeology, Jerusalem 91-905, Israel.

2nd Vice Chairman: Dr.C.J.Chartres, CSIRO, Div. of Soils, P.O.Box 639, Canberra City, ACT 2601, Australia.

3rd Vice Chairman: Dra.K.Oleschko, Colegio de Postgraduados, Centro de Edafologia, 56230 Chapingo, Mexico.

Secretary: Mrs.Dr.M.J.Kooistra, Winand Staring Centre, P.O.Box 125, 6700 AC Wageningen, The Netherlands;
Dra.Magdalena Meza Sánchez, Mexico.

SUBCOMMISSION C:

Chairman: Prof.Dr.Pla-Sentis, Las Acacias, Apartado 1131, Maracay, Venezuela.

1st Vice Chairman: Dr.C.Valentin, ORSTOM, 70-74 Route d'Aulnay, F-93140 Bondy, France.

2nd Vice Chairman: Dr.B.A.Stewart, USDA-SEA-AR/Cons.& Prod.Research, P.O.Drawer 10, Bushland TX 79012, USA;

3rd Vice Chairman: Prof.Dr.M.Anaya Garduno, Colegio de Postgraduados, Centro de Edafologia, 56230 Chapingo, Mexico.

Secretary: Dr.José Luis Oropeza, Mota, Mexico.

SUBCOMMISSION D:

Chairman: Dennis Parkinson, University of Calgary, Department of Biological Sciences, Calgary, Alberta T2N 1N4, Canada.

1st Vice Chairman: Isabelle Barois, Instituto de Ecología, A.Postal 63, 91000 Xalapa Veracruz, Mexico.

2nd Vice Chairman: James Curry, Faculty of Agriculture, UCD, Dept. of Env. Resource Management, Belfield, Dublin 4, Ireland

Secretary: Jürgen Kühle, ITEC GmbH, Grimlinghauser Str. 21, D.W.4000 Düsseldorf, Germany

WORKING GROUP AS:

Chairman: Dr.S.Sadio, ISRA/ORSTOM, B.P. 1386, Dakar, Senegal.

WORKING GROUP DM:

Chairman: Prof.Dr.M.F.Baumgardner, Dept. of Agronomy, Purdue Univ., West-Lafayette IN 47907, USA.

WORKING GROUP FS:

Chairman: Dr.P.K.Khanna, CSIRO, Div. of Forest Research, P.O.Box 4008, Queen Victoria Terrace, Canberra ACT 2600, Australia.

WORKING GROUP FT:

Chairman: Dr.S.K.De Datta, IRRI, P.O.Box 933, Manila, Philippines.

WORKING GROUP HP:

Chairman: Prof.Dr.D.H.Yaalon, Dept. of Geology, Hebrew Univ., Jerusalem 91000, Israel.

WORKING GROUP LI:

Chairman: Dr.J.Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ontario, Canada K1A 0C6.

WORKING GROUP MO:

Chairman: Prof.Dr.P.M.Huang, Univ. of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask., Canada S7N 0W0.

WORKING GROUP MV:

Chairman: Prof.Dr.J.Bouma, Dept. of Soil Science, Agric. University, P.O.Box 37, 6700 AA Wageningen, The Netherlands.

WORKING GROUP PM:

Chairman: Prof.Dr.D.E.Myers, Dept. of Mathematics, University of Arizona, Tucson, Arizona 85721, USA.

WORKING GROUP PP:

Chairman: Prof.Dr.J.A.Catt, Rothamsted Experimental Station, Soil Science Department, Harpenden, Herts, AL5 2JQ, United Kingdom.

WORKING GROUP PS:

Chairman: Prof.Dr.Zhu-Zhaoliang, Inst. of Soil Science, Academia Sinica, P.O.Box 821, Nanjing, PR of China.

WORKING GROUP PT:

Chairman: Prof.Dr.R.Horn, Inst. of Plant Nutrition & Soil Science, Olshausenstr.40-60 HS 20A, 2300 Kiel 1, Germany.

WORKING GROUP RS:

Chairman: Dr.Karale, Remote Sensing Service Centre, NBSS & LUP Campus, Amravati Road, Nagpur 440010, India.

WORKING GROUP RZ:

Chairman: Prof.Dr.A.Jungk, Inst. f. Agrikulturchemie, Von Sieboldstrasse 6, D-3400 Göttingen, Germany.

WORKING GROUP SG:

Chairman: Prof.Dr.J.Låg Dept. of Soil Science - AUN, P.O.Box 28, 1432 As-NLH, Norway.

WORKING GROUP SP:

Chairman: Prof.Dr.P.J.Wieringa, Univ. of Arizona, Soil & Water Science, Tucson AZ 85721, USA.

Standing Committee on Statute and Structure (CSS):

Chairman: Prof.Dr.P.B.Tinker, NERC, Polaris House, North Star Avenue, Swindon SN2 1 EU, England.

Standing Committee on International Programmes (CIP):

Chairman: Prof.Dr.H.Scharpenseel, Inst. für Bodenkunde, Allende-Platz 2, 2000 Hamburg 13, Germany.

Standing Committee on Standardization (CST):

Chairman: Prof.Dr.H-P.Blume, Inst. für Pflanzenern. u. Bodenkunde,
Olshausenstr.40-60, 2300 Kiel 1, Germany.

Standing Committee on Budget and Finances (CBF):

Chairman: Prof.Dr.W.R. Gardner, College of Natural Resources, Univ. of California,
Berkeley, CA 94720, USA.

Standing Committee on Education in Soil Science (CES):

Chairman: Prof.Dr.A.Ruellan, 2 Bd. Berthelot, F-34000 Montpellier, France.

ISSS-Committees and Representatives

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 organizations 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, Geneva-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.

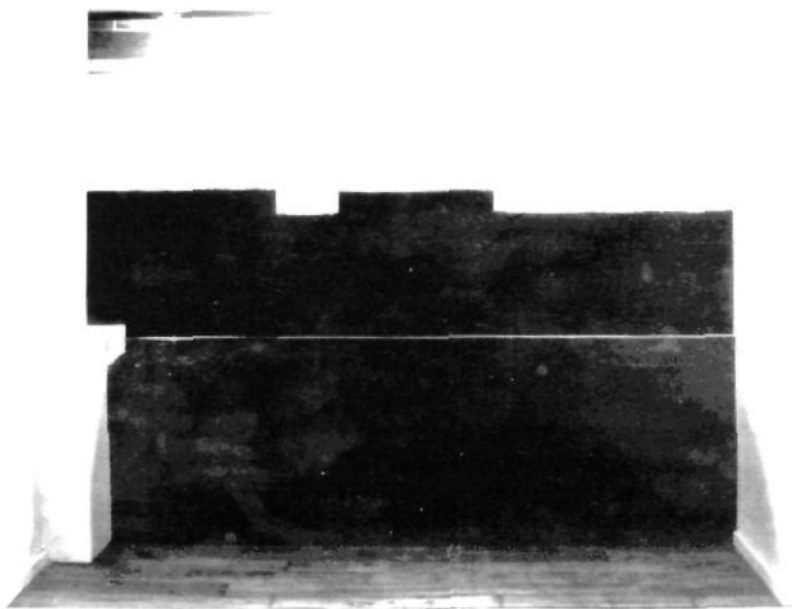
Committee on Education in Soil Science (CES), with particular attention to secondary school/college level

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)



Walter De Maria. The New York Earth Room. 1977. All reproduction rights reserved: Copyright: Dia Center for the Arts. Photo credit: John Cliett

1992 MID-TERM MEETING OF THE ISSS EXECUTIVE COMMITTEE

Summary

The ISSS Executive Committee members and a number of persons of the Organizing Committee of the 15th World Congress of Soil Science met in Acapulco, Mexico, on November 9, 1992 for a series of meetings. Participants were: from the Executive Committee A. Aguilar, R. Núñez, A. Tanaka, K. H. Hartge, W. E. H. Blum, J. H. V. van Baren, P. U. Lüscher, G. Vachaud, R. S. Swift, J. M. Lynch, C. J. Asher, H. Eswaran, G. S. Sekhon, and R. J. Gilkes. (Sub-)Commission Chairmen: Zhao Qiguo, L. P. Wilding, and I. Pla-Sentis. From the Organizing Committee and (Sub-)Commissions 3rd Vice-Chairmen: G. Alcántar-González, L. J. Cajuste, M. E. Gutiérrez-Ruiz, R. Ferrera-Cerrato, J. Z. Castellanos, C. Leo-Jacques, G. Asteizna-Bilbao, A. Trinidad-Santos, N. E. García-Calderón, M. Ortega-Escobar, (N. Chávez Baez, R. Ríos Gómez), B. Vera López, K. Oleschko, M. Meza-Sánchez, M. Anaya-Garduño, J. L. Oropeza-Mota, I. Barois, A. Turrent.

Furthermore a few other colleagues from Working Groups, Standing Committees, National Societies or Institutions: R. Villegas, D. Messick, A. Ludwick, J. Velázquez-Mendoza, R. Ponce, A. Ruellan, F. Takaki, F. Orozco, J. Rivera (B. Martínez), R. Puentes, J. Rey-Contreras, R. Rodríguez-García.

These meetings were organized in conjunction with the 25th National Congress of the Mexican Soil Science Society. The Opening Ceremony of the Congress took place on Monday morning presided by Profr. Carlos Hank González, Minister of Agriculture, Licenciado Francisco Ruíz Massieu, Governor of the State of Guerrero, and Dr. Fernando González Villarreal, General Director of the National Water Commission, among some other distinguished guests.

On Monday afternoon a visit to the International Acapulco Center, venue of the next congress, was guided by Gabriel Alcántar, President of the Organizing Committee.

On Tuesday, Wednesday and Thursday, business meetings were held; the first two in relation to the 15th World Congress of Soil Science and the third on other ISSS matters. The first two meetings were chaired by Andrés Aguilar and Hans van Baren took care of the minutes. Agenda items included the program schedule, plenary sessions, symposia, poster sessions, technical tours, invitation program and many other items related to the congress. Most of the conclusions reached during the first two sessions are included in the invitation program which is also published in this bulletin.

The third meeting was chaired by Winfried Blum, and Hans van Baren kindly assisted with the minutes. Discussions were focussed on the following points:

Organization of symposia

The suggestion by the President on behalf of the Organizing Committee (OC) to generally waive payment of participation costs to the Congress (US \$ 400) to speakers at simposia did not meet approval. This was seen as an unnecessary drain of funds. It was regarded better to have funds available for young scientists from developing countries. It was left to the discretion of the OC to decide and help individually where needed, rather than establish a general rule.

Posters

Profs. Hartge and Tanaka informed the EC about the organizational aspects and evaluation of posters by an ad-hoc commission.

Bulletin

The SG informed the Executive Committee that the delay in publishing the Bulletin is diminishing and that the quality is improving. It was suggested to make one double issue to become fully in time.

Actual and new cooperating journals

Since it was not clear what the criteria were for becoming a Cooperating Journal, it was suggested

that Professors Tinker, Lynch and the SG would formulate these criteria, to be presented to the Executive Committee. Also the duration aspect and financial compensation to the Society should form part of the report.

Promotion of ISSS membership

The SG informed the EC that the number of members is somewhat declining, also because of a stricter control on the payment of dues.

An inexpensive information sheet was prepared by Hans van Baren, but an attractive flyer would probably be more successful.

Present problems in national societies.

The SG informed the EC about some pressing problems facing national societies in e.g. Eastern Europe and, since a long time, in some other continents, notably Africa.

Although the Society cannot help financially, perhaps individual members could be of assistance through providing fellowships, maybe be instrumental in providing technical assistance such as computers, fax machines, library books and journals, etc.

ISSS Budget

The Treasurer informed the EC about the financial situation of the Society. The income is too low in relation to the expenses; especially the costs for printing and forwarding charges of the bulletin are high. The SG gets a subvention of about US \$ 22.000 per year from the Austrian Government, which aids the Society a lot.

The Treasurer blamed several national societies in not transferring dues received. An annual financial account will be published in the Bulletin in the future.

At the discussion the following issues were addressed:

sustaining membership should be developed;

there was no objection to raise the fee to \$ 20.00 per year, if enough reasons can be formulated to do this;

-all members should pay, either through an improved system with the national societies or on an individual basis. Payment for more years is preferred;

-the payment to organizers of intercongress meetings will be discontinued, agreed the EC.

ISSS Funds

The **ISSS Fellow fund** was in the past filled by the national societies in the USA, Canada, The Netherlands and the UK. Unfortunately, since some years there has been no income.

The **ISSS-GTZ Travel fund** received about US \$ 60.000 from the German Agency of International Cooperation (GTZ). This Travel fund has only possibilities to fund participation of persons from developing countries to developing countries where an (ISSS) meeting is held.

ICSU-ISSS membership

The ISSS is a Scientific Associate of the International Council of Scientific Unions (ICSU) since 1972 and wishes have been expressed to join ICSU as a full member. Prof. Tinker, the SG and Dep. SG had several discussions with the ICSU Executive Director Mrs. Julia Marton-Lefèvre. The draft of an application was sent recently to the Admissions Committee of ICSU and a reaction will be received soon.

It was a general opinion that although the "pros" and "cons" are not yet known exactly, the joining of ISSS as a full union member would probably turn out to be a good decision and further advances in this direction would get full support of the Executive Committee.

Structure of ISSS - rules and bylaws

Unfortunately, the Chairman of SC-CSS could not attend. He was requested to make a report on the actual state-of-affairs of the Rules and bylaws, which consists of an updated text of these official documents held during the term of office of his predecessor Prof. Hallsworth and more recent times.

The report by the SC and the SG will be sent in due course to the members of the EC for comments. Proposals will be put forward to the first Council meeting at the next Congress and a decision could be taken at the second or third Council meeting. The General Assembly at the Closing Session has to approve.

Activities of Commissions and Subcommissions 1990-1992 - short reports

Because of time pressure, the SG only asked the participants to send him condensed information,

to be entered in the report on the Society's activities. This report has to be sent to ICSU for inclusion in the ICSU Yearbook and, of course, in the Bulletin.

Since some meetings are planned after the approval of official intercongress meetings at the Congress, there is a need to approve those coming up later. It is left to the SG to do this, after consultation with (Sub-)Commissions, Working Groups or Standing Committees.

Proposals for Honorary Members 1994

Reference was made by the SG about the procedures to follow, as laid down in Statutes and Bylaws: Submission by National Societies or individual members to the EC through the SG; the EC prepares candidatures for the Council.

Letters to National Societies for proposed candidates will be sent out in time.

WCSS candidature of France

Prof. Ruellan gave information on Montpellier, France, which candidature will be put forward officially in 1994. In view of the time needed for the organization of this important event, the EC declared with unanimous support to be in strong favour to hold the 1998 16th World Congress of Soil Science in Montpellier, France, from 20-26 August. He gave information on the theme and structure of the Congress and on possible tours. In a letter by the SG to National Societies and Council Members relevant information on the French candidature will be provided. The EC thanked Prof. Ruellan for his proposal and wished him good luck. The French Government has already supported the idea.

In order to have information transferred from one congress to another Dr. Christian Prat from the ORSTOM Mission in Mexico and working in Montecillo was requested to accept this task. He will attend the monthly meetings of the OC.

Closing

The SG thanked all persons who have made this Mid-term meeting such a profitable and enjoying happening. He thanked the Mexican Society of Soil Science for its generous financial support and arrangements.

H. van Baren and A. Aguilar.

UNCED
The Earth Summit

UNCED was the historic United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, 3 - 14 June 1992. Over one hundred heads of state and government attended, as did delegates from more than 170 countries, virtually all pledged to preserve the endangered planet and its protective envelope.

During their conference, the following declaration was adopted:

RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT

Principle 1: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2: States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment or other States or of areas beyond the limits of national jurisdiction.

Principle 3: The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Principle 4: In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5: All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

Principle 6: The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7: States shall cooperate in spirit of global partnership to conserve, protect and restore the health and integrity of the earth's eco-system. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8: To achieve sustainable development and a higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9: States should cooperate to strengthen endogenous capacity, building for sustainable development by improving scientific understanding through exchanges and scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

***Principle 10:* Environmental issues are best handled with the participation of all concerned citizens, at the relevant level.** At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision making processes. **States shall facilitate and encourage public awareness and participation by making information widely available.** Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11: States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

Principle 12: States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13: States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14: States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15: In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16: National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Principle 17: Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18: States shall immediately notify other states of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19: States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20: Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21: The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22: Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23: The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24: Warfare is inherently destructive of sustainable development. States shall therefore respect international law, providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25: Peace, development and environment protection are interdependent and indivisible.

Principle 26: States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

Principle 27: States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

THE EARTH CHARTER

Prepared by the Non-Governmental Organisations gathered together
in Rio de Janeiro, June 3 - 14, 1992

Preamble

We are Earth, the people, plants and animals rains and oceans
breath of the forest and flow of the sea.

We honour earth as the home of all living things.

We cherish Earth's beauty and diversity of life.

We welcome Earth's ability to renew as being the basis of all life.

We recognise the special place of Earth's indigenous Peoples,
their territories, their customs and their unique relationship to Earth.

We are appalled at the human suffering, poverty and damage to Earth
caused by inequality of power.

We accept shared responsibility to protect and restore Earth and
to allow wise and equitable use of resources so as to achieve an ecological balance and
new social, economic and spiritual values.

In all our diversity we are one.

Our common home is increasingly threatened.

We thus commit ourselves to the following principles,
noting at all times the particular needs of women, indigenous peoples, the South,
the disabled and all those who are disadvantaged

Principles:

1. We agree to respect, encourage, protect and restore Earth's ecosystems to ensure biological and cultural diversity.
2. We recognise our diversity and our common partnership. We respect all cultures and affirm the rights of all people to basic environmental needs.
3. Poverty affects us all. We agree to alter unsustainable patterns of production and consumption to ensure the eradication of poverty and to end the abuse of Earth. This must include a recognition of the role of debt and financial flows from the South to the North and opulence and corruption as primary causes. We shall emphasize and improve the endogenous capacity for technology creation and development. Attempts to eradicate poverty should not be a mandate to abuse the environment and attempts to protect or restore the environment should not ignore basic human needs.
4. We recognise that national barriers do not generally conform to Earth's ecological realities. National sovereignty does not mean sanctuary from our collective responsibility to protect and restore Earth's ecosystems. Trade practices and transnational corporations must not cause environmental degradation and should be controlled in order to achieve social justice, equitable trade and solidarity with ecological principles.
5. We reject the build up and use of military force and the use of economic pressure as means of resolving conflict. We commit ourselves to pursue genuine peace, which is not merely the absence of war but includes the eradication of poverty, the promotion of social justice and economic, spiritual, cultural and ecological well-being.

6. We agree to ensure that decision making processes and their criteria are clearly defined, transparent, explicit, accessible and equitable. Those whose decisions or activities may affect the environment must first prove the absence of harm. Those likely to be affected, particularly populations in the South and those in subjugation within existing States, should have free access to information and effectively participate in the decision making processes.

7. States, institutions, corporations and peoples are unequal in their contribution to environmental harm, experience of ecological degradation and ability to respond to environmental destruction. While all are responsible for improving environmental quality, those who have expropriated or consumed the majority of Earth's resources or who continue to do so must cease such expropriation or reduce such consumption and must bear the costs of ecological restoration and protection by providing the majority of financial and technological resources.

8. Women constitute over half of Earth's human population. They are a powerful source for change. They contribute more than half the effort to human welfare. Men and women agree that women's status in decision making and social processes must equitably reflect their contribution. We must shift from a society dominated by men to one which more accurately reflects the valued contributions of men and women to human and ecological welfare. We have come to realise that the threats to the biosphere which sustains all life on Earth have increased in rate, magnitude and scale to such extent that inaction would be negligent.

Earth Charter Action Plan

1. We shall adopt the spirit and principles of the Earth Charter at the individual level and through concrete actions within our Non-Governmental Organisations.

2. We will use existing mechanisms and/or create an international network of the signatories hereto to disseminate the Earth Charter as principles for action at the local, national and global level.

3. The Earth Charter shall be translated into all the languages of Earth.

4. We shall commit ourselves to the preparation of "OBJECTIVE 1995" by which the United Nations will celebrate its 50th anniversary at which time we want them to adopt this Earth Charter.

5. Non-Governmental Organisations worldwide shall initiate a combined campaign "WE ARE THE EARTH" through to 1995 and the adoption of this Earth Charter by the United Nations.

6. Every individual, organisation, corporation and state shall dedicate a percentage of their operating budget and their profit as an "Earth Percentage" dedicated to the restoration, protection and management of Earth's ecosystems and the promotion of equitable development.

7. We call for a second Global Forum to be held in 1999 to evaluate and reaffirm our commitment to the relationships made, the accomplishments achieved and the goals sought at this "1992 Global Forum".

**ACTIVITIES OF COMMISSIONS AND WORKING GROUP
ACTIVITES DES COMMISSIONS ET GROUPES DE TRAVAIL
AUS DER TÄTIGKEIT VON KOMMISSIONEN UND ARBEITSGRUPPEN**

**INTER-CONGRESS CONFERENCE OF COMMISSION IV
Dhaka, Bangladesh, 1-3 December, 1992**

About 250 soil scientists from about 15 countries, met at the Bangladesh Agricultural Research Council (BARC) auditorium in Dhaka to take part in the Conference organized under the theme "Improving Soil Management for Intensive Cropping in the Tropics and Sub-tropics". The meeting was sponsored in Bangladesh by the BARC and by the Soil Science Society of Bangladesh (SSSB) and internationally, by ISSS Commission IV and several organizations such as the Canadian International Development Agency (CIDA) and the Potash and Phosphate Institute of Canada (PPIC).

Major General M. Majid-ul Haq (Retd.) Hon'ble Minister for Agriculture and Irrigation, Water Development and Flood Control of the People's Republic of Bangladesh was the Chief Guest and inaugurated the Conference. Special guests were Mr. A.N.M Eusuf, Secretary of the Ministry of Agriculture and Dr. M. Amirul Islam, Eminent Soil Scientist.

The Organizing Committee was chaired by Dr. Z. Karim from BARC and integrated by many enthusiastic and capable members among which the President of the SSSB, Dr. A.K.M. Habibullah and Prof. Dr. Imamul Huq, Department of Soil Science, University of Dhaka.

The opening session was followed by eight technical sessions which included about 6-8 presentations each. Session X was a round-table on Sustainable Agriculture chaired by Dr. J. D. Beaton (PPIC), with several contributors, among them Dr. Aguilar (President ISSS) and Dr. Goswami (Past Chairman Commission IV). During the eight sessions, different important topics on soil management for intensive cropping were presented and discussed. Maximum yield research related to rice, sugar-cane and banana; research on intensive cropping and soil nutrient balances; effects of intensive cropping on the status of soil nutrients; different fertilization practices for optimum crop production; soil conservation practices for different crops and soils, etc. Emphasis was given to soils and crops from Bangladesh. Two full-day excursions were conducted including visits to the Bangladesh Agricultural Research Institute, to the Bangladesh Rice Research Institute; examinations of two representative soil profiles, and a presentation of soil survey activities in Bangladesh by the Soil Resources Development Institute. Many thanks are extended to the Government and people of Bangladesh for their hospitality and to all members of the Organizing Committee, whose enthusiastic and qualified work materialized this successful conference.

A. Aguilar, Mexico.

**Conference on "Operational Methods to Characterize Soil Behavior
in Space and Time"**

Cornell University, Ithaca, New York, USA

July 26 - 29, 1992

Working Group MV on Soil and Moisture Variability in Space and Time convened July 26 - 29, 1992 at Cornell University, Ithaca, New York, USA holding a conference on "Operational Methods to Characterize Soil Behavior in Space and Time". Attendance of 70 scientists from 17 nations provided a balanced and creative atmosphere for interaction. The agenda included plenary lectures, voluntary papers, posters, a field trip, and computer program demonstrations. The plenary session set the tone of the conference by illuminating the differences in perceptions in soil behavior, modeling soil behavior, and visualizing soil behavior. Subsequent presentations focused on operational methods at the local scale (pedon, polypedon, and map unit), watershed and regional scale (a few hundreds of hectares to several states/provinces, and at the continental or global scale. *Presentations, posters, and discussions utilized geographic information systems*

(GIS) to integrate soil behavior over space and time. The field trip included inspection of a lacustrine soil profile formed during the retreat of glaciers in North America, a field experiment designed to elucidate the effects of different tillage systems on soil behavior (infiltrability, water retention, and plant yield), and a tour of a winery that takes advantage of the temperature moderating effect of nearby lakes in the culture of the vineyards. In the closing session plenary speakers presented impressions of the issues raised during the conference. One common thread was that of scale integration. Researchers and practitioners alike were charged with taking a broader view of their work regardless of the scale in consideration. Risk assessment and consideration of uncertainties in quantifying soil behavior as it affects environmental fate of agrichemicals was also considered an important issue. New approaches to archiving knowledge about field soil behavior and capturing knowledge of soil classifiers that is lost in traditional soil survey documentation was encouraged. The closing presentation challenged participants to take the broader view of science to learn more holistically how soil behavior contributes to the well-being of our society and how society must respect the environment in order to exist in the future.

Arthur G. Hornsby,
University of Florida, Gainesville, FL, USA.

Report of the Pedometrics '92 Conference
September 1 - 3, Wageningen, The Netherlands

The first conference of the working group on pedometrics of the ISSS was held in the International Agricultural Centre in Wageningen from 1 - 3 September, 1992. The aim was to present current statistical research in soil science, to exchange new ideas on statistical procedures and important general questions from soil science and to bring statisticians and soil scientists together.

Four major themes were distinguished: spatial interpolation, multivariate spatial statistics, sampling strategies and the use of prior information.

The conference was opened by Prof. Van Vloten, head of the Agricultural Research Department of the Netherlands Ministry of Agriculture, Nature Management and Fisheries. She stressed the importance of variability studies for environmental decision making. The conference started with a plenary lecture by Dr. R. Webster, who reviewed the developments in statistics in soil science, dating back to the beginning of the 20th century. Dr. Webster stressed the importance of bridging the gap between soil scientists and statisticians.

The session on spatial interpolation, introduced by Prof. D.E. Myers, covered recent developments in procedures for soil. The session continued with papers on the use of splines, on temporal changes of soil properties, and on the use of soil map polygons. Mapping impurities and predicting land use and management options completed this session.

The session on multivariate spatial statistics, introduced by Dr. H. Wackernagel, covered recent developments in the use of multivariate analysis of spatial data. Attention was given to multivariate geostatistics, interpolation of soil moisture retention curves, and to non-symmetric pseudo-cross variograms. The session was illustrated with two practical case studies. One concerned polluted soil in a Dutch harbour, the second described variation in flooded rice fields.

The session on sampling strategies, introduced by Prof. A.B. McBratney, addressed the particular problems soil scientists face when choosing sampling strategies. Attention was given to probability sampling, the effect of plot shapes, partition coefficients and experimental designs. One case study illustrating this session was on electromagnetic soil conductivity in Senegal.

The session on *prior information in spatial statistics*, introduced by Dr. A. Stein, covered this largely unexplored field. The role of models, soil map delineations and GIS was analyzed. The session was illustrated with two case studies, one on phosphate sorption characteristics and one on fertilizer additions.

Some 15 posters illustrated many other important developments, mostly case studies from several different countries.

The conference proper ended with a general discussion. The meeting identified a strong need for close collaboration between soil scientists and statisticians, to develop spatial statistics for practical problems in soil science, and to make existing ones sometimes more readily available through computer programmes and expert systems. The last may have economic and legal impact, especially on environmental legislation. The particular problem to address now and in the future is a problem of generalization. More specific problems of how to deal with different scales for simulation modelling, with variation in time and with sampling must be tackled.

The proceedings of the conference will soon be published in a special issue of *Geoderma*.

As an addendum to the conference the Winand Staring Centre hosted an informal presentation of fuzzy classification and fuzzy logic on 4 September. It was led by Prof. A.B. McBratney with contributions of Dr. I. Odeh, Huajun Tang, and Prof. P.A. Burrough.

A. Stein (Wageningen Agricultural University)
R. Webster (ETH Zurich)

International Symposium on Paddy Soils
September 15 - 19, 1992 - Nanjing, China

The International Symposium on Paddy Soils was held on 15 - 19 September, 1992 in Nanjing, China. This symposium was the 3rd Symposium on Paddy Soil Fertility and the 1st Symposium on Paddy Soils in East and Southeast Asia, jointly organized by the Paddy Soil Fertility Working Group of ISSS (WG-PS), the East and Southeast Asia Federation of Soil Science Societies, the Soil Science Society of China, and the Institute of Soil Science, Chinese Academy of Sciences. It was supported by the Potash and Phosphate Institute, Canada, The National Natural Science Foundation of China, Australian International Development and Assistance Bureau, and the Sulphur Institute. 114 participants from 14 countries joined this symposium.

In total, 68 papers were presented, 17 papers in plenary sessions, 40 papers in the panel sessions and 11 papers as posters. These papers covered the following 7 research areas: resources and properties of paddy soils; nutrient cycling in rice-based cropping systems; efficiency of chemical and organic fertilizers and its improvement; water management; minimum-tillage; rice-based cropping systems; and environmental impact. A considerable portion of the papers was devoted to the efficiency of chemical and organic fertilizers and its improvement, the balanced fertilization for high yield, and the long-term effect of intensive fertilization on soil fertility and crop yield. Some papers also dealt with the environmental impact of nitrogen loss and methane evolution from paddy fields. The Proceedings of the symposium, containing 75 papers, were published and distributed at the symposium.

At the symposium it was agreed upon, that the 4th International Symposium on Paddy Soil Fertility will be held in Malaysia in 1994.

Prof. Zhu Zhao-liang
Chairman WG-PS

WRB, the World Reference Base for Soil Resources, is completing its work, for presentation to the ISSS Congress in Acapulco

The objective of the **WRB (World Reference Base for Soil Resources)**, the successor of the IRB, is to provide scientific depth and background to the existing 1990 FAO legend, so that it incorporates the latest knowledge relating to global soil resources and interrelationships. In order to incorporate some of the most recent pedological studies and to expand the use of the system from an agricultural base to a broader environmental one, a limited number of important changes of the 1990 legend are necessary.

The WRB will not be a new international soil classification system, but the base for a better correlation between the national systems. The completed first draft Reference Base should provide:

- * a mutually exclusive class framework and guidelines to link national classification systems;

- * a mechanism for the exchange of soil information between countries, by detailing criteria that ensure the coordination and reliability of data collected for national resource assessments;

- * a consistent basis for compiling global soil data bases for taking inventory and monitoring global soil resources.

Since the Hamburg ISSS Congress, the IRB and subsequently the WRB working groups have worked hard, contributions coming from approximately 50 soil scientists from more than 20 countries. The last meetings were in Montpellier, France (January 13 - 15, 1992) and Silsoe, U.K. (October 5 - 7, 1992). The next meeting will be in Rome/FAO, Italy (April 12 - 16, 1993). We intend to present a first complete draft at the next ISSS Congress in Acapulco, in 1994. The WRB has the official support of ISSS (Commission V), FAO and ISRIC.



Participants of the last WRB-meeting in Silsoe/U.K., October 5 - 7, 1992

Alain Ruellan, Montpellier
Chairman of the WRB Working Group

Commission V - Task Force on soil Horizons
Results from the questionnaire on Soil Horizons in the ISSS
Bulletin No. 79

The percentages of the total replies to each question are given in the table below. In some cases a question was not answered or a yes or no answer was given. These are not included in the results.

	YES	NO
1) Should the definition of "Soil Horizon" be: "Material that shows pedological organization"?	72	28
2) Do soil horizons have a variety of shapes?	97	3
3) Do soil horizons have lateral continuity?	95	5
4) Are soil horizons continuous in time and under- going progressive change?	95	5
5) Do soil horizons have fixed juxtarelationships?	22	78
6) Should all horizons be given equal status?	42	58
7) Should the validity of the concept of "Reference Horizon" be tested?	87	13
8) Should provision be made for all of the various anthropogenic horizons?	74	26

These results are extremely encouraging and show that there is a general consensus about the ideas on soil horizons. This should lead to the establishment of some guiding principles that may be used in the future. Some of the questions brought forth more comments than others and indicated the need for the further development of some points as detailed below for each of the questions.

1) Should the definition of "Soil Horizon" be: "Material that shows pedological organization"?

Although this definition is rather short, there was a fair agreement but it was pointed out that it could equally apply to soil itself. A better definition might be "Material that shows distinctive or unique pedological organization." There are many different types of soil material with many different dispositions one to another thus giving rise to different types of horizons.

2) Do soil horizons have a variety of shapes?

Most respondents agreed that horizons do have a variety of shapes. This is a very important aspect of soils since it seems that as soils get older the shapes and disposition of materials within horizons becomes more and more complicated. The tonguing in Podzoluvisols, convolutions in thin iron pans and the tubular forms that develop in the very old Podzols in Portugal and Australia are very distinctive.

3) Do soil horizons have lateral continuity?

Here again there was general agreement that soil horizons have lateral geographical continuity. It was pointed out by some that the extent varies with the nature of the landscape. In strongly undulating landscapes the horizons may change rapidly from one part of the landscape to another but in some loessal landscapes the horizon sequence may remain relatively uniform for many hundreds of meters. It should also be pointed out that horizons have continuity in character space but this will be discussed more fully under question 7.

4) Are soil horizons continuous in time and undergoing progressive change?

There is a general consensus that horizons are constantly changing from one type of horizon to another, therefore it seems that some provision should be made to designate the stages in the change. Thus the answers to 3 and 4 suggest that there is the need to recognize intergrading situations in both geographical and temporal space.

5) Do soil horizons have fixed juxtarelationships?

The general agreement that soil horizons do not have fixed juxtarelationships seems to suggest that a new dynamic appreciation has entered the pedological philosophy. The tendency in the past was to think of soils as having fixed relationships between horizons but we now know that mollic horizons can occur over a number of different horizons including argillic, calcic and unaltered material. Likewise argillic horizons can occur beneath a number of different horizons including mollic, ochric, umbric and albic. This imposed difficulties in defining horizons with more reliance having to be placed on the intrinsic properties of the horizons themselves and not on comparisons with the horizons above or below but this may not be possible in all cases.

6) Should all horizons be given equal status?

There is a feeling that all horizons should not be given equal status. In this context it might be useful to compare horizons with minerals in rocks. Most rocks are dominated by about 30 different minerals with another 30 that are of common occurrence, this leads to the concept of common (major) and accessory (minor) minerals. The same seems to be the case with soil horizons. In the Seventh Approximation there was the concept of diagnostic horizons and other horizons but that has been abandoned and in Soil Taxonomy there are only diagnostic horizons. It might be useful to reintroduce this concept and to have major and minor horizons.

7) Should the validity of the concept "Reference Horizon" be tested?

Eighty seven percent of the replies were in favour of testing the concept. Perhaps it will be useful to state the nature of the concept and why it should be introduced. A reference horizon or more correctly a reference segment is a conceptual volume of soil delimited by coordinates which are soil properties. The simplest coordinate diagram that is used in soil science is the ternary diagram for soil particle size distribution. Reference segments is a natural development of this rather simple concept. However the different reference segments are considered to be volumes in character space delimited by the properties that have been used. This concept envisages relatively small volumes in character space separate from each other but joined by a continuous change in one or more of the properties thus forming a continuum or intergrading situation. Perhaps the philosophical or mathematical ideal would be to have reference points but this would necessitate every horizon having to be designated as an intergrade in the continuum between several other or maybe all other segments. This may be the mathematical ideal but it may be a little difficult to apply. Perhaps a more pragmatic approach is needed as in the ternary diagram for particle size distribution with volumes rather than points.

It has been suggested that the concept of diagnostic horizons and reference horizons are the same. It should be clear from the above that they are quite different. Whereas diagnostic horizons have sharp divisions between one and another reference horizons have continuous gradation from one to another. For example there is a sharp division between spodic horizons and cambic horizons, there is not an intergrading situation. The equivalent reference horizons have intergrading situations so as to preserve the natural continuum in soils.

8) Should provision be made for all of the various anthropogenic horizons?

The general feeling was that there should be provision for the main anthropogenic horizons but it would be an insurmountable task to describe all the possibilities. Descriptions of the main anthropogenic horizons would be a considerable step forward since there has not been a systematic attempt to do so.

From the above the following tentative guidelines are suggested.

- 1) Soil horizons have a variety of shapes.
- 2) There are two classes of horizons - major and minor
- 3) Soils have lateral continuity in geographical, temporal and character space.
- 4) Soil horizons have a wide range of juxtarelationships i.e. they do not have fixed juxtarelationships.
- 5) The concept of "Reference Horizons" appears to have a high degree of support and has been accepted into the French "Référentiel Pédologique"
- 6) Anthropogenic horizons form an important part of the soil mantle.
- 7) There are four types of horizons:
 - i) Reference horizons: composed of material with the properties of reference segments.
 - ii) Intergrade horizons: have properties that lie in the continuum space between reference horizons - cambic horizons with spodic characteristics.
 - iii) Composite horizons: have discrete volumes of contrasting soil material - the crotovinas in calcic horizons in Chernozems.
 - iv) Compound (polygenetic) horizons: have the properties of one reference horizon superimposed on the properties of another reference horizon - oxic horizons with clay coatings.

Dr. E.A. FitzPatrick
Department of Plant
and Soil Science
University of Aberdeen Meston Walk
Aberdeen Scotland

Report of Subcommittee D (Soil Zoology)

Subcommittee D organizes its own colloquia since the creation of a zoology bureau during the IVth International Soil Science Congress in Paris (1956).

The 11th International Soil Zoology Colloquium was held in Jyväskylä, Finland, August 10 - 14, 1992 on the theme "Soil Organisms and Soil Health". 226 participants from 32 nations registered for this meeting.

During the meeting a new bureau was elected:

Chairman: D. Parkinson (Canada); **Secretary:** J.C. Kühle (Germany);
Vice-Chairpersons: I. Barois (Mexico); J. Curry (Eire) and V. Hühta (Finland); **Past Chairpersons:** M.B. Bouché (France) and K.E. Lee (Australia); **Honorary Chairman:** H. Franz (Austria).
Members: J.M. Anderson (U.K.), D.C. Colemam (U.S.A.), C.A. Edwards (U.S.A.), H. Eijsackers (Netherlands), D.A. Krivolutsky (Russia), Ph. Lebrun (Belgium), T. Persson (Sweden), A.-J. Reinecke (South Africa), G.K. Veeresh (India), H. Watanabe (Japan), A. Zicsi (Hungary).
Ex officio members: J. Rusek (Czechoslovakia) as coordinator for Apterygota and G. Wauthy (Belgium) as secretary of the bulletin Pedofauna.

As usual, the VIIIth International Colloquium on Apterygota took place close by, in the zoology museum, Helsinki, Finland, 17 - 19 August 1992.

The bureau selected the place of the next colloquium. The XIIth International Colloquium will be held in Dublin (Eire) in 1996 jointly with the IX International Colloquium on Apterygota.

M. Bouché, France

SOIL PEDON IS NOT A SUITABLE TERM

by
Dan H. Yaalon*

After the introduction of the term pedon by the USDA Soil Conservation Service in 1960 at the Congress of the International Society of Soil Science, it gained widespread acceptance as an apt designation for the smallest spatial body of a soil, usually anisotropic with depth. Polypedon then became the smallest contiguous body of similar pedons or the soil mapping unit in the landscape, sometimes rather ambiguously equated with soil individual.

More recently, the term soil pedon has been used in several periodicals without justification for the redundancy, which seems incongruous and without ground. To my surprise I also found the double term in a well-known textbook on soil genesis. Lest the use of this hybrid becomes common, some comments seem to be in order.

Where soil pedon is used in analogy to the grammatically correct term soil horizon or soil profile, soil becomes the qualifying term for the noun pedon. This is appropriate in connection with soil horizon or profile, for there are other horizons or profiles not associated with soils. Pedons, however, are by definition soil bodies. What kind of other pedons could there be that would necessitate the qualifying soil term? As a qualifying term, soil in connection with pedon is unnecessary and inappropriate, and it should not be used.

Although every pedon is a soil, not every soil is a pedon. Soil means different things to different people, and a pluralistic definition of soil is now commonly accepted and defined as such in glossaries. The concept or definition of soil is different for a horticulturist or engineer and different from that of a pedologist. There is thus justification in speaking of flowerpot soil, greenhouse soil, surface soil, or engineering soil, which need not be a pedon or polypedon. If pedon is meant to be the qualifying term, then one should say pedon soil, which is perhaps what those who used the term soil pedon intended to express. Inasmuch as all pedons are soils, however, pedon by itself will also do.

In conclusion, soil pedon (with soil being the qualifying term) is inappropriate and should not be used. Where pedon is to be the qualifying term, the term pedon soil can be used, but pedon only is preferred.

*Dan H. Yaalon is Professor at the Institute of Earth Sciences, The Hebrew University, Jerusalem 91904, Israel

Copyright 1990 by Williams & Wilkins

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

ESAFS

New ESAFS Office

The ESAFS office was officially moved from JSSSPN to the **Soil Science Society of China** at Nanjing as of April, 1992. All the correspondence should be addressed to:

The Secretary-General of ESAFS
Soil Science Society of China
c/o The Institute of Soil Science
Academia Sinica
P.O.Box 821, Nanjing
People's Republic of China

As the **Malaysian Society of Soil Science** officially accepted to be the office holder after the Chinese Society, the new officers of ESAFS are:

President: Prof. Zhao Quiguo
Vice-President: President of the Malaysian Society
Secretary-General: To be nominated by the Chinese Society

Soil Science Society of Bangladesh (SSSB):

The SSSB has a new address. All correspondence should be sent to:

Dr. Tofazzal Husain Khan
Secretary-General of the SSSB
Associate Professor
Dept. of Soil Science
University of Dhaka,
Dhaka-1000
Bangladesh
(Phone: 5000397)

Chinese Society of Soil and Fertilizer Sciences (Taiwan)

At the 1991 annual meeting of the Chinese Society of Soil and Fertilizer Sciences (Taiwan), Prof. Y.P. Wang was elected Chairman of the Board of Directors and Dr. M.C. Wang was later appointed Secretary-General. For the period of 1992 - 1994, the office of the Society is:

The Chinese Society of Soil and Fertilizer Sciences
c/o Department of Soil Sciences
National Chung Hsing University
250 Kuokuan Road, Taichung
Taiwan

The Society sponsored or co-sponsored two symposia on "Management of Acid Soil" and "Evaluation on Land Use" in 1992.

Korean Society of Soil Science and Fertilizer (KSSSF)

The 1991 autumn meeting of the KSSSF was held at the International Technical Co-operation Center, Rural Development Administration in Suwon on Oct. 25, 1991, with the main topic of "Development of New Fertilizers and Quality Controls for the 21st Century." Eight papers were presented. The major subjects were the development of newly devised fertilizers, by Prof. Sun-Uk Lim, Seoul University; reasonable soil management and fertilizer application by Young-Dae Park,

Agricultural Science Institute; and problems with fertilizer quality and their solution, by Ki-Hak Han, Jae-Sung Shin and Ie-Keun Chung, Agri. Science Institute.

The 1992 General Conference of the KSSSF will be held at Danguk University, Cheona, in the Chungnam Province. New staff of the Society for the next two years will be elected at the Conference.

Japanese Society of Soil Science and Plant Nutrition (JSSSPN)

Dr. Sadao Shoji, Professor of Soil Science at Tohoku University, succeeded Dr. Kazutake Kyuma on April 3, 1992, as President of the Japanese Society. Dr. Shoji has been working on chemistry, mineralogy and genesis of Andosols and made a great contribution to the formulation of the new Andosol order of the U.S. Soil Taxonomy. Recently he has published an English book on controlled release fertilizers, which are promising in reducing the environmental pollution due to fertilizers. Dr. Shoji was the Chairman of the Excursion Committee at the 14th ISSS Congress held in Japan.

Dr. Naoko Nishizawa, the Past Secretary General of ESAFS, was granted the Achievement Award of the JSSSPN along with Dr. Kazutaka Akashi and Dr. Eitaro Miwa at the annual meeting of the Society at Niigata last April. She is the first woman to receive the award for her work on the ultra-

AUSTRALIAN SOCIETY OF SOIL SCIENCE

The new Federal Council of the Australian Society of Soil Science, elected for the period of 1992 - 1994, consists of:

President	: Assoc. Prof. A.S. Black
Vice-President	: Prof. R.E. WhiteHon.
Secretary	: Mr. M.K. ConyersHon
Treasurer	: Mr. M. WinHon.
Editor	: Dr. W.A. Muirhead
Qld. President	: Mr G. Rayment
Qld. Proxy	: Mr. H.G. Beecher
NSW President	: Ms. P. Hazelton
NSW Proxy	: Mr. P.J. Barker
ACT President	: Dr. J. FieldVictorian
President	: Mr. M. Lorimer
Victorian Proxy	: Dr. P.L. Eberbach
S.A. President	: Mr. P.J. Cole
S.A. Proxy	: Mr. J.A. Thompson
W.A. President	: Mr. K. Lindbeck
W.A. Proxy	: Dr. J. DysonRiverina
President	: Dr. W.S. Meyer

Address of the ASSS : NSW Agriculture
Agricultural Research Institute
Private Mail Bag
Wagga Wagga NSW 2650
Australia

ASSOCIATION BURUNDAISE DE LA SCIENCE DU SOL (A.B.S.S)

Les nouveaux officiers de l'A.B.S.S. sont:

- Dr. F. NTIBURUMUSI, Président, ISABU/FAVA
Ir. T. RISHIRUMUHIRWA, 1^{er} Vice-Résident, IRAZ
Ir. D. NTAGUZWA, 2^{ème} Vice Président, FACAGRO, sol/eau
Dr. P. HENNEBERT, secrétaire, FACAGRO
Ir. J. VAN LOOIJ, trésorier, ISABU/GR

Ici l'adresse de l' A.B.S.S.:

c/o FACAGRO
B.P. 2490 Bujumbura, Burundi
Tel.: 22 43 57

ISRAEL SOCIETY OF SOIL SCIENCE

A new Executive Committee has been elected for the Israel Society of Soil Science:

- | | |
|-----------|-------------------------------------|
| President | Dr. S. Dasberg |
| Secretary | Dr. M. Ben-Hur |
| Treasurer | Dr. G.J. Levy |
| Members | Dr. E. Wagschall
Dr. P. Berliner |

Address: Volcani Center, P.O.Box 6, Bet Dagan 50 - 250, Israel

NEW LITHUANIAN SOCIETY OF SOIL SCIENCE

The Lithuanian Society of Soil Science was founded on February 11, 1990. The Society has 105 active, registered members. They are working at the Lithuanian Academy of Agriculture, Vilnius University, the Lithuanian Land Survey Institute, the Institute of Agriculture and the Lithuanian Forestry Institute, in different fields of soil science, They also take actively part in the land reform which is under way in Lithuania.

In the last two years, several seminars and two conferences were held. The main activities of the Society are directed towards increasing the scientific understanding of soil as a main natural resource as well as to promote scientific management of the environment in Lithuania, based on soil research.

The Lithuanian Society of Soil Science is in close contact with Latvian, Estonian, Moldavian, Byelorussian and Russian soil scientists, but would also like to communicate with soil scientists of other countries.

Executive Board members:

- President: Prof. Dr. M. Vaichys
Vice Presidents: Dr. R. Shleiny
A. Juozakas
Secr.-General: Dr. V. Buivydaite
Treasurer: R. Vengeliauskaite

Address:

c/o Soil Science and
Agrochemistry Deptmt.
Lithuanian Academy of
Agriculture
4324 Kaunas-Akademija
Lithuania

Fax: 0127-296531

V. Buivydaite
Secretary-General of the
Lithuanian Society of Soil Science

MALAYSIAN SOCIETY OF SOIL SCIENCE (MSSS)

The Malaysian Society of Soil Science held its 21st annual general meeting on April 27, 1992, in Kuala Terengganu. The following members were elected to serve in the management committee for 1992/1993:

President	: Dr. Wan Sulaiman Wan Harun
Vice President	
Peninsular Malaysia	: Dr. Siti Zauyah Darus
Sarawak	: Mr. Patrick Sibat Sujang
Sabah	: Zulkifli Usof
Immediate Past President	: Dr. Sharifuddin Hj. Abdul Hamid
Hon. Secretary	: Dr. Ghulam Mohd Hashim
Hon. Asst. Secretary	: Dr. Aziz Bidin
Hon. Treasurer	: Dr. Aminuddin Hussin
Hon. Asst. Treasurer	: Dr. Amir Husni Mohd Shariff
Committee Members	: Dr. Alias Husin
	Dr. Abdul Rashid Ahamad
	Haji Hanifuddin Abdul Rahman
	Haji Mohd. Tayeb Dolmat
	Dr. Rosenani Abu Bakar
	Haji Idris Omar
	Haji Dr. Noordin Wan Daud

SOIL SCIENCE SOCIETY OF NIGERIA

This is the new Executive Committee of the Soil Science Society of Nigeria, elected for the period 1992 - 1994:

President:	Prof. R.A. Sobulo
Vice-President:	Prof. E.J. Udo
Secretary:	Dr. V.O. Chude
Assistant Secretary:	Dr. S.O. Ojeniyi
Publicity Secretary:	Dr. A. Fapohunda
Financial Secretary:	Dr. Akin Olayinka
Editor-in-Chief:	Prof. O. Babalola
Treasurer:	Dr. Olu-Obi
Ex-Officio:	Prof. J.A. Ogunwale
	Dr. U. Omoti
	Prof. A. Ojanuga
	(Immediate Past President)
Address:	Dr. V.O. Chude, Secretary Department of Soil Science Ahmadu Bello University, P.M.B. 1044 Zaria, Nigeria

NEW UKRAINIAN SOCIETY OF SOIL SCIENCE

The Ukrainian Society of Soil Scientists and Agrochemists was registered in August, 1992. It is a voluntary, public, scientific and technical organization, uniting researchers, lecturers,

engineers, post-graduates, students and other persons working theoretically and practically in the field of agriculture, forestry, agrochemistry and interdisciplinary sciences such as ecology, soil irrigation etc.

The Ukrainian Society of Soil Scientists and Agrochemists is the successor of the Ukrainian branch of the All Union Society of Soil Science (ex-USSR) and will maintain the continuity of its scientific endeavours.

The Society numbers more than 1200 members from all provinces of the Ukraine; its headquarters are situated in Kharkov, at the A.N. Sokolovsky Institute for Soil Science and Agrochemistry. In the Ukraine, the development of soil science and agrochemistry has an abundant history, all of its branches developing fruitfully; special emphasis is laid on productivity, genesis, classification, plant nutrition, soil chemistry and soil physics.

The main aims of the Society are:

- furthering the progress of soil science and agrochemistry as an important contribution to an adequate understanding of nature;
- creating favourable conditions for the realization of the creative and intellectual potentials of its members;
- supporting and stimulating individual and group activities in the interest of scientific and *technological progress*;
- defending the rights of and providing social guarantees for members of the Society.

The address of the Ukrainian Society of Soil Science is:

c/o Institute of Soil Science and Agrochemistry
Chaykovsky St. 4
Kharkov, 310024,
Ukraine.
Fax: 09-7-0572-478563

Prof. B.S. Nosko President of the Ukrainian Society of Soil Science and Agricultural Chemistry

VIETNAM SOCIETY OF SOIL SCIENCE

The Vietnam Society of Soil Science was officially founded on August 30th, 1991. Up to now, 22 sub-societies at various localities have been gradually established, with a total membership of 400 soil scientists. The VISSS is a voluntary social organization of Vietnamese soil scientists within Vietnam and abroad. The Society is a member of the Vietnam union of scientific and technical associations.

Its officers are:

Chairman	: Dr. Tran Khai
Vice chairman and Secretary-general	: Dr. Ton That Chieu
Vice chairman	: Ngo The Dan
Vice chairman	: Ton Gia Huyen
Vice chairman	: Le Van Thuong

Address: VISSS
61 Hang Chuoi - Hanoi
Tel: 2-63452
Fax: 84 (02) 53093

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

**NATO ASI Workshop on
Migration and Fate of Pollutants in Soils and Subsoils
Acquafredda di Maratea, Italy, May 25-June 5, 1992**

The principal objective of the Advanced Study Institute was to present to advanced students from NATO countries an idea of the state of the art regarding problems of migration and fate of pollutants underground. The first session, on local phenomena and their impact on pollutant migration, stressed adsorption, ion exchange, and chemical reactions with soil components and especially soil organic matter and their effect on retention or retardation of contaminants of various kinds. Also discussed were experimental methods for determination of relevant equilibrium and kinetic properties. The second session, on global phenomena, centered on propagation in multicomponent systems with interactions. Emphasis was on the effects of different combinations of convective transport in single- and multiphase flow, diffusive transport, adsorption and ion exchange, and precipitation and dissolution. Most of the contributions were based on nonlinear wave theory including the coherence concept. Numerical modelling was also discussed in detail. The third session dealt with specific environmental problems including groundwater remediation and recharge, contamination from landfill operations, an example of risk analysis, and radionuclide contamination as a result of the Chernobyl accident. In addition, the program included fourteen short contributions from the audience, a poster session, a round-table discussion on the future of water re-use, and two general question-and-answer sessions to provide participants with opportunities to bring up problems of their special concern.

More information can be obtained from Dr. D. Petruzzelli, Istituto di Ricerca sulle Acque, Via F. De Blasio, 5, Zona Ind. C.A.P. 70123 Bari, Italy.

CHEMICAL TIME BOMBS

**European State-of-the-Art Conference on Delayed Effects of Chemicals in Soils and Sediments.
Veldhoven, Netherlands, September 2-5, 1992**

Over 70 participants from some 18 European countries assembled at the Koningshof Conference Centre, Veldhoven to bring together the many lines of investigation which have been discussed at the preceding chemical time bomb (CTB) workshops and regional conferences. The first session was essentially introductory with the organisers reporting to participants on the current situation.

Session 2 was devoted to discussions of the storage capacity controlling properties which influence the size and potential development of CTBs. The papers presented drew attention to small changes in pH which may lead to big changes in capacity, to the importance of the oxides and hydroxides in soils and the significance of organic matter in providing a storage facility for pollutants. The episodic erosion of soil at different scales provided loss of soil capacity as well as redistributing pollutants. The role of microbial population in the degradation of pollutants was discussed and the likelihood of even more toxic breakdown resulting eg. methyl mercury.

Examples of CTBs and their relationships with the capacity controlling factors was the theme of session 2. Papers and topics included were on phosphate leaching, pesticide residues, salinization, heavy metals, humic substances, pyrite, effect of land use change, dechlorination of chlorobenzene compounds, mine spoils and landfill problems. The fourth session provided a forum for a discussion of risk assessment and modelling which brought together regional estimates of

Personal Subscription to *Pedobiologia*

To all members of the International Society of Soil Science

Fischer Verlag Jena offers members of the Society a preferential subscription rate which amounts to **less than 30 % of the regular list price** of the journal **Pedobiologia**, i.e. 73 % discount. This price of **DM 94,00 annually** does not include postage.

Pedobiologia publishes papers in the field of soil biology (soil zoology and soil microbiology). The scope of this journal embraces fundamental and applied aspects of soil biology. Structural characteristics of the community of soil biota, interactions of soil organisms and the effect of organisms on soil processes are regarded as important subjects. The journal focuses on experimental studies; more theoretical or descriptive studies, papers on methods or techniques and review articles are also included.

Soil biology is a rapidly developing field of ecology and ecosystem studies. The analysis of biological structures, interactions, functions and processes in soils is fundamental for the understanding of natural and managed terrestrial ecosystems. Such understanding is a prerequisite for appropriate soil management.

After many successful years as Managing Editor of the Board of **Pedobiologia**, Dr. v. Törne has retired from his function. We are glad to make you acquainted with the **new Editors** M. Schaefer and J. Schauerermann, Göttingen, G. Weigmann, Berlin, and a **new Editorial Board**.

We would enjoy to receive your filled in form soon. Thank you very much!

Editors

M. Schaefer, Göttingen
J. Schauerermann, Göttingen
G. Weigmann, Berlin

Editorial Board

J.M. Anderson, Exeter
L. Beck, Karlsruhe
D.C. Coleman, Athens
J.P. Curry, Dublin
W. Dunger, Görlitz
C.A. Edwards, Columbus
V. Huhta, Jyväskylä
Ph. Lebrun, Louvain-la-Neuve
M. Luxton, Liverpool
D. Parkinson, Calgary
T.G. Pearce, Lancaster
J. Rusek, České Budějovice
T.R. Seastedt, Boulder
N.M. van Straalen, Amsterdam
Bella R. Striganova, Moskva
M.J. Swift, Nairobi
I.M. Szabó, Budapest
S.T. Williams, Liverpool
G.W. Yeates, Lower Hutt

Order Form

Please enter my personal subscription to **Pedobiologia** (1993), at the special reduced price of DM 94,00 plus postage for members of ISSS.

I assure to be a member of ISSS.

Name

Address

Date Signature

I am informed that I have the right to cancel this continuation order written to publishing house Gustav Fischer, Villengang 2, D-O-6900 Jena, within 8 days (date of post-stamp).

Date 2. Signature

Please send your order directly to our publishing house. If not terminated the subscription will be effective until recalled. If discontinuance is not given until October, 31 st the delivery of the journal will be continued.

chemical loads in the soils of the Rhine valley and examples of modelling the movement of contaminants through the soil and in the atmosphere. This session also included contributions on mapping soil vulnerability.

The meeting closed with a discussion of a proposal for a European CTB research programme and words of thanks and encouragement from a representative of the Dutch Ministry of Environment the Chairman for the Foundation for Ecodevelopment. The text of papers delivered at this conference will be published shortly in a conference proceedings.

E.M. Bridges.

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

The International Symposium on Soil Resilience and Sustainable Land Use was organized jointly by the Hungarian Academy of Sciences, The Commonwealth Bureau of Agriculture (CAB International) and the International Society of Soil Science in Budapest, Hungary between September 28 and October 2, 1992. The Symposium incorporated WEFSA II and served as the second Workshop on the Ecological Foundations of Sustainable Agriculture.

These were the aims of the Symposium:

1. 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 as a follow up of UNCED.

The Symposium meetings held in the Congress Hall of the Hungarian Academy of Sciences were inaugurated by the President of the Republic of Hungary, Dr. Arpad Goncz, in a brief inaugural ceremony. Prof. I. Lang presented the key note address. The Ecological Foundations of Sustainable Land Use - Hungarian Agriculture and the way to Sustainability. He drew attention to the global perspectives of sustainable land use issues and gave a vivid picture of the Hungarian scene and necessary steps to be taken in the future.

The oral presentations made during the symposium were grouped in five technical sessions:

- | | | |
|-----------|---|---|
| Session 1 | - | The Ecological Foundations of Sustainable Agriculture and Land Use |
| Session 2 | - | Land Management, Soil Resilience and Sustainable Agriculture |
| Session 3 | - | Biodiversity and Soil Resilience |
| Session 4 | - | Methodologies for the Study of Soil Resilience and Sustainable Land Use |
| Session 5 | - | Promoting Soil Resilience for Sustainable Land Use |

For Sessions 2 to 5 a working group was set up to hold in-depth discussions and prepare recommendations that were presented at the Plenary Session. Facilities were also provided during the Symposium for poster presentations within the Congress Hall.

The full proceedings including the recommendations will be edited by Prof. D.J. Greenland

(CABI) and Prof. I. Szabolcs (Hungarian Academy of Sciences) and published by CAB International.

The Symposium was attended by about 135 scientists, representing 35 countries and 18 International Organizations. The meetings had been meticulously planned and provided ample opportunities for discussions. During the Symposium, a sight-seeing tour and a visit of the Institute of Soil Science of the Hungarian Academy of Sciences were organized for the participants. The meeting and the recommendations that will be issued as its result, will be a mile-stone in our efforts to promote the sustainable use of land resources by focussing attention to the relevant research issues. Prof. Greenland and Prof. Szabolcs, who conceived the idea, who planned and organized these meetings successfully and who will edit the proceedings, deserve our sincere appreciation.

Dr. I.P. Abrol
Deputy Director General
Indian Council of
Agricultural Research
New Delhi

Recommendations of the Second Workshop on the Ecological Foundations of Sustainable Agriculture (WEFSA II)

held in Budapest, September 28 to October 2, 1992
Soil Resilience and Sustainable Land Use

The participants of the Symposium on Soil Resilience and Sustainable Land Use appreciate the concerns and recommendations of the United Nations Conference on Environment and Development - AGENDA 21.

They also recognise that the global growth in produce from the land over the last century has increased despite losses from land degradation, and that this increase has exceeded population growth in most areas.

The current challenge is to maintain this growth in the well-endowed areas, and to use the natural resilience of soils to establish sustainable reproduction in the unimproved and degraded systems in the face of continued population increase.

In this context the Symposium suggests that:

- 1) the global database of human-induced soil degradation developed by UNEP, ISSS and ISRIC, in collaboration with countries, should be complemented by a similar assessment of
 - areas with sustainable land management systems,
 - areas where degraded lands have been rehabilitated,
 - the resilience of the land resource base in different ecosystems;
- 2) to implement some of the recommendations of AGENDA 21 in the area of land resource planning and management, an assessment of current land use should be made at national and global levels.
This will require that:
 - 1) existing long-term trend monitoring programmes, data collection and experiments are maintained and documented, and new ones supported in key agro-ecological zones in developing countries;
 - 2) key species, biotic assemblages and processes contributing to soil resilience are identified;
 - 3) quantitative indicators and threshold values of those attributes which determine soil re

silience and sustainable land management are determined
and

- 4) appropriate practices for different soils in agro-ecological zones are identified to ensure land management is conducted on a sustainable basis.

Any research conducted should

- be developed in association with local communities and social scientists,
- build on past experience,
- use interdisciplinary teams,
- be targeted at specific agro-ecosystems

to obtain better information on land-use systems and changes in key soil properties related to soil resilience.

Soil resilience is a concept embracing many aspects discussed in the Symposium papers. A simplified definition covering the most important aspects is

“The soil’s ability to recover after degradation”.

All-CIS* Conference “Physics of soil and ecology problems”

7 - 10 October, 1992, Puschino, Moscow region, Russia

This conference was organized by the 1st Commission of Soil Physics of the Union of Soil Scientists of Russia and the Soil Science Department of the Moscow State University. Its aim was to discuss the modern problems in this branch of science, with special attention to

- (1) ecological problems, which are very diverse in the countries of the Commonwealth of Independent States, characteristic not only for industrial countries (pollution, transport of heavy metals, toxicants, pesticides etc.), but also for developing countries (desertification, erosion, etc.). Regarding these problems, mathematical models of forecasting, based on physics, must be included as an integral part of scientific investigation, in order to be able to choose the best solution.
- (2) the new role of soil physics at the present stage of development of soil science. This new role comprises investigation, prognosis of water and matter transports in ecosystems, assessment and forecasting of transformation of physical properties and processes in soils.

These new aspects of soil physics demand new methods, approaches, models and programmes.

65 soil scientists from different parts of Russia, from the Republics Uzbekistan, Byelorussia, Ukraine, Turkmenistan and Moldova took part in this conference. The conference consisted of three parts: plenary session, workshops and the exhibition “Apparatus, methods and computer programmes in physics of soil”.

The plenary session included 6 lectures: Prof. A.D. Voronin (MSU), Dr. A.G. Bondarev (Institute of Soil Science, Moscow), Prof. E.V. Shein (MSU), Dr. B.V. Jeleznij (Institute of Hydrotechnic and Melioration, Moscow), Prof. I.I. Sudnitsin (MSU) and Dr. A.M. Zeilinger (Moscow Land Reclamation Institute). The lectures and discussions showed that the following three items are of major importance:

- (1) the investigation and utilization of retention curves and unsaturated conductivity in mathematical models, as main hydrophysical characteristics;
- (2) the assessment of physical properties of soils, soil compaction and desaggregation;
- (3) the investigation, description and modelling of processes of water and matter transport through macropores in natural soils.

The last problem is of great interest, especially regarding the movement of pesticides, heavy metals etc.

* Commonwealth of Independent States

The exhibition, showing, among other things, pressure-plate apparatus, tensiometers, equipment for filtration and hydrodynamic dispersion investigations in soils, provoked many interesting discussions. Computer demonstrations played a major role in the conference. There were many interesting programs on forecasting water and matter in soils with different pore structure, programs for soil physical processes assessment and prognosis, programmes for students and post-graduate students.

The conference indicated new approaches and new methods. The great interest for questions of matter and water transport and transformation in ecosystems is an example for the direction into which soil physics is currently developing. We received many suggestions for the organizations of an international conference on soil physics in Russia, and we are firmly convinced that this task is going to be realized.

The transactions of the conference (in Russian language) are available from the Moscow State University, Soil Science Department (Prof. E.V. Shein)

Prof. Dr. E.V. Shein
Chairman of the Conference,
Head of Commission 1 (Soil Physics)
of the Union of Soil Scientists of Russia

20th Annual Conference of the Soil Science Society of Nigeria November 16 - 19, 1992, Ilorin, Nigeria

The 20th Annual Conference of the Soil Science Society of Nigeria was held at the Conference Centre of the University of Ilorin, Nigeria, from November 16 - 19, 1992. The Theme of the conference was "Land Use Planning and Soil Management for Sustainable Agriculture".

About 100 Soil Scientists and Agronomists from various institutions and establishments in the country attended the Conference. The Canadian Soil Science Society, our collaborator in the NICANSOL project, was represented at the conference. About 50 scientific papers were presented and discussed during the various technical sessions, which centered on soil characterisation and land use planning, land preparation methods, soil testing and soil fertility management for sustainable agriculture.

The Conference recognised the importance of proper land use and soil management techniques for sustaining agricultural productivity, especially, bearing in mind the fragile nature of our soils and the degradation resulting from poor management.

The conference noted the establishment of the National Agricultural Land Development Authority (NALDA) by the Federal Government with the basic objective of promoting the optimum use of available abundant land resources to improve the quality of rural life. It is hoped that NALDA will take advantage of the technical input of the Soil Science Society of Nigeria to ensure that available soil management and conservation technologies are adopted.

Recommendations:

In the light of the above, the Conference endorses the following recommendations for implementation by the various governments and other relevant agencies:

1. Proper land use planning and soil management should be the basis for establishing large scale agricultural and rural development projects. Following the indiscriminate land use and attendant degradation and pollution of our lands, the Conference recommends that appropriate steps be taken to develop a proper land use policy for Nigeria.

2. Selection of appropriate methods of bush/land clearing, tillage and other soil management practices that are consistent with the goals of sustainable agriculture should be pursued. In this connection more research is needed in developing appropriate farm machineries for our soils.
3. Efforts should be made to strengthen the land resources data bank existing in the Federal Department of Agricultural Land Resources for proper land use planning and management.
4. In view of the fact that sustainable agriculture cannot be maintained without the use of organic fertilizers, government needs to support the search for and encourage organic fertilizer use and management along with inorganic fertilizers in order to prevent a rapid decline of the productivity of our soils.
5. Considering the huge amount of money spent on fertilizer subsidy, the various levels of government should provide a soil testing service to farmers for efficient and economic fertilizer use.
6. Fertilizers are vital inputs in sustaining agricultural productivity. Government should evolve suitable and safe delivery systems to ensure that fertilizers reach the farmers in good time and at reasonable prices.
7. The Conference noted with dismay the poor and irregular funding of the National Fertilizer Centre whose functions are vital to efficient fertilizer use in this country. We therefore call *on the Federal Government* of adequately and regularly fund the centre to ensure that the centre carries out its functions for the benefit of our farmers.

Finally, the Conference expresses appreciation to the Kwara State Government and other agencies for the financial and material support received towards hosting the 20th Annual Conference of the Soil Science Society of Nigeria.

The 21st Annual Conference is scheduled for October, 1993 in Calabar, Nigeria.

Dr. V.O. Chude
Secretary of the Soil Science Society
of Nigeria
Zaria, Nigeria

3rd Annual Meeting of the Group of Analytical Laboratories (GOAL)

The third annual meeting of the Group of Analytical Laboratories (GOAL) was held at the Pacific Forestry Centre, Forestry Canada, Victoria, British Columbia on October 8 and 9, 1992. The GOAL is a Working Group of Forestry Canada's soil and plant analysis laboratories. It provides a forum for exchange of information on topics of mutual interest among analysts to improve laboratory operations.



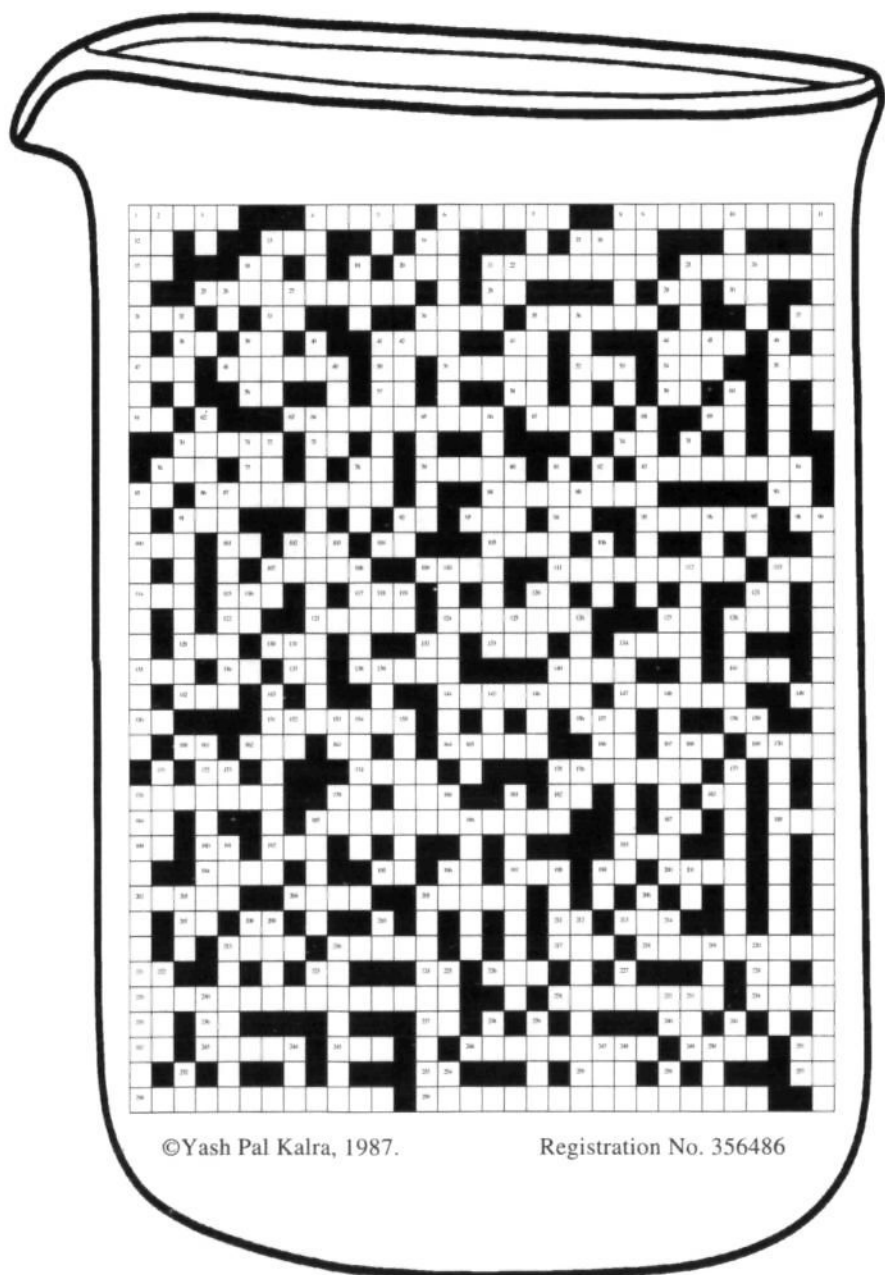
From left to right: Saman Amarakone, William J. Walker, James Robbins, Yash P. Kalra (Chair), Jo R. Ramakers and Ann Van Niekerk.

KALRA'S SOIL ANALYSIS CROSSWORD

Yash Pal Kalra

10920 - 35 Avenue

Edmonton, Alberta, Canada T6J 2V3



©Yash Pal Kalra, 1987.

Registration No. 356486

ACROSS

- 1 A specific gravity scale named after French chemist Antoine_____.
- 4 A porcelain crucible, with perforated bottom, introduced by American chemist Frank A. _____ in 1878.
- 6 A mature soil with an organic surface layer above a gray A layer resting on a dark illuvial horizon (Bh, Bhf, Bfh, or Bf).
- 8 The distance between two successive peaks of electromagnetic radiation.
- 12 The non-mineral fraction of soil: abbr.
- 13 One of the two types of humus on the forest floor named by Danish forester Müller in 1878.
- 14 Title: abbr.
- 15 Tris(hydroxymethyl)aminomethane, a primary standard base: acron.
- 17 Containing less alcohol than proof spirit: abbr.
- 18 This micronutrient can be determined colorimetrically as carbamate: sym.
- 20 Enzyme: suffix.
- 21 A substance that increases the rate of a chemical reaction but is not required for the stoichiometry of the reaction.
- 23 Flask/beaker.
- 25 A vessel used for measuring particle density of soils.
- 28 For example: abbr.
- 29 A colorless, odorless, and tasteless gaseous gas: sym
- 30 200 mg; abbr.
- 31 Contrary: abbr.
- 33 A logical division of a genus: abbr.
- 34 Consisting of diverse things: abbr.
- 35 A solution containing a weak acid HA and its conjugate base A⁻ or a weak base B and its conjugate acid BH⁺.
- 37 Z of an alkali metal: Roman number.
- 38 Tubing measurement: abbr.
- 39 Compounds of this element in soil are one of the principal causes of soil color: sym.
- 41 Glycerides C₃H₅(OOCR)₃ of saturated aliphatic monocarboxylic acids C_nH_{2n+1}COOH.
- 43 Liquid: abbr.
- 44 In this decay, an electron or positron is ejected from the nucleus of an atom thereby the nuclear charge is increased by one but the mass remains unchanged.
- 47 Antilog 2.47712: Roman number.
- 48 To reduce the strength.
- 50 A prefix or suffix.
- 51 In 1982 the ISSS Congress was held in this country.
- 52 Forest litter: horizon designation.
- 54 To put a question about.
- 55 Provides an estimate of organic matter in soil: abbr.
- 56 Racemic mixture (optically inactive): abbr.
- 57 The time required for the maximum concentration of solute to appear at the end of the column in chromatography: abbr.
- 58 A heavy radioactive gaseous element: sym.
- 59 The temperature in the laboratory: abbr.
- 61 A measure of the spread of analytical values: abbr.
- 63 Practical wisdom.
- 67 Eager.
- 69 The usual choice for carrier gas in GC: sym.
- 70 The dark-colored colloidal and chemically stable endproduct of the decomposition of soil organic matter.
- 73 The halogen in the VI period: sym.

- 74 An alkyl radical : abbr.
- 76 An overlying rock layer or stratum usually hard to penetrate.
- 77 First of the three elements discovered by Lecoq deBoisbaudran: sym.
- 78 The ratio of the velocity of light in the first of two media to its velocity in the second: abbr.
- 79 Oil: Fr.
- 83 Unit of wavelength (one ten-billionth of a meter) named after Swedish physicist Anders J. Ångström.
- 85 Cultivating a forest soil typically lowers this ratio: sym.
- 86 The analytical process of successively adding a standard solution until stoichiometric endpoint is reached.
- 88 Dr. Bentley was the president of the ISSS when the XI Congress was held in this city.
- 90 - and fro
- 91 Australia is the birthplace of this analytical technique that is based on the principle of light absorption by ground state atoms: abbr.
- 92 The most abundant metal in the earth's crust occurring always in combination: sym.
- 93 A mineral horizon characterized by a significant amount of exchangeable Na and an enrichment in silicate clay: horizon designation.
- 94 An alkaline-earth metal that is used as a releasing agent for the determination of Ca and Mg by AAS: sym.
- 95 Evaporate & condense.
- 98 The lightest metal: sym.
- 100 The least quantity possible: abbr.
- 101 Log (intensity of incident light/intensity of transmitted light): abbr.
- 102 Permanently wet land having low bearing strength.
- 104 Molecular weight of the chief acid of vinegar: Roman number.
- 105 A loose or crumbling calcareous deposit.
- 107 A chemist at the Waite Agricultural Research Institute, University of Adelaide, Australia, whose book "Soil and plant analysis" was published in 1942.
- 109 Proton acceptor.
- 111 An acid oxidant prepared by mixing HNO_3 and HCl in 1 : 3 ratio (v/v): 2 words.
- 113 One of the highest academic degrees conferred by a university: abbr.
- 114 An unctuous viscous combustible liquid.
- 115 Yellowish tinge of the color produced by phenolphthalein in 0.8 N NaOH solution: abbr.
- 117 A vetch (*Vicia ervilia*) grown as a forage plant.
- 120 It can be determined by the micro-diffusion technique: sym.
- 121 $\text{ppm} \times 10^{-4}$: abbr.
- 122 Potential difference: sym.
- 123 This procedure employs 0.5 M NaHCO_3 (pH 8.5) for extracting P.
- 124 One trained in chemistry.
- 127 Plow layer: horizon designation.
- 128 A provincial organization that assists workers who suffer disablement due to accidents occurring in the course of employment: abbr.
- 129 Title conferred on the atomic absorption pioneer.
- 130 An insoluble amorphous or crystalline solid: abbr.
- 132 Gas evolved when an aqueous mixture of KNO_2 and KI is treated with H_2SO_4 : sym.
- 133 To undergo decomposition from the action of bacteria or fungi.
- 134 One of the scientific societies of the Agricultural Institute of Canada, formally instituted in 1954: abbr.
- 135 Three: comb. form.
- 136 2.54 cm: abbr.
- 137 Chlorosis due to the deficiency of this element affects most strikingly the interveinal areas of the leaf: sym.
- 138 Saltpeter.

- 140 An extractant for simultaneous measurement of available Cu, Fe, Mn and Zn in soil; introduced by Lindsay and Norvell: abbr.
- 141 Resin code of a plastic used in Nalgene labware with a maximum use temperature of 120°C: abbr.
- 142 An association of individuals periodically meeting because of a common profession: abbr.
- 144 German chemist Ernst _____ was the inventor of this two-piece filtering funnel.
- 147 A coloring matter that turns red in acid solutions and blue in alkaline solutions.
- 149 *Radiation having a wavelength longer than that of X-rays but shorter than that of visible region:* abbr.
- 150 Absorbance or extinction of the medium: abbr.
- 151 A well-known professor at the University of Wisconsin, Madison whose book "Soil chemical analysis" was first printed in February 1958.
- 156 An organization dealing with radioisotopes: abbr.
- 158 Able to withstand unusual strain: abbr.
- 160 A large bag of coarse strong material that can be used to store and ship soil samples: abbr.
- 162 A natural soil aggregate that is a unit of soil structure: e.g., prism.
- 163 A plant hormone: abbr.
- 164 A soft friable limestone
- 166 Chloride salt of this element is used for gravimetric and turbidimetric determination of sulfate: sym.
- 167 A magnet is the heart of the instrument for these measurements: abbr.
- 169 To generate bubbles of vapor when heated.
- 172 Power supply: abbr.
- 174 Bryophytic plants.
- 175 A salt or ester of HNO_3 .
- 178 Particles (10^{-4} to 10^{-7} cm diam.) too small for resolution with an ordinary light microscope.
- 179 The purity of these chemicals is between A.R. and U.S.P. grades: abbr.
- 182 A term (scale 0 - 14) proposed in 1909 by Danish biochemist S.P.L. Soerensen: sym.
- 183 A physical technique utilizing a sorbent which can be a column, paper, or thin layer: abbr.
- 184 Either.
- 185 A back titration procedure for the determination of organic C: 2 words
- 187 A bivalent element discovered by Swedish scientist Mosander in 1839: sym.
- 188 Mountain: comb. form.
- 189 A direction: abbr.
- 190 A condition that exists at the free surface of a liquid by reason of intermolecular forces about the individual surface molecules: abbr.
- 192 A garden implement.
- 193 Commonly: abbr.
- 194 A readily available supply of nutrients.
- 195 A radioisotope which was tested in air and rain water samples in Canada following the fallout resulting from the meltdown at the Chernobyl nuclear reactor on 26 April, 1986: sym.
- 196 $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^{10} 5s^2 5p^6 4f^{14} 5d^{10} 6s^2 6p^6$ is the electronic configuration of this inert gas: sym.
- 197 A college in Guelph, Ontario: abbr.
- 199 Ca, Mg, K, and Na expressed as a percentage of CEC of a soil: abbr.
- 200 A fractional precipitation method of endpoint detection first proposed by F. _____ in 1856 for argentometric determination of Cl using K_2CrO_4 .
- 202 A New Zealander who published the first paper on the application of AAS for soil analysis in August 1958.
- 204 A textural class of soil that contains clay 40 %, sand < 45 % and silt < 40 %.
- 205 Magnesium sulfate heptahydrate; a.k.a. _____ salt.
- 207 In ICP analysis, sample solution is nebulized in a stream of this gas: sym.
- 208 2000 lb: abbr.

- 211 One of the two elements of the lanthanide series discovered by Austrian scientist von Welsbach in 1885: sym.
- 213 mg/kg: abbr.
- 215 Spectral color in the 500-570 nm range: Fr.
- 216 A device with perforations.
- 217 Soil: Fr.
- 218 Dimethylamino-azo-benzene o-carboxylic acid: 2 words.
- 221 A statistical term for comparing two sets of data: abbr.
- 223 This micronutrient is essential for the nitrate-reducing enzymes and is also needed for atmospheric N fixation by soil bacteria on legumes: sym.
- 224 This macronutrient can be determined as oxalate by titration with cerate of permanganate: sym.
- 226 Red digital display: abbr.
- 228 Life: comb. form.
- 229 The soil consistency limits first proposed by a Swedish soil scientist in 1911: 2 words.
- 231 This element, discovered by Swedish scientist Scheele in 1774, was found to be an essential micronutrient for plants 180 years later by Broyer et al. at the University of California, Berkeley.
- 234 The upper layer of earth that serves as a natural medium for plants.
- 235 This element occurs as rutile in granites, gneiss, and limestone: sym.
- 236 This divided by degrees of freedom gives variance: abbr.
- 237 A transition element with $Z=45$: sym.
- 240 Old symbol of an element that has a new symbol Nb.
- 242 Portion of the electromagnetic spectrum between visible and microwave radiation: abbr.
- 243 A dish with a loosely fitting overlapping cover named after German bacteriologist Julius R.
-
- 245 Water: Fr.
- 246 CaO.
- 249 Soil particles between 0.05 and 2.00 mm in diameter.
- 251 As much as is sufficient: abbr.
- 253 A unit for measuring the relative loudness of sounds: abbr.
- 255 The exponent that indicates the power to which a number is raised to produce a given number: abbr.
- 257 The second of the three elements discovered by Lecoq de Boisbaudran.
- 258 A technique closely related to turbidimetry.
- 259 Grams of a chemical required to prepare 1 N solution, 1 L: 2 words.

DOWN

- 1 A hydrometer procedure for particle-size analysis introduced by George John _____ in 1926.
- 2 SI base unit of electric current named after a French physicist: abbr.
- 3 Multiple of SI unit of energy: abbr.
- 4 0.035,273,96 Avoirdupois oz.
- 5 Unit of activity in radiation dosimetry (3.7×10^{10} disintegrations/sec.): abbr.
- 6 Reproducibility of analytical results.
- 7 A widely cultivated cereal grain which weighs 34 lb/bu.
- 8 Discarded as worthless.
- 9 Quantity: abbr.
- 10 Operated by electricity: abbr.
- 11 2,4-dichlorophenoxyacetic acid; e.g.
- 13 A soil color designation system based on hue, value, and chroma.

- 14 A typewritten paper: abbr.
- 15 A poisonous metallic element resembling Pb in physical properties; a constituent of some pesticides: sym.
- 16 SI derived unit of electric inductance: abbr.
- 18 mL: abbr.
- 19 Unit of heat equal to 1054.4 absolute joules: abbr.
- 20 Purest grade of reagents: abbr.
- 21 The total amount of exchangeable cations that a soil can adsorb: abbr.
- 22 A white precious metal (m.p. 962°C, b.p. 2212°C); sym.
- 23 Wooded land.
- 24 The initial high-energy product of photosynthesis that is composed of adenylic acid and two phosphate molecules: abbr.
- 26 The youth: abbr.
- 27 Containing more alcohol than proof spirit: abbr.
- 32 SI prefix for 10^{-12} (one trillionth part of): abbr.
- 34 After use, compressed gas cylinders should be labelled — and stored to await return to supplier: abbr.
- 35 A solution analyzed with the samples under exactly the same experimental conditions.
- 36 To separate out matter in suspension.
- 39 A highly sensitive detector that responds to almost all compounds except the inorganic gases, CS_2 , and COS: abbr.
- 40 30.48 cm: abbr.
- 41 0.025 M solution of 1,10-phenanthroline ferrous sulfate complex.
- 42 Opposite: prefix.
- 43 A tree of the genus Abies.
- 44 Unit of pressure equal to one million dynes/cm².
- 45 Vehicle: abbr.
- 46 Portion.
- 49 Test: abbr.
- 53 The AC spark used as excitation source in emission spectrographic analysis: abbr.
- 60 Residue of natural vegetation which has been affected by processes of anaerobic decomposition.
- 62 Editor of the Canadian Journal of Soil Science, 1986.
- 64 If you spill warm HNO_3 on your finger it becomes yellow due to this reaction characteristic of tyrosine and tryptophan.
- 65 A univalent aliphatic radical.
- 66 A flask named after German chemist Emil _____.
- 68 A reagent solution of known concentration.
- 70 2.47 acres (10^4 m²): abbr.
- 71 Pressing: abbr.
- 72 $meq Na / (meq Ca + meq Mg) / 2$: abbr.
- 75 A mineral horizon characterized by gray colors or prominent mottling or both: horizon designation.
- 76 A poisonous radical with a formula weight of 26.018: sym
- 78 5.5 yd.
- 80 A multidentate ligand (H_4Y) that has been used as a titrant for the last four decades: abbr.
- 81 Needed for research.
- 82 A noble metal (sp. gr. 21.4) discovered in South America by de Ulloa in 1735: sym.
- 84 SI base unit for the amount of substance: sym.
- 85 Makeup
- 87 This pH value of a soil is that of a buffer solution that shows no pH change on coming into contact with the soil.
- 89 The percentage of exchange saturation with this cation is called the degree of alkalization: sym.

- 91 The determination of one or more components of a substance.
- 92 One of the reference lines of a coordinate system: abbr.
- 96 S: comb. form.
- 97 Illuminance produced by a flux of one lumen over one square meter: abbr.
- 99 An emission spectrometric multielement analytical technique: 3 words.
- 102 In chemical reagents this element can be determined gravimetrically as dimethylglyoximate, oxide, oxyiodide, oxinate, phosphate, and pyrogallate: sym.
- 103 Soil: comb. form.
- 106 Soft wet earth.
- 107 Negative logarithm of the dissociation constant: sym.
- 108 Inert, insoluble polymer containing charged sites that hold ions by electrostatic attraction.
- 110 This acid is used as a reductant in the determination of P by the single-reagent method of Murphy and Riley (1962).
- 112 $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.
- 113 An industrial organic pollutant of lakes, reservoirs and streams; it has been linked to liver and nervous disorders, cancer, birth defects and skin diseases: abbr.
- 116 Pages: abbr.
- 118 An element discovered in 1925 by Noddack and Tacke; used in catalysts and thermocouples: sym.
- 119 A high ratio is a desirable feature in AAS instruments: abbr.
- 120 Binary digit: abbr.
- 121 Cash kept on hand for payment of minor items: abbr.
- 125 The deficiency of this element (at. wt. 95.94) causes Whiptail of cauliflower": sym.
- 126 Four: prefix.
- 127 Orpiment and realgar are two of the minerals in soil that are composed of S and this element that was discovered in the 13th century by Albertus Magnus: sym.
- 128 The effective potential of AAS in analytical chemistry was first demonstrated in early 1955 by this physicist at CSIRO, Melbourne, Australia.
- 131 A term introduced by Schofield, a British soil scientist for expressing water relationships in terms of free energy: sym.
- 132 An insert gaseous element used in electric lamps: sym.
- 134 Soil containing sufficient calcite and/or dolomite to effervesce visibly when treated with dil. HCl.
- 139 containing the same number of atoms of the same elements but differing in structural arrangement and properties: comb. form.
- 140 Do the opposite of: prefix.
- 143 A widely-used method for N developed in 1883 by Danish chemist Johan G.C.T. _____ at the Carlsberg Laboratory in Copenhagen
- 145 A mineral horizon where lime concentration is higher than in the unenriched parent material: horizon designation.
- 146 Nutrients listed on a fertilizer bag: sym.
- 148 A metallic element of the V family found in columbite.
- 152 Samples that have been allowed to reach equilibrium in moisture content with the surrounding atmosphere: abbr.
- 153 SI base unit for mass: sym.
- 154 Results of analysis are only as good as the _____.
- 155 An alkaline solution of $\text{K}_2[\text{HgI}_4]$ used for the colorimetric determination of NH_4^-N , first proposed by Julius _____ in 1856.
- 157 Na 1-(1-hydroxy-2-naphthylazo)-6-nitro-2-naphthol-4-sulfonate, first proposed as an indicator for EDTA titrations by Schwarzenbach of Switzerland in 1948: abbr.
- 159 Diary: abbr.
- 161 CaCO_3 .
- 165 Added to soil as a fungicide, usually in the form of organic complexes: sym.

- 168 An alkyl radical: abbr.
- 170 H_2SO_4 ; 3 words.
- 171 A method for soil bulk density.
- 173 Ketone group.
- 175 Three essential elements for plants; they were discovered by Rutherford (1772), Brandt (1669) and Davy (1807), respectively: sym.
- 176 A height dimension: abbr.
- 177 The measure of the agreement between a test value and the value accepted as true.
- 178 A major source of error in analysis.
- 179 Approximately: abbr.
- 180 Finely divided, partly decomposed organic material accumulated in peat soils in the transition zone between the peat and the underlying mineral material.
- 181 μ .
- 185 A society of laboratories that held its 2nd annual workshop "Impact of soil analysis" on 26 - 27 February 1986 in Calgary: acron.
- 186 German chemist Robert Wilhelm _____ who invented a gas burner with an air regulator.
- 191 20 cwt.
- 196 Offprint: abbr.
- 198 Receptacles for both sample and reference solutions for analysis by continuous-flow analyzers.
- 199 A horizon enriched with amorphous material, principally Fe and Al: horizon designation.
- 201 Chemical compound containing OH group: suffix.
- 203 A place equipped for soil analysis.
- 205 A conductor used to establish electrical contact with a nonmetallic part of a circuit.
- 206 Indicates speed of a centrifuge: abbr.
- 208 A flourimetric method for its determination is based on the formation of a complex with 2,3-diaminonaphthalene, its extraction into cyclohexane and measurement of its fluorescence: sym.
- 209 A woody perennial plant.
- 210 The heaviest of the three inert gases discovered by Ramsay and Traverse in 1898: sym.
- 212 $NaKC_4H_4O_6 \cdot 4H_2O$; a.k.a. _____ salt.
- 214 CH_3 : abbr.
- 215 Na_2EDTA .
- 216 A liquid capable of dissolving a substance.
- 219 10YR in the soil color 10YR 2/2.
- 220 Plural of a unit of mass: abbr.
- 222 Agitate.
- 223 A single atom of this element occupies the centre of the porphyrin ring system of the chlorophyll molecule: sym.
- 225 Residue left after combustible material is oxidized.
- 227 A radioactive metallic element (named for the native country of its discoverer Mme. Curie) that emits a He nucleus to form an isotope of Pb: sym.
- 230 The extent to which the adsorption complex of a soil is occupied by Na: abbr.
- 232 A rapid and sensitive technique based on LC principles that utilizes a conductivity detector: abbr.
- 233 Over 1,000 standard reference materials, e.g., foliage, estuarine and river sediment, argillaceous and dolomitic limestone, fertilizers, and water are available from this office of the U.S. Department of Commerce, Washington, DC: abbr.
- 238 A noble metal (sp.gr.19.32) that has 2, 8, 18, 32, 18 and 1 electrons in its K, L, M, N, O, and P orbits: sym.
- 239 Eight: comb. form.
- 241 Deficiency of this micronutrient in citrus causes "Little leaf" disease: sym.

- 244 Computer: abbr.
- 247 Atom, group of atoms, or compound carrying a positive or negative electric charge from lost or gained electron(s).
- 248 Key to running a lab efficiently: abbr.
- 250 Green, blue-green, and diatoms; e.g. abbr.
- 251 As much as suffices: abbr.
- 252 The temperature at which the vapor pressure of a liquid is equal to the external pressure: abbr.
- 254 SI derived unit for activity of radionuclides (replaces Ci): abbr.
- 256 A light-colored horizon which has given the podzol its name, for the word signifies in Russian ash-colored soil: horizon designation.

**INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE BEZIEHUNGEN**

GLOBAL BIODIVERSITY STRATEGY

The World Resources Institute, the World Conservation Union, and the United Nations Environment Programme have released their "Global Biodiversity Strategy", a detailed plan of 85 specific actions that governments and nongovernmental organizations can take to conserve natural resources. The 244-page plan was released on the eve of the June United Nations Conference on Environment and Development, commonly called the "Earth Summit", held in Rio de Janeiro, with the hopes that it might serve as a "basis for practical action" in the effort to conserve global biodiversity.

The strategy calls on all nations and peoples to initiate and sustain a Decade of Action to conserve the world's biodiversity. The report recommends the development of policies to address the fundamental need for sustainable development and to attack such international issues as world trading patterns and debt and technology transfer, as well as national issues of resource consumption and waste, land tenure, health, and education. The report concludes that the human capacity to live sustainably must be expanded through education, information, and training.

The 85 actions proposed in the Global Biodiversity Strategy support these broad goals and involve a diverse array of individuals and institutions, including international institutions, national governments, nongovernmental organizations, scientists, and the private sector.

Proposed international guidelines for action include: incorporation of biodiversity values into the criteria for choosing, designing, and evaluations of development of development assistance programs; improving the exchange and development of sustainable technologies; and strengthening crop and livestock genetic resource conservation.

Proposed national guidelines for action include: elimination of agricultural policies that promote excessive uniformity of crops and crop varieties or that encourage the overuse of chemical fertilizer and pesticides; strict regulation of the transfer of species and genetic resources and their release into the environment; reduction of resource consumption through recycling and conservation; and restoration of degraded lands to enhance productivity and biodiversity.

The strategy also proposes a number of local and regional actions that would foster sustainable development, including: increasing incentives for stewardship of lands and waters; improving regional capacity for maintaining and benefiting from crop and livestock diversity; and developing new methods and mechanisms at the bioregional level for dialogue, education, planning, and conflict resolution.

Additional information about the report can be obtained from World Resources Institute, 1709 New York Ave. NW, Washington DC 20806; 202/638-6300. Copies of the report can be purchased by calling 1-800-822-0504

**Monitoring Biodiversity in Tropical Forests,
Guidelines by Smithsonian Institution and MAB**

Paris - A set of guidelines for monitoring biological diversity in tropical forests has been published by UNESCO's Man and Biosphere Programme. "Long-term monitoring of biological diversity in tropical forest areas", a new issue in the series of MAB Digests is based on a study made by the Smithsonian Institution in Washington, D.C., and MAB.

The guidelines are based on methods developed and tested over four years by the Smithsonian

Institution/MAB Biological Diversity Programme and the Biological Diversity in Latin America Programme. The field work was done in the biosphere reserves of Beni in Bolivia, Manu Biosphere in Peru, Luquillo in Puerto Rico, the Virgin Islands National Park and the Great Smoky Mountains in the Southern Appalachian Biosphere Reserve in the United States.

What the projects did was set up small forest plots, of up to two hectares in size. These would contain 1200 to 1400 trees, which would be studied in detail. Surveying and inventorying the smaller plots gave the researchers a window on the diversity and conditions of larger areas of forest.

There is nothing new about establishing forest plots for monitoring; many have been set up over the past decades. However, the results from the work have not always measured up to the initial expectations. Failures have occurred because of lack of funding, advance planning and facilities for handling the volumes of data flowing in. If no shared methodology is established, data from different forest plots will not be easily comparable, and it will be difficult to establish a broader picture of what is happening.

With the modern computer-based technologies that have become available over recent years, overcoming these difficulties has become easier. Still, the inventorying and gathering of data are cumbersome and laborious processes, the new Digest stresses, adding that this makes careful advance planning all the more essential.

Inventorying and determining how species of trees grow, disappear, replace each other and reproduce make it possible for a manager to know where the most urgent priorities for conservation are, and how a forest is changing over time. Which species of trees are becoming rare, which are thriving? How are different species being affected by changes in the environment?

Apart from a detailed description of the methods for establishing and monitoring inventory plots in tropical forests, the Digest contains a case study from the Bisley Biodiversity plot in the Luquillo reserve in Puerto Rico. The one-hectare plot was hit by Hurricane Hugo on 19 September 1989, which killed 108 out of the 434 trees on it.

What made the plot interesting as a case study were the 50 years worth of intensive study in the region, that had preceded Hugo. In addition, the Bisley plot had been inventoried before the hurricane, which makes it possible to examine the effects of the hurricane over a long period of time.

Luquillo and the four other reserves that were used in the project belong to the international biosphere reserve network of UNESCO's Man and Biosphere Programme, which now contains 300 reserves in 76 countries. These reserves differ from classical parks as they work not only for conservation, but also include scientific research and rural development. The purpose of the new Digest is to help researchers and managers of biosphere reserves and protected areas set up monitoring plots, in order to improve the existing body of knowledge of biological diversity in the tropics.

This is of particular importance as the tropics are home to a large part of the world's biological diversity. The tropics and their forests are also the part of the world where this diversity is most threatened, from the pressures of population growth, poverty and the lack of technical and scientific infrastructure.

Although the total number of species in the world remains unknown, with estimations varying from 5 to 10 and even 80 millions, it is virtually certain that more than a million species will be lost over the next 25 years. The majority of these extinctions will occur in the tropics.

"Long-term monitoring of biological diversity in tropical forest areas" was edited by Francisco Dallmeier of the Smithsonian Institution. The issue is available on request from the MAB Secretariat, UNESCO, 1 rue Miollis, 75732 Paris cedex 15, France.

Association for Temperate Agroforestry (AFTA)

A new association has recently been formed to advance the knowledge and application of agroforestry as an integrated land-use approach to meet economic, social and environmental needs. The Association for Temperate Agroforestry (AFTA) focuses on temperate regions, emphasizing North America. The objectives are to:- Develop a temperate-zone network of agroforestry practitioners, technical specialists and researchers through a newsletter, membership directory and other information services.

- Promote applied interdisciplinary research to develop and test new or improved agroforestry technologies
 - Promote a policy environment conducive to agroforestry adoption
 - Promote public awareness and education about agroforestry.
- Bulletin readers working in temperate countries are invited to join. Membership in the association will include subscription to the AFTA newsletter, a membership directory, information about up-coming meetings and relevant agroforestry publications, and the opportunity to work with others to promote more productive and sustainable land management.

Information: Michael A Gold
Department of Forestry
Michigan State University
East Lansing, Michigan 48824, USA

Seeking Solutions for Fallow Land in the Humid Tropics

Each year, between 7,500,000 hectares of tropical forest are lost. The future and possible uses of the resulting fallow lands were discussed at a seminar held in Abidjan from 7 to 12 December, 1992, organized by Côte d'Ivoire with the support of UNESCO and the French research institute ORSTOM.

Over 100 participants from several African countries and from Europe compared experiences, the situations in their countries and possible solutions to the problem.

When tropical forest is cleared and the land abandoned, the original vegetation is replaced by an impenetrable thicket of brush. There are no trees big enough to cut, and the brush is often too thick to clear to use the land for farming. As the land is thus useful for neither farming or forestry, the soil is degraded, the productivity of the ecosystem reduced and the land loses its value.

A better use of these lands would be of great economic importance, considering the large areas involved in many countries, among them Côte d'Ivoire. Different countries in the humid tropics of Africa have varying situations and have tried various approaches to deal with their fallows.

The possibilities are numerous - clearing the fallow lands for agriculture, whether with perennial plants or short cycles, plantations of exotic trees, reconversion into grazing lands etc. While the technical methods are well in hand, the economic and social consequences are not always clear.

To get a clearer picture of the present situation, and the possibilities for the future, the participants decided to set up a regional project to study fallow lands in the different countries of Africa's humid tropics. Part of the research will be carried out in or near biosphere reserves in the participating countries, including Tai and Comoe in Côte d'Ivoire, Dja in Cameroon, Mount Nimba in Guinea, Mananara-Nord in Madagascar, Virunga and Luki in Zaire, and Basse Lobaye in the Central African Republic.

The task will be to compare the fallow land with the natural state, examine how the original vegetation is replaced by brush, which kinds of areas can recover naturally, which are too seriously damaged and what resources are available in the fallow lands.

The last question is of central importance to the future use of the fallows. Are they an important

source for firewood or building material, medicinal or edible plants, and game animals for the local communities? If this is the case, a total reconversion of the fallow lands may not be necessary or even wise.

Eventually, the work could give rise to systems of agroforestry or forest use that stem from the local ecosystems, using native species in combination with new ones.

The seminar in Abidjan continued the work of the UNESCO meeting on South-South cooperation held in Manaus, Brazil, in June 1992. Links will be set up with Latin America, mainly through student exchanges.

Source: Unescopresse, I/93

Alley Farming Network for Tropical Africa (AFNETA) Changes its Focus

AFNETA, the Alley Farming Network for Tropical Africa is a network of organisations and individuals in Africa, interested in research and development activities on alley farming and other sustainable agricultural systems. The network hopes to strengthen and expand research efforts in this field and to raise general awareness on the potentials of the alley farming concept within national institutes in Africa.

Since its start in 1989 the network has activities in the area of information exchange, training and collaborative research. AFNETAN, the networks' newsletter, plays an important role, but equally important are the various conferences and workshops, as well as follow-up exchange visits. Training is designed mainly to support the research programme. This can either be individual, degree-related, training or group training through short focussed courses.

The collaborative research programme of the network is undergoing a gradual, yet very significant change. In phase I, which is about to end, the research programme succeeded in establishing various on-station trials by member institutes. This phase has a strong biological and agronomic bias. The major objective is to assess the biophysical feasibility of the alley-farming system. It can be seen as an "experience building" phase for researchers to familiarise themselves with main principles and practices of the relatively new alley farming concept. In phase II, the network will reorient its research programme quite strongly towards developmental on-farm research activities, based not only on alley farming, but also including other identified promising agricultural systems. Key-elements in this research will include

- interdisciplinary team work
- farmer participatory research approach
- gender consideration and analysis
- balance and linkage between on station and on farm research
- linkages with non-governmental organisations (NGOs)
- activity-focussed training.

This shift in orientation confronts AFNETA with a major challenge. For example, good training activities have to be designed to support this shift and enable researchers to play their new role. AFNETA is looking for partners within the NGO community and other development institutions interested to collaborate in research activities. AFNETA believes that the task of improving or changing traditional farming practices to enhance productivity and sustainability can not be realised through isolated and independent research and development efforts.

Kwesi Atta-Krah, c/o IITA,
Oyo Road, PMB 5320, Ibadan Nigeria

EC WORKSHOP ON INDIGENOUS SOIL AND WATER CONSERVATION AND WATER HARVESTING TECHNIQUES

November 30 - December 3, 1991

In April 1991 a small group of researchers (Spyros Kyritsis, Agricultural University of Athens, Andrew Millington, University of Reading, Chris Reij, Free University, Amsterdam and Eric Roose, ORSTOM, Montpellier) met in Brussels with Mario Catizzone (DGXII G-4) to discuss possible EC involvement in indigenous soil and water conservation (SWC) and water harvesting (WH). In the light of this meeting a series of workshops was envisaged, each one focusing on one of four critical environments; namely the Mediterranean, Arid and Semi-Arid Areas, High Mountains, and the Humid Tropics.

A first result of that meeting was the organization of a workshop on traditional soil and water resource management in Mediterranean regions. The workshop took place on 30th November to 2nd December 1991 at Chania, Crete, hosted by the Mediterranean Agronomic Institute. 21 scientists from five Mediterranean countries (Greece, Italy, Spain, Portugal, Tunisia) and seven central-east-European countries (Belgium, Bulgaria, Denmark, France, Germany, Great Britain and the Netherlands) participated.

The workshop comprised the following elements:

1. The presentation of 16 papers, most of them covered local experience with traditional techniques in the Mediterranean belt.
2. A discussion on indigenous SWC/WH in the Mediterranean based on the papers given. The discussion centered around the extent of application of indigenous techniques for SWC/WH, their efficacy, the reasons for their partial abandonment, and means of improvement.
3. A general discussion on indigenous SWC/WH, outlining the major research themes in this area.
4. The establishment of an EC working group in this area.

The major goal of the Chania workshop was to put indigenous techniques for soil and water conservation and water harvesting (SWC/WH) more firmly on the map. Recent analyses of SWC projects carried out in Africa during the colonial period, as well as since independence, show that most of them have failed. Failure in this context means that the structures have neither been maintained nor expanded by the 'beneficiaries'. As a result many conservation structures, which often have been constructed at considerable cost, degrade within a few years. Of course, this scenario is not restricted to Africa, extensive flights of abandoned terraces are found around the Mediterranean (particularly in Greece and northern Morocco), and the centuries-old terrace agricultural system in Yemen is known to be breaking down.

It has recently become evident, however, that land users in many regions have developed their own techniques to cope with the loss of soil or to better control runoff water, or rehabilitated ancient systems. (For example, the Tunisian Government has been active in revitalising **jessour** systems in southern Tunisia.)

These techniques, which are being actively used, may hold the key to successful SWC and WH in the future.

Consequently, a first step, urgently needed in many countries, is an inventory and analysis of indigenous SWC and WH practices. Furthermore, the two major questions that need answering are: (i) Are indigenous SWC/WH techniques abandoned, or do they continue to be maintained or expanded?, and (ii) Why are these techniques abandoned in some circumstances, and maintained or expanded in others?

It must be clear from the onset that indigenous SWC/WH techniques should not be deified. In many cases they are no longer sufficiently efficient to be able to cope with the accelerated rates of

environmental degradation or the changing socio-economic circumstances. But this does not imply that they can no longer be of use. In a limited number of cases efforts have been made to use indigenous SWC/WH techniques as a starting point for new conservation programmes. Where this has been tried, results have often been quite spectacular.

Dieter Prinz,
University of Karlsruhe,
Germany

BIENNIAL REPORT OF ISSS TO CODATA*

Introduction

Since the founding of the International Society of Soil Science in 1924 one of the major objectives of the Society has been to promote the study of soil genesis, classification and survey. In 1960 at the International Soils Congress in Madison, Wisconsin USA the Society recommended that a Soil Resources Office be established by the UN Food and Agriculture Organization (FAO) in Rome and that this Office have the responsibility for the compilation of all existing soil survey material. FAO, through the World Soil Resources Office, assumed the responsibility not only of compiling the information, but also of preparing an integrated world soil map.

FAO, in collaboration with Unesco, over a period of twenty years, 1960 to 1980, produced the World Soil Map at a scale of 1 : 5M, the first internationally accepted inventory of world soil resources. It was published in ten volumes with nineteen map sheets and in four languages. The FAO/Unesco World Soil Map has made a valuable contribution, especially in developing countries, in providing the best inventory of soils available to them. However, in this era of global change concerns and increasing pressure on soil resources of the world, there is critical need for a more accurate and detailed soils and terrain map of the world.

In 1974 the ISSS established two new Working Groups to explore the applications of new technologies to the inventorying monitoring and management of soils resources. The Working Group on Soil Information Systems was charged with the responsibility of examining new data acquisition and analysis systems and of reporting on how this technology can be used effectively as a tool for the soil scientist in the storage, retrieval and analysis of soils data and in the dissemination of soils information.

The Working Group on Pedology and Remote Sensing was charged with the responsibility of examining the specifications and images of new aerospace sensors and to report on and advise how this new technology can be applied in the inventory and monitoring of soil resources.

An ISSS-sponsored workshop convened in the Netherlands in January 1986 to consider the feasibility of developing a digitized world soils map at a scale of 1 : 1M. As a followup to this Workshop, a proposal was prepared for "The Development of a World **SO**ils and **TER**rain Digital Database (SOTER) and submitted to the International Soils Congress in Hamburg, Germany in July 1986. The proposal was approved by the Congress and a SOTER Working Group was established to implement the SOTER Project.

Development of a SOTER Legend

A major task initially was to develop a universal legend and procedures manual which could be used to translate and correlate soils and terrain data from any classification system and from any country to a standard format for both digitized cartographic data and attribute or descriptive data. Since 1988 a SOTER Procedures Manual has been used and tested in the field in three countries in South America and two countries in North America. Many changes and improvements have been made in the Manual during this period of development and testing. In 1992 Version 5 of the Manual is being edited and will be published and distributed.

*CODATA = Committee on Data for Science and Technology, of the International Council of Scientific Unions (ICSU)

Inventorying World Soils and Terrain Resources

A serious obstacle to the development of a world digital database for any purpose is to identify and obtain in digital format the best and most cartographically accurate world map at the appropriate scale and projection to use as a base map for registration and overlay of all natural resources maps which are to be entered into the database. The SOTER Working Group, acting on the recommendations of the Joint Working Group (International Geographical Union and International Cartographic Association) on Environmental Atlases and Maps, adopted the Operational Navigation Charts (ONC), generated by the U.S. Defense Mapping Agency (DMA) at a scale of 1 : 1M, for use as the base map for SOTER. From the beginning of the SOTER Project to the present no digital format of the ONCs has been available. However, the DMA has announced that the digital format of all ONCs for the world will be available on CD-ROM at reasonable cost in 1992.

The long range objective of the SOTER Project is to utilize emerging information technologies to produce a world soils and terrain digital database containing digitized map unit boundaries and their attribute database, and supported by a file of chosen point data. In the implementation of the Project an attempt is being made to include in the database some minimum density of ground observation data. The database has the following characteristics:

- a. general average scale, or accuracy, of 1 : 1M;
- b. compatible with global databases of other environmental resources and features;
- c. amenable to updating and purging of obsolete and/or irrelevant data;
- d. accessible to a broad array of international, regional and national decision-makers and policy-makers;
- e. transferable to and useable by developing countries for national database development at larger scale (greater detail).

This is an exceedingly ambitious project, one which will require sustained, innovative effort over a period of years. The products from the SOTER Project have the potential for great benefit to a broad array of users throughout the world.

Progress Report on the SOTER Project

The coordination and management of the SOTER Project has been conducted at the International Soil Reference and Information Centre (ISRIC), Wageningen, The Netherlands, under the Project Manager, Dr. Roel Oldeman. The SOTER Working Group serves as a Technical Advisory and Support Committee to the Project.

Pilot area 1 of SOTER included an area of 250,000 sq km with portions in Argentina, Brazil and Uruguay. With collaborating soil scientists from these three countries, working with an external soil correlator, field and laboratory work was completed following the guidelines of the SOTER procedures manual. Integrated maps from the three countries and descriptive data were delivered to the coordinating organization (International Soil Reference and Information Centre) in the Netherlands. Funding for Pilot Area 1 was provided by the United Nations Environment Programme (UNEP) and was completed over a period from September 1987 to August 1990.

Pilot area 2 included an area of approximately 250,000 sq km in Montana USA and the provinces of Alberta and Saskatchewan, Canada. Cartographic and attribute data for this area were assembled, compiled, correlated and prepared for entry into the SOTER Database. This work was conducted in 1989 and completed by August 1990.

A special SOTER symposium was held during the International Soils Congress in Kyoto in August 1990. Experiences and results in the use, testing, and proposed revisions of the SOTER Procedures Manual were reported. At the time recommendations were made for future SOTER activities and for the improvement of the Procedures Manual.

During the past two years the SOTER Management has received many inquiries from around the world about and requests for the implementation of the SOTER Project and Database. Meetings,

discussions, exchanges of correspondence, and in some instances preparation of proposals to obtain supporting funds have involved the following countries or regions: Central America, East Africa, West Africa, Mediterranean, Central Europe, Middle East, Southeast Asia, China and possibly others.

Members of the SOTER Management and Working Group have made many presentations to national and international professional meetings, including CODATA and IGBP and to many potential funding agencies. Numerous scientific and technical papers related to SOTER have been published in a variety of journals.

Since the completion of Pilot Area 1, the agencies in Argentina, Brazil and Uruguay responsible for soil survey have been eager to complete the compilation and correlation of all land areas in their countries for inclusion in the uniform and standard SOTER Database. To promote this effort, the SOTER Project sponsored a Workshop, with emphasis on geographic information system techniques, in Montevideo in March 1992. However, none of these countries has the resources to support the concentrated and intense effort which will be required to complete the SOTER Database for their countries in the next few years.

An ad hoc group of experts (30 soil scientists from around the world) was invited by UNEP to a Workshop in Nairobi in February 1992 to consider the issue of the accomplishments of SOTER to date, the current status of SOTER, and future prospects for a World Soils and Terrain Digital Database. Several positive issues emerged from the Nairobi Workshop:

a. It was the consensus of Workshop participants that Version 5 of the SOTER Procedures Manual should be edited, published and distributed as soon as possible, and that this new Version, a product of four years of field use, testing and revision, is now ready for operational use around the world in the implementation of the SOTER Database.

b. With certain revisions to be included in Version 5 of the SOTER Procedures Manual, FAO has accepted the Manual for official use and distribution by FAO.

c. It was recommended and accepted by consensus of Workshop participants that the SOTER Project concentrate its efforts during the next three to five years and focus on completing the SOTER Database for South America, with the possibility of expansion to complete the entire Western Hemisphere during this period. This special focus on the Western Hemisphere does not in any way rule out SOTER Project activities in other parts of the world if funding sources become available to support those activities.

d. The Workshop reiterated the critical need to produce from the current, though limited, SOTER Database interpretive maps, tabular data and other products for use by decision-makers and policy-makers who can assess the utility of products derived from a soils and terrain digital database at a scale of 1 : 1M. It is of utmost importance that the utility of the SOTER Database be clearly demonstrated as soon as possible.

e. The Workshop participants exchanged ideas on the critical need for adequate financial support to expand and complete the SOTER Database for all terrestrial ecosystems of the Earth system. Many suggestions emerged concerning potential funding sources for SOTER. However, the Workshop adjourned amidst the dilemma of having inadequate funds to market a remarkable idea whose time has come.

Global Assessment of Soil Degradation (GLASOD)

An essential and important component of the UNEP-funded Phase 1 of the SOTER Project was the production of a global soil degradation map at a scale of 1 : 10M to be completed within three years. After guidelines were developed for preparation of a global map on the status of human-induced soil degradation, an "expert system" approach was used where the cooperation of a large number of soil scientists through the world was recruited to assist with the project.

They were asked to provide their expert opinion on soil degradation in their particular geographic region.

Using the maps provided by these regional experts a final map product was prepared by ISRIC and the Winand Staring Centre for Integrated Land, Soil and Water Resource Research in Wageningen, The Netherlands, with technical support provided by FAO and the International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede, The Netherlands.

The maps were printed in three sheets with Mercator Projection. A companion bulletin entitled "World Map of the Status of Human-Induced Soil Degradation" was published. The maps were unveiled at the International Soils Congress in Kyoto in August 1990; publication and initial distribution was in October 1990.

Soils as an Agent in Global Change

One of the major constraints to quantizing rates of global change is the dearth of global data sets. Soils are an important component of the Earth system, and soil processes are intimately related to atmospheric and hydrologic processes. In order to understand the role of soils as an agent in global change or as a source and sink of greenhouse gases or any other element or molecular substance, the student of the Earth system needs a credible global database of soil resources. The capacity of soils as a source and sink of carbon dioxide, for example, may vary several orders of magnitude, depending on the environmental conditions and the properties of the soils.

Increasingly the SOTER Database is perceived as one of many essential components of a global database which is required for modeling the Earth system and the many complex processes involved in global change.

Other ISSS Activities of Interest to CODATA.

Specific professional interests and activities of members of ISSS are organized under seven commissions, four sub-commissions and 15 technical working groups. The general mission of each of these organizational entities is to improve the generation and depth of our knowledge and understanding of the Earth's soil resources and processes, as these relate to sustainable production of food, feed and fiber, and to the conservation and management of these resources.

Although the activities of many of the other sub-commissions and working groups would be appropriate to report to CODATA, the author of this report has chosen to present a brief description of the activities of those working groups with which he is more knowledgeable and those working groups which struggle with a great variety of spatial/attribute data handling, processing and analysis issues.

Marion F. Baumgardner, U.S.A.

IAWQ replaces IAWPRC

International Association on Water Quality (IAWQ) is the new name chosen by IAWPRC - International Association on Water Pollution Research and Control.

Behind the change lies IAWQ's recognition of the need to expand on its traditional strengths in waste water treatment technologies. The increasingly diffuse nature of water pollution has emphasised the need for different control strategies and a more holistic approach.

The effect of this has broadened the Association's interests to cover overall water quality issues worldwide - hence the new name International Association on Water Quality (IAWQ).

INTERNATIONAL HUMIC SUBSTANCES SOCIETY

Standard Humic Substances

A standard and reference collection of **Humic** and **Fulvic Acid** from **soil, coal and water** is maintained by IHSS for use in scientific research. For price lists and information about the collection please contact:

Professor Patrick MacCarthy
Chairman, Standard and Reference Collection
IHSS
Department of Chemistry and Geochemistry
Colorado School of Mines
Golden, Colorado 80401
USA

SOIL RESEARCHERS POOL THEIR EXPERIENCES

RISTROP Network consists of the TropSoils Program (US Agency for International Development) and 43 national research institutions in 15 Latin-American countries. The common objective of the network participants is the creation and adoption of improved soil management technologies in acid tropical soils and dissemination of acquired information among collaborators throughout Latin America. The initiative for the network was taken by the TropSoils Program, which invited research institutions to an inaugural workshop where the research agenda, research methodologies, basic infrastructure and operational guidelines for the network were set. During this workshop, more than half of the participants chose trials with low external inputs as their top priority. Trials were chosen for each network member and a central coordinator was appointed (North Carolina State University). Coordination of the network, information exchange and support services are funded by the USAID Science and Technology Bureau. Internal networking takes place through smaller workshops (e.g. if specific experiments need readjustment), through annual monitoring tours of the coordinator combined with technical support and exchange of information and through the Progress Report Workshop (where information is exchanged, progress is evaluated and where the research agenda is modified and updated). The proceedings of workshops also function as a networking tool. External networking is done through strong working linkages with CIMMYT's Strategic Agronomic Trials Network. Based on the RISTROP experience, the following recommendations are formulated: a long-term commitment of the network members is needed, experiments must be sufficiently flexible to incorporate adjustments, funding must be sustainable and collective meetings of network members are an essential mechanism for fostering partnership in network activities.

Alvaro Cordero, Floria Bertsch and T.Jot Smyth, TropSoils Research Program, Soil Science Department, North Carolina State University, Raleigh NC 27695-7619 USA

From: ILEIA NEWSLETTER, July 1992

STRING

STRING: Generation of a Cartographic and Bibliographic Information System of Soils and Terrain Resources Data for the Region of the Sahara and Sahel Observatory
Name: STRING (Soil and Terrain Resources Information Network Generation)
Executed by: International Soil Reference and Information Centre (ISRIC)
Duration: One year, starting June 1992
Funded by: Caisse Centrale de Coopération Economique (CCCE), France

STRING is a project carried out for the Sahara and Sahel Observatory (L'Observatoire du Sahara et du Sahel - OSS). It is concerned with the systematic inventory of existing cartographic and bibliographic documentation on soils and terrain resources, including organizational details of the national and regional institutions responsible for resources inventories. The twenty African states involved are Algeria, Burkina Faso, Cape-Verde, Chad, Djibouti, Egypt, Ethiopia, Gambia, Guinea-Bissau, Kenya, Libya, Mali, Morocco, Mauritania, Niger, Senegal, Somalia, Sudan, Tunisia and Uganda, and their regional and international organizations. External partners are (inter)national donor agencies, United Nations organizations and all institutions having relations with partners within the region.

STRING will collect information about SOIL AND TERRAIN RESOURCES, including also selected data on land use and climate.

The OBJECTIVE of STRING is to strengthen communication between and among politicians, development officers and scientists in the region and to enable a more efficient use of existing cartographic and bibliographic information about soils and terrain resources.

The main OUTPUTS will be:

- o an orderly arrangement of soils and terrain resources data for the OSS region, in the form of a systematic, open-ended, computerized information system with access for a wide array of users,
- o the basis of an operational network of institutions and individual specialists,
- o a comprehensive report on the inventory of information with hard copies in English and French.

The INFORMATION SYSTEM will, both at the national and international level,

- o provide an information service for regional and national planning,
- o directly benefit agricultural research agencies, soil and land conservation agencies, as well as agencies involved in nature conservation.
- o help to reveal gaps in subject information and in cartographic coverage and to identify problems with compatibility of cartographic materials between countries.

The STRING NETWORK will

- o facilitate exchange of information between institutions at all levels,
- o strengthen institutional capacity through mutual transfer of knowledge.

Ultimately, efforts may lead to joint and harmonized efforts in conservation of nature and safeguarding sustainable food productivity.

ISRIC would be very pleased if it could get into contact with potential cooperating persons and institutes in the region and elsewhere.

Please contact:

Paul J.M. Mulder, Project Coordinator OSS-STRING
ISRIC, P.O.Box 353, 6700 AJ Wageningen, The Netherlands.
Tel (31) 8370 19063; Fax (31) 8370 24460; Tlx via 45888,
intas, nl; E-mail ISRIC@RCL.WAU.NL

TWAS/CSIR Fellowships for Research and Training at CSIR Laboratories in India

The Third World Academy of Sciences (TWAS) and the Council of Scientific & Industrial Research (CSIR) of India have decided to institute fellowships to research scientists of proven ability from developing countries (other than India) to work in the laboratories of the CSIR in India. The following fellowships will be offered from 1992.

1. Fellowships for Postdoctoral Research (for 3 - 12 months)

2. Fellowships for Postgraduate Studies for Ph.D. (for 2 - 3 years)

For research towards a Ph.D. degree the minimum qualification required is a Master's degree in Science or Technology. Candidates should be a regular employee holding a research assignment, registered for Ph.D. either in their home country or in India.

The schemes provide an opportunity for pursuing research, learning new techniques or undertaking some other form of training by working with colleagues in research laboratories of CSIR in India, and also promoting the transfer of advanced scientific research results from these institutions to the rest of the Third World through the establishment of institutional links and long term cooperation. Under these schemes, TWAS will provide travel support, while the CSIR will take care of local living expenses in India.

A CSIR handbook listing all CSIR institutions and their research activities is available from both the TWAS Secretariat in Italy, as well as the CSIR Office of International Scientific Collaboration, in India at the addresses given below. Fellowships will be awarded in various disciplines of science and technology e.g. Physical, Chemical, Biological, Engineering and Information Science in which there are recognized expertise in the CSIR institutions.

Applications

Applications should be made out on CSIR/TWAS forms and duplicate copies sent to both the Office of the Executive Secretary, at TWAS in Trieste, Italy and the Adviser at the International Scientific Collaboration Office, CSIR in New Delhi, India.

The deadline for receipt of all requests will be 1 June each year. Applications will be reviewed and evaluated by the TWAS office in collaboration with CSIR and the host institutions. Special consideration will be given to visits which can be expected to forge future links of collaboration between institutions in developing countries and the host institutions in India.

For further information and application forms please contact:

The Third World Academy of Science (TWAS)

c/o International Centre for Theoretical Physics (ICTP)

P.O.Box 586-34136 Trieste-Italy Phone: (int+3940) 2240387 Fax: (int+3940) 224559 or (int+3940) 224163

Telex: 460392 ICTP I

E-Mail: twas@itsictp.bitnet

or

The Council of Scientific & Industrial Research (CSIR)

Adviser, International Scientific Collaboration

Rafi Marg - New Delhi 110001 - India

Phone: (int+9111) 371-4788

Fax: (int+9111) 371-0618

Telex: 31-65202 / 66147

**APPOINTMENTS, HONOURS
NOMINATIONS, DISTINCTIONS
ERNENNUNGEN, AUSZEICHNUNGEN**

Paul Douglas Seward has been appointed TSBF Executive Officer, and took up his new functions in the TSBF Coordinating Unit in UNESCO-ROSTA in Nairobi in early 1992.

Martinus Th. (Rien) van Genuchten was selected as a fellow of the American Geophysical Union (AGU) and was honoured at the AGU fall meetings, 7 to 11 Dec. 1992, in San Francisco. Dr. van Genuchten is a research leader at the U.S. Salinity Lab in Riverside, CA, and an adjunct professor in the Department of Soil and Environmental Sciences at the University of California, Riverside.

Prof. Eduardo Hugo Rapoport (Argentina) has received the TWAS (Third World Academy of Sciences) 1990 Biology Award for his fundamental work in soil biology, in the fields of ecology of invasions and urban ecology, and particularly for his enlightening contributions to biogeography and seminal work on the theory of spatial distribution of species.

Prof. Dr. Winfried E.H. Blum, Secretary-General of ISSS, received the Doctor honoris causa from the Federal University of Paraná, Curitiba/Brazil in February 1992.

Emeritus Professor John McCraw was honoured in the Queen's Birthday list with the award of an MBE for services to New Zealand education, Earth Sciences, and community service.

Professor McCraw (DSc, Victoria) was appointed Foundation Professor of Earth Sciences in 1969, and held that position until his retirement in 1988. He made significant contributions to national and international academic and professional bodies, and was a member of the first Soil Bureau expedition to Antarctica, which undertook the first soil survey of the area. In 1979 he was appointed a member of the Commission of Inquiry into the Abbotsford Landslide. Since his retirement, Professor McCraw has continued an active interest in research, focusing on the history of mining in the Central Otago area.

Dr. Steve P. McGrath was awarded the first Environment Medal of the Society of Chemical Industry in 1992. This silver medal was awarded by the President of the SCI, Sir Graham Hills FRSE, at the Annual General Meeting of the Society at its London headquarters. The award recognised his work on the effects of heavy metals and organic pollutants on soils and plants; on the potential of certain 'hyperaccumulator' plants to decontaminate soils; and for the part he played in the successful management and publication of 'The Soil Geochemical Atlas of England and Wales'.

Dr. W.W. Emerson has received the J.A. Prescott Medal of Soil Science 1992.

Dr. Les Molloy obtained the J.K. Taylor Obe Gold Medal 1992.

The Australian Society of Soil Science has three new Honorary Members for Life:

Mr. F.R. Gibbons, Dr. J. Loveday and Em.Prof. J.P. Quirk.

IN MEMORIAM

IN MEMORIAM JAN DE PLOEY

Address presented at the Opening Ceremony of the ESSC-Congress at Silsoe

It is only a few days since we have got the sad news. Jan de Ploey is dead. At the beginning of its first congress, our young Society has to mourn the passing of its founder and first President. And many of us mourn the loss of a good friend.

On November 4th, 1988, 18 experts in soil conservation, representing Portugal, Spain, Italy, Greece, France, West Germany, Great Britain, Denmark, the Netherlands and Belgium founded, in Leuven (Belgium), the European Society for Soil Conservation, the ESSC.

Why the Society? The answer was given by Jan de Ploey in the foreword of our first newsletter: "Soil conservation cannot be the sake of academics only. They know already something about the nature of soil resources and the theory of good management. But a major question is how to persuade the large public to manage and use those resources better. Concerning soil fertility, combating physical and chemical degradation of soils including soil erosion is the concern of all Europeans. Therefore we also have to analyze and compare scenarios beyond and across the borders of our small community and of the ESSC, a Society, which has to promote exchange of information and comparative studies."

The aim was, and it is, to make the step from soil degradation to soil conservation also in Europe. This necessity has been understood all over the continent. From November 1988 to February 1989 more than 160 individual and institutional memberships have been declared. Now we count about 550 members in 33 countries inside and outside Europe. "In fact, it resulted from a general consciousness of soil degradation being a reality on our continent and of the awareness of a necessary conservation policy to be developed in Europe within the next decades." (de Ploey, newsletter 1, 1989).

Three and half a year after the founding we can ascertain that it was the right time to make this step. Jan de Ploey registered that, and he took the initiative for its realization. I remember that we met in May 1988 in Freising-Weihestephan, where a seminar on soil conservation in the prealpine and alpine region of Germany was held. We discussed the problems of formulating a European conservation policy across the national borders. Later, in November 1988, he invited a group of soil conservationists to Leuven, and the ESSC was founded.

Since great political changes have occurred in Eastern Europe, the ESSC has begun to build up a bridge to our colleagues in those countries. Many letters have been written, and discussions with some leading scientists in the field of soil conservation have taken place in Hungary and Russia. In November 1991 the President and three members of the Executive Committee visited Russia to give lectures at the Moscow State University and at the Institute of Agronomy and Soil Conservation in Kursk. We registered broad interest in their joining the ESSC and we expect the incorporation of Eastern European Countries in the near future. We now register 87 members of ESSC in Eastern Europe, 59 of them in the former USSR.

Our Society has three bodies: The General Meeting of all members, the Council, and the Executive Committee. The General Meeting is convened on the occasion of ESSC-Congresses. It receives the business report of the Council, and elects the members of the Council for four years. The Council consists of 20 - 25 members of the affiliated countries and decides all major questions of ESSC-policy. The Executive Committee has to execute the decisions of the Council and to organize the current work of the Society. From 1989 to 1991 seven meetings of the Council and the Executive Committee took place, in Barcelona, Leuven, Lisboa, Thessaloniki, Triër and Zürich. And now, during this first ESSC-Congress, the first General Meeting with elections of the Council-members will take place.

The following seminars and conferences were organized by the Society during the past three years:

1. A seminar on "Soil Degradation and Soil Conservation in Switzerland and in Europe", 1989 in Zürich/Switzerland
2. A seminar on "Soil Erosion, Soil Pollution and Conservation practices" 1990 in Thessaloniki/Greece.
3. A seminar on "Interaction between Agricultural Systems and Soil Conservation in the Mediterranean Belt" 1990 in Oeiras near Lisboa/Portugal.
4. A seminar on "Combating Soil Erosion in Vineyards" 1991 in Trier/Germany
5. A conference on "Soil Erosion and Degradation as a Consequence of Forest Fires" 1991 in Barcelona and Valencia/Spain
6. Number six is this Congress

The subjects of these conferences show a broad and multidisciplinary base. This was the intent of the founders, which was expressed by Jan de Ploey in 1989: "... the wish of the founders of the ESSC is to come to a multidisciplinary union and to bring together people and professions that are all involved in the effort to preserve our lands and soils: farmers and agricultural consultants, geoscientists and ecologists, foresters and land reclamation and improvement specialists, industries and governmental institutions, teachers and journalists. Scientists may have to discuss the extent to which man is really responsible for the actual situation and they have to promulgate possible proper solutions. But there will be no conservation issue if the public and the politicians are not convinced of their arguments and of the goals they propose. There the ESSC can play an important role to 'sell good ideas'."

Does ESSC already play this role? Only the first step has been made in this direction. The ESSC has made contact with the Steering Group of the EG in Strassbourg, which has to develop recommendations for the soil conservation policy of the European Community. We are in the process of informing this Group of the possibilities which ESSC can offer for fruitful collaboration.

After a period of only three and a half years the ESSC has grown into a powerful organization. We have found great interest among scientists, teachers and students, who are involved in soil conservation work all over Europe - Pedologists, Geographers, Geologists, Chemists, Biologists, Engineers and others. But regarding the goal to attract the attention of farmers, of the decision makers and of the general public we are still at the beginning.

The President has reflected upon this problem in the newsletters 1 and 4/1990: "Yet the most difficult task will be to bridge between our academic circles and the large public and to "sell good ideas" to those who really are responsible for the soil conservation policies. Maybe we have to go first through a certain period of consolidation and of gathering information on the nature of soil degradation problems in Europe, before we will be able to formulate the right way, "the ideas" we want to transmit by priority to the European Community. It will be one of the main tasks of our Council to reflect more on these matters in the near future ... We appeal to all ESSC members to contribute in that sense with patient endeavour."

We have now lost this first President of our Society, a scientist of international reputation, a firm character full of activity and of patient endeavour. Only a few days after his death it seems to be too early to cover the full dimension of his immense merits for our Society. This task needs a time of reflection. It is owing to him that the ESSC was founded and that this Society has had success. So we may consider this report on the history and the aims of our Society as a first report of his *merits too*.

We mourn the passing of a good President and a friend. The way to keep him in our memory is to contribute to the prosperity of our Society in his sense - with patient endeavour.

Prof. G. Richter
Universität Trier

IN MEMORIAM PROF. DR. MIKKO SILLANPÄÄ

(1925 - 1992)

Mikko Sillanpää, emeritus professor of the Institute of Soil Science of the Agricultural Research Centre of Finland, passed away on November 12th, 1992.

He graduated from the University of Helsinki in 1950, studied soil science at the University of Wisconsin and obtained a M.Sc. degree in 1953. At the Agricultural Research Centre of Finland he started to investigate soil hydraulic conductivity and developed methods for its determination. His dissertation was based on these studies and he received the degree of Doctor of Agriculture and Forestry in 1956 from the University of Helsinki.



Professor Sillanpää started his career at the Institute of Soil Science studying soil macro- and micronutrients. He participated in the development of practical applications of the acid ammoniumacetate soil testing method used in Finland. Later he greatly promoted the use of the acid ammoniumacetate-EDTA-method, developed at his Institute to test soils for plant available micronutrients.

He actively participated in the development of agricultural soil mapping (scale 1 : 20 000) in Finland. On these maps soil types are classified according to texture and organic matter content. Sillanpää also took part in negotiations which resulted in collaborative soil mapping together with the Agricultural Research Centre, the Geological Survey, the Forest Research Institute and the National Board of Survey. Today one third of Finland is covered by these maps, based on the above mentioned principles. He also contributed to the production of the Soil Map of Europe and the Soil Map of the World.

Professor Sillanpää obtained his greatest achievements with his international trace element studies which he conducted in cooperation with FAO and FINNIDA. In his first Soils Bulletin, which was No 17, he stated that the greatest difficulty encountered in micronutrient research is the multitude of methodologies in different countries.

To overcome this problem he decided to conduct a worldwide study. 30 countries were involved, most of them developing countries. The report on this study, Soils Bulletin 48, contains an enormous amount of data. In this book he also introduced the use of factors based on pH, CEC or O.M. to correct soil test results and thus to improve the correlation with plant micronutrient contents. Soils Bulletin 48 is a basic soil micronutrient document.

Based on the results of this study, Professor Sillanpää organized micronutrient fertilization experiments in 15 countries. Soils Bulletin 63 reports the results of this investigation. Zinc appeared to be the most critical micronutrient globally. In one experiment with NPK-fertilization, rice did not grow at all, but when zinc was applied, yield was normal.

He organized The European Cooperative Network on Trace Elements, which has substantially increased the quality and understanding of research in this area, in Europe. The cooperation involved concerns not only soils and plants but also animal feed and human food.

Professor Sillanpää was also interested in heavy metals occurring as pollutants in the environment. Using samples collected during the worldwide micronutrient study he investigated the occurrence of cadmium and lead in different countries. He continued this work after his retirement and just before his death he finished his fifth Soil Bulletin (No 65), which also includes results concerning selenium and cobalt.

He was a member of ISSS since 1958. During this time he attended several ISSS congresses and for 8 years he was the chairman of the Finnish Society of Soil Science. He also participated in the activities of many Finnish scientific societies and published more than 100 scientific papers.

Among his colleagues Professor Dr. Mikko Sillanpää was estimated as a noble and respectable man. In his own work he was thorough and determined. He also taught the scientists he directed to be critical. From the foundation he established for young scientists, grants have been awarded since 1989.

Finnish Society of Soil Science

IN MEMORIAM RENE J. TAVERNIER

Em. Prof. Dr. René J. TAVERNIER died on November 19, 1992. He was Emeritus Professor of the State University of Ghent, Belgium, Honorary Member of the International Society of Soil Science and Honorary Secretary-General of the Belgian Society of Soil Science.

Prof. Tavernier was born on August 26, 1914 in Nevele (Belgium). In 1935, after brilliant studies, he obtained the diploma "Licentiate" in geology, at the University of Ghent; in 1941 he obtained the Ph.D. degree. Mainly interested in research related to Quaternary Geology he became "Assistant" and later "Workleader" at the Geological Institute of the State University of Ghent. Meanwhile he studied soils in Wageningen (The Netherlands) under the late Prof. Edelman. In September 1944 he was appointed "Docent" (Associate Professor) and in 1948 he became Professor of Physical Geography and Regional Pedology.

His early work was mainly on periglacial morphology and sedimentary petrology. He was the first one to recognize the occurrence of fossil periglacial features - such as cryoturbation - in Belgium. His interests and main activities had by then shifted towards soil survey and soil classification. Within the activities of the Committee for the Elaboration of the Soil and Vegetation Map of Belgium he was assigned, in 1947, the responsibility of the Soil Survey Section of the University of Ghent. From 1950 on he assumed the responsibility of the Soil Survey of Belgium which by now has been completed. He was one of the founders of the Belgian Society of Soil Science and acted as its Secretary-General from 1950 to 1958.

In 1950 he attended the 4th Congress of the International Soil Science Society in Amsterdam (The Netherlands) where he was an active member of the "Committee of Rules". At that occasion he was elected President of the International Society of Soil Science. In preparation of the 5th Congress of the International Society of Soil Science, to be held in 1954 in Léopoldville (now Kinshasa), he started studying tropical soils in Zaire. In cooperation with the INEAC (Institut National pour l'Etude Agronomique du Congo Belge)-Soil Survey he worked out a classification system for tropical soils.

At the 5th Congress of the International Society of Soil Science, in Zaire, he played an important part in the organization of the commission meetings and the excursions. Later he has represented the Belgian Society of Soil Science at a series of congresses of the ISSS. Since 1951 he became actively engaged with the USDA Soil Conservation Service for the preparation of Soil Taxonomy and organized a series of meetings at which the various approximations of Soil Taxonomy were discussed with the leading European soil scientists.

After the publication of Soil Taxonomy, from 1977 on he played an active role in the revision of this classification; as a member of the commissions ICOMOX, ICOMLAC, ICOMERT, ICOMAND and ICOMMORT he participated in workshops in Brazil, Malaysia, Thailand, Canada and Rwanda to Zambia.

In 1963 he founded - and became Director - of the International Training Centre for Post-Graduate Soil Scientists of the University of Ghent.

Since then, more than 6000 students, mainly from developing countries have been trained in soil science. Complementary to the post-graduate course, Ph.D. studies were organized.

The scientific results obtained constitute an important contribution for a better understanding of soil forming processes and elaboration of land evaluation procedures for tropical and arid soils.

Within the framework of the FAO-UNESCO Soil Map of the World he actively cooperated in the preparation of Volume V, "Europe" at scale 1 : 5.000.000; simultaneously he prepared the explanatory text and map of Europe at scale 1 : 2.500.000.

In 1980 he was invited by the European Economic Commission of the Common Market to prepare the Soil Map of E.C. at scale 1 : 1.000.000. This work has been completed in 1985.

Prof. Tavernier has always been interested in the development of soil science in the developing countries. With the financial support of the Belgian Cooperation he has initiated various soil survey, soil research and teaching projects such as in Zaire, Algeria, Cameroon, Malaysia, Zambia, etc.

He acted as a member of the Advisory Panel of ACSAD for the realization of the 1 : 1.000.000 Soil Map of the Arabic Countries.

He was a visiting lecturer at numerous foreign universities in Europe as well as abroad.

Prof. R. Tavernier was appointed Honorary Dean of Scientific Research by the King in 1950, received the Government's Decennial Award for Earth Sciences in 1969, and the Medal of Recognition of both Ghent and Liège State Universities.

He was a working member of the Royal Academy of Sciences of Belgium, of the Royal Academy of Overseas Sciences of the National Academy of Sciences U.S.A., and a corresponding member of the Swedish Academy of Agriculture.

For helping to realize the soil map of the "Grand Duchy of Luxembourg" the title of "Commandeur de l'Ordre du Mérite" was bestowed to him.

In 1980 he received the USDA Certificate of Appreciation "for material assistance" in developing Soil Taxonomy and promoting its international use, mainly in the less developed countries, through teaching and consultations, and in causing it to be accepted as a means of international communication in soil science.

D. Gabriels, Ghent, Belgium

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

ANNOUNCEMENT

Anniversary Conference of the Wageningen Agricultural University

**THE FUTURE OF THE LAND,
Mobilizing and Integrating Knowledge for Land Use Options
Wageningen, August 22-25, 1993**

In 1993, the Wageningen Agricultural University will celebrate its 75th anniversary. For this occasion, the University will organize an international conference on the use of knowledge for land use planning, entitled: *The Future of the Land, Mobilizing and Integrating Knowledge for Land Use Options*. Land use planning is evolving to a continuous process of interaction and adjustment of goals and options. Today, more than ever, the unprecedented pace of population growth and our increasing awareness of the fragility of the earth's resources demand careful planning of our use of natural resources to select appropriate land use scenarios that meet divergent goals in society, local communities and individuals. The impressive growth of digital information technology such as databases and GIS give this challenge new dimensions.

In order to maximise the comparability of approaches and to foster optimal exchanges of experiences, the conference will be structured rather tightly around issues of land use planning methodology at different scales (supra-national, national, regional and farm). These will be highlighted in a dual fashion: through invited case studies, and through an accompanying poster session dealing with the same scale or level of aggregation. Each case study is linked to a specific scale. Furthermore, an essential feature of the conference is that different perspectives on land use planning will be presented by all parties concerned, ranging from land users and scientists to decisionmakers. *Poster sessions and software demonstrations will form an integral part of each of the sessions.* In the plenary sessions invited speakers will cover themes that transgress the various scales, such as interdisciplinarity and new information technology. The proceedings will feature the invited papers, full papers based on poster contributions and poster abstracts. Submission of abstracts and demonstrations before February 1, 1993.

The conference will be held in the Wageningen International Conference Centre (WICC) in Wageningen, The Netherlands. The conference language will be English. The number of participants will be limited to 225. The registration fee is Dfl. 400,- and includes admission to the conference, conference publications, conference dinner, lunches, coffee/tea.

For queries on the scientific programme, please contact the Conference Secretariat or the Secretary of the Programme Committee: Prof.dr. L. Stroosnijder, Dept. Irrigation and Soil and Water Conservation, Nieuwe Kanaal 11, 6709 PA Wageningen, The Netherlands. Tel: + 31 8370 82446. Fax: + 31 8370 84759.

For registration forms, contact the Congress Office Wageningen University, J.L. Meulenbroek, PO Box 9101, 6700 HB Wageningen, The Netherlands. These should be returned before February 1, 1993.

ANNOUNCEMENT

Ecotour Programme

The "Ecotour Programme", organized by the Soil Science Faculty of the Moscow State University and the Dokuchaev Soil Institute, carries out scientific field trips and invites foreign scholars to participate in the expeditions. The field trips are of interest for a wide range of participants p.ex. scientists, students, postgraduate students etc.

The trips are guided by highly qualified specialists, their emphasis lies on the natural distribution of soil and vegetation cover, on quaternary sediments and on land use patterns. Besides, the participants get acquainted with soil mapping techniques, means of assessing the state of natural ecosystems and different land reclamation techniques. Places of specific scientific and historical interest will also be visited on the route.

For the season of 1993 the following trips are planned:

1. MAIN TYPES OF BIOGEOCENOSSES OF THE SOUTHERN TAIGA

The trip gives a chance to visit typical mixed forest and agricultural landscapes of Central Russia; developed on mantle, moraine and sandy sediments; where sod-podzolic soils prevail. The route covers the famous region of Golden Ring, rich in historical monuments (the towns of Vladimir, Suzdal, Pereslavl-Zalessky) and will include visiting some of them.

Duration: 7 - 15 days; accommodation: in tents and in hotels (when in towns); number of participants: 5 - 30.

2. NATURAL ZONALITY OF THE RUSSIAN PLAIN

This is the unique possibility to observe the natural zonality of soil and vegetation cover; which classically manifests itself only on the Russian plain. The route will cross the forest, steppe-forest and steppe vegetation zones with sod podzolic, grey forest, chernozem, chestnut, solonetz and solod soils. This trip can be arranged in two ways: a) together with the students of the Soil Science Faculty, from June 1 to July 5, accommodation in tents, number of participants up to 20. b) only for foreign scholars, in July and in August; duration 20 - 30 days, accommodation in tents, number of participants 5 - 30.

3. SOIL AND VEGETATION PATTERNS OF THE NORTHERN TAIGA

A soil and botanic expedition in Northern Karelia and on the White Sea coast. Trip duration varies, accommodation in tents, number of participants 3 - 5. Special tours possible on request, as well as joint field work with Russian experts.

Costs will range from US\$ 30 to US\$ 100 per day, depending on the route and the number of participants.

For information please contact:

Dr. S. Trophimov, Moscow State University, Soil Science Faculty,
Moscow, 119899 Russia.
Phone: (095)939-3641; Fax: (095)939-0989.

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

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

Les réunions, etc., marquées d'un astérisque (*) sont organisées ou autorisées par l'AISS.

Tagungen usw., versehen mit (*) werden von der IBG organisiert oder sind von dieser autorisiert.

Las reuniones, etc. marcadas con un asterisco (*) son organizadas o autorizadas por la SICS.

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.

1993

75th Anniversary Conference of the Wageningen Agricultural University "Predictability and nonlinear modelling in natural sciences and economics", Wageningen, April 5 - 7, 1993; Information: Secretary of the Programme committee: Prof. dr. J. Grasman, Dept. Mathematics, Dreijenlaan 4, 6703 HA Wageningen, The Netherlands;
Tel: +31 8370 82389, Fax: +31 8370 83554

4th Annual International Conference on the Scientific and Policy Issues Facing All Governments, "Global Warming - A Call for International Coordination", Chicago, IL, U.S.A., April 5 - 8, 1993.

Information: The Global Warming International Center, P.O.Box 5275, Woolridge, IL 60517-0275. Tel: +708-910-1551

International Symposium "Soil Processes and Management Systems: Greenhouse Gas Emissions and Carbon Sequestration", Columbus, Ohio, USA, April 5 - 9, 1993. Information: Dr. Carol Whitman, USDA Global Change Program Office, 1621 North Kent Street, Rm. 60 LL, Arlington, VA 22209, USA. Fax: 703-235-9046

*** 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).

1st IGAC Scientific Conference "Global Atmospheric-Biospheric Chemistry", Eilat, Israel, April 18 - 22, 1993.

Information: IGAC Project Office, c/o Anne Slinn, MIT, Room 54-1312, Cambridge, MA 02139 USA

International Symposium 'Operationalization of Remote Sensing', Enschede, April 19 - 23, 1993.

Information: Prof. J.L. van Genderen, ITC, P.O.Box 6, NL-7500 AA Enschede, Tel.: 053-874 254, FAX: 053-874 436, Telex: 44525 itc nl

2nd International Meeting on Red Mediterranean Soils, organized by the Turkish Society of Soil Science, Turkish Scientific and Technical Research Council, F.A.O. and ISSS, Adana, Turkey, May 3 to May 9, 1993.

Information: Organizing Secretariat, University of Çukurova, Faculty of Agriculture, Department of Soil Science, Adana 01330, Turkey.

Geotechnica, internationale Fachmesse und Kongreß für Geowissenschaften und Geotechnik, Köln, Deutschland, 5. - 8. Mai 1993

Information: Alfred-Wegener-Stiftung zur Förderung der Geowissenschaften, Wissenschaftszentrum, Ahrstraße 45, Postfach 20 14 48, D-5300 Bonn 2, Deutschland Tel.: +(0)228/302-260, Telex: 885 420 wzd, Fax: +(0)228/302-270

8th North American Forest Soils Conference, "Carbon: Forms and Functions in Forest Soils", Gainesville, Florida, U.S.A., May 9 - 13, 1993.

Information: Monique Terrell, Conference Coordinator, IFAS Conferences, Building 639, Rm. #2, University of Florida, Gainesville, Florida 32611, U.S.A.; Tel: +904-392-5930

International Workshop on Soil Erosion Processes on Steep Lands. Evaluation and Modelling, Merida, Venezuela, May 16 - 20, 1993.

Information: Executive Secretary, CIDIAT-Parque "La Isla" Aptdo. Postal 219, Merida, 5101, VENEZUELA, FAX: 58-74-441461

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).

International Symposium on Sustainable Agriculture and Rural Development (ISSARD'93), Beijing, China, May 25 - 28, 1993

Information: Mr. Yan Shuling, Secretariat of ISSARD'93, CICCST, 48, Baishiqiao Road, Beijing 100081, China Tel.: +86-1-8313335; Fax: +86-1-8316091.

International Conference on Rural Development in the Mediterranean Area, Cordoba, Spain, Mai 1993;

Information: Pilar Garrido Escudero, Universidad de Córdoba, C/. Alfonso XII, 13, 14071 Cordoba; Tel.: 34-57-21-80-53, 34-57-21-80-45; Fax: 34-57-21-80-30.

European Congress of the International Association for Landscape Ecology - Agricultural Landscapes in Europe, Rennes, France; June 6 - 10, 1993

Information: Sandrine Petit, Lab. d'Evolution des Systèmes Naturels et Modifiés, Campus de Beaulieu, Avenue du Général Leclerc, 35042 Rennes Cedex, France

Nutrient Uptake and Cycling in Forest Ecosystems, Halmstad, Sweden, June 07 - 10, 1993;

Information: Dr. L.O. Nilsson, Swedish University of Agricultural Sciences, Dept. of Ecology and Environmental Research, P.O. Box 70 02, S-75007 Uppsala, Sweden;
Tel: +46-18-67-2548; Fax: +46-18-67-3430

International Workshop on Sustainable Land Management for the 21st Century, Lethbridge, Alberta, Canada, June 20 - 26, 1993

Information: Ms. Cindy LaValley, Coordinator, International Workshop Organizing Committee, The University of Lethbridge, 4401 University Drive, Lethbridge, Alberta, Canada, T1K 3M4 (Tel: 1-403-329-2244, FAX: 1-403-329-5166)

Soil and Environmental Chemistry Workshop, Evergreen State College, Olympia, Washington, USA, June 23 - 25, 1993.

Information: Yash P. Kalra, Forestry Canada, 5320 - 122 Street, Edmonton, Alberta, Canada T6H 3S5; Tel.: 403-435-7210, Fax: 403-435-7359

or: William J. Walker, James P. Walsh and Assoc., Inc., 1913 Capitol Ave., Suite E, Sacramento, California 95814, U.S.A., Tel: 916-443-3025, Fax: 916-442-6891.

7th International Symposium on Iron Nutrition and Interactions in Plants, Zaragoza, Spain, 27 June-2 July 1993.

Information: Sr. D. Jesús Gascón, Aula Dei Experimental Station, CSIC, Apdo 202, 50080 Zaragoza, Spain (Fax: (+34)-76-575828).

Climate Change and World Food Security (NATO Advanced Research Workshop), Oxford, UK, July, 1993

Information: Dr. M. Parry, University of Oxford, School of Geography, Environmental Change Unit, Oxford, OX1 3TB, UK

Congress of the International Union of Microbiological Societies (IUMS), Prague, Czechoslovakia, July 3 - 8, 1993

Information: B. Sikyata, Institute of Microbiology, Czechoslovak Academy of Science, Videnska 270, 14220 Prague 4, Czechoslovakia

International Workshop 'Groundwater/Surface-Water Ecotones: Biological and Hydrological Interactions and Management Options, Lyon, France, 5 - 9 July 1993

Information: Prof. Janine Gibert, University of Lyon 1, France,

Tel: (33) 72 44 82 59, FAX: (33) 72 43 11 41

IAMAP - IAHS '93, Sixth Scientific Assembly of the International Association of Meteorology and Atmospheric Physics and Fourth Scientific Assembly of the International Association of Hydrological Sciences, Yokohama, Japan, July 11-23, 1993.

Information: Dr. Takeo Kinoshita, Chairperson of Executive Committee for IAHS '93, National Research Institute of Earth Science and Disasters Prevention, 1, Tennodai-3, Tsukuba, Ibaraki 305, Japan; Tel: +81-298-51-1611; Fax: +81-298-51-1622

Developing Large Data Bases using Remote Sensing and GIS Technology for Sustainable Management of Natural Resources, Nairobi, Kenya, July 12 - 14, 1993;

Information: Dr. Ashbindu Singh, UNEP/GRID, P.O.Box 3 05 52, Nairobi, Kenya;

Tel.: +2-54-2-22-6491

150th Anniversary Conference of the Rothamsted Experimental Station, Rothamsted, U.K., July 12 - 14, 1993

Information: Mrs. Deidre Hughes, Rothamsted Experimental Station, Harpenden, Hertfordshire AL5 2JQ, U.K.; Tel: +44-582-763-133; FAX: +44-582-760-981

International Symposium: Sustainable Development - Where do we Stand, Graz, Austria, July 13 - 14, 1993.

Information: Prof. Dr. F. Moser, Institut für Verfahrenstechnik der TU-Graz, Inffeldgasse 25/II, A-8010 Graz, Austria, Fax: +43-316-81-10-50

Malvern International Conference on Geological and Landscape Conservation, Great Malvern, England, July 17 - 24, 1993

Information: Margaret Phillips, The Company, St John's Innovation Centre, Cowley Road, Cambridge CB4 4WS, England.

*** 10th International Clay Conference 'Clays Control the Environment'** (ISSS Commission VII), Adelaide, Australia, July 18-23, 1993.

Information: Elliservice Convention Management, P.O.Box 753, Norwood SA 5067, Australia; Tel: +61-8-332-4068; Fax: +61-8-364-1968.

International Correlation Meeting on Permafrost Affected Soils, (Classification, Correlation and Management of Permafrost Affected Soils), Alaska, United States, and Yukon and Northwest Territories, Canada, July 18-30, 1993

Information: Dr. John M. Kimble, USDA - Soil Conservation Service, Federal Building, Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866 USA

4th International Conference on Desert Development, Mexico City, July 25-30, 1993.

Information: Dr. Manuel Anaya Garduño, Executive Secretary Scientific Committee IV ICDD, Colegio de Postgraduados, Montecillo, Edo. de Mexico, 56230, Mexico (Tel.: ++(52)595-45701; Fax: ++(52)595-45723; P.O. Box 91, Chapingo, 56230 Mexico).

9th World Congress on Protozoology, Berlin, Germany, July 25 - Aug. 1, 1993

Information: H. Mehlhorn, Ruhr Univ. Bochum, Postfach 102148, D-4630 Bochum, Germany

4th International Symposium "Windbreaks and Agroforestry", Viborg, Denmark, July 26 - 30, 1993

Information: 4th International Symposium, Hedeselskabet, P.O.Box 110, Klostermarken 12, DK-8800 Viborg, Denmark; Tel.: +45-86-67-61-11.

48th Annual Meeting of the Soil and Water Conservation Society, "Exploring Conservation Frontiers", Fort Worth, Texas, August 8 - 11, 1993;

Information: Elesa Cottrell, Chair, Program Committee, SWCS, 7515 NE Ankeny Road, Ankeny, IA 50021-9764, Fax: 515-289-1227. Tel.: 302-678-4160.

2nd International Paleopedology Symposium, Champaign, Illinois, August 8 - 12, 1993.

Information: Dr. D.L. Johnson, Department of Geography, University of Illinois, 607 South Matthews Street, Urbana, IL 61801; or: Dr. L.R. Follmer, Illinois State Geological Survey, 615 East Peabody Drive, Champaign, IL 61820

*** 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).

Precision Nutrient Management: An International Symposium on Soil Testing and Plant Analysis, Olympia, Washington, USA, August 14 - 19, 1993

Information: COUNCIL Headquarters, Georgia University Station, P.O. Box 2007, Athens, GA 30612-0007, 706-546-0425, Fax: 706-548-4891.

23rd International Conference on "Solution Chemistry", Leicester, U.K., August 15 - 21, 1993; IUPAC, Dr. M.J. Blandamer, Department of Chemistry, Leicester University, University Road, Leicester, LE1 7RH, U.K.

6th International Ecological Congress, Manchester, U.K., August 21 - 26, 1993

Information: R. Sharitz, INTECOL, Savannah River Ecology Lab., Univ. of Georgia, Aiken, SC 29802, USA

24th International Horticultural Congress, Kyoto, Japan, August 21 - 27, 1993

Information: Japanese Society for Horticultural Science, Fac. of Agriculture, Kyoto University, Sakyoku, Kyoto 606, Japan

Anniversary Conference of the Wageningen Agricultural University: "The Future of the Land: Mobilizing and Integrating Knowledge for Land Use Options", Wageningen, The Netherlands, August 22 - 25, 1993.

Information: Secretary of the Programme Committee, Prof.Dr. L. Stroosnijder, Dept. Irrigation and Soil and Water Conservation, Nieuwe kanaal 11, 6709 PA Wageningen, The Netherlands (Tel.: +31 8370 82446; Fax: +31 8370 84759).

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 International Botanical Congress, Tokyo, Japan, Aug. 28 - Sept. 3, 1993

Information: M. Furuya, Frontier Research Programs, The RIKEN Institute, Wako City, 351-01, Japan

15th Congress on Irrigation and Drainage, The Hague, The Netherlands, 30 August -11 September 1993.

Information: ICID, Mr. Bart Schultz, Vice President, ICID, P.O. Box 600, 8200 AP Lelystad, The Netherlands (Tel.: +31 3200 97440; Fax: +31 3200 34300; Telex: 40115 flevo nl).

Second International Conference on the Biogeochemistry of Trace Elements, Taipei, Taiwan, Republic of China, September 5-10, 1993.

Information: Dr. Shang-Shyng Yang, Dept. of Agricultural Chemistry, National Taiwan University, Taipei, Taiwan, 106, R.O.C. (Tel.: 886-2-3621519; Fax: 886-2-3633123).

International Conference on Nuclear Waste Management and Environmental Remediation, Prague, Czechoslovakia, 5 - 11 September, 1993

Information: Mr. Radovan Kohout, Ontario Hydro (H11 A20), 700 University Avenue, Toronto, Ontario, Canada M5G 1X6, Tel: 416/592-5384, FAX 416/592-4485

International Conference on Groundwater Quality Management, Tallin, Estonia, 6 - 9 September 1993.

Information: GQM 93, c/o Institute of Ecology and Marine Research, Paldiski Road 1, 200 001 Tallinn, Estonia (Tel.: +7 (0142) 451634; Fax: +7 (0142) 453748).

International Symposium on the Structure of the Soil Cover, Pushchino, Russia, September 6 - 11, 1993

Information: Organizing Committee on SCS, V.V. Dokuchaev Soil Institute, Pygevsky per. 7., 109017 Moscow, Russia.

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).

13th Long Ashton International Symposium "Arable Ecosystems for the 21st Century", Bristol, England, September 14 - 16, 1993.

Information: Mr. H.M. Anderson, Department of Agricultural Sciences, University of Bristol, AFRC Institute of Arable Crops Research, Long Ashton Research Station, Long Ashton, Bristol, BS18 9AF, UK; Tel.: +44-275-392181, Fax: +44-275-394007

1st International IAWPRC Specialised Conference on Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact and Abatement, Chicago, IL, USA, September 20 - 24, 1993.

Information: IAWPRC Conference, c/o Dr. Vladimir Novotny, Dept. of Civil and Environmental Engineering, Marquette University, 1515 West Wisconsin Avenue, Milwaukee, WI 53233, USA.

*** 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, Spain, September 23 - 26, 1993.

Information: Juan Gallardo Lancho / Secretario, Instituto de Ecología Terrestre / CSIC, Apartado 257, 28006 Salamanca, España Fax: (9) 15640800; Tel: (9) 12625020

*** Managing Red and Lateritic Soils for Sustainable Agriculture**, Bangalore, India, 24 - 28 September, 1993

Information: Prof. J. Sehgal, National Bureau of Soil Survey and Land Use Planning, Amravati Road, P.Box 426, Nagpur-440 010 (Maharashtra) India.

Global Forum on Environmental and Development Education, New Delhi, India, September 24 - 28, 1993.

Information: Indian Environmental Society, U - 112, (3rd floor), Vidhata House, Vikas Marg, Shakarpur, Delhi, 110092 India; Tel: (91-11)222-3311, Fax: (91-11)331-7301

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 Conference on Environmental Pollution (ICEP.2), Barcelona, September 28 - October 1, 1993.

Information: ICEP Conference Office, ICTR Secretariat, 11-12 Pall Mall, London SW1Y 5LU, U.K. Tel: +44-71-930-6825; Fax: +44-71-976-1587; Telex: 925312 reico g

IUFRO S1.02.06 Technical Meeting on "Site Classification and Evaluation", Clermont-Ferrand, France, October 19-22, 1993.

Information: Alain Franc, CEMAGREF, Division Techniques Forestières, Domaine de Lалуas, F-63 200 RIOM, France (Tel.: (33) 73382052; Fax: (33) 73387641).

Symposium on "A decade of potassium research", New Delhi, India, November 18 - 20, 1993.
Information: The Director, Potash Research Institute of India, Sector 19, Dundahera, GURGAON - 122001, Haryana, India.

Integrated Farm Management and Landscape Modification for Environmental Protection - "Total Resource Management", Chicago, Illinois, USA, December 13 - 14, 1993.

Information: Saied Mostaghimi, VPI & SU, Agricultural Engineering Department, 308 Seitz Hall, Blacksburg, VA 24061, Fax: 703-231-3199

1994

International Symposium on Nitrogen Economy in Tropical Soils, St. Augustine, Trinidad, West Indies, January 9 - 14, 1994

Information: Chairman, Organizing Committee, Department of Soil Science, The University of the West Indies, St. Augustine, Trinidad, West Indies. Tel: 1-809-662-2002; Fax: 1-809-663-9686

ASTM Symposium Remote Sensing and GIS, January 27 - 28, 1994

Information: Dr. Vern Singhroy, Canada Centre for Remote Sensing, 588 Booth Street, Ottawa, Ontario K1A 0Y7, Canada, Tel: 613-947-1215, Fax: 613-947-1385

or: Ivan Johnson, 7474 Upham Court, Arvada, CO 80003, USA, Tel: 303-425-5610

or: Doug Nebert, Water Resources Division, U.S.G.S. National Centre, Mail Stop 445, Reston, VA 22092, USA, Tel: 703-648-5691, Fax: 703-959-5691

2nd International Symposium on Sealing, Crusting and Hardsetting Soils: Productivity and Conservation, Brisbane, Queensland, Australia, February 7 - 11, 1994.

Information: Secretariat, Soil Crusting Symposium, Continuing Professional Education, The University of Queensland, Qld 4072, Australia; Tel.: +61-7-365-7100, Fax: +61-7-365-7099

International Inter-INQUA Field Conference and Workshop on Tephrochronology, Loess, and Paleopedology, Hamilton, New Zealand, February 7 - 12, 1994.

Information: Dr. D.J. Lowe, Conference Convenor, Department of Earth Sciences, University of Waikato, Private Bag 3105, Hamilton, New Zealand; Tel: +64-7-856-2889; Fax: +64-7-856-0115; email: dlowe@waikato.ac.nz

International Symposium on Climate Change and Rice, Los Baños, Laguna, Philippines, March 15 - 17, 1994.

Information: Dr. Keith T. Ingram, IRRI, P.O. Box 933, 1099 Manila, Phillipines, Fax: +63-2-818-2087

XV. International Congress of Soil Science (ICSS), Acapulco, Mexico, July 10 - 16, 1994.

Information: XVICSS Secretariat, Centro de Edafología, Colegio de Postgraduados, P.O. Box 45, 56230 Chapingo, México, FAX +52-595-45723

Second International Symposium on Artificial Recharge of Ground Water, Orlando, Florida, USA, July 17 - 22, 1994.

Information: Ivan Johnson, Inc., 7474 Upham Court, Arvada, Colorado 80003, USA.

13. ISTRO Conference Soil Tillage for Crop Production and Protection of Environment, Aalborg, Denmark, July 24-July 29 1994.

Information: ISTRO Conference 1994, Aalborg Convention Bureau, Osteraa 8, DK-9000 Aalborg, Denmark (Tel.: +45 98 12 63 55; Fax: +45 98 16 69 22).

INTECOL - 6th International Congress of Ecology, Manchester, England, August 20 - 26, 1994.

Information: The Secretary, VI International Congress of Ecology, Department of Environmental Biology, The University, Manchester, M13 9PL, U.K.

IGU Regional Conference on Environment and Quality of Life in Central Europe, Prague, Czechoslovakia, 22-26 August 1994.

Information: Dr. L.A. Kosinski, Secretary General IGU, Dept. of Geography, University of Alberta, Edmonton, Alberta, Canada T6G 244.

16th General Meeting of the International Mineralogical Association (IMA), Pisa, Italy, 3 - 8 September 1994.

Information: Stefano Merlino, organizing committee IMA '94, Dipartimento di Scienze della Terra, Università di Pisa, Via S.Maria 53, I-56126 Pisa, Italy; FAX: 39-(0)50-40976 E-mail: IMA94@ICNUCEVM

3rd International Symposium on Environmental Geochemistry, Krakow, Poland, September 12 - 15, 1994.

Information: Dr. hab. Edeltrauda Helios Rybicka, Faculty of Geology, Geophysics and Environmental Protection, University of Mining and Metallurgy, Al. Mickiewicza 30, 30-059 Kraków, Poland. Tel.: +48-12-333290, Fax: +48-12-332936

6th Conference of the African Association for Biological Nitrogen Fixation (AABNF), Harare, Zimbabwe, September 12 - 17, 1994.

Information: Secretary, AABNF, c/o Department of Soil Science and Agricultural Engineering, University of Zimbabwe, Box MP167, Mount Pleasant, Harare, Zimbabwe.

1995

XX IUFRO (International Union of Forestry Research Organizations) World Congress, Tampere, August 6 - 12, 1995.

Information: Prof. Risto Seppälä, The Finnish Forest Research Institute, IUFRO'95 Secretariat, Unioninkatu 40A, SF-00170 Helsinki; Tel.: +358-0-857-051; Fax: +358-0-625-308

1996

28th International Geographical Congress, The Hague, The Netherlands, 4-10 August 1996.

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

Course on Waterlogging and Salinity Technical Study Tour of U.S. Western States, Logan, Utah; Grand Junction, Colorado; Yuma, Arizona; Imperial Valley of California, USA, April 8-May 2, 1992 and April 7-May 1, 1993.

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 On-Farm Irrigation Design, Evaluation and Scheduling, Logan, Utah, USA, May 3-June 13, 1992 and May 2-June 12, 1993.

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).

Course on On-Farm Water Management, Logan and Delta, Utah and Grand Junction, Colorado, USA, June 28-August 8, 1992 and June 27-August 7, 1993.

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).

Irrigation Water Management Study Tour of U.S. Western States, Utah, Colorado; Arizona and California, USA, August 9-29, 1992 and August 8-28, 1993.

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).

Courses of the International Institute for Hydraulic and Environmental Engineering,

Courses in: Hydraulic Engineering, Hydrology, Sanitary Engineering, Environmental Science & Technology, Water Quality Management, Advanced Environmental Sanitation, Transportation & Road Engineering in Development;

M.Sc. and Ph.D. Programme and a wide range of other courses available on demand.

Delft, The Netherlands, October 1992 (duration: between 11 and- 23 months)

Information: The Registrar of IHE, P.O. Box 3015, NL-2601 DA Delft, The Netherlands
Tel: +31 15/78 34 04, cable: interwater, Telex: 38099 ihe nl, FAX: +31 15 12 29 21

International Course for development oriented Research in Agriculture, International Agricultural Centre, Wageningen, The Netherlands, January 11 - July 29, 1993

Information: The Director of ICRA, P.O. Box 88, NL-6700 AB Wageningen, The Netherlands

Managing Rural Development - Information Systems Monitoring and Evaluation, University of London, Wye College, January - March, 1993.

Information: Mrs. Mary Arnold, Short Courses Office, Dept. of Agricultural Economics, Wye College, Ashford, Kent TN25 5AH, England Tel.: +44-233-812401, Fax: +44-233-813006, Telex: 94017832 wyec g

Cours International pour la Recherche Agricole orientée vers le Développement, Complexe International de Recherche et d'Enseignement Supérieur, Agropolis, Montpellier, France, 2 avril - 28 octobre 1993.

Information: Monsieur le Directeur de l'ICRA, BP 88, NL-6700 AB Wageningen, Pays Bas

International Course on On-Farm Irrigation Design, Evaluation and Scheduling (English/ Spanish), Utah State University, Logan, Utah. U.S.A. May 2 - June 12, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150; Tel: +801-750-2800; Fax: +801-750-1248.

3rd International Post-Experience Course for administrators and specialists working in agricultural and natural resource sectors, University of London, Wye College, June 28 to July 9/16, 1993.

Information: Mrs. Mary Arnold, Short Courses Office, Dept. of Agricultural Economics, Wye College, Ashford, Kent TN25 5AH, England Tel.: +44-233-812401, Fax: +44-233-813006, Telex: 94017832 wyec g

International Postgraduate Course: "Soil Pollution and Soil Protection", Leuven, Belgium, June 7 - 12, 1993.

Information: International Training Centre (PHLO), Wageningen Agricultural University, P.O. Box 8130, 6700 EW Wageningen, The Netherlands.

Tel: +31-8370-84092/3, Fax: +31-8370-84763

Short Course on Soil Science for Alumni from South-East Asia, Gadjah Mada University, Yogyakarta, Indonesia, August 2-12, 1993.

Information: Prof. Dr. G. Stoops, ITC-Ghent, Krijgslaan 281/S8, B-9000 Gent, Belgium (Fax: 32-91-644997).

Post-Graduate Diploma Course in Survey Integration for Resource Development

ITC, Enschede, The Netherlands, duration: 10 months, starting August 3, 1993

Information: Mrs. A. Scheggetman, Student Registration Office, ITC, P.O. Box 6, NL-7500 AA Enschede, The Netherlands Phone: 053-874-444, Fax: 053-874-400, Telex: 44525 ITC NL

Post-Graduate Diploma Course in Soil Survey and Applications of Soil Information

ITC, Enschede, The Netherlands, duration: 11 months, starting August 3, 1993

and

MSc Course in Soil Survey and Applications of Soil Information **

ITC, Enschede, The Netherlands, duration: 18 months, starting August 3, 1993 (for ITC alumni: 11 months, starting March 1, 1994)

**** Ph.D. Course**, duration 3 years and In-service-training soil technologist course, duration 3 months, also available

Information: Mrs. A. Scheggetman, Student Registration Office, ITC, P.O. Box 6, NL-7500 AA Enschede, The Netherlands Phone: 053-874-444, Fax: 053-874-400, Telex: 44525 ITC NL

International Post Graduate Course on Land Drainage, Wageningen, The Netherlands, August 16 - November 26, 1993

Information: International Agricultural Centre (IAC), P.O. Box 88, NL-6700 AB Wageningen, The Netherlands, Tel.: 08370-90111, Telex: 45888 intas nl, Fax: 08370-18552

1st Training Session of the "Soil and Plant Analytical Laboratories Network of Africa (SPALNA), Ibadan, Nigeria, October 3 - 17, 1993.

Information: Joseph L. Pleysier, University of Nigeria, Nsukka. Fax: 229-30-1466

17th International Course on Soil Fertility Management for Sustainable Agriculture (Former: International Course on Fertilizer Use and Extension), Wageningen, The Netherlands, August 22 - October 16, 1993.

Information: International Agricultural Centre (IAC), P.O. Box 88, NL-6700 AB Wageningen, The Netherlands; Tel: 03870-90111; Fax: 08370-18552

International Postgraduate Course on Soil and Plant Analysis and Data Handling, October 4 to December 3, 1993 dealing with: instrumental analysis, soil and plant analysis, laboratory management and data handling.

Information: International Agricultural Centre, P.O. Box 88, NL-6700 AB Wageningen, the Netherlands. Fax: +31 8370-18552.

10th International Course on Food and Nutrition Programme Management, Wageningen, The Netherlands, October 24 - December 4, 1993;

Information: International Agricultural Centre (IAC), P.O. Box 88, NL-6700 AB Wageningen, The Netherlands; Tel: +31-8370-90111, Fax: +31-8370-18552.

The Jacob Blaustein Graduate Program for Desert Studies, Israel, announces a series of graduate courses on:

The Environmental Physical Sciences (with emphasis on arid zone phenomena), October 12 - November 22, 1993

Information: Yair Zarmi, Center for Energy & Environmental Physics, The Jacob Blaustein Institute for Desert Research, Sede Boker Campus, Israel, 84993

Utah State University, Logan, Utah, USA, offers a wide range of courses for 1993 and 1994, e.g.:

Applied Microcomputer Use in Irrigation and Drainage;
On-Farm Irrigation Design, Evaluation and Scheduling;
Workshop on Implementing National Irrigation Programs;
On-Farm Water Management;
Irrigation Water Management Study Tour of U.S. Western States;
Environmental Management of Agricultural Lands;
Environmental Management Study Tour of U.S. Mid-Western States;
Design of Wells and Pumps for Irrigation;
Maintenance of Pumping System Components;
Operation, Maintenance and Management of Irrigation Delivery Systems;

Information: Admissions Committee, International Irrigation Center, Utah State University, Logan, Utah 84322-4150 Tel: +801-750-2800; Fax: +801-750-1248

MSc Degree Course in Survey Integration for Resource Development ITC, Enschede, The Netherlands, duration: 11 months, starting March 1, 1994

Information: Mrs. A Schegetman, Student Registration Office, ITC, P.O.Box 6, NL-7500 AA Enschede, The Netherlands; Phone: 053-874-444, Fax: 053-874-400, Telex: 44525 ITC NL

Silsoe College, Bedford, England, offers a wide range of post-graduate courses and studies, e.g.: **Agribusiness Management and Technology (MSc.), Agroforestry (MSc.), Land Resource Management and Planning (MSc. and Postgraduate Diploma programmes), Engineering for Rural Development (MSc.), Agricultural Engineering (Agrochemicals Application Technology - MSc., etc.), Management for Agricultural Development (MSc.), Agricultural and Food Marketing (MSc. and PD), Agricultural Water Management (MSc.), Crop Production Technology (MSc.), Information Technology (MSc.), etc.**

Information: The Student Recruitment Executive, Silsoe College, Silsoe, Bedford MK45 4DT, U.K.; Tel: (0525) 860428; Fax: (0525) 861527; Telex: 826383 silcam g

Cursos de Magister en Ciencias Agrícolas (Suelos y Producción Vegetal) y Doctorado en Agronomía de aproximadamente 2 y 4 años de duración en la Universidad Nacional del Sur (UNS) Bahía Blanca, Argentina. Idioma: Español. Frecuencia: permanente.

Informes: Prof. Dr. R.A. Rosell, Agronomía, UNS, 8000 BAHIA BLANCA, ARGENTINA (Tel.: 54-91-30024/26533; Fax: 54-91-27876; Telex: 81712 DUJOR AR).

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).

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.

MSC Programme in Survey Integration for Resources Development

- Land Use Planning and Resources Management or
- Project Planning and Implementation or
- Rural Energy and Development
- Environmental Systems Analysis and Monitoring

International Institute for Aerospace Survey and Earth Sciences, Enschede, The Netherlands.

Information: ITC Student Registration Office, P.O. Box 6, NL-7500 AA Enschede, The Netherlands. Tel: 053 874 444, FAX: 053 874 400, Telex: 44525 itc nl

Master of Science in Eremology (Interdisciplinary, 2-Year, Post-Graduate Programme in Desert Science), Ghent, Belgium, starting each year in October.

Information: The International Center for Eremology, Faculty of Agricultural and Applied Biological Sciences, University of Ghent, Coupure Links 653, B-9000 Gent, Belgium.

Tel.: +32-91-646036; Fax: +32-91-646247; Telex: 12754 rugent b 2

Post-Graduate Diploma Course in Forestry for Rural Development, Enschede, The Netherlands.

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 ITC NL).

Post-Graduate Diploma and M.Sc. Degree Courses in: Soil Survey; Forest Survey; Rural and Land Ecology Survey; Survey Integration for Resources Development, Enschede, The Netherlands.

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 ITC NL).

M.Sc. Courses in "Irrigation Engineering" and "Soil Conservation and Land Reclamation".

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 Hydraulics, 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.

MSc Programmes: Agricultural Engineering, Animal Science and Aquaculture, Biotechnology, Crop Science, Ecological Agriculture, Geographic Information Systems, Management of Agricultural Knowledge Systems, Soil and Water, Tropical Forestry, Wageningen, The Netherlands.

Information: Wageningen Agricultural University, Dean's Office for Foreign Students, P.O. Box 453, 6700 AL Wageningen, The Netherlands
(Tel.: (08370)82680; Fax: (08370)84464; Telex: 45854 LUWAG).

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 Engineering, Land and Water Management, Rural Engineering, Applied Remote Sensing, Rural Land Use, Agricultural Water Management, Silsoe College, Cranfield Institute of Technology, England.

Information: The Student Recruitment Executive Silsoe College, Silsoe, Bedford MK45 4DT, UK
(Tel.: (0525)60428; Fax: (0525)61527).

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 der 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, Hawaii 96822.

Programme for Ph.D. in Environmental Chemistry and Technology, Lublin, Poland.

Information: Prof. Lucjan Pawlowski, Dept. of Water and Wastewater Technology, the Technical University of Lublin, 40 Nadbystrzycka Str., 20-618 Lublin, Poland.

Advances in Biological Nitrogen Fixation, Puerto Rico, USA.

Information: Dr. E.C. Schroder, Dept. of Agronomy and Soils, College of Agricultural Sciences, University of Puerto Rico, Mayaguez, Puerto Rico 00709-5000, USA.

Post-graduate Courses in Soil Science, Univ. of Reading, Dept. of Soil Science, U.K.

Information: The Secretary, Department of Soil Science, University of Reading, London Road, Reading RG1 5AQ, England.

Post-graduate Course in Soil Science, Maracay, Venezuela.

Information: Universidad Central de Venezuela, Facultad de Agronomia, Comision de Estudios de Postgrado, Curso de Postgrado en Ciencia del Suelo, Avda. Principal el Limon, Apartado Postal 4579, Maracay, Estado Aragua, Venezuela, S.A.

International Post-graduate Training Course in Eremology, (Desert Science), Ghent, Belgium.

Information: The International Center for Eremology, University of Ghent, Coupure Links 653, B-9000 Ghent, Belgium (Tel.: ++32-91-646036; Fax: ++32-91-646247).

M.Sc. Course in Resource Assessment for Development Planning, University of East Anglia, Norwich, England.

Information: Dr. David Dent, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, England.

Cursos de Postgrado en Desarrollo de los Recursos de Aguas y Tierras, Merida, Venezuela.

Information: CIDIAT, Apartado 219, Merida, Venezuela.

Training Course in Soil and Plant Analysis, at the Royal Tropical Institute, Amsterdam, The Netherlands.

Information: The Course Coordinator, Soil and Plant Analysis, Royal Tropical Institute (KIT), 63 Mauritskade, 1092 AD Amsterdam, The Netherlands.

Centro Internacional de Altos Estudios Agronomicos Mediterraneo, Zaragoza, Spain.

Curso superior de diez meses sobre Ordenacion Rural en funcion del Medio Ambiente.

Information: Instituto Agronómico Mediterraneo de Zaragoza, Apartado 202, 50080 Zaragoza, España.

Cours de Formation Spécialisée sur les Aménagements de Terrain, Le Havre, France.

Information: ISTOM, CHCI Quai George V, 76600 Le Havre, France.

International Course on Soil Reference Collections, ISRIC, Wageningen, The Netherlands.

Information: the Director, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands.

College of Soil Physics, Trieste, Italy.

Information: International Centre for Theoretical Physics, College on Soil Physics, P.O. Box 586, I-34100 Trieste, Italy.

International Fertilizer Development Center, USA.

Information: International Fertilizer Development Centre, P.O. Box 2040, Muscle Shoals, Alabama 35662, USA.

Courses in Agricultural and Rural Development by the USDA and US Universities.

Information: Ralph Otto, Acting Director, International Training Division, USDA/OICD, Washington, D.C. 20250-4300, U.S.A.

Courses in Project Planning and Management, Bradford, England.

Information: The Director, Development and Project Planning Centre, University of Bradford, Bradford, West Yorkshire BD7 1DP, England.

Courses in Soil and Plant Analysis, University of Reading, England.

Information: Dr. A.A. Jones, Department of Soil Science, University of Reading, London Road, Reading, RG1 5AG, England.

Arid Lands Resource Sciences Ph.D. Program, The University of Arizona, Tucson, Arizona.

Information: Graduate College, University of Arizona, Tucson, Arizona 85721, USA (Tel.: (602)621-3132; Fax: (602)621-7112).

School of Development Studies, University of East Anglia, Norwich, England. Different courses, e.g.: Agricultural and rural development policy: efficiency, equity and the environment; Vertebrate pest management and crop protection; etc.

Information: The School Clerk (Admissions), School of Development Studies, University of East Anglia, Norwich, NR4 7TJ, U.K.

Tel: (0603)56161; Fax: (0603)505262; Telex: 975197 ueacpc g for odg

Master's and Advanced Course in Soil Science, International Training Centre for Post-Graduate Soil Scientists, Ghent, Belgium.

Information: Prof.Dr. G. Stoops, Director ITC, Geological Institute, University of Ghent, Krijgslaan 281/S8, B-9000 Gent, Belgium.

International Postgraduate Course on Soil and Plant Analysis and Data Handling. A nine-week course in the months of October-November, dealing with: instrumental analysis, soil analysis, plant analysis, laboratory management and data handling.

Information: Dr. V. Houba, Wageningen Agricultural University, P.O.Box 8005, 6700 EC Wageningen, the Netherlands. Fax: +31 8370-83766.

New Journals/Nouveaux Périodiques/Neue Zeitschriften

Permafrost and Periglacial Processes. Quarterly published by John Wiley. H.M. French, E.A. Koster and A. Pissart, editors. ISSN 1045-6740.

This international journal is dedicated to the rapid publication of scientific and technical papers concerned with earth surface cryogenic processes, landforms and sediments present in a variety of (Sub)Arctic, Antarctic and High Mountain environments. It provides an efficient vehicle of communication amongst those with an interest in the cold, non-glacial geosciences. The focus is on (1) original research based on geomorphological, hydrological, sedimentological, geotechnical and engineering aspects of these areas and (2) original research carried out upon relict features where the objective has been to reconstruct the nature of the processes and/or palaeoenvironments which gave rise to these features, as opposed to purely stratigraphical considerations. The journal also published short communications, reviews, discussions and book reviews.

Subscription price: US\$ 165

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.

Electron Microscopy Reviews. Subcellular and Biomolecular Structure. 2 issues a year. J.R. Harris, editor-in-chief. Pergamon Press, Oxford. ISSN 0892-0354.

The aim of the journal is to publish both invited and freely submitted reviews of high scientific standard containing good quality electron micrographs and other visual presentations such as electron diffraction patterns, image reconstructions and molecular models. It provides critical reviews of developments in the field of transmission and scanning transmission electron microscopy of subcellular organelles, membrane fractions, macromolecules and macromolecular assemblies from animal, plant, fungal and bacterial cells. Within this first issue of the journal, there is a strong micro-biological emphasis, determined purely by the spontaneous arrival of manuscripts on a number of virological and bacteriological topics. These papers do, nevertheless, serve very well to set the scene, and provide a good indication of what can be expected from future issues of the journal.

Subscription price: DM 285 per annum, including postage & insurance.

Orders to: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, U.K.

Biodiversity and Conservation. Quarterly published by Chapman & Hall. A.T. Bull and I.R. Swingland, editors-in-chief. ISSN 0960-3115.

This new journal is devoted to the publication of articles on all aspects of biological diversity, its description, analysis and conservation, and its controlled rational use by man. Its scope is wide and multidisciplinary, and embraces all life-forms.

Research papers on biodiversity and conservation and contributions which deal with the practicalities of conservation management, economic, social and political issues and with case studies are welcome. The journal provides a forum for examining the conflict between sustainable development and human dependence on biodiversity, in fields such as agriculture, environmental management and biotechnology.

Subscription price: for individuals: £ 40 (Europe), US\$ 70 (USA/Canada), £ 40 (rest of the world).

For institutions: £ 95 (Europe), US\$ 170 (USA/Canada), £ 105 (rest of the world).

Orders to: Journals Promotion Dept., Chapman et Hall, 2-6 Boundary Row, London SE1 8HN, England; or: Journals Promotion Dept., Chapman & Hall, 29 West 35th Street, New York, NY 10001-2291, U.S.A. TISGLOW.

TERI Information Service on Global Warming. Biannually published by the Tata Energy Research Institute (TERI), New Delhi. ISSN 0970-9703.

This journal aims to keep the policy makers, scientists and technologists abreast of the development in the subject of global warming and climate change. It disseminates current information in the form of a selected article, abstracts, digests and book reviews related to global warming with special reference to the developing countries. TERI will supply the papers abstracted or reviewed herein at nominal charges.

Orders to: Publications Unit, Tata Energy Research Institute, 9 Jor Bagh, New Delhi 110 003, India.

Modeling of Geo-Biosphere Processes. Quarterly published by Catena Verlag, Y. Mualem, O. Richter and R.E. Smith, joint editors. ISSN 0938-9563.

The journal's objective is to promote new vision and creative imagination in applying theoretical models and quantitative simulation to study the mechanisms of natural processes. Models can contribute to clarifying the link between knowledge in basic physics, mathematics, chemistry and biology. This journal will help to explore new mathematical and computational tools to describe and analyze the behaviour of complex systems, at all relevant scales, for whole systems and subsystems.

Contributions covers the following subject areas: Soil Science, Geomorphology, Hydrology, Meteorology, Plant and Animal Ecology, on topics such as: Interactions of processes; Modelling principles; Conceptual/mathematical/numerical models; Model implementation/validation; and Parameter estimation/calibration of existing models.

Subscription Price: DM 198 or US\$ 132 (institutions); DM 138,60 or US\$ 92.40 (individuals)

Orders to: in USA and Canada: Catena Verlag, P.O. Box 1897, Lawrence, KS 66044-8897, U.S.A.

Elsewhere: Catena Verlag, Brockenblick 8, W-3302 Cremlingen 4, Germany.

International Journal of Environment and Pollution. Science, Policy, Engineering. Quarterly published by Inderscience Enterprises Ltd., 1991, supported by Unesco. B. Nath and T.M. Keinath, editors. ISSN 0957-4352.

The journal aims to provide an effective international forum for the reporting of research on the environment, pollution and related science and engineering. It also aims to establish an effective channel of communication on environmental policy and other environmental issues. It provides an authoritative source of information in the policy, science and technology of environmental pollution. It is the official journal of the European Centre for Pollution Research, and will be of interest and practical value to policy makers, staff of government agencies and academic and research institutions and others dealing with all aspects of pollution and the environment.

Orders to: Inderscience Enterprises Ltd., World Trade Centre, 110 Avenue Louis Casai, C.P. 306, CH-1215, Geneva 15, Switzerland.

Journal of Natural Resources and Life Sciences Education. An international journal, is the new title for the Journal of Agronomic Education (JAE) 'broader scope'. Published by the American Society of Agronomy, 1992. D.A. Munn, editor. ISSN 1059-9053.

The journal will publish educational contributions in the areas of natural resources, life sciences, and agriculture. It also will take on a broader scope to serve life science educators in nonagricultural disciplines.

Orders to: American Society of Agronomy, 677 South Segoe Road, Madison, WI 53711, U.S.A.

Journal of Environmental Sciences (China). Quarterly published by the Research Center for Eco-Environmental Sciences, Academia Sinica, 1989. Liu Tungsheng, Zhuang Yahui and Pan Shuwei, editors-in-chief. ISSN 1001-0742.

This journal takes as its main tasks introducing new research achievements, reporting research developments and advanced experience in China, strengthening academic exchanges, *promoting cooperation in science and technology, and making contributions to the progress in environmental sciences.* The journal publishes original research papers on main aspects of environmental sciences in China, such as environmental chemistry, environmental biology, ecology, geoscience and environmental physics. Appropriate subjects include basic and applied research on atmospheric, terrestrial and aquatic environments, pollution control and abatement technology, conservation of natural resources, environmental health study and toxicology, environmental quality assessment, environmental standards and criteria.

Orders to: Tie Xiaoshan, Editor, Editorial Dept. of Environmental Sciences (China), P.O.Box 934, Beijing 100 083, China.

Revista Ciencias Tecnicas Agropecuarias. Centro de Mecanización Agropecuaria del Instituto Superior de Ciencias Agropecuarias de La Habana, Cuba. 3 issues per year. ISSN 1010-2760.

This new journal in Spanish, with English abstracts, contains scientific articles in the following fields: the construction and exploitation of machinery for agriculture and animal

husbandry, electrification, automatization of agriculture, renewable energy sources and recycling of residuals for energy production, hydrotechnical works, irrigation and drainage, construction and installation for farming and grazing, soilless culture, environmental protection and other themes related to technical aspects in agriculture.

Languages accepted are: Spanish, Portuguese, French and English.

Subscription price: US\$ 14 in North America, US\$ 15 in South America, US\$ 16 in Europe, US\$ 18 elsewhere.

Orders to: Ediciones Cubanas, Apartado 605, Ciudad de la Habana, Cuba.

Irrigation and Drainage Abstracts. Quarterly published by CAB International, Wallingford. ISSN 0306-7327.

This is one of a series of abstract journals published by CAB International. Published quarterly since 1975, it comprises over 4,000 records each year selected from the world's primary published literature. Original material includes journals, books, conference proceedings and report; all major languages are covered. Records include full bibliographic details together with an informative English summary or abstract of the original work. The subject coverage ranges from water management through to environmental aspects including effects on human and animal health.

Since January 1991, this journal can be purchased on floppy disc for use with commercially available database management software.

Subscription price: US\$ 185 in the Americas, UK£ 102 elsewhere.

Orders to: in America and Canada: CAB International, 845 North Park Avenue, Tucson AZ 85719, USA;

elsewhere: CAB International Wallingford, Oxon OX10 8DE, U.K.

NEW PUBLICATIONS
NOUVELLES PUBLICATIONS
NEUE VERÖFFENTLICHUNGEN

Titles of new publications are listed here for information. Orders can not be handled by the ISSS Secretariat but should be placed through a bookstore or directly with the publishers. Nearly all publications mentioned can however be viewed at the office of the Deputy Secretary-General of the Society, the International Soil Reference and Information Centre (ISRIC) in Wageningen, the Netherlands.

Les titres de nouvelles publications sont mentionnés à titre d'information. Veuillez adresser vos commandes non pas au Secrétariat de l'AISS, mais à une librairie ou directement aux éditeurs. Presque toutes les publications mentionnées peuvent être consultées au bureau du Secrétaire-Général Adjoint de l'AISS, Centre International de Référence et d'Information Pédologique (ISRIC) à Wageningen, Pays-Bas.

Die Titel neuer Veröffentlichungen sind hier zu Information angeführt. Bitte richten Sie Ihre Bestellungen nicht an das IBG Sekretariat sondern an den Buchhandel oder direkt an die Verlage. Fast alle Veröffentlichungen können jedoch in den Geschäftsräumen des Stellv. Generalsekretärs der IBG, Internationales Bodenreferenz- und Informations-Zentrum (ISRIC) in Wageningen, Holland, eingesehen werden.

Los títulos de nuevas publicaciones son citados para su información. Las pedidas deben ser dirigidas a través de una librería o directamente al editorial. Sin embargo casi todas las publicaciones mencionadas pueden ser consultadas en la oficina del vicesecretario general de la SICS en el Centro Internacional de Referencia e Información de Suelos en Wageningen, Holanda.

Arid and Semi-Arid Environments. Geomorphological and Pedological Aspects. Catena Supplement 14. A. Yair and S. Berkowicz, editors. Catena, Cremlingen, 1989, 157p. ISBN 3-923381-17-4. Hardback.

This special volume is an outcome of the Workshop on Erosion, Transport and Deposition Processes in Semi-Arid and Arid areas, held in Israel in 1987. It contains selected papers dealing with geomorphic and pedologic aspects of semi-arid and arid zones. They cover a wide range of physiographic conditions, extending over four continents. The topics covered are highly diversified. Some are theoretical or are of an applied nature while other papers deal with hillslopes or channels. Although the temporal and spatial scales differ from one paper to another, all exhibit a strong interest towards the understanding of processes shaping the land.

Price: DM 98, US\$ 62.

Orders to: see below.

Landforms and Landform Evolution in West Germany. Catena Supplement 15. F. Ahnert, editor. Catena, Cremlingen, 1989, 347p. ISBN 3-923381-18-2. Hardback.

This book has been published in connection with the Second International Conference on Geomorphology, held in Frankfurt-am-Main in 1989. Following a general introduction, four papers describe and discuss the major landform regions. They provide the background for the other papers and, in addition to covering basic factual information, also deal with major questions of landform development that have long been of particular interest to German geomorphologists. Most of the remaining papers are studies of smaller regions and local areas.

Price: DM 89, US\$ 49.

Orders to: see below.

Paleopedology. Nature and Application of Paleosols. Catena Supplement 16. A. Bronger and J.A. Catt, editors. Catena, Cremlingen, 1989, 232p. ISBN 3-923381-19-0. Hardback.

Following an introduction on problems of definition, recognition and interpretation of Paleosols, the book presents papers arranged in two sections: (1) Relict properties in the soil cover of different climatic belts; and (2) Applications to paleopedological research.

Price: DM 139, US\$ 75.

Orders to: see below.

Soil Erosion - Experiments and Models. Catena Supplement 17. R.B. Bryan, editor. Catena, Cremlingen, 1990, 208p. ISBN 3-923381-22-0. Hardback.

The papers contained in this volume were amongst those presented to a conference on "The role of laboratory and field experiments in soil erosion research and modelling of hillslope development" held at Toronto in 1989. The papers presented a good cross-section of different approaches to soil erosion and hillslope research, including field monitoring, field and laboratory experiments and theoretical modelling, and touched on almost all the topics of current importance, with examples from many different environments.

Price: DM 139, US\$ 75.

Orders to: see below.

Dunes of the European Coasts. Geomorphology, Hydrology, Soils. Catena Supplement 18. Th. W. Bakker, P.D. Jungerius and J.A. Klijn, editors. Catena, Cremlingen, 1990, 223p. ISBN 3-923381-23-9. Hardback.

With the integration of the European Community there is a growing awareness among scientists that landscapes which the participating countries have in common should be studied within a European framework. One of these landscapes is formed by the coastal dunes found from northernmost Norway to the extreme south of Spain. Moreover, man-induced or natural threats, such as large-scale construction, reclamation or sea level rise, ask for continual measures based on scientific insight. This supplement should be seen as an effort to stimulate interest in one of the most striking aspects of the coastal zone: the dune landscape. The different papers cover seven sections:

- (1) European coastal dunes from the bird's eye;
- (2) Regional studies in geomorphology;
- (3) Dating of dune systems;
- (4) Geohydrology;
- (5) Aspects of dune soils;
- (6) Erosion and stabilization; and
- (7) Future developments.

Price: DM 139, US\$ 75.

Orders to: see below.

Erosion, Transport and Deposition Processes. Theories and Models. Catena Supplement 19. H.-R. Bork, J. de Ploey and A.P. Schick, editors. Catena, Cremlingen, 1991, 153p. ISBN 3-923381-28-X. Hardback.

The papers contained in this volume are a selection of those presented at the symposium, held at Königslutter in 1989, that was dedicated to Heinrich Rohdenburg. Commemorating an outstanding and pioneering geomorphologist and geoecologist, papers were presented which were closely related to the main research field of Heinrich Rohdenburg: the analysis and simulation of recent and past processes at the soil surface and in the soil, such as runoff generation, infiltration, soil water fluxes, erosion, transport and deposition of soil particles. The papers in this volume vary from general diagnoses and considerations concerning the evolution of landscapes, process studies in the laboratory and in the field to process-orientated models.

Price: DM 119, US\$ 75.

Orders to: see below.

Loess. Geomorphological Hazards and Processes. Catena Supplement 20. S. Okuda, A. Rapp and Zhang Linyuan, editors. Catena, Cremlingen, 1991, 145p. ISBN 3-923381-29-8. Hardback.

This volume contains a selection of papers presented at "The Lanzhou Field Workshop on Loess Geomorphological Processes and Hazards" held in 1989 in Xian, China. The main topics discussed in this volume deal with

- (1) the sources of loess material and formation of the Loess Plateau in China,
- (2) erosional process by splash detachment,
- (3) transport and deposition processes of eolian dust from Chinese and African deserts,
- (4) deformation mechanism of loess material,
- (5) comparison between landforms of loess and loess-like materials, and
- (6) landslides in the loess district in China.

Price: DM 98, US\$ 61.

Orders to: in U.S.A. and Canada: Catena Verlag, P.O. Box 1897, Lawrence, KS 66044-8897, U.S.A.

Elsewhere: Catena Verlag, Brockenblick 8, W-3302 Cremlingen-Destedt, Germany.

Proceedings of 7th Euroclay Conference, Dresden, August 1991. M. Störr, K.-H. Henning, P. Adolphi (eds.). Ernst-Moritz-Arndt-Universität Greifswald, Germany. Three volumes, 250 papers, 1216 p. Paperback.

This series includes the texts of 250 papers presented at the Euroclay Conference. They are entered in alphabetical order and not according to subject.

Orders to: Prof. Dr. M. Störr, Department of Geological Sciences, University of Greifswald, Jahnstrasse, 17a, O-2200 Greifswald, Germany.

Proceedings to the IFA Regional Conference for Sub-Saharan Africa, Harare, March 1991. International Fertilizer Industry Association, Paris. Two Volumes, 15 papers, 156 + 173p. Paperback.

This Conference was organized around the theme "Fertilizers and Crop Production in Sub-Saharan Africa". In this region lives 8% of the world population, but the consumption of fertilizers is only 1%. Fertilizer consumption is for the most part still in an early stage of development. The papers mainly deal with the actual and potential use of NPK nutrients and their effect on the production of food crops. Also discussed are the use of agronomy research data, the fertilizer situation, including production and distribution in the region, and credit facilities.

Price: free of charge

Orders to: IFA, 28 rue Marbeuf, 75008 Paris, France.

Geomedicine. J. Låg (Ed). CRC Press, Boca Raton, Ann Arbor, 1990, 278 p. ISBN 0-8493-6755-7.

Geomedicine is defined by the editor as the science dealing with the influence of ordinary environmental factors on the geographic distribution of health problems in man and animals. Since ancient times, a knowledge has been existing that certain human and animal illnesses are related to particular geographical areas. Now, the book shows that the comprehensive progress in chemical analyses has established a valuable basis for determining many environmental features and for understanding the relation between health and the habitat of man and animals.

Geomedical activity has developed recently, especially when anthropogenic stresses became significant factors in health.

The first part of the book comprises 15 chapters covering different general topics. The second part presents geometrical problems in some regions of Africa, Asia, Europe and North America. The book is a contribution to the complex subject of the relation between health and quality of the environment.

Price: UK£ 92

Orders to: CRC Press, 22-24 Torrington Place, London WC1E 7HJ, England; or: CRC Press Inc., 2000 Corporate Blvd., NW, Boca Raton, Florida 33431, U.S.A.

Morfología y génesis de suelos sobre yesos, J. Herrero. Monografías INIA N°77. Madrid, 1991, 447 p. ISBN 84-7498-345-1. Softbound.

Soils developed on gypsum rocks are common in Eastern Spain and in many arid and semiarid countries. This kind of soils does not exist in other European or wet temperate countries, and the available information is scarce. This book has a naturalist approach. Several soil morphologies and processes are studied, and their relationship with the landscape dynamics is also considered. Soil micromorphology is the main technique applied for the study of these soils. More than one hundred figures, most of them colour photos, are included. The classification of the soils according to Soil Taxonomy and the new proposals of ICOMID are also discussed.

Price: 1500 pesetas

Orders to: Ministerio de Agricultura, Centro de Publicaciones, Infanta Isabel 1, 28014 Madrid, Spain; **or:** Mundi-Prensa, Castelló 37, 28001 Madrid, Spain.

Production et Transfert de Technologies Agricoles: les relations entre les chercheurs, les responsables du transfert et les paysans. D. Merill-Sands et D. Kaimowitz. ISNAR, La Haye, 1992, 128 p. Traduction de la version anglaise "The Technology Triangle". Cartonné.

L'existence de liaisons entre les institutions de recherche agronomique et leur clientèle - agriculteurs et agences de transfert de technologies - revêt une importance capitale pour un développement et une diffusion réels des technologies. Les liens directs avec les agriculteurs, forgés par le biais de la recherche en milieu réel, garantissent l'adéquation de la recherche et un retour d'information rapide. Les liaisons avec les agences de transfert de technologies sont synonymes d'impact puisqu'elles permettent une transmission des technologies sur une plus grande échelle. Ces deux catégories de liaisons sont complémentaires et toutes deux indispensables. Les gestionnaires de la recherche ont éprouvé certaines difficultés à mettre en place et à maintenir ces liaisons, notamment pour répondre aux besoins des agriculteurs sans ressources. Or, l'expérience nous enseigne que des liaisons déficientes entraînent des coûts difficilement acceptables pour les systèmes de recherche de nombreux pays en développement. Outre leurs effets négatifs sur l'efficacité, les problèmes de liaison se traduisent par une réduction des performances et une diminution de l'impact de la recherche agronomique.

Cet ouvrage fait la synthèse des présentations et des discussions d'un atelier international, organisé pour passer en revue les acquis de deux études en cours sur les moyens de renforcer les liaisons avec les agriculteurs et les agences de transfert de technologies. Ces études, menées par l'ISNAR en collaboration avec plusieurs systèmes nationaux de recherche agricole, abordent cinq domaines-clés:

- (1) Le contexte politique et institutionnel des liaisons,
- (2) L'influence des facteurs organisationnels sur les liaisons;
- (3) Les types de mécanismes de liaison,
- (4) Les problèmes de gestion du personnel, et
- (5) La nécessité d'une gestion active.

Commandes à: ISNAR, B.P. 93375, 2509 AJ La Haye, Pays-Bas.

Proceedings of the Eight International Soil Correlation Meeting (VIII ISCOM): Characterization, classification and utilization of wet soils. J.M. Kimble, editor. USDA, SCS-SMSS, 1992, 327 p. Paperback.

This meeting, held in Louisiana and Texas, in October 1990, emphasized soil classification and the identification of the aquic moisture regime. Proposals to define aquic moisture conditions had been developed, along with Keys for testing the placement of aquic conditions in Soil Taxonomy. These Proceedings represent a current reference to the latest thinking on aquic conditions, both from the Soil Taxonomy point of view and from the standpoint of use and management. The papers provide a very useful reference on topics related to wet soils.

Orders to: National Leader World Soil Resources, Soil Management Support Services, Soil Survey Division, USDA-SCS, P.O.Box 2890, Washington, D.C. 20013, U.S.A.

Sustainable Development, Science and Policy. The Norwegian Research Council for Science and the Humanities, Oslo, 1990, 579 p. ISBN 82-7216-622-4. Paperback.

This is the report of the Conference on Sustainable Development, Science and Policy, held in Bergen in May 1990. The ambition of the convenors was to provide an international forum of science discourse in search of viable answers to the puzzles posed by global environmental change. This ambition has been realised, with a focus on five major themes:

- (1) Management of global climate change,
- (2) Global food supply: sustainable agriculture and the natural resource base,
- (3) Economics of sustainable development,
- (4) Integrating scientific disciplines to achieve sustainable development, and
- (5) The interface of science and policy. The Conference also offered a set of policy recommendations thought to be conducive for promoting global sustainable development.

Orders to: The Norwegian Research Council for Science and the Humanities (NAVF), Sandakerveien 99, 0483 Oslo 4, Norway.

Tropical Resources - Ecology and Development. A special issue of the international journal Resource Management and Optimization. Vol.7, nrs. 1-4. J.I. Furtado, guest editor. Harwood Academic Publishers, Chur, London, 1990, 306 p.

This special issue contains 14 articles on tropical resources, covering such subjects as environment, soils, forests, wetlands, agroforestry systems and marine resources, and their development.

Orders to: Harwood Academic Publishers, c/o STBS Ltd., P.O.Box 197, London WC2E 9PX, U.K.; **or:** Harwood Academic Publishers, P.O.Box 786, Cooper Station, New York, NY 10276, U.S.A.

Land Desertification in the Arab Countries. (In Arabic) A.M. Balba and M.G. Nasseem. Monshaat Al Naaref, Alexandria. 393 p. ISBN 977-03-0027-6. Paperback.

The Arab countries extend from the Atlantic Ocean to the Arabic Gulf in the arid and semiarid climatic regions where all factors of soil desertification are active. Attention in this region has been recently directed to soil and water conservation so that productive land may not further deteriorate. Environmental awareness has been considerably increased. Thus the writers felt the need for a book tackling the problem of desertification in Arabic, depending on their experience gained from several consultations to the UNEP and FAO.

The book is made up of five chapters. The first one deals with the climate role in desertification, the risks and processes of desertification of pasture land, forests, rainfed land, irrigated regions and desertification due to sand movement. Chapter 2 discusses the principles of combatting desertification including the role of management legislation, monitoring and the activities of the international organizations. Chapter 3 presents the processes and techniques of combating soil erosion with wind and water, sand dunes fixation, afforestation, conservation of the pasture land and measures that should be applied in the irrigated areas to prevent their salinization and sodication. The role of water in the desertification processes is discussed in Chapter 4, which presents also water conservation practices in rain-fed and irrigated areas, as well as a discussion on methods and techniques to minimize water loss and prevent water logging. Chapter 5 contains the extent of desertification in Egypt, Sudan, Libya, Tunisia, Algeria, Morocco, Jordan, Syria, Iraq, Saudi Arabia, United Arab Emirates and Oman. Efforts and projects to combat desertification in these countries are presented.

Requests to: Prof.Dr. A.M. Balba, College of Agriculture, University of Alexandria, Alexandria, Egypt.

Soil Fertility and Global Change. The Role of TSBF Studies in the IGBP. M.J. Swift, editor. Special issue N°25 of Biology International. IUBS, Paris, 1991, v + 24 p. ISSN 0253-2069. Paperback.

The objective of this report is to assess the possible significance of the studies being carried out by the Tropical Soil Biology and Fertility (TSBF) programme to the development of a research agenda for studying Global Climate Change. The particular target of this report is to propose ways in which TSBF and IGBP can collaborate in research on the interaction between soil and atmosphere.

Orders to: IUBS Secretariat, 51 Boulevard de Montmorency, F-75016 Paris, France.

Soil Restoration. Advances in Soil Science N°17. R. Lal and B.A. Stewart (Editors). Springer-Verlag, New York, Berlin, 1992, 456 p. ISBN 0-387-97657-4 (US edition) 3-540-97657-4 (German edition). Hardbound.

The degradation of otherwise fertile soil through misuse (improper agricultural methods, inappropriate land use, pollution, strip mining) and through natural processes of erosion, fertility depletion, and volcanic activity is a major concern today, especially when one considers the ever-increasing world population. It is essential that this degraded soil be restored to fertility and productivity in order to raise crops or sustain a forested habitat.

This book examines both the mechanisms of soil degradation and the methods by which the soil can be restored to fertility. Soil scientists, agronomists, and environmental scientists involved in the practice of soil restoration will find this book to be an invaluable reference.

Price: DM 248

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.

Global Runoff. Continental comparisons of annual flows and peak discharges. T.A. McMahon, B.L. Finlayson, A.T. Haines and R. Srikanthan. Catena Paperback. Catena Verlag, Cremlingen, 1992, 166 p. ISBN 3-923381-27-1. Paperback.

This book is a study in comparative hydrology, made at the global scale using time sequences of data for individual catchments. The study is based on three sets of data - the first consists of annual flow volumes for 974 gauging stations, with an average record length of 33 years; the second contains annual peak instantaneous flows for 934 gauging stations, with an average record length of 30 years; and the third consists of annual precipitation for 478 stations with an average record length of 46 years. After a description of the characteristics of the annual flow volumes and peak discharges are presented. Time series analysis of the data is given, after which an interpretation of the results is carried out, where the nature and extent of inter-hemispheric, intercontinental and inter-regional differences are discussed. The most significant difference established in this project is the abnormally high variability of flows in Australia and Southern Africa when compared with the rest of the world. An attempt is made to explain this phenomenon using a single linear storage model. The major conclusions to be drawn from this work are discussed in the last chapter.

Orders to: Catena Verlag, Brockenblick 8, W-3302 Cremlingen 4, Germany; or: Catena Verlage, P.O. Box 1897, Lawrence, KS 66044-8897, U.S.A.

Agriculture & Environment in Eastern Europe and the Netherlands. J.L. Meulenbroek, editor. Wageningen Agricultural University, Wageningen, 1992, 470 p. Paperback.

This book presents the proceedings of the Congress on Agriculture and Environment held in Wageningen in September 1990. The aim of this congress was to present a multidisciplinary view of the problems of East and West and the way the University is working on them. The proceedings contain the seven plenary papers and 38 contributions presented at parallel sessions. The authors are mainly from eastern Europe and the Netherlands.

Price: NLG 40

Orders to: Mr. J.L. Meulenbroek, Congress Office, Wageningen Agricultural University, Costerweg 50, 6701 BH Wageningen, the Netherlands.

World Atlas of Desertification. N. Middleton and D.S.G. Thomas. United Nations Environment Programme. Edward Arnold, London, New York, 1992, ix + 69 p. + 65 maps. A3-size. ISBN 0-340-55512-2. Hardback.

This atlas represents in graphical form the United Nations Environment Programme's most recent quantification of the global extent and severity of desertification. It is based on a global soil degradation database compiled by more than 250 regional experts. This atlas summarized an enormous mass of data on one of the world's most pressing environmental problems. As such it will form a vital reference for all scientists with an interest in arid land problems.

The atlas is structured in three parts, dealing with global, continental and national/local situations. Different countries have taken different approaches in assessing the extent of desertification. Their surveys provide greater detail of the problem at a national or local scale, and give illuminating insights into both the scale of desertification, and its various forms. This difference of approach has demanded a thematic approach for the atlas.

Price: £ 89.50

Orders to: Edward Arnold, Hodder & Stoughton Publishers, Mill Road, Dunton Green, Sevenoaks, Kent TN13 2YA, England.

Limiting Greenhouse Effects. Controlling carbon dioxide emissions. Dahlem Workshop Reports. Environmental Sciences Research Report 10. G.I. Pearman, editor. John Wiley & Sons, Chichester, New York, 1992, xv + 631 p. ISBN 0-471-92945-X. Hardbound.

This book is a report of the Dahlem workshop held in Berlin in December 1990, and which aimed to provide a rational basis for national and international efforts to reduce the rate of accumulation of carbon dioxide in the atmosphere.

An ever-growing global population, with steadily increasing energy and nutritional demands, is the major reason for the changing atmospheric composition and, in particular, increasing atmospheric concentrations of carbon dioxide. Growing energy demands are at the heart of the aspirations of those who seek to achieve more and those who simply need the basic elements of food, water, and shelter.

So we face a major dilemma. The energy goose that lays that golden egg of prosperity, that promises global equity and a better future, turns out to be a serious barrier to the long-term sustainability of our planetary systems.

This volume is a determined attempt to look afresh at our global energy systems with the object of discovering what options exist for the reduction of emissions of the greenhouse gas, carbon dioxide, what are the barriers to implementing those reductions, and how those barriers can be overcome. The chapters are written by specialists from many fields. The global warming issue, by its nature, thrusts us into a new level of interdisciplinary research and debate, exemplified by the papers in this volume.

Price: £ 99.50

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.

Farming for the Future. An introduction to low-external-input and sustainable agriculture. C. Reijntjes, B. Haverkort and A. Waters-Bayer. ILEIA, Leusden, in cooperation with MacMillan, Basingstoke, 1992, xxi + 250 p. ISBN 0-333-57011-1. Paperback.

This book examines the strategies and techniques of Low-External-Input and Sustainable Agriculture (LEISA) in the tropics. It is based on eight years' work by the Information Centre for Low-External-Input and Sustainable Agriculture (ILEIA) in conjunction with the ETC Foundation in the Netherlands.

The central concern of the book is how development workers can assist small-scale farmers in making the best use of low-cost local resources to solve their agricultural problems. Emphasis is therefore on methods of Participatory Technology Development (PTD) to find site-specific solutions and to raise the overall productivity of farming in a sustainable way.

The authors have taken an interdisciplinary approach, providing a broad framework of background theory as well as practical ideas and sources of up-to-date information.

Price: US\$ 12.50; £ 6.95

Orders to: MacMillan Publishers, Houndmills, Basingstoke, Hampshire RG21 2XS, U.K.

Sulphur Research and Agricultural Production in India. 3rd edition. H.L.S. Tandon. The Sulphur Institute, Washington, 1991, 140 p. Paperback.

This is the third revised and enlarged edition of the book. Since the time that this book first appeared in 1984, there has been a notable growth in sulphur research and usage in India. Updating and synthesis of the increasing volume of information is a continuous activity if the latest results of research are to move towards practical application.

This book documents reports of sulphur-deficiencies in soil from more areas and yield responses of a larger number of crops than was reported in the earlier editions. Efforts have been made to provide an up-to-date account of various aspects of sulphur. As in the past, this edition has also accorded priority to results from field experiments keeping in view the practical utility of research.

Price: In India: Rs 160; outside India: US\$ 45

Orders to: Dr. H.L.S. Tandon, Director, Fertiliser Development and Consultation Organisation, 204-204A Bhanot Corner, 1-2 Pamposh Enclave, New Delhi 110048, India.

Mathematical Modeling for Flow and Transport through Porous Media. G. Dagan, U. Hornung and P. Knabner, editors. Kluwer Academic Publishers, 1991, 296 p. ISBN 0-7923-1616-9. Hardback.

This book contains a selection of articles presented at an International Workshop on 'Mathematical Modeling for Flow and Transport through Porous Media'. The major topics of the meeting were free and moving boundary problems, structured media, multiphase flow, scale problems, stochastic aspects, parameter identification and optimization problems.

Also represented are a few contributions on the incorporation of chemical and biological processes in mathematical models for transport in porous media.

Price: Dfl 160; US\$ 98; UK£ 56

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.

Out of the Earth. Civilization and the Life of the Soil. D.J. Hillel. The Free Press, New York, 1991, 312 p. ISBN 0-2-915060-4. Hardback.

Although we often think of soil as something *lifeless* or *inert* - a simple mix of earth and water - in reality, the soil's dynamic cycle of biological and chemical processes make it a kind of living entity. The source and final resting place of everything that grows, soil thus inspires religious reverence not only in the peasant who derives his daily bread from it, but also in the scientist who contemplates its meaning as the place where life and death meet and exchange vital energies.

After tracing the historical connection between soil and civilization, the author turns to an analysis of current global problems, many of them caused by human agency: saline seeps in Australia and North America, desertification in Africa, America and Asia, as well as shrinking wetlands, *pollution and depletion of the aquifer in many regions, chemical abuse, and other scourges* unleashed by a profligate and near-sighted technological civilization. These policies will all come back to haunt us, and with devastating force, the author predicts, unless we undertake a fundamental change in human attitudes concerning our relation with the earth which has produced us and whose bounty has sustained us. This book by a soil scientist, is a lively well-written and lively, informative response to the environmental crisis of our time.

Price: US\$ 22.50

Orders to: The Free Press, a Division of Macmillan, Inc., 866 Third Avenue, New York, NY 10022, U.S.A.

The Balance of Nature. Ecological Issues in the Conservation of Species and Communities. S.L. Pimm. The University of Chicago, 1991, xiii + 434 p. ISBN 0-226-66830-4. Paperback.

How quickly will species recover following catastrophes? Can we predict which species are particularly vulnerable to extinction? Which species will succeed if they are deliberately or accidentally introduced into a community? When species become extinct, will few or many other extinctions result in the community? These are among the questions the author asks and seeks to answer, as he addresses the central and often-debated question of "stability" in ecological communities. Ecology must address five aspects of stability: stability in the strict sense, resilience, variability, persistence, and resistance. While the first of these is important in defining how communities may be configured, careful extended studies of the last four types provide the means to compare and contrast natural populations and communities, as well as theoretical studies of them.

Stability in any sense depends on characteristics of the species involved, on the structure of the species' food web, and on physical features of the environment. Yet detecting and measuring a number of these relevant factors has proved difficult because the factors occur on different temporal and spatial scales, and ecology is usually practiced on too small a scale over too short a time with a focus on too few species.

In this book, the author uses summary statistical data from a number of published studies on food webs and on population variability to test theories. In urging a new alliance between theoretical and empirical studies, he also makes explicit connections between theoretical work and the pressing concerns of practical conservation biology.

Price: US\$ 26.95

Orders to: The University of Chicago Press, 11030 South Langley Avenue, Chicago, IL 60628, U.S.A.

Looking after our Land. Video and accompanying book. English and French. W. Critchley. Edited by O. Graham. Oxfam, Oxford, 1991, video 90 mn, book 80 p. ISBN 0-85598-170-9. Paperback.

Soil and water conservation projects in Sub-saharan Africa have had a troubled record over

the past 50 years. Their failure has had extremely serious consequences especially for those people living in the marginal dryland areas. However, with the help of a handful of projects, people across Africa have demonstrated that they are motivated, competent and capable of protecting their environment. This book, and accompanying video, are about the main lessons to be learnt from new approaches to soil and water conservation in Sub-saharan Africa. Six case studies are covered, from Burkina Faso, Kenya and Mali. They show how, in the wake of many failures, some success has been achieved in projects where the participation of local people has been recognised as the crucial issue.

The book and video have been produced expressly for development workers in arid and semi-arid Africa on whose experience they are based. They will also be of general interest to a wider audience concerned with environmental issues.

Price: Video £ 13; book £ 6.95

Orders to: Oxfam Publications, Oxfam House, 274 Banbury Road, Oxford OX2 7DZ, U.K.

Geostatistical Glossary and Multilingual Dictionary. Studies in Mathematical Geology No.3. R.A. Olea. Oxford University Press, New York, Oxford, 1991, xi + 177 p. ISBN 0-19-506689-8. Hardback.

In this book, the aim of the authors is to present a useful reference for students, scientists, engineers, and others concerned with the meaning of the terms found in the geostatistical literature and heard in professional practice. Definitions and entries, which differ in levels of rigor and complexity, have been prepared in order to provide help to a readership that may range from inexperienced practitioners to advanced researchers.

This book includes a glossary as first part, and a multilingual dictionary as second part. The dictionary is divided in one section arranged alphabetically by English terms and in seven sections by Chinese, French, German, Greek, Portuguese, Russian and Spanish terms, each with the translation to English.

Price: UK£ 35

Orders to: Oxford University Press, Walton Street, Oxford OX2 6DP, U.K.

Electron-Optical Methods in Clay Science. CMS Workshop Lectures Vol. 2. I.D.R. Mackinnon and F.A. Mumpton, editors. The Clay Minerals Society, Boulder, 1990, ix + 159 p. Paperback.

This volume is based on an updated version of several of the lectures presented at the 1986 workshop plus three additional contributions. The subjects treated herein provide a sound basis for the use of electron-optical methods in the analysis of clays. This volume is intended for students who wish to begin their electron-optical investigation of clay minerals and for professionals who want to renew their acquaintance with this important subject. Each contribution has benefited from peer review and represents in its own right a valuable contribution to the scientific literature.

Orders to: see below.

Thermal Analysis in Clay Science. CMS Workshop Lectures Vol. 3. J.W. Stucki, D.L. Bish and F.A. Mumpton, editors. The Clay Minerals Society, Boulder, 1990, vii + 192 p. Paperback.

The subjects treated in the lectures presented at the 1987 workshop provide a sound basis for the use of modern thermal analytical techniques in the study of clays. This volume is intended for students who wish to begin their thermal investigations of clay minerals and for professionals who want to renew their acquaintance with this important subject.

Orders to: The Clay Minerals Society, P.O.Box 4416, Boulder, CO 80306, U.S.A.

The Biosphere. I.K. Bradbury. Belhaven Press, London, New York, 1991, viii + 203 p. ISBN 1-85293-037-3 (hardback) 1-85293-038-1 (paperback).

A basic textbook introducing the principles underlying structure and function in the biosphere and outlining its historical development through geological time. This book has been designed particularly for students with little formal biological training who are engaged in degree level work in geography and other environmentally-centred subjects. High priority has been given to making the various topics discussed accessible and comprehensible to the non-specialist. The reader is introduced to investigational techniques and given an insight into the most recent ideas.

Major environmental problems and human impacts on the biosphere are considered in the context of relevant natural processes.

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

Assessment of Critical Loads and the Impact of Deposition Scenarios by Steady State and Dynamic Soil Acidification Models. Staring Centrum Report 36. W. de Vries and J. Kros. The Winand Staring Centre, Wageningen, 1991, 61 p. ISSN 0924-3062. Paperback.

An overview is given of steady state and dynamic soil acidification models, together with applications on a local and national scale. The application of a simple steady state model shows that the average critical load for potential acidity on non-calcareous sandy forest soils in the Netherlands is approximately 1400 molc ha⁻¹ yr⁻¹. This is based on critical values for the Al concentration and molar Al/Ca ratio in the soil solution. A further decrease in soil solution pH, caused by depletion of Al-hydroxides, is also avoided at this level. Deposition reductions generally lead to a fast improvement of the soil solution chemistry. Results of dynamic model simulations show that deposition reductions up to 1400 molc ha⁻¹ yr⁻¹ as an average for Dutch forest before 2010 cause a substantial decrease in the exceedance of critical Al concentrations and Al/Ca ratios in forest topsoils (from about 80% to 20%).

Orders to: The Winand Staring Centre, Postbus 125, 6700 AC Wageningen, the Netherlands.

Development of K-Fertilizer Recommendations. International Potash Institute, Bern, 1990, 406 p. Paperback.

This book is the proceedings of the 22nd Colloquium of the International Potash Institute held at Soligorsk, USSR in June 1990. Besides the opening and closing addresses, the book presents the papers arranged in 5 sections:

- (1) Potassium demand in cropping systems,
- (2) Soil types and K-dynamics,
- (3) Soil and plant test methods and their calibration for long-term sustainability of soil fertility,
- (4) Evaluation of field experiments and fertilizer recommendations, and
- (5) Implementation of fertilizer recommendations with special reference to potash fertilizers.

Orders to: International Potash Institute, P.O.Box 121, CH-3048 Worblaufen-Bern, Switzerland.

Proceedings of the Mungbean Meeting 90. C. Thavarasook et al., editors. Tropical Agriculture Research Centre, Bangkok, 1991, xviii + 318 p. Paperback.

Mungbean is an excellent source of easily digestible protein in cereal-dominated diets of Asia. Moreover, mungbean has a very short maturity span so that cultivation can be applied to various cropping systems, increasing small farmer's income and improving soil fertility. Noodles, bean sprouts, sweets and various products are made from this plant. The area planted to this crop in Thailand has increased to over 100,000 ha in the past decade. More than 65% of Thai mungbean is exported. However, the yield of mungbean in Thailand is rather low compared with that of the other countries. To improve this situation, the Mungbean Meeting 90 was organized in Chiang Mai, Thailand in February 1990. This book gives the Proceedings of that meeting. It includes a number of contributions on soil fertility and farming systems.

Orders to: Tropical Agriculture Research Center (TARC), c/o Soil Science Division, Department of Agriculture, Bangkok, Bangkok 10900, Thailand.

Vesicular-Arbuscular Mycorrhiza Management. E. Sieverding. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Eschborn, 1991, 371 p. ISBN 3-88085-462-9. Paperback.

The occurrence and efficiency of vesicular-arbuscular mycorrhiza (VAM) under field conditions is influenced by numerous ecophysiological factors and plant production measures. This publication contains a number of new findings in this area. The results of these research activities have so far been published in numerous works and/or presented at congresses in various languages. But until now there has been no single book documenting and analyzing these results in their entirety and indicating possible practical applications. The present publication is intended

to fill that gap. It addresses scientists and practitioners engaged in plant production in the tropics and subtropics.

Orders to: Hartmut Bremer Verlag, Raiffeisenstr. 16, W-3403 Friedland, Germany.

Environmentally Sustainable Economic Development: Building on Brundtland. R. Goodland, H. Daly, S. El Serafy, B. von Droste, editors. Unesco, 1991, 100 p. ISBN 92-3-102781-6. Paperback.

Highlighting the value of our 'natural capital', this book makes it clear that unless development is distinguished from economic growth, the turn-off towards sustainable development will be missed. It indicates that too many warning signs have already been ignored suggesting that, in North and South alike, we are moving in the wrong direction and that there may be few, if any, short-cuts back.

Situated at the crossroads of culture, science, communication and education, Unesco has long been a proponent of the interdisciplinary approach recommended by the World Commission on Environment and Development. There is no doubt that such an approach, further elaborated here, is necessary to deal with the complex problems of environment and development.

This publication has been produced to reinforce the concept of ecological economics as the world was preparing for the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.

Price: US\$ 13

Orders to: Unesco, 7 Place de Fontenoy, F-75700 Paris, France.

Fertilizer Management in Dryland Agriculture - A Guidebook. H.L.S. Tandon, editor. Fertiliser Development and Consultation Organisation, New Delhi, 1991, viii + 104 p. ISBN 81-85116-13-X. Paperback.

It is crucial to improve the productivity of dryland areas, not only to increase their contribution in overall agricultural production and to reduce the outgo of foreign exchange spent in importing pulses and oilseeds but also to improve the incomes and living standards of millions of farmers who live off these lands.

In view of the important place occupied by fertilizers in improved dryland technologies, this practical guidebook have been prepared. It is based on latest available information. It has been written particularly for subject matter specialists, students, field staff of the fertilizer industry, extension workers, etc.

Price: In India: Rs 65; Elsewhere: US\$ 18.

Orders to: see below.

Fertilisers, Organic Manures, Recyclable Wastes and Biofertilisers - components of integrated plant nutrition. H.L.S. Tandon, editor. Fertiliser Development and Consultation Organisation, New Delhi, 1992, viii + 148 p. ISBN 81-85116-17-2. Paperback.

No single source of nutrient be it fertiliser, organic manure or biofertiliser can meet the nutrient needs of agriculture. Integrated nutrient supply system (IPNS) in which diverse sources of plant nutrients are made use of can do this to a large extent. Since these nutrient sources represent great diversity in chemical, physical and biological characteristics and their efficient use depends upon the particular agro-ecological environment and local availability, there can be no single IPNS package. However, from a single concept, a range of packages can be assembled. Integrated plant nutrition can best be practised if it is based on scientific facts, local conditions and micro economics.

Price: In India: Rs 170; Elsewhere: US\$ 45.

Orders to: Fertiliser Development and Consultation Organisation, 204-204A Bhanot Corner, 1-2 Pamposh Enclave, New Delhi 110048, India.

Managing Nitrogen for Groundwater Quality and Farm Profitability. R.F. Follett, D.R. Keeney and R.M. Cruse, editors. Soil Science Society of America, Madison, 1991, xix + 357 p + software. ISBN 0-89118-796-0. Paperback.

The very essence of agriculture is based on the capture of radiant (solar) energy and the stocks and flows of nutrients. Among the biogeochemical cycles governing agricultural produc-

tivity is the N cycle with its attendant pathways that can "leak" N forms to groundwater as well as to the atmosphere. Nitrogen ranks at or among the top of the agricultural crop production resource inputs based on both economics and thermodynamic energy equivalents. This production-governing resource coupled with its propensity to leak beyond the rooting zone under certain conditions requires management practices and protocols that will address the economics of its use as well as the potential for environmental and human health impacts. This volume makes a state-of-the-art assessment of the N cycle as applied to agriculture and presents N management strategies for minimizing leakages from production systems in the interest of maximizing N-use efficiency and minimizing environmental impacts, particularly on groundwater quality. Regional Soil and Climate Databases for the U.S. A supplement to Managing Nitrogen for Groundwater Quality and Farm Profitability.

Regional soil and climate databases for the United States were developed to be used in conjunction with the Nitrate Leaching and Economic Analysis Package (NLEAP) model published in the mentioned book. The U.S. regions include the Upper Midwest, Southern, Northeastern, and Western. The Upper Midwest is currently available.

Orders to: SSSA, ASA Headquarters Office, Book Order Department, 677 South Segoe Road, Madison WI 53711-1086, U.S.A.

A Tree for all Reasons. Science and Practice of Agroforestry No.5. P.J. Wood and J. Burley. ICRAF, 1991, vii + 158 p. ISBN 92-9059-075-0. Paperback.

This source book was written to provide guidance to field workers on the introduction and evaluation of woody perennials for use in agroforestry. In this context, introduction means taking a species to an environment where it is not well known or established and evaluation refers to the process of determining the suitability of a particular species for use in an agroforestry system. The evaluation process seeks, first, to determine the adaptation of the species to the site, as demonstrated by its survival and early growth, and, second, to study its phenology and morphology as a guide to its suitability for a specific agroforestry system.

The book is organized in four sections and four supplements. The sections cover: background to species selection for agroforestry, research planning and design, assessment and evaluation, and important areas of multipurpose-tree research. The supplements include a checklist of principle multipurpose-tree characteristics and products, a list of assessments for multipurpose-tree evaluation with sample formats, experimental designs, summary plans for 10 types of experiment, a glossary of terms, names and addresses of useful organizations, and references.

Price: US\$ 10 plus postage.

Orders to: ICRAF, P.O.Box 30677, Nairobi, Kenya.

Opportunities in Basic Soil Science Research. G. Sposito and R.J. Reginato, editors. Soil Science Society of America, Madison, 1992, xx + 109 p. ISBN 0-89118-799-5. Paperback.

This report arose from an increasing awareness that many scientists outside of the agricultural sciences know little about modern soil science. Some people perceive that everything worth knowing about soil is known and that appropriate application of that knowledge is all that is needed. Other people perceive that soils were better understood and managed during some previous Golden Era of agriculture.

As this report illustrates, soil is one of the most complex systems known. Highly nonlinear and highly variable, the soil system contains an infinite number and variety of chemical and biological phenomena. They ensure that the system is never static, never at equilibrium. Soils, if they are to be understood, must be studied at the atomic, human, and global scales. They are as worth of study in and of themselves as are the heavens and the depths of the oceans.

Price: US\$ 14 (plus 10% per book for postage outside the USA). Prepayment required.

Orders to: see below.

Myths and Science of Soils of the Tropics. SSSA Special Publication No. 29. R. Lal and P.A. Sanchez, editors. Soil Science Society of America, Madison, 1992, xvii + 185 p. ISBN 0-89118-800-2. Paperback.

There are several misconceptions about soils of the tropics. These misconceptions and myths are based on inadequate information on principal soils of the region, interaction between soils and prevalent climate, soil physical and mineralogical properties, soil chemical and nutritional characteristics, soil biota and their effects of productivity. Myths are propagated by perpetual food crisis, agrarian stagnation, severe problems of soil and environmental degradation and resultant economic and socio-political instability.

It is time that myths regarding soils of the tropics are replaced by scientific realities. We need to strengthen the database so that land capability can be assessed, ecologically compatible soil and crop management systems can be developed and validated, and long-term planning can be made to adopt strategies for sustaining agricultural growth and preserving productive potential of the soil resource. It is these concerns that led to the publication of this volume.

Price: US\$ 24 (plus 10% per book for postage outside the USA). Prepayment required.

Orders to: see below.

Turfgrass. Agronomy Monograph 32. D.V. Waddington, R.N. Carrow and R.C. Shearman, editors. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, 1992, xxi + 805p. ISBN 0-89118-108-3. Hardbound.

This volume updates some of the topics from the first turfgrass monograph and offers detailed information on many new topics. As such, it complements information contained in the earlier monograph and various turfgrass textbooks and reference books.

The monograph is divided into five sections. The first one explores the turfgrass industry and includes chapters on historical aspects of research and education, current status of the industry, and artificial turf. The turfgrass physiology section focuses on ecological aspects, energy relations and carbohydrate partitioning, and stresses due to salinity, temperature, shade, and traffic. The third section is on soils and water and emphasizes soils and amendments, nutrition, fertilization, water requirements, and irrigation. The management section offers chapters on energy conservation and efficient maintenance, integrated pest management, turfgrass management operations, and plant growth regulators. The last section addresses research techniques related to field and controlled-environment research, diseases, insects, weeds, and breeding.

Price: US\$ 42 (plus 10% per book for postage outside the USA). Prepayment required.

Orders to: ASA, CSSA, SSSA Headquarters Office, Book Order Department, 677 South Segoe Road, Madison WI 53711-1086, U.S.A.

Tropical Forests in Transition. Advances in Life Sciences. J.G. Goldammer, editor. Birkhäuser, Basel, Boston, 1992, vii + 270 p. ISBN 3-7643-2601-8 (German edition) 0-8176-2601-8 (US edition). Hardbound.

Natural large- and small-scale disturbances have played a significant evolutionary role in shaping the distribution, dynamics, structure and composition of the tropical forest. With the expansion of humans, the anthropogenic influences on the tropical forest began to overlap natural disturbances. Today's anthropogenic impacts on the tropical forests differ qualitatively and quantitatively from the natural disturbances. The speed of tropical deforestation and savannization is dramatically increasing. The physical and chemical impacts of forest conversion and biomass burning add to other anthropogenic influences on the atmosphere and climate. The expected anthropogenic climate change will also have considerable impacts on the tropical flora and fauna.

This volume synthesizes information on changing environmental conditions and human impacts on the tropical forest by looking back to the paleoecology, analyzing the impact of modern human populations and modeling the future of the tropical forest in a changing environment. The aim of the book is to strengthen multidisciplinary thinking in disturbance ecology.

Price: sFr 98, DM 114.

Orders to: In U.S.A. and Canada: Birkhäuser Boston Inc., c/o Springer Verlag New York, 44 Hartz Way, Secaucus, NJ 07096-2491, U.S.A. ; Elsewhere: Birkhäuser Verlag AG, P.O.Box 133, CH-4010 Basel, Switzerland.

Soil Chemistry. D.S. Orlov. A.A. Balkema, Rotterdam, Brookfield, 1992, xii + 390 p. ISBN 90-6191-915-0. Hardbound.

This textbook is based on the lecture course which the author has delivered for the past several years in the Soil Science Faculty of Moscow State University, and is translated from Russian.

The author has sequentially described the history of soil chemistry, application of soil chemistry in agriculture, chemical properties and composition of the principal types of soils, important chemical processes and chemical equilibrium in soils, fundamental laws of ion-exchange capacity of soils, formation of acidity and alkalinity as well as oxidation-reduction conditions. Also described are the principles of structure and formation of specific humic compounds and clay minerals. The author also examines the applied problems of chemical amelioration of soils and soil pollution.

Price: Hfl 145

Orders to: In U.S.A. and Canada: A.A. Balkema Publishers, Old Post Road, Brookfield, VT 05036, U.S.A. Elsewhere: A.A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, the Netherlands.

Acid Soil and Acid Rain. 2nd edition. I.R. Kennedy. Research Studies Press, Taunton, 1992, xvii + 254 p. ISBN 0-86380-124-2. Hardbound.

Widespread anxiety about the causes and effects of soil acidity prompted the writing of the first edition of this book in 1986. A second edition is now justified by the recognition of the international scale of the problem posed by acidification. Since the mid 1980s many governments have funded extensive research into problems of acidic deposition and soil acidification, on a greater scale than ever before. This book incorporates and integrates the new findings. Like the first edition, its primary object is to examine the fundamental chemical processes involved in acidification, so as to assess better their long-term influence on the status of soils and on the health of plants and other living species that depend on them. For this, a knowledge of the complex chemistry of pollutants and their transformation is needed, as well as an understanding of the chemistry and biochemistry of soils and plants. Consideration of the new data obtained since 1985 renders more certain the explanations of the causes of the environmental impacts of acidity, particularly in forests and lakes. In addition, procedures recommended by research workers for estimating rates of acidification are treated in this book more quantitatively.

Price: UK£ 44.50

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.

New IGBP Publications

Past Global changes Project: Proposed Implementation Plans for Research Activities. Global Change Report 19. J.A. Eddy, editor. IGBP, Stockholm, 1992, 110 p. ISSN 0284-8015. Paperback.

Improved Global Data for Land Applications. Global Change Report 20. J.R.G. Townshend, editor. IGBP, Stockholm, 1992, 85 p. ISSN 0284-8015. Paperback.

A proposal for a new high resolution data set. Report of the Land Cover Working Group of IGBP-DIS. Global Change and Terrestrial Ecosystems: The Operational Plan. Global Change Report 21. W.L. Steffen. B.H. Walker, J.S. Ingram and G.W. Koch, editors. IGBP, Stockholm, 1992, 93 p. ISSN 0284-8015. Paperback.

Report from the START Regional Meeting for Southeast Asia. Global Change Report 22. IGBP, Stockholm, 1992, 112 p. ISSN 0284-8015. Paperback.

Arranged by the International Geosphere-Biosphere: A study of Global Change (IGBP) in collaboration with Human Dimensions of Global Environmental Change (HDGEC) Programme.

Orders to: IGBP Secretariat, The Royal Swedish Academy of Sciences, Box 50005, S-10405 Stockholm, Sweden.

Weathering, Soils and Paleosols. Developments in Earth Surface Processes No.2. I.P. Martini and W. Chesworth, editors. Elsevier, Amsterdam, London, 1992, xxi + 618 p. ISBN 0-444-89198-6. Hardbound.

For the past 200 years, geological scientists have used the present as a key to unlocking the

past. This volume continues the tradition by exploring the processes of weathering and soil formation as indicators of the present environment of the Earth's land surface. Examined are the various ways in which this information can be used to interpret past environments which have produced the soils now preserved as paleosols. Because the surface environment of the earth may now be undergoing rapid change (the greenhouse effect), the book is a timely one for those researchers looking for evidence of analogous changes in the Earth's past. The work is divided into three sections. The first deals with fundamental considerations of weathering, clay mineralogy and diagenesis. The second deals with the formation of soils from various starting materials and in various surficial environments. The final section is an interpretation of paleosols. This volume provides reading material for graduate and senior-undergraduate courses.

Price: US\$ 133.50, Hfl 260.

Orders to: see below.

Natural Grasslands. Introduction and Western Hemisphere. Ecosystems of the World Vol. 8. R.T. Coupland, editor. Elsevier, Amsterdam, London, 1992, xiv + 470 p. ISBN 0-444-88264-2.

A detailed review of all major grassland regions of the world by ecologists who have worked extensively in these regions is provided in this volume. Grasslands have been modified to a large extent by the activities of man and his domesticated animals and these stresses are evaluated in terms of ecosystem structure and the activities of its organisms. The book begins with an overview of characteristics applicable to natural grasslands in general: climate, soils, water flow, productivity, micro-organisms, decomposition and nutrient cycling. Because of its length, it is published in two parts. This first volume includes these eight synthesis chapters and eleven regional chapters of the grasslands of the application of this fundamental information to conservation of resources and land use and management.

This handbook will be particularly useful for conservationists, land managers and terrestrial ecologists in general, and those of subhumid regions in particular. It is well-illustrated and referenced and contains much information in tabular form.

Price: US\$ 217, Hfl 380.

Orders to: see below.

Digitization, Processing and Quantitative Interpretation of Image Analysis in Soil Science and Related Areas. Special issue of *Geoderma*, Vol.53 Nos.3-4. A.R. Mermut and L.D. Norton, editors. Elsevier, Amsterdam, New York, 1992, 239p. ISSN 0016-7061. Paperback.

This volume contains papers presented at a symposium during the Soil Science Society of America Meetings, in October 1990 in San Antonio, Texas, U.S.A.

The papers included in this special issue cover many aspects of digitization, processing and quantitative interpretation of image analysis in soil science. It is expected that the publication of this issue will encourage more studies and extensive interaction between soil scientists in the world.

Orders to: in the USA and Canada: Elsevier Science Publishing Co. Inc., P.O.Box 882, Madison Square Station, New York NY 10159, USA; Elsewhere: Elsevier Science Publishers, P.O.Box 211, 1000 AE Amsterdam, the Netherlands.

Plantation Forestry in the Tropics. Second edition. J. Evans. Clarendon Press, Oxford, 1992, xv + 403 p. ISBN 0-19-854257-7. Paperback.

Tree-planting and plantation forestry in tropical countries are expanding rapidly. Social and community forestry, tree planting to control soil erosion, and the use of agroforestry, as well as many industrial afforestation projects, are all part of the response to tropical deforestation and are central to much rural development. The international Tropical Forest Action Programme (TFAP) promotes these many roles for tree planting. This book covers each role, setting the essential silviculture in the wider development context.

This new edition has been completely revised to provide up-to-date accounts of silvicultural practices, rural development issues, and the wider role that tree planting now plays. The chapters on agroforestry and protection forestry have been virtually rewritten, while throughout the book the important place of social forestry is recognized with frequent illustration and inclusion of important principles.

The silviculture underpinning successful industrial plantation forestry remains at the heart of the book. Many developments in tree improvement and forest nurseries through to considerations of forest protection and monocultures are covered.

Price: £ 30

Orders to: see below.

Development and the Environment. World Development Report 1992. The World Bank, Washington. Published by Oxford University Press, Oxford, New York, 1992, xii + 308 p. ISBN 0-19-520-876-5 (paperback) 0-19-520-877-3 (clothbound).

Between 1990 and 2030 the world's population will grow by 3.7 billion, demand for food will almost double, and industrial output and energy use will probably triple worldwide and increase sixfold in developing countries. Under current practices, the result could be appalling environmental conditions in cities and countryside alike.

This fifteenth annual report presents that outcome as a clear possibility, but it also presents an alternative path - one that, if taken, would allow the coming generation to witness improved environmental conditions accompanied by rapid economic development and the virtual eradication of widespread poverty. This is the more difficult path. Choosing it will require that both industrial and developing countries seize the current moment of opportunity to reform policies, institutions, and aid programs.

As in previous editions, this report includes the World Development Indicators, which give comprehensive, current data on social and economic development in more than 180 countries and territories. This volume is available in English, French, Spanish, Arabic, Chinese, German, Japanese and Portuguese.

Price: US\$ 16.95 (paperback) US\$ 32.95 (hardback)

Orders to: Oxford University Press, Walton Street, Oxford OX2 6DP, U.K.; or: Oxford University Press Inc., 200 Madison Avenue, New York, NY 10016, U.S.A.

Future Challenges for National Agricultural Research: a Policy Dialogue. A.M. Fletcher, editor. International Service for National Agricultural Research, The Hague, 1992, vii + 172 p. ISBN 92-9118-002-5. Paperback.

This book comprises the proceedings of the conference "Challenges and Opportunities for the NARS in the year 2000: a Policy Dialogue", held in Berlin, Germany, in January 1992. It reinforced the overall importance of the policy framework as a determinant of the performance of national agricultural research systems (NARS), and it attempted to bring about a dialogue between NARS leaders and policymakers. The objective of the conference was to initiate a policy dialogue in an unconstrained forum where policymakers could discuss the issues with their research counterparts, free of internal or external political agendas. It was also an opportunity to inform one another of new directions being taken by institutions operating at the international and regional levels. This was a tall order for a single conference, and one can only hope that this conference will be the beginning of a series of exercises in necessary policy dialogue. Over time this should set the stage for change from within as a response to the issues as they are objectively perceived by policymakers and NARS leaders, rather than as a reaction to outside pressures resulting from alien perceptions.

Orders to: ISNAR, P.O.Box 93375, 2509 AJ The Hague, the Netherlands.

For Earth's Sake. International Development Research Center, Ottawa, 1992, vii + 145 p. ISBN 0-88936-622-5. Paperback.

Poverty, inequality, dependency: catalysts of the economic and social malaise of the Third World. Global warming, ozone depletion, the vanishing rain forest: images of a planet-wide crisis in our environment. Is there a connection? Can the key to rescuing our environment be found in the concerns of sustainable development? The answer is yes.

Technical fixes are only patches. The real solution to the global environmental crisis lies in eradicating poverty and inequality. It lies in the effective transfer of appropriate knowledge systems and technologies. It lies in democratic decision-making. Northern concerns dominate the environmental agenda. The voice of the South must be heard.

Global warming and the loss of biological diversity have little meaning for people suffering daily from starvation, malnutrition, or lack of basic health care. Southern priorities, such as

resource degradation, pollution, and natural disasters, are immediate issues of life and death. They are issues often tied to international politics and economics. They are global problems demanding global resolution.

This book, a report from the Commission on Developing Countries and Global Change, clarifies the human dimensions of global environmental change. It helps Third World nations deal with this change. It identifies key social issues. It proposes a research agenda to address these issues. It opens a dialogue that can change the environmental agenda into a global plan for equity, development, and a sustainable ecology.

Price: Can\$ 14.95

Orders to: IDRC, P.O.Box 8500, Ottawa, Ontario, Canada K1G 3H9.

Genese, Ökologie und Soziologie einer Bodengesellschaft aus Ultrabazit und Bodenformen assoziierter Gesteine des süd-ost-brasilianischen Regenwaldes. U. Pfisterer. Schriftenreihe No.14. Institut für Pflanzenernährung und Bodenkunde, Kiel, 1991, ii + 176 S. ISSN 0933-680X.

Ziel dieser Arbeit war es, Genese und Ökologie eines Oxisols und seine Vergesellschaftung mit Böden aus anderen Gesteinen zu bearbeiten. Dabei sollte die Genese eines Oxisols aus seinem Stoffbestand rekonstruiert und gleichzeitig aus der rezenten Stoffdynamik abgeleitet werden.

Die Bodenbildung aus ultrabasischem Gestein unter feucht-tropischen Bedingungen war bisher nur relativ selten Gegenstand von Forschungsaktivitäten. Ultrabasische Gesteine verwittern vor allem im feucht-tropischen Klima sehr rasch und erscheinen daher im besonderen Maße geeignet, die Genese von Böden über ihre Dynamik zu verstehen.

Preis: DM 15

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

Dissolved Organic Matter in Lacustrine Ecosystems: energy Source and System Regulator. K. Salonen, T. Kairesalo and R.I. Jones, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1992, vii + 291 p. ISBN 0-7923-1652-5. Hardbound.

Concentrations of dissolved organic matter (DOM) in lakes are often an order of magnitude greater than concentrations of particulate organic matter; nevertheless, biogeochemical analysis of DOM is involved only in few textbooks on limnology. The origins of dissolved organic substances are largely photosynthetic; DOM is either autochthonously synthesized by littoral and pelagic flora through secretions and autolysis of cellular contents, or allochthonously generated in terrestrial systems of the drainage basin, consisting largely of humic substances refractory to rapid microbial degradation. The role of DOM in lacustrine ecosystems, as energy source and system regulator, however, is still poorly known.

The aim of this book is: (1) to present state-of-the-art reviews of the role of dissolved autochthonous and allochthonous organic matter in pelagial and littoral zones; (2) to focus attention on poorly understood but critical topics and hence to provide direction for future research activity.

Price: Hfl 275, US\$ 164, UK£ 95.

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.

An Agenda of Science for Environment and Development into the 21st Century. J.C.I. Dooge, G.T. Goodman, J.W.M. la Rivière, J. Marton-Lefèvre, T. O'Riordan, and F. Praderie, editors. International Council of Scientific Unions, Paris. Published by Cambridge University Press, Cambridge, New York, 1992, vii + 331 p. ISBN 0-521-43761-X. Paperback.

This volume brings together the understanding and the judgement of the world's scientific community on the issues of highest priority for the future of the environment and development. It looks beyond the state-of-the-art and formulates the environmental and development research agenda, and identifies the scientific knowledge base which will be needed for rational policy decisions during the coming decades.

Diverse topics such as population, land use, energy, global cycles, quality of life and public awareness are covered under sixteen themes which have been grouped into three sections:

Problems of Environment and Development; Scientific Understanding of the Earth System; and Responses and Strategies. All the contributions were developed at a conference of invited participants convened at the end of 1991 by the International Council of Scientific Unions and other non-governmental organizations. The contents of this volume are expected to form the basis of action on the part of the international scientific community as a follow up to the UN Conference on Environment and Development.

Orders to: Cambridge University Press, The Pitt Building, Trumpington Street, Cambridge CB2 1RP, England; or: Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, U.S.A.

Shifting Cultivation and Alternatives. An Annotated Bibliography, 1972-1989. D.M. Robison and S.J. McKean. CAB International, Wallingford, in association with CIAT, Cali, 1992, v + 281 p. ISBN 0-85198-680-3. Paperback.

Tropical deforestation and its possible contribution to global warming has recently received increasing attention in both tropical and temperate countries. This bibliography seeks to gather and sort the research done since the publication of Nye and Greenland's monograph (*The Soil under Shifting Cultivation*, CAB, Farnham Royal) in 1960. The editors' belief is that most of the work yet to be done in this topical and challenging area involves evaluation of the alternatives to shifting cultivation. Sections have therefore been included on alternative fallows, alternative nutrient input strategies and attempts at rehabilitating land which has been degraded due to slash and burn agriculture. The literature, taken from the international agricultural database, CAB Abstracts, has been categorized as follows: Part I: Farming system description, The cropping period, The fallow period; Part II: Improved fallows, Agroforestry and community forestry, Other intensified cropping systems, Soil and water conservation studies, Alternative input strategies, Alternative crops, Land rehabilitation; and Part III: Social and policy aspects of intensification.

Price: £ 25 (US\$ 47.50 Americas only).

Orders to: in America and Canada: CAB International, 845 North Park Avenue, Tucson AZ 85719, USA;

elsewhere: CAB International Wallingford, Oxon OX10 8DE, U.K.

Proceedings of the Middle East Sulphur Symposium. M.H. Hilal, editor. The Sulphur Institute, Washington, 1992, 375 p. ISBN 977-5041-21. Paperback.

Agronomists and farmers throughout the world have now recognized sulphur as the fourth major nutrient for crop production. However, sulphur also has a special application for the challenges associated with agriculture in arid environments. Besides sulphur's established role as a plant nutrient, it can also improve soil properties in arid environments by decreasing soil alkalinity and salinity or by improving water relations, to name a few. These subjects were explored in detail at this Symposium which was held in February 1990 in Egypt. In this book, the papers are arranged in the following four sections: (1) Sulphur resources and sulphur processing; (2) Sulphur oxidation and biology; (3) Sulphur fertilizers and nutrients transfer; and (4) Soil amendment and crop response. Recommendations and comments of the symposium are presented as the last chapter of the book.

Orders to: The Sulphur Institute, 1140 Connecticut Avenue, NW, Suite 612, Washington, DC 20036, U.S.A.

Assessment of the Transferability of Laboratory Rainfall-runoff and Rainfall-soil Loss Relationships to Field and Catchment Scales. A Study in the Cape Verde Islands. C.M. Mannaerts. Doctoral Thesis, University Ghent, 255 p. Paperback.

This study describes a comparative analysis of rainfall-runoff and rainfall-soil loss relationships among three experimental data sets characterized by the different size of their drainage areas. Field plot and small catchment runoff and sediment data were collected in the Cape Verde Islands, representing a semiarid environment of volcanic origin. Laboratory-scale runoff and sediment data from the soils of the field plots and catchments were obtained by rainfall simulation on 0.1 m² plots using a number of standardized rainstorms on various slope gradients.

Requests to: Dr. C.M. Mannaerts, Division of Water Resources Survey, ITC, P.O. Box 6, 7500 AA Enschede, the Netherlands.

Classes Gerais de Solos do Brasil. Guiar auxiliar para seu reconhecimento. (General soil classes of Brazil. Auxiliary guide for their recognition). J. Bertoldo de Oliveira, P. Klinger Tito Jacomine and M. Nunes Camargo. FUNEP, 1992, 201 p. Paperback (in Portuguese).

This book has been written by three soil scientists based on their experience and research activities in the reconnaissance of soil survey and classification in Brazil. It is the first textbook concerned with a systematic description of the present-day knowledge on the Brazilian soil classes recognized at a general level. The characteristics of 36 soil classes as well as their agricultural potential occurrence, affinities and distinctions are discussed. The book is subdivided in eight chapters: after an introduction, chapter 2 gives a brief discussion on the soil forming factors with special reference to Brazilian conditions. Chapters 3 to 7 are concerned with the Brazilian view towards several aspects of soil profile description and its interpretation. In chapter 8, all recognized soil classes are discussed in separate sections. Besides bibliographic references, the book is well illustrated with colour photographs of representative soil profiles and their diagnostic horizons, some with landscapes description. It is a guidebook for lecturers, students, extensionists, researchers, farmers and others interested in soil resources.

Orders to: FUNEP, Rodovia Carlos Tonanni km 5, 14870 Jaboticabal, SP, Brasil.

Population Dynamics of Bacteria Introduced into Bentonite Amended Soil. C. Heijnen. Doctoral thesis, Wageningen Agricultural University, 1992, 119p. Paperback.

In this thesis, the population dynamics of rhizobia introduced into loamy sand was taken as a reference for studying the effects of clay amendments to soil. The use of clay amended soil instead of natural clayey soil, made it possible to study the influence of the presence of clay only, without having to pay much attention to other differences in e.g. the organic matter content. The main attention was focused on the changes in survival of introduced bacteria after amending the soil with bentonite clay.

Orders to: Institute for Soil Fertility IB-DLO, P.O.Box 48, 6700 AA Wageningen, the Netherlands.

Introduction to Clay Minerals. Chemistry, Origins, Uses and Environmental Significance. B. Velde. Chapman & Hall, London, New York, 1992, ix + 198 p. ISBN 0-412-37030-1. Paperback.

The study of clay minerals has been very active in the past four decades. However, there have been as yet few recent attempts to unify the great store of knowledge concerning the chemistry, origin, uses and role in the geologic domain of these fine particles. The interaction of living and mineral worlds is most often governed by clay chemistry; soils, sediments and sedimentary rocks, are the keys to present-day environmental problems.

The methods used to identify and characterize clay minerals, as well as their chief chemical and crystallographic characteristics, are outlined in this text. X-ray diffraction, infrared, electron microscopy, DTA and other methods give details concerning one or another aspect of clay minerals. In order to understand the methods, one must understand the basics of the structure and chemistry of a mineral; these are given in detail in the book.

Price: £ 14.95

Orders to: Chapman & Hall, 2-6 Boundary Row, London, SE1 8HN, England; or: Chapman & Hall, 29 West 35th Street, New York, NY 10001-2291, U.S.A.

Soils. An Introduction. Second edition. M.J. Singer and D.N. Munns. MacMillan Publishing Company, New York, Oxford, 1992, xix + 474 p. ISBN 0-02-946470-6. Paperback.

This book has been revised to include concepts and information new since the first edition in 1987. It is written to be understood by all students, but it has sufficient depth to serve as a text for soil science majors and as a reference for anyone interested in soil.

The authors begin by naming parts - mineral particles, organic matter, organisms, pores, water- and explain how they relate to one another to form soil and with plants and microbes to form an ecosystem. The authors then relate this complex soil body to its larger environment by discussing soil origins, classification, and interpretation.

Orders to: MacMillan Publ. Company, 866 Third Avenue, New York, NY 10022, U.S.A.

The Evaluation of Land Resources. D.A. Davidson. Longman Scientific & Technical, Harlow. Co-published in the U.S. with John Wiley & Sons, New York. 1992, xix + 198 p. ISBN 0-582-02399-8. Paperback.

This book is an expanded edition of *Soils and Land Use Planning*, first published in 1980. Land evaluation determines land suitability for a range of sustainable uses. It analyses the options which best achieve planning and policy objectives, predicting anticipated yields under different inputs and management strategies.

This volume begins with an overview of land resource issues at global, continental and national scales and describes land resource survey techniques. Explaining the main methods of Land Capability Assessment and the methodology of land evaluation, it examines soil surveys and their interpretation. The author considers a wide range of applications for land resource planning illustrating these with a range of international examples drawn from Britain, The Netherlands, USA, Canada, Australia, New Zealand, Nigeria and Zambia. He places particular emphasis on the application of Geographical Information Systems (GIS) and modelling techniques to the evaluation of land resources.

Price: £ 13.99

Orders to: Longman Scientific and Technical, Longman House, Burnt Mill, Harlow, Essex CM20 2JE, England; or: John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158, U.S.A.

Diversity and the Tropical Rain Forest. J. Terborgh. Scientific American Library, New York. Published with Freeman, New York, Oxford, 1992, ix + 242 p. ISBN 0-7167-5030-9. Hardbound.

The tropical rain forest is the most exuberant manifestation of nature's diversity, and the abundance of life it nurtures has captured the fascination of scientists since the time of Darwin. Why are there so many species? Why do tropical forests in particular contain so many species of trees? What can we learn by studying this remarkable diversity and what can be done to preserve it? In this sumptuously illustrated volume, the author shows how scientists approach these critical questions.

At the heart of the study of biodiversity is the investigation of the ecological processes that accommodate diversity and the evolutionary processes that generate it. Separate in principle, these two sets of factors are intricately interwoven, and it is this complex interrelationship that the book seeks to unravel.

Price: £ 17.95

Orders to: Marston Book Services, P.O. Box 87, Osney Mead, Oxford OX2 2DT, England.

Irrigation Planning with Environmental Considerations. A Case Study of Pakistan's Indus Basin. World Bank Technical Paper 166. M. Ahmad and G.P. Kutcher. The World Bank, Washington, 1992, vii + 197 p. ISBN 0-8213-2080-7. Paperback.

Waterlogging and salinity are two of the major environmental problems associated with large irrigation systems. This paper contains the results of this case study for the Indus Basin irrigation system, which analyzes causes of waterlogging and salinity and suggests possible remedies. The methodology and the techniques developed for this case study can be considered as applicable generally to irrigation systems operating in semi-arid and arid environments.

Orders to: see below.

Successful Small-Scale Irrigation in the Sahel. World Bank Technical Paper 171. E.P. Brown and R. Nooter. The World Bank, Washington, 1992, xii + 65 p. ISBN 0-8213-2106-4. Paperback.

The study reviews the experience with irrigation projects in Africa with particular attention to small-scale irrigation in the Sahel, where small-scale private irrigation systems, based on simple, low-cost technologies, are expanding successfully in a number of countries. It examines the characteristics of the successful projects in order to determine the basis for future successful project design. It then outlines those factors most critical to the project success, including full and early farmer participation, low-cost technologies, an adequate financial return that provides a cash flow to farmers at the time that they need it, and sustainability through groundwater surveys and attention to environmental considerations.

Price: US\$ 6.95

Orders to: The World Bank, Office of the Publisher, 1818 H Street, N.W., Washington, DC 20433, USA.

Australian Environment. Issues and Facts. I. Castles. Australian Bureau of Statistics, Belconnen, 1992, xi + 354 p. ISBN 0-642-16043-0. Paperback.

The first edition of this publication is being regarded as a prototype with a view to encouraging feedback to the Australian Bureau of Statistics on additional data sources that may be tapped, the statistical issues that need to be addressed, the form of presentation adopted, and how the quality of the data might be improved. With this in mind it was decided to aim at an early release of available information rather than delay until a more comprehensive publication could be produced.

A particular purpose is to provide a set of statistical benchmarks for debate on environmental issues at both the national and international level. In addition, the organisation of the material within the specified framework is designed to provide some order to the boundaries of the field. It has a wealth of data and maps on such issues as agriculture, forestry, the atmosphere, water, land and soil, and human settlements.

Price: Aust.\$ 35

Orders to: Australian Bureau of Statistics, P.O.Box 10, Belconnen ACT 2616, Australia.

Bibliography of Malaysian Soils. 1980-1991. A.B. Rosenani and S. Zauyah. Malaysian Society of Soil Science, Kuala Lumpur, 1992, viii + 58 p. Paperback.

This volume is a special publication produced in conjunction with the 20th Anniversary of the Malaysian Society of Soil Science. This is the second bibliography published on Malaysian soils. Its objective is to provide a reference list of work on Malaysian soils which have been done and published either locally or abroad. It has 723 references ordered by subject, and an author index. The authors hope that it will be of use not only to soil scientists, but also to agriculturists or scientists having an interest in soil research.

Orders to: Malaysian Society of Soil Science, P.O.Box 12644, 50784 Kuala Lumpur, Malaysia.

Soil Structure Deficiency in Extensive Croplands of Northern Victoria. A. Fried and N. Smith. Monash University, Clayton, 1992, 112 p. Paperback.

This publication is an inventory of the state of soil structure throughout the extensive croplands of Northern Victoria. The report found that there is no universally used yardstick against which soil structure is assessed, and as a result there is no universal methodology to assess soil structure.

In the absence of quantitative data, soil structure features that are known to have a detrimental impact on plant growth are described. The link between these characteristics, soil type and management are outlined, and the spatial distribution of soil types and these features in the extensive croplands of Northern Victoria is described. A statistical analysis is used to identify wheat yield shortfalls on a shire basis that are strongly suspected to be linked to inadequate soil structure. A major conclusion of the report is that plant requirements should be used to assess soil structure conditions, and it is recommended that research is focused on these requirements and associated measurements techniques.

Price: Aust.\$ 10 (plus postage)

Orders to: see below.

The Importance of Soil Movement by Water on Broadacre Cropland in Victoria. F. Gibbons, W. Papst and J. Patterson. Monash University, Clayton, 1988, 110 p. Paperback.

In this publication, the Universal Soil Loss Equation (USLE) is applied on a landscape scale to a series of land types used for broadacre cropping to examine the importance of soil movement (sheet and rill erosion) by water. The land types are a combination of 3 major soil categories and 5 slope classes. The relative importance of soil movement in individual Shires is also studied. Indices of potential productivity decline due to soil movement and the urgency of corrective action are derived. USLE produces a useful first approximation in ordinal terms to the relative importance of soil movement on the various land types and Shires in the study area. Similarly, the indices of productivity decline and urgency assist in interpreting the effects of soil movement. Whether in terms of soil movement, potential productivity decline or urgency, the problem is predominately with red-brown earths on gentle slopes (0-5%), particularly 1-3% slopes. It is to these land types that attention should be directed. Clays are a small contributor to the problem as is all land of greater than 5% slope. Sands are a minor contributor to the problem in terms of productivity decline.

Price: Aust.\$ 10 (plus postage)

Orders to: Monash University, The Publications Secretary, Dept. of Geography & Environmental Sciences, Clayton, VIC 3168, Australia.

Systèmes d'Information Géographique en Mode Image. C. Collet. Presses Polytechniques et Universitaires Romandes, Lausanne, 1992, 196 p. ISBN 2-88074-239-0. Broché.

Si l'aspect cartographique des systèmes d'information géographique est le plus familier et le plus représentatif aux yeux du public, il ne constitue que la partie émergée de l'iceberg. Un système d'information géographique est plus qu'un outil de représentation cartographique. En fait, derrière cette appellation se cache une diversité d'environnements capables de gérer des informations à caractère spatial. Les systèmes d'information géographique en mode objet trouvent leur terrain d'application privilégié dans la recherche et dans l'extraction d'information concernant les objets spatiaux, grâce à leur capacité de gestion et de manipulation des bases de données géographiques. De façon complémentaire, ceux en mode image sont particulièrement adaptés à l'analyse spatiale, à la modélisation ainsi qu'à la simulation.

Cet ouvrage propose une description détaillée des techniques et méthodologies spécifiques aux systèmes d'information géographique en mode image. Dans la première partie, il expose les techniques de saisie numérique de l'information spatiale, celles de leur mise en forme et de leur représentation graphique, qui ont été pour la plupart empruntées à la cartographie thématique numérique. La seconde partie traite de la spécificité des systèmes d'information géographique en mode image, elle passe en revue de manière détaillée et illustrée les outils d'analyse spatiale qui sont à la base de la modélisation et de la simulation de processus à caractère spatial.

Prix: SFr. 58

Commandes à: Presses Polytechniques et Universitaires Romandes, EPFL, Ecublens, CH-1015 Lausanne, Suisse.

Fertilizing Effects of Atmospheric Ammonia on Semi-natural Vegetations. L.J. van der Eerden. Thesis Free University Amsterdam, 1992, 131 p. Paperback.

There is about 75.106 kg nitrogen (mainly N₂) in the atmosphere above each hectare of the earth's surface, of which 1-20 kg ha⁻¹ yr⁻¹ is incorporated into plant biomass and soil, and after some time is released into the atmosphere. Human activities, both industrial and agricultural, disturb this natural nitrogen cycle by strongly increasing the amount of biologically more active nitrogenous compounds, the most important being nitrogen monoxide (NO), nitrogen dioxide (NO₂), ammonia (NH₃), nitrate (NO₃⁻) and ammonium (NH₄⁺). Deposition of these compounds in The Netherlands amounts to 47 N kg ha⁻¹ yr⁻¹, of which 49% is from NH₃ and 17% from NH₄⁺.

In this thesis the responses of heathland vegetation and two tree species to atmospheric NH₃ and ammonium NH₄⁺ have been evaluated. To provide a basis for assessment of critical levels for these compounds, attention was paid to uptake and retention, to the character of effects and exposure/response relationships and to methods to arrive at concentration thresholds.

Orders to: Public Relations IPO-DLO, P.O. Box 9060, 6700 GW Wageningen, the Netherlands. 3D in Remote Sensing and GIS: Systems and Applications. Special Issue of the ITC Journal, 1992-1. ITC, Enschede, 1992, 109 p. ISSN 0303-2434.

During a workshop on "3D in Remote Sensing and GIS: Systems and Applications" held in September 1991, the aspects of 3D in remote sensing and GIS were presented from very diverse viewpoints, such as geography, photogrammetry, cartography, physics, optics, computer science, database management, hydrology and robot vision.

This issue presents a number of selected papers presented at the workshop.

Orders to: ITC, P.O.Box 6, 7500 AA Enschede, the Netherlands.

Laboratory Manual for the Examination of Water, Waste Water and Soil. 2nd edition. H.H. Rump and H. Krist. VCH, Weinheim, New York, 1992, xi + 190 p. ISBN 3-527-28440-0 (German edition) 1-56081-221-4 (US edition). Flexicover.

The rising consumption of water for domestic, agricultural and industrial purposes is placing an increasing burden on nature's household. Apart from the problems associated with supplying sufficient quantities, an equally important difficulty involves the availability of water of acceptable quality.

The present compilation will aid the specialist active in the fields of water evaluation and judgement of water quality. Well proven, uncomplicated analytical techniques are emphasized. Particular importance is placed on methods for quality control, sampling and evaluation of experimental results. The publication is intended especially for use in training courses and in further education as well as for personnel involved in development aid schemes.

Price: DM 64

Orders to: VCH Verlagsgesellschaft, P.O.Box 10 11 61, W-6940 Weinheim, Germany;
or: VCH, Suite 909, 220 East 23rd Street, New York, NY 10010-4606, U.S.A.

Handbook of Organophosphorus Chemistry. R. Engel, editor. Marcel Dekker, New York, Basel, 1992, x + 899 p. ISBN 0-8247-8733-1. Bound.

This practical work summarizes the development of organophosphorus chemistry in topical areas and details the discipline's current state, providing applications and experimental procedures throughout. Among others, the book examines advances in the mechanistic understanding of the Perkow and related organophosphorus reactions; describes methods for the reduction of quinquevalent to trivalent phosphorus and their applications to standard synthetic procedures; emphasizes the preparation of phosphonates bearing hydroxy, amino, and thiol functions at the *a*-position relative to the phosphoryl group; reviews the basics of NMR as it applies to the ³¹P nucleus, considering the use of the latest measurement techniques in solving structural and mechanistic problems; compares the characteristics of polymer-based and monomeric materials; presents recent progress in the design of insecticides and covers their chemical and biological characteristics.

Orders to: Marcel Dekker Inc., 270 Madison Avenue, New York NY 10016, U.S.A.

The arenal Expert Evaluation Model of Field Vulnerability. Computer Program with Electronic Manual. D. de la Rosa, J.A. Moreno and L.V. Garcia, Sevilla, 1992.

arenal is a complementary module of the agro-ecological land evaluation methods within MicroLEIS (Microcomputer-based Mediterranean Land Evaluation Information System) software package. It estimates the relative vulnerability of different fields to agrochemical compounds, in terms of soil and groundwater diffuse contamination. Through a microcomputer Basic program, soil factors and related agricultural land features are combined with management system criteria in Mediterranean conditions. ALES system was previously applied to get the computer-captured expert knowledge and data from soil science and related disciplines which deal with agricultural land management. The model, as a simple and qualitative-empirical approach, uses basically input data or "key" parameters from soil survey and other natural resource inventory information.

arenal program is an environmental impact evaluation procedure for sustainable land management. This method and the other evaluation methods included in MicroLEIS compose a "case of useful tools" to be used in order to identify environmentally and economically sustainable agricultural systems. The programme on diskette is provided as an integral part of MicroLEIS Version 3.1 package.

Request to: Instituto de Recursos Naturales y Agrobiología, CSIC, P.O.Box 1052, E-41080 Sevilla, Spain.

Biohistory: The Interplay between Human Society and the Biosphere. Past and Present. Man and the Biosphere Series N°8. S. Boyden. Unesco, Paris. Published with Parthenon Publishing Group, Carnforth, 1992, xiv + 265 p. ISBN 92-3-102747-6 (Unesco) 1-85070-371-X (Parthenon). Bound.

Biohistory, as defined in this book, is the study of the biological background to human situations and of the interplay in history and at the present time between cultural and natural processes. After introducing the conceptual framework of the biohistorical approach, the book offers a discussion of the evolution, interdependencies, diversity and sensitivities of living organisms and systems.

The main part of the book is concerned with the impacts of culture-induced human activities on natural systems, from the emergence of humankind in evolution to the present day. The emphasis throughout is on the implications of these impacts for the health and well-being, both of humans themselves and of the ecosystems of the biosphere. Attention is drawn to important

biohistorical principles that help us to understand the human situation today. Emphasis is given to the fact that the biosphere, as a system capable of supporting humanity, will not tolerate indefinitely the present patterns of resource and energy use by human society.

Orders: see below.

Sustainable Investment and Resource Use. Equity, environmental integrity and economic efficiency. Man and the Biosphere Series N°9. M.D. Young. Unesco, Paris. Published with Parthenon Publishing Group, Carnforth, 1992, 176 p. ISBN 1-85070-381-7 (Parthenon). Bound.

Today's environment is largely a function of decisions made 10-20 years ago. Concerned about the lag between policy decisions, land use change and environmental improvement, this book identifies policy changes that will stimulate investment for a sustainable future. Written in language that ecologists, economists and policy makers can understand, it argues that much more investment is necessary and shows how this can be achieved whilst maintaining environmental integrity.

By focusing on the incentives that drive investment and resource use, governments can build a platform that will lead to sustainable development. Recognizing three social goals - economic efficiency, ecological integrity and equity- formal constraints to policy formulation are identified, and a set of policy prescriptions is developed.

Guidelines for the design of resource-right systems and macro-economic policies are put forward. Taking a market-friendly approach, the widespread use of a precautionary Principle, a User-Pays Principle and a Beneficiary-Compensates Principle is advocated.

Price: £ 35, plus postage

Orders to: see below

Shifting Agriculture and Sustainable Development. An interdisciplinary study from north-eastern India. Man and the Biosphere Series N°10. P.S. Ramakrishnan. Unesco, Paris. Published with Parthenon Publishing Group, Carnforth, 1992, xvii + 424 p. ISBN 92-3-102749-2 (Unesco) 1-85070-383-3 (Parthenon). Bound.

Conservation and sustainable development are two sides of the same coin. An integrated approach involving these two concepts demands satisfying basic human needs, equity with social justice and maintenance of social, cultural and biological diversity as well as the ecological integrity of the system. This case study is an in-depth analysis of the integrated approach.

The book has three parts. The first one on agroecosystem and village-system function addresses such topics as cropping and yield patterns, energy budgets, ecological and economic efficiencies of various land-use systems, weed potential, soil fertility patterns, and nutrient budgets. The second part on secondary successional patterns and processes is concerned with vegetation dynamics, nutrient cycling, early successional strategies and shrub and tree architecture. Management implications are addressed in the third part.

Orders to: The Unesco Press Commercial Services, 7 place de Fontenoy, F-75700 Paris, France; or: Parthenon Publishing, Casterton Hall, Carnforth, Lancs. LA6 2LA, U.K.

Landscape Boundaries. Consequences for biotic diversity and ecological flows. Ecological Studies 92. A.J. Hansen and F. di Castri, editors. Springer-Verlag, New York, Heidelberg, 1992, xviii + 452 p. ISBN 0-387-97631-0 (US edition) 3-540-97631-0 (German edition). Hardbound.

This volume examines the effect of ecotone patterning on community diversity and landscape functioning. Ecotones (transition zones between ecosystems) define ecosystem boundaries and may control the flow of energy, material, and organisms between ecosystems. This book explores the role of ecotones in controlling these flows thereby influencing landscape functioning. It synthesizes existing theory, evaluates central hypotheses relative to empirical and simulation data, and puts forth new hypotheses. This volume addresses the following questions:

- (1) Do ecotones control ecological flows among ecosystems and hence influence landscape dynamics?
- (2) How do patterns of biodiversity relate to landscape dynamics?
- (3) Can monitoring of ecotones allow early detection of global change?
- (4) How can landscape patterns be managed to achieve sustainability?

Price: DM 198

Orders to: see below.

The Nitrogen Fixation and its Research in China. Guo-Fan Hong, editor. Springer-Verlag, Heidelberg, New York, 1992, xviii + 610 p. ISBN 3-540-54510-7 (German edition) 0-387-54510-7 (US edition). Hardbound.

Studies on nitrogen fixation have now been recognised as a topic of high priority in Chinese scientific programmes, since nitrogen fixation research is considered essential for helping to solve the food problem in this country. The contributions to this book represent the first complete overview of nitrogen-fixation research. This research field is of prime importance for agriculture in China and nitrogen fixation provides more than half of the fertilizers applied. The topics presented cover biochemistry, molecular genetics and the biology of nitrogen fixation.

Price: 298 DM

Orders to: Springer-Verlag, Postfach 105280, W-6900 Heidelberg 1, Germany; or: Springer-Verlag, 175 Fifth Avenue, New York, NY 10010, U.S.A.

Only One World. Our own to make and to keep. G. Piel. W.H. Freeman, New York, Oxford, 1992, xii + 367 p. ISBN 0-7167-2316-6. Hardbound

In this book, the industrial revolution that began 400 years ago is very much a current event. Abruptly, it has divided the planet into two worlds: a new world of rich industrial nations and the traditional world of the poor. Since 1950, the people of the rich nations have taxed the planetary ecosystem with a fourfold multiplication of their consumption of goods per capita. Industrial revolution long ago increased production ahead of the increase in their population. Now, assured of the survival of their first children, these fortunate people are bringing their population growth to zero, with low death rates and low birth rates.

In contrast, for the people of the 130-odd poor nations, the industrial revolution has just begun. Already it has brought a lengthening of life expectancy; however, against death rates still high among their children under five years of age, they maintain high birth rates. The consequent population explosion in these regions accounts for most of the doubling of the world population since 1950 that has carried the census past five billion.

If world population is to be stabilized, the industrial revolution of the poor countries must be accelerated. Economic development has proved to be the surest mode of population control, the author, who has founded the journal *Scientific American*, argues. As such, it is the ultimate environmental protection measure. To that end, a massive transfer of technology and economic assistance is imperative.

Price: £ 14.95

Orders to: W.H. Freeman & Comp., 20 Beaumont Street, Oxford OX1 2NQ, England; or: W.H. Freeman & Comp., 41 Madison Avenue, New York, NY 10010, U.S.A.

Tropical Rain Forest: Disturbance and Recovery. A.G. Marshall and M.D. Swaine, editors. The Royal Society, 1992, 130 p. ISBN 0-85403-458-7. Paperback.

Tropical rain forests are the richest ecosystems that the world has ever known. The great number of species that form them is the reason for their fascination to people, their value to the biosphere, and the complexity of their proper management. The land that they occupy, and the value of just one of their many useful products, timber, are the reasons why they are rapidly disappearing.

This volume reports some of the results to date of a major inter-disciplinary programme of rain forest research and training by British and South-east Asian scientists. The Royal Society's South-east Asian Rain Forest Research Programme on "The recovery of tropical forests following disturbance: patterns and processes", initiated in 1985, has largely, but not exclusively, been carried out in Malaysia. The objective is to gain an understanding of the influence of the creation of gaps of various sizes and kinds, both natural and man-made, upon the flora and fauna of closed-canopy forest, and of the processes whereby these gaps will eventually be filled. Data obtained will allow better utilization of forest resources and better management of conservation areas.

The papers in this volume were presented at a discussion meeting held in September 1991. They examine the spatial dynamics of trees, regeneration dynamics, the role of colonizing species and of mycorrhiza, forest hydrology and geomorphic processes, arthropods as decomposers and predators, and the effects of selective logging upon animal populations.

Price: £ 19.50 (UK) £ 21 (elsewhere)

Orders to: The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, U.K.

Desert Development. Advances in Desert and Arid Land Technology and Development Vol.5. A. Bishay and H. Dregne, editors. Harwood Academic Publishers, Chur, London, 1991. ISBN 3-7186-0526-0 (two parts set). Hardbound.

This volume covers the proceedings of the Second International Desert Development Conference held in Cairo in January 1987.

Part 1: Desert Agriculture, Ecology and Biology. xiv + 654 p. ISBN 3-7186-0396-9.

This first part covers the areas of desert agriculture, ecology and biology. Topics of special interest include agricultural development through the use of systems research and computer techniques, including remote sensing, salt water irrigation, laser land-levelling, and nutrient cycling and nitrogen fixation. After 3 plenary papers, this volume has 3 chapters on Systems Research, 32 chapters on Agriculture and 7 on Ecology and Biology.

Part 2: Socio-economic Aspects and Renewable Energy Applications. xii + 655 p. ISBN 3-7186-0522-8.

This second part focuses on the socio-economic aspects of desert communities, such as balancing economic and ecological issues, new and renewable energy strategies and nonconventional energy plans. The volume stresses the systems approach, applications and case studies in developing nations. After 3 plenary papers, this volume presents 6 papers on Integrated Approaches, 16 papers on Energy and Architecture, and 14 on Socio-Economics and Desert Communities.

Orders to: Harwood Academic Publishers, Poststrasse 22, CH-7000 Chur, Switzerland; or: STBS, Ltd, Bush Terminal, 32 Thirty-third Street, Brooklyn, NY 11232, U.S.A.

Sustainable Mountain Agriculture. N.S. Johda, M. Banskota and T. Partap. Intermediate Technology Publications, London, 1992, xv + 807 p. ISBN 1-85339-114-X (set). Paperback.

Volume 1: Perspectives and Issues. ISBN 1-85339-130-1.

Volume 2: Farmer's strategies and innovative approaches. ISBN 1-85339-131-X.

This document has been produced as part of the work programme of the Mountain Farming Systems Division of the International Centre for Integrated Mountain Development (ICIMOD). Mountain Farming Systems is one of ICIMOD's four thematic research programmes.

This significant study addresses a substantial and urgent problem. Mountain areas of developing countries face rapid increases in population pressure as well as degradation of the environment and production resource base, and there are unmistakable symptoms of the emerging unsustainability of current patterns of resource use and production practices. This situation is both a cause for concern and a reason for reappraisal of conventional development approaches to mountain areas in general, and mountain agriculture in particular. The book aims to stimulate fresh thinking on development goals and strategies in mountain regions.

Concerned with the possible operational problems and convenience of readers, the book is divided in two volumes. The first one focuses on agricultural development perspectives, approaches, and strategies in the Hindu Kush-Himalayan region. The long-term sustainability issues and use of agro-ecological zonation as a tool for development planning in mountain areas are also covered by Volume 1. The second volume covers relatively more operational dimensions of the subject where *micro-level or project-level realities, experiences and implications are reported and analyzed*. Some chapters deal with farmers' strategies and innovative project initiatives.

Price: £ 22.50 per volume, £ 45 for the set

Orders to: IT Publications, 103-105 Southampton Row, London WC1B 4HH, England.

Soil Geomorphology. R.B. Daniels, R.D. Hammer. John Wiley & Sons, New York, Chichester, 1992, xvi + 236 p. ISBN 0-471-51153-6. Hardbound.

The authors believe that one needs a knowledge of the geologic processes that shaped the landscape to understand soil distribution, properties and genesis. All landscapes are somewhat different, yet several features reappear in each. These similarities allow transfer of ideas, usually with modification, from one area to another. The transfer of ideas between landscapes is difficult unless we use the basic relations between geologic processes and soils. Soils are only the thin upper part of a complex system controlled in large part by stratigraphy, geomorphology and hydrology.

The text has three sections: stratigraphy, geomorphology and hydrology. Each provides the

reader with the fundamentals needed for a basic understanding of the soil landscape. For each section scores of volumes are provided as references.

Price: £ 55

Orders to: John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England.

Greenhouse-Impact on Cold Climate, Ecosystems and Landscapes. Catena Supplement N°22. M. Boer and E. Koster, editors. Catena Verlag, Cremlingen-Destedt, 1992, 151 p. ISBN 3-923381-31-X. Hardbound.

This volume contains a selection of revised versions of preliminary discussion papers prepared for two of the Landscape ecological Impact of Climatic Change (LICC) Case Study Workshops: one on the alpine regions and the other on the Fennoscandian region. In the three first papers, the direct and indirect effects of climate warming on cryospheric processes and phenomena are discussed. Then two papers discuss the response of landforms and geomorphic processes to climatic change. Another paper focuses on the morpho-sedimentological response of lowland rivers in The Netherlands during two periods of marked temperature rise in the past, the onset of the Weichselian Late Glacial and the beginning of the Holocene as paleo-analogues to global warming. Biophysical aspects of the greenhouse impact on high-latitude and high-latitude ecosystems and landscapes are discussed in the last four papers.

Price: DM 119; US\$ 75

Orders to: In U.S.A. and Canada: Catena Verlag, P.O.Box 1897, Lawrence, KS 66044-8897, U.S.A. or: Catena Verlag, Brockenblick 8, W-3302 Cremlingen 4, Germany

Global Climatic Changes in Water and Heat Transfer. Accumulation Processes. Developments in Atmospheric Science N°21. S.G. Dobrovolski. Elsevier Science Publishers, New York, Amsterdam, 1992, 280 p. ISBN 0-444-88914-0.

In this book global heat circulation is studied in connection with changes in large scale water transfer and accumulation processes. Special attention is given to stochastic regularities of the analyzed processes. Some deterministic approaches are also considered, whereby dynamic-stochastic models are used.

This study in global heat and moisture circulation is based upon the following main aspects:

- (1) Substantiation of the hypothesis of a two-scale separation of weather and climatic variables, which forms the basis of the stochastic theory of the climate system;
- (2) Analysis of the probabilistic structure of changes in the characteristics of heat and moisture circulation in the intermediate and larger time scales;
- (3) Study of regularities of anomalies in the characteristics of heat and moisture circulation in the atmosphere and hydrosphere for large regions through spatial statistic analysis and two-dimensional dynamic-stochastic models;
- (4) Changes in the structure of temporal variations in stochastic models, under the conditions of modified spatial scales of the processes; and
- (5) Analysis of globally averaged characteristics, such as temperature of the atmosphere and oceans.

Price: US\$ 108.50; Dfl 190

Orders to: in the USA and Canada: Elsevier Science Publishing Co. Inc., P.O.Box 882, Madison Square Station, New York NY 10159, USA; Elsewhere: Elsevier Science Publishers, P.O.Box 211, 1000 AE Amsterdam, the Netherlands.

Developing and Improving Irrigation and Drainage Systems. World Bank Technical Paper Number 178. G. Le Moigne, S. Barghouti and L. Garbus. The World Bank, Washington, 1992, viii + 168 p. ISBN 0-8213-2165-X. Paperback.

In recent years, the World Bank's lending for irrigation and drainage development has changed significantly. To help put these changes in perspective, this volume offers papers from past seminars on irrigation and drainage issues. These papers review seminars that took place from 1985 through 1991. They discuss the critical issues facing irrigation and drainage development and show the crucial relationship between sound water management and improved agricultural production.

Three papers comprise a sectoral overview which examines irrigation in the 1990s and analyzes land and water constraints world-wide. It also describes the developmental impact of

irrigation and drainage projects -including their performance and sustainability. Subsequent reports address institutional considerations, policy and research issues, and technological and environmental concerns. Concluding papers examine the effects of irrigation and drainage projects on the environment and describe the extent to which technology contributes to successful projects.

Price: US\$ 10.95

Orders to: see below.

Aid to African Agriculture. Lessons from two Decades of Donors' Experience. U. Lele, editor. The World Bank, Washington, 1991, xix + 627 p. ISBN 0-8018-4366-9. Hardback.

Aid to Sub-Saharan Africa has often been of the wrong sort, in quantities countries could not absorb for lack of trained personnel to create and implement policies. Aid has been a large share of African governments' expenditure and gnp. But domestic policies have done most to shape performance, and countries with the largest aid receipts have not necessarily performed best. Aid givers and recipients have often encouraged import substituting industrialization at the expense of a balanced output of food and export crops. Yet experience in Cameroon and Kenya, described in this book, has shown that such balanced agriculture, based on smallholdings, can lead the expansion of gnp on all fronts.

These findings come from a comparative study of African aid programs in Cameroon, Kenya, Malawi, Nigeria, Senegal, and Tanzania, carried out between 1984 and 1988. It explored the effect on country performance of conditions at the time of independence, and of subsequent external shocks, policy response, and external assistance. This collection shows that where economic growth has occurred in the six countries of the study, smallholder agriculture has been the key. The book suggests that in promoting agriculture in recipient countries, donors should concentrate on developing human and institutional capacity. They should use their own special expertise within a coordinated framework of long-term strategies.

Orders to: World Bank Headquarters, 1818 H Street, N.W., Washington, DC 20433, USA.

Society and the Environment: a Swedish Research Perspective. Ecology, Economy & Environment n°2. U. Svedin and B. Hägerhäll Aniansson, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1992, ix + 321 p. ISBN 0-7923-1796-3. Hardback.

Following the report by the World Commission on Environment and Development, research efforts devoted to the topic of sustainable development were promoted by the Swedish Council for Planning and Coordination of Research (FRN).

With its fifteen essays by Swedish scholars on different aspects of the society-environment interface, giving various analyses of and prospects for the concept of sustainable development, this book is a result of those efforts. The authors represent a spectrum of inter- and multidisciplinary approaches in the field of ecology, economy and environment. They are economists, ecologists, engineers, anthropologists, physicists, geographers, political scientists, science theorists and educationalists discussing sustainable development and the future of society and the environment.

The question is also raised whether there is a special Swedish 'touch' -with a 'responsibility for the world' ethos- to the approach to environmental issues, especially as seen through the efforts of the research community.

Price: Dfl 195; US\$ 115; UK£ 67.

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.

Soil Management: A World View of Conservation and Production. R.L. Cook and B.G. Ellis. Krieger Publishing Company, Melbourne, 1987, reprint 1992. 428 p. ISBN 0-89464-682-6.

A broad, general coverage of the important factors of soil management, updating soil classification terminology and including recent soil management research findings are offered in this text. It describes management of soil organic matter, soil water and soil fertility in terms of getting the highest level of crop productivity without diminishing the soil's productive potential. The material in this book develops a history of erosion and the need for conservation. It also covers

erosion control, conservation structures, soil and water pollution, as well as fertilizer use and rotations, and includes chapters that examine the world's food problems and possible solutions.

Price: US\$ 59.95

Orders to: see below.

Soil Organic Matter: Biological and Ecological Effects. R.L. Tate III. Krieger Publishing Company, Melbourne, 1987, reprint 1992. 304 p. ISBN 0-89464-765-2.

This text provides a survey of the impact of the soil organic component, living as well as non-living portions, on the total ecosystem. Biological and ecological implications are stressed. The primary topics are the nature and source of fixed carbon in the soil ecosystem and the importance of biological transformations of these compounds on above ground and below ground communities; examination of the microbiological mediators of soil organic matter transformations; the implications of soil organic matter on nutrient cycling processes, soil structure, and metal mobility; and relationship of soil organic matter to solutions of current environmental pollution and management difficulties.

Orders to: Robert E. Krieger Publ. Comp., P.O. Box 9542, Melbourne, FL 32901-9542, U.S.A.

Abstracts on Sustainable Agriculture. Volume 4, compiled by J. Carls. Deutsche Gesellschaft für Technische Zusammenarbeit, Eschborn, 1992, viii + 487 p. ISBN 3-528-02065-2. Paperback.

This is the fourth volume with comprehensive abstracts of 1029 publications in the broad field of sustainable agriculture. Although not substituting for originals, these abstracts can play an important role as part of the external input in drafting extension programmes. It also has subject, geographical and author indexes.

Orders to: F. Vieweg Verlags GmbH, Postfach 300 944, D-5090 Leverkusen 3, Germany.

An Appeal for the Mountains. Mountain Agenda, Berne, 1992, 44 p.

The point of this volume is to get people everywhere to see that the mountains and their inhabitants are in trouble, that they merit immediate attention. This appeal summarises the situation and proposes a number of actions based on over a year of consultation which has gathered and sifted the best advice of experts and concerned citizens world wide.

It seeks for governments at the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) to endorse the diagnosis and take immediate measures to address the situation so as to conserve and develop in sustainable ways a great and unique heritage of mankind. Un appel pour les Montagnes. Mountain Agenda, Berne, 1992, 44 p.

Le but de ce volume est d'amener chacun prendre conscience des problèmes des montagnes, qui mérite notre attention en priorité. Cet appel résume la situation et propose un nombre de mesures fondées sur une année de consultation qui a permis de récolter et de trier l'avis des experts et des citoyens concernés à travers le monde.

Il cherche à obtenir des gouvernements présents la Conférence des Nations-Unies sur l'Environnement et le Développement (Rio de Janeiro, 1992) qu'ils appuient ce diagnostic et prennent des mesures immédiates pour aborder la situation afin de conserver et de développer de façon viable ce grand et unique héritage de l'humanité.

Orders to/Commandes à: Mountain Agenda, c/o Institute of Geography, University of Berne, Hallerstrasse 12, CH-3012 Berne, Switzerland

Soil Solarization. J. Katan, and J.E. Devay. CRC Press, Boca Raton, Ann Arbor, 1991, 256 p. ISBN 0-8493-6868-5.

This volume describes the principles and technology of soil solarization and the use of soil solarization for different crops and cropping systems. The book evaluates and interprets the extensive amount of literature available on soil solarization in relation to climatic effects and changes in populations of soil-borne microorganisms and weeds. It also compares the advantages and disadvantages of soil solarization with other methods of soil disinfestation, such as soil steaming and fumigation. The book explores the effects of soil solarization, covering such points as biological control, changes in soil chemistry involving mineral elements, as well as other changes, such as soil salinity and soil structure.

Price: UK£ 95

Orders to: CRC Press, 22-24 Torrington Place, London WC1E 7HJ, England; or: CRC Press Inc., 2000 Corporate Blvd., NW, Boca Raton, Florida 33431, U.S.A.

Proceedings of the International Workshop on Correlation of the National Soil Classification Systems for Agro-technology Transfer. The East and Southeast Asia Federation of Soil Science Societies, 1992. Proceedings 97 p., Tour guide 61 p. Paperback.

The ESAFS was founded in 1990 on the occasion of the 14th International Congress of Soil Science held at Kyoto, Japan, aiming at closer contact and denser information exchange among the societies working on soil science and its related fields. The first international workshop of ESAFS on "Correlation of the National Soil Classification Systems for Agro-technology Transfer" was held at Osaka, with a field excursion covering Hyogo, Okayama and Kagawa prefectures in southwestern Japan. As the basis of an exchange of information related to agricultural and the environment the matter of correlation of soil classification systems is of great importance. The present publication contains the papers on soil classification, mapping and interpretation in most countries in the region.

Orders to: ESAFS Office, c/o Soil Science Society of China, Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing, P.R. of China.

Papers presented at the 60th IFA Annual Conference. Wiley & Sons, Chichester, New York, 1992, xxii + 259 p. ISBN 0-471-51186-2. Hardbound.

This book begins with discussions of the factors that cause swelling, and the factors of which engineers need to be aware during site investigation in order to identify expansive soils. Next the mechanics of unsaturated soils is introduced. Soil suction is presented and discussed in detail because of the importance of this concept in regard to expansive soils. After that, methods of testing and applications to design of foundations and pavements are covered. Soil treatment to reduce swelling is discussed to the extent possible within the scope of this book. Finally, a discussion of remedial measures and principles behind design of remedial measures is presented.

This book can serve both as a reference guide for the practicing engineer and as a textbook for a course on foundations and pavements on expansive soils.

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.

Statistical Methods in Soil and Land Resource Survey. R. Webster and M.A. Oliver. Oxford University Press, Oxford, New York, 1990, vii + 316 p. ISBN 0-19-823317-5. Hardbound.

This book describes suitable statistical methods for analyzing variation in soil and for relating the soil to its environment. Sound land planning increasingly needs such quantitative information, and decisions have to be made against a background of variation in soil and other land resources.

The authors stress sound sampling technique and show how to use the results for estimation, prediction, and efficient design. They show how classification can enhance the utility of survey data and lead to economies in sampling. Optimal methods for creating classification are described as well as alternative multivariate methods for identifying relations such as principal component and principal co-ordinate analysis.

The accent throughout the book is on fully quantitative survey of land resources, of measurement, and of estimation with the more advanced techniques liberally illustrated by simple diagrams.

Price: £ 40.00

Orders to: see below.

Geomorphic Responses to Climatic Change. W.B. Bull, Oxford University Press, Oxford, New York, 1991, xviii + 326 p. ISBN 0-19-505570-5. Hardbound.

In this book, concepts are developed through discussion of climate-induced changes in fluvial systems of four field areas. Studies in the western United States, Egypt, Israel and New Zealand provided data from markedly different climatic settings.

The basic topics of climate and palaeoclimatology, vegetation, soils genesis, and *geochronology* are discussed in each chapter as essential background and to assess the responses of geomorphic processes to climatic change. Descriptions of present climates are compared with paleoclimatic inferences.

This book is written primarily for graduate students and colleagues. Because the concepts it presents are essential to many types of geomorphic analyses and instruction, it also may be useful as an advanced undergraduate text.

Price: £ 45.00

Orders to: Oxford University Press, Walton Street, Oxford OX2 6DP, England.

Plant Growth. Interactions with Nutrition and Environment. Seminar Series 43. J.R. Porter and D.W. Lawlor, editors. Cambridge University Press, Cambridge, New York, 1991, xii + 284 p. ISBN 0-521-36133-8. Hardbound.

Nutrition is a major environmental factor in regulating plant growth, and is therefore of significant practical concern to agriculturalists and ecologists. In order to achieve efficient plant production, it is essential to gain a full understanding of the basic principles underlying the three-way interaction between the plant, its nutrition and its environment. This book addresses the role of nutrition in regulating plant growth, at the level of both the individual and the community, by exploring the biochemical, cellular and physiological processes involved in energy metabolism and nutrient absorption. In the final section of the book, case studies are used to illustrate the practical implications of the interaction between plant and environment for crop and resource management.

Price: £ 45.00; US\$ 79.95

Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, U.K.; or: Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, U.S.A.

Ecotoxicology of Earthworms. P.W. Greig-Smith, H. Becker, P.J. Edwards and F. Heimbach, editors. Intercept, Andover, 1992, v + 269 p. ISBN 0-946707-40-5. Hardbound. (Free with this book: Booklet of recommendations about testing the safety of chemicals for earthworms. 16 p. ISBN 0-946707-41-3).

This book reviews the current science of toxicological testing using earthworms. The contributors address issues concerned with the methods of testing in the laboratory and in the field, and the approaches to risk assessment and the significance of residues in worms. The book looks directly and fully into the issue of pesticide hazards to earthworms and the environmental consequences. It follows the first major meeting of the Society of Environmental Toxicology and Chemistry in Europe.

Price: £ 38.95

Orders to: Intercept Ltd., P.O.Box 716, Andover, Hants, SP10 6YG, England.

Erosion, Debris Flows and Environment in Mountain Regions. IAHS Publication N° 209. D.E. Walling, T.R. Davies and B. Hasholt, editors. International Association of Hydrological Sciences, Washington, Wallingford, 1992, x + 486 p. ISBN 0-947571-38-8. Paperback.

This publication is the proceedings of an International Symposium held in Chengdu, China, in July 1992. This was the sixth meeting in an informal series of symposia dealing with erosion and sediment yield with regard to the particular problems of steepland environments within the Pacific Rim.

The symposium focused on steepland and mountain environments, but particular emphasis was given to debris flows and to the general problem of environmental degradation in mountain areas, which is now attracting increasing concern. Although most of the papers dealt with studies undertaken within steepland areas bordering the Pacific, there were also contributions reporting the results of investigations in many other mountain areas of the world, including Greenland, Germany, Poland, Austria, Czechoslovakia, Spain, Italy, Greece, Yugoslavia, several states of the former USSR, and Brazil. The 55 papers provide information from 25 different countries. More familiar topics such as the measurement and prediction of soil erosion, the dynamics of debris flows and related phenomena, and slope protection measures, are joined by papers that deal with the wider field of environmental degradation and include discussions of vegetation succession, soil degradation and land restoration.

Price: US\$ 75

Orders to: see below.

Erosion and Sediment Transport Monitoring Programmes in River Basins. IAHS Publication N° 210. J. Bogen, D.E. Walling, and T. Day, editors. International Association of Hydrological Sciences, Washington, Wallingford, 1992, x + 538 p. ISBN 0-947571-43-4. Paperback.

The 57 papers included in this volume cover a wide range of topics within the field of erosion and sediment transport. The papers have been grouped under four main themes: Development of measurement techniques; Sampling strategies; Monitoring networks and programmes; and Case studies. Developments and experience in a great variety of environments are reported.

The papers are the proceedings of an international symposium held in Oslo, Norway, in August 1992. The objectives of the symposium were to focus on methodology, on the design and implementation of programmes to monitor the processes of erosion and sediment transport, and on the need to obtain consistent information about environmental change and associated problems.

Price: US \$ 75

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

An Atlas of Cassava in Africa. Historical, agroecological and demographic aspects of crop distribution. CIAT Publication N° 206. S.E. Carter, L.O. Fresco and P.G. Jones, with J.N. Fairbairn. Centro Internacional de Agricultura Tropical, Cali, 1992, v + 85 p. + 8 inset maps. ISBN 958-9183-38-7. Hardback.

The lack of adequate data on cassava production in Africa has for decades hampered development efforts. Scientists, concerned with understanding cassava's role in agricultural systems and nutrition, and policy makers concerned with declining per capita food production have had to contend with very limited information on a crop whose significance is increasing markedly. This volume is divided in 6 chapters:

- (1) The dynamics of cassava in Africa;
- (2) The introduction and diffusion of cassava in Africa;
- (3) Current distribution of cassava in Africa;
- (4) The relationship of cassava distribution to environment and population;
- (5) Distribution and change in cassava production in three countries; and
- (6) Conclusions.

The book includes also a summary in English, Portuguese and French, as well as a bibliography, different appendixes with data and a subject index.

Orders to: CIAT, Apartado Aéreo 6713, Cali, Colombia.

Ground Movements and Structures. Volume 4. J.D. Geddes, editor. Pentech Press, London, 1992, xi + 826p. ISBN 0-7273-0705-3. Hardbound.

This volume contains the 50 papers, together with the discussion thereon, presented at the 4th International Conference on Ground Movements and Structures held at the University of Wales College of Cardiff.

The papers cover such topics as the estimation and measurement of surface and near-surface ground movements of reclaimed and backfilled land and those due to excavations, trenches, tunnelling, current and past coal mining, seasonal soil shrinkage and heave, partially saturated soils, ground vibrations and slope instability, and the effects of these movements on structures, including pipelines.

The book is interdisciplinary and brings together civil and structural engineers, geologists, mining engineers, surveyors and others concerned with the performance and safety of structures resting on and within moving ground.

Price: £ 85

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.

A Logical Framework for Planning Agricultural Research Programs. B. Schubert, U.J. Nagel, G.L. Denning and P.L. Pingali. International Rice Research Institute, Los Baños, 1991, 23 p. Paperback.

The logical framework (logframe) approach to improving project planning is used by several development agencies. This booklet describes how to adapt and use logframe for agricultural

research planning. The approach requires teamwork among participants as they develop research plans through the following steps: Analysis of interest groups; Identification of core problem and research output; Development of research planning matrix; and Development of the work plan and resource allocation.

An important element of the method is visualizing the ideas by using coloured cards and pinboards. The adapted logframe approach described in the booklet was used by IRRI scientists to develop the Institute's Work Plan for 1990-94.

Price: US\$ 6.50 for HDC, US\$ 1.50 for LDC (plus US\$ 2.00 for airmail postage).

Orders to: IRRI, P.O.Box 933, Manila 1099, Philippines

L'Homme et le Sol. Exploration, utilisation et conservation des sol. Numéro double de la Revue SCIENCES. Association Française pour l'Avancement des Sciences, Paris, 1992, 230 p. ISSN 0151-0304. Cartonné.

Ce numéro double de la revue SCIENCES reprend les compte-rendus du 108e congrès annuel de l'AFAS, tenu à Orléans en novembre 1990. Les textes, plus copieux que les conférences originales sont de K. Mengel, J. Boulaïne, G. Pedro, M. Robert, J. Trichet, F. Papy, M. Bonneau, E. Roose et J.-C. Rémy.

Les deux premiers articles évoquent la vie et l'oeuvre de J. von Liebig, 150 ans après la parution de son livre, et les relations historiques entre les Français et leur sol. Puis viennent des articles qui exposent les fondements scientifiques de la science des sols et plusieurs exemples des approches appliquées de cette science très multidisciplinaire sont passées en revue.

Cette publication présente une tableau actuel, original et très fouillé de plusieurs thèmes majeurs de la science des sols: l'histoire, la question des engrais, l'altération des minéraux, l'évolution de l'humus, l'intervention des micro-organismes dans le monde minéral, la protection des forêts, les techniques de travail du sol, l'érosion, l'évaluation et la protection du patrimoine sont les sujets majeurs de cette publication.

Prix: FF 80 (port compris)

Commandes à: AFAS, Cité des Sciences, 75930 Paris Cédex 19, France.

Nutritional Disorders of Plants. Development, visual and analytical diagnosis. W. Bergmann, editor. Gustav Fischer Verlag, Stuttgart, New York, 1992, 741 p. ISBN 3-334-60422-5 (German edition) 1-56081-357-1 (U.S. edition). Hardbound.

This book comprises a most valuable database for the study of all problems of plant nutrition and plant damage and will meet the requirements of a wide range of users, especially students in agricultural colleges, agronomists, botanists, physiologists, ecologists, and environmentalists. The most impressive and informative part of the book is presented in the 945 colour pictures of high quality showing changes in growth and development of plants under nutrient stress (from deficiency to toxicity). The imbalance in the supply of 12 elements is presented in colour pictures. In addition, there are illustrations of heavy metal toxicities, gaseous compounds, herbicides and salts. The symptoms are given for various groups of plants such as crop and ornamental plants, forest trees, tropical and sub-tropical vegetation. In a special chapter the background and reasons for using plant analysis and the evaluation of analytical data by "computerised nutrient element charts" are discussed. *Thirteen tables (with the text in English, French and Spanish) are presented showing "adequate ranges" of the mineral content of many plants, including cereals, root crops, vegetables, flowers, fruit and forest trees and some other plants, in order to permit the interpretation of analytical data.*

Price: DM 298; US\$ 214.

Nutritional Disorders of Plants. Colour Atlas. W. Bergmann, editor. Gustav Fischer Verlag, Stuttgart, New York, 1992, 386 p. ISBN 3-334-60423-3 (German edition) 1-56081-358-X (U.S. edition). English, French and Spanish. Hardbound.

This book with the French title "Perturbations dans la nutrition des plantes - Diagnostics visuels et analytiques" and the Spanish title "Trastornos de la nutrición de la plantas - Diagnostico visual y analítico" is a shortened edition of the English edition mentioned above. Besides the 945 colour pictures of deficiency and toxicity symptoms of plants that are also contained in the larger book, the three language edition includes the following chapters: A "key" for the identification of

nutrient deficiency symptoms, a short survey on the recognition of toxicity symptoms, and a chapter concerning plant analysis and the evaluation of analytical data including 12 tables with "adequate ranges" of plant nutrients of more than 90 plant species.

Price: DM 189; US\$ 135.

Orders to: Gustav Fischer Verlag, Postfach 720 143, W-7000 Stuttgart 70, Germany. or in USA and Canada: VCH Publishers Inc., 303 N.W. 12th Avenue, Deerfield Beach, FL 33442-1705, U.S.A.

Bodenkunde in Stichworten. D. Schroeder. 5e revidierte und erweiterte Auflage von W.E.H. Blum. Gebr. Borntraeger Verlag, Berlin, Stuttgart, 1992, 175 p. ISBN 3-443-03103-X.

Dieses Buch gehört seit mehr als 20 Jahren zur geowissenschaftlichen Standardliteratur an Universitäten, Fachhochschulen und Schulen. 1988 verstarb der Autor. Auf Wunsch des Verlages wurde die Bearbeitung des Werkes von Prof. Blum übernommen. Für die 5. Auflage sind die Kapitel "Mineralische Bestandteile" sowie "Organische Bestandteile" aktualisiert und das Kapitel 8 "Der Boden in der Umwelt des Menschen" neu geschrieben. Durch diese Bearbeitung, insbesondere die Neufassung des achten Kapitels mit umfassender Darstellung der wichtigsten Funktionen des Bodens in der Umwelt sowie einer Erläuterung der aktuellen Probleme des Bodenschutzes, wurde das Werk, soweit möglich, dem neuesten Wissensstand angepaßt.

Preis: DM 35.

Bestellungen an: Gebr. Borntraeger Verlagsbuchhandlung, Johannesstr. 3A, W-7000 Stuttgart 1, Deutschland.

Environment and Development in Latin America. The politics of sustainability. Issues in Environmental Politics. D. Goodman and M. Redclift (editors). Manchester University Press, Manchester, 1991, 238 p. ISBN 0-7190-3380-2. Paperback.

This book explains how political, social and economic factors have turned one of the richest continents in terms of natural resources into one of the poorest environments. It moves beyond bankrupt models of conventional development to point towards a new political economy for Latin America, one centred on sustainable environmental management.

The contributors show how the unsustainable components of Latin American development are interconnected, and offer a powerful indictment of 'top down' economic growth, in which local knowledge and local resources are lost or ignored. They integrate apparently diverse, but interrelated, issues to explain the continent's current environmental poverty, and to point to alternative ways forward. With their focus clearly set on the needs of people, they ask what sustainability might mean for Latin America, in terms of extractive systems, land utilisation and political structures.

Price: £ 11.95

Orders to: Manchester University Press, Oxford Road, Manchester M13 9PL, U.K.

Tropical Resources. Ecology and Development. J.I. Furtado, W.B. Morgan, J.R. Pfafflin and K. Ruddle. Harwood Academic Publishers, Chur, 1990, iv + 306 p. ISBN 3-7186-0514-7. Paperback.

This book presents in-depth coverage of the extremely diverse tropical environments, the resources to be found within the region and their production, and ecological management. Some contributors discuss economic geography and ways of utilizing available resources, including those of tropical forests, wildlife, tidal wetlands and the sea.

Others address the development and land use of protected areas; the ecological aspects of pasture resources; and the impacts of economic development and population damage. In addition, studies are offered on tropical soils, including their distribution properties and management and the ecological processes at work in tropical forests.

Orders to: Harwood Academic Publishers GmbH, Poststrasse 22, CH-7000 Chur, Switzerland; **or:** STBS, Ltd, Bush Terminal, 32 Thirty-third street, Brooklyn, NY 11232, U.S.A.

XVIII Reunión Nacional de Suelos. Comunicaciones. Universidad de la Laguna, Tenerife, 1991, 527 p. ISBN 84-604-0411-0.

Este volumen es una recopilación de las comunicaciones presentadas a la XVIII Reunión Nacional de Suelos, celebrada en el Puerto de La Cruz (Tenerife-I.Canarias), del 22 al 28 de

Septiembre de 1991. Consta de cincuenta artículos, clasificados según las secciones de la Sociedad Internacional de la Ciencia del Suelo.

Orden: Departamento de Edafología y Geología, Universidad de La Laguna, Tenerife, Islas Canarias, España.

Histoire de l'Agronomie en France. J. Boulaïne. TEC & DOC-Lavoisier, Paris, 1992, 392 p. ISBN 2-85206-805-2. Relié.

Cette synthèse relate 10.000 ans d'évolution et souligne les traits majeurs de l'histoire agronomique de la France: mise en valeur progressive des sols et défrichements successifs du pays, crise des rendements céréaliers du Haut Moyen Age, impossibilité pour l'agriculture classique de nourrir correctement la population, épuisement inexorable des sols et résolution de ces problèmes depuis la fin du XIXe siècle. Les différents chapitres se regroupent autour des périodes ou thèmes suivants: Thèmes agronomiques de tous les temps; de la Préhistoire à la conquête romaine; de la conquête romaine à Charlemagne; le Moyen Age: l'agriculture du cheval; les catastrophes autour de la Renaissance; d'Olivier de Serres aux physiocrates; des physiocrates au blocus continental; de la Restauration à la fin du Second Empire; la Troisième République; la montée en puissance de l'agronomie (1920-1980).

Ce livre très richement documenté s'adresse non seulement aux agronomes, aux agriculteurs, mais aussi aux historiens, aux géographes, aux économistes, aux étudiants, et à tous ceux qui s'intéressent à l'histoire de leur pays. L'auteur de ce livre publie ici un ouvrage remarquable sur un sujet qui a été, et est toujours, à la base de l'économie française.

Prix: FF 295

Commandes à: TEC & DOC - Lavoisier, 14 rue de Provigny, F-94236 Cachan Cedex, France.

The Utilisation of Remote Sensing in the South Pacific. ACIAR Technical Reports 19. D. van R. Claasen. Australian Centre for International Agricultural Research, Canberra, 1992, 59p. ISBN 1-86320-059-2. Paperback.

Much information about the quantity, quality and distribution of terrestrial and marine resources can be acquired through remote sensing -the interpretation of aerial photographs and satellite images. ACIAR funded the services of remote sensing specialist as part of a consultancy commissioned by the South Pacific Commission to report on its needs for remote sensing. Between November 1990 and March 1991 the mission visited the South Pacific, New Zealand and Australian national and regional agencies, institutions and other centres. This is the consultancy's final report and lists the current use of remote sensing, the feasibility of a regional remote sensing facility, the possible scope for research and the potential costs.

Price: \$A 25.00

Orders to: Bibliotech, GPO Box 4, Canberra ACT 2601, Australia.

Primer on Natural Hazard Management in Integrated Regional Development Planning. Organization of American States, Washington, 1991, xviii + 428 p. Paperback.

This document is a technical compendium directed at planners and other development practitioners. Its main intent is to establish two ideas:

- (1) that the best way to reduce the growing impact of natural hazard events is in the context of integrated development planning; and
- (2) that there are means available to reduce economic loss caused by disasters.

It includes much material of its complementary document Disasters, Planning and Development but provides much greater depth on the specific hazards and assessment techniques. A compilation and analysis of experience not available from other sources, it complements the 1984 case book on integrated regional development planning.

Orders to: Organization of American States, 17th Street and Constitution Avenue, N.W., Washington, D.C. 20006, U.S.A.

Farmers' Practices and Soil and Water Conservation Programs. J.M. Kerr, editor. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, 1991, iv + 58p. ISBN 92-9066-211-5. Paperback.

This is the summary proceedings of a Workshop held in June 1991 in India. This workshop brought together farmers, researchers, government officials from development department, and non-governmental organizations. Their discussions and presentations focused on three main objectives:

- (1) to document and analyze indigenous soil and water conservation practices in terms of effectiveness and adoption levels;
- (2) to document participatory planning and implementation efforts in soil and water conservation projects, and the success/failure of such projects; and
- (3) to jointly arrive at strategies to make soil and water conservation programs more effective by taking into consideration indigenous approaches and participatory planning.

Recommendations were made for changes intended to bring more flexibility, relevance, financial viability, and adaptability into soil and water conservation programs, and to introduce indigenous knowledge and participatory methodologies into education curricula.

Price: LDC: US\$ 5.03; HDC: US\$ 11.43; India: Rs 65.60 (incl. handling charges)

Orders to: ICRISAT, Patancheru PO, Andhra Pradesh 502 324, India.

Nutrient Management for Sustained Productivity. M.S. Bajwa, N.S. Pasricha, P.S. Sidhu, M.R. Chaudhary, D.K. Benbi and V. Beri, editors. Punjab Agricultural University, Ludhiana, 1992. Vol I: vi + 380p. Vol II: x + 212p. Paperback.

These two volumes represent the proceedings of the international symposium held in India in February 1992. The first volume includes invited papers on the eight themes of the symposium, viz. nutrient dynamics in soil plant systems, monitoring soil health, fertilization of crops and cropping systems, integrated nutrient management, soil-plant-animal/human health interrelationships, systems approach in nutrient management, nutrient management under favourable environment, and fertilizer related pollution issues. The second volume includes the extended summaries of the voluntary papers related to the different themes of the symposium. There is also a Souvenir book with some papers on situation and research in the same fields in Punjab.

Orders to: Department of Soils, Punjab Agricultural University, Ludhiana 141 004, India.

Soil Technology - Applied Soil Science. Invited lectures for training course. S.M. Bannerman and P.A. Hazelton, editors. Australian Society of Soil Science (NSW Branch), Chatswood, and Soil Science, University of Sydney, Sydney, 1991, 323p. ISBN 0-7305-9044-5. Paperback.

The training course in Soil Science has been held in Sydney from 30 September till 4 October 1991. This book has been compiled by the coordinators and lecturers of the course units as pre-course reading and post-course reference material. It represents a good deal of accumulated expertise and collaboration by experts from the various fields of soil science and from different areas of employment.

Accurate and effective soil assessment and advice is critical for the development of land use systems and assessment of environmental impacts, not only in the more traditional agricultural areas but increasingly for urban and industrial development. Contamination of soil and water are particular current issues and there has been considerable interest in this section of the training course.

Price: \$A 40 (approx. US\$ 30)

Orders to: Dr. P. Hazelton, P.O. Box 573, Wollongong East 2520, Australia.

The State of the World's Mountains. A Global Report. P.B. Stone, editor. Mountain Agenda, 1992, xx + 391p. ISBN 1-85649-115-3 (Hardback) 1-85649-116-1 (Paperback).

Mountains are one of the victims of environmental degradation. But they have been ignored by politicians and policy makers in spite of mounting evidence that their fragile ecosystems are already in a state of crisis. In this book, leading development and environmental authorities brought together assess the state of the world's mountain heritage.

Among the issues highlighted are the problems and potential of mountain economies; the importance of mountains as a vertical archipelago of refuge for biodiversity; the likely impact of global warming; the commercial forces threatening upland forests and water resources; the impact

of mass tourism; and the pressures on mountain farmers from plainmen and city dwellers colonising marginal uplands.

Price: US\$ 60, £ 39.95 (Hardback) US\$ 25, £ 15.95 (Paperback).

Orders to: Zed Books, 57 Caledonian Road, London N1 9BU, England.

Crop-Livestock Interaction in Sub-Saharan Africa. World Bank Regional and Sectoral Studies. J. McIntire, D. Bourzat and P. Pingali. The World Bank, Washington, 1992, xiii + 246p. ISBN 0-8213-2166-8. Paperback.

This book is the result of a collaborative research effort between the World Bank and the International Livestock Centre for Africa (ILCA). It extends previous work on agricultural mechanization and the evolution of farming systems in Africa by seeking to answer a number of basic questions about the integration of crops and livestock in Sub-Saharan Africa. Those questions include the role of mixed farming in promoting agricultural growth, the appropriate points at which to encourage the use of animals as sources of farm power, the contribution of animals to improving the poor fertility of African soils, the efficacy of different methods to better livestock nutrition, and the economic returns to incorporating livestock production on small farms. This book is a review of existing knowledge which offers general explanations of crop-livestock relations with respect to both economic and technical features of African agriculture.

Orders to: see below.

Trends in Agricultural Diversification. Regional Perspective. World Bank Technical Paper N° 180. S. Barghouti, L. Garbus and D. Umali, editors. The World Bank, Washington, 1992, viii + 214p. ISBN 0-8213-2191-9. Paperback.

Agricultural diversification is fast becoming a key strategy to promote agricultural development. Diversification can minimize production risks, increase agricultural productivity, and maintain or improve farm incomes. This publication presents the results of studies on agricultural diversification commissioned by the Bank's Agriculture and Rural Development Department. The book examines diversification in a regional context, highlighting those areas in Southeast Asia that have achieved notable agricultural diversity.

Readers will learn about the technical, economic, institutional, and policy issues concerning diversification. These issues include the local adjustment constraints farmers experience and the national policy responses to those constraints. The papers highlight a problem shared by each region: the limited flexibility of agricultural systems in adjusting to economic, political and technological change. Analysts discuss the ways in which such limited flexibility keeps farmers from adjusting fully to new opportunities that could maximize benefits and minimize risks.

Price: US\$ 11.95

Orders to: see below.

Indigenous Integrated Farming Systems in the Sahel. World Bank Technical Paper N° 179. M. Speirs and O. Olsen. The World Bank, Washington, 1992, x + 80p + 1 map. ISBN 0-8213-2180-3. Paperback.

This paper presents the results of a study examining the development of mixed farming systems in the Sahelian region of West Africa. The study was part of a program of research into the future directions of livestock production, agricultural development, and resource management in Sub-Saharan Africa. It describes the evolution of integrated crop and livestock systems and the underlying causal factors. Particular attention is given to the allocation of resources, especially land and labour, among different crop and animal production activities. The study concludes that present farming systems are unsustainable in the long term. Appropriate strategies are recommended to reduce the identified constraints.

Orders to: The World Bank, 1818 H Street N.W., Washington, D.C. 20433, U.S.A.

Bibliography of Soil Science in Indonesia: 1890-1963. S. Chin A Tam. Institute for Soil Fertility, Haren, 1992, 550 p.

This bibliography is a structured compilation of published and unpublished literature with abstracts, covering a range of soil science subjects that were conducted in a period when tropical soil science, classification and management were developing. Theoretically part of the work may be

outdated, but practically the old literature still contains valuable information. The book is divided into 5 main chapters:

- (1) Soil Resources and Surveys,
- (2) Soil Biology and Plant-Soil relations,
- (3) Soil fertility management,
- (4) Erosion & Soil Conservation and
- (5) Bibliographies. It contains indexes on authors, subjects, plant taxonomical names, and geographical location.

Price: NLG 36 or Rp 20 000 (Indonesia only)

Orders to: ISRIC, P.O. Box 353, 6700 AJ Wageningen, the Netherlands or: CSAR, Jalan Ir. Juanda 98, 16123 Bogor, Indonesia.

IFA World Fertilizer Use Manual. D.J. Halliday, M.R. Trenkel and W. Wichmann, editors. International Fertilizer Industry Association, Paris, 1992, xii + 632p. ISBN 2-9506299-0-3. Flexicover.

This manual gives detailed information on the principles and practice of the fertilization of almost all the world's crops. It includes contributions relating to a crop or group of crops by about 80 reputed specialists from around the world.

Each chapter gives information on the timing, nutrient requirements, plant analyses, recommended fertilizer rates and application practices for the crop(s) in question and ends with a list of references. This excellent compilation is introduced by a general chapter on mineral fertilizers and their correct application.

Price: FF 450 (HDC); FF 200 (LDC or students), incl. surface mail; for airmail, add FF 50.

Orders to: IFA, 28 rue Marbeuf, F-75008 Paris, France.

Dünger und Düngung. 2., neuarbeitete Auflage. A. Finck. VCH, Weinheim, New York, 1992, xiv + 488 S. ISBN 3-527-28356-0.

Dieses Buch gibt einen Überblick über Eigenschaften und Anwendungen der vielen Arten von Düngungskonzepten und bietet Ratschläge für die praktische Düngung von Nutzpflanzen.

Der Rahmen spannt sich über den gesamten Landbau, einschließlich der alternativen Formen und der Forstwirtschaft, und berücksichtigt auch die tropische Pflanzenproduktion. Neben der richtigen Ernährung der Pflanzen für gesundes Wachstum und hohe Erträge wird der Einfluß der Dünger auf die Nahrungsqualität ausführlich behandelt, ebenso die Einwirkungen auf die Umwelt.

Eine Besonderheit dieses Buches: es informiert auch über die neuesten gesetzlichen Vorschriften für eine sachgerechte Düngung.

Mit dieser Neufassung seines erfolgreichen Buches leistet der Autor wieder einen wichtigen und aktuellen Beitrag zur Diskussion um den umweltgerechten und gleichzeitig ökonomischen Einsatz von Düngemitteln.

Preis: DM 86

Bestellungen an: VCH Verlagsgesellschaft, P.O.Box 10 11 61, W-6940 Weinheim, Deutschland; oder: VCH, Suite 909, 220 East 23rd Street, New York, NY 10010-4606, U.S.A.

Soil Conservation for Survival. K. Tato and H. Hurni, editors. Soil and Water Conservation Society, Ankeny, 1992, xv + 419 p. ISBN 0-935734-27-9. Hardcover.

Land degradation due to soil erosion is an ecological disaster and a life-threatening process that endangers agricultural societies and mankind in general. For the world's poorest farmers, soil conservation is a matter of survival. It is not only a technical and ecological question but a social, economic and political issue. In the light of these facts, the International Soil Conservation Organisation (ISCO) held its 6th International Conference in November 1989 in Ethiopia and Kenya.

This volume highlights the most important presentations of this conference, focusing on the relationship between soil conservation and survival. The book starts at the level of national and international policy, moving in the next part to principles and issues of participation. It then critically reviews conservation programmes and implementation projects. Questions of the costs and benefits of conservation are revealed as being crucial, even for subsistence-oriented farmers.

Training and education greatly augment the ability of land users to take competent ecological action. Numerous case studies exemplify how difficult it is to achieve sustainable development and to implement proper land husbandry concepts.

A companion volume is *Erosion, Conservation, and Small-scale Farming*, Hans Hurni and Kebede Tato, editors.

Price: US\$ 35

Orders to: Soil and Water Conservation Society, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021-9764, U.S.A.

Erosion, Conservation, and Small-scale Farming. H. Hurni and K. Tato, editors. *Geographica Bernensia*, 1992, xiii+ 582 p. ISBN 3-906290-70-0. Hardcover.

Although small-scale farming is not a paying business, there are currently over one billion people whose livelihood is based on this survival strategy. An overwhelming number of these farmers are in the unfortunate position of not receiving government subsidies for their enterprise. Often, small-scale farms are in marginal areas subject to processes of land degradation that further reduce their production potential. A dilemma arises when additional efforts are needed to make small-scale farming sustainable and when there are no direct benefits to be easily obtained from such efforts.

This book contains a selection of papers presented at the 6th International Conference of the International Soil Conservation Organisation (ISCO), held in Ethiopia and Kenya in November 1989, which made a special attempt to shed light on the above dilemma.

This volume makes a particular effort to focus on the problems and potentials of reversing environmental degradation on small-scale farms, especially in the developing world. All papers cover topics studied in 26 countries.

The first half of the book focuses on erosion in three parts, starting with an assessment of erosion as the most important degradation process affecting small-scale farms. A second part deals with erosion models and their application in areas where no detailed measurements exist. The implications of erosion for the soil are covered in the third part. The second half of the book focuses in three further parts on conservation issues, starting with techniques.

This is followed by experiments, and, finally, by planning and approaches in soil conservation implementation.

Price: US\$ 40 (plus \$ 10 for postage)

Orders to: *Geographica Bernensia*, c/o Group for Development and Environment, Hallerstrasse 12, 3012 Berne, Switzerland

Methodologies for Screening Soil-Improving Legumes. M. Sarrantonio. Rodale Institute, Kutztown, 1991, xxviii + 310p. + Legume seed source directory. ISBN 0-87857-989-3. Flexicover.

This book serves as both a reference guide and a field handbook for growing leguminous crops for soil improvement. It was written primarily for agricultural researchers and extension personnel who work at the field level but lack the benefit of well-equipped laboratories or readily available technical support. Readers with a minimum of experience in agricultural research will be able to use it as a teaching aid to carry out field trials to identify and test various soil-improving legumes.

In the text, heavy emphasis has been placed on working with farmers to find solutions to soil-related problems, that are well-suited to their needs. The methodologies advocate a systems approach, in which many interacting biological, physical and socio-economic factors are taken into account to find a feasible technology to address problems.

The book offers detailed background information on the benefits and potential drawbacks of including soil-improving legumes in cropping systems. The process of biological nitrogen fixation is summarized, and the factors involved in optimizing legume-rhizobial symbiosis are discussed.

Price: US\$ 24.95 (HDC); US\$ 12.95 (LDC)

Orders to: Rodale Institute, Attn. Barbara Bruno, 611 Siegfriedale Road, Kutztown, PA 19530, U.S.A.

Botswana: National Map of Land Suitability for Rainfed Crop Production, Explanatory Note and

Legend. D.J. Radcliffe, J.L. Tersteeg and P.V. de Wit. Food and Agriculture Organization of the United Nations, Rome, 1992, viii + 69p. + map in 2 sheets. Paperback.

Although Botswana is a semi-arid country, most of the estimated 1 million rural population are involved in crop production activities. These documents give a national overview of potential for rainfed crop production, based on estimates of productivity of five crops under a level of inputs and management which broadly corresponds with the recommendations of the agricultural extension service. The map at 1:1M scale is intended to support decision making on the allocation of resources and the targeting of strategies at the national and District level.

The assessment of land suitability is based on simulation of crop yield on defined land units using actual rainfall data over a 30 year period. The dependable yield which the farmer can expect to exceed in 75% of years, provides the basis for separating classes of potential productivity which define the colour scheme on the map. The Soil Map of Botswana forms the spatial template for the present map, while the temporal resolution is determined by the climatic data set. The evaluation thus incorporates an assessment of risk in addition to predicting yield under 'average' conditions, which is particularly important in Botswana where annual rainfall is highly variable. Generalized information on hazards of sheet erosion and flooding, existing land degradation, and soil workability is also included on the map.

Orders to: Land Utilization Division, Ministry of Agriculture, P.Bag 3, Gaborone, Botswana.

Tropical African Development: Geographical Perspectives. M.B. Gleave, editor. Longman, Scientific & Technical, Harlow, 1992, xii + 366p. ISBN 0-582-30147-5. Paperback.

This book considers the major problems and policies associated with development in contemporary Tropical Africa. It analyses and places in perspective the changes that it has undergone under the impact of the development process.

The book has five sections:

- (1) An overview of the present situation in Tropical Africa, considering Africa's past experiences of European colonialism;
- (2) Resources for development. Three areas are discussed - environmental limitations on agricultural developments, possible energy sources and requirements, and how human skills and populations are affected by development;
- (3) The manipulation of these resources to boost economic development in agriculture and mining, and the importance of trade, transport and distribution to support these industries;
- (4) Human and spatial factors. This section discusses the way in which population movements are interlinked, even though urbanization may not always be an indication of economic development in the region; and
- (5) Future prospects. Short- and medium-term hopes for development in Tropical Africa.

Price: £ 14.99

Orders to: Longman Scientific and Technical, Longman House, Burnt Mill, Harlow, Essex CM20 2JE, England; or: John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158, U.S.A.

Environmental Issues in the 1990s. A.M. Mannion and S.R. Bowlby, editors. John Wiley and Sons, Chichester, New York, 1992, xv + 349p. ISBN 0-471-93326-0. Paperback.

This book examines key issues relating to debates on environmental change and policy in the 1990s. The opening chapter presents a variety of approaches to analyzing the people/environment relationship while the underpinning theme of the book, explored in chapter two, is sustainability. Specific issues are discussed in subsequent chapters which can be read separately, making the book ideal for course use.

The book is divided into two sections; the first one covers issues of a global nature while the second examines localized issues. Each section is subdivided into topics that relate to change in the physical environment and topics that concern social and economic change. Of the seventeen issues discussed, global issues include past and present climatic change, deforestation, marine pollution, population, energy, green politics and biotechnology. The local issues discussed are acidification, eutrophication, industrial pollution, wetland disturbance, desertification, soil ero-

sion, transport, urban sustainability, counterurbanization and tourism. The final chapter provides an overview that emphasizes common themes.

Price: £ 14.95, US\$ 31.85

Orders to: see below.

Fate of Pesticides and Chemicals in the Environment. J.L. Schnoor, editor. John Wiley and Sons, Chichester, New York, 1992, xxi + 436p. ISBN 0-471-50232-4. Hardcover.

This volume addresses the fate of chemical pollutants in air, water, and soil. The result of a historic collaboration between eminent Russian and American scientists, it contains new predictive models of transport and transformation from many of the leading scientists in this area of research. Informative chapters analyze the biotransformation of organic chemicals and pesticides, atmospheric deposition of toxic pollutants in the Great Lakes and elsewhere, the transport of volatile organic compounds and pesticide residues through surface soil, and many other important problems in the field.

The source and pathways of pollutants into all areas of the environment are thoroughly explored; the role of free radicals in chemical transformations, surface and bottom sediment redox reactions in water, the contribution of microbial degradation; and considerations for in situ bioremediation are just a few of the complex issues addressed. The book also contains comprehensive information on pesticide labelling laws with groundwater protection which will be of interest to all soil and water chemists and environmental engineers.

Price: £ 109.00, US\$ 164.

Orders to: see below.

Greenhouse Earth. A. Nilsson. John Wiley and Sons, Chichester, New York, 1992, xvi + 219p. ISBN 0-471-93628-6. Paperback.

Climate change has become one of the major issues on the international environmental agenda. Predictions of a rising sea and devastating droughts have alerted politicians worldwide to the risks of continued increases in the emission of carbon dioxide and other greenhouse gases. But to change the direction of development is not an easy process. A myriad of political decisions has to be made on a national as well as international level. Those decisions need to be based on facts. The questions are: How big a problem is climate change really? how much do the scientists know about what is in store?

Since the greenhouse effect and global warming were first brought up on the international agenda of environmental problems, many efforts have been made to evaluate critically the scientific base for any predictions about climate change. This book is an attempt to capture the messages in those reports to give the non-scientific reader a picture of the different factors that scientists consider in their scenarios of the future. The decisions called for in a global climate convention have to be made by policy makers worldwide, but the basis for those decisions is the picture painted by scientists.

Price: £ 9.95, US\$ 21.50

Orders to: see below.

Urban Soil in Landscape Design. P.J. Craul. John Wiley and Sons, Chichester, New York, 1992, xx + 396p. ISBN 0-471-80598-X. Paperback.

There is a clear need for a collection of information on soil and its capabilities and limitations for landscape design and planting in the urban environment. Deterioration of general urban tree health and many failures of urban tree plantings have been widely observed. Too often the problem can be ascribed to failure to recognize or perhaps to knowingly ignoring existing soil problems and their effects on plant roots, considering these problems unimportant; this contributes to the short longevity of the urban vegetation.

This book has been organized and written in such a way that both those with or without a basic soil background can understand the principles and techniques covered in the later chapters. The concepts and conditions under which urban soils are found in their environment are discussed in the Introduction. The following chapters deal with: Basic soil properties; The soil as a natural body; The description of urban soils; Roots; Soil fertility; Soil contamination; Soil compaction and

its amelioration; Drainage and irrigation; Site preparation and tree planting; and Site assessment, soil analysis, and site design.

Price: £ 54

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.

Release of Agroforestry Database

The Multipurpose Tree and Shrub Database, released in the first half of 1992, gives researchers, planners and development workers the information they need on nearly 1,100 trees and shrubs suitable for agroforestry in the tropics and subtropics.

The database can be used in two ways. An agroforester can enter the name of a tree and come up with information on its characteristics (such as growth, flowering, fruiting and propagation techniques), the sites where it grows, and the products and services it provides. Alternatively, the user can enter information on desirable tree characteristics, the site, and the products and services expected and receive a list of candidate tree species.

The database requires an IBM XT/AT computer, or compatible. The cost is US\$ 125 for institutions in developing countries and US\$ 250 for other users. For further information: Mr. Douglas Boland, ICRAF, P.O. Box 30677, Nairobi, Kenya.

International Proficiency Testing Schemes

A continuous and world-wide proficiency study for the inorganic analysis of plant material is provided by the International Plant-analytical Exchange (IPE) scheme, organised by the Department of Soil Science and Plant Nutrition of Wageningen Agricultural University (WAU), the Netherlands. There are currently 240 participants, which receive 5 dried plant samples of different species every two months and analyse the samples according to their own procedures for those macro and micro elements they are interested in. One sample is supplied in duplicate during a number of years to serve as a permanent reference. The results are compiled and evaluated statistically at WAU, and made available to participants in bimonthly reports. Additional statistical information is given in annual reports by grouping all results according to sample, element and laboratory, accompanied by Gauss plots to visualise any deviations. The annual membership fee is NLG. 500,- (Dutch guilder) or equivalent in foreign currency.

A similar programme is run for soils, the International Soil-analytical Exchange (ISE) Scheme. The participating laboratories (currently 230) receive 4 air-dried soil samples of a fraction <500µm every three months. Determinations of elements are currently made for real total analysis as well as for acid extractions; furthermore a number of extraction procedures have been chosen for availability purposes. Additionally, data for the cation exchange capacity (actual and potential), clay, carbonate, P-Bray, P-Olsen and conductivity can be reported. The results are processed and reported in the same way as with IPE. The annual membership fee for ISE amounts also to NLG. 500,-.

More recently the International Sediment Exchange for Tests on Organic Contaminants (SETOC) has been set up. The exchange programme is aimed at laboratories around the world who analyse sediment samples for their content of PCBs, PAHs, organochlorine pesticides and (mineral) oil. The participants receive 4 dried sediment samples of a fraction <250µm every three months and analyse the samples according to their own procedures and for those compounds and parameters they are interested in. Results are collated and published in quarterly reports. Additionally, all data collected in one year are compiled and published in an annual report. The annual participation fee is NLG. 1250,- or equivalent in foreign currency.

For further information about these schemes please contact:

For further information: Dr V Houba, P.O. Box 8005, 6700 EC Wageningen, the Netherlands. Tel: +31 8370 82344, Fax: +31 8370 83766, Telex: NL 45015.

**ISSS COOPERATING JOURNALS/JOURNAUX COOPERANTS DE L'AISS/IBG
KOOPERIERENDE ZEITSCHRIFTEN**

1. ARID SOIL RESEARCH AND REHABILITATION

Size: Four issues per year in one volume of ca. 400 pages.

Publisher: Taylor & Francis New York

Editor-in-chief: Prof. Dr. J. Skujins, Utah State University, USA.

Full subscription rate incl. postage (1993): US\$ 99.

Personal subscription rate for ISSS members (1993): US\$ 59 (\pm 54% discount)

2. BIOLOGY & FERTILITY OF SOILS

Size: Eight issues per year, in two volumes of about 750 pages.

Publisher: Springer Verlag, Berlin-Heidelberg-New-York-Tokyo.

Editor-in-Chief: Prof. Dr. J.C.G. Ottow, Giessen, Germany.

Full subscription rate for the two volumes, excluding surface mailing: DM 956.-.

Personal subscription price for ISSS members for the two volumes, excluding postage and handling DM 597.60.

3. CATENA, an interdisciplinary journal of Soil Science-Hydrology-Geomorphology, focusing on Geocology and Landscape Evolution.

Size: Bi-monthly, 1 volume (6 issues) per year, about 600 pages.

Publisher: Catena Verlag, 3302 Cremlingen 4, Germany

Managing Editor: Dr. Margot Rohdenburg.

Full subscription rate 1991, including surface mailing: DM 459.00 / US\$ 258.

Personal subscription rate for ISSS members (available from the publisher only): DM 170.45/ US\$ 104.65. A discount of 40% applies to the personal standing order for the series of the CATENA SUPPLEMENT.

4. GEODERMA, an International Journal of Soil Science.

Size: Eight issues per year, in two volumes of about 400 pages each.

Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands.

Editor-in-Chief: Prof. Dr. J. Bouma, Wageningen, and Prof. Dr. J.A. McKeague, Ottawa, Ont.

Personal subscription price for ISSS members: Dfl 292 (US\$ 176.-)

5. SOIL BIOLOGY & BIOCHEMISTRY

Size: 12 issues per year, in one volume of about 1800 pages.

Publisher: Pergamon Press Ltd., Oxford, England.

Editor-in-Chief: Prof. Dr. J.S. Waid, Bundoora, Australia.

Full subscription rate, including surface mailing: US\$ 930.00.

Personal subscription price of ISSS members: US\$ 114.00 (£ 60.--).

6. SOIL TECHNOLOGY

journal concerned with applied research and field applications on soil physics, soil mechanics, soil erosion and conservation, soil pollution, soil restoration, drainage, irrigation and land evaluation.

Size: Quarterly, 1 volume (4 issues) per year, about 400 pages.

Publisher: Catena Verlag, 3302 Cremlingen 4, Germany.

Managing editor: Dr. Margot Rohdenburg.

Subscription rate 1991, incl. surface mailing: DM 228. / US\$ 138.

Personal subscription rate for ISSS members 1991 (available from the publisher only): DM 83.65 / US\$ 52.15

7. PEDOBIOLOGIA

international journal, focusing on soil biology, especially on soil zoology and microbiology.

Size: 6 issue per year, in 1 volume with 450 pages.

Publisher: G.Fischer, Jena, Stuttgart, New York.

Editors-in-chef: Prof. Dr. M. Schaefer and Dr. J. Schauer mann, Göttingen, Prof. Dr. G. Weigmann, Berlin.

Subscription rate 1993: DM 330.00, plus postage

Reduced subscription-price for personal subscription of ISSS: DM 94.00, plus postage.



ISSS-AISS-IBG

Cooperating Journals Journaux Cooperatives Kooperierende Zeitschriften

APPLICATION FOR SUBSCRIPTION/DEMANDE D'ABONNEMENT/
ANTRAG AUF ABONNEMENT

From: Family name:
First name(s) and title(s):
ISSS membership No.:
Full address:
.....
.....
.....
Telephone: Fax:

To: Dr. P.U.Lüscher
Treasurer ISSS
WSL, Zuercherstr.111
CH-8903 Birmensdorf/Switzerland

I should like to take a personal subscription for the following Cooperating Journal(s) (price rate 1992):

- Acid Soil Research and Rehabilitation (59,00 US\$)
- Biology and Fertility of Soils (597,60 DM)
- Catena (170,45 DM/104,65 US\$)
- Geoderma (292,00 Dfl/176,00 US\$)
- Soil Biology & Biochemistry (114,00 US\$/£60,00)
- Soil Technology (83,65 DM/52,15 US\$)
- Pedobiologia (94,00 DM + postage)

I took note that the payment(s) will be made directly to the publisher(s) of the Journal(s) and not to the ISSS. I will receive respective instructions from the publishers.

Date:

Signature:

For official use only:

- membership status:
- to Cooperating Journal(s):

LIFE MEMBERS

014-10515 FITZPATRICK R.W. DR.	CSIRO, DIV. OF SOILS	P.M.B. 2	GLEN OSMOND, S.A. 5064	AUSTRALIA
015-12114 BHUIYAN R.M.		NEULERCHENFELDER STR. 59/14	A-1160 WIEN	AUSTRIA
015-12007 GERZABEK M.		AMEISGASSE 27	A-1140 WIEN	AUSTRIA
020-00373 EAQUB M. PROF. DR.	BANGLADESH AGRIC. UNIV.	DEPT. OF SOIL SCIENCE	MYMENSINGH 2202	BANGLADESH
020-11449 RAHMAN M.	UNIVERSITY OF DHAKA	DEPT. OF SOIL SCIENCE	DHAKA 1000	BANGLADESH
020-01456 SATTAR M.A. DR.	DEPT. OF SOIL SCIENCE	BANGLADESH AGRIC. UNIV.	MYMENSINGH	BANGLADESH
025-00429 DE STROOPER E.		BREDESTRAAT 217	B-9041 OOSTAKKER	BELGIUM
025-02205 DUDAL R. PROF. DR.	FAK. LANDBOUWWET. K.U.L.	VITAL DECOSTERSTR. 102	B-3000 LEUVEN	BELGIUM
025-00439 GABRIELS D. DR.	FAK. LANDBOUWWET. R.U.G.	COUPURE LINKS 653	B-9000 GENT	BELGIUM
025-12681 LOUIS A.		PACIFIKATIELAAN 15	B-9000 GENT	BELGIUM
031-14128 QUIROGA J.C.	CUMAT		LA PAZ	BOLIVIA
037-14129 NOBREGA C.	SQS 313	BL. C AP. 203	70832 BRASILIA DF	BRAZIL
051-00845 BENTLEY C.F. PROF. DR.		13103 - 66 AVENUE	EDMONTON, ALTA. T6H 1Y6	CANADA
051-00945 IGNATIEFF V.	BEECHMORE	R.R. #3	RICHMOND, QUE. J0B 2H0	CANADA
051-00956 KALRA Y.P.	FORESTRY CANADA	5320 - 122ND STREET	EDMONTON, ALTA. T6H 3S5	CANADA
051-10873 OSMAN A. DR.		71 WOODRIDGE CR. #16	NEPEAN, ONTARIO K2B 7T2	CANADA
091-14412 HAQUE I.	ILCA	P.O. BOX 5689	ADDIS ABABA	ETHIOPIA
099-11610 MAENE L.M.	INTERN. FERT. INDUS. ASSOC.	28 RUE MARBEUF	F-75008 PARIS	FRANCE
099-06548 MATHIEU C. PROF. DR.	ESA PURPAN	75 VOIE DU TOEC	F-31076 TOULOUSE	FRANCE
099-01560 RIQUER J.	DUCAL U 14	MARINA BAIE DES ANGES	F-06270 VILLENEUVE LOUBET	FRANCE
099-13962 RUELLAN A. PROF. DR.		2 BOULEVARD BERTHELOT	F-34000 MONTPELLIER	FRANCE
110-01799 PIETROWICZ P.		VEBER DER KAMPWESE 24	D-W-3524 IMENHAUSEN	GERMANY
111-11490 SANTANNA R.	F.A.O./U.N.	P.O. BOX 1628	ACCRA	GHANA
114-11714 ADETUNBI A.R.	UNIV. OF SALFORD	REMOTE SENSING UNIT	SALFORD, M5	UNITED KINGDOM
114-07392 BRAMMER H. DR.		37 KINGSWAY COURT	HOVE, EAST SUSSEX BN3 2LP	UNITED KINGDOM
114-04301 SMART P. DR.	GLASGOW UNIVERSITY	CIVIL ENGINEERING DEPT.	GLASGOW, G12 8LT	UNITED KINGDOM
134-12430 GUPTA B.S. DR.	TECHN. ADV. R & D DEPT.	KHATAULI MANURE MILLS	KHATAULI - 251201 - U.P.	INDIA
134-14463 RAO D.L.N. DR.	CENTRAL SOIL SALINITY	RESEARCH INSTITUTE	KARNAL - 132001 - HARYANA	INDIA
134-12748 REDDI M.V. DR.	KAKATIYA UNIV./DEPT. ZOOLO.	ENVIRONMENTAL BIOLOGY LAB	WARANGAL - 506009 - A.P.	INDIA
134-11497 SAMRA J.S.	CENTR. SOIL & WATER CONSERV. SECTOR	27-A, MADHYA	MARG CHANDIGARH - 160019	INDIA
134-04857 SINGH A.K. DR.	WATER TECHN. CENTRE	I.A.R.I. BUILDINGS	NEW DELHI - 110012	INDIA
135-12864 ADIWIGANDA R.	MEDAN RESEARCH INSTITUT	P.O. BOX 104	MEDAN 20001	INDONESIA
135-03974 GO BAN HONG DR.	BONDONGANGKOMPLEKS 212	PADANG SELASA 524	BOGOR	INDONESIA
135-14442 GUNALAN	UNIV. SRIWIJAYA/PERTANIAN JALAN	SUMANTRI BROJONEGRO 1 BANDAR	PALEMBANG 30139	INDONESIA
312-10524 LUMBANRAJA J.	FAK. PERTANIAN, UNIVERSITASJL.			LAMPUNG
INDONESIA				
135-12272 MAMARIL C.P.	I.R.R.I. - BOGOR OFFICE	P.O. BOX 107	BOGOR 16001	INDONESIA
136-02028 BYBORDI N. DR.	PLAN & BUDGET ORGAN.	ROOM 308	TEHRAN	IRAN
144-06665 WAKATSUKI T. DR.	SHIMANE UNIV./FAC. AGRIC.	NISHIKAWAZU	MATSUE 690	JAPAN
197-02666 DRIESSEN P.M. DR.	AGRIC. UNIV./SOIL SCI.	POSTBUS 37	6700 AA WAGENINGEN	THE NETHERLANDS
197-02751 SOMBROEK W.G. DR.	I.S.R.I.C.	POSTBUS 353	6700 AJ WAGENINGEN	THE NETHERLANDS
197-08384 STALJANSENS M.	PELMOLENSTRAAAT 78	AVENU COGHEN 114	NL-7511 SC ENSCHEDE	THE NETHERLANDS
197-02765 VAN BAREN J.H.V.	I.S.R.I.C.	POSTBUS 353	6700 AJ WAGENINGEN	THE NETHERLANDS
197-023786 VAN DIEPEN C.A.		GRUTTOWEIDE 209	6708 BG WAGENINGEN	THE NETHERLANDS
197-02491 VAN KEKEM A.J.		WOLFHEREKEWEG 120-37	NL 6874 AW WOLFHERE	THE NETHERLANDS
211-02997 KANG B.T. DR.	I.I.T.A.	OYO ROAD/P.M.B. 5320	IBADAN	NIGERIA
211-10820 MBA C.C. DR.	UNIV. OF NIGERIA	DEPT OF SOIL SCIENCE	NSUKKA	NIGERIA
219-02046 KHAN M.F.A. PROF. DR.	402/18 SAMNABAD	GULISTAN-E-MUSTAFA	KARACHI-38	PAKISTAN
225-11276 PAREDES ARCE P.G. DR.	APARTADO 665	CORREO CENTRAL	IQUITOS	PERU
226-14470 LADHA J.K.	I.R.R.I.	P.O. BOX 933	1099 MANILA	PHILIPPINES
240-10728 VAN BRANDT H.	C/O AMBABEL	B.P. 81	KIGALI	RWANDA
261-11973 ABU-BOCKARI J.J.	LAND & WATER DEV. DIVISION PRIVATE	MAILBAG 187	FREETOWN	SIERRA LEONE
269-03358 DU PREEZ C.C. DR.	DEPT. GRONDKUNDE	POSBUS 339	9300 BLOEMFONTEIN	SOUTH AFRICA
285-10185 REMMELZWAAL A. DR.	C/O UNDP	P.O. BOX 261	MBABANE	SWAZILAND
287-07829 WEN T.T.	C/O FAO SOMALIA/VIA UNDP PALAIS DES NATIONS	P.O. BOX 3008	CH-1211 GENEVA	SWITZERLAND
291-12857 MTAKWA P.W.	SOKOINE UNIV. AGRIC./SOIL	P.O. BOX 9-109	MOROGORO	TANZANIA
292-02553 PUSHPARAJAH E.P. DR.	IBSRAM, 6TH FL., LAND. DEV. PHAHOLYOTHIN RD/POBOX 9-109	P.O. BOX 2890	BANGKHEN, BANGKOK 10900	THAILAND
312-05369 ESWARAN H. DR.	USDA SOIL CONS. SERV.	COLLEGE STATION	WASHINGTON DC 20013	U.S.A.
312-05365 GOYAL M.R. PROF.	BOX 5984	118 NEWINS-ZIEGLER HALL	MAYAGUEZ, PR 00709-5984	U.S.A.
312-02484 NAIR P.K.R. PROF. DR.	UNIVERSITY OF FLORIDA	DEPT. OF L.A.W.R.	GAINESVILLE FL 32611	U.S.A.
312-05756 NIELSEN D.R. PROF. DR.	UNIVERSITY OF CALIFORNIA	6234 NORTH SACRAMENTO ST.	DAVIS CA 95616	U.S.A.
312-05802 PAL D.	SOIL SCIENTIST & CONSULTANT	3857 S.W. 4 PL.	CHICAGO IL 60659	U.S.A.
312-06040 STRYKER M.M.		P.O. BOX 532	GAINESVILLE FL 32607	U.S.A.
312-35584 WIEMANN M.R.	418 SO. 9TH ST.	P.O. BOX 3397	CHESTERTON, INDIANA 46304	U.S.A.
312-12861 YACOUBI M.A. DR.			TUCSON, AZ 85722	U.S.A.

NEW MEMBERS

011-35824	NW92-L FILGUEIRA R.R. PROF.DR.FAC. DE CIENCIAS UNLP	CALLES 60 Y 119	1900 LA PLATA	12306670BC00	3	ARGENTINA	
014-35635	N 92-L ABRAHAM S.	SOIL CONSERVATION SERVICE P.O. BOX 198	CHATSWOOD NSW 2057	000000000000	1	AUSTRALIA	
014-35637	N 92-L COMMINS P.J	CI-TRANGIE RES. CENTRE	TRANGIE NSW 2823	000000000000	1	AUSTRALIA	
014-35752	N 92-L DART I.K.	AGRONOMY DEPARMENT	QUEENSLAND AGRICUL.	COLLEGE LAWES QLD 4343	000000000000	1	AUSTRALIA
014-35636	N 92-L DUHA Y LINGSROD N.C.	CENTER FOR ENVIRON. CONCERNMAMUNING	QUEZON CITY	000000000000	1	PHILIPPINES	
014-35753	N 92-L ENGELBOGEN C.G.	BASF AUST LTD.	55 FLEMINGTON RD	NORTH MELBOURNE VIC 3051	000000000000	1	AUSTRALIA
014-35754	N 92-L GRANT M.J.	FOREST RESEARCH CENTRE	MIS 483	GYMPIE QLD 4570	000000000000	1	AUSTRALIA
014-35640	N 92-L ENFREY G.J.		P.O. BOX 29	SPRING HILL QLD 4004	000000000000	1	AUSTRALIA
014-35638	N 92-L GREENHALGH S.E.	AGRICULTURAL RES. CENTRE		TRANGIE NSW 2823	000000000000	1	AUSTRALIA
014-35639	N 92-L HALL D.J.M.	AGRICULTURE RES. CENTRE		TRANGIE NSW 2823	000000000000	1	AUSTRALIA
014-35742	N 92-L KADDOUS F.		203 SEAFORD RD.	SEAFORD, VIC 3198	120460A0C00	1	AUSTRALIA
014-35756	N 92-L RAINE S.R.		P.O. BOX 496	PALMERSTON NT 0831	000000000000	1	AUSTRALIA
014-35741	N 92-L ROBERTSON-HERO F. DR.	CSIRO WIDLIFE & ECOLOGY	P.O. BOX 84	LYNEHAM, CANBERRA ACT 2602	003400A0C00	1	AUSTRALIA
014-35642	N 92-L SUMMERELL S.F.	ROADS & TRAFFIC AUTHORITY	16 TAYLOR AVE	BARNSELY NSW 2301	000000000000	1	AUSTRALIA
014-35643	N 92-L THOMAS J.P.		P.O. BOX 308	ROMA QLD 4455	000000000000	1	AUSTRALIA
014-35641	N 92-L THOMPSON W.P.	62 WHITEHILL ROAD	LAND RESOURCES BRANCH	INDOOROOPILLY QLD 4068	000000000000	1	AUSTRALIA
014-35644	N 92-L TURNER J.	FORESTRY COMMISSION OF NSW	P.O. BOX 100	BEECROFT NSW 2119	000000000000	1	AUSTRALIA
014-35645	N 92-L YATES D.	SCHOOL OF CROP SCIENCES	UNIVERSITY OF SYDNEY	NSW 2006	000000000000	1	AUSTRALIA
020-35681	N 92-L ELAHI S.F. DR.	DEPT. OF SOIL SCIENCE	DHAKA UNIVERSITY	DHAKA 1000	0005070B000	1	BANGLADESH
020-35682	N 92-L HUQ S.M.I. DR.	DEPT. OF SOIL SCIENCE	DHAKA UNIVERSITY	DHAKA 1000	000400A0C00	1	BANGLADESH
025-35732	N 92-L AYORINDE K.	INTERN. CENT FOR REMEMOLOGY	COULPURE LINKS 653	9000 GENT	000000000000	1	BELGIUM
037-35745	N 92-L CHAVES H.	AV SILVA JARDIM	2494 AP. 12	80240 CURITIBA, PR	10006000C00	1	BRAZIL
037-35751	N 92-L MELO G.	CPAF-RORAIMA, BR 174 KM 8 CAIXA POSTAL 133		69300 BOA VISTA, RR	000050000000	1	BRAZIL
037-35747	N 92-L GONZAGA R.M.S.	UNIV. EST. RIO DE JANEIRO R.S. FRANZ. X'AV., 524		20550 RIO DE JANEIRO, RJ	00055000C00	1	BRAZIL
037-35748	N 92-L NOGUEIRA F.C.B.	RUA TOMAS ACIOLY	340 AP. 201	60135 FORTALEZA, CE	00055000C00	1	BRAZIL
037-35749	N 92-L DE OLIVEIRA M.	ESAM, KM 47 BR 110	CAIXA POSTAL 137	59600 MOSSORO, RN	0004007A0C00	1	BRAZIL
037-35750	N 92-L PALMIERI F.	EMBRAPAS/NLCS	RUA JARDIM BOTANICO, 1024	22460 RIO DE JANEIRO, RJ	00055000C00	1	BRAZIL
037-35746	N 92-L ZAGO A.	UNIV. FEDER. DE SANTA MARIA	DEPT. DE SOLOS	97119 SANTA MARIA, RS	00005000B000	1	BRAZIL
049-35607	NW92 YAN WAMBEKE J.	C/O F.A.O.	BOITE POSTALE 2540	OUAGADOUGOU	000000000000	1	BURKINA FASO
051-35695	N 92-L BAKER R.	123 CORNWALLIS DR. NW	CALGARY ALTA.	T2K 1V3	000000000000	1	CANADA
051-35696	N 92-L BARIL R.		2782 RUE LOUISBOURG	STE-FOY QUE. G1W 1W6	000000000000	1	CANADA
051-35697	N 92-L BOURBEAU G.A.		1234 KILBORN AVE.	OTTAWA ONT. K1H 6K9	000000000000	1	CANADA
051-35698	N 92-L BREWSTER G.R.		R.R.5	TRURO N.S. B2N 5B3	000000000000	1	CANADA
051-35699	N 92-L CANN D.B.		676 MAIN ST.	YARMOUTH N.S. B5A 1K3	000000000000	1	CANADA
051-35700	N 92-L CARSON J.A.		6508-94 B AVE.	EDMONTAN ALTA. T5R 3Y3	000000000000	1	CANADA
051-35701	N 92-L DENHOLM K.A.	AG CANADA LAND RES.	DIV. 70 FOUNTAIN GUELPH ONT.	N1H 3N6	000000000000	1	CANADA
051-35702	N 92-L DUFOUR C.M.L.	BOX 8, SITE 20 R.R. 2	CALGARY ALTA.	T2P 2G5	000000000000	1	CANADA
051-35703	N 92-L GHANEM I.	N.B. DEPT. OF AGRICULTURE PLANT INDUSTRY	P.O. BOX	6000 FREDERICTON N.B. E3B 5H1	000000000000	1	CANADA
051-35704	N 92-L GILL K.S.		57 JADE CRESCENT	BRAMPTON ONT. L6S 3G9	000000000000	1	CANADA
051-35705	N 92-L GLEDDIE S.	PHILOM BIOS INC.	104-110 RES. DR. INNO. PLACES	SASKATOON SASK. S7N 3R3	000000000000	1	CANADA
051-35706	N 92-L HASTIE W.J.		635 DEERCROFT WAY S.E.	CALGARY ALTA. T2J 5V4	000000000000	1	CANADA
051-35707	N 92-L HILCHEY J.D.		72 ROOSEVELT AVE.	TRURO N.S. B2N 1B6	000000000000	1	CANADA
051-35708	N 92-L HINATOWICH G.L.	SASK. WHEAT POOL	103-111 RRESEARCH DR.	SAKATOON SASK. S7N 3R2	000000000000	1	CANADA
051-35709	N 92-L HOSLER K.R.		1325 ROSEMARY CD.	BURLINGTON ONT. L7P 2P3	000000000000	1	CANADA
051-35710	N 92-L JOHNSON R. L.	GENREAL DELIVERY		VEGEVILLE ALTA T0B 4L0	000000000000	1	CANADA
051-35711	N 92-L KRUGER G.A.		2545 EASTVIEW	SAKATOON SASK. S7J 3G5	000000000000	1	CANADA
051-35712	N 92-L LIMBIRD A.G.	UNIV. CALGARY	DEPT. GEOGRAPHY	GALGARY ALTA. T2N 1N4	000000000000	1	CANADA
051-35713	N 92-L MARR J.	WATER & EARTH SCI. ASSOC. 182	VICTORIA STREET SOUTH	KITCHENER ONT. N2G 2B9	000000000000	1	CANADA
051-35730	N 92-L NIELSEN K.F.	TH 52 POINT MCKAY CR. N.W.	CALGARY ALTA.	T3B 5B4	000000000000	1	CANADA
051-35714	N 92-L O'HALLORAN I.	MCGILL UNIVERSITY	MACDONALD COLLEGE	RENEWABLES ESTE-ANNE-DE-BELLEVUE HX1C0	000000000000	1	CANADA
051-35715	N 92-L RACZ G.J.	UNIVERSITY OF MANITOBA	DEPT SOIL SC.	WINNIPEG MAN. R3C 2H6	000000000000	1	CANADA
051-35716	N 92-L REIMER A.	METEC CONSULTANTS	P.O. BOX 325	WINNIPEG MAN. R3C 2H6	000000000000	1	CANADA

051-35717 N 92-L RICEA W.A.		P.O. BOX 29	BEAVER LODGE ALTA. T0H 0C0	00000000000	1	CANADA
051-35718 N 92-L ROWELL M.J.		9361-98A ST.	EDMONTON ALTA. T6E 3N3	00000000000	1	CANADA
051-35719 N 92-L RUTHERFORD G.K.	QUEEN'S UNIVERSITY	DEPT. OF GEOGRAPHY	KINGSTON ONT. K7L 3N6	00000000000	1	CANADA
051-35720 N 92-L SPRATT E. D.		P.O. BOX 8247	SAKATOON SASK. S7K 6C5	00000000000	1	CANADA
051-35721 N 92-L STAUFFER M.D.		231 SUNNYSIDE DRIVE	LONDON ONT. N5X 3V1	00000000000	1	CANADA
051-35722 N 92-L TAJEK J.	AG CANADA	SOIL SURVEY 8727-1644 ST.	EDMONTON ALTA. T5K 2R2	00000000000	1	CANADA
051-35723 N 92-L TIMMERMANS J.G.	ALBERTA AGRICULTURE	BAG SERVICE #1	AIRDRIE ALTA. T4B 2C1	00000000000	1	CANADA
051-35609 N 92-L TOMLIN A.D. DR.	LONDON RES.CENTR. AGRICULT.	1400 WESTERN RD.	LONDON, ONTARIO N6G 2V4	00000000000	1	CANADA
051-35724 N 92-L TWARDY A.G.		11428-44 A AVE	EDMONTON ALTA. T6J 0Z9	00000000000	1	CANADA
051-35725 N 92-L WALMSLEY M.E.	WESTLAND RESOURCE GROUP	1863 OAK BAY AVE.	VICTORIA B.C. V8R 1C6	00000000000	1	CANADA
051-35726 N 92-L WATSON D.L.		8407-69 AVE	EDMONTON ALTA. T6E 0R5	00000000000	1	CANADA
051-35727 N 92-L WOODROW E.F.	AG CANADA	RESEARCH STATION BOX 7098 ST JOHN'S WEST NPLD A1E 3Y3	EDMONTON ALTA. T6G 2E3	00000000000	1	CANADA
051-35728 N 92-L XING B.	UNIVERSITY OF ALBERTA	DEPT. SOIL. SC.	EDMONTON ALTA. T6G 2E3	00000000000	1	CANADA
067-35819 N 92-L ZUNIGA O.	DEP. DE FISICA	CINDAD UNIVERSI. MELENDEZ A.A.	25360 GALI	1000000A0000	3	COLOMBIA
079-35731 N 92-L DOLEZAL F. DR.	RES. INST. OF SOIL & WATER	ZABOVRESKA 250	15627 PRAHA 5 - ZBRASLAV	10230060BCD	1	CZECH REPUBLIC
085-35685 N 92-L CALVACHE M.	COMIS. ECUATOR. DE ENERGIA S JAVIER		# 295 Y AV ORELLANQUITO	00000000000	3	ECUADOR
085-35684 N 92-L PADILLA W. DR.	AGROBIOCIEMICA	GONZALO ZALUMBIDE #	QUITO	020400000C00	3	ECUADOR
099-35625 N 92-L NAHON D.B. PROF.	LAB. GEOSCIENCES DE L'ENVIFAC.	SCL. ST.JEROME CASE43113397	MARSAILLE CEDEX 13	123050700C00	2	FRANCE
110-35647 NW92-L BILLIB M.H.A. DR.	INST. WASSERWIRTSCHAFT	UNIVERSITÄT HANNOVER	3000 HANNOVER	0000000A0C00	4	GERMANY
110-35823 NW92-L BOTSCHKEK J. DR.	INST. BODENKUNDE	NUSSALLEE 13	D-5300 BONN	100450000C00	4	GERMANY
110-35821 N 92-L CRAM S.	INST. BODENKUNDE/BODENCHEM.	UNIVERSITÄT HOHENHEIM	D-7000 STUTTGART 70	020400000C00	4	GERMANY
110-35646 NW92-L ERMILICH C.		KARLSBADER STR. 32	2300 KIEL	00000000000	4	GERMANY
110-35737 NW92-L FICHTER J.	STAT. SOLS ET NUTRITION	INST. NAT. RES AGRONOMIQUE	54280 CHAMPENOUX	020400700C00	1	FRANCE
110-35615 NW92-L KEPLIN B.	INST. GEOGR. ART. LANDSCH.	ROBERT-KOCH-STR. 26	D-440 MÜNSTER	003400000C00	4	GERMANY
110-35622 NW92-L LEINWEBER P. DR.	ISPA	DRIVERSTR. 22, PF 1553	D-2848 VECHTA	00000000000	4	GERMANY
110-35739 NW92-L NIEDERBÖRSTER H. DR.		MARGERTENWEG 7	D-2121 VÖGELSEN ÜB. LÜNEB	003450000C00	4	GERMANY
110-35694 N 92-L ROHDENBURG M.	CATENA VERLAG	BROCKENBLICK 8	D-3302 CREMLINGEN-DESTEDT	1000670BC00	4	GERMANY
110-35740 NW92-L SCHRADER ST.	ZOOLOG. INST DER TU	POCKELSTR. 10A	D-3300 BRAUNSCHWEIG	12300000BC00	4	GERMANY
110-35734 NW92-L WÖLFELSCHNEIDER A.	INST. BODENKUNDE	BERTHOLDSTR. 17	D-7800 FREIBURG	00340000B000	4	GERMANY
110-35606 NW92-L ZHANG H. DR.	F.T.Z.	WERFTSTR. 10	D-2242 BÜSUM	00000000000	4	GERMANY
114-35626 NW92-L ADDERLEY W.P.	SCHOOL OF AGRIC. & FOREST	UNIVERSITY OF WALES, BANCORGWYNEDD LL 57 2UW		02040070BC00	1	UNITED KINGDOM
114-35627 NW92-L DENDOOVEN L. DR.	MATHERLY LABS/UNI OF EXETER	PRINCE OF WALES ROAD	EXETER EX4 4PS	003400000C00	1	UNITED KINGDOM
114-35735 NW92-L HADDEN ST. W.	ADAS KENTON BAR	NEWCASTLE UPON TYNE	NE1 2YA	100400000000	1	UNITED KINGDOM
114-35822 N 92-L HENROT J. DR.	ITA CO LAMBOURN	CAROLYN HOUSE 26 DINGWALL	RCROYDON CR9 3EE	123450000C00	2	UNITED KINGDOM
114-35683 NW92-L OKAE-ANTI D.T.A.	DEPT. OF SOIL SCI	UNI READING; LONDON RD	READING BERKS RG1 5AQ	000050000C00	1	UNITED KINGDOM
114-35687 NW92-L ROTHER J.A. DR.	K2 OKHAMPTON STREET	EXETER	DEVON EX4 1DY	003400000C00	1	UNITED KINGDOM
138-35611 N 92-L COURY M. DR.	OAK PARK RES CENTRE		IR-CARLOW	00000000000	1	IRELAND
138-35612 N 92-L FORTUNE T.	OAK PARK RESEARCH CENTRE		IR-CARLOW	00000000000	1	IRELAND
144-35733 NW92-L OMOTE J. PROF. DR.	DEPT. OF BIOENGINEERING	1-236 TANGI-CHO	HACHIOJI-SHI, TOKYO	023400700C00	1	JAPAN
197-35628 N 92-L TIAN G.	DEPT. SOIL SCI/AGRIC. UNI	P.O. BOX 37	NL-6700 AA WAGENINGEN	0034000000D0	1	THE NETHERLANDS
197-35630 N 92-L VERHAGEN I.		SINT ANTONIELLAAN 260	NL-6821 CN ARNHEM	000050000000	1	THE NETHERLANDS
197-35633 N 92-L VAN DEN HOEVEN J.		HOEVENSTEIN 239-14B	6708 AK WAGENINGEN	000000000000	1	THE NETHERLANDS
197-35634 N 92-L LANSINK C.J.E.		VAN HOGENDORPSTRAAT 793	1051 CB AMSTERDAM	000000000000	1	THE NETHERLANDS
223-35621 NW92-L KLASSEN BOSCHMANN E.	SERVICIO AGROPECUARIO	C.D.C 984 COL. FERNHEIM	FILADELFO CHACO	000400000C00	3	PARAGUAY
269-35618 N 92-L NNGOVHELA L.M.	VENDA SOIL LABORATORY	PRIVAT BAG X2153	THOHOYANDOU, VENDA	000000000000	1	SOUTH AFRICA
275-35651 NW92-L PARDINDI G.	INST. OF EARTH SCIENCES	C/MARTI FRANQUES S/N	08028 BARCELONA	1200667ABC00	1	SPAIN
286-35688 N 92-L EDLING V.	VALLÉ GARD	HUSBY-OPPUNDA	S-640 33 BETTNA	000000000000	1	SWEDEN
286-35689 N 92-L HÉKASSON T.		VANADISVÄGEN 2	S-113 46 STOCKHOLM	000000000000	1	SWEDEN
286-35690 N 92-L MÉRTESSON A.	DEPT. SOIL SCL	UNIV. AGRIC. SCI. BOX 7014	S-750 07 UPPSALA	000000000000	1	SWEDEN
286-35691 N 92-L NILSSON F.		AMALIENTORPS GÉRD	S-242 00 HÖRBY	000000000000	1	SWEDEN
286-35692 N 92-L SIREN G.		SVITODSVÄGEN 10	S-182 62 DJURSHOLM	000000000000	1	SWEDEN
287-35736 NW92-L BAPST M.	TRIFORM SA	COURT CHEMIN 19	CH-1700 FRIBOURG	023456000C00	4	SWITZERLAND
287-35693 N 92-L BUCHTER B. DR.	ITÖ	GRABENSTR. 11	CH-8952 SCHLIEREN	120000000000	4	SWITZERLAND
287-35680 N 92-L GUELAT M.		RUE DE L'AVENIR 16	CH-2800 DELEMONT	00005000B000	2	SWITZERLAND

287-35624 N 92-I JENKA B. DR.	APPELSEESTR. 33	CH-4143 DORNACH	1004000A0C00 4 SWITZERLAND
287-35743 N 92-I SALM CH.	MITTELDOERFERSTR. 185	CH-5704 EGLSWIL	00000000000 4 SWITZERLAND
287-35744 N 92-I TILLMAN D.	LINDENHOF 4	CH-5430 WETTINGEN	00000000000 4 SWITZERLAND
287-35686 NW92-L ZEYER J. PROF. DR.	INST. TERRESTR. ÖKOLOGIE GRABENSTR. 3	CH-8952 SCHLIEREN	003400000000 4 SWITZERLAND
303-35679 N 92-L AKSOY E.	UNIV. GUKUROVA / FAC. AGRIL DEPT. SOIL. SCIENCE	01330 ADANA	00805000000 1 TURKEY
303-35676 N 92-L BILGEHAN G.	UNIV. GUKUROVA / FAC. AGRIL DEPT. SOIL. SCIENCE	01330 ADANA	10000000000 1 TURKEY
303-35678 N 92-L GÜZEL N. PROF. DR.	UNIV. GUKUROVA / FAC. AGRIL DEPT. SOIL. SCIENCE	01330 ADANA	020400700000 1 TURKEY
303-35677 N 92-L KARAMAN C.	UNIV. GUKUROVA / FAC. AGRIL DEPT. SOIL. SCIENCE	01330 ADANA	000056708000 1 TURKEY
303-35675 N 92-L SENOL S. DR.	UNIV. GUKUROVA / FAC. AGRIL DEPT. SOIL. SCIENCE	01330 ADANA	0000500A0000 1 TURKEY
303-35608 NW92 SUEBI A.	SEKER ENSTTTÜSÜ ZIRAI KIMYAVETOPRAK SUBESİ 06790	ETMESGUT-ANKARA	000400000000 1 TURKEY
308-35623 NW92 N MADZURU B.I.	TIMIRJAZEV AGRIC. ACADEMY LISTVENNICHNAYA ALL.2A.K301	MOSCOW U-550	020400000000 1 U.S.S.R.
312-35820 NW92 RUSIN D.	X-29 JARDIN TERR	MANHATTAN, KS 66502	000000000000 1 U.S.A.
316-04157 PETERS W.L. PROF.	UNIV. DE ZULIA/FAC.	AGRON. APARTADO 526	MARACAIBO 4001 A VENEZUELA

ISSS MEMBERSHIP NUMBER AND ITS MEANING

Exemple for an ISSS membership number (see e.g. the first line on your addresslabel):

1. eight-digit registration number (xxx-yyyyy) of:

xxx = three-digit country code which generally indicates the country of residence or of the national society, to which the member is affiliated.

yyyyy = five-digit current number of the ISSS registration

2. supplementary code

for new members:

N 92 = new member 1992, contribution paid

NW92 = new member 1992, contribution not yet paid

for others:

92-L = the contribution for 1992 has been paid through the national society

92-I = the contribution for 1992 has been paid by the member directly to the ISSS.

Attention: This code informs always about your current payments, e.g. 90-L would mean that your last fee was paid through your national society in 1990.

NUMERO D' AFFILIATION DE L' AISS ET SA SIGNIFICATION

vosre numéro d'affiliation se trouve p.ex. sur vosre étiquette d'adresse en premier ligne (voire enveloppe du bulletin de l'AISS).

1. Numéro d'enregistrement de huit chiffres qui s'explique comme suit:

xxx = code du pays de trois chiffres qui indique en général le pays de résidence ou de l'association nationale, à laquelle le membre est affilié

yyyyy = code d'enregistrement interne de l'AISS de cinq chiffres

2. Codes supplémentaires

pour les nouveaux members:

N 92 = nouveau membre en 1992, cõtisation annuelle payée

NW92 = nouveau membre en 1992, cõtisation annuelle encoure à payer

pour les autres members:

92-L = cõtisation annuelle de 1992 payé par l'association nationale

92-I = cõtisation annuelle de 1992 payé directement à l'AISS.

Attention: CE code informe toujours sur l'état actuelle de vosre cõtisation, p.ex. 90-L signifie, que la dernière cõtisation fût payée en 1990 par vosre association nationale.

IBG MITGLIEDERNUMMER UND IHRE BEDEUTUNG

Beispiel einer IBG Mitgliedernummer (wie z.B. in der ersten Zeile Ihrer Adressetikette):

- xxx** = dreistelliger Ländernummer, bezeichnet in der Regel das Land, in dem das Mitglied wohnt oder dessen nationaler Gesellschaft es angehört.
- yyyyy** = laufender fünfstelliger Nummer unserer internen IBG-Registratur.

2. Zusatzkode

bei neuen Mitgliedern:

- N 92** = neues Mitglied 1992, Beitrag 1992 bezahlt
NW92 = neues Mitglied 1992, Beitrag 1992 noch nicht bezahlt

sonst:

- 92-L** = Beitrag 1992 wurde über die nationale Gesellschaft bezahlt
92-I = Beitrag 1992 wurde vom Mitglied direkt an die IBG bezahlt.

Achtung: Dieser Zusatzkode informiert Sie über den aktuellen Stand Ihrer Beitragszahlungen, z.B. bedeutet 90-L, daß die letzte Beitragszahlung durch Ihre nationale Gesellschaft 1990 erfolgte.



Membership Application Form

Fiche de Demande d'Affiliation

Aufnahmeantragsformular

- 0 REGISTRATION FOR MEMBERSHIP/DEMANDE D'AFFILIATION/
AUFNAHMEANTRAG
- 0 CHANGE OR CORRECTION OF ADDRESS/CHANGEMENT OU
CORRECTION D'ADRESSE/ANSCHRIFTENÄNDERUNG
- 0 STATEMENT ON SPECIAL INTEREST/DECLARATION D'INTERETS
SPECIAUX/ANZEIGE VON SPEZIALINTERESSEN
- 0 APPLICATION FOR LIFE MEMBERSHIP/DEMANDE D'AFFILIATION
POUR LA VIE/ANTRAG AUF MITGLIEDSCHAFT AUF LEBENSZEIT

- Please return this form, completed at both sides, to the Treasurer of ISSS: Dr. Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Switzerland
- Veuillez bien renvoyer ce formulaire, complété des deux côtés, au Trésorier de l'AISS: Dr. Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Suisse
- Bitte senden Sie dieses Formular, ausgefüllt auf beiden Seiten, an den Schatzmeister der IBG: Dr. Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Schweiz

Membership number (if applicable)
Numéro d'affiliation (si applicable)
Mitgliedsnummer (wenn anwendbar)

- * Surname (Apellido/Sobrenome)
- * Nom de famille.....
- * Familienname

First name(s) (Nombre/Nome) or initials, and title(s)

Prénom(s) ou initiales, et titre(s).....
Vorname(n) oder Initialen und Titel

Address (Institution & Dept., Street and no. P.O.Box, Town & Zipcode, Country)
Adresse (Institution et Département, Rue et no., Boîte Postale, Ville et Code Postal, Pays)
Anschrift (Institut & Abteilung, Strasse & No., Postfach, Postleitzahl, Stadt, Land)

Phone/Tel.:

Fax:

Date.....

Datum

Signature

Unterschrift

* For composite names, please indicate first the part of the name to be used for listing it in alphabetical order

* Pour les noms composés, prière de marquer en premier lieu l'élément du nom à utiliser dans une liste alphabétique

* Bei zusammengesetzten Namen wird gebeten, zuerst den Teil des Namens anzugeben, der in einer alphabetischen Folge erscheinen soll

please turn over!/voir au verso!/bitte wenden!

Specially interested in the activities of/intérêt particulier pour les activités/besonders an folgenden Bereichen interessiert:

(C) Commissions/Commissions/Kommissionen

- 0 **I** Soil Physics/Physique du Sol/Bodenphysik
- 0 **II** Soil Chemistry/Chimie du Sol/Bodenchemie
- 0 **III** Soil Biology/Biologie du Sol/Bodenbiologie
- 0 **IV** Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und Pflanzenernährung
- 0 **V** Soil Genesis, Classification and Cartography/Genèse du Sol, Classification et Cartographie/Bodengenetik, Klassifikation und Kartographie
- 0 **VI** Soil Technology/Technologie du Sol/Bodentechnologie
- 0 **VII** Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie

Subcommissions/Sous-commissions/Subkommissionen

- 0 **A** Salt affected soils/Sols salins/Salzböden
- 0 **B** Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
- 0 **C** Soil Conservation and Environment/Conservation du Sol et Environnement/Bodenerhaltung und Umwelt
- 0 **D** Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit UBS)

Preferred language/Langue préférée/Gewünschte Sprache

- 0 English
- 0 Français
- 0 Deutsch
- 0 Espanol

Payment/Cotisation/Jahresbeitrag

Payment of the yearly due of US\$ 12 or equivalent will be made:

La cotisation annuelle de 12 dollars E.U. ou leur équivalent sera versée:

Der Jahresbeitrag von US\$ 12 oder Gegenwert wird bezahlt:

- 0 through the national society of/par l'intermédiaire de l'association nationale de/durch die nationale Gesellschaft von (country, pays, Land)

.....

- 0 by cheque (personnel cheque = 16 US\$)
par chèque (chèque personnel = 16 dollars E.U.)
mit Scheck (Privatscheck = 16 US \$)

- 0 by international money order/par mandat international/durch Banküberweisung

- 0 as Unesco coupons/sous forme de bons de l'Unesco/mit Unesco-Kupons

- 0 life membership/affiliation pour la vie/Mitgliedschaft auf Lebenszeit (US\$ 300 or equivalent, after four years of regular membership/dollars E.U. 300 ou leur équivalent, après quatre ans d'affiliation régulière/US\$ 300 oder Gegenwert, nach 4 Jahren Normalmitgliedschaft)

Account/Compte/Konto: Union Bank of Switzerland (UBS), CH-8903 Birmensdorf, ISSS, 817338.61T

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**
Dr. C.J. Chartres, CSIRO Division of Soils, P.O. Box 639, Canberra City, ACT 2601, Australia
- 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)**
Prof. D. Parkinson, Dept. Of Biological Sciences, University of Calgary, 2500 University Drive N.W., Calgary, Alberta T2N 1N4, Canada:
Fax: +1-403-289-9311

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 Land- karte (SOTER)**
Prof. Dr. M.F. Baumgardner, Dept. of Agronomy, Purdue University, West Lafayette IN 47907, USA
- 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 Informations-systeme 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 Composés Organiques et les Microbes/Wechselwirkungen zwischen Bodenmineralen, organischen Substanzen und Mikroorganismen**
Prof. Dr. P.M. Huang, Univ. of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask., 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 Feuchtigkeitvariabilität 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/Pédométrie/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 Télédéttection/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. Agrilkulturchemie, 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, Swindon SN2 1EU, England
- CIP Committee 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. Berthelot, F-34000 Montpellier, France

Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften

ARID SOIL RESEARCH AND REHABILITATION; BIOLOGY & FERTILITY OF SOILS;
CATENA; GEOBERMA; PEDOBIOLOGIA; SOIL BIOLOGY & BIOCHEMISTRY; SOIL TECHNOLOGY;

ISSS MEMBERSHIP

Membership of the International Society of Soil Science is open to all persons engaged in the study and the application of soil science. Membership application can be addressed to the National Societies or directly to the Treasurer. For individual memberships, the yearly subscription, due each January, is 12 US dollars, or equivalent in any other convertible currency. Individual payments can be made by cheque (personal cheques only with additional payment of 4 US\$) or by international money order. UNESCO coupons are also accepted. In order to reduce bank charges it is recommended that subscriptions be remitted, whenever possible, through the National Societies (for their addresses see Membership List 1991). Non-membership subscriptions to the Bulletin, by library services, institutes, etc., are US\$ 50.- yearly.

ADHÉSION A L'AISS

Toute personne engagée dans l'étude et l'application de la science du sol peut adhérer à l'Association Internationale de la Science du Sol. Les demandes d'inscription peuvent être faites par l'intermédiaire des associations nationales ou adressées directement au Trésorier. La cotisation individuelle, due au mois de janvier, est de 12 dollars E.U. par an ou son équivalent dans une autre monnaie convertible. Les versements individuels peuvent être faits par chèque (chèque personnel seulement avec paiement additionnel de 4 dollars E.U.) ou mandat international. Les coupons UNESCO peuvent également être utilisés. En vue de réduire les frais bancaires, il est demandé, dans la mesure du possible, de faire parvenir les cotisations par l'intermédiaire des associations nationales (voir leurs adresses dans la Liste de Membres 1991). Les abonnements au Bulletin sans adhésion, pour les institutions, services de bibliothèques, etc., sont de 50 dollars E.U. par an.

IBG-MITGLIEDSCHAFT

Die Internationale Bodenkundliche Gesellschaft heisst Personen, die auf dem Gebiet der Forschung und Anwendung der Bodenkunde arbeiten, als Mitglieder willkommen. Aufnahmeanträge können direkt an den Schatzmeister geschickt oder über die nationalen bodenkundlichen Gesellschaften an diesen geleitet werden. Der Einzelmitgliedsbeitrag, der jeweils im Januar zu entrichten ist, beträgt jährlich 12 US-Dollar oder den Gegenwert in einer konvertierbaren Währung. Einzelzahlungen können durch Scheck (Privatscheck nur bei zusätzlicher Zahlung von 4 US\$) oder internationale Banküberweisung erfolgen. UNESCO-Kupons werden ebenfalls akzeptiert. Um die Bankkosten niedrig zu halten, sollten Beiträge wenn möglich durch die nationalen Gesellschaften gezahlt werden (Anschriften siehe Mitgliederverzeichnis 1991). Abonnements der Mitteilungen ohne Mitgliedschaft, für Institute, Bibliotheken u.s.w., betragen US\$ 50.- jährlich.

SOCIOS DE LA SICSS

Todas las personas involucradas en el estudio y la aplicación de la ciencia del suelo pueden ser miembro de la Sociedad Internacional de la Ciencia del Suelo. Las solicitudes de inscripción pueden ser enviadas a través de las sociedades nacionales o directamente al tesorero. Para miembros individuales la cuota anual, a ser pagada durante el mes de Enero, es de 12 dolares EUA o su equivalente en cualquier moneda cambiabile. Los pagos individuales pueden ser realizados por medio de un cheque (cheque personal solo contra pagamento adicional de 4 dolares EUA) o un orden de pago internacional. También los cupones de la UNESCO pueden ser utilizados. Con el objeto de reducir los cargos bancarios se recomienda efectuar los pagos en lo posible a través de las sociedades nacionales (para las direcciones ver Lista de Socios 1991). Suscripciones al Boletín, sin ser miembro, de parte de servicios de bibliotecas, institutos etc. son de 50 dolares EUA por año.

Account/Compt/Konto/Cuenta: Union Bank of Switzerland (UBS)

CH-8903 Birmensdorf, ISSS, 817338.61 T

Treasurer/Trésorier/Schatzmeister/Tesorero: Peter U. Luescher, WSL
Zuercherstr. 111, CH-8903 Birmensdorf/Switzerland