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

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

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Sir J. Carling Bldg. 725, 930 Carling Av., Ottawa, Ont. K1A 0C5, Canada

IMPORTANT NOTICE:

As of July 13, 1998, the Secretariat-General of ISSS has new telephone and telefax numbers:

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TELEFAX: **+43-1-478-91-10**

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Sociedad Internacional de la Ciencia del Suelo (SICS)

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of changes of address

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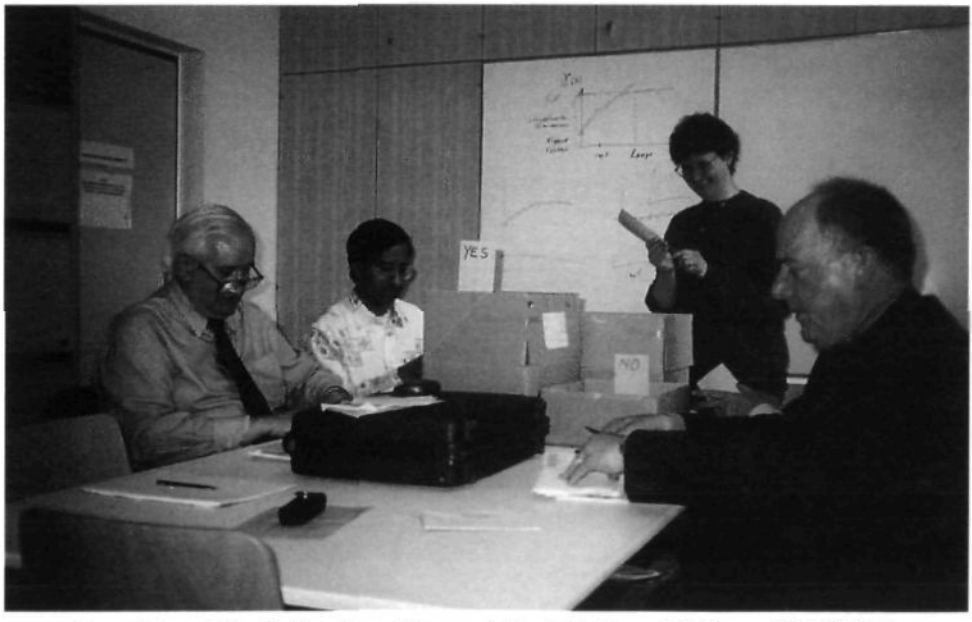
CONTENTS - SOMMAIRE – INHALT

THE COUNTING OF THE BALLOTS IN FAVOUR OR AGAINST AN »INTERNATIONAL UNION OF SOIL SCIENCES« (IUSS) AT THE SECRETARIAT GENERAL IN VIENNA WAS A HEAVY WORKLOAD – BUT WORTH WILE!

From left to right: M. Ahmad, Bangladesh (PhD. student at the Institute of Soil Research, Vienna), H. Exner (Secretary), E. Klaghofer, Austria (teller), W.E.H. Blum (Secretary-General, ISSS).



From left to right: G. Varallyay, Hungary (teller), M. Ahmad, H. Exner, W.E.H. Blum

Editorial

•••

As President of ISSS, the International Society of Soil Science, I am pleased to announce that **the statutes of the IUSS, the International Union of Soil Sciences**, have been adopted.

The postal vote, organized by the ISSS Secretary-General, Professor W.E.H. Blum, counted by Professors G. Varallyay and E. Klaghofer, **gave the following results** :

- number of votes : 1702
- number of votes in favour of the statutes : 1662 = 97.6 %
- number of votes against the statutes : 37 = 2.2 %
- number of null votes : 3 = 0.2 %

On the 26th of August 1998, in Montpellier,
at the close of the 16th World Congress of Soil Science,
the ISSS will become the IUSS.

An important step has thus been taken towards modernizing the organization of our scientific community. I would like to express my sincere thanks to all those who have contributed to this. Since 1994, numerous meetings and project reports have been devoted to this issue : I would particularly like to thank **Bernard Tinker**, Chairman of the CSS, Committee on Statutes and Structures of the ISSS, **Winfried Blum**, Secretary General of the ISSS and all the members of the CSS as well as to the **Executive Committee** of the ISSS. Together we called for this change, together we have brought it about : the scientific community has just given its agreement ; many thanks to all concerned.

Nevertheless, the work on modernization is not yet finished : it is now necessary to consolidate the **scientific organization**. The work has already been started by the Executive Committee and the CSS : you will find enclosed the first results of this work, which all IUSS members are invited to discuss.

Alain RUELLAN
President of ISSS

EDITORIAL

•••

En tant que Président de l'AISS, Association Internationale de la Science du Sol, j'ai le grand plaisir d'annoncer que **les statuts de l'UISS, Union Internationale des Sciences du Sol, ont été adoptés.**

Le vote postal, organisé par le Secrétaire Général de l'AISS, le Professeur W.E.H. Blum, dépouillé par les Professeurs G. Varallyay et E. Klaghofer, **a donné les résultats suivants**:

• nombre de votants	: 1702	
• nombre de votes en faveur des statuts	: 1662	= 97,6 %
• nombre de votes contre les statuts	: 37	= 2,2 %
• nombre de votes nuls	: 3	= 0,2 %

Le 26 août 1998, à Montpellier,
au terme du 16ème Congrès Mondial de Science du Sol,
l'AISS deviendra l'IUSS.

Un pas décisif pour la modernisation de l'organisation de notre communauté scientifique vient donc d'être franchie. Je tiens à en remercier, très chaleureusement, tous ceux qui y ont contribué. Depuis 1994, nous avons tenu de nombreuses réunions, écrit de nombreux projets : merci, tout particulièrement, à **Bernard Tinker**, Président du CSS, Comité des Statuts et Structures de l'AISS, à **Winfried Blum**, Secrétaire Général de l'AISS, à tous les membres du **CSS**, à tous les membres du **Comité Exécutif** de l'AISS. Ensemble, nous avons souhaité ce changement, ensemble nous l'avons construit : la communauté scientifique vient de nous confirmer son accord ; un grand merci à tous.

Le travail de modernisation n'est cependant pas terminé : il faut maintenant concrétiser **l'organisation scientifique**. Le travail a déjà été entrepris par le Comité Exécutif et le CSS : vous trouverez, ci-après, les premiers résultats de ces travaux, que nous soumettons au débat par tous les membres de l'UISS.

Alain RUELLAN
Président de l'AISS

EDITORIAL

•••

Als Präsident der IBG, der Internationalen Bodenkundlichen Gesellschaft, freut es mich bekanntgeben zu können, daß **die Statuten der IBU, der Internationalen Bodenkundlichen Union,** angenommen wurden.

Die Briefwahl wurde vom Generalsekretär der IBG, Prof.W.E.H. Blum organisiert, die Stimmen von Prof. G. Varallyay und Prof. E. Klaghofer ausgezählt. **Das Resultat der Abstimmung:**

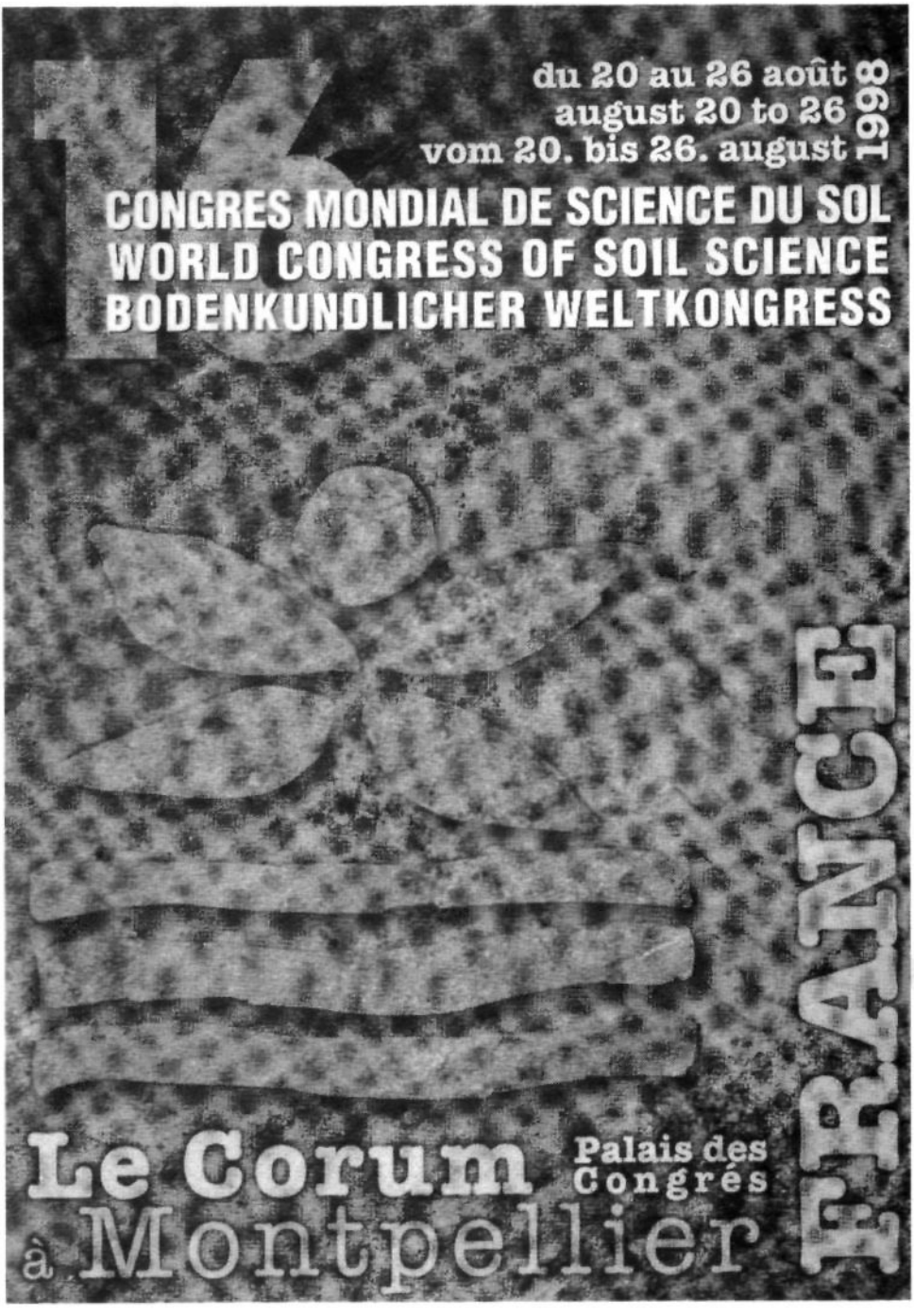
- Anzahl der abgegebenen Stimmen: 1702
- Anzahl der Stimmen für die neuen Statuten: 1662 = 97.6 %
- Anzahl der Stimmen gegen die neuen Statuten: 37 = 2.2 %
- Anzahl der ungültigen Stimmen: 3 = 0.2 %

Am 26. August 1998, in Montpellier,
mit Ende des 16. Weltbodenkundekongresses,
wird aus der IBG die IBU.

Damit wird ein wichtiger Schritt in Richtung einer Modernisierung der Organisation unserer wissenschaftlichen Gesellschaft getan. Ich möchte all diejenigen, die dazu beigetragen haben, meinen herzlichen Dank aussprechen. Seit 1994 wurden zahlreiche Tagungen und Projektberichte diesem Thema gewidmet. Besonderer Dank gebührt **Bernard Tinker**, dem Vorsitzenden des CSS, des Komitees für Statuten und Struktur der IBG, **Winfried Blum**, dem Generalsekretär der IBG und allen Mitgliedern des **CSS,** sowie auch dem **Verwaltungsauschuß** der IBG. Gemeinsam haben wir diese Änderung angestrebt, gemeinsam haben wir sie erreicht: die Gemeinschaft der Wissenschaftler hat dieser Änderung soeben zugestimmt: Ein herzliches Dankeschön allen, die sich dafür eingesetzt haben.

Die Arbeit an der Erneuerung unserer Organisation sind jedoch damit noch nicht abgeschlossen: jetzt gilt es, die **wissenschaftliche Organisation** neu zu ordnen. Diese Aufgabe wurde bereits vom Verwaltungsausschuß und vom CSS in Angriff genommen. Nachstehend finden Sie die ersten Ergebnisse dieser Arbeit. Alle Mitglieder der IBU sind aufgerufen, diese zu diskutieren.

Alain RUELLAN
Präsident der IBG


du 20 au 26 août 1998
august 20 to 26
vom 20. bis 26. august
CONGRES MONDIAL DE SCIENCE DU SOL
WORLD CONGRESS OF SOIL SCIENCE
BODENKUNDLICHER WELTKONGRESS
FRANCE
Le Corum
Palais des Congrès
à Montpellier

16ème CONGRES MONDIAL DE SCIENCE DU SOL
16th WORLD CONGRESS OF SOIL SCIENCE
16. BODENKUNDLICHER WELTKONGRESS
16° CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO

WELCOME TO MONTPELLIER

2500 persons will participate in the 16th World Congress of Soil Science from 20 to 26 August 1998

Please find hereafter the document :

GENERAL PROGRAMME INFORMATION

This document gives the latest information concerning the Congress

See you soon

Alain RUELLAN
President

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16ème CONGRES MONDIAL DE SCIENCE DU SOL
16th WORLD CONGRESS OF SOIL SCIENCE
16. BODENKUNDLICHER WELTKONGRESS
16° CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO

Montpellier

France

20 - 26 August 1998

GENERAL PROGRAMME

•

INFORMATION

The Corum

Convention Centre

Esplanade Charles de Gaulle

May 1998

GENERAL PROGRAMME

OPENING DAY : Programme of Thursday 20 August

- 09h00 - 09h45 : **official opening of the exhibitions and of the Demolon Room.**
- 10h00 - 11h30 (Berlioz room) : **opening ceremony**, with the participation of international, national and local authorities.
- 12h00 - 13h00 then 14h30 - 19h00 (Berlioz room) : **conferences and debates : the aims of Soil Science, challenges to be met by Soil Science, the services Soil Science can render** (look at the joined programme).
- 19h30 - 20h30 (Berlioz Room) : **concert of Mediterranean music** (Group Une Anche Passe).
- 20h30 - 23h00 : **evening reception** (parvis of Corum, on the Esplanade).

Simultaneous translation, all day, in 4 languages : French, English, German, Spanish.

SYMPOSIA AND WORKSHOPS : Programme of 21, 22, 24, 25, 26 august

- The 45 symposia and the 6 workshops of the Congress take place each day :
  - . **oral sessions** : from 08h30 to 12h00 and from 14h00 to 17h30, parallel in 6 rooms
  - . **poster sessions** : from 09h00 to 14h00 and from 15h00 to 20h00
- The daily schedule for the symposia and workshops is joined.
- Overhead projector and slide projector is available in each room.
- For the oral sessions of the 45 symposia, simultaneous translation is available in 2 languages : French, English.
- For the posters : each paper dispose of two contiguous panels, each 140 cm in height and 96 cm in length (ie. a total surface area of 140 x 192 cm) ; the two panels form an angle ; the presentation of each paper take place over two consecutive half-days.

EXHIBITIONS : from 20 to 26 August

Two exhibitions take place in parallel (each day from 08h00 to 20h00) :

- . **scientific and technical exhibition** (Berlioz Hall and Joffre Area) : admittance is free for the Congress participants ;
- . **educative exhibition** (Esplanade Area) : admittance is free for every public.

ISSS STATUTORY MEETINGS

- **Commissions :** **1st meeting : Saturday 22** de 18h00 à 20h00
  2nd meeting : Monday 24 de 18h00 à 19h00
- **Sub-Commissions :** **1st meeting : Friday 21** de 18h00 à 20h00
  2nd meeting : Monday 24 de 12h15 à 13h15

Standing Committees and **Working Groups** can meet **21, 22, 24, 25 August**, from 12h00 to 14h00 and from 18h00 to 20h00.

Council will meet (Sully 3 room) at the following dates and hours : **19 August** (10h00-13h00), **21 August** (20h30-23h00), **23 August** (09h00-13h00), **24 August** (20h30-23h00), **25 August** (12h30-15h00).

TOURS (for the itineraries and prices, look at the Programme of December 1996)

- **Registrations are still possible** : for the pre-congress tours **A1, A3, A4** and for the post-congress tours **B1, B4, B5, B6, B7, B8.**
- Tours **C** (23 August) : they are all confirmed ; **no more place available.**
- **Registrations are still possible** for the tours **D and E** (21, 22, 24, 25 August).

GALA DINNER : **Tuesday 25 August**, from 18h30 to 24h00, in « Petite Camargue », Mas St Gabriel, 30 km from Montpellier (transportation insured) ; **registrations are still possible** (420 FF).

CLOSING SESSION : **Wednesday 26 August**, from 14h00 to 17h00 (Pasteur room).
During this session, **the ISSS will become the IUSS International Union of Soil Sciences.**

SERVER WWW :

http://www.cirad.fr/isss.html

you can find on it all information about the Congress
you can find on it the summary of all the papers, oral and poster

Thursday 20 August 1998

from 12h00 to 13h00 and from 14h30 to 19h00
Le Corum, Berlioz conference room
Montpellier - France

Conferences and introductive debate to the 16th World Congress of Soil Science

THE AIMS OF SOIL SCIENCE
CHALLENGES TO BE MET BY SOIL SCIENCE
THE SERVICES SOIL SCIENCE CAN RENDER

The session will begin with 4 conferences (30 minutes each), presented by Soil Science experts. Each speaker will give his views on the following topics:

basic research in Soil Science - applied research in Soil Science
the role of soils in the Planet's functioning - the uses of soils
soil education

The 4 speakers will be, successively:

Jose Pereira de Queiroz Neto, pedologist (Brazil) - **Garrison Sposito**, soil physico-chemist (USA)
Michael Swift, soil biologist (TSBF, Nairobi) - **Marc Latham**, agro-pedologist (France)

The conferences will then be discussed by experts (scientific, technical, administrative and political), persons who are non-specialists in soil science but who are involved in the processes and results of soil science:

Mario Catizzone (European Commission, Brussels) - **Lapulapu Cerna**, farmer (Philippines)
Albert Fischli, chemist (IUPAC, Basel) - **Sam Fujisaka**, anthropologist (CIAT, Cali)
Etienne Guyon, physicist (France)- **Malcolm Hadley** (MAB-UNESCO, Paris)
Parviz Koohafkan (FAO, Rome) - **Lynn Margulis**, biologist (USA)
Tomas Paces, geochimist (Czech Republic) - **Michel Petit** (World Bank, Washington)

The debate will be conducted by:
Alain Ruellan
President of ISSS, International Soil Science Society

The press, both French and international, will be invited to attend this debate

From 20 to 26 August 1998

Daily schedule for the 45 symposia and 6 workshops

The 45 symposia and 6 workshops of the Congress take place each day:
. **oral sessions:** from 08h30 to 12h00 and from 14h00 to 17h30, parallel in 6 rooms
. **poster sessions:** from 09h00 to 14h00 and from 15h00 to 20h00

Oral Sessions

(**01** = n° of a symposium • **A** = letter of a workshop)

Rooms	Thursday 20 afternoon	Friday 21 morning	Friday 21 afternoon	Saturday 22 morning	Saturday 22 afternoon	Monday 24 morning	Monday 24 afternoon	Tuesday 25 morning	Tuesday 25 afternoon	Wednesday 26 morning
Pasteur		12	15	13a	13b	14	06	25	31	07
Berlioz		01	35	02	43	03	17	33	20	38
Einstein		45	22	36	16	09	11	29	37	40
Demolon		26	44	10	30	18	21	42	41	39
Barthez		28	19	05	04	24	27	32	08	34
Rondelet		A	D	B	F	E	C			

Poster Sessions

Posters will be exhibited during the half day preceding the oral session of the symposium and during the half day of the oral session

Antigone and Esplanade	• 12-01-45-26-28 • 15-35-22-44-19	• 12-01-45-26-28 • 15-35-22-44-19	• 15-35-22-44-19 • 13a-02-36-10-05	• 13a-02-36-10-05 • 13b-43-16-30-04	• 13b-43-16-30-04 • 14-03-09-18-24	• 14-03-09-18-24 • 06-17-11-21-27	• 06-17-11-21-27 • 25-33-29-42-32	• 25-33-29-42-32 • 31-20-37-41-08	• 31-20-37-41-08 • 07-38-40-39-34	• 07-38-40-39-34

SYMPOSIA

01 • New concepts and theories in soil physics and their importance for studying changes induced by human activity *(20-21 August)*

02 • Changes in soil structure processes in relation to different soil management systems *(21-22 August)*

03 • Mass and energy transfers in soils *(22-24 August)*

04 • Influence of clay minerals and associated compounds on soil physical properties *(22 August)*

05 • Heterogeneity of physico-chemical processes in soils *(21-22 August)*

06 • Dynamics of inorganic compounds, including inorganic pollutants, in the soil system *(24 August)*

07 • Dynamics of organic compounds, including organic pollutants, in the soil system *(25-26 August)*

08 • Geochemistry of fluids (air and water) in soils *(25 August)*

09 • Control of microbial activity and organic matter dynamics by macro-organisms (roots, fauna) in their respective functional domains (rhizosphere, drilosphere, etc.) *(22-24 August)*

10 • Use of soil microbial communities for sustainable agriculture and forestry *(21-22 August)*

11 • Biodiversity and soil functioning *(24 August)*

12 • Indicators for soil fertility recapitalization efforts *(20-21 August)*

13a • Bioavailability of organic and inorganic sources of nutrients from soil and fertilizers : bioavailability of nitrogen *(21-22 August)*

13b • Bioavailability of organic and inorganic sources of nutrients from soil and fertilizers : bioavailability of phosphorus, potassium and microelements *(22 August)*

14 • Matching fertilizers to crop, pasture and tree demands in sustainable agro-systems *(22-24 August)*

15 • Processes and patterns in spatial soil differentiation and horizonation *(21 August)*

16 • Records in soils of environmental and anthropogenic changes *(22 August)*

17 • Advances in soil survey using modern tools ; methods and results *(24 August)*

18 • Role and contribution of biota-induced processes in functioning and evolution of soil systems *(22-24 August)*

19 • Construction and use of artificial soils *(21 August)*

20 • Management of physical properties of tilled horizons : environmental and agricultural aspects *(25 August)*

21 • Sustainable management of industrial waste water and sludge for agriculture *(24 August)*

22 • Crystal chemistry of trace elements and evolution in soils of short range ordered minerals *(21 August)*

24 • Soil minerals and acidification *(22-24 August)*

25 • Soil pollution : diagnosis, assessment techniques and support for policy development *(24-25 August)*

26 • Soil and climate change *(20-21 August)*

27 • Early stages and reversibility of soil desertification *(24 August)*

28 • Urban and suburban soils : nature, management and risks for human health *(20-21 August)*

29 • Sustainability of irrigated land use systems with respect to soil salinization ; rehabilitation of salt affected soils *(24-25 August)*

30 • Contribution of micromorphology to the study of the temporal behaviour of soil structural and water systems *(22 August)*

31 • Soil patterns as a key controlling factor of water and/or wind erosion *(25 August)*

32 • Human activities and soil fauna : from the natural biota to the restoration of the perturbed ecosystems *(24-25 August)*

33 • Sustainability of soil fertility under forests and indicators to measure soil changes *(24-25 August)*

34 • The effect of land use change on the carbon cycle of forest soils *(25-26 August)*

35 • Applicability of the proposed methods for land evaluation *(21 August)*

36 • Which land evaluation for which stakeholders? *(21-22 August)*

37 • Soil remediation : criteria and indicators of soil quality *(25 August)*

38 • Assessment and feasibility of biological, chemical and physical processes in soil remediation *(25-26 August)*

39 • Cryosols and their relationships with global climate change *(25-26 August)*

40 • Criteria for the efficiency and innocuity of organic and mineral amendments *(25-26 August)*

41 • Impacts of soil mineral-organic-micro-organisms interactions on the cycling and bioavailability of elements *(25 August)*

42 • Standardization and management of soil informations on an international level *(24-25 August)*

43 • Structure and function of the rhizosphere: mechanisms at the soil-root interface *(22 August)*

44 • Improving communication concerning soil, soil science and its applications *(21 August)*

45 • Attitudes to soil care and land use through human history *(20-21 August)*

WORKSHOPS

A - Soils in a changing environment: the work of GCTE (sponsored by GCTE) *(21 August)*

B - The soil, water and nutrient management programme (sponsored by IBSRAM) *(22 August)*

C - Essential role of K in diverse cropping systems (sponsored by IPI) *(24 August)*

D - The use of nuclear techniques for developing sustainable soil, water and nutrient management practices (sponsored by FAO/IAEA) *(21 August)*

E - Role of the market in the success and failure of the sustainable management of natural resources : soil, water and biodiversity (sponsored by the Alliance for a Responsible and United World) *(24 August)*

F - Land quality indicators (sponsored by the World Bank) *(22 August)*

INFORMATIONS

ADDRESSES

- **Congress Secretariat :**

16ème Congrès Mondial de Science du Sol
Agropolis - Avenue Agropolis
34394 MONTPELLIER Cedex 05 - FRANCE
Tel. : 33 4 6704 7538
Fax : 33 4 6704 7549
Email : isss@agropolis.fr
Server WWW : http://www.cirad.fr/isss.html

- **Le Corum** (place of the Congress) **:**

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BP 2200
34027 MONTPELLIER Cedex 01 - FRANCE
Tel. : 33 4 6761 6761
Fax : 33 4 6761 6684
Email : corum@corum-montpellier.fr

VISAS

On request, Congress Secretariat can send an official invitation to facilitate, near the France Consulate, the obtention of the visa for France entrance.

RECEPTION

Congress participants reception will be organized :

- at Montpellier-Méditerranée airport, Wednesday 19 August from 8h00 to 23h00 and Thursday 20 August from 8h00 to 13h00 ;
- at SNCF railway station of Montpellier, Wednesday 19 August from 8h00 to 23h00 and Thursday 20 August from 8h00 to 14h00 ;
- at the CORUM, from Wednesday 19 August, 8h00.

Informations will also be available in the hotels.

In order to make easier your travel, mainly for those coming by car, a map of Montpellier and its vicinity can be sent on demand.

REGISTRATION

Congress participants registration will begin Wednesday 19 August at 8h00. It will be possible each day, from 19 to 26 August, from 8h00 to 20h00 (21h00 the 19).

New registrations are possible at all time of the Congress. Price : 3240 FF (2640 FF for ISSS member ; 840 FF for participant under 30 years ; 420 FF for accompanying person).

ACCOMMODATION

For all information and registration, please contact **Le Corum** (tel. : 33 4 6761 6761 or 33 4 6761 6712 ; fax : 33 4 6761 6684). Attention : requests for reservation received after June 1st 1998 will be limited by availability.

TRANSPORTATION

- **Wednesday 19 August** from 8h00 to 23h00 and **Thursday 20 August** from 8h00 to 13h00 : a free shuttle service will transport the congress participants, from airport to the Corum or to the hotels.
- **Each day**, from 19 to 26 August, a free shuttle service will transport the congress participants between hotels and the Corum : morning departure from hotels between 7h15 and 8h00, on a case by case basis ; evening departure from Corum at 18h15 and 20h15. This free transportation will only concern hotels that are far from the Corum and that are without public urban transportation service.
- **Wednesday 26 August** afternoon and **Thursday 27 August** morning : a free shuttle service will transport the congress participants from the Corum, or the hotels, to the airport.
- **Taxis :** the Company « Taxi du Languedoc » is partner of the Congress ; free telephone call : 08 0004 9841 ; price of a fare (day and night) :
  - between airport and the Corum : 90 FF ;
  - between airport and the hotels of the city centre: 100 FF ;
  - between airport and the hotels far from the city centre : from 140 to 180 FF.

CLIMATE AND TIME

Montpellier is located 10 km from the Mediterranean Sea and enjoys a warm, sunny climate during the summer. In August, the average temperature is around 25°C (35°C maximum). Nevertheless you are advised to bring rainwear, as rainstorms may occur during this season.

Official time : Universal Time + 2 hours.

INSURANCE

The Organizing Committee is not responsible for illness and accidents that can occur to the Congress participants during the congress and during the pre- and post-congress tours. The Congress will not cover costs incurred by accidents, illness, hospital and medicinal charges.

We recommend the Congress participants to contract a special individual insurance.

SERVER WWW :

http://www.cirad.fr/isss.html

you will find all information about the Congress

Organized by :

ISSS, International Soil Science Society
AFES, French Soil Science Society

Under the Patronage of :

Minister of National Education, Research and Technology
Minister of Foreign Affairs
Minister of Agriculture and Fishery
Minister of Territory Management and Environment

The Institutions backing and financing the 16th World Congress of Soil Science

are the following :

- Department of National Education, Research Technology
- Department of Foreign Affairs
- Department of Agriculture and Fishery
- Department of Territory Management and Environment
- Department of Cooperation

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- Languedoc Roussillon Region
- Departement of Hérault
- District of Montpellier
- City of Montpellier
- Rectorate - Academy of Montpellier

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- Agriculture Academy of France
- European Academy of Arts, Sciences and Humanities
- Academy of Sciences
- ADEME, Agency for Environment and Energy Control
- AGROPOLIS
- APCA, Permanent Assembly of Farmer's Associations
- CEMAGREF
- CIRAD, Centre of International Cooperation for Agronomical Research for Development
- CNEARC, National Centre of Agronomical Studies for Hot Countries
- CNRS, National Centre of Scientific Research, Environment Programme Life and Societies
- General Delegation for French Language
- ENSA.M, National Superior Agronomical School of Montpellier
- INRA, National Institute of Agronomical Research
- ORSTOM, French institute of scientific research for development with cooperation

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- European Commission
- FAO, Food and Agriculture Organisation of United Nations
- ICSU, International Council of Scientific Unions
- UNESCO, United Nations Educational, Scientific and Cultural Organisation

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- ACCT, Agency for French-speaking world
- AusAID, Australian Agency for International Development
- European Bureau of Soils of European Union
- FAO/IAEA Division of nuclear techniques in food and agriculture
- GTZ, Deutsche Gesellschaft für Technische Zusammenarbeit
- IFA, International Fertilizer Industry Association
- IFS, International Foundation for Science
- IPI, International Potash Institute
- ISRIC, International Soil Reference and Information Centre
- ODA, Overseas Development Administration (United Kingdom)

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- French Red Cross
- Air France

16ème CONGRES MONDIAL DE SCIENCE DU SOL
16th WORLD CONGRESS OF SOIL SCIENCE
16. BODENKUNDLICHER WELTKONGRESS
16° CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO

BIENVENUE A MONTPELLIER

Vous serez 2500 à participer au 16ème Congrès Mondial de Science du Sol du 20 au 26 août 1998

Veuillez trouver, ci-après, le document :

PROGRAMME GENERAL INFORMATIONS

Ce document donne les dernières informations concernant le Congrès

A bientôt

Alain RUELLAN
Président

16ème Congrès Mondial de Science du Sol
Agropolis - Avenue Agropolis
34394 MONTPELLIER Cedex 05 - FRANCE
Tél. : 33 4 6704 7538 - Fax : 33 4 6704 7549
Email : isss@agropolis.fr
Serveur WWW : http://www.cirad.fr/isss.html

16ème CONGRES MONDIAL DE SCIENCE DU SOL
16th WORLD CONGRESS OF SOIL SCIENCE
16. BODENKUNDLICHER WELTKONGRESS
16° CONGRESO MUNDIAL DE LA CIENCIA DEL SUELO

Montpellier

France

20 - 26 août 1998

PROGRAMME GÉNÉRAL

•

INFORMATIONS

Le Corum

Palais des Congrès
Esplanade Charles de Gaulle

mai 1998

PROGRAMME GENERAL

JOURNEE INTRODUCTIVE : Programme du jeudi 20 août

- 09h00 - 09h45 : **inauguration officielle des expositions et de la Salle Demolon.**
- 10h00 - 11h30 (salle Berlioz) : **séance inaugurale**, en présence des autorités internationales, nationales, locales.
- 12h00 - 13h00 puis 14h30 - 19h00 (salle Berlioz) : **conférences et débats : les objectifs de la science du sol, les défis que la science du sol doit relever, les services que la science du sol peut rendre** (voir programme ci-joint).
- 19h30 - 20h30 (salle Berlioz) : **concert de musiques méditerranéennes** (Groupe Une Anche Passe).
- 20h30 - 23h00 : **soirée d'accueil** (parvis du Corum, sur l'Esplanade).

Traduction simultanée, toute la journée, en 4 langues : Français, Anglais, Allemand, Espagnol.

SYMPOSIUMS ET ATELIERS : Programme des 21, 22, 24, 25, 26 août

- Les 45 symposiums et les 6 ateliers du Congrès se déroulent chaque jour :
  - . **séances orales** : de 08h30 à 12h00 et de 14h00 à 17h30, en parallèle dans 6 salles
  - . **séances posters** : de 09h00 à 14h00 et de 15h00 à 20h00
- Voir, ci-joint, la répartition journalière des symposiums et des ateliers.
- Chaque salle est équipée d'un rétroprojecteur et d'un projecteur de diapositives.
- Pour les séances orales des 45 symposiums, traduction simultanée en 2 langues : Français, Anglais.
- Pour les posters : chaque communication dispose de deux panneaux contigus ayant chacun 140 cm de hauteur et 96 cm de largeur (soit une surface totale de 140 x 192 cm) ; les deux panneaux forment un angle; chaque poster reste exposé pendant deux demi-journées consécutives.

EXPOSITIONS : du 20 au 26 août

Deux expositions se tiennent en parallèle (tous les jours de 08h00 à 20h00) :

- . **exposition scientifique et technique** (hall Berlioz et espace Joffre) : l'accès est gratuit pour les congressistes ;
- . **exposition éducative** (espace Esplanade) : l'accès est gratuit pour tout public.

REUNIONS STATUTAIRES DE L'AISS

- **Commissions** : **1ère réunion** : **samedi 22** de 18h00 à 20h00
  2ème réunion : **lundi 24** de 18h00 à 19h00
- **Sous-Commissions** : **1ère réunion** : **vendredi 21** de 18h00 à 20h00
  2ème réunion : **lundi 24** de 12h15 à 13h15

Les **Comités Permanents** et les **Groupes de Travail** pourront se réunir les **21, 22, 24, 25 août**, de 12h00 à 14h00 et de 18h00 à 20h00.

Le **Conseil** se réunira (salle Sully 3) aux dates et heures suivantes : **19 août** (10h00-13h00), **21 août** (20h30-23h00), **23 août** (9h00-13h00), **24 août** (20h30-23h00), **25 août** (12h30-15h00).

EXCURSIONS (pour les itinéraires et les prix, voir le Programme diffusé en décembre 1996)

- **Les inscriptions sont encore possibles** : pour les excursions pré-congrès **A1, A3, A4** et pour les excursions post-congrès **B1, B4, B5, B6, B7, B8.**
- Excursions **C** du 23 août : elles sont toutes confirmées ; **il n'y a plus de places disponibles.**
- **Les inscriptions sont encore possibles** pour les excursions **D et E** (21, 22, 24, 25 août).

DINER DE GALA : **mardi 25 août**, de 18h30 à 24h00, en « Petite Camargue », au Mas St Gabriel, à 30 km de Montpellier (transport assuré) ; **les inscriptions sont encore possibles** (420 FF).

SEANCE DE CLOTURE : **mercredi 26 août**, de 14h00 à 17h00 (salle Pasteur).
Au cours de cette séance **l'AISS deviendra l'UISS Union Internationale des Sciences du Sol.**

SERVEUR WWW :

http://www.cirad.fr/isss.html

vous y trouvez toutes les informations concernant le Congrès
vous pouvez y consulter les résumés de toutes les communications, orales et posters

Jeudi 20 août 1998

de 12h00 à 13h00 et de 14h30 à 19h00
Le Corum, salle Berlioz
Montpellier - France

Conférences et débats introductifs au 16ème Congrès Mondial de Science du Sol

LES OBJECTIFS DE LA SCIENCE DU SOL
LES DEFIS QUE LA SCIENCE DU SOL DOIT RELEVER
LES SERVICES QUE LA SCIENCE DU SOL PEUT RENDRE

La séance sera introduite par 4 conférences (30 minutes chacune), prononcées par des spécialistes en science du sol. Chaque conférencier donnera son point de vue sur les thèmes suivants :

la recherche fondamentale en science du sol - la recherche finalisée en science du sol le rôle des sols dans le fonctionnement du Globe - les utilisations des sols l'éducation dans le domaine des sols

Les 4 conférenciers seront, successivement :

Jose Pereira de Queiroz Neto, pédologue (Brésil) - **Garrison Sposito**, physico-chimiste du sol (Etats Unis) **Michael Swift**, biologiste du sol (TSBF, Nairobi) - **Marc Latham**, agro-pédologue (France)

Ces conférences seront ensuite discutées par des personnalités (scientifiques, techniques, administratives et politiques), non-spécialistes en science du sol, mais utilisateurs des démarches et des résultats de la science du sol :

Mario Catizzone (Commission Européenne, Bruxelles) - **Lapulapu Cerna**, agriculteur (Philippines)
Albert Fischli, chimiste (IUPAC, Bâle) - **Sam Fujisaka**, anthropologue (CIAT, Cali)
Etienne Guyon, physicien (France) - **Malcolm Hadley** (MAB-UNESCO, Paris)
Parviz Koohafkan (FAO, Rome) - **Lynn Margulis**, biologiste (Etats Unis)
Tomas Paces, géochimiste (République Tchèque) - **Michel Petit** (Banque Mondiale, Washington)

Le débat sera animé par :
Alain Ruellan
Président de l'AISS, Association Internationale de la Science du Sol

La presse, française et internationale, est invitée à assister à ce débat

Du 20 au 26 août 1998

Répartition journalière des 45 symposiums et des 6 ateliers

Les 45 symposiums et les 6 ateliers du Congrès se déroulent chaque jour :
. séances orales : de 08h30 à 12h00 et de 14h00 à 17h30, en parallèle dans 6 salles
. séances posters : de 09h00 à 14h00 et de 15h00 à 20h00

Séances Orales

(**01** = n° d'un symposium • **A** = lettre d'un atelier)

Salles	Jeudi *20* après-midi	Vendredi *21* matin	Vendredi *21* après-midi	Samedi *22* matin	Samedi *22* après-midi	Lundi *24* matin	Lundi *24* après-midi	Mardi *25* matin	Mardi *25* après-midi	Mercredi *26* matin
Pasteur		12	15	13a	13b	14	06	25	31	07
Berlioz		01	35	02	43	03	17	33	20	38
Einstein		45	22	36	16	09	11	29	37	40
Demolon		26	44	10	30	18	21	42	41	39
Barthez		28	19	05	04	24	27	32	08	34
Rondelet		A	D	B	F	E	C			

Séances Posters

Les posters sont exposés pendant la demi-journée qui précède la séance orale du symposium et pendant la demi-journée de la séance orale

Antigone et Esplanade	• 12-01-45-26-28	• 12-01-45-26-28 • 15-35-22-44-19	• 15-35-22-44-19 • 13a-02-36-10-05	• 13a-02-36-10-05 • 13b-43-16-30-04	• 13b-43-16-30-04 • 14-03-09-18-24	• 14-03-09-18-24 • 06-17-11-21-27	• 06-17-11-21-27 • 25-33-29-42-32	• 25-33-29-42-32 • 31-20-37-41-08	• 31-20-37-41-08 • 07-38-40-39-34	• 07-38-40-39-34

SYMPOSIUMS

01 • Nouveaux concepts et théories en physique du sol et leur importance pour étudier les effets de l'activité humaine *(20-21 août)*

02 • Dynamique de la structure des sols, en relation avec divers systèmes d'aménagement *(21-22 août)*

03 • Transferts de masse et d'énergie dans les sols *(22-24 août)*

04 • Influence des minéraux argileux et des composés associés sur les propriétés physiques du sol *(22 août)*

05 • L'hétérogénéité des processus physico - chimiques dans les sols *(21-22 août)*

06 • Dynamique des composés minéraux, incluant des polluants, dans le système sol *(24 août)*

07 • Dynamique des composés organiques, incluant des polluants, dans le système sol *(25-26 août)*

08 • Géochimie des fluides (air et eau) dans le sol *(25 août)*

09 • Contrôle de l'activité microbienne et de la dynamique de la matière organique par les macroorganismes (racines, faune) *(22-24 août)*

10 • Utilisation des communautés microbiennes en agriculture durable et sylviculture *(21-22 août)*

11 • Biodiversité et fonctionnement du sol *(24 août)*

12 • Indicateurs utilisables dans le cadre de la restauration de la fertilité des sols *(20-21 août)*

13a • Biodisponibilité des éléments dans les sols, engrais et amendements organiques ou minéraux : biodisponibilité de l'azote *(21-22 août)*

13b • Biodisponibilité des éléments dans les sols, engrais et amendements organiques ou minéraux : biodisponibilité du phosphore, du potassium et des micro-éléments *(22 août)*

14 • Ajustement de la fertilisation aux besoins des cultures annuelles et pérennes dans le cadre des agrosystèmes durables *(22-24 août)*

15 • Processus et organisations dans la différenciation spatiale des sols et des volumes pédologiques *(21 août)*

16 • Archivage, dans les sols, des changements de leur environnement naturel ou anthropique *(22 août)*

17 • Progrès réalisés en cartographie des sols à l'aide d'outils modernes ; méthodes et résultats *(24 août)*

18 • Rôle et contributions des processus biologiques dans le fonctionnement et l'évolution des systèmes de sols *(22-24 août)*

19 • Technologie des sols reconstitués *(21 août)*

20 • Maîtrise des états et des comportements physiques des couches de sol travaillées ; aspects environnementaux et agricoles *(25 août)*

21 • Gestion durable des eaux usées et des boues en agriculture *(24 août)*

22 • Cristallochimie des éléments trace et devenir des composés minéraux organisés à courte distance dans les sols *(21 août)*

24 • Minéraux des sols et acidification *(22-24 août)*

25 • Pollution des sols : diagnostic, méthodes d'évaluation et applications dans le domaine de la réglementation *(24-25 août)*

26 • Les sols et le changement climatique *(20-21 août)*

27 • Stades précoces et réversibilité de la désertification des sols *(24 août)*

28 • Sols urbains et suburbains : nature, gestion et risques pour la santé humaine *(20-21 août)*

29 • Durabilité des systèmes irrigués vis à vis de la salinisation ; réhabilitation des sols affectés par des sels *(24-25 août)*

30 • Contribution de la micromorphologie à l'étude du comportement temporel de la structuration des sols et des systèmes sol-eau *(22 août)*

31 • Prise en compte de l'ensemble des dimensions de la couverture pédologique dans la caractérisation et la modélisation de l'érosion *(25 août)*

32 • Activités anthropiques et faune du sol : du milieu naturel à la restauration des systèmes dégradés *(24-25 août)*

33 • Gestion durable de la fertilité des sols forestiers et indicateurs des évolutions *(24-25 août)*

34 • Modifications du cycle du carbone dans les sols forestiers suite aux changements de pratiques *(25-26 août)*

35 • Applicabilité des méthodes recommandées pour l'évaluation des terres *(21 août)*

36 • Quelle évaluation des terres pour quels utilisateurs ? *(21-22 août)*

37 • Réhabilitation des sols : critères d'appréciation et indicateurs de la qualité des sols *(25 août)*

38 • Evaluation et faisabilité de procédés biologiques, chimiques et physiques appliqués à la réhabilitation des sols *(25-26 août)*

39 • Les cryosols : leur évolution en fonction des changements globaux *(25-26 août)*

40 • Critères d'efficacité et d'innocuité pour les amendements minéraux et organiques *(25-26 août)*

41 • Interactions constituants minéraux - constituants organiques - microorganismes du sol sur le cycle et la biodisponibilité des éléments *(25 août)*

42 • La standardisation internationale des données pédologiques et de leur traitement *(24-25 août)*

43 • Structure et fonction de la rhizosphère : les mécanismes à l'interface sol-racine *(22 août)*

44 • Comment mieux faire connaître le sol, la science du sol et ses applications *(21 août)*

45 • L'homme et son attitude concernant le sol au travers de l'histoire *(20-21 août)*

ATELIERS

A • Sols et changements de l'environnement : le travail de GCTE (organisé par GCTE) *(21 août)*

B • Le programme concernant l'utilisation des sols, des eaux et des éléments nutritifs (organisé par IBSRAM) *(22 août)*

C • Rôle essentiel du potassium dans divers systèmes de cultures (organisé par IPI) *(24 août)*

D • L'utilisation des techniques nucléaires pour le développement de pratiques au service de l'utilisation durable des sols, des eaux et des éléments nutritifs (organisé par FAO/IAEA) *(21 août)*

E • Rôle du marché dans les réussites et les échecs de la gestion durable des ressources naturelles : sol, eau, biodiversité (organisé par Alliance pour un Monde Responsable et Solidaire) *(24 août)*

F • Les indicateurs de la qualité des terres (organisé par la Banque Mondiale) *(22 août)*

INFORMATIONS

ADRESSES

• Secrétariat du Congrès :

16ème Congrès Mondial de Science du Sol
Agropolis - Avenue Agropolis
34394 MONTPELLIER Cedex 05 - FRANCE
Tél. : 33 4 6704 7538
Fax : 33 4 6704 7549
Email : isss@agropolis.fr
Serveur WWW : http://www.cirad.fr/isss.html

• Le Corum (lieu du Congrès) **:**

Esplanade Charles de Gaulle
BP 2200
34027 MONTPELLIER Cedex 01 - FRANCE
Tél. : 33 4 6761 6761
Fax : 33 4 6761 6684
Email : corum@corum-montpellier.fr

VISAS

Le Secrétariat du Congrès adresse à ceux qui le demandent une invitation officielle permettant d'obtenir, auprès des Consulats de France, le Visa d'entrée en France.

ACCUEIL

L'accueil des congressistes sera assuré :

- à l'aéroport de Montpellier-Méditerranée, le mercredi 19 août de 8h00 à 23h00 et le jeudi 20 août de 8h00 à 13h00 ;
- à la gare SNCF de Montpellier, le mercredi 19 août de 8h00 à 23h00 et le jeudi 20 août de 8h00 à 14h00 ;
- *au CORUM, à partir du mercredi 19 août à 8h00.*

Des informations seront également disponibles dans les hôtels.

Afin de faciliter vos déplacements, en particulier pour ceux qui viennent en voiture, un plan de Montpellier et de ses environs peut vous être envoyé sur demande.

ENREGISTREMENT

L'enregistrement des Congressistes commencera le mercredi 19 août à 8h00. Il sera possible tous les jours, du 19 au 26 août, de 8h00 à 20h00 (21h00 le 19).

Les nouvelles inscriptions seront possibles pendant toute la durée du Congrès. Prix : 3240 FF (2640 FF pour les membres de l'AISS ; 840 FF pour les moins de 30 ans ; 420 FF pour les accompagnants).

HEBERGEMENT

Pour toutes informations et inscription, veuillez contacter **Le Corum** (tél. : 33 4 6761 6761 ou 33 4 6761 6712 ; fax : 33 4 6761 6684). Attention : les demandes de réservation reçues après le 1er juin 1998 ne pourront être satisfaites que dans la mesure des disponibilités.

TRANSPORTS

- **Mercredi 19 août** de 8h00 à 23h00 et **jeudi 20 août** de 8h00 à 13h00 : un service (gratuit) de cars assurera le transport des congressistes, depuis l'aéroport vers le Corum ou vers les hôtels.
- **Tous les jours**, du 19 au 26 août, un service (gratuit) de cars assurera le transport des congressistes entre leurs hôtels et le Corum : le matin départ des hôtels entre 7h15 et 8h00 selon les cas ; le soir départ du Corum à 18h15 et 20h15. Ce transport ne sera assuré que pour les hôtels éloignés du Corum et non desservis par les transports urbains.
- **Mercredi 26 août** après-midi et **jeudi 27 août** matin : un service (gratuit) de cars assurera le transport des congressistes depuis le Corum, ou les hôtels, vers l'aéroport.
- **Taxis** : la Société « Taxi du Languedoc » est *partenaire du Congrès ; appel téléphonique gratuit:* 08 0004 9841 ; coût de la course (jour et nuit) :
  - . entre l'aéroport et le Corum : 90 FF ;
  - . entre l'aéroport et les hôtels du centre ville : 100 FF ;
  - . entre l'aéroport et les hôtels éloignés du centre ville : de 140 à 180 FF.

CLIMAT ET HEURE

Montpellier est situé à 10 km de la mer Méditerranée et jouit, pendant l'été, d'un climat chaud et ensoleillé. En août, la température moyenne est de 25°C (maximum 35°C). Attention aux orages : il est conseillé de prévoir des vêtements de pluie.

Heure officielle : Temps Universel + 2 heures.

ASSURANCE

Le Comité d'Organisation du Congrès n'est pas responsable des maladies et des accidents qui peuvent survenir aux congressistes pendant le Congrès et pendant les excursions qui précèdent et qui suivent le Congrès. Le Congrès ne couvrira pas les frais résultant d'accidents, de maladies, de frais hospitaliers, de frais pharmaceutiques.

Il est recommandé aux congressistes de contracter une assurance individuelle auprès de l'assureur de leur choix.

SERVEUR WWW :

http://www.cirad.fr/isss.html

vous y trouvez toutes les informations concernant le Congrès

Organisé par :

l'AISS, Association Internationale de la Science du Sol
l'AFES, Association Française pour l'Etude du Sol

Avec le Patronage :

du Ministre de l'Education Nationale, de la Recherche et de la Technologie
du Ministre des Affaires Etrangères
du Ministre de l'Agriculture et de la Pêche
de la Ministre de l'Aménagement du Territoire et de l'Environnement

Les Institutions qui appuient et financent le 16ème Congrès Mondial de Science du Sol

sont les suivantes :

- Ministère de l'Education Nationale, de la Recherche et de la Technologie
- Ministère des Affaires Etrangères
- Ministère de l'Agriculture et de la Pêche
- Ministère de l'Aménagement du Territoire et de l'Environnement
- Ministère de la Coopération

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- Région Languedoc Roussillon
- Département de l'Hérault
- District de Montpellier
- Ville de Montpellier
- Rectorat - Académie de Montpellier

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- Académie d'Agriculture de France
- Académie Européenne des Sciences, des Arts et des Lettres
- Académie des Sciences
- ADEME, Agence de l'Environnement et de la Maîtrise de l'Energie
- AGROPOLIS
- APCA, Assemblée Permanente des Chambres d'Agriculture
- CEMAGREF
- CIRAD, Centre de Coopération Internationale en Recherche Agronomique pour le Développement
- CNEARC, Centre National d'Etudes Agronomiques des Régions Chaudes
- CNRS, Centre National de la Recherche Scientifique, Programme Environnement Vie et Sociétés
- Délégation Générale à la Langue Française
- ENSA.M, Ecole Nationale Supérieure Agronomique de Montpellier
- INRA, Institut National de la Recherche Agronomique
- ORSTOM, l'Institut français de recherche scientifique pour le développement en coopération

***

- Commission Européenne
- FAO, Organisation des Nations Unies pour l'alimentation et l'agriculture
- ICSU, Conseil International des Unions Scientifiques
- UNESCO, Organisation des Nations Unies pour l'éducation, la science et la culture

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- ACCT, Agence de la Francophonie
- AusAID, Agence Australienne pour le Développement International
- Bureau Européen des Sols de l'Union Européenne
- FAO/IAEA Division des techniques nucléaires pour l'alimentation et l'agriculture
- GTZ, Deutsche Gesellschaft für Technische Zusammenarbeit
- IFA, Association Internationale des Industries d'Engrais
- IFS, Fondation Internationale pour la Science
- IPI, Institut International de la Potasse
- ISRIC, Centre International de Références et d'Information Pédologique
- ODA, Administration pour le Développement Outre-mer (Royaume Uni)

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- Croix-Rouge Française
- Air France

REPORT OF THE ISSS SECRETARIAT AND TREASURY 1994 - 1998

In compliance with the rules of the Society, the report of the ISSS Secretariat and Treasury over the period between the last Congress (Acapulco/Mexico, July, 1994) and the new Congress (Montpellier/France, August, 1998) is printed in the Bulletin, immediately preceding the latter. Highlights of this report will be mentioned in the inaugural session of the Montpellier Congress and details will be discussed and evaluated in the ISSS Council, as convened in Montpellier.

TOWARDS A NEW STRUCTURE – FROM ISSS TO IUSS

As reported by the President in the editorial of this Bulletin, the new IUSS statutes were accepted by an overwhelming majority of the members of our Society, which means that a new administrative structure is concluded and will enter into vigour at the end of the Montpellier Congress, thus allowing ISSS to step into the next century as IUSS.

Nevertheless, there will be still intensive discussions needed in order to bring forward a new scientific structure, see also the chapter »Scientific organisation: proposals for discussion« in this Bulletin. This will be the task during the Congress in Montpellier and after that.

It is proposed that the new administrative structure of the International Union of soil Sciences will be installed during the next four years, aiming at a conclusion of this process at the 17th World Congress of Soil Science in Bangkok/Thailand in 2002.

All members of the still active ISSS are invited to participate actively in this transition and to help to install and promote the new administrative structure as well as the new scientific structure.

SCIENTIFIC ACTIVITIES

Scientific activities inbetween the two Congresses are reported by the Chairmen of the 8 scientific Commissions, including partly activities of the 7 Sub-Commissions and 18 Working Groups, in the annex to this report. From these, it becomes clear that the scientific activities of the different Commissions, Sub-Commissions and Working Groups varied considerably, as can be also read in the reports of the foregoing Bulletins No. 86-93.

In total, about 60 inter-congress activities were reported, thus indicating that many scientific bodies of ISSS were very active inbetween the two World Congresses. Moreover, in relation to the last period between 1994 - 1998, many new activities were organized more or less spontaneously, thus showing that ISSS is a very active learned society. This shows also that enough flexibility is given in our structure, in order to meet the necessities of scientific inter-relations and exchange within our Society and with others.

Some of these scientific activities could be financially supported, at least in part, by funds made available through the International Council of Scientific Unions Funding Programme, which is gratefully acknowledged. These scientific activities were mainly held in countries in development and in the former Central and Eastern European Societies.

In the period 1994 – 1998 the Working Group on »World Reference Base for Soil Resources« was again very active with meetings on different continents, thus furthering the final version of the new World Soil Reference Base, which is in print at the moment and will be distributed in Montpellier, in August. ISSS congratulates this Working Group for its tremendous efforts and achievements, as well as those, who have actively participated in these endeavours.

In many of the a.m. scientific activities, officers of the ISSS were present, as well at many annual meetings of National Societies. The officers also acted as liaison persons to UN Organizations, to ICSU as well as to other international learned societies and organizations.

INTERNATIONAL COOPERATION

There were many new events, dedicated to international cooperation, including those with Union Members of ICSU, such as IGU, IUBS, IUGG, IUPAC and others, which was facilitated by our Full Membership within the ICSU Family.

Further cooperation with ICSU's Interdisciplinary Bodies and their projects, as for example the International Geosphere-Biosphere Programme (IGBP) and here especially related to the role of soils in Global Change of Terrestrial Ecosystems (GCTE) and Land Use Cover Change (LUCC) can be reported. In these two projects, it was clearly felt, that soil science should be more actively involved, because soil is a very important interface in these projects and should be better understood by the cooperating scientists from other areas. In this context, the Committee on International Programmes was actively involved in order to improve our position within these international cooperations, which is acknowledged In the framework of international, interdisciplinary cooperation, the Secretary-General of ISSS chairs the ICSU Committee »Sciences for Food Security«.

There were further activities by the Committee on History, Philosophy and Sociology of Soil Science, which was accepted as a member by the International Union of History and Philosophy of Science. Also the Committee on Education in Soil Science was actively involved in international programmes.

ADMINISTRATION AND FINANCES

The number of registered members has not changed very much since 1994. There was an increase from 6812 in April 94 to 7397 in April 1998. Life members increased by 12 from 69 in April 1994 to 81 in April 1998.

The financial situation of the Society has considerably improved since 1994, because we could create a financial reserve assuring at least a smooth transition from ISSS to IUSS in the coming four years, see page 29.

Even so the financial situation of the Society is far from being reasonable, because it does still not allow any special activity, except the printing and mailing of the Bulletin, apart from the necessary administration.

Without the voluntary contribution of the Austrian Ministry of Agriculture and Forestry, with a donation of about 22000 US$ per year since 1990, and without one secretarial post entirely to the ISSS Secretariat, allocated by the Austrian Ministry of Science and Research, ISSS would not be able to run the Secretariat-General in Vienna. Due to these contributions and also the consent of the Boards of the Institutions where the Secretary-General, the Deputy Secretary-General and the Treasurer are professionally employed, the ISSS could fulfil its administrational tasks, mentioning in addition, that all officers are carrying out their societal duties on a honorary basis only.

NECROLOGUE

Since 1994, several prominent members of our Society passed away and were remembered in the In Memoriam section of the Bulletin. Among them were ISSS Honorary Members Prof. V. Ignatieff, Prof. W.E. Russell, Prof. J. Szabolcs, and Prof. P. Schachtschabel. We also mourn the death of other prominent members, among them Prof. L.I. Bartelli, Prof. F.T. Boyd, Dr. M.N. Camargo, Dr. M. Daraselia, Prof I. Garbuchev, Prof. L. Hargitai, Prof. J.H. Moolman, Dr. A.M. Osman, Prof. N.S. Randhawa, Prof. G.K. Rutherford, Prof. K. Tiller, Prof. C. Van Ouwerkerk, Prof. R.J. Wagenet, Prof. John R. Webb, Prof. E.P. Whiteside, Prof. H. Zakosek.

BULLETIN

Eight issues of the ISSS Bulletin, including the present one, were published since the Acapulco Congress, and we hope that the technical quality, as well as the speed of delivery could be improved during the last four years. Due to financial constraints, we unfortunately cannot mail the bulletins by air mail, which causes certainly some delay into overseas countries. - Also under the new administrative structure of IUSS the Bulletin will be printed and mailed, but its distribution to member societies may be different from now.

THANKS

The three Bureau officers wish to thank all members for the confidence and the moral support over the past four years and hope that the contact between the Secretariat and the Treasury and the members of the Union will be improved and strengthened in the future.

Financial Report of ISSS 1994 - 1998

A major aim with regard to the management of the ISSS funds from 1994 to 1998 was to ensure the survival of the Society during the transitional period of introduction of the new statutes, through the creation of a sufficient financial reserve. This aim was reached with a balance of 106 076 US$ as of 31st December 1997.

Financial development (outline) for the time 1994-97 (in US$):

year	**1994**	**1995**	**1996**	**1997**	**1998**
balance (Jan.1)	66 101	76 412	83 601	86 828	106 076
surplus (Dec. 31)	+10 310	+ 7 189	+ 3 227	+19 248	
tied amounts (bank)	36 949	64 326	60 366	67 264	84 179

Therefore, the margin for expenses was narrow and only comprised the printing and mailing of the Bulletin, the essential administrative work, and support funds for the Mid-Term Meeting and for work related to the new IUSS Statutes. The additional funds from ICSU were to a great extent earmarked for specific purposes, as support for travel costs and as smaller contributions to meetings and publications.

Due to our full membership within ICSU since 1993, the annual account for each year had to be checked and audited as of March 31, and submitted to ICSU for scrutiny. Prof.Dr. P. Fitze of the Geographical Institute, University of Zurich, Switzerland, kindly agreed to act as an auditor. The different balances within the time span covered by this report did not give cause to any objections.

According to the new IUSS Statutes, an auditor has to be appointed for the period of 1998 to 2002. Prof. Dr. P. Fitze kindly agreed to act as auditor.

Number of members: April 94 6 812
April 98 7 397

Life membership: April 94 69
April 98 81

RAPPORT DU SECRÉTARIAT ET DE LA TRÉSORERIE DE L'AISS

1994 - 1998

En accord avec les règles de l'Association, le rapport du Secrétariat et de la Trésorerie de l'AISS, pour la période allant du dernier Congrès (Acapulco, Mexique, juillet 1994) au prochain Congrès (Montpellier, France, août 1998), est publié dans le Bulletin qui paraît juste avant le Congrès. Les points importants de ce rapport seront mentionnés lors de la séance inaugurale du Congrès de Montpellier ; les détails en seront discutés et évalués, pendant le Congrès, par le Conseil de l'AISS.

VERS DE NOUVELLES STRUCTURES: DE l'AISS À l'IUSS

Ainsi que cela est annoncé par le Président dans l'Editorial du présent Bulletin, les nouveaux statuts de l'IUSS ont été acceptés par une écrasante majorité des membres de l'Association ayant participé au vote, ce qui veut dire qu'une nouvelle structure administrative est définie et entrera en vigueur à la fin du Congrès de Montpellier : ainsi l'AISS entrera dans le prochain siècle en tant que UISS.

Cependant, d'intenses discussions seront encore nécessaires pour mettre en place une nouvelle structure scientifique : voir, à ce sujet, le texte du présent Bulletin »Organisation Scientifique : propositions pour le futur«. Ce débat se poursuivra pendant et après le Congrès de Montpellier.

Il est proposé que la nouvelle organisation administrative de l'Union Internationale des Sciences du Sol soit progressivement mise en place d'ici le 17ème Congrès Mondial de Science du Sol, qui aura lieu à Bangkok, Thaïlande, en 2002.

Tous les membres de l'AISS sont invités à contribuer activement à cette période transitoire, en apportant leurs appuis à la promotion des nouvelles structures, administratives et scientifiques.

ACTIVITÉS SCIENTIFIQUES

Les activités scientifiques ayant eu lieu dans l'intervalle des deux Congrès (Acapulco et Montpellier) sont rapportées, en annexe du présent rapport, par les Présidents des 8 Commissions de l'AISS ; ces rapports concernent aussi, partiellement, les activités des 7 Sous-Commissions scientifiques et des 16 Groupes de travail. Il apparaît clairement que les activités scientifiques des Commissions, Sous-Commissions et Groupes de travail sont très variables (voir aussi les rapports parus dans les Bulletins n°86 à 93).

Au total, environ 60 activités inter-congrès sont rapportées : cela montre que certains ensembles scientifiques de l'AISS ont été très actifs. De plus, comparativement à la période 1990-1994, plusieurs activités nouvelles ont été organisées, plus ou moins spontanément, démontrant ainsi que l'AISS est une société savante très active. Cela démontre aussi que nos structures sont suffisamment flexibles pour faciliter les relations et les échanges scientifiques à l'intérieur de l'AISS et vers l'extérieur.

Certaines activités scientifiques ont pu être soutenues financièrement, au moins partiellement, grâce à des subventions en provenance de l'ICSU (Conseil International des Unions Scientifiques), que nous tenons à remercier. Ces activités soutenues se sont principalement déroulées dans des pays en développement ainsi que dans des pays de l'Europe Centrale et de l'Est.

Pendant la période 1994-1998, le Groupe de Travail »World Reference Base« pour les ressources en sol (WRB) a continué à être très actif, avec des rencontres organisées dans divers continents. La version finale du nouveau Référentiel Mondial est en cours d'impression et sera disponible à Montpellier, en août prochain. L'AISS félicite ce Groupe de Travail et tous ceux qui y ont participé activement.

Les membres du Bureau de l'AISS ont participé à plusieurs des activités citées ci-dessus, ainsi qu'à de nombreuses réunions annuelles des Sociétés Nationales de Science du Sol. Les membres du Bureau

ont également été en relation : avec les Organisations des Nations Unies, avec l'ICSU, avec plusieurs sociétés savantes et organisations internationales.

COOPÉRATION INTERNATIONALE

Beaucoup d'événements ont concerné la coopération internationale, particulièrement en coopération avec des Unions membres de l'ICSU, telles que l'IGU, l'IUBS, l'IUGG, l'IUPAC et d'autres. Ceci a été facilité par l'appartenance, à part entière, de l'AISS à la famille ICSU.

Les coopérations avec certains des grands programmes interdisciplinaires de l'ICSU se sont développées : par exemple, avec le Programme International Géosphère-Biosphère (IGBP), dans le cadre duquel on travaille sur le rôle des sols dans les changements globaux des écosystèmes terrestres (GCTE) et sur les changements concernant l'utilisation des terres (LUCC). Dans ces deux projets, il est apparu clairement que la science du sol devrait être plus présente, parce que le sol est un interface important et, de ce fait, devrait être mieux compris et mieux pris en compte par les scientifiques des autres sciences collaborant à ces projets. Dans ce contexte, le Comité Permanent de l'AISS concernant les Programmes Internationaux a été très actif et il faut l'en remercier.

Le Comité Permanent concernant l'Histoire, la Philosophie et la Sociologie de la Science du Sol a développé ses activités ; il a été accepté comme membre de l'Union Internationale de l'Histoire et de la Philosophie des Sciences. Le Comité Permanent Education en Science du Sol a également été très impliqué dans des programmes internationaux.

ADMINISTRATION ET FINANCES

Le nombre des membres de l'AISS n'a pas beaucoup changé depuis 1994. Il est passé de 6812 en Avril 1994 à 7397 en Avril 1998. Les membres à vie sont passés de 69 en Avril 1994 à 81 en Avril 1998.

La situation financière de l'AISS s'est considérablement améliorée depuis 1994 : nous avons pu créer une réserve qui facilitera une transition tranquille de l'AISS vers l'UISS pendant les quatre années à venir (voir page 32).

Même ainsi, la situation financière de l'AISS est loin d'être devenue raisonnable : elle ne permet pas, au-delà des besoins relatifs à l'administration, la réalisation d'activités spéciales (mi à part l'impression et l'envoi du Bulletin).

Sans la contribution volontaire du Ministère autrichien de l'Agriculture et des Forêts, dont les dons se montent à environ 22.000 US.$ par an depuis 1990, le Secrétariat Général de l'AISS ne pourrait pas fonctionner correctement à Vienne. De plus, le Ministère autrichien de la Science et de la Recherche pourvoit le secrétariat de l'AISS d'un poste de secrétaire à temps complet. Grâce à ces contributions, et également au consentement de la direction des instituts qui emploient le Secrétaire Général, le Secrétaire Général Adjoint et le Trésorier, l'AISS peut s'acquitter de ses tâches administratives ; il faut également ajouter que tous les membres du bureau accomplissent leur travail associatif de façon bénévole.

NÉCROLOGIE

Depuis 1994, plusieurs membres éminents de notre Association sont décédés et ont été commémorés dans la rubrique In Memoriam du Bulletin. Parmi eux, quatre membres d'honneur : Prof. V. Ignatieff, Prof. W.E. Russel, Prof. I. Szabolcs et Prof. P. Schachtschabel. Nous regrettons également le départ d'autres membres éminents parmi lesquels Prof. L.I. Bartelli, Prof. F.T. Boyd, Dr. M.N. Camargo, Dr. M. Daraselia, Prof. I. Garbuchev, Prof. L. Hargital, Prof. J.H. Moolman, Dr. A.M. Osman, Prof. N.S. Randhawa, Prof. G.K. Rutherford, Prof. K. Tiller, Prof. C. Van Ouwerkerk, Prof. R.J. Wagenet, Prof. John R. Webb, Prof. E.P. Whiteside, Prof. H. Zakosek.

BULLETIN

Depuis le Congrès d'Acapulco, 8 Bulletins ont été publiés, y compris celui-ci. La qualité technique et la vitesse d'acheminement de ces bulletins ont été progressivement améliorées. Pour des raisons financières, il n'est pas possible d'envoyer le bulletin par courrier aérien, ce qui retarde sa distribution dans un certain nombre de pays. Dans le cadre de l'UISS, le bulletin continuera à être imprimé et posté, mais sa distribution vers les membres pourra être faite différemment.

REMERCIEMENTS

Les trois membres exécutifs du Bureau de l'Association tiennent à remercier tous les membres de la confiance et du soutien moral qu'ils leur ont accordés, et espèrent que les contacts entre le Secrétariat et la Trésorerie d'une part, et les membres de l'Association d'autre part, continueront à s'améliorer et à se renforcer.

Rapport financier

De 1994 à 1998, l'objectif financier principal a été de créer une réserve financière suffisante pour assurer le fonctionnement de l'Association pendant la période transitoire de mise en place des nouveaux statuts. Cet objectif a été atteint avec un solde positif de 106.076 US $ au 31 décembre 1997.

Résumé financier pour les périodes 1994 - 1997 (en US $)

	1994	**1995**	**1996**	**1997**	**1998**
Solde (1er janvier)	66 101	76 412	83 601	86 828	106 076
Surplus (31 décembre)	+ 10 310	+ 7 189	+ 3 227	+ 19 248	
Somme sur compte à terme (banque)	36 949	64 326	60 366	67 264	84 179

En conséquence, l'espace pour les dépenses a été étroit ; il n'a permis que l'impression et l'envoi du bulletin, l'essentiel du travail administratif, l'appui à la réunion intermédiaire du Comité Exécutif (avril 1996), l'appui à l'élaboration des nouveaux statuts. Les fonds additionnels en provenance de l'I.C.S.U. ont, en grande partie, été utilisés à des fins spécifiques : appuis à des voyages, petites contributions à des colloques et à des publications.

Du fait que l'A.I.S.S. soit, depuis 1993, membre à part entière de l'I.C.S.U., ses comptes doivent être vérifiés par un Commissaire aux Comptes, avant le 31 mars de l'année, puis soumis à l'I.C.S.U. qui les vérifie. Le Prof. Dr P. Fitze (Institut de Géographie, Université de Zurich, Suisse) a gentiment accepté d'être Commissaire aux Comptes. Les divers soldes concernés par la période couverte par ce rapport n'ont fait l'objet d'aucune objection.

En accord avec les nouveaux statuts de l'U.I.S.S., un Commissaire aux Comptes a été désigné pour la période 1998 - 2002 : Le Prof. Dr P. Fitze a gentiment accepté cette responsabilité.

Nombre de membres:	Avril 94	6 812
	Avril 98	7 397
Membres à vie:	Avril 94	69
	Avril 98	81

BERICHT DES IBG-SEKRETARIATS UND DES SCHATZMEISTERS, 1994-1998

Gemäß den Statuten der Gesellschaft wird der Bericht des Generalsekretariats und des Schatzmeisters für den Zeitraum zwischen dem letzten Kongreß (Acapulco/Mexico, Juli, 1994) und dem nächsten (Montpellier/Frankreich, August, 1998) in dem Mitteilungsblatt abgedruckt, das unmittelbar vor dem letzteren erscheint. Schwerpunkte des folgenden Berichtes werden in der Eröffnungssitzung des Kongresses in Montpellier vorgestellt, Einzelheiten anläßlich der Sitzungen des Beirats in Montpellier diskutiert werden.

VON DER IBG ZUR IBU

Wie vom Präsidenten der Gesellschaft im Editorial dieses Mitteilungsheftes mitgeteilt wurde, ist die neue Satzung der Internationalen Bodenkundlichen Union (IBU) von der überwältigenden Mehrheit unserer Gesellschaft angenommen worden. Dies bedeutet, daß die neue administrative Struktur der Gesellschaft beschlossen ist und am Ende des Weltkongresses in Montpellier in Kraft treten wird. Damit wird die IBG als IBU in das nächste Jahrhundert eintreten.
Nichts desto trotz werden noch intensive Diskussionen nötig sein, um eine neue wissenschaftliche Struktur zu erreichen, vgl. auch den Artikel »Scientific organisation: proposals for discussion« in diesem Mitteilungsheft. Diese Aufgabe wird uns während des Weltkongresses in Montpellier und danach noch beschäftigen. Es wird vorgeschlagen, daß die neue administrative Struktur der Internationalen Bodenkundlichen Union während der nächsten vier Jahre umgesetzt wird, wobei die Übergangsfrist mit dem 17. Bodenkundlichen Weltkongreß in Bangkok/Thailand im Jahre 2002 abgeschlossen sein soll.

Alle Mitglieder der IBG werden herzlich eingeladen, aktiv an dieser Überleitung teilzunehmen und mitzuhelfen, die neue administrative Struktur in Kraft zu setzen und die neue wissenschaftliche Struktur zu entwickeln.

WISSENSCHAFTLICHE AKTIVITÄTEN

Im Anhang zu diesem Bericht wird über die wissenschaftlichen Aktivitäten zwischen den Weltkongressen von den Vorsitzenden der 8 wissenschaftlichen Kommissionen berichtet, wobei auch teilweise die Aktivitäten der 7 Sub-Kommissionen und 18 Arbeitsgruppen Berücksichtigung fanden.

Aus den Berichten wird deutlich, daß die wissenschaftlichen Aktivitäten der verschiedenen Kommissionen, Sub-Kommissionen und Arbeitsgruppen sehr unterschiedlich waren, was auch aus den einzelnen Berichten in den vorangegangenen Mitteilungsheften Nr. 86 bis 93 ersichtlich wird.

Insgesamt wurde über ca. 60 Zwischen-Kongreß-Aktivitäten berichtet, was verdeutlicht, daß viele wissenschaftliche Organisationen innerhalb der IBG zwischen den Weltkongressen aktiv waren. Darüber hinaus ist festzustellen, daß zwischen 1994 und 1998 sehr viele neue Aktivitäten mehr oder weniger spontan organisiert wurden, woraus ersichtlich wird, daß die IBG eine außerordentlich aktive wissenschaftliche Gesellschaft ist. Dies zeigt aber auch, daß unsere Struktur genügend Flexibilität besitzt um die notwendigen wissenschaftlichen Kooperationen und Austauschprozesse innerhalb unserer Gesellschaften und mit anderen reibungslos durchzuführen.

Einige dieser wissenschaftlichen Aktivitäten konnten finanziell unterstützt werden, zumindestens teilweise durch ein Finanzierungsprogramm des Internationalen Rats für wissenschaftliche Unionen (ICSU), was hier mit Dank anerkannt werden soll. Diese wissenschaftliche Aktivitäten wurden hauptsächlich in Entwicklungsländern und in den Zentral- und Osteuropäischen Ländern durchgeführt.

Im Zeitraum 1994-1998 war die Arbeitsgruppe »World Reference Base for Soil Resources« wiederum sehr aktiv und hielt Treffen in verschiedenen Weltregionen ab um damit die endgültige Fassung der neuen World Soil Reference Base fertigzustellen, die derzeit im Druck ist und im August in Montpellier verteilt werden soll. Die IBG beglückwünscht diese Arbeitsgruppe zu ihren außerordentlichen

Anstrengungen und Ergebnissen und außerdem all denen, die in diesen Aktivitäten teilgenommen haben.
In vielen der o.g. wissenschaftlichen Veranstaltungen waren Vorstandsmitglieder anwesend. Sie haben auch an sehr vielen Jahresveranstaltungen nationaler Gesellschaften teilgenommen. Mitglieder des Vorstands hielten auch Verbindung zu UN-Organisationen, zur ICSU und zu anderen Internationalen wissenschaftlichen Gesellschaften und Organisationen.

INTERNATIONALE ZUSAMMENARBEIT

Es gab sehr viele neue Veranstaltungen, die der Internationalen Zusammenarbeit gewidmet waren, einschließlich Kooperationen mit Unions-Mitgliedern von ICSU, wie z.B. mit der Internationalen Geographischen Union, der Internationalen Union für Biologische Wissenschaften, der Internat. Union für Geodäsie und Geophysik, der Internat. Union für Reine und Angewandte Chemie und mit anderen, was durch unsere Vollmitgliedschaft in der ICSU erleichtert wurde.

Eine weitere Zusammenarbeit erfolgte mit den interdisziplinären Strukturen innerhalb ICSU und deren Projektaktivitäten, wie z.B. mit dem Internationalen Geosphären- Biosphärenprogramms (IGBP) und hier insbesondere konzentriert auf die Bedeutung von Böden in den Teilprogrammen »Global Change of Terrestrial Ecosystems (GCTE)« und »Land Use Cover Change (LUCC)«. - In diesen beiden Teilprogrammen wurde deutlich, daß sich die Bodenkunde stärker artikulieren sollte, da Böden eine außerordentlich wichtige Nahtstelle in diesen Projekten darstellen und Wissenschaftler anderer Fachgebiete ein besseres Verständnis für Böden vermittelt bekommen sollten. In diesem Zusammenhang war auch unser »Komitee für Internationale Programme« sehr aktiv, insbesondere um unsere Position in diesen internationalen Kooperationsprojekten zu verbessern, was hier mit Dank vermerkt werden soll. - Im Rahmen interdisziplinärer und internationaler Zusammenarbeit leitet der Generalsekretär der IBG das ICSU Komitee »Sciences for Food Security«.

Darüber hinaus ist über weitere Aktivitäten des »Komitees für Geschichte, Philosophie und Soziologie der Bodenkunde« zu berichten, das als neues Mitglied der Internationalen Union für Geschichte und Philosophie der Naturwissenschaften akzeptiert wurde. Ebenso war das »Komitee für Bodenkundeausbildung« aktiv in internationale Programme eingeschaltet.

VERWALTUNG UND FINANZEN

Die Zahl der IBG-Mitglieder hat sich seit 1994 nicht stark verändert. Es gab einen leichten Zuwachs von 6.812 im April 94 auf 7.397 im April 1998. Die Anzahl der Lebenszeitmitglieder stieg um 12 von 69 im April 1994 auf 81 im April 1998.

Die finanzielle Situation der Gesellschaft konnte erheblich verbessert werden, da seit 1994 eine finanzielle Reserve gebildet werden konnte, die zumindestens einen problemlosen Übergang von der IBG zur IBU in den folgenden vier Jahren garantieren soll, vgl. Seite 35.

Trotzdem ist die finanzielle Situation der Gesellschaft noch sehr angespannt, da wir außer dem Druck und dem Versand des Mitteilungsheftes und dem notwendigen administrativen Abläufen immer noch keine spezifischen Aktivitäten setzen können.

Ohne die Sonderzahlung des Österreichischen Ministeriums für Land- und Forstwirtschaft mit einer jährlichen Zuwendung von ca. 22.000 US Dollar seit 1990 und ohne eine volle Sekretariatskraft, die vom Österreichischen Ministerium für Wissenschaft und Forschung zur Verfügung gestellt wurde, könnte das Generalsekretariat in Wien seine Arbeiten nicht durchführen.
Nur aufgrund dieser Zuwendungen und aufgrund der Zustimmung derjenigen Institutionen, an denen der Generalsekretär, der stellvertretende Generalsekretär und der Schatzmeister beschäftigt sind, könnte die IBG ihre administrative Verantwortung wahrnehmen, wobei zusätzlich Erwähnung finden sollte, daß alle Mitglieder des Vorstands ihre Verpflichtungen innerhalb der Gesellschaft ehrenamtlich durchführen.

NACHRUF

Seit 1994 sind mehrere prominente Mitglieder unserer Gesellschaft verstorben, und es wurde ihrer in den früheren Mitteilungsblättern gedacht.
Unter ihnen sind folgende Ehrenmitglieder der IBG zu beklagen:
Prof. V. Ignatieff, Prof. W.E.Russell, Prof.I. Szabolcs and Prof.P. Schachtschabel.
Wir bedauern ebenfalls den Tod weiterer herausragender Mitglieder unserer Gesellschaft, unter ihnen Prof. L.I. Bartelli, Prof. F.T. Boyd, Dr. M.N. Camargo, Dr.M.Daraselia, Prof.I. Garbuchev, Prof. L. Hargitai, Prof.J.H.Moolman, Dr. A.M. Osman, Prof.N.S. Randhawa, Prof. G.K. Rutherford, Prof. K.Tiller, Prof.C. Van Ouwerkerk, Prof.R.J. Wagenet, Prof. John R. Webb, Prof. E.P. Whiteside, Prof. H. Zakosek.

MITTEILUNGSBLATT

Seit dem Weltkongreß in Acapulco wurden 8 Hefte des IBG-Mitteilungsblattes einschließlich des vorliegenden publiziert und wird hoffen, daß die technische Qualität wie auch die Geschwindigkeit der Auslieferung während der letzten vier Jahre verbessert werden konnte.
Wir bedauern aus finanziellen Gründen nicht in der Lage zu sein, die Mitteilungsblätter mit Luftpost ausliefern zu können, was sicherlich einige Verspätungen in den überseeischen Gebieten verursacht.

Auch unter der neuen administrativen Struktur der IBU wird das Mitteilungsheft gedruckt und versandt werden, doch wird die Verteilung zu den Mitgliedgesellschaften im einzelnen von den heutigen Bedingungen abweichen.

DANKSAGUNG

Die drei Mitglieder des Vorstands (Generalsekretariat und Schatzmeister) danken allen Mitgliedern der Gesellschaft für ihr Vertrauen und ihre moralische Unterstützung während der vergangenen vier Jahre und hoffen, daß die Kontakte zwischen dem Generalsekretariat und dem Schatzmeister einerseits und den Mitgliedern der Union andererseits in naher Zukunft verbessert und vertieft werden können.

IBG-Finanzbericht

1994 - 1998

Eine wesentliche Zielsetzung für die Finanzgebarung während der Periode 1994-98 war das Überleben der Gesellschaft während der Einführungsphase der neuen Statuten durch eine ausreichende finanzielle Reserve sicherzustellen. Dieses Ziel konnte mit einem Saldo von 106 076 US$ am 31.12.97 erreicht werden.

Finanzentwicklung (Übersicht) während der Periode 1994-97 (in US$)

Jahr	1994	1995	1996	1997	1998
Saldo (1. Jan.)	66 101	76 412	83 601	86 828	106 076
Überschuß (31. Dez.)	+10 310	+ 7 189	+ 3 227	+19 248	
Festangelegte Summe (Bank)	36 949	64 326	60 366	67 264	84 179

Dementsprechend blieb der Spielraum für die Ausgaben eng und beschränkte sich auf den Druck und den Versand des Mitteilungsblattes, auf die notwendigsten administrativen Arbeiten inkl. Unterstützungsbeiträgen für das Mid-term Meeting sowie die Tätigkeiten für die Statutenrevision. Die zusät-

zlichen Einnahmen von der ICSU waren weitgehend zweckgebunden zur Unterstützung von Reisekosten und kleinen Beträgen für Meetings und Veröffentlichungen.

Ab1994 mußten die Jahresrechnungen der einzelnen Jahre jeweils zum 31.3. kontrolliert und revidiert der ICSU zur Prüfung vorgelegt werden. Als Revisionsstelle hat sich in dankenswerter Weise Prof. Dr. P. Fitze vom Geographischen Institut der Universität Zürich (Schweiz) zur Verfügung gestellt. Die einzelnen Abrechnungen der Berichtsperiode gaben zu keinerlei Beanstandungen Anlaß.

Gemäß den neuen Statuten ist für die nächste Periode 1998-2002 ein Revisor zu bestimmen. Prof. Dr. P. Fitze stellt sich freundlicherweise für diese Arbeit zur Verfügung.

Anzahl Mitglieder:	April 94	6 812
	April 98	7 397
Lebensmitgliedschaft:	April 94	69
	April 98	81

Report of Commission I
1994 - 98

The activities of Commission I: Soil Physics during the last 4 years can be summarized by: the organisation of several international workshops and meetings, realisation of training programs, and lectures held at various international meetings of soil science societies.

Based on the excellent experiences of the 1st. workshop in soil hydrology in Riverside 1989, Dr.R. van Genuchten and his very active group organized the 2nd workshop in October 1997. More than 180 participants from all continents got very impressive informations about water flow processes in soil media as well as in water flux and ion transport modelling. It became obvious that the gap between very profound informations about highly sophisticated modelling approaches and the data required for model testing seems to enlarge which also holds true for the validation of flow processes in soils / soil horizons with heterogenous and anisotropic physical properties. The discussion about scale effects on water and ion flow processes as well as the coupling of mechanical and hydraulic processes is until now only at the very beginning but should to be intensified, if the "more site specific" properties and processes shall be predicted.

The discussion about soil structure - processes and functions was restarted both by the organisation of a corresponding workshop in 1995 as well as during several meetings. The definition of aggregates at the various scales (from mega - to micro), the description of physical and visible properties can be used as a first approach to get a better tool for the definition of site specific properties both from the mechancical and hydrological point of view. A link to the corresponding working group: Soil Structure headed by Prof. Horn/ Kiel of the ISTRO can help to include more informations also with respect to predict flux processes and to quantify the term workability or trafficability. Even if the determination of physical properties of single aggregates partly requires more sophisticated apparatus it is essential to define the heterogeneity and anisotropy in the soil horizon in order to also redefine mobile and "immobile or less mobile" phase transport processes including ad-and desorption phenomea. The more precise definition of the boundary conditions e.g. for mechanical soil strength in combination with hydraulic properties like pore size distribution or hydraulic conductivity under saturated and unsaturated conditions will help to better understand transport and environmental processes and functions. By defining the material functions of soil physical properties, a more precise and site adjusted quantification could be obtained. If e.g. the quantification of the precompression stress - as the maximal hydraulic and/or mechanical stress previously applied to a soil - would be also used to define the redried suction range of e.g. the water retention curve, some more reliable results could be obtained because the main presumption: a rigid pore system without any changes in height or pore composition could be analysed and differentiated from the virgin drying range. The latter shows normal shrinkage behaviour and results in no defined boundary conditions.

The consideration of soil mechanical processes and functions in structured unsaturated soils and the changes in physical properties was more intensely discussed also by the organization of a joined workshop in Tiberias in August 1997 as well as by a consecutive workshop on: Subsoil Compaction and Soil Dynamics - Processes and Environmental Consequences (IWSCSD) which will take place March 24 - 26, 1999 in Kiel/Germany. During the forcoming workshop not only the main mechanisms how to get soil strength, to determine the stress/strain processes, but also to define the effects of soil disturbance and soil reloosening on physical properties will be discussed in order to also derive some main recommendations when, where and how to ameliorate and what are the consequences for soil aggreation, soil strength, and soil ecological properties.

It would be very helpful and desirable if participants from the various disciplines in soil physics would join and inform about their experiences also from the hydrological, thermal and gas flux point of view. Furthermore a workshop on transport of contaminants in the vadose zone and prevention of groundwater contamination was organized in Nanjing/China in March 1997 by the Institute of Soil Science, Chinese Academy of Sciences and the Soil Physics Commission, Soil Science Soc. of China and was joined by a european group. The papers presented during the 7 days meeting clearly demonstrated both the urgent need and the chance to apply also soil physical basic knowledge to solve problems and to also find acceptable tools.

Such link between in situ problems and processes and soil physical knowledge can be considered as very desirable to solve environmental problems and to also propose more adjusted landuse systems. A very impressive excursion also underlined these thoughts.

Training courses in soil physics like that one in Valdivia/Chile are an excellent possibility to improve the understanding of soil physical processes and functions and to also demonstrate the potential for solving specific problems. Such courses which were first organized in Triest/Italy should be offered and carried out more frequently in various continents which also would help to keep the participation fees and the travelling costs very small.

Several visits of soil science society meetings in various countries finally gave me an excellent insight into the soil physics activities and may have been a good chance to also inform a bit about ongoing research elsewhere. I hope that these contacts can be enlarged in the future to get a better link between the various societies and to also improve the understanding of soil physical properties and functions from the viewpoint of the various disciplines.

I hope that we can meet us again during the next International Congress in Montpellier where we will have 4 symposia (No.: 1 - 4) from Friday 21st. to monday 24.th of August. Last but not least I would like to thank that I was allowed to serve the International Soil Science Society as the chairman of our commission for the last 4 years.

Rainer Horn, Chair, Commission I - Soil Physics.

Report of Commission II
1994 - 98

An International Symposium, entitled "The Science of Composting" was held, with the patronage of the ISSS, by the new Working Group FA "Soil Organic Fertilizers and Amendments", in Bologna, Italy, 30 May – 2 June 1995. This was a very successful meeting, which attracted approximately 300 participants from about 20 countries. A selection of 98 papers presented has been published in two volumes of 1430 pages by Blackie Academic & Professional, Chapman & Hall, London, in 1996. Working Group FA was formed in 1994 in Acapulco and mainly originated from Commission II.

The 2nd International Symposium of Working Group MO – Interactions of Soil Minerals with Organic Components and Microorganisms, entitled "Effect of Mineral-Organic-Microorganism Interactions on Soil and Freshwater Environments", was held in Nancy, France, 3-6 September 1996, with the support of Commission II. The meeting was very successful, with a participation of approximately 150 persons from 25 countries. The Proceedings of this Symposium are in course of publication.

The traditional fruitful association of Commission II of ISSS with the International Humic Substances Society (IHSS) has continued at the 8th International Meeting of IHSS, held in Wroclaw, Poland, 9-14 September 1996, and organized under the auspices of Commission II of ISSS. This was a very suc-

cessful meeting that attracted over 260 delegates from more than 30 countries. The Proceedings of the Meeting are in course of publication. The IHSS originated from an ISSS Working Group and counts now more than 800 members. The President of IHSS in the last two years (1996-97) has been the current Chairman of Commission II, prof. Nicola Senesi. It is hoped that the productive association between ISSS and IHSS should continue in the future.

The ISSS, through its Commission II, has endorsed, together with a number of other International Societies and Organizations, the XIII International Symposium of Environmental Biogeochemistry (XIII ISEB), which was held in Monopoli (Bari), Italy, 21-26 September, 1997. The Chairman of the Organizing and Scientific Committee of XIII ISEB was the current Chairman of Commission II, prof. Nicola Senesi. The Symposium attracted over 250 participants from 37 countries. A selection of papers presented at the XIII ISEB will be published in special issues of four refeered international Journals.

In the last two years, the officers of Commission II have taken an active role in the preparation of the new statutes and administration of ISSS in view of its transformation in a Union. Commission II has also worked actively for the formulation of a stimulating programme for the 16th World Congres of Soil Science in Montpellier, France. Four Symposia are being organized with the direct involvement of Commission II officers and members.

Nicola Senesi, Chair, Commission II – Soil Chemistry

Report of Commission III
1994 - 98

Biodiversity is one of the major international research and policy themes in science and technology, and microbial diversity, especially of soil biology is perhaps the least explored area of this subject. Hence, this commission has been active in several international activities to further soil biodiversity research and understanding. Two Commission III officers and other ISSS members participated in a SCOPE sponsored workshop in 1997 in Wageningen to assess current knowledge, identify gaps and define needs for soil biodiversity research. The report of this working group was published in 1997 in Ambio (Brussaard et. al., 26:563-570). In further support of the biodiversity initiative, Dr. Tiedje was an invited speaker at the International Conference of Culture Collections in 1996 in Veldhoven, The Netherlands, and serves on Advisory Board to the World Data Center on Microorganisms (WDCM) located at the National Institute of Genetics in Japan.

Commission III was also a co-sponsor of the International Environmental Biogeochemistry Conference held in 1997 in Bari, Italy, and coordinates with the International Microbial Ecology Symposium in Santos, Brazil in 1995 and in Halifax, Canada in 1998 to insure that soil microbiology was appropriately represented and promotes the work of Commission III members.

Commission III officers were also responsible for shaping the soil biology programs for the Montpellier meeting, in particular to foster integration of work in soil zoology with ecosystem processes, biodiversity and use of molecular methods to better understand soil communities. Commission III officers also participated in the discussions on restructuring ISSS.

J.M. Tiedje, Chair, Commission III - Soil Biology

Report of Commission IV
1994 - 98

1. In March 1997, Commission IV of ISSS in collaboration with the International Centre for Research in Agroforestry (ICRAF) and the International Union of Forestry Research Organizations (IUFRO) co-sponsored an International Symposium on »The Science and Practice of Short-term Improved Fallows in Humid and Sub-Humid Tropics« in Lilongwe, Malawi 12-18 March 1997. The symposium attracted over 80 participants from 25 countries and included in the programme plenary papers, posters, working group discussions and a field visit to Chipata in eastern Zambia. The symposium brought together a multi-disciplinary group of scientists with an active interest in research aimed at the development and dissemination of improved fallow systems for small-scale farmers in the humid and sub-humid tropics. The symposium focused on short-term fallows (1-5 years) of shrubs, herbaceous species and trees whose primary objective is the maintenance or restoration of soil fertility.

The meeting was structured around four principal themes:

1. Traditional fallows and indigenous knowledge. What can be learnt to assist in the development of improved systems.
2. Case studies of research on and development of improved fallows. The studies highlighted both successes and failures, and presented both biophysical and socio-economic research results.
3. The biophysical processes of fallows including the dynamics of nutrients, water, pests, diseases and soil physical properties that help in the understanding of how and where fallows work.
4. Dissemination mechanisms and policy requirements for adoption of improved fallows.

Through the plenary presentations, poster session, the field day and working groups, the symposium had several outputs. A report on the proceedings is being prepared and will be ready for release shortly. Already a report of the working group discussions has been prepared which distills and synthesizes key points, lessons learnt and makes some recommendations.

The International Symposium offered a unique opportunity for researchers from many different disciplines to meet and discuss the science and practice of short-term improved fallows. Through this symposium a synthesis of the current knowledge of research, adoption and impact of improved fallows was created which identified the knowledge gaps and regional research priorities. In general the symposium enhanced the awareness of improved fallow research and created a mechanism for future formal and informal information exchange.

2. Organizing 3 symposia for the ISSS Congress in Montpellier

3. Participating in the ISSS mid-term meeting in Montpellier April 9-12, 1996, where the Commission IV Chair had to respond to questions whether soil fertility and plant nutrition should or should not form part of the forthcoming IUSS as a Division, given the more applied nature of our Commission. No decision was made to remove our topic.

Pedro Sanchez, Chair, Commission IV - Soil Fertility and Plant Nutrition

Report of Commission V
1994 - 98

Between 1994 and 1998, Commission V organized the following international conferences, meetings and symposia:

1996

1. International Meeting: »The scientific basis of soil science and the ISSS structure«, Moscow, January 10-13, 1996; in co-operation with the President of ISSS and the Russian Soil Science Society. Approx. 30 participants: members of the Executive Committee, Chairpersons of Commissions and Standing Committees of ISSS and representatives of the RSSS. Proceedings are published.

2. 10th International Meeting on Soil Micromorphology: »Studies on Soil Diversity, Diagnostics and Dynamics«, Moscow, July 8-13, 1996; in cooperation with Sub-Commission B, ISSS and RSSS. More than 100 participants, three field excursions. Books of abstracts and papers are published.

3. International Working Meeting of the WG-WRB: »Discussion of Glossisols, Stagnosols, Phaeozems, Chernozems and Kashtanozems«, Moscow, July 8-12, 1996; in cooperation with WG-WRB. About 30 participants, three field excursions.

1997

4. International Conference »Problems of Anthropogenic Soil Formation«, Moscow, June 16-21, 1997; In cooperation with Dokuchaev's Soil Institute and RSSS. About 250 participants, two field excursions. Book of abstracts is published.

5. II International Conference »Cryopedology '97«, Syktivkar, Russia, August 5-8, 1997; in cooperation with the WG Cryosols. About 150 participants, one field excursion. Book of abstracts is published.

6. International Working Meeting: »Recent and Paleo-Pedogenesis as Tools for Modeling Past and Future Global Change«, Rauischholzhausen, Germany, September 21-27, 1997; in cooperation with the Commission Paleopedology, INQUA and the Justus-Liebig University Giessen. About 80 participants, one field excursion. Book of abstracts is published.

7. International Symposium: »Soil System Behaviour in Time and Space«, Vienna, Austria, November 19-21, 1997; in cooperation with the Austrian Soil Science Society and the Universitaet fuer Bodenkultur, Vienna. About 80 participants. Book of abstracts is published.

Victor O. Targulian, Chair, Commission V –
Soil Genesis, Classification and Cartography

Report of Commission VII
1994 - 98

Scientific activities

1995 Participation in the Symposium of the interdisciplinary group on interactions between mineral and organic constituents and microorganisms, held in Nancy.

1997 Participation and support of M. ROBERT and J. WILSON and several scientists of Commission VII at a symposium in Bratislava (Slovakia) on weathering and acidity.
For these tow meetings environmental problems were the mains topics.

There was no specific participation of the Commission at the European Clay Group (Louvain 1996) whose subject was very specific. The same applied to the AIPEA congress (Ottawa), co-organized by USA and Canada, where we did not organize any specific symposium, since the choice of topics was already sufficient.

1998 Montpellier – 3 symposiums were programmed by Commission VII, which have finally been reduced to two. The themes concern low range crystalline compounds, crystal chemistry and the localization of trace elements, and soil minerals and acidification.

These topics are closely related to the general theme of the Congress.

Commission VII is a co-participant in 4 symposiums (4,5,6,15) with commissions I, II and V and one symposium (41) with the Organic Matter work group.

Participation in work for reforming ISSS structures

The association has reconsidered its research themes and its organization and this has been the subject of several meetings: Moscow 1996, Louvain and Montpellier 1997.

The association will be structured into large divisions and a commission. Mineralogy will remain important since it will continue either as an independent division or be grouped together with chemistry within the same division.

One hypothesis put forward in Moscow which will be re-examined in Montpellier consists of grouping together in the same division research on soil constituents (mineral or organic). For fine phases, this would have the advantage of grouping together 'colloid'-type constituents, whose importance is often underlined particularly in environmental problems.

M. Robert, Chair, Commission VII – Soil Mineralogy

Report of Commission VIII
1994 - 98

Commission VIII on "Soils and the Environment" was formally established by ISSS at the closure of the 15th World Congress of Soil Science, that took place in July 1994, in Acapulco, Mexico. The nomination of the Commission Vice Chairpersons was made by the ISSS President, Alain Ruellan, the Secretary-General, Winfried Blum, and the Chair in consultation with the Council: Drs. Zhao Qiguo, China, Ben Warkentin, USA, and Francis Andreux, France, were appointed as first, second, and third Vice-Chairpersons, respectively. The first task for the Commission was to develop a "Position Paper" to identify the objectives of the Commission, and its proposed line of action. A summary of the Position Paper is attached to the report.

Activities

- The Position Paper was presented and discussed at the International Soil Conservation Organization (ISCO) meeting in August 1996 in Germany in a presentation "Soil Functions and the Future of Natural resources" by De Kimpe and Warkentin. The paper will be published in Advances in GeoEcology, Vol. 31 (1998). "Soil Functions and the Future of Natural resources" was also the topic of a session.
- Commission VIII was part of the Organizing Committee of the Symposium "Effect of Mineral-Organic-Microorganism Interactions on Soil and Freshwater Environments, organized by the ISSS Working Group MO in September 1996 in Nancy, France.
- Commission VIII was part of the Organizing Committee of the Symposium "Soil, Human and Environment Interactions " that took place in May 1997, in Nanjing, China. C. De Kimpe, Chairman of Commission VIII was invited to present the summary of the Symposium at the closing session.
- The following symposia will be organized by Commission VIII at the 16th World Congress of Soil Science in August 1998, in Montpellier:

25. Soil Pollution: diagnosis, assessment techniques and support for policy development
26. Soil and Climate Change
27. Early Stages and Reversibility of Soil Desertification
28. Urban and Suburban Soils: nature, management, and risks for human health.

Future activities

The World Congress of Soil Science will be the first opportunity for all ISSS members interested in the topic of Soils and the Environment, to get together and discuss the challenges and the future of the Commission. Future activities are being considered and they will be submitted in Montpellier.
There are several areas of interest:

* Climate change is a major issue, and it got increased visibility with the Kyoto Conference on Climate Change. Soils may be a sink of greenhouse gases; this topic is of immediate concern to the world's population, and it would bring together a large spectrum of disciplines; many uncertainties need to be addressed by science, especially in the area of adaptation.
* Soil degradation: Commission VIII would take the lead and prepare, with the help of other ISSS interested groups, a background statement for ISSS on soil degradation.
* Interaction between Science and Policy on environment issues needs to be encouraged in various ways, and again Commission VIII would take the lead in addressing such matters.

Christian De Kimpe, Chair, Commission VIII – Soils and the Environment

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ISSS PROCEEDINGS

The proceedings of the last three International Congresses of Soil Science can be ordered at a reduced rate for ISSS members.

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Proceedings 14th International Congress of Soil Science, Kyoto, 1990 (set of 7 volumes)	NLG 75.—
Proceedings 15th World Congress of Soil Science, Acapulco, 1994 (set of 17 volumes)	NLG 100.—

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IUSS
International Union of Soil Sciences

***

Scientific Organisation : proposals for discussion

presented by **Alain Ruellan**, President of ISSS,
in the name of the Executive Committee

Parallel to the work on the statutes for the IUSS, which have now been adopted, the Executive Committee and the Committee on Statute and Structure of ISSS has worked on the future scientific organisation of IUSS.

Two main meetings were organized to discuss this question: the first one was in Moscow (Russia) from 10 to 13 January 1996, and the second one in Louvain-la-Neuve (Belgium) from 8 to 10 October 1997.

These meetings, with intensive and wide-ranging contributions and discussions, brought many agreements but also some disagreements. Therefore, the discussions between all the members of the new IUSS have to continue: the 16th World Congress of Soil Science in Montpellier will be a good opportunity for such discussions, although no decision will be taken during this Congress; it is planned that the decisions concerning the scientific organisation of IUSS will be taken by the IUSS Council between 1998 and 2002 (Congress of Thailand).

In order to facilitate future discussions, a summary of the main conclusions of the Moscow and Louvain-la-Neuve meetings is given hereafter.

AGREEMENTS

The main points of agreement between the participants of the Moscow and Louvain-la-Neuve meetings were:

- The number of IUSS - Divisions has to be as low as possible *(article G1 of the Statutes: the scientific work of the IUSS shall be carried out through Divisions that are defined by subject ...; the Divisions shall be composed of Commissions and Working Groups).*
- The IUSS Commissions (within the Divisions) should comprise all the activities which actually exist at the level of the ISSS Commissions and Sub-Commissions.
- ISSS Commission I is transformed into **IUSS - Division = SOIL PHYSICS**.
- ISSS - Commission II is transformed into **IUSS - Division = SOIL CHEMISTRY**.
- ISSS - Commission III is transformed into **IUSS - Division = SOIL BIOLOGY**.
- ISSS - Commission VIII is transformed into **IUSS - Division = SOIL AND ENVIRONMENT.**

DISCUSSION

The main discussions between the participants of the Moscow and Louvain-la-Neuve meetings were about the following points:

1 - Proposal for an **IUSS Division 1, called PEDOLOGY**. This Division would comprise the scientific activities concerning soil morphology and micromorphology, soil genesis, soil geography, soil ecology, soil classification and cartography, paleopedology, which play a special role

in soil science.
Soil Physics would be Division 2.
Soil Chemistry would be Division 3.
Soil Biology would be Division 4.

2 - Alternative to proposal **1**:

+ proposal for an **IUSS Division 1, called SOIL (COVERS) MORPHOLOGY AND GEOGRAPHY**; this Division would comprise the scientific activities concerning: soil morphology, micromorphology, and geography;
+ Soil Physics would be Division 2;
+ Soil Chemistry would be Division 3;
+ Soil Biology would be Division 4;
+ proposal of an **IUSS - Division 5, called SOIL (SYSTEMS) GENESIS AND CLASSIFICATION**; this Division would provide the framework for joint activities between specialists of soil morphology, physics, chemistry, biology; it would comprise the scientific activities concerning soil genesis, soil geography, soil ecology, soil classification and cartography, and paleopedology.

3 - For Soil Mineralogy, two alternatives exist:

+ The Division of Soil Chemistry becomes the **IUSS Division of SOIL CHEMISTRY AND MINERALOGY**, with a Commission of Soil Mineralogy.
+ A special IUSS - Division for Soil Mineralogy is created.

4 - All scientific activities concerning the ISSS Commissions IV (Soil fertility and plant nutrition) and VI (Soil Technology) are regrouped in an **IUSS - Division of SOIL AND LAND MANAGEMENT**; soil fertility and soil technology are Commissions of this Division. This proposal has the approval of the participants of Louvain-la-Neuve meeting, but it has still to be discussed with the specialists concerned.

5 - For the activities concerning the ISSS Standing Committee »Education in Soil Science« and the ISSS Standing Committee »History, Philosophy and Sociology of Soil Science«, three alternative proposals exist:

+ **maintain as IUSS Standing Committees ;**
+ **constitution of two IUSS - Working Groups ;**
+ **constitution of two IUSS - Commissions, to be allocated to a Division of Pedology or to a Division of Soil Genesis and Classification.**

Summing up the two main proposals for the IUSS Divisions:

Proposal 1:	**Pedology**
	Soil physics
	Soil chemistry and mineralogy
	Soil biology
	Soil and land management
	Soil and environment
Proposal 2 :	**Soil (covers) morphology and geography**
	Soil physics
	Soil chemistry
	Soil mineralogy

Soil biology
Soil (systems) genesis and classification
Soil and land management
Soil and environment

Combinations of these two proposals are possible.

It is clear that the discussion has to continue, during and after the Montpellier Congress: alternative ideas are welcome for contribution to this discussion.

UISS
Union Internationale des Sciences du Sol

***

Organisation Scientifique : propositions pour discussion

présentées par **Alain Ruellan**, Président de l'AISS,
au nom du Comité Exécutif

Parallèlement aux travaux concernant les statuts de l'UISS, maintenant adoptés, le Comité Exécutif et le Comité Statuts et Structures de l'AISS ont travaillé sur la question de la future organisation scientifique de l'UISS.

Deux rencontres ont été organisées pour débattre de cette question : la première à Moscou (Russie) du 10 au 13 janvier 1996 et la seconde à Louvain-la-Neuve (Belgique) du 8 au 10 octobre 1997.

De ces rencontres, au cours desquelles les contributions et les discussions furent très riches, sont ressortis des accords mais aussi quelques désaccords. Les discussions doivent donc se poursuivre, entre tous les membres de la nouvelle UISS ; le prochain 16ème Congrès Mondial de Science du Sol, à Montpellier, sera une bonne opportunité pour ces discussions, sachant qu'aucune décision ne sera prise pendant le Congrès de Montpellier ; la prévision est que les décisions concernant l'organisation scientifique de l'UISS seront prises, par le Conseil de l'UISS, entre 1998 et 2002 (Congrès de Thaïlande).

Dans le but de faciliter les prochaines discussions, un résumé des principales conclusions des réunions de Moscou et Louvain-la-Neuve est donné ci-après.

ACCORDS

Les principaux points d'accord entre les participants des réunions de Moscou et Louvain-la-Neuve furent les suivants :

- Le nombre de Divisions de l'UISS doit être aussi petit que possible *(article G1 des Statuts : le travail scientifique de l'UISS est mené dans le cadre de Divisions ; chaque Division concerne un domaine scientifique ... ; les Divisions comprennent des Commissions et des Groupes de Travail).*
- Il est nécessaire de retrouver au niveau des Commissions de l'UISS (au sein des Divisions) l'ensemble des activités qui sont actuellement menées par les Commissions et Sous-Commissions de

l'AISS.

- La Commission I de l'AISS est transformée en une **Division de l'UISS = PHYSIQUE DU SOL.**
- La Commission II de l'AISS est transformée en une **Division de l'UISS = CHIMIE DU SOL.**
- La Commission III de l'AISS est transformée en une **Division de l'UISS = BIOLOGIE DU SOL.**
- La Commission VIII de l'AISS est transformée en une **Division de l'UISS = SOL ET ENVIRONNEMENT**

DISCUSSION

Les principaux points de discussion entre les participants des réunions de Moscou et Louvain-la-Neuve furent les suivants :

1 - Proposition de création d'une **Division 1 de l'UISS dénommée PÉDOLOGIE**. Cette Division regrouperait les activités scientifiques, très spécifiques de la Science du Sol, concernant : la morphologie et la micromorphologie des sols, la genèse des sols, la géographie des sols, l'écologie des sols, la classification et la cartographie des sols, la paléopédologie.
La Physique des sols serait la Division 2.
La Chimie des sols serait la Division 3.
La Biologie des sols serait la Division 4.

2 - Alternative à la proposition **1**:

+ proposition d'une **Division 1 de l'UISS dénommée MORPHOLOGIE ET GEOGRAPHIE DES SOLS (COUVERTURES PÉDOLOGIQUES)** ; cette Division regrouperait les activités scientifiques concernant : la morphologie, la micromorphologie et la géographie des sols ;
+ la Physique des sols serait la Division 2 ;
+ la Chimie des sols serait la Division 3 ;
+ la Biologie des sols serait la Division 4 ;
+ proposition d'une **Division 5 de l'UISS dénommée GENÈSE ET CLASSIFICATION DES (SYSTÈMES DE) SOLS** ; cette Division serait le cadre pour des activités conjointes de spécialistes en morphologie, physique, chimie, biologie des sols ; cette Division regrouperait les activités scientifiques concernant la genèse des sols, la géographie des sols, l'écologie des sols, la classification et la cartographie des sols, la paléopédologie.

3 - Pour la Minéralogie des Sols, deux alternatives :

+ La Division de Chimie du Sol de l'UISS est une **Division de CHIMIE ET MINERALOGIE DU SOL**, avec une Commission de Minéralogie du sol.
+ On crée une Division spécifique pour la Minéralogie du sol.

4 - Toutes les activités scientifiques concernant les Commissions IV et VI de l'AISS (IV = Fertilité du sol et nutrition des plantes ; VI = Technologie du sol) sont regroupées dans une **Division de l'UISS intitulée AMÉNAGEMENT DES SOLS ET DES TERRES ; la fertilité du sol et la technologie du sol sont des Commissions de cette Division. Cette proposition a l'accord des participants de la réunion de Louvain-la-Neuve, mais doit encore être discutée avec les spécialistes concernés.**

5 - Pour les activités concernant le Comité Permanent de l'AISS « Education en Science du Sol » et le Comité Permanent de l'AISS « Histoire, Philosophie et Sociologie de la Science du Sol », trois alternatives sont proposées :

+ **les maintenir en tant que Comités Permanents de l'UISS ;**

+ **constituer deux Groupes de Travail de l'UISS ;**
+ **constituer deux Commissions de l'UISS, qui seraient placées dans le cadre soit d'une Division Pédologie soit d'une Division Genèse et Classification des sols.**

En résumé, il y a 2 propositions principales pour les Divisions de l'UISS :

Proposition 1 :
Pédologie
Physique du sol
Chimie et minéralogie du sol
Biologie du sol
Aménagement des sols et des terres
Sol et environnement

Proposition 2 :
Morphologie et géographie des sols (couvertures pédologiques)
Physique du sol
Chimie du sol
Minéralogie du sol
Biologie du sol
Genèse et classification des (systèmes de) sols
Aménagement des sols et des terres
Sol et environnement

Des combinaisons entre les deux propositions sont possibles.

Il est clair que la discussion doit se poursuivre, pendant le Congrès de Montpellier et après : de nouvelles contributions sont attendues et seront bienvenues.

IBU
Internationale Bodenkundliche Union
***
Wissenschaftliche Organisation: Vorschläge für eine Diskussion

von **Alain Ruellan**, Präsident der IBG
im Namen des Verwaltungsausschusses

Parallel zur Arbeit an den Statuten für die IBU, die jetzt angenommen wurden, haben sich der Verwaltungsrat und das Komitee für Statuten und Struktur der IBG mit der zukünftigen wissenschaftlichen Organisation der IBU beschäftigt.

Zu diesem Thema wurden zwei Tagungen veranstaltet, die erste in Moskau (Rußland) vom 10. bis13. Jänner 1996 und die zweite in Louvain-la-Neuve (Belgien) vom 8. bis 10. Oktober 1997.

Diese Tagungen waren durch intensive und konstruktive Diskussionen und Beiträge gekennzeichnet.

Über viele Punkte wurde eine Einigung erzielt, manche müssen noch diskutiert werden. Daher muß die Diskussion unter allen Mitgliedern der IBU weitergeführt werden. Der 16. Bodenkundliche Weltkongreß bietet dazu eine gute Möglichkeit, obwohl bei diesem Kongreß noch keine endgültigen Entscheidungen getroffen werden. Es ist vorgesehen, Entscheidungen bezüglich der wissenschaftlichen Organisation der IBU erst in der Beiratssitzung zwischen 1998 und 2002 (Kongreß in Thailand) zu treffen.

Als Basis für zukünftige Diskussionen finden Sie nachstehend eine Zusammenfassung der wichtigsten Resultate der Tagungen von Moskau und Louvain-la-Neuve:

GEKLÄRTE PUNKTE

In folgenden Punkten konnte in Moskau und Louvain-la-Neuve Übereinstimmung erzielt werden:

- Die Anzahl der Abteilungen in der IBU soll so gering wie möglich sein (Artikel G1 der Satzung der IBU: *die wissenschaftliche Arbeit der IBU wird von Abteilungen durchgeführt, die durch ihre jeweilige Fachrichtung definiert werden...; Die Abteilungen bestehen aus Kommissionen und Arbeitsgruppen*).

- Die neuen Kommissionen der IBU (innerhalb der Abteilungen) sollen alle Aktivitäten umfassen, die derzeit in den Aufgabenbereich der Kommissionen und Subkommissionen der IBG fallen.
- Die IBG-Kommission I wird **zur IBU-Abteilung = BODENPHYSIK**
- Die IBG-Kommission II wird zur **IBU-Abteilung = BODENCHEMIE**
- Die IBG-Kommission III wird zur **IBU-Abteilung = BODENBIOLOGIE**
- Die IBG-Kommission VIII wird **zur IBU-Abteilung = BODEN UND UMWELT**

DISKUSSIONSPUNKTE

Die Haupt-Diskussionspunkte zwischen den Teilnehmern der Tagungen in Moskau und Louvain-la-Neuve betrafen folgende Themen:

1. Vorschlag einer **IBU-Abteilung 1, PEDOLOGIE**. Diese Abteilung würde jene wissenschaftlichen Aktivitäten umfassen, die die Bodenmorphologie und -mikromorphologie, die Bodenbildung, die Bodengeographie, die Bodenökologie, die Bodenklassifizierung und -kartographie und die Paläopedologie betreffen; diese spielen eine besondere Rolle in der Bodenkunde.
   Bodenphysik wäre die Abteilung 2.
   Bodenchemie wäre die Abteilung 3.
   Bodenbiologie wäre die Abteilung 4.

2. Als Alternative zu Vorschlag 1:
   + Vorschlag einer **IBU-Abteilung 1 namens BODENMORPHOLOGIE UND -GEOGRAPHIE**. Diese Abteilung würde jene wissenschaftlichen Aktivitäten umfassen, die die Bodenmorphologie, -mikromorphologie und –geographie

betreffen.

+ Bodenphysik wäre Division 2.
+ Bodenchemie wäre Division 3.
+ Bodenbiologie wäre Division 4.
+ Vorschlag für eine **IBU-Abteilung 5, namens BODENBILDUNG UND -KLASSIFIKATION**. Diese Abteilung würde den Rahmen für gemeinsame Aktivitäten von Spezialisten der Bodenmorphologie, der Bodenphysik und -chemie und der Bodenbiologie bilden. Sie würde jene wissenschaftlichen Aktivitäten umfassen, die die Bodenbildung, die Bodengeographie, die Bodenökologie, die Bodenklassifizierung und -kartographie und die Paläopedologie betreffen.

3. Für die Bodenmineralogie gibt es zwei Alternativen:
   + Die Kommission Bodenchemie wird zur **IBU-Abteilung BODENCHEMIE UND -MINERALOGIE**, mit einer Kommission für Bodenmineralogie.
   + Eine eigene IBU-Abteilung für Bodenmineralogie wird geschaffen.

4. Alle wissenschaftlichen Aktivitäten, die die IBG-Kommissionen IV (Bodenfruchtbarkeit und Pflanzenernährung) und VI (Bodentechnologie) betreffen, werden in einer **IBU-Abteilung BODEN- UND LANDBEWIRTSCHAFTUNG** zusammengefaßt. Bodenfruchtbarkeit und Bodentechnologie wären Kommissionen dieser Abteilung. Dieser Vorschlag wurde von den Teilnehmern der Tagung von Louvain-la-Neuve gutgeheißen, muß aber erst mit den betroffenen Fachgremien besprochen werden.

5. Für jene Aktivitäten, die die beiden ständigen Komitees für »Bodenkundeausbildung« und für »Geschichte, Philosophie und Soziologie der Bodenkunde« betreffen, gibt es drei alternative Vorschläge:
   + Aufrechterhaltung als ständige Komitees der IBU
   + Umwandlung in zwei IBU Arbeitsgruppen
   + Bildung von zwei IBU-Kommissionen, die einer Abteilung für Pedologie oder einer Abteilung für Bodenbildung und Klassifikation zugeordnet werden.

Zusammenfassung der zwei Hauptvorschläge für IBU-Abteilungen:

Vorschlag 1:	Pedologie
	Bodenphysik
	Bodenchemie und -mineralogie
	Bodenbiologie
	Boden- und Landbewirtschaftung
	Boden und Umwelt
Vorschlag 2:	Bodenmorphologie und –geographie
	Bodenphysik
	Bodenchemie
	Bodenmineralogie

Bodenbiologie
Bodenbildung und -klassifikation
Boden- und Landbewirtschaftung
Boden und Umwelt

Kombinationen dieser beiden Vorschläge sind möglich.

Es ist klar, daß diese Diskussion während des Kongresses in Montpellier und danach fortgesetzt werden muß: alternative Ideen als Beiträge zu dieser Diskussion sind willkommen.

10th International Soil Conservation Organization (ISCO) Conference »Sustaining the Global Farm – Local Action for Land Stewardship«

May 23-28, 1999, Purdue University, West Lafayette, Indiana, USA

The United States of America, in cooperation with its North American partners, is pleased to invite land and water conservation advocates, researchers, educators, policymakers, and practitioners throughout the world to participate in the 10th International Soil Conservation Organization (ISCO) Conference.

The program will encompass:

- Science and Technology for Conservation Planning and Assessment
- Soil Survey and Natural Resources Assessment for Environmental Protection
- Socioeconomic Elements of Land and Water Conservation
- Conservation Policy: A Basis for Action
- Conservation Action: Sustaining Our Land and Water

Participants will also have the opportunity to take part and actively shape the outcome of the conference through structured discussion sessions on the state of the global land resource and strategies to sustain it.

Also offered are pre-conference workshops covering GIS, conservation tillage, the Revised Universal Soil Loss Equation, or WEPP; pre-conference tours through the midwest or the Pacific northwest; and post-conference tours through Arizona or Hawaii.

Timetable and Deadlines:

Receipt of abstracts	October 1, 1998
Receipt of requests for travel assistance	October 1, 1998
Pre/post-conference tour deposit	December 1, 1998
Conference registration and payment	February 1, 1999
Workshop registration and payment	February 1, 1999
Full payment for tours	February 1, 1999

Information:

10th ISCO Conference USA
Attn: Mark Nearing
1196 SOIL Building
Purdue University
West Lafayette, Indiana 47907-1196
USA

Fax: +1-765-494-5948
Tel: +1-765-494-8673
E-mail: isco99@ecn.purdue.edu
Web Site: http://soils.ecn.purdue.edu/~isco99/
OR: http://128.46.135.45/~isco99

14º CONGRESO LATINOAMERICANO DE LA CIENCIA DEL SUELO
CLACS-99

Pucon, Chile, 8-12 de noviembre de 1999

Dpto. de Ciencias Químicas, Universidad de La Frontera
Av. Fco. Salazar 01145, Casilla 54-D
Temuco
Tel.: +56-45-325432/325420/325433; Fax: +56-45-325440/325950
E-mail: CLACS99@werken.ufro.cl; Servidor: http://www.ufro.cl/eventos/clacs99.html

Inicio de giras post-congreso: 13 de noviembre de 1999

➨ Devuelva el formulario de pre-inscripción/intención de participar en el CLACS-99, vía e-mail, fax o correo a la Secretaria CLACS-99 antes del 15 de junio de 1998. Con esta información Ud. será incorporado a un directorio y le permitirá recibir toda la información emanada de esta secretaria.
El resumen (1 página, máximo 2000 caracteres) y el texto completo (4 páginas, máximo 7500 caracteres) deben ser enviados a la Secretaria CLACS-99 antes del 15 de diciembre de 1998.
➨ A todos los autores cuyos papers han sido aceptados por el Comité Científico del CLACS-99 se les informará a partir del 15 de enero de 1999, y deberán enviar la ficha de inscripción, reserva de hotel y visita cientifica elegida impostergablemente, y pagar su derecho de inscripción antes del 30 de marzo de 1999.
➨ El programa y formularios de inscripción serán difundidos vía Servidor Internet. Si no dispone de acceso a internet, solicitar a la brevedad a la Secretaria CLACS-99 por e-mail, fax o correo el programa y formularios correspondientes.
➨ Todos los precios serán recargados en un 20% si el pago se recibe después del 30 de marzo de 1999.

Itilier Salazar-Quintana,
Presidente de la Sociedad Latinoamericana de la Ciencia del Suelo, y 14º CLACS-99

FORMULARIO DE PREINSCRIPCION
(Intención de participar)

Nombre:..... Apellido: .....

Institución:.....

Dirección:.....

.....

Ciudad:..... País: .....

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

E-mail: .....

Presentación oral ❑ Poster ❑ Comisión ❑

Titulo de la Presentación:

.....

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

COMMISSION VIII: »SOILS AND THE ENVIRONMENT«

(A Summary of the Position Paper)

PREAMBLE

Commission VIII »Soils and the Environment« was created officially at the closure of the 15th World Congress of Soil Science, in Acapulco; there was no opportunity to clarify the objectives of the Commission nor to canvass the interest of the ISSS members for this new Commission. Following the appointment of the vice-chairpersons by the Council, the Commission's officers of prepared a statement that defined their position and objectives for the future. This Position Paper was then circulated for

The next step is to extend the discussion to all members interested in the various aspects of the interactions between human activities and the environment, keeping a specific focus on soils. In order to initiate the process, it was asked from the Secretary-General to publish at length the Position Paper in order to prompt more effective discussion at the Commission meetings in Montpellier.

BASIC SOIL FUNCTIONS

Basic soil functions and subfunctions are discussed in the literature, namely:
* habitat diversity for biota in soils,
* habitat stability, including the buffering potential against rapid changes, and
* storage, transformations and transport in soils:
  - partitioning of water,
  - cycling of elements,
  - accumulation and dispersion of pollutants and wastes

Habitat diversity is determined by a number of specifics:
- at the regional level (by geographical location, climate, landscape, social economy,...),
- at the ecosystem level (by soil type, microclimate, plant cover, agricultural or industrial use,...), and
- at the local level (by typology of soil horizons, their physical and chemical status, and soil biota).

Ecosystem diversity is the range of natural habitats found in a region, a country and on the planet. Both space and time are important parameters to be considered in all investigations. Habitats share common soil functions; however, in order to understand how the habitats function, each of them has to be evaluated individually:

- in the range from macroscopic to microscopic scales, to account for the specific role and action of all interacting components,
- above and below the soil surface, as vegetation type and cover have a strong interaction with soil characteristics and properties, and
- at different temporal and spatial scales, in order to explain the evolution and/or transformations that occurred in specific situations under various influences or pressures.

Among the pressures on habitats, the human factor is paramount, involving the systems developed by human societies: agrosystems, urban systems, industrial and mining systems, ... Human activities affect not only the habitat in which the activities are conducted, but sometimes neighbouring and more distant ones. Examples of activities with short and long range impacts are: forestry and agricultural management for crop production, forest clearing for agriculture, introduction of non-native species, river damming, industrial activities (building and operating industrial plants, extracting stone, gravel and sand), and noxious gas or particle emissions, transfer and deposition via the atmosphere or streams, and routine human activities themselves.

Human intervention has generally attempted to obtain a greater net energy production by simplifying the systems, thus reducing the variety of habitats, which could result in restricted biodiversity and reversibility. Agricultural and forested landscapes of high-yield crop and tree production are thus »managed ecosystems« with a biodiversity level that is likely lower than in a virgin ecosystem. Because the cost-benefit analysis of human interventions rarely takes into account the effects on biodiversity, the evaluation is often incomplete.

Habitat stability is required to some degree for normal operation of any ecosystem. Each of the earth's ecosystems consists of animals, plants and microorganisms, and the sunlight, air, water, soil and minerals they need to survive. These systems exist in a delicate balance, with each component of the system playing a specific role. At the same time, habitat entities (involving all physical, chemical and biological parameters) are in an evolving dynamic equilibrium, changing in response to natural influences. Opposite concepts of stability and evolution can co-exist, because changes under natural evolution are observed at the century- or millenium-scale. The concept of stability discussed here is in reference to much quicker and more drastic changes. Abrupt disturbance of the dynamic equilibrium can cause a cascade of disruptions, threatening parts or the whole ecosystem. Stability may be modified, even temporarily, in a very obvious way (e.g. erosion, acidification,...) whereas in other cases, the changes will not be clearly or immediately detectable (e.g. following application even in small amounts of compounds such as pesticides or heavy metals). Effects of minimal additions may be cumulative, and detrimental in the long term.

Habitats, and especially their soil component, have some buffering potential against pressures/influences. Resilience of the soil, i.e. its inertia or response to external action or its ability to recover from a stress, is a very important characteristic that results from the interaction of the physical, chemical and biological components. Resilience differs greatly from soil type (= habitat) to soil type, and with the external pressure applied: for example, soils developed on granitic parent material have less resilience than clay soils developed on calcareous parent material. Lakes on granites are vulnerable to acidification, to the point they can become virtually biologically dead.

Resilience is also affected by climatic conditions. In the tropics, soil processes are much faster than under more temperate climates, and the buffering capacity is smaller: the rate determining factors may be related to the physical, chemical and biological properties of the soils, but also to time. For example, when a tropical forest is broken for agriculture, soil temperature increases considerably, leading to a rapid oxidation of organic matter, and decreasing support for life.

Obviously, the nature of the human activity is important. Some ecosystem resilience remains when forests are cleared for agriculture; when agricultural soils are lost to urbanization or industrialization, there is little potential for recovery. Reclamation and rehabilitation of industrial land for recreation and gardening is a rather new challenge, but almost no reclamation returns land to agroforestry use (reclamation of mine tailings could be considered such a reversal). Soils can be used for production of commodities outside the scope of »classical« agriculture. Alternate uses for agricultural products are being proposed (e.g. production of biomass for biofuel).
Two challenges can therefore be identified:

- prevention or at least control of soil degradation
- soil remediation to restore soil properties and productivity

Human activities affect both habitat diversity and stability: soil formation, transformation, deformation or destruction can occur.Under ideal management conditions, soil wealth (ability for sustainable productivity for known and unknown purposes) is borrowed by humans, who return some of the extracted material to the soil. Under improper conditions, when the output is larger than the input, the soil is mined, and over time its nutrient and diversity capitals are depleted, leading ultimately to desertification or sterility. In the case of abuse, there is a need for remediation or restoration. On the contrary, when the input/output balance is properly adjusted, under an acceptable land use, the soil may then be considered to be at equilibrium (again the dynamic equilibrium).

Storage capacity for water and nutrients largely depends on the type of soil habitat. Transfer capacity for water, solutes, and suspensions is determined by the spatial organization of soil volumes and soil habitats in the drainage basin.
a) *Partitioning of water,* i.e. the amount of water that will ultimately percolate through the soil compared to the amount that will run off at the surface or evaporate is strongly dependent on land use, soil type and soil cover, and climate: at any site, during the year, precipitation is partitioned into different forms. For example, during the growing season, a certain proportion of water is transpired by crops, and another is »lost« by evaporation from the soil surface. The remainder or excess water above soil storage capacity, moves off the site to recharge ground and surface water supplies. Energy levels of water at the soil surface determine erosion potential.
b) *Cycling of elements* has to be considered not only from the point of view of the internal mechanisms of adsorption/release, but also from the soil taken as both a source and a sink for human activity. Materials or nutrients should not be exported or mined, but rather borrowed from the soil, i.e. returned to the soil so that the net balance or equilibrium within the whole soil ecosystem is not lastingly affected. In other words, the process should be sustainable.
c) *Transformations, transfers and storage* of anthropogenic compounds added intentionally or accidentally to the soil are largely determined by the distribution of habitats, the soil characteristics, and the conditions of water movement. Soil pollution possibly precedes water pollution, and therefore it may be more appropriate to ensure that pollutants remain stored in the upper horizons of the soil rather than migrating to surface and groundwater.

Ensuring the sustainability of its soil, water and nutrient resources is a major objective for all countries. Use of resources will be acceptable only at levels or intensities where functions continue to operate.

Sustainability can be defined as the ability to indefinitely meet demands for output *at socially acceptable economic and environmental costs*. Socio-economic development and protection of resources are not fundamentally incompatible. Although complementarity between the two goals is not limitless, it

is not a zero-sum game: for development to be sustainable, it must meet the needs of the present without compromising the ability of future generations to meet their own needs. The ideal of sustainability varies also from country to country, reflecting different environmental endowments, economic conditions and social preferences: the concept is a directional indicator rather than a benchmark, and therefore cannot be measured against some absolute state.
In the area of agricultural production, countries have tried to meet their national requirements for food and fibre. The question is whether progress towards this goal is being achieved at the cost of degrading the natural capital (e.g. productive soil, clean water, natural ecosystems) in the process, depriving future generations of an important source of welfare.

Promotion of sustainable agriculture and rural development has been discussed in relation to land resource management, deforestation, fragile ecosystem management, desertification and drought, biodiversity, and quality and supply of freshwater resources.

Many natural resources, particularly plant and animal species, and the habitats that sustain them, are unique, and no man-made substitutes can compensate for their loss. Natural resources are usually separated into »non-renewable« and »renewable« resources. Although the distinction is not always clear-cut, non-renewable resources are those for which the rate of replenishment is zero or so slow that it does not take place within an economic timeframe. Renewable resources can be further divided into non-extinguishable and extinguishable.
Non-extinguishable resources are not diminished by human activity, such as the infrared radiation of the sun, the kinetic energy of the wind, or the potential energy of a head of water. Most plants and animals are extinguishable and can recover from a pressure or shock only as long as their numbers remain above some critical level. A habitat or an ecosystem (a community of life forms and its physical and chemical environment) can also be extinguished if its capacity for renewal is exceeded.

Soil does not fit readily into any of the above categories:
- susceptibility of soils to erosion differs among soil types,
- at low rates of erosion, most farm plots could be cultivated indefinitely, whereas at high rates, topsoil would eventually disappear,
- *soil productivity being determined by a combination of physical, biological and chemical attributes*, some changes (e.g. in the soil flora) can be more easily reversed than others (e.g. toxin build-up).

Implicit in many of these statements is the assumption that the consequences of human activity on the environment are well understood and therefore also predictable. How ecological systems adjust to stress imposed upon them (such as pollution) is often very complex. Some changes occur incrementally, others by sudden jumps in the level of damage. Some environmental processes are so complex that they are currently beyond the capacity of scientists to understand and model. Earth's climate is an example: long-term changes to the global climate would have a major impact on the environment and agriculture.

CONCLUSION

The mandate of the Commission needs to be defined in accordance with, and complementary to, those of other (Sub-)Commissions and Working Groups that look at other specific aspects of soil science. The general context is to consider soil components interacting with other environmental components. In other words, soil is part of an ecosystem at a macroscale.

More specifically, a key point is to consider the impacts of human activities on the soil, and vice-versa. Humans are part of the biota, an integral part to the ecosystems. In this respect, the notion of »habitat« which has been used appears to be more general and better adapted to this discussion than that of soil microscale systems. From this point of view, the classical functions of cycling and storage defined and studied by soil scientists need to be linked to other functions, through the study of interactions between human activities and the nature, diversity, and stability of soil habitats. The problem of soil biodiversity and human intervention is a topic that involves a number of disciplines. A more comprehensive approach to the understanding of these interactions requires increasing cooperation of soil scientists with other specialists, from areas such as ecology, sociology, and economics. Commission VIII could therefore be the forum where these issues will be discussed.

March 2, 1998

C. De Kimpe
Z.Qiguo
B.P. Warkentin
F. Andreux

KUBIENA AWARD

Dr. Colin Chartres , the Chairman of the Sub-Commission B Kubiena Award Committee, has recently announced that the Committee has unanimously decided to award the 1996 Kubiena Medal to Professor **Ewart Adsil FitzPatrick** from the University of Aberdeen, Scotland.

Professor FitzPatrick has made great contributions to Soil Science (books on Introduction to Soil Science) and to Micromorphology (»Soil Micromorphology« textbook). These books have contributed to soil science through their well considered text, excellent illustrations, careful explanations of soil properties and have shown the possibilities that micromorphology can offer as an explanatory tool. He (and his students) also have been instrumental in the development of new methods. These include work on sample preparation techniques, in submicroscopy (via the Working Group on Submicroscopic Techniques), in hydraulic conductivity studies (methylene blue, with Lorna Mackle) and lastly with application of Remote Sensing Techniques in quantification of micromorphological features (with Fabio Terribile).

Arrangements are being made to have the medal presented to Professor FitzPatrick during Symposium No. 30 at the next International Congress of Soil Science in Montpellier in August 1998.

The Kubiena medal is presented quadrennially.

ISSS Sub-Commission F Land Evaluation
Congress: Geo-Information for Sustainable Land Management (SLM)

17 to 21 August 1997, ITC, Enschede, The Netherlands

The congress dealt with the role of geographic information, particularly soil information, to support sustainable land management (SLM). There were a total of 125 keynote addresses and oral and poster presentations. They focused on concepts, user needs, SLM possibilities, a land use system approach to SLM, biophysical and socio-economic sustainability of land use systems, the integration of biophysical and socio-economic analyses, and on applications at regional, national, project and farm levels. Attention was also paid to the need for geo-information infrastructure, ie., a policy framework to ensure that geo-information can be absorbed and can make a cost-effective impact at all levels of planning, decision making and land management, while ensuring the integrity of the underlying data and the quality of the information. The potential role of remote sensing and geographic information systems was highlighted.

After the conference, a one-day field excursion was made to study dutch approaches to various scales of sustainable land management in Pleistocene sandy areas and on reclaimed marine sediments.

Key questions for debate, submitted to the participants by the chairman of Sub-Commission F at the opening of the conference, included:

- How can the perceived needs of land users be incorporated in the formulation of sustainability criteria?
- Where do top-down and bottom-up land use planning processes meet?
- How can the physical and economic processes pertinent to sustainable land management, the levels of spatial and temporal resolution, and the corresponding data to characterize these processes be identified?
- How can bridges be built between the scientific disciplinary models of natural phenomena and practical integral land use planning models for management and decision support?
- How can the biophysical carrying capacity of the land be matched with socio-economic sustainability?
- How can we cover the last mile of the information highway to the farmers in developing countries, who are hesitant to adopt recommendations derived from externally defined systems of land evaluation, preferring instead their own criteria and knowledge systems?
- How can we handle the institutional and administrative barriers such as standardization, legislation and quality control, which slow down progress of information and communication technology?
- Is Geo-Information currently adequate for sustainable land management? How can it be collected in a cost-effective and timely manner with remote sensing techniques?

In sixteen keynote addresses, as well as many oral and poster presentations these questions were analysed providing a valuable multidisciplinary insight into the complex challenges facing scientists, especially in the developing countries, who want to focus their research on the transition to more sustainable land management practices in rural areas. In organizing this congress, the ISSS Sub-Commission F was able to bring together a wide variety of relevant scientific disciplines and, in so doing, many ITC alumni from developing countries.

The congress demonstrated the usefulness of systems approaches (including geo-information systems

and remote sensing techniques) in enhancing the impact of soil and other geoscientific research on planning, designing and monitoring sustainable land use practices.

Among the 190 participants from 50 countries were representatives from the World Bank, FAO, IBSRAM, ISNAR, universities and research institutes. They contributed papers on criteria and indicators for sustainable land management and on new approaches to land evaluation and land use planning. About half the participants work in developing countries, and they provided valuable contributions based on their practical experience. Forty-two participants from developing countries were sponsored by the Netherlands government, ITC and the private sector.

The congress was hosted by ITC to commemorate the inauguration of its new building in Enschede.

The proceedings are published on CD-ROM as part of the special 1997-3 issue of the ITC Journal. Free copies of the CD-ROM which includes 16 recent FAO publications pertinent for SLM and various other relevant publications will also be available from FAO (AGLS, Rome) and during the ISSS World Conference in Montpellier, France, at the ITC/ISRIC booth. The CD-ROM includes the 700 names and addresses of colleagues who participated or have shown interest in the Conference and are therefore the "back bone" of ISSS Sub-Commission F (Land Evaluation) activities in the coming years. All papers can be consulted on the Internet: http:/www.itc.nl/ha2/suslup.

Klaas Jan Beek
Chairman, ISSS Commission F Land Evaluation
ITC – P.O. Box 6 - 7500 AA Enschede
The Netherlands

Working Group on Pedometrics (WG-PM)

Since the 1994 ISSS Congress in Acapulco, Mexico, much has happened. First, a Special Issue on Fuzzy Sets in Soil Science has recently been published in Geoderma volume 77. This is the Proceedings of a Joint Symposium held by the Working Group and Division S5 of the SSSA in November 1995. Interest in this publication has been strong. The Proceedings of the Symposium on Soil and Water Quality at Different Scales jointly held in 1996 by three working groups is soon to be published in Nutrient Cycling in Agroecosystems.

The major event I wish to report on here is the 2nd International Conference on Pedometrics (Pedometrics '97) held at the University of Wisconsin in Madison, USA from August 18-20. Some 60 delegates from a dozen countries took part.

The program consisted of morning oral presentations with poster presentations and round-table discussions in the afternoon. The talks had two main themes. There were methodological reviews of familiar topics such as soil geostatistics and sampling and reviews of newer topics such as neural networks and fractals. the second major theme focussed on spatial prediction methods. It was clear that there were two (somewhat distinct) approaches to spatial prediction. The first is the geostatistical approach – using various forms of kriging. The second approach is what I call the »clorp(t)« approach, named from Jenny's equation. In this approach prediction of soil properties is made from other environmental

variables, principally derived from digital elevation models. the synthesis of these two approaches was not really discussed. This will be an area for much further research in Pedometrics.

Random spatial patterns of Pedometricians in a Wisconsin prairie after observing a soil pit during the post-Pedometrics'97 field trip (Photo: Courtesy of Zueng-Sang Chen)

The poster and discussion sessions were excellent. The discussion was open, detailed and thought-provoking. I would certainly recommend this format for future conferences. All in all the format of the Conference was a great success and much of that is due to Kevin McSweeney. Thanks Kevin. The final afternoon was spent in the field looking at soil profiles in a prairie environment, nitrogen modelling and ended up with a very pleasant visit to a vineyard.

The 25 or so papers from the Conference are currently being reviewed and will soon appear in a Special Issue of *Geoderma*.

In 1998 the Pedometrics WG will assemble in Montpellier. We are holding a One-day Symposium on Soil Geostatistics on August 19, prior to the World Congress of Soil Science. This has been kindly organised by Marc Voltz.

The plans for the next two International Conferences are well in hand. The 3rd International Conference, ISSS-PM'99, will be held in Sydney on September 27-29, 1999. The 4th International Conference, organised principally by Marc Van Meirvenne, will be held in Gent in 2001.

I will conclude with the following poem from my Dutch friend. It essentially focuses on what we do

not know about soil – the fundamental cause of the variability – is soil formation a divine process, or a chaotic process or is it just clorpt?

OIL neSCIENCE

SSoil variability –
A multiform jewel
Or a capricious pig
In a heterogeneous poke?
God tossing the dice
Across the earth's felt
Games and throws of craps
Since time was created
The crazy paving of
An unknowable artisan.
Or a nonlinear god
Toying with
Pedogenic parameters
Out on the edge?
Chaos realised
Over and again.
Or is it simply
Clorpting away
According to a plain
Old-fashioned determinism
With unknown factors
Yet to be revealed
By further understanding
And meticulous measurement?
And in this nescient state
Can we husband it
To a centimetre?
Or is the soil's diversity there
To protect us
- From ourselves?

David van der Linden

Newsletter of the Working Group

It was resolved at he 1994 ISSS Congress in Acapulco that a Newsletter of the Working Group for communication among its members, as initiated by Professor McBratney be continued and be published at least twice a year. The name PEDOMETRON or _ÅÄÏÌÅÔÑÏÍ, first suggested by Professor McBratney, was formally accepted as the title of the newsletter. Since 1994, about six issues have been published and distributed to members. Dr. Inakwu Odeh has kindly been editing the Newsletter.

Alex B. McBratney

SOIL AND ENVIRONMENTAL CHEMISTRY WORKSHOP

Bellingham, USA

The Soil and Environmental Chemistry Workshop took place during the general meeting of the Pacific Northwest Regional Section of the Association of Official Analytical Chemists (AOAC INTERNATIONAL) at the campus of Western Washington University in Bellingham, Washington, USA on June 26-27, 1997. Western Washington has a beautiful campus overlooking Bellingham Bay. Pre-meeting training courses were held on June 25.

Some of the participants at the AOAC Soil and Environmental Chemistry Workshop.

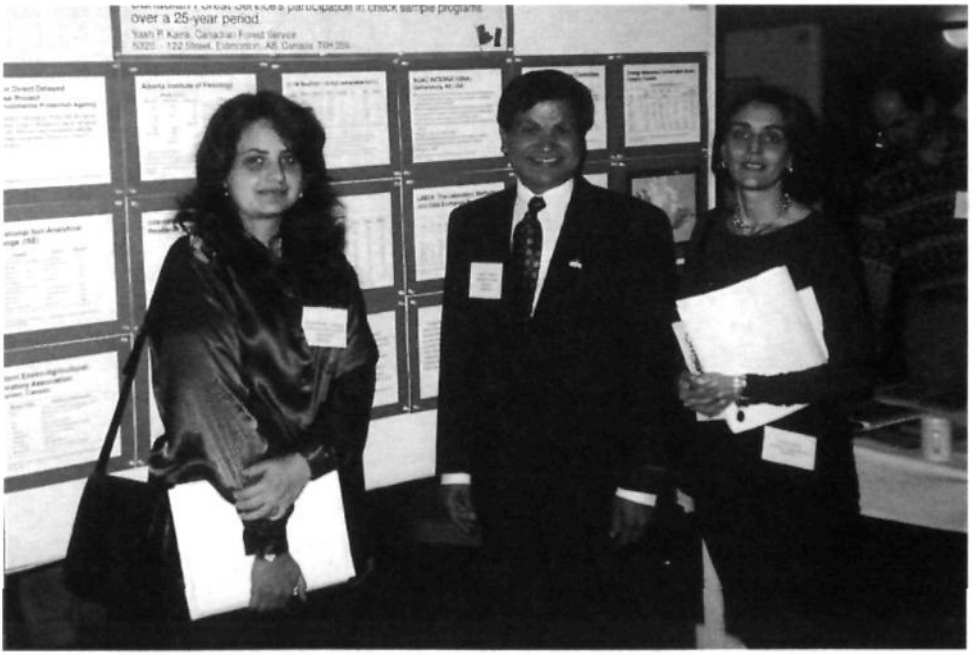
The general meeting consisted of the following nine component workshops:
Food Chemistry and Mycotoxins, General Chemistry, Metals Chemistry, Microbiology, Microscopy, Organic Chemistry, Pesticide Residues, Pharmaceutical Chemistry, and Soil and Environmental Chemistry. The Soil and Environmental Chemistry Workshop program included presentations on sulphur determination for soil fertility and plant nutrition research, use of ion exchange resin technology in agriculture (current development and future application), key issues in Indian ecology, and soil digestion with quantitative trapping of silica for ICP analysis. The program also included a panel discussion on »To scoop or not to scoop, that's the question.« The planning committee, chaired by Lyn Faas, is to be complimented for an outstanding meeting. The next meeting will be held at the University of Puget Sound, Tacoma, Washington, USA, June 11-12, 1998. Further information is available from Steve Pope, EPA Region X, 7411 Beach Drive East, Port Orchard, WA 98366, USA; Phone (360) 871-8717; Fax (360) 871-8747; E-mail: pope.steve@epamail.epa.gov.

Yash P. Kalra,
Edmonton, Alberta, Canada

5th INTERNATIONAL SYMPOSIUM ON SOIL AND PLANT ANALYSIS

Bloomington, Minnesota, USA

The 5th International Symposium on Soil and Plant Analysis was held at the Radisson Hotel South and Plaza Tower in Bloomington, Minnesota, USA, August 2-7, 1997. It was sponsored by the Soil and Plant Analysis Council, Inc., Athens, Georgia, USA. More than 150 delegates from 34 countries, from Argentina to Zambia, participated in this biennial event. The objective of the Symposium was to bring together agricultural and natural resource scientists from around the world to disseminate information on methodology, terminology, interpretation, and application of soil, plant, and other agricultural analyses for the purpose of efficient resource management and environmental protection. The Symposium provided the most comprehensive coverage of soil and plant analysis techniques in the world. The program theme was »The promise of precision - past, present, and future.« Presentations by internationally recognized scientists in the plenary sessions focused on soil sampling and nutrient recommendations, analytical methodologies and management approaches for phosphorus and micronutrients, and soil and plant analysis methods. Two of these addressed »Precision agriculture - what's in the future?« and »Agriculture and change – the promises and pitfalls of precision.« About 120 papers were presented in four poster sessions.



One of the poster papers described the check sample programs in which the Canadian Forest Service has participated over a 25-year period.

The five training sessions included data management in precision agriculture, soil extraction with ion exchange resins, greenhouse media extraction methods and recommended nutrient ranges, laboratory management (team building and conflict resolutions), and plant analysis (sampling, preparation, interpretation, and recommendations). Seven exhibitors provided valuable support to the Symposium. The

three professional tours (precision agriculture, laboratory visits, and environmental areas) gave attendees an opportunity to see some of the resources in the Minneapolis area. I took the Precision Agriculture tour. It included on-farm visits to observe equipment applying variable rates of agricultural chemicals, real-time harvesting equipment, and techniques to generate soil and crop yield maps.

The J. Benton Jones, Jr. Award was presented to Wayne E. Sabbe, Director of the Arkansas Soil Testing Program and Professor of Agronomy at the University of Arkansas, Fayetteville, for his contributions to the science of soil and plant analysis and his long-term participation in the Council's activities. The award honors a Council member who has made outstanding contributions to soil and plant analysis. Presentation of this award is a tradition at the International Symposia the Council sponsors, and Wayne is the fifth recipient. The previous recipients of this prestigious award are J. Benton Jones, Jr., USA (1989), Victor J. G. Houba, the Netherlands (1991), Yash P. Kalra, Canada (1993), and Nat Dellavalle, USA (1995).

The proceedings of the plenary and poster presentations will be published in 1988 as a special issue of the Communications in Soil Science and Plant Analysis. The Organizing Committee did a superb job of overseeing arrangements. Ann Wolf, Council President was the Program Chair. Bob Beck, Council Vice President was Chair of the Local Organizing Committee, and Mary Banaszewski managed most of the arrangements and registration. The next symposium will be held at the Brisbane Hilton Hotel, Brisbane, Queensland, Australia, March 22-26, 1999. The theme is »Opportunities for the 21st century - Expanding the horizons for soil, plant, and water analysis.« Two councils are sponsoring the symposium: Soil and Plant Analysis Council, Inc., USA and the Australian Soil and Plant Analysis Council. Further information on the Symposium is available from: The 6th International Symposium on Soil and Plant Analysis c/o Australian Convention and Travel Services Pty Ltd, GPO Box 2200, Canberra ACT 2601, Australia; Phone 61 2
6257 3299; Fax 61 2 6257 3256.

Yash P. Kalra,
Edmonton, Alberta, Canada

3rd International Conference on Soil Dynamics

Tiberias, Israel, August 3-7, 1997

Under the Auspices of the Agricultural Engineering Department, Auburn University,USA, International Soil Science Society ISSS, International Soil Tillage Research Organisation ISTRO,Israeli Association of Agricultural Engineering IAAE,
National Soil Dynamics Laboratory NSDL, USA, and the Society for Engineering in Agricultural, Food and Biological Systems (ASAE), about 80 participants from 18 countries discussed during this workshop about soil dynamic processes in unsaturated and structured soils both from the engineering as well as from the soil physical point of view. Traction and Compaction, Soil Mechanics, Tillage Tools, Soil structure, Soil Machine Interaction, Soil Measurement Properties and Cultural Practices were the main topics, which were covered by more then 50 lectures and about 30 posters.
The interaction between soil engineering and soil physical approaches for sustainable agriculture and adjusted tillage tool applications were intensely discussed and some major open questions defined. From the soil physical point of view the interaction between soil strength and stress /strain induced alterations of physical properties during dynamic loading by also including the slip effect became a major point of discussion. The Critical State Soil Mechanics approach may help to predict and to under-

stand shear and stress processes in soils, as was also shown by several lectures. The complete proceedings will be published in a special issue by Elsevier in 1998.

During the conference also a field trip was organized which also included some historical sites and ended in the Technion, the Israeli Institute of Technology in Haifa, where very impressive experiments and agricultural machines were demonstrated.
The next international workshop on soil dynamics will be held in Adelaide/Australia in 2000.

Rainer Horn
Chairman Commission I, Soil Physics ISSS

11th World Fertilizer Congress of CIEC

Gent, Belgium, September 1-13, 1997

The 11th World Fertilizer Congress of CIEC (Centre International des Engrais Chimiques) has been organized by Prof. Dr. ir. O. Van Cleemput (Department of Applied Analytical and Physical Chemistry) and by Prof. Dr. Ir. G. Hofman (Department of Soil Management and Soil Care) of the University of Gent, in collaboration with CIEC.

The congress was entitled: »Fertilization for Sustainable Plant Production and Soil Fertility«. It was held in the Aula of the University of Gent from September 7-13, 1997. The Congress was attended by more than 250 scientists from 70 different countries. Sponsorship was obtained from 10 organizations, which made it possible to invite about 25 scientists from developing countries.

The introductory lecture was given by Dr. R. Brinkman from FAO. The programme consisted of nine sections:
- Nutrient inputs by fertilizing materials
- Input and management of animal manure and other organic materials

- Input of nutrients from industrial sources
- Nutrient dynamics in the soil-plant ecosystem
- Nutrient losses to ground- and surface waters
- Nutrients to and from the atmosphere
- Spatial variability of nutrients
- Legislations about the use of fertilizers
- Advisory systems.

Each session was introduced by an outstanding invited scientist, giving the state of the art of the topic, followed by oral presentations. Furthermore, about 250 posters were presented, dealing with the different subjects of the congress.

A half day excursion was organised with opportunities to visit:
(1) some laboratories of the Faculty of Agricultural and Applied Biological Sciences of the University of Gent.
(2) the Provincial Research Centre for Agriculture and Horticulture, Beitem
(3) the Plant Breeding Institute, Centre for Agricultural Research, Merelbeke.

The application of fertilizers in agriculture has to be done on a scientific basis so that sustainability of this important primary sector can be maintained. This main objective of CIEC, the promotion of the rational use of fertilizers, has been treated in detail during the congress.

Georges Hofman
O. Van. Cleemput

The participants of the World Fertilizer Congress

AOAC INTERNATIONAL ANNUAL MEETING AND EXPOSITION

San Diego, USA

The 111th Annual Meeting and Exposition of the Association of Official Analytical Chemists (AOAC INTERNATIONAL) was held in San Diego, California, USA, September 7-11, 1997. The spectacular fall weather of California greeted the 986 conferees from around the globe. In his opening address, Raymond M. Matulis hailed »the power of volunteerism.« Fifteen technical symposia and a regulatory roundtable were offered, featuring 97 international speakers. About 300 papers were presented in 11 poster sessions. The following seven training courses were offered: Basic statistics for analytical science, statistics for method development, ISO 9000 (ISO/IEC Guide 25 and the laboratory), interlaboratory analytical method validation, implementing good laboratory practices, quality assurance for analytical laboratories, and quality assurance for microbiological laboratories. Exposition of laboratory equipment and services was of great interest to a number of chemists. The AOAC is dedicated to analytical excellence. It operates three methods validation programs. The soil pH methods have been adopted. The following soil analysis methods are currently under the AOAC validation procedure in collaboration with the Soil Science Society of America: nitrate-N, Bray-P, ammonium acetate-K, and DTPA-extractable micronutrients.

In addition to other honors, Fellow Awards were presented to nine analytical chemists (Canada 1, the Netherlands 1, and the USA 7). The Fellow Award is presented in recognition of ten or more years of meritorious service to the Association. The AOAC has 4,068 individual members and 171 sustaining members from about 100 countries. Visit the World Wide Web site (http://www.aoac.org) to stay current on AOAC activities. The 112th Annual Meeting and Exposition will take place at the Queen Elizabeth Hotel, Montreal, Quebec, Canada, September 13-17, 1998. Further information is available from: AOAC INTERNATIONAL Meetings and Education Department, 481 North Frederick Ave., Suite 500, Gaithersburg, MD 20877, USA; phone (301) 924-7077; fax (301) 924-7089; E-mail: meetings@aoac.org.

Yash P. Kalra, Edmonton, Alberta, Canada

International Conference: »The Mountain Soils of the Mediterranean: Genesis and Conservation«

Tbilisi, Georgia, October 20-24, 1997

The International Conference »The Mountain Soils of the Mediterranean: Genesis and Conservation« was held at the Georgian State Agrarian University in Tbilisi, on October 20-24, 1997.

The Conference was organized by the Georgian State Agrarian University, the National Committee of the Georgian UNESCO Programme on »Man and Biosphere« (MAB), the Georgian Academy of Agricultural Sciences and the Georgian Soil Science Society. The Conference was supported by the UNESCO.

The conference was attended by about 50 Georgian soil scientists and 15 guests from other countries (Bulgaria, Greece, Israel, Italy, Russia) and the Secretary-General of the International Society of Soil Science (ISSS), Prof. Winfried E.H. Blum. Representatives of the Government (Parliament, Georgian Academy of Sciences, Ministry of Environment, Ministry of Agriculture and Food, Department of Land Management, Department of Forestry) and non-government organizations (Georgian Geographic Society and Georgian Botanical Society) took part in this conference.

At the plenary meeting, reports were given on the general state of the Mediterranean soil cover, soil research etc. Questions referring to the genesis of mountain soils in the Mediterranean area as well as the problems of their conservation were dealt with. The reports covered the experience of different countries and broadened the exchange of information on soil conservation between these countries.

40 papers were presented at the Conference, among others: »Soil as a Filter, Buffer and Transformation Medium« (Prof. Winfried E.H. Blum), »The Mountain Soils of the Eastern Mediterranean: Achievements and Problems« (Prof. Tengiz F. Urushadze, Georgia), The Present Condition and Perspectives of the Investigation of Mountain Soils« (Prof. S. Zonn, Russia), »on Mediterranean Soils Conferences: A Brief History« (Prof. Dan H. Yaalon, Israel), »The Soils under Fagus Forest in the Northern Apennines of Italy« (Prof. F. Ugolini, Italy), »Evolution Tendencies on Limestone Parent Material of Two Red Mediterranean Soils of Northern Greece (Prof. A. Spyropoulos, Greece), »The Genesis of Reddish Soils of the South Crimea« (Prof. G. Dobrovolsky, Russia) and others.

At the Conference, Prof. G. Dobrovolsky (Russia), Prof. S. Zonn (Russia) and Prof. D.H. Yaalon (Israel) received a honorary doctorate of the Georgian State Agrarian University, as Prof. W.E.H. Blum had, half a year ago.

Three one-day excursions were organized for the participants of the conference, in order to give them an impression of Georgian mountain soils.

Tengiz F. Urushadze, Georgia

Study of Mountain Soils Promoted by the Georgian Society of Soil Science

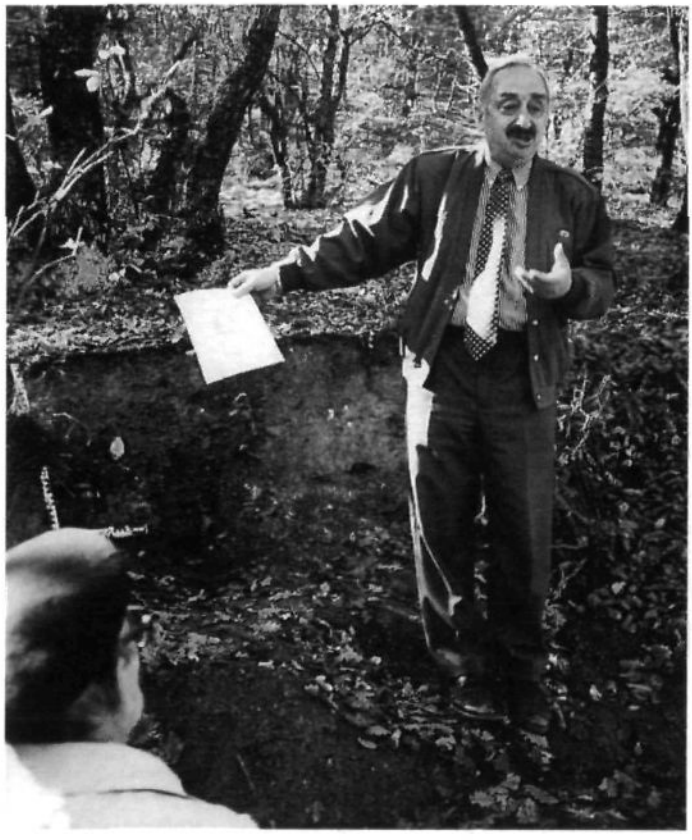
The newly independent countries of the former Soviet Union are now making great efforts to establish contact with foreign countries and to join the circuit of international symposia. From October 20 to 24,

Presidium of the Conference: Prof. T. Urushadze, Prof. W.E.H. Blum, Prof. N. Karkashadze, Prof. G. Dobrovolsky

1997, the Georgian State Agrarian University in Tbilisi hosted a symposium on *Mountain Soils of the Mediterranean – Genesis and Conservation*, generously supported by UNESCO and local organizations. Besides the ISSS Secretary-General, visitors from Italy, Greece, Israel, Bulgaira and Russia attended and presented papers, translated into Russian. Graduate research studies by young and promising Georgian soil scientists were translated from the Georgian or Russian languages into English.

In addition to the three days of paper presentations, the energetic Prof. Tengiz Urushadze, who has written books on the Soils of Georgia and on Mountain Soils of the USSR, now Provost of the Agrarian University and President of the Georgian Society of Soil Science, arranged two one day field trips to see the soils and sights of the region. Located in the southern part of the High Kavkaz Mountains, Tbilisi and some other intermontane valleys have indeed a typical xeric (mediterranean) moisture regime though udic moisture regimes prevail in most of the Georgian mountains. However, besides being calcareous, the foreign visitors had difficulties in comprehending what the term Cinnamonic, used for most of the different soils examined, implies. Many soils have suffered considerable degradation due to insufficient care and protection of the sloping grounds, but well tended fertile fields were also evident. The concluding resolutions included recommendations for closer coordination with other groups dealing with degradation, conservation and and management of mountain soils in the eastern Mediterranean region.

D.H. Yaalon, Jerusalem, Israel



Near Tbilisi: brown forest soil (explained by T. Urushadze)

Muchrani (East Georgia). discussion on the meadow – cinnamonic soil

I CONGRESO LATINOAMERICANO DE QUIMICA AMBIENTAL
I Iberamerican Congress on Environmental Chemistry.

The First Iberoamerican Congress on Environmental Chemistry was successfully held at the 'Termas de Jahuel' (near San Felipe, Chile) from 19 to 22 October 1997. At the same time, the First Chilean Symposium on Environmental Physic and Chemistry was held.
*These Congresses were conducted by Prof. Raúl G.E. MORALES, from the University of Chile, San*tiago. The Nobel Laureat Paul CRUTZEN held the opening lecture on the topic of Atmospheric Chemistry. An International Committee consisting of scientists from ten countries helped with the organization, in coordination with the National Committee. Drs. D. ADAMS (USA), R. FERNANDEZ (Argentina), J.F. GALLARDO (Spain), and G. SANHUEZA (Chile/Venzuela) held lectures about the Geochemistry of Aquatic Ecosystems, Supercritic Fluids, Evolution of Water Chemical Composition in Mediterranean Ecosystems, and Production and Consumption of Ozone. 24 oral presentations and about 90 posters were presented, in the following fields: atmosphere, waters, soils, new materials, instrumental analysis, and education. More than one hundred scientists from ten American and European countries attended the Congresses. The next Iberoamerican Congress on Environmental Chem*istry is planned to be held in 1999, in Bariloche (Argentina).*

Meanwhile, an International Commission headed by Dr. Raúl MORALES (FAX: 56.2.6787274; E-MAIL: <RAULGEM@ABELLO.DIC.UCHILE.CL>) will coordinate the activities of the new Iberoamerican Society of Environmental Chemistry.

Juan F. Gallardo, Spain

PRIMER CONGRESO IBEROAMERICANO DE QUIMICA AMBIENTAL
PRIMERAS JORNADAS CHILENAS DE FISICA Y QUIMICA AMBIENTAL

Termas de Jahuel, Chile. 19 al 22 de Octubre de 1997

DECLARACION DE JAHUEL

La investigación sobre el medio ambiente y el desarrollo de políticas conducentes a resolver problemas ambientales regionales y locales están fuertemente sujetos a la naturaleza del medio geográfico, o sea, de las condiciones específicas de los medios físico, biológico y socio-económico, resultando esencial el establecer conexiones apropiadas y una adecuada difusión a nivel internacional.

En nuestra región existe un desarrollo incipiente, aún no sistematizado, de las Ciencias Ambientales, como resultante de un esfuerzo espontáneo de científicos en áreas básicas (Matemáticas, Física, Química, Biología) y afines a éstas (Agricultura, Salud, Ingenierías, etc.), para cuyo fortalecimiento es necesario estimular el crecimiento de grupos interdisciplinarios de alto nivel, en donde la participación de la Química Ambiental es esencial.

Como acción iniciadora de un proceso que compromete a nuestras diversas comunidades nacionales, consideramos de urgencia abocarnos a consolidar la Química Ambiental para el estudio del medio físico, de modo de establecer esa disciplina como un elemento clave en el desarrollo de soluciones basadas en el diagnóstico, evaluación, formulación de hipótesis y soluciones a largo plazo, sobre los diferentes problemas que afectan la atmósfera, el agua y el suelo de nuestros territorios.

Atendiendo a que no existen políticas estratégicas regionales, y sólo incipientemente nacionales por carecerse de una adecuada información sobre nuestros propios habitats, los gobiernos y las instituciones públicas de gestión ambiental deben basar sus decisiones a partir de estudios científicos propios de nuestras regiones y países, de modo que se sitúen en las verdaderas realidades que representan nuestros actuales problemas de contaminación ambiental, asumiendose los costos y compromisos internacionales en los mismos, a fin de alcanzar un crecimiento económico y social sustentable en el tiempo. Es por ello que se requiere iniciar un conjunto de acciones inmediatas sobre:

1. La conformación de grupos científicos organizados y de alto nivel en Química Ambiental.
2. Incorporar la Química Ambiental como disciplina prioritaria en los actuales sistemas de financiamiento y de políticas en Ciencia y Tecnología.
3. Generar programas de formación de recursos humanos competentes a diferentes niveles del desarrollo productivo público y privado.
4. Crear programas de investigación regionales y locales, con una adecuada transferencia al sector industrial.
5. Establecer los mecanismos para la cooperación inter e intra regional.
6. Desarrollar mecanismos de cooperación con los sectores gubernamentales y productivos.

NOMBRE:
PAIS:
FIRMA:

RED IBEROAMERICANA DE QUIMICA AMBIENTAL (RIQA)

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INTERNATIONAL SYMPOSIUM ON SOIL SYSTEM BEHAVIOUR IN TIME AND SPACE (VIENNA, AUSTRIA, November 19-21, 1997)

The International Symposium "Soil System Behaviour in Time and Space" was and organized by the Austrian Soil Science Society, the University of Agricultural Sciences in Vienna, and ISSS Commission V "Soil Genesis, Classification and Cartography". It was held in Vienna on the occasion of the 125 years' anniversary of the University of Agricultural Sciences in Vienna.

The Symposium was opened by the Rector of University Prof. Dr. L. Maerz, the President of the Austrian Soil Science Society Prof. Dr. E. Klaghofer, the President of ISSS Prof. Dr. A. Ruellan, the Secretary General of ISSS Prof. Dr. W.E.H. Blum, and the Chairman of Commissión V of ISSS Prof. Dr. V. O. Targulian.

The programme of the Symposium focused on 3 main topics of soil research. On the first day, the papers elucidated soil as a complex system, describing it as an open, multifaceted system of biospheric interactions and taking into consideration the specific aspects of soil components, as well as the time scale of processes and the spatial distribution of both. On this day, theoretical papers were successfully combined with experiment-oriented and practical ones. Both the general system approach and the

energy concepts were demonstrated for investigation of soils as complex systems of biotic and abiotic interactions. Soil physical characteristics, gas fluxes and soil covers themselves were analysed in spatial and temporal aspects. Pedogenic carbonates were shown to be used as a memory of soil processes in the High Arctic. Different aspects of human-induced changes of soils (contamination, cultivation and manure amendments) were shown in the context of general approaches to soil studies.

The topic of the second day included models of soil system processes, focusing on general aspects of modelling in soil science, as well as models for specific processes and case studies, based on experimental data. Different paradigms (linear, non-linear) for soil system modelling were discussed. Non-linear behaviour of soil systems during the Holocene was demonstrated. The numerous models concerning organic matter dynamics, water transport, moisture content, temperature and other soil characteristics were developed based on a large amount of data.

On the third day of the Symposium, papers dealt with the problem of how the World Reference Base for Soil Resources, its soil diagnostic characteristics and soil groupings were adapted to reflect the behaviour of soil systems in time and space. These papers included general approaches of the classification systems (WRB and Soil Taxonomy), the specificity of WRB on the national level (Austria, South Africa), the special WRB orders (Cryosols, Alisols) and some experimental data need to elucidate the problems of soil classification (on well-drained soils with redoximorphic features, paleosols and rejuvenated soils).

The list of Symposium participants consisted of 65 soil scientists from 21 countries. They touched the soil problems of all continents, including Antarctica, in 34 oral papers and 25 posters.

The participants of the Symposium

The Symposium papers were published in the form of extended abstracts in the Bulletin of the Austrian Soil Science Society.

The Symposium showed that nowadays we have an accelerating growth of experimental data on both stable and dynamic soil parameters, due to the active development of logger, remote sensing and computer technique, but that there also are numerous problems in the theoretical approach, with regard to the generalization of the data and the scientific orientation of future experimental studies.

The participants of the conference highly appreciated the efforts of the organizers and expressed their sincere gratitude to the University of Agricultural Sciences of Vienna, to the Austrian Soil Science Society and to ISSS.

V.Targulian, Moscow, Russia
S.Goryachkin, Moscow, Russia

Manejo Fisico de Suelos - Para Sustentabilidad del Recurso

The 1st. Course of Soil Physics for Postgraduates in Southern America had taken place at the Universidad de Chile, Valdivia in the Faculty of Forestry. From March,
9 - 14, 1998, 31 participants coming from Private Industry, Forestry Administration and State Institutes as well as from other universities and teaching centers received some more informations about Soil

Physics both from the theoretical as well as from the practical point of view by Prof.Dr.K.H.Hartge, Hannover, Prof.Dr.R. Horn, Kiel, Prof.Dr.A.Ellies /Valdivia and Prof. J.Gayoso/Valdivia. In the beginning and at the end of the course especially Prof.Dr.J.Schlatter but also Prof. Dr.V.Gerding /both from Valdivia informed about soil classification and soil use and forestry management as well as about the susceptibility of forest soils which also created several open questions but also showed some links to the given physical information.

The lectures in Soil Physics ranged from very basic physical properties up to stress/strain discussions in soils under various site and loading (harvesting) conditions and also included the problems of filtering/ decontamination of soils as well as the effect of soils, soil development and soil management on water, gas and heat transport.
During a field trip, methods to predict changes in site properties by easily available tests as well as by more sophisticated approaches were demonstrated and trained by the participants and were lateron also discussed and trained by some more data sets during 2 practical exercises in the laboratory.
Thanks to a very precise organisation and preparation of this course by Prof.Dr.J.Schlatter, - who has put in a lot of effort to start such new attempt to link very basic knowledge to scientific and to applied organisations - all participants were very pleased of having joined this week at the Universidad Austral de Chile and expressed their wish to repeat such course. Presumably the next course will be held in 2001 and will be also announced in the bulletin of the ISSS or ISSU.

Rainer Horn Chairman of Commision I: Soil Physics.

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

Brazilian Society of Soil Science

The new Directive Committee was elected at the 26th Brazilian Congress of Soil Science, held in Rio de Janeiro, Brazil:

President:	Dr. Antonio Ramalho-Filho
Vice-President:	Dr. José Roberto Rodrigues Peres
Vice-President:	Dr. Luiz Eduardo Ferreira Fontes
Secretary:	Dr. Antonio Carlos Ribeiro
Treasurer:	Dr. Elpídio Inácio Fernandes-Filho
Board Members:	Dr. Antonio Carlos Moniz
	Dr. Antonio Roque Dechen
	Dr. Egon Klamt
	Dr. Mauro Carneiro dos Santos
	Dr. Victor Hugo Alvarez

Dr. A. Ramalho-Filho

CANADIAN SOCIETY OF SOIL SCIENCE ANNUAL MEETING
Truro, Nova Scotia

The 43rd Annual Meeting of the Canadian Society of Soil Science (CSSS) was held at the Nova Scotia Agricultural College, Truro, Nova Scotia, August 17-21, 1997 during the 77th Annual Conference of the Agricultural Institute of Canada (AIC) and its affiliated societies. The »Welcome to Nova Scotia« opening reception on August 17 was an excellent opportunity to make new friends and become reacquainted with old ones. The theme for the overall conference, hosted by the Nova Scotia Institute of Agrologists, was »Who speaks for agriculture?« This topic was discussed by a panel of speakers during the August 18 morning plenary session involving all societies. The theme continued with a structured discussion and question /answer period. There was a lively exchange of ideas. On August 20, seven societies sponsored a joint session on alternative amendments in agriculture.

In addition to poster sessions, the societies held their oral presentations. The CSSS held the following technical paper sessions: organic matter and soil surfactants, compost and organic amendments, forestry/soil management, erosion/water quality, and soil fertility. The highlight of the meeting was the Awards Banquet at Pictou Lodge on August 19. At the banquet we were pleased to have Lee Sommers, President-Elect, Soil Science Society of America and Thomas Hall, Assistant Executive Vice President, American Society of Agronomy as our special guests. Gerald M. Coen was elected a CSSS Fellow in recognition of his exemplary contributions to soil science. The C.F. Bentley and President's Awards were presented to students in recognition of excellence in oral and poster presentations. Doug

Tyler, Minister of the Department of Agriculture and Rural Development and Greg Byrne, Minister of State for Mines and Energy were honored for their efforts to have the Holmsville soil declared a Provincial Soil of New Brunswick. In February 1997 New Brunswick became the first province in Canada to proclaim a soil a provincial symbol. Taumey Mahendrappa has been instrumental in this project.

Eric Beauchamp (right) receives gavel and CSSS presidency from outgoingpresident Yash Kalra

The post-conference tour included blueberry production sites.

The post-conference tour on August 21 explored Northwestern Nova Scotia. We saw shoreline erosion caused by the world's highest tides, dykeland soils formed by the Acadian settlers, horticultural crops, and geologic features such as the basaltic chain of Five Islands. The tour ventured into the highlands to view blueberry production and the panorama of Cape Split and the Bay of Fundy. Research trials and dykeland soils with their unique drainage system were discussed at the Nappan Research Farm of the Agriculture and Agri-Food Canada. We also visited a maple sugar camp. The tour finished with a barbecue and lobster boil in Pugwash from where Prince Edward Island could be seen across the Northumberland Strait.

Co-chairs Vernon Rodd and Phil Warman are to be complimented for organizing an excellent program. The next CSSS Annual Meeting will be held in conjunction with the 78th AIC Annual Conference at the University of British Columbia, Vancouver, BC, July 5-8, 1998. The theme of the conference is »Agriculture for a healthy society.« Information is available from Robert Blair (Phone 604 822-2355, Fax 604 822-4400, E-mail: blair@unixg.ubc.ca). Keep current with updated information as it becomes available by checking out our Internet Web Site (http://www.interchg.ubc.ca/aic98). To register electronically, go to the registration Web Site at
http://www.conferences.ubc.ca/AIC98.htm.

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Deutsche Bodenkundliche Gesellschaft (DBG)

Mit 1. Januar 1998 setzt sich der Vorstand bzw. der erweiterte Vorstand der DBG wie folgt zusammen:

Präsident:	Prof.Dr. Karl Stahr	
Vizepräsident/in:	PD. Dr. Karl Auerswald Prof.Dr. Monika Frielinghaus Prof.Dr. Martin Körschens	
Geschäftsführer:	Dr. Peter Hugenroth	
Mitglieder des erweiterten Vorstandes:		
Altpräsident:	Prof.Dr.Dr.h.c. Hans-Peter Blume	
I. Bodenphysik	Vorsitzender:	Prof.Dr. Kurt Roth
	Stellvertreter:	Prof.Dr. Bernd Huwe

II. Bodenchemie	Vorsitzender:	Prof.Dr. Martin Kaupenjohann
	Stellvertreter:	Prof.Dr. Ingrid Kögel-Knabner
III. Bodenbiologie	Vorsitzender:	PD. Dr. Ellen Kandeler
	Stellvertreter:	Prof.Dr. Franz Makeschin
IV. Bodenfruchtbarkeit u. Pflanzenernährung	Vorsitzender:	Prof.Dr. Wolfgang Merbach
	Stellvertreter:	Dr. Diedrich Steffens
V. Bodengenetik, Klassifikation u. Kartierung	Vorsitzender:	Dr. Herbert Sponagel
	Stellvertreter:	Prof.Dr. Reinhold Jahn
VI. Bodentechnologie	Vorsitzender:	PD. Dr. Gerd Wessolek
	Stellvertreter:	Prof.Dr. Stefan Gäth
VII. Bodenmineralogie	Vorsitzender:	Dr. Helge Stanjek
	Stellvertreter:	Dr. Peter Weidler
Bundesverband Boden e.V.:		PD. Dr. Karl Auerswald

Indian Society of Soil Science

The Council of the Indian Society of Soil Science has been reconstituted for the year 1998 as follows:

President:	Dr. D.K. Das
Vice Presidents:	Dr. M.C. Oswal and Dr. P.K. Chhonkar
Secretary:	Dr. G. Narayanasamy
Joint Secretary:	Dr. R.K. Rattan
Asst. Secretary:	Dr. A.K. Singh
Treasurer:	Dr. K.S. Uppal

Address:

Indian Society of Soil Science
Division of Soil Science and Agricultural Chemistry
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INDIA

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G. Narayanasamy, Hon. Sec.
New Delhi, India

Italian Society of Pedology
(Società Italiana di Pedologia - SIPE)

The Società Italiana di Pedologia was founded on December 9, 1997, with its seat in Palermo. The aim of the Society is to promote and develop studies and researches in the field of Pedology and to cooperate with other national and international scientific associations that operate in the same field.

For the period 1998 – 2000, the following Council was elected:

President:	Prof. Giovanni Fierotti (University of Palermo)
Vice-President:	Prof. Guido Sanesi (University of Florence)
Secretary/Treasurer:	Prof. Carmelo Dazzi (University of Palermo)
Members:	Prof. Paolo Baldaccini (University of Sassari)
	Prof. Andrea Buondonno (University of Caserta)
	Prof. Corrado Boundonno (University of Naples)
	Prof. Franco Previtali (University of Milan)

For further information please contact:
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c/o Istituto di Agronomia generale – Università
Viale delle Scienze
90128 Palermo
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Tel: +39-91-665-0247
Fax: +39-91-665-0229
E-mail: dazzi@mbox.unipa.it

Sociedad Mexicana de la Ciencia del Suelo

During the Annual Ordinary Assembly of the Mexican Society of Soil Science (MSSS) on November 14, 1997, the following Board was elected:

President:	Victor Ordaz Chaparro
Vice-President:	Jose Cisneros
Secretary-General	Prometeo Sánchez García
Treasurer:	Fernando de León
Secretary-Technical:	Edna Alvarez Sánchez
Secretary of Public Relations:	Ricardo Torres Cossio
Secretary of National and International Activities:	Francisco Gavi Reyes
Board Member:	Rogelio Oliver
Board Member:	Gaspar Romero

The address of the Mexican Soil Science Society is:

Universidad Autónoma Chapingo
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Apartado Postal 45
56230 Chapingo
México, MEXICO

Tel.: +52(595)46024 and Fax: +52(595)48076

Dr. Victor Ordaz Chaparro
Ph.D. Prometeo Sánchez García

Soil Science Society of South Africa

The new office-bearers of the SSSSA are:

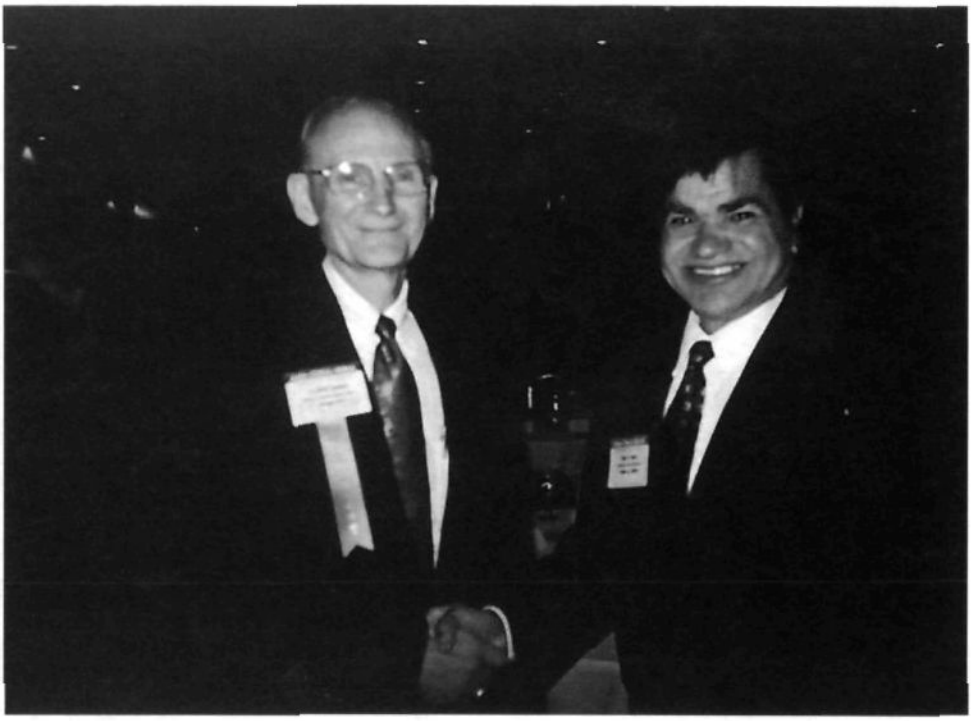
President:	Prof. C.C. du Preez (University of the Free State, Bloemfontein)
Vice-President:	Dr. J.J. Bornman (Kynoch Fertilizers, Johannesburg)
Secr./Treasurer:	Mr. T.E. Dohse (Institute for Soil, Climate & Water, Pretoria)
Committee:	Dr. J.F. Eloff (Institute for Soil, Climate & Water, Pretoria) Prof. M.C. Laker (University of Pretoria) Dr. B.M. Molope (Department of Agriculture, Pretoria) Mr. D.G. Paterson (Institute for Soil, Climate & Water, Pretoria) Dr. L. van Huyssteen (Nietvoorbij Wine Institute, Stellenbosch)

D.G. Paterson, Pretoria, South Africa

ANNUAL MEETING OF THE AMERICAN SOCIETY OF AGRONOMY

The 89th Annual Meeting of the American Society of Agronomy (ASA), 42nd Annual Meeting of the Crop Science Society of America (CSSA), and the 61st Annual Meeting of the Soil Science Society of America (SSSA) were held in Anaheim, California, USA, October 26-30, 1997. The majority of the activities were held at the Anaheim Convention Center. Additional meetings took place in nearby hotels. A total of 3,882 people attended the tri-societies meetings. The theme of the meeting, » Building strength through diversity«, was certainly reflected in the technical program. About 2,250 papers (by over 4,500 authors) were presented, including 1,360 as posters in 200 oral and 108 poster sessions. There were several workshops, professional tours, food functions, receptions, companion activities, award presentations, and committee meetings. In addition, there were several other functions, e.g., All California Mixer, Cornell Thirsty Bear Reception, South Dakota Jackrabbit Stampede, Ohio State Uni-

versity Buckeye Bash, and Michigan State University Spartan Reception. The Association of Agricultural Scientists of Indian Origin, the Association of Women Soil Scientists, the Association of Chinese Soil and Plant Scientists in North America, and other groups also held meetings. I found the ASA-CSSA-SSSA meetings to be the best value in scientific conferences.



D. Keith Cassel (left) and Yash P. Kalra, who have just completed their terms as presidents of the Soil Science Society of America and the Canadian Society of Soil Science, respectively, renew their friendship at the ASA meetings.

Gary H. Heichel, Ronald P. Cantrell, and Lee E. Sommers assumed 1997-98 presidencies of ASA, CSSA, and SSSA, respectively. William W. McFee, Elizabeth L. Klepper, and D. Keith Cassel completed their 1996-97 terms as Presidents. Presidents-Elect of these societies are H.H. Cheng, Lowell E. Moser, and Gary W. Petersen. The Societies' officers, program chairs, and headquarters staff are to be complimented for successful meetings. The next four annual meetings are scheduled for Baltimore, Maryland (October 18-22, 1998), Salt Lake City, Utah (October 31-November 4, 1999), Minneapolis, Minnesota (November 5-9, 2000), and Charlotte, North Carolina (October 21-25, 2001). For further information please contact: The American Society of Agronomy, 677 S. Segoe Rd., Madison, Wisconsin 53711-1086, USA. To access this information on the World Wide Web, point your browser to http://www.agronomy.org; http://www.crops.org; and http://www.soils.org.

Yash P. Kalra,
Edmonton, Alberta, Canada

INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE BEZIEHUNGEN

Soil Care and Sustainable Soil Use Convention Promoted

The significant 1994 report *World in Transition: Threat to Soils* by the German Advisory Council on Global Change (see note in New Publications, Bulletin ISSS, no. 89, p. 89-90, 1996) concluded by recommending that a new institutional framework is needed in order to call attention to the growing seriousness of the global threat to soils. The call has been taken up by a group of mostly German speaking nature conservationists, headed by Dr. Martin Held, from the Protestant Academy Tutzing, Germany, who have now – following an International Conference in Tutzing, April 1997 – prepared a draft for a comprehensive *»International Convention on Sustainable Use of Soils«* complementing the more limited *Combating Desertification Convention* of UNEP and the UN *Agenda 21 Sustainable Development Conference* of 1992.

Bringing required soil care and related soil topics into the public eye and to the attention of decision makers is a worthy project. The object is now to obtain comments and support for this initiative and eventually to present it to UNEP or some other UN organization for approval and ratification by countries.

The aims of an international SOIL CARE CONVENTION, to preserve soils as natural resource from further global degradation and as sustainable life-support system, need strong input from interested soil scientists. It differs from a previously adopted FAO *World Soil Charter* or the *European Council Soil Charter*, which are merely recommendations, by aiming at internationally binding rules and goals, similar to the *Preserving Biodiversity and Global Climate Change Conventions* now ratified by many countries and internationally binding.

Those interested should request copies and submit comments to Dr. Martin Held, Economics & Ecology, Protestant Academy Tutzing, D-82327 Tutzing, Gemany (Fax: +49-8158-996-426).

D.H. Yaalon

THE FARM PROGRAMME

The Farmer-centred Agricultural Resource Management Programme (FARM) is a child of the Earth Summit, held in June 1992 in Rio de Janeiro, Brazil, and was designed to support the implementation of Agenda 21, in particular in the sustainable use and management of agricultural resources.

FARM is a regional Programme of eight Asian countries (China, India, Indonesia, Nepal, Philippines, Sri Lanka, Thailand and Vietnam). It is supported by the United Nations Development Programme (UNDP) and implemented by the Food and Agriculture Organisation (FAO) and the United Nations Industrial Development Organization (UNIDO). The Programme is coordinated by a multi-disciplinary team from the FAO Regional Office for Asia and the Pacific, situated in Bangkok, Thailand.

The vision of the FARM Programme is of »Communities in rainfed areas in Asia practising sustainable agricultural resource management in partnership with development professionals and achieving improved household food security and a better quality of life.«

The mission of the Programme is to »Support improved sustainable agricultural resource management and the attainment of household food security through innovative approached in rainfed areas in Asia«.

For more information about FARM and its publications, contact: FARM Programme Coordinator, FAO/RAP, 39 Maliwan Mansion, Phra Atit Road, Banglumpoo, Bangkok 10200, Thailand. Fax: +66 2 2803240; E-mail: farmasia@ksc15.th.com.

European Research Network for the Evaluation and Conservation of Land Resources

Research into the evaluation, management and conservation of land resources is commonly carried out by specialist scientists in such fields as geology, soil science, biology, civil engineering, agriculture and forestry. There is ever increasing pressure on European landscapes, and in particular in Mediterranean countries, expressed as changes in hydrology, soil erosion, vegetation cover, biodiversity and land and water pollution. European land resources are thus subject to deterioration in their quality, a topic which is of continuing concern given the need to formulate sustainable land use systems.

The following Website has been established at the Department of Environmental Science, University of Stirling, Scotland with the aim of providing contact information for researchers with interests in the issues associated with the Evaluation, Conservation and Management of Land Resources:

http://www.stir.ac.uk/envsci/eclr/index.html

Research workers are encouraged to register following the brief instructions. Specific research interests can be recorded as well as cross references to home Web pages. The hope is that such an open-access register will foster contact and ultimate collaboration between a range of scientists concerned with land resource matters in Europe.

Professor Donald A Davidson
d.a.davidson@stirling.ac.uk

Professor Donatello Magaldi
magaldi@ing.univaq.it

Writing reviews: some personal observations[1)]

Ian Smalley

About 30 years ago Conyers Herring published his famous paper 'Distill or drown' in Physics Today. The message was that we need reviews; it's no good generating vast amounts of science if no-one is assessing and reviewing it. The paper was a plea for reviewers to be afforded more status, and for the compiling of reviews to be seen as a necessary activity. Without reviews and reviewers, said Herring, we will drown in a flood of science which we cannot possibly assimilate. Eugene Garfield, in one of his editorial essays for Current Contents in 1980 enthused about the Herring paper »Its hard to overstate the importance of review articles to the advancement of science. I have even gone so far as to propose that review writing be considered a profession unto itself«. This Garfield idea is attractive, but it is hard to see any soil science organisation raising the funds for a specialist reviewer to sort out all this wonderful science we are doing and to prevent more of it from being wasted.

There are two instant solutions to the problem of oversupply and confusion: the unappreciated reviewers could redouble their efforts and publish many more perceptive and comprehensive reviews; or the originators of the problem, the research scientists with their urge to publish could attempt to ensure that their work is more highly visible, that the primary publication is somehow followed up.

We need an example to illustrate some possibilities. I am currently involved in publishing a paper on fragipans in Geoderma. The journal is well chosen, it is a logical place for a paper on fragipans in loess soils, it is covered by the ISI and thus our paper will be noted in Current Contents and then in the Science Citation Index (SCI). What further action should or could we take to ensure that we have done as much is possible to make our results available to those scholars who might be interested in them? Many, many years ago when there were fewer journals and fewer investigators and one was not required to publish quite so many papers, it was a simple matter of sending a reprint to everyone who might be interested, but this is not an option now.

Since Herring, the electronic mist has risen up to cover us and to further obscure the scene. Actually the electronic revolution may not be as radical as it seems; I can access the Science Citation Index from my office computer and the searches and assessments are easier, but it is only a matter of degree; I am simply saved the effort of walking over to the library to look at the volumes. The on-line journal could make a difference to our lives. I was looking at Sciences of Soils (www.hintze-online.com/sos/) recently and browzing through the instructions to authors I noticed the requirement to keep references to a minimum. I don't know what to think about this; do we applaud this space saving measure or do we regret the idea that a thorough literature review is no longer required. Maybe a thorough literature review is no longer possible - it might be a luxury we can no longer afford. References are necessary if any scientific paper is to tie into the body of extant knowledge - without references we don't know where to put it or how to consider it. But if comprehensive reference lists are not longer to feature in research papers then the need for reviews grows even more pressing.

Fragipan is a good keyword - a lot of meaning is crammed into one term, and it is totally specific to soil science. An SCI search, using the term fragipan yielded 25 hits for the years 1994-1997, almost four years of coverage. These 25 papers were distributed among 15 journals; the most popular was the Soil Science Society of America Journal with 8 papers, next were Geoderma with 2 and Journal of Soils and Water Conservation also with 2. There was one paper from Quaternary International and one from

Holocene - showing that our term is crossing out of soil science and into Quaternary studies. The message is that if you want to study fragipans keep an eye on SSSAJ, and also hope that another review comes along fairly soon. Within the fragipan story there is one brilliant review: Grossman & Carlisle in Advances in Agronomy in 1969. This review gave structure to the whole field of fragipan study.

Asking some of the WWW Search Engines to look for fragipan can be interesting. NlightN(www.nln.com) is a useful search engine. It has been redesigned recently and now its role is to provide a gateway to other search engines. It does not function like MetaCrawler (metacrawler.cs.washington.edu) and select from other lists, it simply offers a menu of 25 search engines (from A2Z to Yahoo). Thus if we try fragipan in all available engines it will take a long time. Hotbot (www.hotbot.com), at the end of October 1997, produced 965 fragipan hits, but it seemed to me that few of them were directly useful.
We are back to needing our reviewers. Hotbot did provide a neat connection to the SSSA termlist - which contains a very good definition of fragipan.

The fragipan paper I mentioned earlier owes its existence to a review - well not exactly a review but a special SSSA volume on fragipans. Drs. Smeck & Ciolkosz assembled nine fragipan papers to give a late 1980s overview of the topic, and in one of the papers R.B. Bryant suggested that fragipan formation may be facilitated by hydrocollapse in suitable soil systems. Having access to a laboratory full of consolidation testing machines we were in a position to test the Bryant hypothesis and produce some data to support it. I would argue that our work owes its existence to the review volume which contained the suggestion. *I* fact *I* think that the entire topic of fragipan formation pivots on the classic *1969* review by Grossman & Carlisle. I suppose you could say that all of evolutionary biology pivots around the classic 1859 review by Charles Darwin. We need more reviewers, and we need more reviews. Perhaps the ISSS can do something to push the reviewers towards respectability.

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Smeck, N.E. & Ciolkosz, E.J. eds. 1989. Fragipans: Their Occurrence, Classification, and Genesis. Soil Sci. Soc. Amer. Spec. Publ. 24, 155 p.

[1] Based upon a Guest Editorial in New Zealand Soil News, Volume 45, Number 4, August 1997, p. 123.

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

D.R. Nielson received the Dr. honoris causa of the Universitaet fuer Bodenkultur (University of Agricultural Sciences), Vienna, Austria, in October 1997 for his outstanding contributions to soil physics.

Prof.Dr. Dobrovolsky, the President of the Russian Society of Soil Science (Dokuchaev Society), **Prof.Dr. S.V. Zonn**, Moscow State University, and **Prof. Dr. D.H. Yaalon** received the Dr. honoris causa of the Georgian State Agrarian University in Tbilisi, Georgia, in October 1997, for their outstanding contribution to soil science.

N.C. Uren, School of Agricultural Sciences, La Trobe University, Australia, has been awarded the 1997 C.S .Piper Prize by the Royal Australian Chemical Institute. The award is for the best published original research work carried out mainly in Australia in the fields of soil chemistry or the mineral nutrition of plants.

M. A. Arshad has been elected a Fellow of the American Society of Agronomy in recognition of his distinguished contributions to soil science and agronomy in Canada and the USA as well as to agricultural development in Nigeria, Kenya and Pakistan.

Yash P. Kalra, Past President of the Canadian Society of Soil Science and a member of the Board of Directors, Soil and Plant Analysis Council was elected a Fellow of the AOAC INTERNATIONAL (Association of Official Analytical Chemists) at the 111th Annual Meeting in San Diego, California, September 7-11, 1997. He also was appointed Chair (1997-2000) of the AOAC Methods Committee on Environmental Quality. At the 89th Annual Meeting of the American Society of Agronomy in Anaheim, California, October 26-31, 1997, he received the Outstanding Scientist Award of the Association of Agricultural Scientists of Indian Origin.

John Ryan, who is currently working as a soil scientist with the International Center for Agricultural Research in the Dry Areas in Aleppo, Syria, received the ASA's International Soil Science Award.

IN MEMORIAM

Prof. Paul Schachtschabel

Am 4. Feburar 1998 verstarb unser Ehrenmitglied Professor Dr. Dr. h.c. Paul Otto Schachtschabel nach einem erfüllten Leben für die Wissenschaft im Alter von fast 94 Jahren. Bis zu seiner Emeritierung im Jahre 1971 war er Direktor und Leiter des Institutes für Bodenkunde der Technischen Universität Hannover. Mit ihm verliert die wissenschaftliche Bodenkunde eine ihrer großen sie prägenden Persönlichkeiten.

Geboren am 4. Juni 1904 in Gumperda(Thüringen), studierte Paul Schachtschabel von 1923 bis 1929 in Jena Chemie, Mineralogie und Physik, und promovierte dort auch 1929 bei Prof. Linck mit einer Dissertation über die Dehydratisierung und Rehydratisierung des Kaolins im Fach Mineralogie. In dieser Arbeit wies er nach, daß sich die durch Erhitzen von Kaolin erhaltenen Zersetzungsprodukte unter hydrothermalen Bedingungen im Autoklaven wieder zu Kaolinit vereinigen und schuf damit die experimentelle Grundlage für weitere Tonmineralsynthesen.

Nach Tätigkeiten als Laborleiter in der Zementindustrie, als Chemiker bei den Carl-Zeiss-Werken und bei der Landwirtschaftlichen Versuchsstation kehrte er 1935 an die Universität Jena als Assistent im Agrikulturchemischen Institut zurück. Dort habilitierte er sich 1939 mit seiner Schrift über die Sorption der anorganischen und organischen Kolloide des Bodens für die Fächer Bodenkunde und Pflanzenernährung. In dieser bahnbrechenden Arbeit, die seinen wissenschaftlichen Ruf begründete, wies er nach, daß die Bodenaustauscher die Kationen der Bodenlösung unterschiedlich stark sorbieren und weitete diese Erkenntnisse zur Bestimmung des Anteils der einzelnen anorganischen und organischen Austauscher an der Sorption der Nährstoffkationen aus. Er verstand aber gleichermaßen, wichtige Erkenntnisse bodenkundlicher Grundlagenforschung der landwirtschaftlichen Praxis nutzbar zu machen. Die von ihm entwickelte und nach ihm benannte Methode zur Bestimmung des H-Wertes und damit des Kalkbedarfs ist so frappierend einfach, daß sie nach nunmehr weit über 50 Jahren immer noch Verwendung findet.

Nach Zwischenstationen bei der Landwirtschatftlichen Versuchsstation Hohenheim und im Agrikulturchemischen Institut der Universität Göttingen wurde P. Schachtschabel 1948 zum Professor und Direktor des Institutes für Bodenkunde der damaligen Hochschule für Gartenbau und Landeskultur (die später in der Universität Hannover aufging) berufen und war in dieser Funktion bis zu seiner Emeritierung im Jahre 1971 tätig.

In diese Zeit fallen eigene sowie gemeinsame Arbeiten mit seinen 20 Doktoranden (von denen 8 später selbst auf Professuren berufen wurden) über die Nährstoffe Magnesium, Kalium, Ammonium, Phosphor und Mangan, über das Eisen im Boden, über tonmineralogische und bodenphysikalische Probleme sowie über gärtnerische Erden, die Ursachen der Obstbaummüdigkeit bis hin zu Profiluntersuchungen an Marschen, Schwarzerden und Pseudogleyen. Über 80 Veröffentlichungen in internationalen Zeitschriften zeugen von der großen Breite seines Wirkens.

Paul Schachtschabel hat sich in der Deutschen Bodenkundlichen Gesellschaft (DBG) als langjähriger Vorsitzender der Kommission für Bodenchemie, als Vizepräsident und auch als langjähriger Mitherausgeber ihres Organs, der Zeitschrift für Pflanzenernährung und Bodenkunde engagiert. Gleiches gilt für den Verband der Landwirtschaftlichen Untersuchungs- und Forschungsanstalten (VDLUFA), deren Fachgruppe für Pflanzenernährung und Bodenkunde er leitete und deren Fachgruppe für Bodenuntersuchung er 25 Jahre hindurch angehörte, zuletzt als Mahner vor Überdüngung unserer Böden. Prof. Schachtschabel war auch ein begnadeter Lehrer der Bodenkunde (anfangs auch der Chemie und Geologie). Seine lebendigen, anregenden, mit Bonmots und aufmunternden Einlagen gewürzten Kollegs sind seinen Hörern unvergeßlich. Generationen von Studierenden kannten und kennen aber den **Scheffer/Schachtschabel** als deutschsprachiges Standardwerk der Bodenkunde, das er von der 3. bis zur 13. Auflage entscheidend geprägt hat. Bis ins hohe Alter hat er sich für dieses Werk engagiert. Die Auslieferung der 14. Auflage zu erleben, für die er noch das Stickstoffkapitel bearbeitet hatte, war ihm nicht mehr vergönnt.

In Würdigung seiner großen Verdienste zum Wohle der deutschen und der internationalen Bodenkunde verlieh ihm die Agrarwissenschaftliche Fakultät der Universität Kiel 1964 die Ehrendoktorwürde und der VDLUFA 1968 die Hugo-Neubauer-Auszeichnung. Die DBG ernannte ihn 1973 und die Internationale Bodenkundliche Gesellschaft 1980 zu ihrem Ehrenmitglied. Paul Schachtschabel war ein herausragender Wissenschaftler, ein engagierter Lehrer, ein stimulierender Kollege und eine beeindruckende Persönlichkeit; in diesem Sinne ist ihm ein bleibendes, dankbares Gedenken sicher.

H.-P. Blume, Kiel

Reeshon Feuer

Dr. Reeshon Feuer, 80, died on March 29, 1997. Dr. Feuer, who was born on January 11, 1917, in Marlow, New Hampshire, USA, received his BS and MS degrees from the University of New Hampshire and his PhD from Cornell University. During and subsequent to his career at Cornell, he worked for the USDA Bureau of Soils & Conservation Services and served as Rice Production Technologist for the International Rice Research Institute. As a result of his nine years of work with the Ministry of Agriculture, Philippines National Production Program, the Philippines moved from being a rice importing country to being a rice exporting country. In addition to his work with IRRI, he maintained an extensive career in agricultural consulting, travelling and working internationally in over a dozen countries.

From: The Ithaca Journal, April 1, 1997

Prof. Dr. Ivan Garbuchev (1924-1997)

Bulgarian Soil Science suffered a heavy loss on October 30, 1997 when Professor Dr. Ivan Garbuchev died at the age of 73.

He was born in v. Malinovo, Bourgass District, and received his academic education at Harkov's Agricultural Institute in the Soviet Union. During his stay in the United Kingdom, he specialised in the problems of agrochemistry; research in the field of phosphoric fertilisation strongly influenced his future work. Over the years, Prof. Dr. Garbuchev established himself as a competent researcher. As director

of the N. Poushkarov Institute (1964-1977), and as President of the Bulgarian Society of Soil Science (1965-1975), he took an active part in the organisation of modern soil science and the agrochemical management of Bulgarian agriculture. Prof. Dr. Garbuchev was extremely productive as a scientist. He published more than 100 scientific papers and several monographs covering a wide range of topics. His Ph.D. dissertation »Management of the Phosphate Status of the Main Bulgarian Soils« made him a well known scientist.

Prof. Dr. Garbuchev also was an active member of many scientific unions, such as the International Society of Soil Science (1980-1985), the American Society of Soil Science and the International Organisation of Mineral Fertilisers.

His work will live on and will be appreciated by the coming generations.

R. Dilkova, Bulgaria
Vice-President, BSSS

Joseph Hulme Moolman

Hulme Moolman, President of the Soil Science Society of South Africa, passed away on October 24, 1997, at the age of 47, after a long struggle against brain cancer. He received his tertiary education at the University of Stellenbosch, obtaining his Ph.D. in Soil Science in 1982 for the thesis »The implementation of a determinstic model to characterize the relationship between irrigation return flow and the process of river mineralization.«

He started his career as a researcher in soil science in the then Western Cape Region of the Department of Agricultural Technical Services at Elsenburg, Stellenbosch. After 10 years at Elsenburg, he joined the Hydrological Research Unit of the Department of Geography at Rhodes University in Grahamstown. In 1985 he returned to Stellenbosch as senior lecturer. In 1989 he became Professor and Head of the Department, a position which he held until his death.

Hulme Moolman was an outstanding researcher, as was evident by the high standards of his publications and the quality of the papers which he presented at SSSSA congresses. At the 1980 congress, he received the bronze medal for the best paper presented by a researcher younger than 30, while at both the 1987 and 1992 congresses, he received a silver medal for the best overall paper. The Fertilizer Society of South Africa also honoured him with a silver medal for his research. This concentrated on the quality of irrigation water and its effect on soil and plants, especially grapevines, for which he deservedly received generous funding, especially from South Africa's Water Research Commission.

Hulme was an exceptionally loyal and highly valued member of the Soil Science Society of South Africa, which he joined in 1973. He served as council member, vice-president and president of the SSSSA. Hulme was editor/co-editor of the Society's newsletter for two periods and also represented

the Society on the editorial committee of the South African Journal for Plant and Soil. In 1996 the Society honoured him with a silver medal for his service to the SSSSA and his contributions to soil science in general. Hulme's dedication was epitomized by the valuable contribution which he still made at his last SSSSA council meeting, only a few weeks before his death. His untimely passing leaves a large gap in soil science circles in South Africa.

Finally, Hulme Moolman will be remembered as a dedicated family man and a true Christian who set a wonderful example to others.

D.G. Paterson, Pretoria, South Africa

Corneliu Răută

Prof. Corneliu Răută died unexpectedly on April 3, 1998.

Prof. Răută was born on October 17, 1928, graduated from the College of Soil Science of the Moscow State University, and got his PhD in 1982, at the Agricultural University of Bucharest, Romania.

He successively worked as head of the soil survey team within the Design Institute for Land Planning, head of the Agrochemistry Research Laboratory in the Research Institute for Horticulture and Viticulture, director and then general director of the Central Institute for Agronomic Research. Between 1994 and 1998, Corneliu Răută was President of the Academy of Agricultural and Forestry Sciences. In 1969, Corneliu Răută played an important role in the establishment of what is now the Research Institute for Soil Science and Agrochemistry. He became the first director of this institute, a position which he held until the last day of his life.

In the first years of his research activity Corneliu Răută was interested in soil fertility as related to grape and vegetable cropping. Soon, he became aware of the increasing importance of research on soil pollution and established, in 1973, a new department within the institute, devoted to this field of science. Corneliu Răută and his co-workers carried out a broad range of research work concerning chemical pollutants, oil residues, acid rain, urban and livestock residues, mining and industrial waste dumps, coal surface mining, etc. Closely related to pollution, Professor Răută developed and recently extended the National Soil Quality Monitoring System, in correlation with the European network. He published a great number of scientific articles, monographs, and textbooks.

Corneliu Răută was between 1976 and 1985 Vice President and between 1985 and 1994 President of the National Romanian Soil Science Society.

He took part in a series of international projects on heavy metal pollution, soil monitoring, soil vulnerability and »the chemical time bomb«. One of the major outputs of these activities was the World Map of Status of Human-Induced soil Degradation, published by ISRIC, to which he contributed the data of Romania.

The too early decease of Professor Răută interrupted a fruitful activity. His co-workers and all soil scientists in this country will certainly continue on the way he has opened and keep alive the memory of Corneliu Răută.

Dr. R. Lăcătusu, Romania

Prof. George Kenyon Rutherford

Professor George Kenyon Rutherford was born in 1925 in New Zealand. His scientific life spanned five decades and almost as many continents. After earning a B.Sc. degree in Chemistry and Geology and an M.Sc. in Geology from the University of New Zealand at Canterbury, he went to Norway, where he earned a Diploma in Agriculture from the Agricultural Academy in Oslo and then, in 1959, a Ph.D. in Agricultural Science from the University of Norway at Vollebekk for his research on the formation of forest soils.

Following research positions in Trinidad and Australia, Ken joined the Department of Geography at Queen's University, Ontario, Canada, as an Assistant Professor in 1963. From that date on, he was a prominent and active member of the University. He was promoted to Professor in 1970 and granted the title of Professor Emeritus in 1992.

Prof. Rutherford quickly established himself as a leading scholar in the field of soil science and enjoyed a well-deserved international reputation. The author of three books and over a hundred articles, chapters and technical writings, he had a major impact on his chosen field. His field research on the properties of soils took him to many different parts of the world including the Caribbean, Australasia, Polynesia, Nepal, Israel, Greenland and various parts of Europe. His early research focused on the formation and weathering of tropical soils in the context of agricultural development. However, he was probably best known internationally for his contributions to our knowledge of clay mineralogy. In his capacity as Chair of the UNESCO International Working Group in Soil Micromorphology, he also played a leading role in the development of the field of soil and sediment microscopy.

Ken Rutherford served two separate terms as President of the Canadian Society of Soil Science, he was an Associate Editor of GEODERMA, and had served as a member of, or advisor to, a number of international organizations.

Apart from his commitment to scientific research, his most appreciated talent was his unwavering dedication to the education of students. His teaching was always at the centre of his academic work and he was greatly admired and respected by the many students he taught and supervised.

Professor Rutherford was truly a citizen of the world, which was reflected in his journey through life, in his work and academic career, in his internationalist outlook and concern for the social well-being of others, and even in his own family where his five , now adult children are spread to several corners of the earth. His was a varied and productive life lived to the full and he will be sorely missed.

John Holmes, Queen's University, Ontario, Canada

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

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1998

International Symposium on Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes, Vienna, Austria, July 13-17, 1998.
Information: Mr. Wolfgang Summer, Pachmuellergasse 1/20, 1120 Vienna, Austria, Tel/Fax: +43-1-815-6223; E-mail: summer@aon.at.

6th International Symposium on Earthworm Ecology - ISEE6, Vigo, Spain, July 1998.
Information: Dr. D.J. Díaz Cosín, Dpt. Biología Animal I - Universidad Complutense, 28040 Madrid, Spain; Tel: +34-13944953; Fax: +34-13944947; E-mail: dadíco@eucmax.sim.ucm.es;
or:
Dr. S. Mato, Dpt. Recursos Naturales y Medio Ambiente, Facultad de Biología, Lagoas-Marcosende; 36200 Vigo (Pontevedra), Spain; Tel: +34-86812583; Fax: +34-86812556; E-mail: smato@uvigo.es

Canadian Society of Soil Science Annual Meeting, Vancouver, British Columbia, Canada, July 5-9, 1998.
Information: R. Blair, Tel: (+1)-604-822-4400.

2nd International Conference on Climate and Water, Espoo, Finland, August 17-20, 1998.
Nea Helenius, Helsinki University of Technology, Water Resources Engineering, Tietotie 1, FIN-02510 Espoo, Finland; Fax: +358-9-451-3827; E-mail: nhelenius@ahti.hut.fi.

XVIth World Congress of Soil Science, Montpellier, France, August 20-26, 1998.
Information: XVI World Congress of Soil Science, Congress Secretariat, 1101, Avenue Agropolis, 34394 Montpellier Cedex 5; France; tel: (+33)67 04 75 38; fax: (+33)67 04 75 49

Symposium sur le »***Rôle du marché dans les réussites et les échecs de la gestion durable des ressources***«,
organisé par l'alliance pour un monde responsable et solidaire et son chantier SOLS, pendant le 16ème Congrès Mondial de Science de Sol, 20-26 août 1998.

Symposium on the »***effect of the market on the success and failures of the sustainable management of resources***«,
organized by the alliance for a responsible and united world and its Soil Campaign, at the 16th World Congress of Soil Science, 20-26 August 1998.

Information: Prof. Dr. Rabah LAHMAR, fph, 38, rue Saint Sabin 75011 Paris; Tel: +33(0)1 43 14 75 75 et +33(0)2 33 29 33 94; fax: +33(0)1 43 14 75 99; et +33(0)2 33 29 33 94; e-mail: rabah@echo.org.

International Conference on Indicators for Sustainable Forest Management, Melbourne, Australia, August 24-28, 1998.
Information: Margaret Scarlett, Managing Director, The Conference Organisers Pty Ltd, PO Box 1127, Sandringham VIC 3191, Australia; Tel: +61-3-9521-8881; Fax: +61-3-9521-8889; E-mail: conforg@ozemail.com.au.

British Society of Soil Science Autumn Meeting, Belfast, U.K., September 6-9, 1998.
Information: Dr. Jim Stevens, Dpt. of Agric. and Environmental Science, The Queen's University of Belfast, Newforge Lane, Belfast BT9 5PX, U.K.; Tel: +44-1232-255-353; Fax: +44-1232-662-007; E-mail: Stevensj@dani.gov.uk.

International Conference »Flow and Deformation in Biology and Environment« Prague, Chech Republic, September 14-16, 1998.
Information: Dr. Jiri Blahovec, Conference FDBE, Chech University of Agriculture, 16521 Prague 6 - Suchdol, Czech Republic; Tel: +4202-2438-4281; Fax: +4202-2092-1361; E-Mail: blahovec@tf.czu.cz.

International Symposium on Sustainability of Chestnut Forest Ecosystems, Catania, Italy, September 18-23, 1998.
Information: Prof. Salvatore Leonardi, Istituto Chimico, Facoltà di Ingegneria, Università di Catania, viale Andrea Doria, 6-95125 Catania, Italy; Tel: +39-95-25-64-56; Fax: +39-95-25-64-50.

International Conference and Special Workshops: Groundwater Quality: Remediation and Protection, Tuebingen, Germany, September 21-25, 1998.
Information: Conference Secretariat GQ'98, c/o Lehrstuhl fuer Angewandte Geologie, Sigwartstr. 10, 72076 Tuebingen, Germany; Tel: +49-707174692 (from the USA or the Netherlands: +49-7071-290 - ask for extension 74692 or 76486); Fax: +49-7071-5059
E-mail: mike.herbert@uni-tuebingen.de.

9th International Meeting of the International Humic Substances Society (IHSS): »Understanding and managing organic matter in soils, sediments and waters«, Adelaide, Australia, September 21-25, 1998.
Information: Dr. Kaye Spark, IHSS-9 Conference Secretary, CRC for Water Quality and Treatment, PMB 3, Salisbury, SA 5108, Australia; Tel.: +61-8-8259-0347; Fax: +61-8-8259-0228; E-mail: ihss-9@sawater.sa.gov.au; Internet: http://www.cfw.csiro.au/conferences/ihss9/

International Symposium on Arid Region Soils, Izmir, Turkey, 21-25 September, 1998.
Information: Prof. S. Senol, Dept. of Soil Science, Cukurova University, 01330 Adana, Turkey; Fax: +90-322-338-6643 or -6747.

International Conference on Environmental Contamination, Toxicology and Health, Hong Kong, September 23-25, 1998.
Workshop on Soil Contamination and Remediation, Hong Kong, September 22, 1998.
Information: The Conference Secretariat, Department of Biology, Hong Kong Baptist University, Kowloon Tong, Hong Kong; Tel: 852-2339-7050; Fax: 852-2336-1400; E-mail: ECTH@hkbu.edu.hk

International Conference on Dust Aerosols, Loess and Global Change, Seattle, USA, October 11-13, 1998.
Information: Conferences and Institutes, Washington State University, Pullman, WA 99164-5222, USA; Tel: +1-509-335-3530; Fax: +1-509-335-0945; E-mail: wsuconf@wsu.edu, Website: www.eus.wsu.edu/c&i.

FERTBIO-98: Interrelation between soil fertility, plant nutrition and soil biology: consolidation of a paradigm.
XXIII Brazilian Conference of Soil Fertilizing and Plant Nutrition. - VIII Brazilian Conference on Mycorrhiza. - V Brazilian Symposium on Soil Microbiology. - II Brazilian Conference on Soil Biology. Lavras, MG, Brazil, October 11-16, 1998.
Information:Organizing Committee, FERTBIO-98, DCS-UFLA, CP 37, 37.200-000 Lavras, Minas Gerais, Brazil; Fax: (035)829-1251; E-mail: dcs@ufla.br; Internet: http://www.ufla.br.

International Symposium on Problematic Soils - The Japanese Geotechnical Society, Sendai, Japan, October 1998.
Information: Prof. N. Moroto, Dept. of Civil Engineering, Hachinohe Institute of Technology, 88-1 Ohbiraki, Myo, Hachinohe 031, Japan. Fax: +81-178-25-1013; E-mail: istohoku@ hi-tech.ac.jp.

Hydrological Changes in Africa, Abidjan, Côte d'Ivoire, November 16-19, 1998.
Information: Dr. Eric Servat, ORSTOM, 06 BP 1203, Cedex 1, Abidjan 06, Côte d'Ivoire; Tel: +225-1-45-00-74/45-41-70; Fax: +225-45-00-76/24-65; E-mail: 101727.2773@compuserve.com OR servat@orstom.rio.net.

Annual Convention of the Indian Society of Soil Science, Haryana, India, November 16-19, 1998.
Information: Dr. G. Narayanasamy, Division of Soil Science and Agricultural Chemistry, Indian Agricultural Research Institute, New Delhi – 110012; Tel: +91-11-572-0991; Fax: +91-11-575-5529; E-mail: gnsamy@yahoo.com.

New Zealand Society of Soil Science Annual Conference »Soil – The Earth's Edge« and New Zealand Association of Resource Management Annual Conference: »Resource Mangement at the Edge«, Gisborne, New Zealand, November 16-20, 1998
Information: Dr. Alec Mackay, AgResearch, Private Bag 11008; Palmerston North, New Zealand; E-mail: mackaya@agresearch.cri.nz

First International Agronomy Congress, New Delhi, India, November 23-27, 1998.
Information: Fax: +91-11-574-2283.

15th International Symposium of the Association for Farming Systems Research and Extension, Pretoria, South Africa, November 29-December 3, 1998.
Information: AFSR+E Symposium '98, P.O. Box 411177 Craighall 2024, South Africa. Fax: +27-11-4426111; E-mail: cpjh@jhb.lia.net.

National Congress of the Soil Science Society of Pakistan, Faisalabad, Pakistan, December 9-12, 1998.
Information: Prof. R.H. Qureshi, E-mail: javaid@sarcuaf.fsd.brain.net.pk

Colloque International sur la Gestion Durable des Ressources en Eau et en Sol: »L'Homme et l'Erosion«, Yaoundé, Cameroun, du 10 au 19 décembre 1998.
Information: Z. Boli Baboulé/R. Ambassa Kiki, IRAD, B.P. 2123 Yaoundé, Cameroun; Tel: (237)22-33-62 ou 23-88-22; Fax: +237-23-35-38; E-mail: iita-hfs@cgnet.com
ou: E. Roose, Réseau Erosion-ORSTOM; B.P. 5045, 34032 Montpellier, France;
Tel: (33)(0)467-41-62-65; Fax: (33)(0)467-41-62-94; E-mail: roose@mpl.orstom.fr.

1999

2nd International Conference on Land Degradation, Khon Kaen, Thailand, January 22-31, 1999.
Information: The President, Soil and Water Conservation Society of Thailand, c/o Department of Land Development, Chatuchak, Bangkok 10900, Thailand; Tel: +66-2-5791939 and -5790111;
Fax: +66-2-5613029 and -5611959; E-mail: oibsram@nontri.ku.ac.th

30th Annual North American IECA (Intl. Erosion Control Association) Conference and Trade Exposition, Nashville, Tennessee, February 22-26, 1999.
Information: 1999 IECA Conference Program, P.O.Box 4904, Steamboat Springs, CO 80477-4904 USA; Fax: +1-970-879-8563; E-mail: ecinfo@ieca.org.

6th International Symposium on Soil and Plant Analysis, Brisbane, Qld., Australia, March 22-26, 1999.
Information: Australian Convention and Travel Services Pty Ltd, GPO Box 2200, Canberra, ACT 2601, Australia, Tel: +61-2-6257-3299; Fax: +61-2-6257-3256.

First Asia-Pacific Conference and Trade Exhibition on Ground and Water Bioengineering for Erosion Control and Slope Stabilization, Manila, Philippines, April 19-21, 1999.
Information: Conference Secretariat, Philippine Congress Organizing Center, P.O. Box 4486, Ermita, Manila, the Philippines; Tel: +63-2-5214884 and -5220541; Fax: +63-2-5212831 and -5218304; E-mail: pcoc@manila-online.net

5th International Symposium: In Situ and On-Site Bioremediation, April 19-22, 1999, San Diego, California, USA.
Information: The Conference Group, 1989 West Fifth Avenue Suite 5, Columbus, Ohio 43212-1912 USA. Tel.: +1 (800 within the USA and Canada)-783-6338; Fax: +1-614-488-5747; E-mail: conferencegroup@compuserve.com.

International Workshop of Commission I - Soil Physics, ISSS:
Subsoil Compaction and Soil Dynamics - Processes and Environmental Consequences (IWSCSD), Kiel, Germany, May 19-21, 1999.
Information: Prof.Dr. Rainer Horn, Institute of Plant Nutrition and Soil Science, Christian Albrechts Universität zu Kiel, Olshausenstr. 40, 24118 Kiel, Germany. Fax: +49-431-880-2940; E-mail: rhorn@soils.uni-kiel.de.

10th International Soil Conservation Organization (ISCO) Conference: »Sustaining the Global Farm – Local Action for Land Stewardship«, Purdue University, West Lafayette, IN, USA, May 23-28, 1999

Information: 10th ISCO Conference USA, Att.: Mark Nearing, 1196 SOIL Building, Purdue University, West Lafayette, Indiana 47907-1196 USA; Fax: +1-765-494-5948; Tel.: +1-765-494-8673; E-mail: isco99@ecn.purdue.edu; Internet: http://soils.ecn.purdue.edu/~isco99/ OR http://128.46.135.45/~isco99.

Southern African Soil Science Congress, University of Pretoria, Pretoria, South Africa, June 28-July 1, 1999.
Information: D. Garry Paterson, P.O. Box 30030, Sunnyside, 0132 Pretoria, South Africa; Tel: +27-12-326-4205; Fax: +27-12-323-1157; E-mail: g_pater@igkw2.agric.za.

5th International Meeting on Soils with Mediterranean Climate (IMSMC). Barcelona, Spain, July 4-9, 1999.
Information: Prof. J. Bech, Chair of Soil Science, Dept. of Plant Biology, Faculty of Biology, University of Barcelona, Avda Diagonal 645. E-08028 Barcelona, Spain; Tel: +34-3-402-1466; Fax: +34-3-411-2842. E-mail: jabechbo@porthos.bio.ub.es.

2nd European Conference on Precision Agriculture: »Multidisciplinary Challenges for Scientific and Technical Development of Precision Agriculture«, Odense, Denmark, July 11-15, 1999.
Information: The Conference Secretariat, SCI, 14-15 Belgrave Square, London SW1X 8PS, UK; Tel: +44-(0)171-235-3681; Fax: +44-(0)171-235-7743; E-mail: conferences@chemind.demon.co.uk.

5th International Conference on the Biogeochemistry of Trace Elements, ICOBTE '99, Vienna, Austria, July 11-15, 1999.
Information: Friederike Jockwer and Tanja Valersi, Institute of Soil Science, Universität für Bodenkultur, Gregor Mendel-Str. 33, A-1180 Vienna, Austria. Fax: +43-1-47654-3105; Phone: -3110; E-mail: icobte@edv1.boku.ac.at.

VI International Rangeland Congress, Townsville, Australia, July 19-23, 1999.
Information: VI International Rangeland Congress Registrations, PO Box 764, Aitkenvale, Townsville Qld. 4814, Australia; E-mail: secretariat.irc@unsw.edu.au; Website: http://irc.web.unsw.edu.au.

XXII General Assembly of he International Union of Geodesy and Geophysics (IUGG), Birmingham, UK, July 19-30, 1999.
Information: IUGG99, School of Earth Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK; Fax: +44-121-414-4942; E-mail: iugg99@bham.ac.uk

XV International Congress of the International Union for Quaternary Research (INQUA): »The Environmental Background to Hominid Evolution in Africa« Durban, South Africa, August 3-11, 1999.
Information: Conference Secretariat, Conference Africa, P.O. Box 1722, Parklands, 2121, Johannesburg, South Africa; Tel: +27-11-447-8143; Fax: +27-11-447-8144; E-mail: cafrica@iafrica.com.

International Symposium of ISSS WGs RS and DM, IAG, ITC and ICIMOD: »Remote Sensing and GIS for Monitoring Soils and Geomorphic Processes to Assist Integrated Development of Mountainous Land«, Kathmandu, Nepal, August 22-28, 1999.
Information: Mr. D. Shresta, ITC, P.O. Box 6, 7500 AA Enschede, The Netherlands, Tel: +31-53-48-74-264; Fax: Tel: +31-53-48-74-399; E-mail dhruba@itc.nl, Internet: http://wwws.itc.nl/~shrestha/sympo.html.

International Peat Symposium: »Chemical, physical and biological processes in peat soils«, Jokioinen, Finland, August 23-27, 1999.
Information: Symposium Secretariat, Merja Myllys, Agricultural Research Centre of Finland, FIN-31600 Jokioinen, Finland; Fax: +358-3-4188-437; E-mail: merja.myllys@mtt.fi.

Congress of the Polish Society of Soil Science: »The role of soil in the functionality of ecosystems«, Poland, September 7-10, 1999.
Information: Prof. Adam Kaczor, Department of Agricultural Chemistry, Agricultural University of Lublin, Akademicka 15, P.O. Box 158, 20-950 Lublin, Poland, Tel: +48-81-537-67-34; Fax: +48-81-33-549.

3rd Conference of the ISSS Working Group on Pedometrics, Sydney, Australia, September 27-29, 1999.
Information: Prof. Alex B. McBratney, Dpt. of Agric. Chemistry & Soil Science, The University os Sydney, Ross Street A03, Sydney, NSW 2006, Australia;
Tel: +61-(02)-9351-3214; E-mail: alex.mcbratney@cropsci.su.edu.au;
or: Dr. Inakwu O.A. Odeh, same address
Tel: +61-(02)-9351-4178; E-mail: ominyi@sola.agric.usyd.edu.au

XIV Congreso Latinoamericano de la Ciencia del Suelo CLACS-99, Pucon, Chile, 9 al 12 de noviembre de 1999.
Información: Itilier Salazar-Quintana,Presidente, Sociedad Latinoamericana de la Ciencia del Suelo, Dpto. Ciencias Químicas, Universidad de La Frontera, Av. Fco. Salazar 01145, Casilla 54-D, Temuco, Chile; Fono: +56-45-3254-32 or -33; Fax: +56-45-325-440 or -950; E-mail: clacs99@werken.ufro.cl. Website: http://www.ufro.cl/eventos/clacs99.html

2000

International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21st Century, New Delhi, India, February 14-18, 2000.
Information: Dr. A.K. Singh, Secretary General, Intl. Conf. on Managing Nat. Res., Indian Society of Soil Science, Indian Agricultural Research Institute, New Delhi – 110 012, India; Tel: +91-11-573-1494; Fax: +91-11-575-5592; E-mail: icmnr@bic-iari.ren.nic.in.

15th ISTRO Conference »Tillage at the Threshold of the 21st Century: Looking Ahead«, Fort Worth, Texas, USA, July 2-7, 2000.
Information: ISTRO@brcsun0.tamu.edu; 808 E. Blackland Road, Temple, TX 76502, USA; Tel: +1-254-770-6507; Fax: +1-254-770-6561

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

INTERNATIONAL TRAINING COURSES
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8th International Post-Experience Course for Professionals working in the Natural Resources Sector: »Environmental Asessment and Management in Rural Development (with GIS option)«, Wye College, University of London and Natural Resources Institute (NRI), July 6-17/24, 1998.
Information: Mrs. Mary Arnold (CPD), Wye College, University of London, Wye, Ashford, Kent TN25 5AH, England;
Tel: +44-1233-812-401 (ext. 359), Fax: +44-1233-813-006/813-320; E-mail: m.arnold@wye.ac.uk; *Internet: http://www.wye.ac.uk.*

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ICRA, Wageningen, The Netherlands, January-July 1999.
Information: ICRA – PO Box 88, 6700 AB Wageningen, The Netherlands; Tel: +31-317-422-938; Fax: +31-317-427-046; icra@iac.agro.nl; http://icra.agropolis.fr

CIHEAM – The International Centre for Advanced Mediterranean Agronomic Studies and IAMZ – The Mediterranean Agronomic Institute of Zaragoza
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Post-graduate Courses in Soil Science, Plant Production, and Ecology. MSc and PhD Degree, Universidad de Buenos Aires, Argentina.
Language: Spanish
Information: Ing.Agr. Marta E. Conti, Facultad de Agronomía. UBA, Escuela para Graduados, Av. San Martín 4453. (1417) Buenos.Aires, Argentina. Fax: (+541)522-1687. E-mail: conti@ifeva.edu.ar and epg@ifeva.edu.ar.
8

The University of Gent and the Free University of Brussels, Belgium offer:
International Interuniversity Post-Graduate Programmes in Physical Land Resources. Diploma and Master Courses,
Information: Prof.Dr. G. Stoops, Chairman Steering Committee, Programme Secretariat, Krijgslaan 281, B-9000 Gent, Belgium; Tel: +32-9-264-46-18; Fax: +32-9-264-49-91; E-mail: PLRprog.adm@rug.ac.be.
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Information: The Center for Ground Water Management, Wright State University, Dayton, Ohio 45435-0001; Tel: +1-937-775-3648; Fax: +1-937-775-3649; E-mail: IRIS19@wright.edu; Web: http://geology.wright.edu/iris.html.

8

The University of Reading, Department of Agriculture, offers a

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- 6-week course for Laboratory Managers, Supervisors and Senior Technicians: **»Short Course in Plant and Soil Analysis«**, August 16 - September 24, 1999.

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

The University of East Anglia, Norwich, UK, offers a short course on »Crop Research Techniques and Management« in August-September 1998.
Information: The Overseas Development Group, University of East Anglia, Norwich NR4 7TJ United Kingdom; Tel: +44-1603-456-410; Fax: +44-1603-505-262; Telex: +51-317210 BUREAU G ODG/UEA; E-mail: odg.train.@uea.ac.uk.

9th International Postgraduate Course on Soil and Plant Analysis and Data Handling
Wageningen, the Netherlands, September 20-November 21, 1998.
Organized by the Wageningen Agricultural University (WAU), in co-operation with the International Agricultural Centre (IAC) and the International Soil Reference and Information Centre (ISRIC).
Information: International Agricultural Centre (IAC), Lawickse Allee 11, P.O. Box 88
6700 AB Wageningen, The Netherlands; Tel.: +31-317-490-111; Fax: +31-317-418-552; E-mail: IAC@IAC.AGRO.NL; Telegrams: INTAS; Telex: 45888-INTAS NL.

The Katholieke Universiteit Leuven and the Vrije Universiteit Brussel offer, among others a:
2-year Master's Degree Programme in Water Resources Engineering for undergraduates, faculty staff, project engineers, staff of ministries etc.
Information: K.U. Leuven, Vital Decosterstraat 102, 3000 Leuven, Belgium. Tel: +32-16-23-13-81; Fax: +32-16-23-06-07;
or: Laboratory of Hydrology, V.U. Brussel, Pleinlaan 2, 1050 Brussel, Belgium. Tel: +32-2-641-30-21; Fax: +32-2-641-30-22
and an

International Course on Microcomputer Applications in Water Resources Engineering and Management (short course), for researchers, engineers, managers and government officers dealing with irrigated agriculture, water resource development planning and system management.
Information: Mrs. Greta Camps, Course Secretary, Institute for Land and Water Management, K.U. Leuven, Vital Decosterstraat 102, 3000 Leuven, Belgium. Tel: +32-16-32-97-45; Fax: +32-16-32-97-60; E-mail: greta.camps@agr.kuleuven.ac.be

International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) offers a wide range of short- and long-term studies in the field of
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Information: Instituto Agronómico Mediterráneo de Zaragoza; Apartado 202, 50080 Zaragoza, Spain; Tel: (34-76)57-60-13; Fax: (34-76)57-63-77
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ITC Postgraduate Diploma and MSc Degree Courses, Enschede, The Netherlands,
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- Professional Master Degree Course: Rural Land Ecology Survey
- Msc Degree Course: Environmental Systems Analysis and Monitoring

Information: ITC, Student Registration Office, Attn. Mrs. A Scheggetman, P.O.Box 6, 7500 AA Enschede, The Netherlands, Tel: +31-(0)53-4874-205; Fax: +31-(0)53-4874-238; E-mail: education@itc.nl; Website: http://www.itc.nl.
8

The International Training Centre PHLO - Wageningen Agricultural University – DLO Winand Staring Centre offer a course on:
Modelling Water Flow and Solute Transport for Agricultural and Environmental Management, Wageningen, 9-14 November 1998
Information: International Training Centre (PHLO), Wageningen Agricultural University, P.O. Box 8130, 6700 EW Wageningen, The Netherlands; Tel: +31-317-484-092 or –093; Fax: +31-317-426-547; E-mail: geralda.fonteijn@secr.phlo.wau.nl.
8

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Information: The Student Recruitment Executive, Silsoe College, Silsoe, Bedford MK45 4DT, U.K.; Tel: (0525) 860428; Fax: (0525) 861527; Telex: 826383 silcam g

External Programme, specialised courses on Managing Agricultural Development, Environmental Management in Agricultural Development, Kent, UK.
Information: The External Programme, Wye College, University of London, Ashford, Kent TN25 5AH UK (Tel.: 0233 812401; Fax: 0233 813320; Telex: 94017832 WYEGG).

ICRA, Centre International pour la Recherche Agricole orientée vers le Développement - International Centre for Development Oriented Research in Agriculture
Formation post-académique pour de jeunes chercheurs agricoles des pays en voie de développement et leurs collègues des pays développés qui ont une expérience de travail dans des pays en voie de développement.
Post-academic training for young agricultural scientists from developing countries and their colleagues from developed countries who have some working experience in developing countries.
Information: The Director of ICRA, P.O.Box 88, 6700 AB Wageningen, The Netherlands. Fax: -31-8370-27046; E-mail: icra@iac.agro.nl
or: ICRA-Agropolis International, Av. Agropolis, 34394 Montpellier CX5, France; Fax: +33-4-67-04-75-26; E-mail: icra@agropolis.fr; http://icra.agropolis.fr
7

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- MSc Spatial Analysis of Soils and Land Evaluation
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Information: The Postgraduate Admissions Tutor, Department of Soil Science, The University of Reading, PO Box 233, Reading, RG6 6DW, UK; Tel: +44-1734-316-557; Fax: +44-1734-316660; E-mail: s.nortcliff@reading.ac.uk.
5

The International Institute for Infrastructural, Hydraulic and Environmental Engineering, IHE, in Delft, the Netherlands, offers Diploma Courses, Msc Programmes, PhD Programmes and Short Courses in different fields of science, e.g. Hydraulic Engineering, Hydrology, Environmental Technology and Management, Transportation and Road Engineering for Development etc.
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6

Masters Programme in Human Ecology, Vrije Universiteit Brussel
(endorsed by UNESCO-MAB Programme)
Information on admission requirements: Mr. Eddy Nierynck, International Relations Officer, Human Ecology Department, Faculty of Medicine and Pharmacy, VUB (MEKO GF), Laarbeeklaan 103, B-1090 Brussels, Belgium; Tel: +32-2-477-4282 or -4961; Fax: +32-2-477-4964; E-mail: gronsse@meko.vub.ac.be.
Other information: Dr. Christine Horton (Programme Co-ordinator) and Ms. Karin de Bruyn (Assistant Programme Co-ordinator); Tel: +32-2-477-4925 or -4964; E-mail: chorton@meko.vub.ac.be; kdebruyn@meko.vub.ac.be

Curso de Pós-Graduaçao em »Solos e Nutriçao de Plantas«
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The Wageningen Agricultural University offers an International Postgraduate Programme in different fields, e.g.:
Msc Courses in Agricultural Economics and Management; Agricultural Engineering; Animal Science; Biotechnology; Crop Science, Ecological Agriculture, Environmental Sciences, Soil and Water, Urban Environmental Management etc., as well as a **PhD Programme.**
Information: Ms. Jeanine W.M. Hermans,Dean, Office for International Students, Wageningen Agricultural Unversity, P.O. Box 453, 6700 AL Wageningen, The Netherlands; Tel.: +31-317-483618 or -483433; Fax: +31-317-484464; E-mail: Office@DOIS.SZ.WAU.NL; HTTP://WWW.WAU.NL/; Internet for education and student information: HTTP://WWW.WAU.NL/WAUEDUC.HTML

The Soil Science Department, Faculty of Agriculture, of the Minia University, Minia, Egypt, organizes the following International Courses:

- **International Course on Soil and Plant Analysis** (in cooperation with the Royal Tropical Institute, Amsterdam, The Netherlands;
- **International Training Course for Extension Workers on Soil and Water Problems;**
- **International Training Course on Water Analysis for Agricultural Purposes;**

Information: Prof.Dr. M. A. Kishk, Minia University, Faculty of Agriculture, Service Laboratory for Soil, Plant & Water Analysis, Minia, Egypt. Tel and Fax: +20-86-345-394; Fax: +20-86-322-182.

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.
Personal subscription rate for ISSS members (1998): US$ 105.00.

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 956.00.
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 Geoecology and Landscape Evolution.
Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands
Joint editors: J.A. Catt, Harpenden, UK, M.F. Thomas, Stirling, UK, J. Poesen, Leuven, Belgium, S.W. Trimble, Los Angeles, USA, O. Slaymaker, Vancouver, Canada, and D. Yaalon, Jerusalem, Israel
Personal subscription rate for ISSS members, including postage and handling: Dfl. 375.00

4. GEODERMA, an International Journal of Soil Science.
Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands.
Editors-in-Chief: H. Insam, Innsbruck, Austria, A.B. McBratney, Sydney, Australia, K. McSweeney, Madison, USA and Prof. D.L. Sparks, Newark, USA
Personal subscription price for ISSS members: Dfl 420.00

5. SOIL BIOLOGY & BIOCHEMISTRY
Size: 12 issues per year, in one volume of about 1800 pages.
Publisher: Elsevier Science Publishers, Amsterdam, the Netherlands
Editor-in-Chief: Prof.Dr. J.S. Waid, Mooloolaba, Australia.
Full subscription rate, including surface mailing: £ 590.00 (US$ 910.00). Personal subscription price of ISSS members: £ 74.00

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: 2 volumes (6 issues) per year, about 600 pages.
Publisher: Elsevier Science Publishers, Amsterdam, The Netherlands
Editor-in-Chief: Prof.Dr. M. Kutilek (Czech Republic); Assoc. Editors: Dr. D. Nielsen (USA) and Dr. Roy Morgan (UK).
Personal subscription rate for ISSS members (available from the publisher only): Dfl 150,— per year (including postage/handling)

7. PEDOBIOLOGIA, international journal, focusing on soil biology, especially on soil zoology and microbiology.
Size: 6 issues per year, in 1 volume with 450 pages.
Publisher: G. Fischer, Jena, Stuttgart, New York.
Editors-in-chief: Prof.Dr. M. Schaefer and Dr. J. Schauermann, Göttingen, Prof.Dr. G. Weigmann, Berlin.
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NEW PUBLICATIONS
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NEUE VERÖFFENTLICHUNGEN

Land Resources: on the Edge of the Malthusian Precipice? D.J. Greenland, P.J. Gregory and P.H. Nye, editors. CAB International, Wallingford, The Royal Society, London, 1998, vii + 180 p. ISBN 0 85199 235 8. Hardcover.

Recent demographic evidence suggests that during the next twentyfive years, the global human population will increase by about two billion. This prediction is generally accepted, but there are conflicting views about our ability to use the earth's resources to support this unprecedented increase and the longer-term effects on sustainability. Some believe that we have reached a point beyond which this will not be possible due to constraints on land use and productivity (as suggested by Malthus in 1798).

This volume is the result of a discussion meeting held at the Royal Society in London in 1996 and a follow-up meeting with leading scientists concerned with natural resource management to make a critical assessment of the production potential of the available land. It describes current pressures on land and water resources, the effects of climate on productivity, the need for crop improvement, better management of water, soil and nutrients, economic factors and environmental limitations. A set of conclusions is drawn concerning our ability to feed the world population and the steps which must be taken to ensure that we achieve this aim. this publication is not only of interest for agronomists, soil scientists and others concerned with natural resources, but especially so for economists and policy makers.
Price: GBP 40; USD 75
Orders to: see below

Conserving Peatlands. L.Parkyn, R.E. Stoneman, H.A.P. Ingram, editors. CAB International, Wallingford, New York, 1997, xxi + 500 p. ISBN 0 85198 998 5. Hardbound.

Three percent of the Earth's land surface is, or rather was, covered with peatlands - living systems that fix carbon from the global greenhouse, storing it away in the form of peat and producing oxygen into the bargains. Peatlands, bogs and fens are habitats for many unique plants and animal communities, themselves made up of a cross section of the main groups of the world's flora and fauna. Unfortunately this landscape is fast disappearing by drainage for agriculture and urban development, mining for power generation and for the horticultural trade and even to produce land fill sites to hide the products of our throw away society. This publication is the result of the contributions at the Peatlands Convention, held in 1995, Edinburgh. It addresses two key questions: first, why should peatlands be conserved and how should this be achieved? This question is answered by chapters that look at the variety and attributes of active bogs and peatlands throughout the world and consider also the active bogs and peatlands throughout the world. The second question is addressed by a comprehensive section on peatland conservation. Contributions discuss how to conserve active bogs, restore degraded ones and monitor the results; chapters on how to assess the resource and discussions on the usefulness of legislative protection and raising public awareness. It summarises the current situation regarding peatlands and bogs and sets the agenda for their future survival.
Price: GBP 60; USD 110
Orders to: see below

Phosphorus Loss from Soil to Water. H. Tunney, O.T. Carton, P.C. Brookes and A.E. Johnston, editors. CAB International, Wallingford, New York, 1997, xiv + 467 p. ISBN 0 85199 156 4. Hardbound.

This publication presents the proceedings of an international workshop held in Ireland, 1995, on factors controlling phosphorus losses to water from agriculture. The topic is becoming ever more important in understanding the forces which drive the process of eutrophication in lakes. Advanced eutrophication of surface water leads to problems with its use for fisheries, recreation, industry and drinking, due to the increased growth of undesirable algae and aquatic weeds, and oxygen shortages caused by their death and decomposition. Agriculture is identified as a major source of phosphorus, with contributions from both farmyards (point sources) and fields (nonpoint sources). The strategies to control point sources are well known and used but the control of nonpoint sources is difficult because of the large land area involved, the variability of soils and the unpredictability of the weather. This book addresses phosphorus use, its fate and its transport within catchments, and provides a reference source on the state of knowledge concerning the processes and mechanisms associated with phosphorus losses from fields and catchments.
Price: GBP 60; USD 120
Orders to: see below

Biological Indicators of Soil Health. C.E. Pankhurst, B.M. Doube, V.V.S.R. Gupta, editors. CAB International, Wallingford, New York, 1997, xi + 451 p. ISBN 0 85199 158 0. Hardcover.

Soil health can be defined as »the continued capacity of soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments, and maintain plant, animal, and human health«. Maintaining soil health is fundamental to successful crop production and ecosystem sustainability. This publication reviews and evaluates how soil organisms and biotic processes can be used as indicators of soil health; evaluating the potential of using different components of the soil biota and its activity as biological indicators, such as soil microorganisms, soil micro-, meso- and macrofauna, soil biodiversity, soil biotic processes and soil enzymes. Two chapters address the development of new technologies which probe the composition and functioning of soil microbial commu-

nities and two chapters review the use of plants as indicators of soil pollution. And last A synthesis brings together the views and major points made by the authors and offers an analysis of the current status of the different biological indicators.
Price: GBP 60; USD 110.
Orders to: see below.

Soils and the Greenhouse effect. Supplement to: Soil Use and Management, Vol. 13, no. 4., December 1997, pp. 229-304. British Society of Soil Science and CAB International, Wallingford, 1997.

This issue deals entirely with a topic of great current interest: global warming induced by the release into the atmosphere of so-called greenhouse gases. Of the principal gases involved, 20% of the carbon dioxide, 35% of the methane, and 65% of the nitrous oxide released globally come from soil processes or as a result of land-use change. Interest in this subject a decade ago led to the holding of a major conference on Soils and the Greenhouse Effect, in Wageningen in 1989. The next year, the conference Proceedings were published (Bouwman, A.F. (ed.) 1990. Soil and the Greenhouse Effect. Wiley, Chichester), and this volume has become a standard reference source. Since then the continued and growing attention given to global change has resulted in much new experimental, modelling and synthesis work. It is timely to examen the current state of knowledge in this field, and this is achieved in this special issue. The eight papers presented review what is known about the most significant fluxes of greenhouse gases between soils and the atmosphere, and examine the possibilities of reducing net emissions by reducing the sources or increasing the sinks.
Price: GBP 25; USD 40.
Orders to: see below.

Agroforestry for Soil Management. 2nd Edition. A. Young. CAB International, Wallingford, 1997, viii + 320 p. ISBN 0 85199 189 0. Paperback.

Agroforestry is a collective name for land-use systems in which woody perennials (trees, shrubs, etc.) are grown in association with herbaceous plants (crops, pastures) or livestock, in a spatial arrangement, a rotation, or both; there are usually both ecological and economic interactions between the trees and other components of the system.

The science of agroforestry has advanced in the period between the first (1989) and the second edition and only a small amount of material has been retained for this edition. New chapters have been added on soil water management, and on wider aspects of agroforestry relating to land use and the environment. It provides a new synthesis, drawing on over 700 published sources (included in the list of references) dating largely from the 1990s, and summarizes the present state of knowledge and indicates needs for research. These include both results of field trials of agronomy systems, and research into the plant-soil processes which take place within them, and soil conservation in its narrower sense, the control of erosion and aspects of soil management, such as nutrient cycling. From the conclusions it is quoted: »Let us risk a forecast. By the year 2010, it may be possible to write: 'It was formerly supposed that agroforestry presented many difficulties in the semiarid zone. This was because it was not then realized that ....'
Price: GBP 25; USD 45.
Orders to: CAB International, Wallingford, Oxon OX10 8DE, UK. Fax: +44 1491 833508; E-mail: Publishing@cabi.org *or* CAB International, 198 Madison Avenue, New York, NY 10016-4341, USA: Fax: +1 212-686-7993; E-mail: cabi-nao@cabi.org.

Global Change and Terrestrial Ecosystems. B. Walker, W. Steffen, editors. International Geosphere-Biosphere Programme Book Series, 2. Cambridge University Press, Cambridge, New York, 1996, xvii + 619 p. ISBN 0 521 57094 8 (hardback); ISBN 0521 57810 8 (paperback).

How will the world's vegetation, from 'natural' ecosystems to intensively managed agricultural systems, be affected by changes in land use, the composition of gases in the atmosphere, and climate? This publication is the result of the First Science Conference of the Global Change and Terrestrial Ecosystems (GCTE) Core Project of the International Geosphere-Biosphere Programme (IGBP), held in Woods Hole, USA in 1994. The goal of the conference was to advance the understanding and general awareness of global change science in regard to terrestrial ecosystems, and to provide an input to the leaders of the various Activities and Tasks of the GCTE Core Project. The book has seven parts. Part one: GCTE science, objectives, structure and implementation; Part two: Ecosystem Physiology (5 papers); Part three: Ecosystem structure (5 papers); Part four: Agriculture, Forestry and Soils (6 papers); Part five: Ecological Complexity (4 papers); Part six: GCTE and Earth system Science (7 papers); Part seven: Predicting a future terrestrial biosphere: challenges to GCTE science. Among the special features of the book are descriptions of a dynamic global vegetation model, developing generic crop models and a special section on the emerging discipline of global ecology. As might be expected, soil aspects play a large role in many papers.
Price: GBP 105 (hardback); GBP 44.95 (paperback)
Orders to: see below.

Molybdenum in Agriculture. U.C. Gupta, editor. Cambridge University Press, Cambridge, New York, 1997, x+ 276 p. ISBN 0-521-57121-9. Hardback.

Molybdenum (Mo) is one of the seven identified trace elements that are essential for plant growth. It is the only transition element in group VI in the periodic table that is essential for normal growth, metabolism, and reproduction of higher plants. Mo deficiencies in field-grown plants were first recorded in Australia more than 55 years ago, and this publication condenses all the information currently available on the subject of Mo as it relates to soils, crops and livestock. The book reviews our knowledge of chemistry and mineralogy of Mo, the extraction of available Mo from various soils, the various analytical methods of determining Mo content in soils and plants, the biochemical role of Mo in crop production, the technology and application of Mo fertilizers to crops, the responses to Mo of various tem-

perate and tropical crops, Mo deficiency and toxicity in various plant species, the interaction of Mo with other plant nutrients, and the distribution of Mo within the plant. Factors affecting the availability of soil Mo to plants and Mo status in the semiarid and subhumid tropics are also discussed.
Price: GBP 45; USD 74.95.
Orders to: see below.

World Soils. Third Edition. E.M. Bridges. Cambridge University Press, Cambridge, New York, 1997, vi + 170 p. ISBN 0 521 49777 9. Paperback.

The object of this book is to provide an introduction to the soils of the world and to give the widest possible readership a better understanding of their nature, properties, distribution and use. Environmentalists have drawn attention to the possible damage which can be caused by pollution of the atmosphere, the oceans, the rivers and aquifers, but all too often the effects of human actions on soils are overlooked. Little publicity ever reaches the media about soils; they are not newsworthy and regrettably are regarded as unimportant by many people. This is a pity because soils are some of the most interesting natural features on the Earth's surface. They are an essential part of natural ecosystems and are necessary for the growth of human food, animal fodder, fibre and timber crops. Soils underpin all natural and human-modified ecosystems to which they provide moisture, nutrients and support. It is just as important to have knowledge of and to care for our soils, as it is to study and be aware of the problems mankind faces if air and water supplies are abused. A significant outcome of the 1992 UN Conference on Environment and Development (UNCED) was the idea of the sustainable use of the land. For soil scientists, soil conservation is not a new idea, but it must now be taken in a wider context embodied in the holistic approach introduced in this new edition. Whilst it is possible to dismiss this as simply a new way of looking at an old problem, soil scientists are keen to take the initiative in determining the most appropriate ways in which our soils are used. After chapters on soil classification discussing some of the concepts behind classification systems, the following seven chapters which deal with the major soils of the world. The final two chapters are devoted to soil mapping and use of soil information. This new edition is completely revised to include new developments in soil science and is well-illustrated with diagrams, and black and white and colour photographs.
Price: GBP 19.95.
Orders to: see below

Molybdenum in Agriculture. U.C. Gupta, editor. Cambridge University Press, Cambridge, New York, 1997, x+ 276 p. ISBN 0-521-57121-9. Hardback.

Molybdenum (Mo) is one of the seven identified trace elements that are essential for plant growth. It is the only transition element in group VI in the periodic table that is essential for normal growth, metabolism, and reproduction of higher plants. Mo deficiencies in field-grown plants were first recorded in Australia more than 55 years ago, and this publication condenses all the information currently available on the subject of Mo as it relates to soils, crops and livestock. The book reviews our knowledge of chemistry and mineralogy of Mo, the extraction of available Mo from various soils, the various analytical methods of determining Mo content in soils and plants, the biochemical role of Mo in crop production, the technology and application of Mo fertilizers to crops, the responses to Mo of various temperate and tropical crops, Mo deficiency and toxicity in various plant species, the interaction of Mo with other plant nutrients, and the distribution of Mo within the plant. Factors affecting the availability of soil Mo to plants and Mo status in the semiarid and subhumid tropics are also discussed.
Price: GBP 45; USD 74.95
Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU U.K. *or* The Press Syndicate of the University of Cambridge, 40 West 20th Street, New York, NY 10011-4211, USA. Fax: +44 1223 315052.

Agricultural Systems Modeling and Simulation. Books in Soils, Plants, and the Environment Series. R.M. Peart, R. Bruce Curry, editors. Marcel Dekker, New York, Basel, 1998, xi + 696 p. ISBN 0-8247-0041-4. Hardcover.

Modeling has become a well-developed discipline, and modeling research on agricultural processes and operations is being conducted throughout the world. It makes it possible for workers at distant locations to cooperate by obtaining a copy of a program, and applying it to their own agricultural environment. This publications provides a treatment of modern applications of modeling and simulation in crops, livestock, forage/livestock systems, and field operations, discussing modeling methodologies from linear programming and neural network to expert of decision support systems, as well as featuring agricultural models, such as CROPGRO, GOSSYM/COMAX, GRAZE, and SIMHARD. Most of the models described are one-dimensional in the sense that time is the main variable. It introduces Object-Oriented Programming (OOP)-improving organization in the development of large models; emphasizes the human/computer interface-identifying users' needs in the design and modeling process; integrates Geographic Information Systems technology with time-based simulation; addresses data-handling problems where system results reflect spatial and temporal variations; examines livestock systems grazing on forage as well as held in confinement systems, reviewing crop and animal growth simulation based on the amount and value of forage consumed; covers machinery selection, capacities, and costs; describing a program that computes costs and timeliness losses due to inadequate equipment capabilities. Modeling and simulation of food production systems will be increasingly used in the future, to help meet the global need for food.
Price: USD 195.
Orders to: see below

Mass Spectrometry of Soils. Book in Soils, Plants, and the Environment Series. T.W. Boutton, S. Yamasaki, editors. Marcel Dekker, New York, Basel,

1996, xiii + 517 p. ISBN 0-8247-9699-3. Hardcover.

The soil resource is a critical component of natural and managed ecosystems and has important interactions with the atmosphere, hydrosphere, and biosphere. A thorough understanding of the structural and functional characteristics of soil is essential not only to ensure the proper management and long-term sustainability of this renewable natural resource but also to enhance our understanding of the function of the earth-atmosphere system. Mass spectrometric applications in soil science research are relatively recent, although mass spectrometry itself is an old instrumental technique for chemical analysis. Since about 1960 the use of mass spectrometry in agricultural and environmental research, including studies of the soil system, has increased. This book describes the uses of gas isotope ratio mass spectrometry in soil science, it explains accelerator, thermal ionization, organic, and inductively coupled plasma mass spectrometry; furnishes theory, methodology, and examples; introduces new methods and results; shows how spectrometric techniques supply detailed information on pedogenesis. This book surveys the most common applications of mass spectrometry to the field of soil science, and have applications and implications that should be of interest to both basic and applied research scientists in many disciplines.

Price: USD 185.

Orders to: Marcel Dekker, Inc., 270 Madison Avenue, New York, NY 10016, USA; fax: +1-914-796-1772; E-mail: bookorders@dekker.com; *or* Hutgasse 4, Postfach 812, CH-4001 Basel, Switzerland; fax: +41-61-261-8896; E-mail: intlorders@dekker.com.

Humic Substances in Terrestrial Ecosystems. A. Piccolo, editor. Elsevier Science, Amsterdam, New York, 1996, xi + 675 p. ISBN 0-444-81516-3. Hardbound.

The term 'soil organic matter' is generally used to represent the organic constituents in soil, excluding undecayed plant and animal tissue, their partial decomposition products, and the soil biomass. Soil organic matter is recognized to be generally comprised of humic substances and of non-humic substances. The latter material includes discrete compounds of known chemical structure such as polysaccharides and sugars, proteins and amino acids, fats, simple organic acids, and so on.

The important role of soil humic substances in preserving the ecology of our planet is recognized by scientists who see in the most stable part of soil organic matter not only a nutritional reservoir to match the demands of an increasing world population, but also a means of efficiently recycling in soil the growing production of waste biomass in rapidly enlarging urban areas. Humic substances may represent a possible measure to counter the menacing ecological consequences of the greenhouse effect, by functioning as a sink of carbon in the presence of an excessive concentration of atmospheric CO_2. This book highlights the increasing importance of humic substances in the different scientific fields related to terrestrial ecology, soil quality conservation, and environmental chemistry. It shows that modern humic substances research is not only directed to unravel their yet ill-defined chemical structure but is exploring the interconnected chemical, biological, and physical processes that maintain the ecological equilibrium of soil and ensure a sustainable agricultural production.

Price: DFL 495; USD 309.50

Orders to: see below.

Vertisols and Technologies for their Management. N. Ahmad, A. Mermut, editors. Developments in Soil Science 24. Elsevier, Amsterdam, Lausanne, 1996, xv + 549 P. ISBN 0-444-88789-x. Hardbound.

Vertisols are clay soils with unusual and interesting properties. They occur world-wide and are distributed in most climates, but are important in the sub-humid to semi-arid tropics. Vertisols have great potential for agricultural production, but many, especially in the developing world, are underutilized due to a lack of understanding regarding their behaviour and management. There is keen interest in developing management techniques which would increase agricultural production for these soils. Research on Vertisols has increased in all areas of the world, in solving management problems including the use of irrigation. In particular, there have also been significant developments in the knowledge of the pedogenesis and classification of these soils, with the International Committee for Vertisols (ICOMMERT) comprehensively revising the classification of the Order of Vertisols in Soil Taxonomy..

In this volume, recent research results and personal experiences of scientists who have worked on Vertisols are integrated and interpreted for the benefit of users of the soils. There are separate chapters dealing with aspects such as occurrence and distribution, pedogenesis, classification, soil morphology, chemical and mineralogical properties, water relations and water management, texture and structure, tillage, land preparation and land layout, fertility management, management in rice culture, management in cold, humid, semi-arid and irrigated conditions, associated geotechnical problems, and soil erosion and conservation.

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Legend to FAO/Unesco Soil Map of the World. PC Program FAOSOIL, Version 2 (billingual, English/German).

This bilingual PC program, as announced in the Bulletin 92, page 62, may easily be used in a purely monolingual way as well. It covers the major chapters of the revised legend of the Soil Map of the World 1:5M, including the updated of the year 1997. The programme has been compiled as a Windows Help File running under MS Windows versions 3.1, 95 and NT. Hence, its installation as well as its use are quite easy. The programme is useful for teaching purposes and covers: (1) Identification key of the Major Soil Groupings and Soil

Units; the programme leads step by step through the key. It is possible to take short-cuts. (2) Descriptions of the Major Soil Groupings and Soil Units. The descriptions of all soil units are easily accessible.
The connections with Diagnostic Horizons, Diagnostic Properties, etymological roots etc. are shown with help of numerous links and popup windows. A demo version of the program, as well as the full version which requires registration, can be downloaded from: http://www.et.fh-osnabrueck.de/fbaw/bw/faosoil.htm.
For more information, please contact: Dr. F. Bailly, Eschebergstr. 81, D-34128 Kassel, Germany. E-mail: f.bailly@t-online.de.

Sustaining Growth. Soil fertility management in tropical smallholdings. K.M. Müller-Sämann, J. Kotschi. Margraf Verlag, Weikersheim, 1997, 486 p. ISBN, 3-8236-1226-3. Softbound.
This publication presents a range of practices conducive to sustainable agriculture and of particular importance for the development of smallholdings in the tropics. These include agroforestry, intensive fallowing and green manuring, the use of mulch, compost, stable manure, and the use of natural symbionts to maintain the soil fertility using a minimum of external inputs. Much ancient knowledge related to these practices is reexamined here, in the light of recent research finding.

This book was first published in 1986 in German. In the English version the work has been updated and extended to include recent findings in the fields of agroforestry and green manuring.
Price: DEM 60,80
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The Dominican Republic. A country between rain forest and desert. Contributions to the ecology of a Caribbean island. E. Bolay. Margraf Verlag, Weikersheim, 1997, 456 p. ISBN 3-8263-1276-X. Softbound.

This book gives information on the ecology of the Dominican Republic. After the introductory chapters dealing with the historical aspects of the Dominican Republic and Haiti, the geography is treated in the following parts: landscapes, hydrography, geology, climate, protected areas, people and tourism. The chapters on plant and animal life, and agriculture and forestry is followed by one about 17 selected area. The chapter 'Selected aspects' gives an insight in f.e. sugar, speleology, bauxite exploration, contamination of the surrounding areas, etc. An extensive bibliography concludes the book.
Price: DEM 90
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Institutions and Technologies for Rural Development in West Africa. Institutions et Technologies pour le Développement Rural en Afrique de l'Ouest. Proceedings of the International Symposium organized by the University of Hohenheim, Germany, 16-22 February 1996 in Cotonou, Benin. T. Bierschenk, R.-Y. Le Meur, M. von Oppen, editors. Margraf Verlag, Weikersheim, 1997, xv + 546 p. ISBN 3-8236-1268-9. Softbound.

This publication is the result of the above mentioned symposium. The University of Hohenheim has been involved in research on agricultural problems in the Sudano-Sahelian Zone of West Africa since 1985. The research programme was conceived to move in the classical way from constraint identification via experimentation of improved resource utilization towards evaluation and technology transfer; an approach which assumes that technologies provide the key to solve problems. In the course of the programme it came out that on the surface technical problems such as decreasing soil fertility, wind and water erosion, as well as low labour productivity are constraining productivity, and that technical answers to overcome these problems are not sufficient. While improved technologies are required to raise productivity, the institutional framework has to be in place. Even the priorities which researchers attach to the technical problems may be seen quite differently by farmers. During this 5 days forum the first two days were spent in the field to study the work of the University on participatory technology evaluation and adaptation together with farmers in their fields. Three days were devoted to discussing issues by addressing three major areas of institutional constraints to agricultural development in West Africa: 1. Markets and Credit (19 papers); 2. Research and Extension(14 papers); 3. Land Tenure and Property Rights (15 papers). A part of the contributions is in French, a part in English, all have long abstracts in the other language.
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Diagnosis of the Nitrogen Status in Crops. G. Lemaire, editor. Springer-Verlag, Berlin, Heidelberg, 1997, x + 239 p. ISBN 3-540-62223-3. Hardcover.

This publications provides a link between theoretical and applied aspects of plant nutrition and agriculture. It introduces a new concept in plant nutrition and demonstrates how it can be applied in practice to improve N nutrition of crops and to improve nitrogen nutrition through optimized N fertilization management. It provides relationships between critical N% and plant mass that can be incorporated directly into computer models that calculate the day-to-day changes in N response. Existing methods for predicting fertilizer requirements and future possibilities, including those involving non-invasive radiometry and the value of the nitrogen nutrition index in the light of this information, are discussed. The main agricultural crops such as grasses, wheat, barley, durum wheat, maize, sorghum, grain legumes and potatoes are covered.
Price: DEM 168; USD 115.
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Managing Salinization. Institutional Analysis of Public Irrigation Systems. W. Scheumann. Springer-Verlag Berlin, Heidelberg, 1997, xvi + 274 p. ISBN 3-540-63328-6. Hardcover.

Salinization of soils is a major threat to irrigated agriculture and counteracts the targets of costly public infrastructure investments. A large-scale public irrigation project in South Turkey with a highly centralized

decision-making setting was selected for a case study. In this study, salinization is regarded as the outcome of an institutional arrangement which impedes the effective implementation of well-known and well-established control measures be they technical, managerial or economic. In public irrigation systems neither the management units nor the farmers are offered any incentives towards the control of high groundwater levels and salinization if the management units are embedded in a highly centralized non-market institutional setting. Answers are given to the question under which conditions management units and irrigators are active in halting and reversing the process of salinization.
Price: DEM 168; USD 109.
Orders to: see below.

Soils and Sediments. Mineralogy and Geochemistry. H. Paquet, N. Clauer, editors. Springer-Verlag, Berlin, Heidelberg, New York, 1997, xx + 367 p. ISBN 3-540-61599-7. Hardcover.

This textbook is dedicated to the memory of Dr. Georges Millot, an eminent French clay sedimentologist. Clays and soils are of great importance in various scientific fields, such as agriculture and environmental science, and in mineral deposits. In this publications, students and collaborators of Georges Millot, have put together topics ranging from weathering processes and diagenetic evolution of sediments to sedimentary mineral deposits.
Price: DEM 178; USD 115.
Orders to: see below.

The Central Amazon Floodplain. Ecology of a Pulsing System. Ecological Studies 126. W.J. Junk, editor. Springer-Verlag, Heidelberg, Berlin, 1997, xxiii + 525 p. ISBN 3-540-59276-8. Hardcover.

Floodplains are wetlands which oscillate between terrestrial and aquatic phases. This makes them alternately suitable for aquatic and terrestrial organisms, but makes utilization by humans difficult. For this reason, *the extensive floodplains of Europe and North America* were largely eliminated or strongly modified. With the growing awareness of the ecological and economic significance of wetlands in general and floodplains in particular, the number of studies undertaken increased considerable. Most studies relating to floodplains are oriented toward either limnological or terrestrial aspects. This Volume presents for the first time a complete survey of the existing knowledge on the ecology of one type of tropical wetland, a huge floodplain, that of the Amazon; the result of a 15-years study on the structure and function. It covers qualitative aspects, adaptations of aquatic and terrestrial organisms to the flood pulse, as well as quantitative aspects - studies of biomass, primary production, decomposition, and nutrient cycles. The author interpret the findings and most important data from other studies under an integrating scientific concept, the Flood Pulse Concept.
Price: DEM 248; USD 197.
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Soils of Tropical Forest Ecosystems. Characteristics, Ecology and Management. A. Schulte, D. Ruhiyat, editors. Springer-Verlag, Heidelberg, Berlin, 1997, 206 p. ISBN 3-540-63607-2. Hardcover.

The papers in this book have been developed from presentations at the third ISSS Conference on Forest Soils, the »International Congress on Soils of Tropical Forest Ecosystems', held in Balikpapan, 1995. It has a foreword from the Minister of Forestry, Republic of Indonesia, H.E. Djamaludin Surjohadikusumo, and four chapters. Chapter 1. Forest Soils in the Humid Tropics: Characteristics and Classification (4 papers); Chapter 2: Chemical and Hydrological Changes after Utilization (5 papers); Chapter 3: Soil Fertility and Fertilization in Forest Plantations and Agroforestry Systems (8 papers); Chapter 4: Ecosystem Studies and Dipterocarp Forests of Southeast Asia (6 papers). According to the foreword »This book is a proof that a little yet essential work has been done, and a lot more has to be done, to improve our understanding of forest soils, to enable us to manage forest ecosystems sustainable«.
Price: DEM 168; USD 109.
Orders to: Springer-Verlag, Postfach 31 13 40, D-10643, Berlin, Germany; Fax: +49 30 821 40 91; E-mail: service@springer.de *or* Webmaster@springer.de.

Product-Oriented Composting. From open to closed bioconversion systems. R. Gajdos. Doctoral Thesis, Swedish University of Agricultural Sciences, Alnarp, 1997. ISBN 91-576-5297-X.

This publication recapitulates and defines what composting is and presents a summary of four primary research papers. The themes represent steps from scientific reductionism to studies on system-level complexities, i.e. from cultivation and composting experiments to a holistic approach to sustainable management of solid and liquid organic waste, focusing on efficient recycling of plant nutrients. This work motivates a paradigm shift where 'composting' became 'aerobic bioconversion' *and 'compost' became 'biofertiliser'. In* the cultivation experiment, crop response to compost was studied and a novel method for calculating compost amendment rate was developed. These experiments were stimulating for research on composting methods. For composting experiments on standard substrate, with and without additives, static and rotated bioreactors were constructed. A thought-provoking comparison of economical assessments between present and future methods of organic waste management was made. Proper management of organic material by closed bioconversion will bridge the gap between industrial prosperity and biological requirements. Present polluting systems can be counteracted by environmentally friendly technology.
Requests to: Swedish University of Agricultural Sciences, Department of Horticulture, S-230 53 Alnarp, Sweden.

The Science of Composting: Part 1 and 2. M. de Bertoldi, P. Sequi, B. Lemmes and T. Papi, editors. Blackie Academic & Professional, 1996, Part 1: xvi + 672 p.; Part 2: xvi + pp 673-1405. ISBN 0-75714-0383-0.

This publication contains papers presented at the International Symposium on the Science of Composting, held in Bologna, Italy 1995.

Volume 1 comprises papers organized under the following headings: plenary session; composting process; the quality of compost; legislation; the use of compost; and starting materials. Volume 2 contains the papers under the headings: the state of the art of composting; composting as an integrated system of waste management; bioremediation; composting design; marketing and economy; and final reports and posters.

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Indigenous Organizations and Development. P. Blunt and D.M. Warren, editors. IT Studies in Indigenous Knowledge and Development. Intermediate Technology Publications, London, 1996, xv + 253 p. ISBN 1 85339 321 5. Paperback.

Indigenous organizations are local-level institutions with a community base, such as women's groups, ethnic associations, traditional religious bodies - as well as a wide variety of other social groupings. They often stress the importance of good social relationships, and of harmony, as well as having more practical aims. This publication emphasizes the need to let local people decide what is best for them; such an acceptance should lead to a greater sensitivity to the many options available, and persuade change agents not simply to assume that external forms are best. Investigations on local planning and management systems, local levels of technology and development, and community-based systems of evaluation and capacity building are done. Contributions come from Africa and South Asia, the Pacific and Canada.

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The Lie of the Land. Challenging Received Wisdom on the African Environment. African Issues. M. Leach and R. Mearns, editors. The International African Institute, London, James Curry Publishers, Oxford, 1966, xvi + 240 p. ISBN 0-85255-409-5. Paperback.

This publication originated from a conference held at the University of Sussex, September 1994, under the title 'Escaping orthodoxy: environmental change assessments, local natural resource management, and policy processes in Africa'. The meeting was planned to bring together the majority of the cases included here, and to discuss their wider implications. Bringing together a range of cases address three central questions. First: how does received wisdom about environmental change in Africa become established, get reproduced, and in some cases persists even in the face of strong counter-evidence; Second: how is it put to use and with what outcomes; Third: what alternative approaches for policy and applied research are suggested by countervailing views?

Price: GBP 11.95 (paper); GBP 40 (cloth).

Orders to: James Currey Publishers, 73 Botley Road, Oxford OX2 0BS, UK. Fax: +44 1865 246454.

The Handbook of Trace Elements. I. Pais and J. Benton Jones Jr. St. Lucie Press, Boca Raton, 1997, xv + 223 p. ISBN 1-884015-34-4. Hardcover.

This publication brings together a complete listing of the trace element content of a wide range of substances and provides a complete description by element for 41 trace elements found in the environment (earth's crust, soil, water, plants, animals, and man) in relatively low (<0.1%) concentrations. These elements are generally referred to as trace elements or, for the seven trace elements essential to plants, micronutrients. They are of increasing interest to ecologists and plant, animal, and human physiologists because their presence in the environment can have profound effects on crop production as well as the well-being of animals and man. Some of the trace elements are found concentrated in both naturally occurring and man-made substances. Of the 105 known elements, 29 are believed to be essential for the growth and development of living organisms. Of these 29 elements, 18 are classed as trace element, with 10 known as transition metals. Due to their biological activity, about one-half of the essential trace elements function as metallo-enzymes. Other trace elements are metals and non-metals. Their exact function of essentiality is not fully known. For the well-being of animals and man, 12 trace elements have been identified as being essential. The presence as well as lack of certain trace elements in drinking and irrigation water and the trace element content of ingested dust can have effects on the health of animals and man.

Price: USD 69.95; GBP 49.

Orders to: St. Lucie Press, 2000 Corporate Blvd., N.W. Boca Raton, FL 33431-9868, USA; Fax: +1 800 3743401; E-mail: information@slpress.com.

Sustaining the Soil. Indigenous soil and water conservation in Africa. Chr. Reij, I. Scoones and C. Toulmin, editors. Earthscan, 1996, xii + 260 p. ISBN 1 85383 372. Paperback.

Indigenous soil and water conservation practices are rarely acknowledged in the design of conventional development projects. The history of soil and water conservation (SWC) in Africa has been one of imposing external solutions without regard for local practice. This book is about the importance of traditional SWC practices in Africa. It is the result of nearly one hundred African researchers who developed the 27 case studies of indigenous soil and water conservation (ISWC) in the 14 countries presented. This publication documents farmers' practices, exploring the origins and adaptations carried out by farmers over generations, in response to changing circumstances. Through comparative analysis of conservation measures the book explores the various factors that influence adoption and adaptation; farmers' perceptions of conservation needs; and the institutional and policy settings most favourable to more effective land husbandry. This publication shows that indigenous techniques work, and are being used successfully to conserve and harvest soil and water. The book is also published in French.

Price: GBP 12.50; USD 22.
Orders to: Earthscan Publications, 120 Pentonville Road, London, N1 9JN, UK; E-mail: earthinfo@earthscan.co.uk; or Island Press, Box 7, 24850 East Lane, Covelo, Ca 95428, USA; E-mail: ipwest@igc.apc.org.

Methods for Assessment of Soil Degradation. Advances in Soil Science. R. Lal, W.H. Blum, C. Valentin and B.A. Stewart, editors. CRC Press, Boca Raton, 1998, 558 p. ISBN 0-8493-7443-X. Hardcover.

Soil degradation is a major global issue because of its adverse impact on agricultural productivity and sustainability. It undermines the resource base by decreasing soil quality. Degradation of agricultural lands is a symptom of misuse and mismanagement that jeopardizes the integrity of soil's self-regulatory capacity. Reliable information on soil degradation is needed to understand processes, establish the cause-effect relationship, and develop appropriate methods of constraint/stress alleviation, soil restoration and quality enhancement. Improved and reliable statistics is the answer to replace myths with facts, fears of doom prophecies with a constructive agenda to address the problem with objectively and realistically, and emotional rhetoric with action plans to alleviate the hazard. Methods of assessing soil degradative processes should be simple, accurate, objective, and routine and should be standardized and reflect the social, economic and ecologic consequences of different processes involved. The objective of this volume is to: 1. Explain predominant soil degradative processes for agricultural, urban, industrial and military land uses; 2. Describe presently used methods of evaluating soil degradation by different processes; 3. Identify research priorities in developing new and reliable methods in relation to different processes, their ecologic and economic impacts, and different land uses and 4. Describe scaling procedures of data extrapolation across temporal and spatial scales.
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Field Manual for Assessment of Current Erosion Damage. K. Herweg. Soil Conservation Research Programme, Ethiopia and Centre for Development and Environment, University of Berne, Switzerland, 1996, 60 p. ISBN 3-906151-07-7. Hardcover.

Assessment of Current Erosion Damage (ACED) is a method designed for monitoring and assessing soil erosion damage of recent origin. It is a »rough field method« that can be used to estimate soil losses from current rill and gully erosion, to identify important causes of erosion, and to elaborate initial steps in soil and water conservation. ACED was elaborated as a tool to supplement other erosion measurements like test plots, sediment troughs and river gauging stations, but it can also be utilised separately as a trouble-shooter. ACED is addressed to field technicians, extension workers and consultants, and is used in applied rather than in basic research. This manual is divided in two parts and one annex. Part I contains background information about ACED, its potential and limitations applicability, analysis, interpretation and outputs; Part II explains how to fill out the field forms. It contains detailed descriptions of each column on the forms and the Annex contains the field and sketch forms attached to this manual. This field manual was developed for people who need to get a quick overview of current soil erosion in their working area. Being a rough method, ACED can neither take account of all details of the erosion process nor can it have the same accuracy as more sophisticated methods. It is assumed that the user of this manual has basic knowledge of soil erosion and soil and water conservation. Some experience in designing conservation strategies or measures and practise in collaborating with farmers is desirable. Experienced field staff can use the manual as a training tool in the field.
Price: CHF 20.
Orders to: Centre for Development and Environment, Institute of Geography, University of Berne, Hallerstrasse 12, CH 3012 Berne, Switzerland. Fax: +41 31 6318544; E-mail: Gfeu_sek@giub.unibe.ch.

Soils of the Rainforest in Central Guyana. Plus Soil Map 1:100.000. Tropenbos-Guyana Series 2. A.J. van Kekem, J.H.M. Pulles, Z. Khan. The Tropenbos-Guyana Programme, 1996, 159 p. + map. ISBN 90 393 1159 5. Paperback

This report presents the results of the land resources inventory carried out within the framework of the Tropenbos research programme in the Mabur-Kurupukari area in Central Guyana. The area is part of a logging concession in which selective logging takes place. The land resources survey is to provide base line data on which decisions regarding sustained use of the forest can be based. The publication contains information about the environment, the survey methods and extensive soil data of 38 profiles. The map is at a scale of 1:100.000, showing 26 units.
Price: NLG 30
Orders to: The Tropenbos foundation, P.O.Box 232, 6700 AE Wageningen, The Netherlands:; Fax: +31 317 423024; E-mail: tropenbos@iac.agro.nl.

Ecology and Logging in a Tropical Rain Forest In Guyana. With recommendations for forest management. Tropenbos Series 14. H. Ter Steege et al. Backhuys Publishers, Leiden, 1996, 123 p. ISBN 90-5113-026-0. Paperbound.

The Tropenbos Guyana Programme started in September 1989. Its major objective is to attain an understanding of the lowland tropical rainforest ecosystems to such a degree that timber harvesting under a sustainable forest management system can be achieved without it leading to bio-degradation and loss of proper hydrological functions of the exploited system. At the same time a satisfactory level of bio-diversity is to be maintained and an appropriate area of rain forest conserved.

This book summarises the results of the first phase of the Tropenbos-Guyana Programme (1989-1993) and the contributions for the Tropenbos-Guyana Symposium held in Georgetown in 1994. The different studies are presented in a similar style and in an integrative manner. The interaction of results allows for the for-

mulation of recommendations for forest management.
Price: NLG 80.
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Towards Priorities of Biodiversity Research in Support of Policy and Management of Tropical Rain Forests. A Contribution to the Conservation and Wise Use of Tropical Rain Forests. E.M. Lammerts van Bueren and J.F. Duivenvoorden. The Tropenbos Foundation, Wageningen, 1996. 35 p. ISBN 90-5113-029-5. Stapled.

The purpose of this publication is to present the results of the development and application of a procedure to identify research priorities on biological and ecological aspects of biodiversity in order to provide crucial information to policy makers and forest managers for conservation and wise utilisation of tropical rain forests. The paper delivers two products: a procedure for setting research priorities and a partial application of this procedure.
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Hierarchical Framework for the Formulation of Sustainable Forest Management Standards. Principles Criteria Indicators. E.M. Lammerts van Bueren, E.M. Blom. The Tropenbos Foundation, Wageningen, 1997, 82 p. ISBN 90-5113-031-7. Soft bound.

This documents provides a manual for the development of hierarchically consistent standards and a guideline for the formulation of principles, criteria and indicators for sustainable forest management (C&I). It was written to provide practical backup to the different processes directed at the development of C&I, and highlights and discusses the underlying concepts for the formulation of C&I and explores their inter-relationships in an effort to achieve greater clarity and consistency in their use.
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Orders to: Universal Book Services, P.O. Box 321, 2300 AH Leiden; Fax: +31 71 5171856; E-mail backhuys@euronet.nl.

World Atlas of Desertification. Second Edition. N. Middleton and D. Thomas, coordinating editors. UNEP, Arnold, London and John Wiley & Sons, New York, 1997, x + 182 p. ISBN 0-340-69166-2 (Arnold); 0-470-24972-2 (Wiley).

This atlas summarises the state of scientific knowledge on the drylands of the globe. Representing in graphic form the current state of our understanding of desertification, as well as its extent and possible solutions, it contains an extraordinary amount of information of value to students and experts alike. It clearly shows that desertification is one of the world's most pressing environmental problems, and that it is a truly global issue. Since the publication of the first edition in 1992, over 100 countries have ratified the United Nations Convention to Combat Desertification. This second edition reflects major advances in our understanding of desertification over de past few years and has been thoroughly revised and expanded to almost twice its original size. Because combating desertification involves all aspects of environmental issues, the edition covers a broader range of topics, including concerns surrounding poverty, biodiversity, climate change and the availability of water. Social and economic conditions also have a major impact on the progress and control of desertification and this edition contains the latest information on population movements which result from, and lead to, desertification.
Desertification directly affects the livelihoods of more than one billion people who are dependent on the land for their survival. Using the latest updated digitised maps of desertification, this atlas is essential reading for everyone concerned with the drylands and their people. Much of the information is based upon the Global Assessment of Soil Degradation (GLASOD) project and subsequent more detailed database development in Asia (ASSOD), carried out by the International Soil Reference and Information Centre (ISRIC), Wageningen.
Price: GBP 145.
Orders to: SMI, P.O.Box 119, Stevenage, Herts. SG1 4TP, UK or John Wiley & Sons, 605 Third Avenue, New York, NY 10158-0012, USA.

The toposequence concept. Methods for linking partners in on-farm research for rural development. Results of a field workshop in Sikasso, Mali, August 1995. W.A. Stoop, W.J. Brinkman and W.J. Veldkamp, editors. Working paper series: no.1. Agricultural and Enterprise Development section of the Royal Tropical Institute, Amsterdam, 1997, vii + 189 p.

The toposequence concept is a tool to identify and analyze variability in land types and land use. It also serves as a communication tool, as it is easily visible in the landscape. The effectiveness of the toposequence concept as a tool will depend upon the methodology used. It is effective in the context of participatory approaches to technology development, extension, and land use planning. It is recognized and used by both farmers and researchers, being relevant at different scales of work, at field and farm levels as well as the village territory and watershed. It can also be used in the extrapolation and transfer of research results.
This series of papers illustrates the use of the toposequence concept in the different, iterative phases of Farming Systems Research and Development and Natural Resource Management, as well as in communication between different actors in rural development, and in increasing the impact and spread of local research results. The papers selected for full presentation are either in French or English and all have an English and French summary.
Orders to: see below.

Facilitating innovation for development: A RAAKS resource box. M.L. Salomon, P.G.H. Engel. (book, manual and cards in a box). Royal Tropical Institute, Amsterdam, 1997, 240 p. book; 80 p. manual; 41 laminated cards. ISBN 90 6832 109 9. Paperback.

RAAKS is a participatory method that facilitates networking and communication processes, that is, knowledge management. It is field-tested, and can be used to build a team and start to work. It stands for rapid or

relaxed appraisal of agricultural knowledge systems; the methodology was developed to improve the generation and use of agricultural knowledge and innovation, and is beginning to be used in other areas as well. The resource box includes a guide to the method, with 'windows'-specific ways to gain varied perspectives on the situation - and 'tools' for use in practice, plus a book. Each window and each tool is on a separate card: a team can choose a combination to fit their situation. The book included in the box, The social organization of innovation A focus on stakeholder interaction (ISBN 90 6832 101 3), is also available separately. It combines theory and case studies, providing detailed background material for the methodology.

The publication is intended for management consultants, decision makers, project managers, facilitators and others in the field.

Price: NLG 59 (Box); NLG 39 (book only)
Orders to: see below.

Agricultural R&D at the crossroads. Merging systems research and social actor approaches. A. Budelman, editor. Royal Tropical Institute, Amsterdam, 1997, 247 p. ISBN 90 6832 107 2. Paperback.

This book presents a selection of the papers from the International symposium on Systems-Oriented Research in Agriculture and Rural Development, held in Montpellier, from 21 to 25 November 1994. As the difficulties inherent in providing sustainable food supplies for the world's population become ever more apparent, agricultural researchers stand at crossroads. It is becoming increasingly clear that social, political and economic processes are often as critical as - and even overshadow - technical innovation. Currently, there are various approaches to agricultural research. Merging these can provide new vitality. Incorporating social actor approaches has even more potential, but may require researchers to re-define their roles. As this book makes clear, agricultural researchers are not just objective participants; we are also stakeholders, with an interest in achieving successful interventions. Agricultural systems, however,are broader than the usual definitions of many agricultural researchers, and far more socially complex. To improve our success rate by taking advantage of the potential of social actor approaches, many of us will need to acquire new skills. Are we willing to do this? To see ourselves as actors in a wider framework, one group among many processes of agricultural innovation? Perhaps to become participants in joint learning, opening up 'doing science' and working collaboratively toward mutually defined aims? The papers suggest that to achieve sustainability, to create strategies with the objective of making it possible for rural populations to manage their own resources, these are exactly the areas in which we must attempt to change. An annotated bibliography has been appended to provide an introduction to the literature in both English and French.

Price: DFL 59.
Orders to: Royal Tropical Institute, KIT Press, P.O.Box 95001, 1090 HA Amsterdam, The Netherlands; Fax: +31 20 5688286; E-mail: kitpress@kit.support.nl.

The Terrestrial Biosphere and Global Change: Implications for Natural and Managed Ecosystems. A Synthesis of GCTE and Related Research. IGBP Science No. 1. B. Walker, W. Steffen, editors. The International Geosphere-Biosphere Programme (IGBP), Stockholm, 1997, 32 p.

The IGBP and its partners, the World Climate Research Programm (WCRP), and the International Human Dimensions Programme (IHDP), provide an international, interdisciplinary framework for the conduct of Global Change science. They add value to nationally funded activities through the identification and agreement of research priorities, the development of standardized research methodologies, the co-ordination of major multi-national field campaigns and research efforts, and the exchange of data and results. After a decade of activity, they can point to an ever broadening pool of new Earth System knowledge and understanding, and a vastly enhanced international, interdisciplinary network of researchers. An important characteristic of the programmes is their capacity to draw on the world's front-ranking research expertise to synthesise »state of the art« summaries of new Earth System results. The global Change and Terrestrial Ecosystems (GCTE) project is the first of IGBP's projects to do so. The researchers have produced an account of the outcome of their work to date covering both basic research and policy-relevant issues. The former deal with the response of terrestrial ecosystems to predicted Earth System changes and associated feedbacks, whilst the latter address critical issues such as the future capacity of terrestrial ecosystems to provide food for the world's growing population, and their ability to absorb the carbon emissions resulting from humankind's exploitation of fossil fuels. The latter insight constitute critical steps on the path to »Sustainability«.

This is an executive summary with the major findings and is available free of charge from IGBP. The full synthesis results and conclusions are presented in Walker et al. (eds). Implications of Global Change for Natural and Managed Ecosystems. IGBP Book Series 4, Cambridge University Press.

Requests to: IGBP Secretariat, Royal Swedish Academy of Sciences, Box 50005, S-104 05 Stockholm, Sweden. Fax: +46 8 1664 05; E-mail: lisa@igbp.kva.se.

Intercropping and the Scientific Basis of Traditional Agriculture. IT Studies in Indigenous Knowledge and Development. D.Q. Innis. Intermediate Technology Publications, London, 1997, ix + 179 p. ISBN 1 85339 328 2. Paperback.

Intercropping is a widespread practice in developing countries which has many benefits: it usually results in higheryields, better conservation of soil, more effective use of natural resources, and keeps pests down. Until recently, intercropping received insufficient attention from mainstream agricultural scientists. Recent studies indicate that its worth is becoming more widely recognised. This publication, based on field studies in Jamaica, Nepal and India over many years, presents a comparative analysis of the practice of intercropping. The conclusion that intercropping offers both agro-

nomic and ecological advantages as well as economic and financial benefits over monocropping is well documented.
Price: GBP 19.95; USD 38
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Slash/Mulch Systems. Sustainable methods for tropical agriculture. H.D. Thurston. Intermediate Technology Publications, London, Westview Press, Boulder, 1997, ix + 196 p. ISBN 1 85339 340 1. Paperback.

Mulching and slash/mulch systems constitute some of the most ecologically sound agricultural systems that traditional farmers have developed over the centuries. These practices are characterized by the slashing or cutting of vegetation 'in situ' to produce a mulch from agricultural crop rather than discarding or burning.
This overview and analysis of slash/mulch practices from around the world, particularly from the tropics, shows that these systems have generally shortened the necessary fallow periods and have restores degraded soils, thus increasing or stabilizing yields. These improvements, in turn, have allowed small-scale, resource-poor farmers to compete more effectively with larger commercial farmers and have enabled subsistence farmers to achieve food security.
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Miombo Ecology and Management. An Introduction. E.N. Chidumayo. Intermediate Technology Publications, London, in association with the Stockholm Environment Institute, 1997, xviii + 166 p. ISBN 1 85339 411 4. Paperback.

Miombo forest occurs in a swathe across central and southern Africa, including parts of Zambia, Zimbabwe, Angola, Zaire, Malawi, Mozambique and Tanzania. It is rich in tree species, and has enormous value as a wildlife habitat. Traditionally, shifting cultivators have farmed in miombo, and allowed it to regenerate, but increasingly demands for land and fuelwood have resulted in deforestation.

This book provides comprehensive details of the climate, environment, ecology and species characteristic of miombo, and describes methods for assessing the timber and other resources, through inventories, in order to use the forest sustainably. Management guidelines give practical advice on propagation and harvesting techniques, as well as discuss how to design plans to conserve biodiversity and to protect water catchments. It has five chapters. The first part of chapter 1 is an introduction to the indigenous vegetation types in the miombo region, commonly referred to as the Zambezian phytoregion, the second part is a description of miombo ecology. Chapter 2 is a description of the various major uses of the miombo ecosystem. Chapter 3 is a biogeography of fire, one of the principal ecological factors and a significant management problem, in the miombo ecosystem and a description of adaptations in different plant forms. In chapter 4 methods of carrying out management inventories and assessments of various uses of miombo are presented. The last chapter deals with management guidelines.
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Evaluating Natural Resource Use in Agriculture. T. Robertson, B.C. English and R.R. Alexander. Iowa State University Press, Ames, 1998, xxi + 397 p. ISBN 0-8138-2958-5. Hardcover.

This publication offers all the updated papers presented at the Thirtieth International Atlantic Economic Conference, held in 1990. The authors seek to develop a system for evaluating the impact of alternate programs and policies on the natural resources of the United States. They evaluate the feasibility of bringing together independent models used for measuring the impact of alternate policies at the firm, local, regional and national levels. Most of the models estimate the impacts of alternative production practices on agriculture and the environment.They consider methods for estimating the impacts of alternative agricultural production and environmental policies on farm income and employment, sustainable agriculture, erosion, and pesticide risks and benefits. Although written for a US audience, the contents of this book makes also interesting reading for scientists elsewhere.
Price: USD 59.95
Orders to: see below.

Soil Science Simplified. M.I. Harpstead, T.J. Sauer, W.F. Bennett. Third edition. Iowa State University Press, Ames, 1997, ix + 210 p. ISBN 0-8138-1504-5. Hardcover.

This publication offers a thorough and very readable look at soil - its formation, components, chemistry, fertility, and erosion. In this third edition the authors have expanded and strengthened all chapters, included new chapters on soil water and heat flow and soil temperature, and incorporated both English and metric units of measure. Soil classification has been updated to reflect the most recent revisions.
Price: USD 36.95
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Soil Genesis and Classification. Fourth Edition. S.W. Biol, F.D. Hole, R.J. McCracken, R.J. Southard. Iowa State University Press, Ames, 1997, xvi + 527 p. ISBN 0 8138 1464 2. Hardcover.

This fourth edition reflects advances in concepts and new information based on research and field experience. It describes the changes in soil classification reflected in Soil Taxonomy in the last 8 years and reflects several changes in terminology, advances in technology and soil formation processes. It includes a definition and description of soils in the coldest regions of the planet that are actively being considered as a new order, Gelisols, in Soil Taxonomy. More information is given about the genesis, properties and classification of

soils frequently present in tropical and subtropical regions and soils with andic soil properties, the Andisols. Discussions and explanations of the use and applications of new technology via soil data bases, soil geographic information systems, ground penetrating radar, increased use of aerial photography for soil studies, and new approaches to modeling soil systems; measures for remediation of soil problems and discussions of concerns about soil quality, such as waste disposal and soil loss by erosion. The book has a very extensive bibliography and is well-illustrated.
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Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE). K.G. Renard, G.R. Foster, G.A. Weesies, D.K. McCool and D.C. Yoder. Agricultural Handbook Number 703. U.S. Department of Agriculture, 1997, xix + 384 p. ISBN 0-16-048938-5. Hardcover.

The Revised Universal Soil Loss Equation (RUSLE) is an erosion model predicting longtime average annual soil loss (A) resulting from raindrop splash and runoff from specific field slopes in specified cropping and management systems and from rangeland.This publication is an update of Agriculture Handbook No. 537, containing a computer program to facilitate the calculations. RUSLE also includes the analysis of research data that were unavailable then. Although the original Universal Soil Loss Equation (USLE) has been retained in RUSLE, the technology for factor evaluation has been altered and new data have been introduced with which to evaluate the terms for specified conditions. Thus soil-loss evaluations can be made for conditions not included in the previous handbook using fundamental information available in three data bases: CITY, which includes monthly precipitation and temperature, front-free period, annual rainfall erosivity (R) and twice monthly distributions of storm erosifity (E); CROP, including below-ground biomass, canopy cover, and canopy height at 15-days intervals as well as information on crop characteristics; and OPERATION, reflecting soil and cover disturbances that are associated with typical farming operations. The calculations in RUSLE are facilitated with a computer program.
Price: USD 57
Orders to: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, USA or K.G. Renard, Southwest Watershed Research Center, 2000 E. Allen Rd., Tucson, AZ 85719, USA; Fax: +1 520-670-5550; E-mail: Renard@tucson.ars.ag.gov.

Ecosystem-Based Management of Natural Resources: a Step Towards Sustainable Development. IUFRO Occasinal Paper No. 6. R. Schlaepfer. International Union of Forestry Research Organizations, 1997, 32 p. ISSN 1024-414X.

The world's awareness of the emerging problems due to different pressures on the ecosystems on which our society depend for its well being has increased considerably. It has become clearer that plants, animals, microorganisms, soils, air, and water constitute a natural heritage of social, economic, ecological and intrinsic value that needs to be preserved, where possible enhanced, and handed over to future generations. The need to improve the protection and management of ecosystems in a way that balances and integrates environmental and development questions, is now recognized as an important challenge for sustainable development. An objective of this paper is to review ideas on how natural resources can be managed for sustainable development. This is done on the basis of an ecosystem approach, and mainly deals with forest ecosystems.
Orders to: IUFRO Secretariat, Seckendorff-Gudent-Weg 8, A-1131 Wien, Austria. Fax: +43-1-877 93 55; e-mail: iufro@forvie.ac.at.

The use of remote sensing for land degradation and desertification monitoring in the Mediterranean basin. State of the art and future research. J. Hill and D. Peter, editors. Experts Workshop 13 to 15 June 1994, Valencia (Spain). European Commission, Environment and Quality of Life. EUR 16732 EN. European Commission, Luxembourg, 1996, ix + 235 p. ISBN 92-827-7784-7. Paperback.

Since the mid eighties, the European Union has responded to the threat of progressive desertification in the Mediterranean region by initiating major programmes on fundamental and applied research (EPOCH, 1989-1992; ENVIRONMENT, 1991-1994). Findings from these integrated and multidisciplinary projects have increased our understanding of land degradation processes which result from the mismanagement of land and water resources, and progressive drought under possible changing climatic conditions. It appears evident that land degradtion in this context needs to be addressed at different scales and with appropriate indicators in order to analyze its consequences, and to define strategies to control it. It was felt that there was a need to assess how remote sensing approaches were used in the assessment of the desertification phenomenon so far, and how its fundamental and complementary role could be envisaged in the future. The workshop convened remote sensing specialists from various disciplines involved in desertification and land degradation monitoring, and representatives of potential end-users, e.g. coming from national and supranational agencies. The papers presented are contained in this publication.
Orders to: Office for Official Publications of the European Communities, L-2985 Luxembourg. Also available on the Internet through the Europa server: http://europa.eu.int.

Environmental Impact of Radioactive Releases. Proceedings of a Symposium, Vienna, 8-12 May 1995. International Atomic Energy Agency, Vienna, 1995, 874 p. ISBN 92-0-104495-X; ISSN 0074-1884. Softbound.

These proceedings contain the text of all oral presentations and the extended synopses of the poster presentations. This symposium was the first IAEA meet-

ing dealing specifically with the transfer of radionuclides in the environment. Its purpose was to review the information that has become available in recent years, notably as a result of the Chernobyl accident and information gained from studies of the discharges from civil and military nuclear facilities in the early nuclear age. Also to provide a forum for technical information exchange and a presentation of the main results of two major IAEA programmes: VAMP (Validation of Environmental Model Predictions) and IASAP (International Arctic Seas Assessment Project). In its final session, discussions on protection of the environment and the precautionary principle were held.

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Humic Substances and Organic Matter in Soil and Water Environments: Characterization, Transformations and Interactions. Proceedings of the 7th International Conference of the International Humic Substances Society, University of the West Indies, St. Augustine Trinidad and Tobago, 3-8 July 1994. C.E. Clapp, M.H.B. Hayes, N. Senesi & S.M. Griffith, editors. International Humic Substances Society, Minnesota, 1996, xxiv + 493 p. ISBN 1-889365-00-9. Softcover.

The aim of the International Humic Substances Society (IHSS) is »To advance the Knowledge, Research and Applications of Humic Substances«. The contributions to this book are based on papers and posters presented at the above mentioned Conference. All who have interests in the humic sciences are aware of the vital roles which humic substances have in agriculture. It is recognized now that good soil management, and appropriate amendments with organic substances are essential for the preservation of soil aggregates. This book has seven sections. Section 1, Isolation, Fractionation, and Characterization of the Humic Substances of Soils and Waters (11 papers), are essential for an understanding of composition and properties. Section 2 (6 papers) deals with the »Transformations of Organic Matter in Soils«. The transformations to humic substances of various types of organic substrates, and the properties of the substances formed are considered. Section 3 (9 papers) deals with the »Influences of Management Practices on the Composition and Properties of Organic Matter in Soils and Waters«. It focuses on different plant precursors and emphasizes the influences of different soil types, of different sizes of aggregates, and of different management systems on the humification process. Section 4 (9 papers) deals with »Spectroscopy and Chemical Degradations« as tools for studies of the compositions of humic substances. Section 5 (9 papers) »Interactions of Xenobiotic Chemicals, Metals and Mineral with Humic Substances«. Attention is focused on the ways in which humic substances affect the solubilities of sparingly soluble organic chemicals, on the way in which they sorb certain organic chemicals, and on the ways in which they interact with heavy metals. Section 6 (5 papers) addresses aspects of the »Biological Influences of Humic Substances« and includes investigations of the post-chlorination mutagenicity of aquatic humic substances, of the uses of humic substances as natural detoxicants and for the promotion of plant growth. Section 7 (8 papers) is especially relevant to emerging industries that involve the utilizations of humic substances on land.

For information about the IHSS: 1991 Upper Buford Cicle, St.Paul, MN 55108, USA

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Orders to: Dr. C.E. Clapp, USDA-Agricultural Research Service and Department of Soil, Water, and Climate, University of Minnesota, St. Paul, MN 55108, USA; or Dr. Michael H.B. Hayes, The University of Birmingham, School of Chemistry, Edgbaston, Birmingham B15 2TT, UK; Fax: +44 121 414 4403.

Diagnostic Techniques for Improving Crop Production. Instructor's Manual B. Wolf. Food Products Press, Binghamton, 1996, xv + 426 p. ISBN 1-56022-858-X. Hardcover.

In this book are presented a number of procedures across several disciplines that enable the grower to find answers involving important inputs directly in the field or through various laboratories. By making a number of interdisciplinary techniques available it should also aid the highly specialized expert to become more competent in dealing with growers' problems. Section I: Soil Diagnostics (3 chapters) covers those techniques that can have an impact on the intelligent use of soil. Section II: Plant Diagnostics (3 chapters) outlines tests of plant materials useful for improving crop production; Section III: Water Diagnostics (3 chapters) deals with the application of water for crops, emphasizing those tests that determine the need for water and the suitability of water for irrigation. Section IV: Diagnostic Procedures for Maximizing Pest Control (2 chapters), summarizes diagnostic techniques that maximize pest control by counting and identifying pests, proper application of pesticides, and calibration of application equipment. Section V: Diagnostic Procedures for Evaluating the Plant Environment (4 chapters), outlines the methods of evaluating climate that will provide suitable conditions of light, temperature, air humidity, carbon dioxide, and freedom from air pollutants for growing, storing, and transporting plants and plant commodities. Section VI: Appraising the Problem: Systematic Approach (one chapter), provides methods for determining the causes of problems.

Together with this book, an Instructor's Manual was published, containing an introduction for each of the six sections and the 18 chapters. In addition, the manual provides a list of key concepts that enables the instructor to present the basic facts about each diagnostic procedure; a set of discussion topics or essay questions and some multiple choice questions (with answers), a useful addition.

Price: USD 89.95; USD 108 (Outside US/Canada/Mexico).

Orders to: Sales/Publicity Department, Food Products Press, The Haworth Press, 10, Alice Street, Bingham-

ton, New York 13904-1580, USA. E-mail: getinfo@haworth.com.

Main Types of Geological Maps. Purpose, Use and Preparation. French Oil and Gas Industry Association. Technical Committee. Édition Technip, Paris; Oxford & IBH Publishing Co., New Delhi, 1997, 348 p. ISBN 2-7108-0622-3. Hardcover.

The maps described in this work are presented in the form of standardized data sheets including the definition together with, when available, the corresponding mathematical function, goal, use (in combination or association), advantages and limitations and compiling (materials and methods) of some fifty maps. Examples are given for comparing the most important types and showing how they are complementary. As for many maps, databases can be obtained from physical measurements (wireline logging and geophysics). The maps have been arbitrarily divided into two broad categories, qualitative maps and quantitative maps, prepared from raw quantitative data amenable to computer processing. Within each category, four groups of maps have been distinguished, depending on what they describe: a surface; a volume; a composition; or a time-space evolution. A fifth group has been added to the quantitative maps: maps which aid in defining the degree of reliability of plotting of the preceding maps and evolving regional or local trends from them. At the end of the book maps are listed which do not fit into this classification.
Price: FRF 560
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Beyond Intellectual Property. Toward Traditional Resource Rights for Indigenous Peoples and Local Communities. D.A. Posey and G. Dutfield. International Development Research Centre, Ottawa, 1996. *ISBN 0-88936-799-X.* Paperback.

The growing attention given to traditional knowledge and resource rights for indigenous peoples by an enlarged number of disciplines makes this book also an interesting one for soil scientists. It is published within the framework of the Working Group on Traditional Resource Rights, established after the 1990 World Congress of the International Society for Ethnobiology. The aim was to implement a strategy for the use of local knowledge, the involvement of local peoples in conservation and development strategies, and the implementation of alternative, people-centred conservation models. It presents conclusions of numerous conferences, seminars and workshops on Intellectual Property Rights or Traditional Resource Rights. This latter term was introduced in recognition of the fact that »Property« has a different connotation between indigenous peoples and Western thought. The term traditional resource rights has emerged to define the many »Bundles of rights« that relate to protection, compensation, and conservation. The aim of this publication is to outline the nature of these bundles and suggest how these rights can be made accessible to local communities. It has an extensive resource guide with World-Wide Web sites, a useful annotated bibliography and addresses of relevant institutions and persons, and a glossary.
Price: USD 30.
Orders to: IDRC Books, Renouf Publishing Co., 5369 Canotek Road, Unit 1, Ottawa, Ontario, Canada, K1G 3H9. E-mail: renouf@fox.nstn.ca.

Dictionnaire de Science du Sol. Avec index anglais-français. 3ème Edition. J. Lozet et C. Mathieu. Tec&Doc Lavoisier, Paris, 1997, 488 p. ISBN 2-7430-0178-X.

La première parution du Dictionnaire de Science du Sol remonte à 1986 et une 2ème édition a été publiée en 1990. L'évolution de la Science du sol est à ce point rapide et vaste, qu'il était impératif de publier une 3ème édition mise à jour et augmentée: on est passé de 2.400 à 3.500 termes définis; certains termes nouveaux sont apparus en pédologie et dans les sciences connexes, tandis que d'autres ont acquis un sens différent. Parmi les modifications les plus importantes, il faut relever: la révision de la Soil Taxonomy, la légende révisée de la carte mondiale des sols FAO-Unesco et le Référentiel Pédologique Français. Outre le dictionnaire, présenté classiquement par ordre alphabétique, l'ouvrage comporte plusieurs annexes, reprenant l'essentiel des principales classifications des sols, les appellations des horizons dans différents systèmes, une liste de pédologues célèbres, ainsi qu'un index anglais-français. Cet ouvrage intéressera tout professionnel de la science du sol et en particulier les enseignants et les chercheurs principalement, mais non exclusivement francophones.
Prix: FRF 495.
Commandes à: Tec&Doc Lavoisier, 11 rue Lavoisier, F-75384 Paris Cedex 08, France. Fax: +33 1 47 65 02.46; E-mail: edition@lavoisier.fr.

The Economics of Environmental Degradation. Tragedy for the Commons? T.M. Swanson, editor. UNEP and Edward Elgar, Cheltenham, Brookfield, *1996, xiii + 192* p. *ISBN 1 85898 486 6. Hardback.*

After a up-to-date survey of the most recent literature, the authors consider whether there is some common or deeper explanation of environmental degradation. They conclude that a problem results whenever human exploitation of the environment outruns the capacity of human institutions to adapt and to evolve methods for managing exploitation. Environmental degradation will persists because it is the static result of the on-going dynamic contest between opportunistic individuals and institutional adaptation. This volume is intended as a supplementary text for students and policy makers interested in the issues of environmental problems. It also provides a few new insights on the interface between environmental economics, natural resource economics and institutional economics for those working in any one of those fields.
Price: GBP 45.
Orders to: see below.

Economy and Ecosystems in Change. Analytical and Historical Approaches. J.C.J.M. van den Bergh, J. van der Straaten, editors. P.Hill Jasinski, technical

editor. Advances in Ecological Economics. Edward Elgar, Cheltenham, Lyme, 1997, xiii + 400 p. ISBN 1 85898 647 8. Hardback.

With the exception of one, all the papers in this publication were presented at the third meeting of the International Society for Ecological Economics (ISEE), titled »Down to Earth: Practical Applications of Ecological Economics«, held in Costa Rica, 1994. Ecological economics is concerned with extending and integrating the study and management of nature's household (ecology) with humanity's household (economy). Ecological economics acknowledges that, in the end, a healthy economy can only exist in symbiosis with a healthy ecology. Ecological economics is the name that has been given to the effort to transcend traditional disciplinary boundaries in order to address the interrelationship between ecological and economic systems in a broad and comprehensive way. Ecological economics takes a holistic worldview with human beings representing one component (albeit a very important one) in the overall system. The interaction between economies and ecosystems is a topic that has received increasing attention in the last few years. Environmental economics has dealt with natural resources, but has generally not gone further than a very abstract level of analyzing exploitation of renewable resources. This means that issues related to ecosystem structure and functions, multiple use and assessment of use and non-use values have received little attention. However, as this book shows, much attention has recently been focused on dealing with such problems, using both analytical-theoretical, empirical-statistical, and historical-descriptive approaches. On a macro- or regional level, economy-ecosystem relationships are more varied and heterogeneous than on a very micro-level, and as a result it will be very difficult to deal analytically with impacts such as ecosystem stress on national economies. However, as is also shown in this book, statistical evaluation and historical analysis may contribute to a better understanding of the intricate links between socioeconomic and environmental-ecological systems on such a scale. In the last part of the book the perspective is further broadened to specifically address policy and institutional issues.

Price: GBP 55.

Orders to: Edward Elgar Publishing, 8 Lansdown Place, Cheltenham, Glos GL50 2HU, UK; Fax: +44 1242 262111; Email: Publicity@e-elgar.co.uk, or Pinnacle Hill Road, Lymne, NH 03768, USA.

Beyond Slash and Burn. Building on Indigenous Management of Borneo's Tropical Rain Forest. Advances in Economic Botany Volume 11. C.J. Pierce Colfer, N. Peluso and C.S. Chung.

Scientific Publications Department the New York Botanical Garden, New York, 1997, xi + 236 p. ISBN 0-89327-405-4. Paperback.

»What is the world giving up when the tropical rain forests are destroyed?« The authors ponders this question from the viewpoint of the Uma'Jalan, an indigenous Kenyah people of eastern Borneo, by looking at the complex management systems they have developed for their tropical forests. This volume shows the many uses the Uma'Jalan make of the various stages of forest regrowth, the under-recognized benefits gained from the forest, the forest's value beyond that which is attached to it by outsiders, and concludes with recommendations on how this system might be adapted to help in the conservation of tropical rain forests and the continued subsistence of traditional rain forest communities elsewhere. It also discusses the changes in management from the traditional system to a more modern kind that includes the clearing of vast areas for transmigration, industrial timber plantations, and mining, as well as the continuing onslaught of large-scale, comparatively unmanaged commercial logging. This publication might help as a wake-up call to protect the environmental health and human well-being of Borneo.

Price: USD 28 (plus postage and handling).

Orders to: Scientific Publications, The New York Botanical Garden, Bronx, NY 10458-5126, USA; Fax: +1 718 817-8842 or E-mail scipubs@nybg.org.

X-Ray Diffraction and the Identification and Analysis of Clay Minerals. Second Edition. D.M. Moore, R.C. Reynolds, Jr. Oxford University Press, Oxford, New York, 1997, xviii + 378 p. ISBN 0-19-508713-5. Paperback.

This book is a combination text and laboratory manual. This is reflected in the format. The wire binding allows it to lay flat on the laboratory bench. The goal of the book is to achieve historical perspective, to understand the interaction of X-rays, and crystalline materials, and to understand the applications and limitations of the data produced by this interactions. This new edition pays particular attention to integrating the mineralogy of soils and features a new chapter on disorder and polytypes. Chapter four from the first edition has been expanded and split into two chapters, »Structure and Properties: General Treatment« and »Structure, Nomenclature, and Occurrences of Clay Minerals«. Chapter 10 is new and is an introduction to using X-ray diffraction tracings from random powders. Essential in agriculture, geology, and in making informed engineering decisions, this text offers the necessary information on the properties of these minerals, combining theoretical discussing with recipe-like directions for laboratory procedures.

Price: GBP 27.50.

Orders to: Oxford Science Publications, Great Clarendon Street, Oxford OX2 6DP, UK. Fax: +44 1865 267782 or E-mail: science.books@oup.co.uk.

Aquic Conditions and Hydric Soils: The Problem Soils. SSSA Special Publication Number 50. M.J. Vepraskas, S.W. Sprecher, editors. Soil Science Society of America, Madison, 1997, xvii + 156. ISBN 0-89118-878-2. Paperback.

This publication is based on a symposium held at the annual meeting of the Soil Science Society of America in 1994. It focuses on the problem of identifying hydric soils when redoximorphic features are not present. Hydric soil identification is normally done by looking for indicators that show the soils have been chemically reduced. Such indicators include redoximorphic features, or, as formerly called, gray and red mottles. When

these colors occur near the soil surface, hydric soils are easily identified. However, not all hydric soils develop these features. This publication focuses on the problem of identifying hydric soils when these features are absent.
Price: USD 36.
Orders to: see below.

Replenishing Soil Fertility in Africa. SSSA Special Publication Number 51. *R.J. Buresh, P.A. Sanchez* and F. Calhoun, editors. Soil Science Society of America, American Society of Agronomy, Madison, 1997, xix + 251 p. Paperback.

Declining soil fertility is the fundamental cause of declining productivity in Africa. Extreme poverty, widespread malnutrition, and massive environmental degradation are consequences of a policy environment that results in large-scale nutrient mining. This publication is the result of an international symposium held in 1996 at the joint annual meeting of ASA and SSSA in Indianapolis. It brings together the current views of a multidisciplinary team of scientists, as well as leaders of African national research institutes, international research centers, nongovernmental organizations, and universities in Africa, the USA and Europe. The first chapter presents the new conceptual approach of replenishing soil fertility as an investment in natural resource capital. It is followed by an analysis of the magnitude of soil fertility depletion, a review of field research trials, an exciting NGO approach, and a perspective from temperate-region soils. These are followed by three process-oriented chapters on phosphorus, nitrogen, and combining organic and inorganic nutrient inputs. The last two chapters focus on key socioeconomic considerations, gender, and environmental economics.
Price: USD 22.
Orders to: see below.

Glossary of Soil Science Terms-1997 Edition. Soil Science Society of America, 1997, 140 p. ISBN 0-89118-827-4. Softcover.

This revision of the Glossary replaces the previous edition and includes major revisions and additions. In this edition approximately two-thirds of the 1514 terms contained in the July 1987 edition were revised. The »obsolete« list was moved into the main body of the glossary to facilitate the finding of these terms with addition of »no longer used in SSSA publications« or »Not used in current U.S. system of soil taxonomy« where appropriate. A total of 113 terms was deleted and 420 new terms were added. Three of the nine tables were deleted while three more were revised radically. The other three tables had only slight modifications and two new tables were added. Measurements included with terms are in SI units. Conversion factors for SI and non-SI units are included at the end of this Glossary. The glossary is published in an effort to provide a foundation for common understanding in communications covering soil science.
Price: USD 5 each for 1-10 copies and USD 4.75 each for 11 or more copies.
Orders to: see below.

Advances in Carbon Dioxide Effects Research. ASA Special Publication Number 61. L.H. Allen, Jr., M.B. Kirkham, D.M. Olszyk and C.E. Whitman, editors. American Society of Agronomy, Madison, 1997, xvii + 228 p. ISBN 0-89118-133-4. Paperback.

Plants are being exposed today to higher atmospheric CO2 concentrations that they have been for the last 2 million years. This increase is caused primarily by burning of fossil fuels and secondarily by conversion of forests to other land uses. Recent advances on the effects of CO2 on vegetation and climatic change have included new experimental technologies as well as improved understanding of processes. The development of Free-Air Carbon dioxide Enrichment (FACE) systems has permitted exposure of plants to elevated CO2 in large field plots without the confines of chamber walls; however, comparisons of plant responses in FACE systems with some of the responses in growth chambers have confirmed, not invalidated, many of the plant responses found in chamber exposure systems. Advances in understanding respiration processes have been documented in this publication. Responses of trees as well as agricultural crops to CO2 have been reviewed. Although a very wide range of responses have been found in various experiments around the globe, the average response to doubled CO2 was found to be about 33%. Improved modeling techniques have been developed for more accurate assessment of crop responses to elevated CO2 and climate change.
Price: USD 36.
Orders to: ASA, CSSA, SSSA Headquarters Office; Attn. Book Order Department; 677 South Segoe Road; Madison, Wisconsin 53711-1086, USA. Fax: +1 608-273-2021; E-mail: books@agronomy.org.

Opportunities for Biological Nitrogen Fixation in Rice and Other Non-Legumes. Proceedings of the Second Working Group Meeting of the Frontier Project on Nitrogen Fixation in Rice held in Faisalabad, Pakistan, 13-15 October 1996. J.K. Ladha, F.J. de Bruijn, K.A. Malik. Developments in Plant and Soil Sciences 75. Reprinted from Plant and Soil. Kluwer Academic Publishers, Dordrecht, Boston, 1997, 232 p. ISBN 0-7923-4514-2. Hardbound.

New frontiers of science offer exciting opportunities to stretch rice research horizons. Recent advances in understanding symbiotic Rhizobium-legume interactions at the molecular level, the discovery of endophytic interactions of nitrogen-fixing organisms with non-legumes and the ability to introduce new genes into rice through transformation have created an excellent opportunity to investigate the possibilities for incorporating N2 fixation capability in rice. During a workshop, the participants reaffirmed that such opportunities do exist for cereals and recommended that rice be used as a model system. Subsequently, IRRI developed a New Frontier Project to coordinate collaborative efforts among research centers committed to reducing dependency of rice on mineral N resources. An international Rice Biological Nitrogen Fixation working group was established to review, share research results/material, and to catalyze research. This volume contains the deliberations made at the second working

group meeting. The papers presented deal with recent findings on different approaches related to the establishment of endophytic association, development of N2-fixing nodules similar to legumes and transfer of nif genes to rice. This book is co-published with IRRI.
Price: NLG 250; USD 143; GBP 85.
Orders to: see below.

Applications of Systems Approaches at the Farm and Regional Levels. Volume I. Systems Approaches for Agricultural Development, Volume 5. Proceedings of the Second International Symposium on (SAAD), held at IRRI, Los Ba_os, Philippines, 6-8 December 1995. P. P.S. Teng, M.J. Kropff, H.F.M. ten Berge, et al., editors. Kluwer Academic Publishers, Dordrecht, Boston, 1997, x + 468 p. ISBN 0-7923-4285-0. Hardcover.

Systems approaches for agricultural development are needed to determine rational strategies for the role of agriculture in national development. Mathematical models and computer simulation provide objective tools for applying science to determine and evaluate options for resource management at field, farm and regional scales.

The second international SAAD symposium fostered the link between the bio-physical sciences and the social sciences in the choice of keynote papers and oral presentation, a selection of which is included in this book. The objectives of SAAD are to review the status of applications of systems research and modelling in agricultural research, with special focus on countries where agricultural development is facing major challenges; and to promote international collaborative activities and to increase awareness of the opportunities for using systems approaches as a tool in research and planning. This is a further reflection of how systems approaches have definitely moved beyond the research mode into the application mode. The large number and quality of interdisciplinary research teams in different parts of the globe, working to determine land-use options that will meet multiple goals and yet sustain natural resource bases, is a key indicator of this 'coming of age'. At the farm level, where trade-off decisions between processes and products (commodities) feature strongly, much progress is also evident in the development of systems-based tools for decision making.
Price: NGL 400; USD 260; GBP 176.
Orders to: see below.

Applications of Systems Approaches at the Field level. Volume II. Systems Approaches for Agricultural Development, Volume 6. Proceedings of the Second International Symposium on Systems Approaches for Agricultural Development (SAAD), held at IRRI, Los Ba_os, Philippines, 6-8 December 1995. .M.J. Kropff., P.S. Teng, P.K. Aggarwal et al., editors. Kluwer Academic Publishers, Dordrecht, Boston, 1997, 496 p.. ISBN 0-7923-4286-0. Hardcover.

This second volume contains the papers dealing with field level studies.
Price: NLG 400; USD 264; GBP 164.
Orders to: see below.

Wind Erosion in Niger. Implications and Control Measures in a Millet-based Farming System. Developments in Plant and Soil Sciences Volume 67. B. Buerkert, B.E. Allison and M. von Oppen, editors. Kluwer Academic Publishers, Dordrecht, Boston, in cooperation with the University of Hohenheim, 1997, xxiv + 255 p. ISBN 0-7923-3885-5. Hardbound.

The West African Sahel is the transition zone between the Sahara desert in the north of Africa and the more humid Sudanian zones in the south. Although diverse in many ways, the Sahelian countries have the common problem of a fragile agricultural sector, caused mainly by low inherent soil fertility, limited and unpredictable rainfall, frequent droughts, and wind erosion that accelerates soil degradation and desertification, compounded by rapidly growing populations. To assure food production in the future, means must be found to offset the trends of declining soil fertility and increasing soil degradation through wind erosion.

This book is the first in a series of interdisciplinary publications of research conducted in West Africa by the University of Hohenheim, Germany, in collaboration with African partners and international organizations. It is intended for researchers and institutions focusing on sustainable agriculture in the West African Sahel, and other parts of the world where wind erosion affects agricultural production. The book is in English; the abstracts and the summary chapter are also given in French.
Price: NLG 140; USD 91; GBP 61.50.
Orders to: Kluwer Academic Publishers, P.O.Box 17, 3300 AA Dordrecht, The Netherlands; Fax: +31 78 639 22 54; E-mail: services@wkap.nl or Kluwer Academic Publishers customer Service Department, P.O.Box 358, Accord Station, Hingham, MA 02018-0358, USA: Fax: +1 781 871-6528: E.mail: kluwer@wkap.com.

Soil and Crop Growth Variability in the Sahel. Highlights of Research (1990-95) at ICRISAT Sahelian Center. Information Bulletin No. 49 (In English and French). J. Brouwer and J. Bouma. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, and., Agricultural University, Wageningen, 1997, 42 p. ISBN 92-9066-365-0. Paperback.

In the Sahel, crop growth in farmers' fields varies widely, not only between fields but also between different parts of a single field. This variability is essential to the survival of Sahelian ecosystems and agroecosystems. The role of water, plants, animals, farmers, pastoralists, and agronomic researchers in causing, maintaining, and changing such variability, over distances of a few meters up to hundreds of kilometres was investigated in a 5-year project. The improved understanding of this variability can help increase agricultural production, contribute to sustainable land use and increase the effectiveness of local agricultural research in the Sahel. the publication is also available in French.
Requests to: ICRISAT, Patacheru 502 324, Andhra Pradesh, India. (Order code: IBE 049).

Ecologie des milieux sur roches ultramafiques et sur sols métallifères. The Ecology of ultramafic and metalliferous areas. T. Jaffré, R.D. Reeves and T. Bec-

quer. Documents Scientifiques et Techniques III 2. Volume spécial, Special Issue. Editeurs Scientifiques-Scientific editors, ORSTOM, Centre de Nouméa, 1997, 306 p. ISSN 1245-222X. Paperback.

At the first Conference on Serpentine Ecology, Davis, 1991, it was decided to hold the next meeting at Nouméa, New Caledonia, part of the Pacific archipelago with its extensive areas of ultramafic rocks. The conference papers presented in 1995 and included in this volume address a fairly wide range of topics, concentrating on the following issues: the physical and chemical characteristics of soils derived from ultramafic rocks (5 papers); microbiological characteristics of ultramafic soils (4 papers); the vegetal formations, flora and fauna of ultramafic environments (14 papers); the ecology and phytochemistry of plants on metalliferous soils (6 papers); physiological aspects of tolerance of plants on metalliferous soils (5 papers); revegetation and rehabilitation of metalliferous soils (the subject of the plenary lecture (9 papers). It is shown that problems of ultramafic ecology remain a subject of great interest to a wide range of people. This publication has contributions in English and French.
Price: USD 28; FRF 150
Orders to: ORSTOM-DISC, Boîte Postale A5, 98.848 Nouméa Cedex, Nouvelle-Calédonie. Fax: +687 26 43 26; E-mail: gasser@noumea.orstom.nc.

Perspectives for World Food Security. Challenges for Agricultural Research. Bericht über das 2. Forum der Allianz der International Ausgerichteten Deutschen Agrarforschung am 12. und 13. Februar 1996 in Bonn. M. Reule, W. Ritter, editors. Arbeitsgemeinschaft für Tropische und Subtropische Agrarforschung (ATSAF), Bonn, 1997, 227p. ISBN 3-931825-03-5. Paperback.

These conference proceedings present a summary of the key speeches, relevant statements and highlight of this meeting. They show that the German Alliance for International Agricultural Research (AIDA) has an important role to play in bringing together the demand- and supply-side of research. The forum not only presents an opportunity for interdisciplinary discussions of the pressing global problems, but also helps to establish new partnerships and alliances to tackle the identified problems through well-planned, coherent and coordinated research approaches. Publication is free of charge.
Requests to: ATSAF e.V., Ellerstrasse 50, D-53119 Bonn, Germany. *Fax: +49 228-9846-99; E-mail:* mailbox@atsaf.de.

Landscape Ecology. Function and Management. Principles from Australia's Rangelands. J. Ludwig, D. Tongway, D. Freudenberger, N. Noble, K. Hodgkinson. CSIRO Publishing, Collingwood, 1997, 158 p. ISBN 0 643 05797 8. Paperback.

People who live in Australia's rangelands, and those who are responsible for rangeland management, are aiming for sustainable land use practices founded on knowledge and experience. This book extends the extensive knowledge developed by CSRIO's National Rangelands Program on how rangeland landscapes function and the implications for management. The principles of landscape management are built into a conceptual framework which shows how landscapes function over space and time. Understanding the principles, as developed in this publication, will allow the management of landscapes such as rangelands for sustainable production and the conservation of habitats and biodiversity. This Australian information will also be of interest for rangelands scientists elsewhere.
Price: AUD 59.95.
Orders to: see below.

Conservation Tillage and Ley Farming Systems for the Semi-arid Tropics. P.S. Carberry, A.L. Chapman, C.A. Anderson and L.L.Muir, editors. Reprinted from: Australian Journal of Experimental Agriculture, Volume 36, Number 8 (1996), 170 pp. ISBN 0 643 05841 9. Softcover.

These 15 papers, that make up this special issue, were presented at a workshop on Conservation Farming for the Semi-Arid Tropics, held in Katherine, 1995. Over the past 15 years, considerable progress towards the development of sustainable, conservation tillage and ley farming practices for the semi-arid tropics has been made by various government agencies, producers and agribusiness. However much of this work had not been fully evaluated and published and was in danger of being forgotten or overlooked by current and future workers. Most of this research has now been collated and made available in this publication.
Price: AUD 50.
Orders to: see below.

Studies in Catchment Hydrology: The Basics of Recharge and Discharge. Lu Zhang & G. Walker, Series Editors, CSIRO Publishing, Collingwood..

Measuring and modelling recharge and discharge are essential to the management of water catchments. The present series of booklets aims to satisfy this need and is the first of its kind in Australia. Issues covered in this series include developing sustainable land use practices, estimating time scales for salinisation to occur of recede, impacts of proposed land uses on catchment behaviour, and ensuring that remediation activities aimed at modifying the hydrological behaviour of a catchment are targeted at the appropriate parts of the catchment. The series provides background in recharge and discharge studies. It is useful for developing courses and educational material. It includes documentation of techniques, clear worked examples, and some explanation of the appropriateness of various techniques. The series is not intended as a scientific review of the subjects; however, enough references are provided for further in-depth reading. The emphasis is on measurement techniques, factors to be considered in choosing appropriate techniques, and applications of the techniques. Up to now the series includes: Physical and Chemical Techniques for Discharge Studies by R.B. Salama; Groundwater Chemical Methods for Recharge Studies by P.G. Cook; Using Soil Water Traces to Estimate Recharge by G.R. Walker; Electromagnetic Induction Techniques by P.G. Cook and B.G. Williams; Soil Physical Methods for Estimating

Recharge by W. Bond; Groundwater Processes and Modelling by D. Armstrong and K. Narayan; Catchment Scale Recharge Modelling by T.J. Hatton; Surface Water Balance for Recharge Estimation by P.M. Fleming and Plot Scale Models and Their Application to Recharge Studies by H. Cresswell et al.
Price: AUD 24.95 each title.
Orders to: see below.

Predicting Farm Production & Catchment Processes. A Directory of Australian Models and Modelling Groups. R. Hook. CSIRO Publishing, Collingwood, 1997. 320 p. ISBN 0 643 05979 2. Spiral Bound.

This directory of dryland farming models and modelling groups is the first of its kind in Australia. It arose out of a workshop held as part of the CSIRO Dryland Farming Systems for Catchment Care Program in 1994 and the concept was tested and developed further at a symposium in 1996. The symposium reviewed current knowledge about the links between dryland farming and land and water quality, and our capacity to predict the effects of dryland farming on land and water condition. The directory includes information about modelling groups in Australia and describes in a uniform manner models which are relevant to dryland farming and/or land and water quality in catchments affected by dryland farming. It includes both dynamic and static models, as well as some of the Expert Systems of Decision Support Systems (DSSs) which incorporate mathematical models which are designed for use by land managers and those without a scientific background.
Price: AUD 40 plus AUD 8 postage and handling per order.
Orders to: see below.

Plants to Ecosystems. Advances in Computational Life Sciences Vol. I. M.T. Michalewicz, editor. CSIRO Publishing, Collingwood, 1997, 152 p. ISBN 0 643 05942 3. Hardcover.

Computational studies in life sciences not only provide a new way of complementing experimental studies; they also offer a practical means of bringing immediate financial gains in the competitive world of medical technology, drug design, agrochemicals, agriculture and food production. The methods presented in this book are tools for modelling, visualizing and studying the growth, dynamics and aging of plants and marine sessile organisms. The methodology takes into account external factors like soil water flow, soil porosity, plant hormones, fertilizers and even the damage caused by insects to the plant.

This volume, the first of two reporting the Melbourne Symposium on »Computational Challenges in Life Sciences« brings together some of the most important contributors in the field of computer plant modelling. The aim of this collection is to present the conceptual and methodological view of plant modelling as it is currently developing.
Price: AUD 64.95
Orders to: CSIRO Publishing, PO Box 1139, Collingwood Vic. 3066, Australia; Fax: +61 3 96627611; E-mail: sales@publish.csiro.au.

Biotechnology. Building on Farmer's Knowledge. J. Bunders, B. Haverkort and W. Hiemstra, editors. Macmillan Education, London, Basingstoke, 1997, xvi + 240 p. ISBN 0 333 67082 5. Paperback.

This book looks at the application of biotechnology to agricultural development. Farmers' knowledge should be the starting point to make biotechnological research less supply-driven and more demand-oriented. The first part of the book examines rural people's existing biotechnology practices in the areas of animal health, bio pesticides, food processing and crop genetic resources. Part two focuses on science-based biotechnolgy research and assesses the potential of existing technologies and the socio-political context of formal sector research. It presents a participatory and interactive methodology for the development of biotechnologies for small scale farmers in the tropics that builds on farmers' knowledge and makes use of the latest scientific insights. The final part sets out a model for integrating the formal and informal research and development systems.
Price: GBP 8.95.
Orders to: Macmillan Education, Houndmills, Basingstoke Hampshire RG21 6XS, UK. Fax: +44 1256 814642; E-mail: v.izat@macmillan.co.uk

Soil Erosion & Conservation. Second Edition. R.P.C. Morgan. Longman Group, Harlow, 1995, x + 198 p. ISBN 0-582-24492-7 (UK); 0-470-23514-4 (USA). Paperback.

Soil erosion is a hazard traditionally associated with agriculture in tropical and semi-arid areas and is important for its long-term effects on soil productivity and sustainable agriculture. Erosion control is vital if the increasing demand to feed the world is to be met. This second edition provides a comprehensive treatment of soil erosion processes and their control and a practical approach to the design of soil conservation methods. It includes the recent major changes in soil erosion work carried out since the first edition. There is new material on the socio-economic context, new developments in modelling techniques, and soil erosion and conservation is set in a broader environmental context and employs reference material from European, African, Australian, American and Asian sources.
Orders to: Longman Group, Longman House, Burnt Mill, Harlow, Essex CM20 2JE, England or John Wiley & Sons, 605 Third Avenue, New York, NY 10158, USA.

Soil Pollution and Soil Protection. F.A.M. de Haan, M.I. Visser-Reyneveld, editors. International Training Centre (PHLO), Wageningen Agricultural University, Wageningen, 1996, vii + 306 p. ISBN 90-6754-469-8. Hardcover.

This publication has been compiled from lecture handouts prepared for an international postgraduate course given jointly by Wageningen Agricultural University, the Netherlands, and the Faculties of Agricultural Sciences of the universities of Leuven and Gent, Belgium. This book provides basic information to aid understanding the complex problem of soil quality and its evaluation. The main causes and sources of soil pollution and some of the most pronounced effects are

described. The chemical, physical and biological interactions of chemicals within the soil system are discussed individually and in various combinations, to clarify the relationships between source and impact. The physical aspects of the transport of contamination through soils and the problem of soil heterogeneity receive attention. The impacts of soil pollution on plant growth and on the functioning of the soil ecosystem are also discussed. In addition to these basic topics, the book also covers problems of a more practical nature, such as soil acidification and the use of soil to treat waste. The final chapter describes the EU policy on waste treatment systems.
Price: NLG 90.
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Soil Science. A. Rashid, K.S. Memon, E. Bashir and R. Bantel, National Book Foundation, Islamabad, 1996, xxviii + 508 p. ISBN 969-37-0170-4. Hardbound.

This book is written by Pakistani authors as a textbook for university students in in country. It is written by Pakistani authors incorporating a few topics specially relevant for Pakistan. The book consists of 17 chapters covering a wide range of subjects such as Weathering, Soil formation, Soil mineralogy, soil water, organic matter, soil organism, its physical and chemical properties, and soil classification, erosion, salinity, sodicity and waterlogging, nutrients, The book also contains a small scale soil map of Pakistan, using soil taxonomy at associations of soil group level, dan illustrative colour photos of some representative landscapes and soil profiles. U useful glossary concludes this textbook.
Price: PF.Rs 350; USD 7.50.
Orders to: National Book Foundation, Sales & Distribution Centre, Sarya Chowk G-8/4, Islamabad, Pakistan. Fax: +92 51 264283.

Gebirgsnadelwälder. Ein praxisorientierter Leitfaden für eine standortgereichte Waldbehandlung. E. Ott, M. Frehner, H.-U. Frey, P. Lüscher. Verlag Paul Haupt, Bern, Stuttgart, 1997, 287 S. ISBN 3-258-05601-3. Gebunden.

Wer sich heute mit dem komplexen Thema der Gebirgswaldpflege auseinandersetzt, sieht sich einmal mit einer Fülle menschlicher Ansprüche an die vielfältigen Gebirgsnadelwälder der hochmontanen und subalpinen Stufe konfrontiert. Im Zentrum steht dabei namentlich die forderung zur nachhaltigen Erfüllung der Schutzfunktion, welche diese hochempfindlichen Waldökosysteme ausüben. Daneben spielen auch ökonomische und ökologische Aspekte eine rolle. Alles menschliche Tun und Lassen muss im Gebirgswald deshalb auf das Ziel einer größtmöglichen Waldstabilität ausgerichtet sein, damit das Risiko grossflächiger Entwaldungen minimiert werden kann und ein Fortbestand der schützenden Waldbestockungen dauerhaft gewährleistet bleibt. Dieses buch geht in beispielhafter Weise auf die Lebensbedingung der *Gebirgsnadelwälder ein und bringt theoretisches Wis*sen und praktische Erfahrung in anschaulicher Weise zusammen. Diese praxisbezogene Gliederung erlaubt auch einem Nichtspezialisten einen Einstieg in die komplexe Welt der Standortskunde. Die verbreiteten Standortstypen der Schweizerischen Gebirgsnadelwälder werden in einfacher und übersichtlicher Darstellung präsentiert. Das Buch hat zahlreiche excellente Farbphotos.
Preis: CHF 68; DEM 76.
Bestellungen an: Verlag Paul Haupt, Falkenplatz 14, CH-3001 Bern, Schweiz. Fax: +41 31 30146 69.

Wasser in Boden und Pflanze. Dynamik des Wasserhaushalts als Grundlage von Pflanzenwachstum und Ertrag. W. Ehlers. Verlag Eugen Ulmer, Stuttgart, 1996, 272 S. ISBN 3-8001-4118-3. Gebunden.

Dieses neu konzipierte Lehrbuch beschreibt den Wasserhaushalt der Böden und der Pflanzen im Zusammenhang. Die Physik des Wassertransports und die Wege des Wassers vom boden durch die Pflanze zur Atmosphäre werden dargestellt. Der Zusammenhang zwischen Transpiration und Ertragsleistung von Kulturpflanzen wird behandelt und die Abhängigkeit dieser Beziehung von klimatischen Gegebenheiten erläutert. Es wird gezeigt, daß in einzelnen phänologischen Phasen der ökonomische Ertrag besonders empfindlich auf Wassermangel reagiert. Mit diesem Grundverständnis wird der Blick geöffnet für möglichen Konsequenzen eines Klimawandels für die Ertragsbildung. Es werden Strategien erörtert, um für die pflanzliche Produktion das Wasserangebot zu optimieren.
Preis: DEM 78; CHF 71.
Bestellungen an: Verlag Eugen Ulmer, Postfach 70 05 61, D-70574, Deutschland. Fax: +49 711 4507 214.

Remediation of Soils Contaminated with Metals. I.K. Iskander, D.C. Adriano, editors. Advances in Environmental Science. Science Reviews, Northwood, Chicago, 1997, v + 255 p. ISBN 0-905927-94-X. Hardback.

Past practices associated with mining and smelting of ores, secondary smelting of scrap metals, and industrial and municipal wastes have createdmany problems. Remediation of metal-contaminated soils requires special technical expertise because of the presence of various forms and amounts of metals and changes in the forms of metals brought about by changes in soil environmental conditions such as Ph, Eh, organic matter content, and soil texture. Metals may become mobile and be transported to other ecosystem components, including groundwater and surface water. This publication examines various concerns and technologies for the remediation of soils contaminated with metals. The papers were presented at the Second International Conference on the Biogeochemistry of Trace Elements held 5-10 September 1993 in Taipei, Taiwan. The first four chapters provide overviews of remediation methods. Five chapters examine aspects of bioavailability and plant uptake of metals and six chapters examine specific problems with lead- and cadmium-polluted soils.
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Ecosystems and Sustainable Development. J.L. Usó, C.A. Brebbia, H. Power, editors. Advances in Ecological Sciences 1. Computational Mechanics Publications, Southampton, Boston, 1997, 678 p. ISBN 185312 502 4. Hardcover.

This publication contains the papers presented at the 1st International Conference on Ecosystems and Sustainable Development held in Peñiscola, Spain in 1997. The aim of ECOSUD 97 was to encourage and facilitate the interdisciplinary communication amongst scientists, engineers, economists and professionals working in the different areas of ecological research. Emphasis was given to those areas that will most benefit by the application of scientific methods for sustainable development, aimed at the conservation of natural systems in developed as well as developing countries. Research topics in the main areas are discussed such as: Development Economics including International and Industrial Applications (13 papers), Conservation, Management and Recovery of Endangered and Degraded Areas (22 papers); Modelling of Natural and Human Ecosystems (28 papers).
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Orders to: Computational Mechanics Publications, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK; Fax: +44 1703 292853; E-mail: cmp@cmp.co.uk or Computational Mechanics, 25 Bridge Street, Billerica, MA 01821, USA; Fax: +1 978 667 7582; E-mail:cmina@ix.netcom.com.

Population, Land Management, and Environmental Change. UNU Global Environmental Forum IV. J.I. Uitto, A. Ono, editors. United Nations University, Tokyo, 1996, xiii + 89 p. ISBN 92-8-8-0956-3. Paperback.

This publication is based on the fourth UNU Global Environmental Forum to address the issues of population, land management, and environmental change in Osaka, 1995. The Forum focused on the research carried out under the University's international collaborative research programme with the same title. This publication reproduces the papers presented at the Forum. The authors draw extensively upon field research carried out in the tropical and subtropical regions of South-East Asia, Sub-Saharan Africa, and the Amazon. The first three papers set the objectives of the research programme. The following four chapters give preliminary results from the research undertaken with the field research clusters of the programme in Papua New Guinea, northern Thailand and the Amazon. The last chapter presents a different perspective to the population carrying capacity at the global level. It is argued that indigenous production systems are often highly adaptive to the local ecological and socio-economic conditions, and can be sustainable if given the change.
Orders to: United Nations University Press, 53-70, Jingumae 5-chome, Shibuya-ku, Tokyo 150, Japan; Fax: +81 3 3406-7345.

Vetiver Research and Development. Abstract. International Vetiver Workshop held in FuZhou, China, October 1997. Xu Liyu and Ch. Chirko, editors. 54 p.

The vetiver grass technology is very efficient for soil and water conservation as well as for land reclamation. Since the technology was recognized as an important issue, more scientists, technicians, and government officials have become interested in its use, and that it could be useful for natural resources conservation in China, particularly in southern China.
This publication contains several contributions to the Vetiver Workshop, and is an anticipation to the publication of the Proceedings of all the qualified papers.
Request to: Xu LiYu, Coordinator China Vetiver Network, c/o Institute of Soil Science, Academia Sinica, P.O. Box. 821, Nanjing 210008, China, P.R. Fax: +86 25 3353590; e-mail: lyxu@issas.ac.cn.

Potassium Status and Crop Response to Potassium on the Soils of Agro-Ecological Regions of India. IPI Research Topics No. 20. A. Subba Rao and Ch. Srinivasa Rao. International Potash Institute, Basel, 1996, 57 p. Paperback.

To meet the demand of a steadily growing population in India, grain production should increase. The more grain and other crops are harvested, the more nutrients are removed from the soil. The fertilizer dressings used for their replacement are not properly balanced, while fertilizers now used supply ten times more nitrogen than potassium. The results of such unbalanced fertilization is to lower soil fertility with disastrous consequences for sustainability of crop production and, ultimately for the environment. To meet the needs of the increasing population, productivity of the presently cropped land must be improved, unless it is acceptable to increase the cropped area by further deforestation or to take marginal land into cultivation. There seems to be widespread ignorance about the importance of potassium, probably because its action is not so spectacular as is that of nitrogen. Other reasons for unbalanced fertilization are misinterpretation of soil test results and failure to appreciate that its effects vary with soil type and agro-ecological situation. To provide more information on this vital issue, the authors have compiled basic data concerning the properties of the soils and their contents and availability of potassium from the 20 agro-ecological regions of India. Examples of crop responses to potassium and its economic implication complete the compilation. This publication complements the IPI-Research Topics No. 4 on »Measurement and Assessment of Soil Potassium« (2nd ed. 1995).
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Potassium in Asia. Balanced Fertilization to Increase and Sustain Agricultural Production. Proceedings of the 24th Colloquium of the International Potash Institute held at Chiang Mai/Thailand 1995. International Potash Institute, Basel, 635 p. Paperback.

Asia, inhabited by almost 60% of the global population harvests 46% of the total cereals and applies 51% of all nitrogenous, 45% of phosphoric, but only 25% of potassic fertilizers. These figures indicate a serious imbalance in nutrient usage at the expense of soil fertility and the safeguarding of natural resources: the potassium balance, usually negative, tends to become more so. Rice yield is stagnating or even declining and, in view of further rapid population growth, this is a serious problem. Fertile arable land is almost exhausted, reserves can be provided only by rehabiliting degraded land. The Colloquium tried to focus on the problem of how to produce on a sustainable basis the requirement of a growing population by drawing the attention to soil fertility and soil potassium status in the main agroclimatic regions of Asia. It is also attempted to provide ideas and information on (1) the management of the potassium supply to plants in cropping systems of different agroclimatic regions and on the nutrient requirements of crops; (2) Constraints and opportunities for fertilizer use in Asian countries and (3) approaches for the implementation of sustainable soil management practices in view of the problem of overcoming declining soil fertility.
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Mediterranean Geoecosystems. Hierarchical Organisation and Degradation. G. Bergkamp. Thesis Universiteit van Amsterdam, 1996, 238 p. ISBN 90-6787-049-8. Paperback.

The general objectives of this study were: a. to identify and understand the interactions between soil and vegetation structures and hydrological processes at different spatial scales within an area representative for large parts of the western Mediterranean and b. to determine the importance of these interactions for geoecosystem degradation and recovery.
First the current knowledge regarding this interactions in relation to degradation within the western Mediterranean is reviewed and a new approach is proposed for these interactions at different scales. Measurements of soil, vegetation and morphological properties at different scales on sites selected along an assumed degradation gradient are presented and discussed. Process-pattern interaction is studied within the selected area ranging from the soil aggregate to the landscape scale. The synthesis relating different aspects of process-pattern interaction to degradation of western Mediterranean geoecosystems is given.
Orders to: Laboratory of Physical Geography and Soil Science, University of Amsterdam, Nieuwe Prinsengracht 130, 1018 VZ Amsterdam, The Netherlands. Fax: +31.20.5257431.

Land Resources and their Management for Sustainability in Arid Regions. A. S. Kolarkar, D. C. Joshi and A. Kar, editors. Scientific Publishers, Jodhpur, 1996, xi + 316 p. ISBN 81-7233-125-8. Hardbound.

Cultivable land in India is getting scarce. To meet the growing demand of food and fodder, especially in the arid regions, the government, and the scientists in India are seriously engaged in their pursuit to bring additional land under cultivation and manage the existing cultivable land for optimal production. This book is the result of papers presented at a training programme at the Central Arid Zone Research Institute (CAZRI), for the management of arid regions, for participants from Asia. After conceptualizing the idea of sustainable and integrated land development it covers topics such as soil, climate, ecology based development, use of remote sensing, ground water and aquifers, water gaining techniques, integrated management of land, use of nutrients, salinization and their amelioration methods. A theoretical model of crop growth and its yield under limited and potential moisture supply has also been introduced and discussed.
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Agroforestry for Sustained Productivity in Arid Regions. J.P. Gupta and B.K. Sharma, editors. Scientific Publishers, Jodhpur, 1997, ix + 198 p. ISBN 81-7233-155-X. Hardbound.

Good and productive land is getting scarcer. To fulfil the demand of growing population, less productive land has to be brought to production. This book covers many all aspects of agroforestry in arid regions. After a description of arid zone soils and their suitability for agroforestry system. The book covers various aspects, such as climate, vegetation, fertility, nutrient cycle, judicious use of water, use of fertilizers, cultivation of leguminous crops as biofertilizer for enhancing nitrogenous component of soil, etc. It provides insight on shelterbelt crops, keeping in view the ecological aspect of their management and on a system of evaluating the integrated farming system. It includes information on genetically improved tree species, pasture and grasses, and also social issues in agroforestry and land use systems.
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Manual for Soil and Water Analysis. P. Buurman, B. van Lagen and E.J. Velthorst, editors. Backhuys Publishers, Leiden, 1996, xiii + 314 p. ISBN 90-73348-58-7. Paperbound

Analytical results start with proper sampling. Soil samples are notoriously heterogeneous. In soils with irregular horizon boundaries, it may be difficult to sample a single horizon. Procedures for sample pretreatment, analysis, and calculation of results, have to be described accurately, and should be adhered to. Slight differences in procedures may cause large difference in results, especially between different batches of samples.

In this manual, all analyses that are currently used to characterize soils and water in their natural environment, are accurately described. The methodology is based on the use of modern equipment (HPLC, Atomic Absorption Spectrometry, Graphite Tube Furnace AAS, Laser grain-sizer, etc.). Fractionation of sulphur and of dissolved organic matter have been included.
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The Iron Oxides. Structure, Properties, Reactions, Occurrence and Uses. R.M. Cornell, U. Schwertmann. VCH Verlagsgesellschaft, Weinheim, New York, 1996, xxxi + 573 p. ISBN 3-527-28576-8. Hardcover.

Iron oxides have served man for centuries. Since the red and yellow ochres were first used to help produce prehistoric painting in caves, such as Lascaux, the role of iron oxides has expanded enormously. Their application as pigments and their ability to catalyse various chemical reactions, their role as the precursors of iron and steel and their activity as adsorbents in the ecosphere. This publication presents a coherent and up-to-date account of the properties, reactions and mechanisms of formation of the oxides, and oxyhydroxides of iron. In addition to these topics, other aspects of iron oxide behaviour, such as geochemistry, biomineralization, role in corrosion and numerous applications are discussed. It provides a coherent text with a maximum of homogeneity and minimum overlap between chapters. It is structured according to topics, i.e. surface chemistry, dissolution behaviour, adsorption etc. For each topic a general introduction is followed by a section which reviews current knowledge concerning the different iron oxides. The latter section includes detailed information and recent data the from authors' own laboratories. Table of crystallographic, thermodynamic and X-ray data are provided in the appendices. Numerous graphs, tables and illustrations are displayed.
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Landnutzung und Desertifikation in Nord- und Westafrika. Fallstudien aus Marokko, Niger und Togo. Land Use and Desertification in North and West Africa. Case Studies from Morocco, Niger and Togo. Paderborner Geographische Studien. Band 6. H.-J. Späth (Hrsg./Ed.), J. Runge. Pach Geographe, Universität, Paderborn, 1997, 170 S. ISBN 3-9800875-6-5; ISSN 0935-9621.

Dieser Band über Probleme der Desertifikation und Landnutzung im westlichen Afrika zielt darauf ab, eine Beitrag zum Brückenschlag zwischen natur-, sozial und ingenieurwissenschaftlich arbeitenden Disziplinen zu leisten. Der Marokkobeitrag tested die Hypothese vom kausalen Zusammenhang zwischen Bevölkerungsexplosion, Verstärkung des Beweidungsdruckes und Intensivierung der Entwaldung oberhalb von Hangterrassen, der sodann forcierten Denudation und der dadurch bewirkten Zerstörung der tieferliegenden terrassierten Bewässerungsinseln im Hohen Atlas in diesem Jahrhundert. Die agro-energetische Analyse weist ein überdurchschnittlich effizientes, profitables und umweltschonendes Farmsystem aus. Das Beispiel aus dem Niger analysiert den Charakter der sich verschärfenden Feuerholzkrise von Niamey, die Folgen der radikalen entwaldung für die sahelische Landoberflächen, für agrarisch wichtige Eckwerte des Naturhaushaltes sowie den Handlungs-und Anpassungsspielraum der baumabhängigen traditionellen Farmsysteme. Die Togo-Studie verbindet kleinräumig erhobene geomorphologische, bodenkundliche und agrarwissenschaftliche Informationen und erklärt auf dieser Grundlage gegenwärtige Landnutzungsmuster und damit verbundene morphodynamische Prozesse.
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Soils of India Series. National Bureau of Soil Survey and Land Use Planning (NBSS & LUP), Nagpur.

India is an agriculture based country where about 75 percent of its population is involved in farming. Since agriculture forms the backbone of the country's economy, the soils on which the crops grow, are of vital importance. Soils are the prime finite natural resources whose proper management helps to the socio-economic development of the country. India as such is facing great problems of increasing population that demands more and more food from a unit area. With the increasing demand for food, fodder and fibre, there is overuse of faulty planning of land use that results in soil health hazards such as soil degradation thereby declining the soil quality.

During the green revolution in 1970's with the introduction of high yielding varieties, with the increase in irrigation facilities, association with high usage of fertilizers and pesticides, the production showed an increasing trend. This increase is associated with pollution and environmental degradation. At present, a majority of the land is degraded and needs an immediate attention and care before they loose their resilience. Thus, developing the strategies to slow down the degradation processes or ameliorate the soils are major issues today. In order to estimate the extent of potential areas for agriculture and the extent of degradation, a systematic resource inventory of 1:250,000 scale of the whole India was undertaken. The maps provide information on the kinds, extent and the distribution of different soils, their nature, characteristics, problems and potentials so a to develop strategies not only to increase agricultural production on a sustainable basis but also to maintain an ecological balance. The soil resource maps of different states along with their text are being brought out in the form of »Soils of India Series« with maps printed at 1:500,00 scale. For an up-to-date listing of available maps, in the Soils of India Series contact: M. Velayutham, Director National Bureau of Soil Survey & Land Use Planning, Amravati Road, NAGPUR, 440 010 India. Fax: +91 712 532386; E-mail: NBSSLUP@X-400nic-gw-nic-in.

The Assessment of the Status of Human-Induced Soil Degradation in South and Southeast Asia. (plus maps). G.W.J. van Lynden and L.R. Oldeman. UNEP, FAO, ISRIC, 1997, v + 35 p.

Recognizing the need to obtain a better overview of the geographical distribution and the seriousness of human-induced soil degradation, UNEP commissioned the International Soil Reference and Information Centre (ISRIC) to coordinate a programme to produce, on the basis of incomplete existing knowledge, a scientifically credible global assessment of the status of human-induced soil degradation. A World Map of the Status of Human-induced Soil Degradation (GLASOD) was published in 1990 and complementing statistics on the global and continental extent of various types of soil degradation, their degree and causative factors were published in 1991. GLASOD aroused worldwide interest and the results have been cited in many policy papers and reviewed in several scientific journals. Since GLASOD was published, requests were made for soil degradation assessments at regional and national scale. Consultations recommended to prepare a soil degradation assessment for South and Southeast Asia at a scale of 1:5 million, based on the GLASOD methodology and using as a working template a physiographic map and database to be constructed along the lines of the internationally endorsed SOTER (Soils and Terrain Digital Database) approach. The results are given in the present study. The printed map, at scale 1:18M, show the status of soil degradation in the region, and maps of parts of the region showing wind erosion, water erosion, salinization and fertility decline. The explanatory text contains the methodology followed, and the results of the assessment. The data are also available in a digitized form.
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Controlling Environmental Risks from Chemicals. Principles and Practice. P. Calow. John Wiley & Sons, Chichester, New York, 1997, xiv + 136. ISBN 0-471-96995-9. Cloth.

This book aims to bring information and insight on how industrial chemicals are controlled for the sake of environmental protection. The focus is on the principles and practices of how the environmental (ecological) hazards and risks associated with industrial chemicals are recognised and how this information is used in their management. It describes the principles and practices of ecological risk assessment and cost-benefit analysis. The emphasis is on the EU Directives and Regulations, with a chapter on the instruments and institutions involved, but this is balanced by a review of US and International policies and legislation. The discussion returns to the question of attempting to balance risks with benefits, in the context of the development of sustainable and globally practicable chemical controls policy.
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Precision Agriculture: Spatial and Temporal Variability of Environmental Quality. Ciba Foundation Symposium 210. Symposium held in collaboration with the European Environmental Research Organisation, at Wageningen, The Netherlands, 1997. John Wiley & Sons, Chichester, New York, 1997, viii + 251 p. ISBN 0-471-97455-2. Hardcover.

Precision agriculture aims at adjusting and fine-tuning land and crop management to the needs of plants within heterogeneous fields. Production aspects have to be balanced against environmental threshold values and modern information technology has made it possible to devise an operational field system. It takes into account within-field variability to enable the precise targeting of interventions such as crop sprayer or fertilizer application only when and where they are needed. The symposium brought together experts in precision agriculture and specialists in temporal and spatial statistics to discuss new agricultural systems and how they can maximize productivity while minimizing environmental damage. Separate chapters deal with sampling techniques, crop growth models, the use of remote sensing data, geographical information systems, precision weed management, and statistical methods for dealing with spatial and temporal data.
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Ecosystems. Volume 1, issue 1, Jan/Feb. 1998. S.R. Carpenter, M.G. Tuner, Editors-in-Chief. Springer-Verlag, New York, Berlin. ISSN 1432 9840.

The science and management of ecosystems together is one of the most dynamic fields of contemporary ecology. Ecosystem science has developed into a well-established diverse discipline that bridges fundamental research and applied problem solving, employs a wide variety of approached, and draws upon linkages to a number of other ecological disciplines. The scope of ecosystem science encompasses bounded systems like watersheds as well as spatially complex landscapes and even the earth itself. Temporally, ecosystem science crosses scales ranging from seconds to millennia. The focus of ecosystem science is characterized increasingly by issues that cross spatial and temporal scales as well as the boundaries. of traditional ecological disciplines.

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Journal of Crop Production. Innovations in Practice, Theory & Research. Amarjit S. Basra, editor. The Food Products Press, Binghamton, 1998, Volume 1, Number 1. ISSN 1092-678X.

This new journal responds to the urgency of increasing food demands. It offers readers new perspectives on crop production which respect environmental conservation, as opposed to the system of yielding more crops through the use of more fertilizers, more pesticides and more irrigation. The journal directly addresses emerging issues, new strategies for new needs, and future challenges of crop production and evaluates and reviews major production issues of crop science, especially those leading to a secure world food supply and resource conservation using environment-friendly technologies. Each issue is devoted to a theme representing cutting-edge topics or research fronts in the field.

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❍	IV	Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und Pflanzenernährung
❍	V	Soil Genesis, Classification and Cartography/Genèse du Sol, Classification et Cartographie/Bodengenetik, Klassifikation und Kartographie
❍	VI	Soil Technology/Technologie du Sol/Bodentechnologie
❍	VII	Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie
❍	VIII	Soils and the Environment/Sols et l'Environnement/Boden und Umwelt

Subcommissions/Sous-commissions/Subkommissionen

❍	A	Salt affected soils/Sols salins/Salzböden
❍	B	Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
❍	C	Soil Conservation and Environment/Conservation du Sol et Environnement/Bodenerhaltung und Umwelt
❍	D	Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit UBS)
❍	E	Forest Soils/Sols forestiers/Waldböden
❍	F	Land Evaluation/Evaluation du Terrain/Landbewertung
❍	G	Soil Remediation/Restitution des sols/Bodensanierung

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

A. Salt Affected Soils/Sols Salins/Salzböden
Dr M. Rédly, Research Inst. for Soil Science & Agric. Chem., Hungarian Academy of Sciences, Herman O. ut. 15, 1022 Budapest, Hungary

B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
Prof Dr. Sergey Shoba, MSU, Dokuchev's Soil Institute, Pygevsky per 7/109017 Moscow, Russia

C. Soil and Water Conservation/Conservation des Sols et des Eaux/Boden- und Wasserschutz
Dr Ch. Valentin, ORSTOM, B.P. 11416, Niamey, Niger

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

E. Forest Soils/Sols forestiers/Waldböden
Dr P.K. Khanna, CSIRO, Div. of Forest Research, P.O.Box 4008, Queen Victoria Terrace, Canberra, ACT 2600, Australia

F. Land Evaluation/Evaluation du Terrain/Landbewertung
Prof Dr. K.J. Beek, ITC, P.O.Box 6, 7500 AA Enschede, The Netherlands

G. Soil Remediation/Restitution des sols/Bodensanierung
Prof.Dr. D.C. Adriano, Savannah River Ecology Lab., Savannah River Site Bldg. 737A, Aiken, S.C., USA

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

AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden
Dr S. Sadio, ISRA/ORSTOM, B.P. 1386, Dakar, Senegal

CR Cryosols/Cryosols/Frostböden
Dr D.A. Gilichinsky, Inst. of Soil Science & Photosynthesis, Pushchino, Moscow District 142292, Russia

DE Soil Resources of Desert Ecosystems/Ressources de sol dans des ecosystèmes de désert/Böden in Wüstenökosystemen
Dr. A. Sourji, Rue de la ville 2, 5660 Couvin, Belgium

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

FA Soil Organic Fertilizers and Amendments/Produits organiques d'engrais et d'amendement du sol/Organische Dünger und Bodenverbesserungsmittel
Prof Dr. P. Sequi, Istituto Sperimentale per la Nutrizione delle Piante Via della Navicella 2-4, 00184 Roma, Italy

LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/Informationssysteme zur Landbewertung
Dr. J. Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ontario, Canada K1A 0C6

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

MV Soil and Moisture Variability in Time and Space/Variabilité du Sol et de l'Humidité dans le Temps et l'Espace/Boden- und Feuchtigkeitsvaria bilität in Raum und Zeit

PM Pedometrics/Pedométrique/Pedometrik
Prof Dr. A.B. McBratney, Dept. of Agric. Chem.&Soil Science, A03 Ross St. University of Sidney, NSW 2006, Australia

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

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

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

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

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

RZ Rhizosphere/Rhizosphère/Rhizosphäre
Prof.Dr. P.J. Gregory, Dept. of Soil Science, Univ. of Reading, Whiteknights P.O.Box 233, Reading, RG6 2DW, U.K.

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 Eauxouterraines/Boden- und Grundwasserverschmutzung
Prof. Dr. P.J. Wierenga, Univ. of Arizona, Soil & Water Science, Tucson AZ 85721, USA

US Urban and Periurban Soils/Sols urbains et périurbains/Städtische Böden
Dr J. Celecia, Div. of Ecological Sciences, UNESCO, 75700 Paris, France

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, GCTE Associate Project Office, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, UK

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

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

CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee
Prof.Dr. W.R. Gardner, 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. M. Dosso, CNEARC, 1101 Av. Agropolis, B.P. 5098 Montpellier Cédex, France

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

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