Bulletin

of the International Union of Soil Sciences

Bulletin

de l'Union Internationale de la Science du Sol

Mitteilungsblatt

der Internationalen Bodenkundlichen Union

Boletín

de la Union Internacional de la Ciencia del Suelo

No. 94 **1998/2**

ISSN:0374-0447. Edited and published by/rédigé et publié par/redigiert und publiziert von:

INTERNATIONAL UNION OF SOIL SCIENCES
UNION INTERNATIONALE DE LA SCIENCE DU SOL
INTERNATIONALE BODENKUNDLICHE UNION

Founded as International Society of Soil Science (ISSS)/Fondée comme Association Internationale de la Science du Sol (AISS)/Gegründet als Internationale Bodenkundliche Gesellschaft (IBG): 19-05-1924.
Full Members, Associate Members, Individual Members and Sustaining Members since/Membres à part entière, Membres Associés, Membres à titre Individuel et Membres Bienfaiteurs depuis/ Vollmitglieder, assoziierte Mitglieder, Einzelmitglieder und fördernde Mitglieder seit: August 1998.
A scientific union member of ICSU since/Membre scientifique du CIUS depuis/Wissenschaftliches Mitglied von ICSU seit: 1993.
Seat/Siège/Sitz: c/o Institut für Bodenforschung, Universität für Bodenkultur, Gregor-Mendel-Strasse 33, A-1180 Vienna, Austria. Phone: +43-1-478-91-07; Fax.: +43-1-478-91-10; E-mail: IUSS@EDV1.BOKU.AC.AT

Officers/Bureau/Vorstand

President/Président/Präsident
Prof.Dr. Sompong THEERAWONG, Soil and Fertilizer Society of Thailand, Dpt. of Soil Science, Kasetsart University, Chatuchak, Bangkok 10900, Thailand.

Vice President/Vice-Président/Vizepräsident
Prof.Dr. Irb KHEORUENROMNE, Soil and Fertilizer Society of Thailand, Dpt. of Soil Science, Kasetsart University, Chatuchak, Bangkok 10900, Thailand.

1st Past President/1er Ancien Président/1. Altpräsident
Prof.Dr. A. RUELLAN, AGROPOLIS, Avenue Agropolis, 34094 Montpellier Cedex 5, France

2nd Past President/2ème Ancien Président/2. Altpräsident
Prof.Dr. A. AGUILAR SANTELISES, Universidad Autónoma de Chapingo, Aapto. Postal 45, 56230 Chapingo, Mexico

3rd Past President/3ème Ancien Président/3. Altpräsident
Prof.Dr. A. TANAKA, Hokkaido Univ., Faculty of Agric. Kita 9 nishi 9 Kita-ku, Sapporo 060, Japan

Secretary-General/Secrétaire Général/Generalsekretär
Prof.Dr. W.E.H. BLUM, Institut für Bodenforschung, Universität für Bodenkultur, Gregor-Mendel-Strasse 33, A-1180 Vienna, Austria.

Deputy Secretary-General/Secrétaire Général adjoint/Stellvertretender Generalsekretär
Drs. J.H.V. VAN BAREN, ISRIC, P.O.Box 353, 6700 AJ Wageningen, The Netherlands.

Treasurer/Trésorier/Schatzmeister
Dr. P.U.LUESCHER, Eidg. Forschungsanstalt für Wald, Schnee u. Landschaft (WSL), Zuercherstr.111, CH-8903 Birmensdorf, Switzerland

Honorary Members/Membres d'Honneur/Ehrenmitglieder

Prof. Dr. G. Aubert (France), Dr. G. Barbier (France), Prof.Dr.Ir. G.H. Bolt (Netherlands), Prof.Dr. Ph. Duchaufour (France), Prof.Dr. R. Dudal (Belgium), Prof.Dr. W. Flaig (Germany), Prof.Dr. E.G. Hallsworth (Australia), Prof.Dr. K.H. Hartge (Germany), Dr. Y. Ishizuka (Japan), Dr. J.S. Kanwar (India), Prof.Dr. M. Kutilek (Chech Republic), Prof.Dr. E. Mückenhausen (Germany), Dr. S.K. Mukherjee (India), Prof.Dr. J. Quirk (Australia), Dr. R. Simonson, (USA) Dr. Ir. W.G. Sombroek (Netherlands), Prof.Dr. K. Wada (Japan), Prof.Dr. D.H. Yaalon (Israel), Prof.Dr. S.V. Zonn (Russia).

Commissions/Commissions/Kommissionen - Chairpersons/Présidents/Vorsitzende:

I. Soil Physics/Physique du Sol/Bodenphysik
Dr. D. Tessier, Science du Sol, INRA Route de Saint Cyr, 78026 Versailles Cédex, France

II. Soil Chemistry/Chimie du Sol/Bodenchemie
Prof.Dr. D.L. Sparks, Univ. of Delaware, Dept. of Plant & Soil Sci., Newark, DE 19717-1303, USA

III. Soil Biology/Biologie du Sol/Bodenbiologie
Dr.J.K. Ladha, I.R.R.I., P.O. Box 933, 1099 Manila, Philippines

IV. Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und Pflanzenernährung
Prof.Dr. M.J. Swift, Carolyn House, 26 Dingwall Road, Croydon, CR9 3EE, UK

V. Soil Genesis, Classification and Cartography/Genèse, Classification et Cartographie du Sol/ Bodengenetik, Klassifikation und Kartographie
Prof.Dr. A.R. Mermut, University of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask. S7N 5A8, Canada

VI. Soil Technology/Technologie du Sol/Bodentechnologie
Dr. P. Rengasamy, CRC Soil and Land Management, PMB2 Glen Osmond S.A. 5064, Australia

VII. Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie
Prof.Dr. K. Stahr, Inst. f. Standortlehre u. Bodenk., Univ. Hohenheim, Emil-Wolff-Str.27, 70599 Stuttgart, Germany

VIII. Soils and the Environment/Sols et l'Environnement/Boden und Umwelt
Dr. Ch. de Kimpe, Agriculture Canada, Direction Générale de la Recherche Sir J. Carling Bldg. 725, 930 Carling Av., Ottawa, Ont. K1A 0C5, Canada

IMPORTANT NOTICE:

Telephone and telefax numbers of the Secretariat-General of IUSS:

TELEPHONE: **+43-1-478-91-07**

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

Our new E-mail address is:

IUSS@EDV1.BOKU.AC.AT

W.E.H. Blum
Secretary-General, IUSS
University of Agricultural Sciences
Gregor Mendel-Str. 33
1180 Vienna
AUSTRIA

Bulletin

of the International Union of Soil Sciences

Bulletin

de l'Union Internationale de la Science du Sol

Mitteilungsblatt

der Internationalen Bodenkundlichen Union

Boletín

de la Union Internacional de la Ciencia del Suelo

Edited and published by/rédigé et publié par/redigiert und publiziert von/
redactado y publicado por:
International Union of Soil Sciences (IUSS)
Union Internationale de la Science du Sol (UISS)
Internationale Bodenkundliche Union (IBU)

Editor:
Prof.Dr. Winfried E.H. Blum
Secretary-General of IUSS
Universitaet fuer Bodenkultur
Gregor Mendel-Str. 33
A-1180 Vienna/Austria

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

ISSN:
0374-0447

Printed by:
WUV-Universitätsverlag
A-1009 Wien, Berggasse 5
Tel: +43-1-3105356-0
Fax: +43-1-3187050

Layout:
WUV-Universitätsverlag
A-1009 Wien, Berggasse 5
Tel: +43-1-3105356-0
Fax: +43-1-3187050

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

Price of a single copy:
25.00 US$

CONTENTS - SOMMAIRE - INHALT

EDITORIAL

NEW STRUCTURE OF THE INTERNATIONAL UNION OF SOIL SCIENCES

On 26th of August 1998, the last day of the 16th World Congress of Soil Science, the »International Society of Soil Science« became the »International Union of Soil Sciences«. Within the new structure of our organization, National Soil Science Societies can become **full members**; **individual members** are only accepted from those countries where no national organization of soil science exists. Through this change, we have enlarged our outreach to approx. 45000 soil scientists world-wide.

What does this mean for the present individual members and how will the changes be implemented in the near future?

Between now and the 17th World Congress of Soil Science, to be held in Thailand in 2002, the following steps will have to be taken:

1. Structural changes

After the implementation of the new statutes of IUSS by the end of the past World Soils Congress, we are in the process of developing a new scientific structure, consisting of *divisions, commissions, working groups and standing committees*. The main operational structures will be the divisions, which are to get some funding for the promotion of the different fields of interest within soil sciences. For the implementation of the new scientific structure, an enlarged *Standing Committee on Statutes and Structure* will meet in October 1999 in Vienna, in order to elaborate a draft for a new scientific structure. This draft will be published in the IUSS Bulletin and will then be decided upon by the *Extraordinary Council of IUSS* to be held in Thailand, in April 2000. The new scientific structure will enter into vigour at the 17th World Congress of Soil Science in Thailand in the year 2002, where the new chairpersons for divisions, commissions, working groups and standing committees will be elected.

2. Finances

From now on until 2002, *negotiations* will be held with the National Societies, in order to implement the *new financial structure*, based on contributions from these Societies. The national contributions will depend on different parameters, e.g. on the number of national members, on the distribution of the IUSS Bulletin within the National Society, and on the contribution that a National Society might receive from the National Academy of Sciences of the respective country. Until these negotiations are concluded, the actual system of membership fees is continued.

3. Bulletin and information exchange

Until the year 2000, all National Societies and individual members will receive the Bulletin as usual. The above cited negotiations with National Societies (see »Finances«) will also include new arrangements concerning the distribution of IUSS information (e.g. the Bulletin).

4. General information network of IUSS

Within the next few months, an IUSS website will be installed at the Secretariat General in Vienna, available free of charge for everybody. The Bulletin of IUSS will be published within this website, thus providing easy access to current information.

Those National Societies whose members have difficulties to get access to this information could install their own IUSS information network, e.g. by including relevant information from the IUSS Bulletin in their national newsletters.

Individual members will still be able to subscribe to the IUSS Bulletin after the year 2000, for a fee of approx. 12 US$ per year for two issues, as in the past. They will receive the Bulletin by mail from the Secretariat-General twice a year.

Finally, let me point out that IUSS celebrates its 75th birthday on the 19th of May, 1999, which makes it one of the oldest international scientific unions!

Winfried E.H. Blum
Secretary-General, IUSS

Mr. SOMPONG THEERAWONG, new President of the International Union of Soil Sciences, 1998–2002. Mr. Sompong Theerawong was born in 1939. He graduated in soil science from Kasetsart University, Bangkok, in 1964 and obtained a Master's Degree in Agronomy from Iowa State University, USA, in 1976.

He started his career at the Department of Land Development (DLD), Ministry of Agriculture and Cooperatives in 1965 and was appointed Deputy Director-General of DLD in 1989. From 1995 to 1996 and from 1997 to 1998, he held the post of Director-General of DLD.

During his office term at DLD, he has chaired various committees responsible for soil and water conservation and land management in cooperation with various government and private agencies concerned. He has fully supported and accelerated the development of appropriate technology to solve such soil problems as e.g. acid soils, saline sols, sandy soils and deteriorated soils, in different parts of the country. He was unanimously elected President of the Soil and Fertilizer Society of Thailand and President of the Soil and Water Conservation Society of Thailand for two consecutive periods, from 1996 until now.

At an international level, he has served as the Advisor of the Soil and Water Conservation Network in the International Soil Conservation Organization (ISCO) and Advisor of the World Association of Soil and Water Conservation (WASWC). He has been strongly involved in different projects in cooperation with such various international agencies as JICA (Japan International Cooperation Agency), NASDA (National Space Development Agency of Japan), MOA (Mokichi Okuda Association), STA (Science and Technology Agency of Japan), ORSTOM (French Scientific Research Institute for Development Through Cooperation), ITC (International Institute for Aerospace Survey and Earth Sciences), IBSRAM (International Board for Soil Research and Management), UNDP, FAO etc. In August 1998, he was elected President of the International Union of Soil Sciences (IUSS) and is therefore in charge of the organization of the 17th World Congress of Soil Science that is to be held in Thailand, in the year 2002.

Mr. IRB KHEORUENROMNE, new Vice-President of the International Union of Soil Sciences, *1998–2002.* Mr. Irb Kheoruenromne was born in 1944 in Phuket, Thailand and studied soil science at Kasetsart University, Bangkok. He obtained a Master's Degree from the University of Sheffield, United Kingdom, in 1974, and his Doctoral degree from the University of South Carolina, USA in 1976.

He started working as an experimental officer in the Applied Scientific Research Corporation of Thailand in 1968 and joined the Kasetsart University staff in 1971 as an assistant instructor at the Department of Soil Science, Faculty of Agriculture. He has continued his teaching and research career there ever since. He is now an Associate Professor of Soil Science. His subjects of interest include soil survey, soil genesis and classification and land use planning. He published books on Soil Survey, Soils in Thailand, Land Resources Data and Land Use Planning along with many scientific papers.

He has served several times as a short-term consultant for FAO in the ASEAN area, and chaired the Department of Soil Science from 1994-96. He is one of the founding members of the Soil and Fertilizer Society of Thailand and served as the Secretary-General of the Society from 1993-1994. He has been the Vice-President for International Relations of the Society since 1995. In August 1998, he was elected Vice-President of IUSS.

ADDRESS OF Mr. SOMPONG THEERAWONG, NEW PRESIDENT OF IUSS at the end of the 16th World Congress of Soil Science in Montpellier, France

President Alain Ruellan, Secretary-General Winfried Blum, Distinguished Guests, Ladies and Gentlemen:

A month ago, we watched France win the World Cup and during the last week our French colleagues have excelled themselves again by hosting the 16th World Congress of Soil Science. We in the International Society of Soil Science were proud to have the French Soil Science Society organize this Congress and it is my privilege to thank all our French colleagues, on behalf of the members of ISSS, for their contributions to another successful Congress of ISSS.

The Council of ISSS has now passed the torch to Asia and specifically to us in Thailand. We do realize that this is a great responsibility. It will not be easy to emulate the successes of Kyoto, Acapulco, and Montpellier, but we can assure you that our goal is to make it a Congress to be remembered.

We have proposed the theme of the 17th Congress as »SOILS, CONFRONTING NEW REALITIES OF THE 21st CENTURY«. We have been made aware during the last decade of this century, of the many problems of our planet earth, the inability of some countries to feed themselves, the stresses that are being placed on the natural resources, and the ever increasing demands on land and on people. The new imperatives include issues such as the role of soils in global climate change and food security. Many of these problems and conditions will remain or even be accentuated in the next few decades. Soil science will be asked to provide new solutions for the sustainable use of the land. It must also generate the soil databases that are required to drive the tools and techniques of the information age. We will have to increasingly collaborate with and rely on other disciplines to address these and other issues.

Soil scientists have contributed to feeding and clothing 5.6 billion people today; our challenge is to build on this so that we can do the same to 8 billion people in the year twenty-twenty. The reality is that we have to do this not only with almost the same amount of land but also with land, which in many parts of the world is being degraded and is rapidly losing its productivity. Ladies and gentlemen, the reality is that we have to continuously prove that Malthus was wrong. I am confident we can do it and at the opening ceremony of the 17th Congress in Bangkok, we want to announce to the world that we have actively addressed these issues.

Ladies and gentlemen, it is my honor to recognize the leaders of ISSS who have shown visionary leadership and worked very hard to make us a member of the International Council of Scientific Unions (ICSU). This is indeed a benchmark event in the history of ISSS and in a few minutes' time, we will become the International Union of Soil Science. This is not just a change in name. It is a giant step in the evolution of soil science and we now have the obligation and the challenge to play our role in the service of science to society. When we meet in Bangkok in 2002, we will be under the banner of IUSS.

The next four years are going to be hectic in some aspects, and challenging in others. We have to make certain that this transition is smooth and ensure that in the process we do not lose our legacy and her-

itage. Becoming a partner of ICSU is one of the new realities that we have to meet and work for in the next few years. I hope each and everyone of you will help the Council of IUSS to implement this new reality.

The Soil and Fertilizer Society of Thailand is the main host of the 17th World Congress. We have about 50 members attending this Congress and I am sure you have met some of them. To your Western eyes, they may look young and very shy but I can assure you that they are efficient and ambitious .We are eager to show you our country and let you enjoy our hospitality. We are also proud to demonstrate to you the progress we have made in soil and water conservation and the productivity of our agricultural systems.

As hosts we are very gracious but occasionally very demanding. We demand that everyone of you join us in Thailand and contribute to making the 17th Congress the best ever. We are already in the process of developing an outstanding program. Our neighbours, such as Vietnam, China, Malaysia, and Australia have already volunteered to join in this event by organizing pre- and post-Congress excursions. The government of the Kingdom of Thailand has already committed its support by providing us with funds to do the preliminary work and by placing all Thai institutions at our disposal. By early next year, we will keep you informed through a dedicated website, and by E-mail and snail-mail.

Ladies and gentlemen, four years may seem far away. This is deceptive. It will descend on us quickly and so I suggest that just as we are arranging for your comfort and pleasure in Thailand, each one of you must start thinking and preparing to make the best presentation that you have made in your career. A congress is only remembered by the highlights of the scientific contributions. Every one of you is an integral part of the formula for the success of the 17th Congress.

It is now my humble duty to formally invite you to the 17th World Congress of Soil Science, to Bangkok, and to Thailand. We assure you of an experience that you will remember for a long time.

Merci beaucoup,
Muchas gracias,
Vielen Dank,
Thank you,
Khob Khun Krup

16th WORLD CONGRESS OF SOIL SCIENCE

The Corum, Montpellier, 20–26 August 1998

An Open-minded Congress

2600 participants, 50 exhibitors, 300 accompanying persons, thirty-odd journalists : over 3000 people in total, from 99 countries, took part in the various scientific and technical activities of the 16th World Congress of Soil Science held at the Corum, Montpellier from 20 to 26 August 1998.

Keynote of the Congress : The **man - soil relationship** : past, present and future.

Nearly 2000 scientific papers were presented, within the framework of the 45 symposia and 6 workshops (1700 of which were in poster form). The Congress opened on August 20th with a wide-ranging debate on the scientific and social responsibilities of Soil Science. An educational exhibition for the benefit of both congress participants and the general public, drew attention to the importance of soil resources for the future as well as the need to improve soil management. 14 scientific tours took place in France, Europe and in Africa, before, during and after the Congress.

The hallmarks of this Congress were not only quality but also diversity and open-mindedness. The diversity of topics dealt with, from the most basic to the most finalised, from knowledge of the soil system - as an anthropized natural environment, to solving problems related to its sustainable management ; the diversity of participants, from researchers to farmers and political representatives, from soil scientists to economists and anthropologists, from engineers to academics and development project directors. Open-mindedness within the discipline itself: the various scientific and technical approaches confronted and collaborated with oneanother ; openmindedness toward the other scientific disciplines : physics, chemistry, biology, ... economics, sociology, anthropology, ... teaching ; openness towards the general public, thanks to the educational exhibition and the excellent liaison with journalists.

The soil, i.e. the soil cover or pedosphere, is a structured natural environment. Its originality lies in the fact that it appears at the interface with the other four natural environments of Planet Earth : the lithosphere, atmosphere, hydrosphere and biosphere. Interaction between these four environments and the pedosphere is both permanent and fundamental. The soil provides the source, the nurturing ground for a large part of terrestrial life; to put it more succinctly: no soil = no life; no life = no soil. The evolution of many biological communities, whether terrestrial, aquatic or aerial, is closely linked to soil evolution.

Soil - Man relationships in particular, are of considerable importance :
- we are developing a fairly clear picture of the way human activities transform the soil and its dynamics - often very quickly; these transformations will have both negative and positive effects on the future of human society;
- we are also beginning to perceive the extent to which the history of human societies and their present dynamics are highly dependent on soils and their evolution;
- and we may begin to assert that the future of human societies largely depends on the influence these societies have already had and continue to have on soils.

Not only Soil Science but also the Sciences working in conjunction with Soil Science, are thus confronted by three main issues, three major challenges which must be given priority :

1 - Developing knowledge of the soils of the world, what they are, what they were and their dynamics today : a great deal of progress has been made over the last years, due in particular to improved knowledge and greater awareness on all levels and amongst all specialists, of the structural reality of soil covers; much remains to be done.

2 - The development of research on the relationship between soils (soil systems) and human societies (social systems) : a systemic approach is called for.

3 - Developing general access to information about soils (for children and adults; individuals and societies) so that people become aware of the impact of the soil element on Human Societies and their Environment, today and in the future : much remains to be done in terms of teaching aids and strategies.

These three main objectives must be considered as priorities : in research, particularly for the community of Soil Science specialists; in education; but equally in terms of political action : political world leaders must be better informed of the issues, the major challenge represented by the soil, its use and conservation : the Soil = Witness of the Past; the Soil = Guarantee of the Future.

These are some of the messages and proposals of the 16th World Congress of Soil Science : it is vital to stress the need and determination of Soil Science specialists to come out of their scientific and thematic isolation. For the future of the World, the soil is just as important as water or the air; the necessary bio-diversity of the World will only be attained if soils are healthy; the same is true for the necessary diversity of human development . Interdisciplinarity and education are indispensible.

Alain RUELLAN
President of the 16th World Congress of Soil Science
President of the International Soil Science Society (ISSS), from 1994–1998

16ème CONGRÈS MONDIAL DE SCIENCE DU SOL

Le Corum, Montpellier, 20-26 août 1998

le Congrès de l'Ouverture

2600 participants, 50 exposants, 300 accompagnants, une trentaine de journalistes : au total plus de 3000 personnes, en provenance de 99 pays, ont participé aux diverses activités scientifiques et techniques du 16ème Congrès Mondial de Science du Sol, qui s'est déroulé au Corum de Montpellier du 20 au 26 août 1998.

Thème général du Congrès : **les relations sols ⇔ hommes** : passé, présent et futur.

Autour de ce thème, près de 2000 communications scientifiques ont été présentées, dans le cadre de 45 symposiums et de 6 ateliers (dont 1700 sous la forme de poster). Le Congrès a été ouvert, le 20 août, par un vaste débat concernant les responsabilités scientifiques et sociales de la Science du Sol. Une exposition éducative a attiré l'attention, des congressistes et du public Montpelliérain, sur l'enjeu que représente pour l'avenir une meilleure connaissance, donc une meilleure gestion, de la ressource sol. 14 excursions scientifiques, en France, en Europe et en Afrique, ont précédé, accompagné et suivi le Congrès.

Ce Congrès fut marqué, non seulement par la qualité mais aussi par la diversité et par l'ouverture. Diversité des thèmes abordés, du plus fondamental au plus finalisé, de la connaissance du système sol, milieu naturel anthropisé, à la résolution des problèmes concernant sa gestion durable ; diversité des participants, du chercheur à l'agriculteur et au responsable politique, du pédologue à l'économiste et à l'anthropologue, de l'ingénieur à l'enseignant et au gestionnaire de projets de développement. Ouverture interne, au sein de la discipline : les diverses approches scientifiques et techniques de la Science

du Sol se sont confrontées, ont collaboré ; ouverture vers les autres disciplines scientifiques : physique, chimie, biologie, ... économie, sociologie, anthropologie, ... pédagogie ; ouverture vers le public, grâce à l'exposition éducative et grâce à d'excellentes relations avec les journalistes.

Le sol, c'est à dire la couverture pédologique, la pédosphère, est un milieu naturel structuré. L'originalité de ce milieu naturel sol est d'être situé à la charnière des quatre autres grands milieux naturels de la Planète Terre : lithosphère, atmosphère, hydrosphère, biosphère. Les interactions entre ces quatre milieux et la pédosphère sont permanentes et fondamentales. Le sol est la source, le lieu de développement, d'une grande partie de la vie terrestre ; on peut affirmer : sans sol = pas de vie ; sans vie = pas de sol. L'évolution de beaucoup de communautés biologiques, terrestres, aquatiques, aériennes, est en relation étroite avec l'évolution des sols.

En particulier, les relations : Sols ¤ Hommes, sont considérables :
- nous commençons à assez bien comprendre comment les activités humaines transforment les sols et leurs dynamiques, souvent très vite ; il y a dans ces transformations, pour l'avenir des sociétés humaines, du positif et du négatif ;
- nous commençons ainsi à percevoir que l'histoire des sociétés humaines, et leurs dynamiques actuelles, sont très dépendantes des sols et de leur évolution ;
- et on peut commencer à affirmer que l'avenir des sociétés humaines dépend beaucoup de l'influence que ces sociétés ont déjà eu et vont avoir sur les sols.

La Science du Sol, mais aussi bien d'autres Sciences qui doivent travailler avec la Science du Sol, sont donc confrontées à trois grandes questions, trois grands défis auxquels il s'agit de donner la priorité :

1 - Le développement de la connaissance des sols du monde, de ce qu'ils sont, de ce qu'ils ont été, de leurs dynamiques actuelles : de grands progrès ont été faits ces dernières années, en particulier grâce à une meilleure connaissance et à une meilleure prise en compte, à toutes les échelles et par tous les spécialistes, de la réalité structurée des couvertures de sols ; il reste beaucoup à faire.

2 - Le développement des recherches concernant les relations entre les sols (les systèmes pédologiques) et les sociétés humaines (les systèmes sociaux) : l'approche systémique est à construire.

3 - Le développement de l'accès à la connaissance des sols pour tous (enfants et adultes ; individus et sociétés), de façon à ce que chacun puisse prendre conscience de l'importance du milieu sol pour le présent et pour le futur des Sociétés Humaines et de leur Environnement : il y a beaucoup à faire pour ce qui est des démarches et des outils pédagogiques.

Ces trois grands objectifs doivent être considérés comme prioritaires : pour la recherche, en particulier pour la communauté des spécialistes en Science du Sol ; pour l'éducation ; mais aussi pour l'action politique : les responsables politiques du monde doivent être mieux informés du grand enjeu, du grand défi, que représente le sol, son utilisation, sa conservation : le Sol = Témoin du Passé ; le Sol = Garant du Futur.

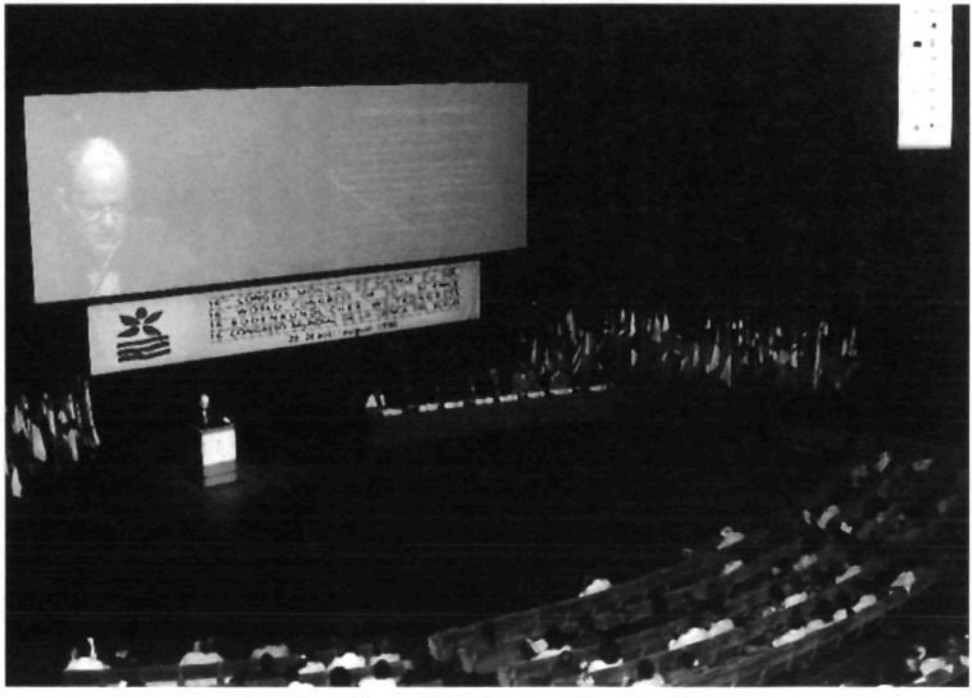
Tels sont quelques uns des messages et des propositions du 16ème Congrès Mondial de Science du Sol : il faut, en particulier, retenir la nécessité et la volonté, des spécialistes en Science du Sol, de sortir d'un certain isolement scientifique et thématique. Le sol, pour l'avenir du Monde, est tout aussi important que l'eau et que l'air ; la nécessaire diversité biologique du Monde ne sera gagnée qu'avec des sols en bonne santé ; la nécessaire diversité des développements humains aussi. Interdisciplinarités et éducation sont indispensables.

Alain RUELLAN
Président du 16ème Congrès Mondial de Science du Sol
Président, de 1994 à 1998, de l'AISS, Association Internationale de la Science du Sol

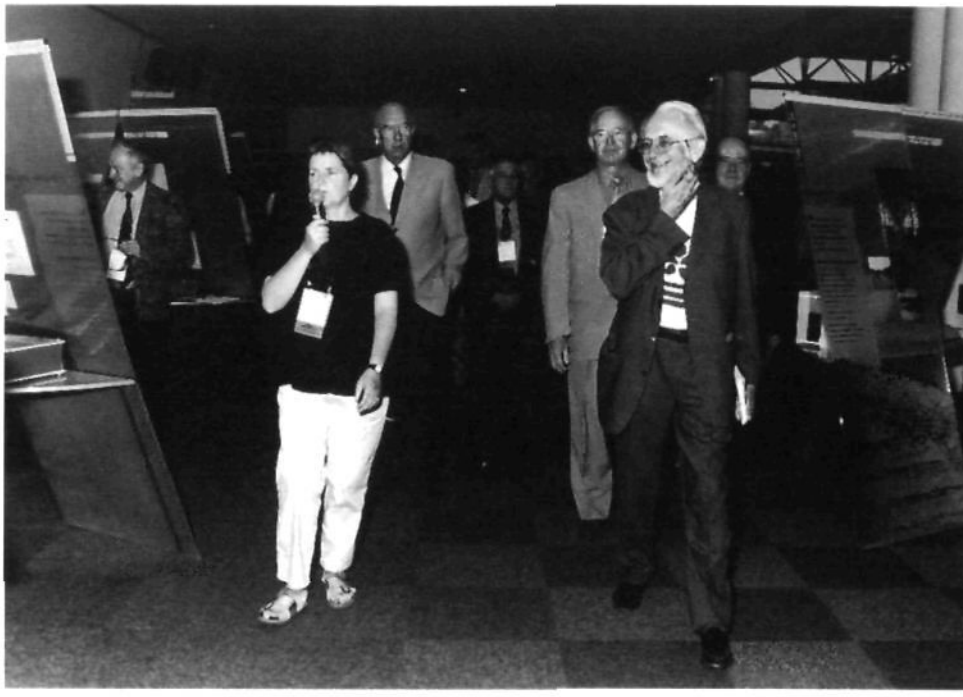
Panel at the opening ceremony

Audience at the opening ceremony

Greeting address of the President of ISSS



Greeting address of the Secretary-General of IUSS

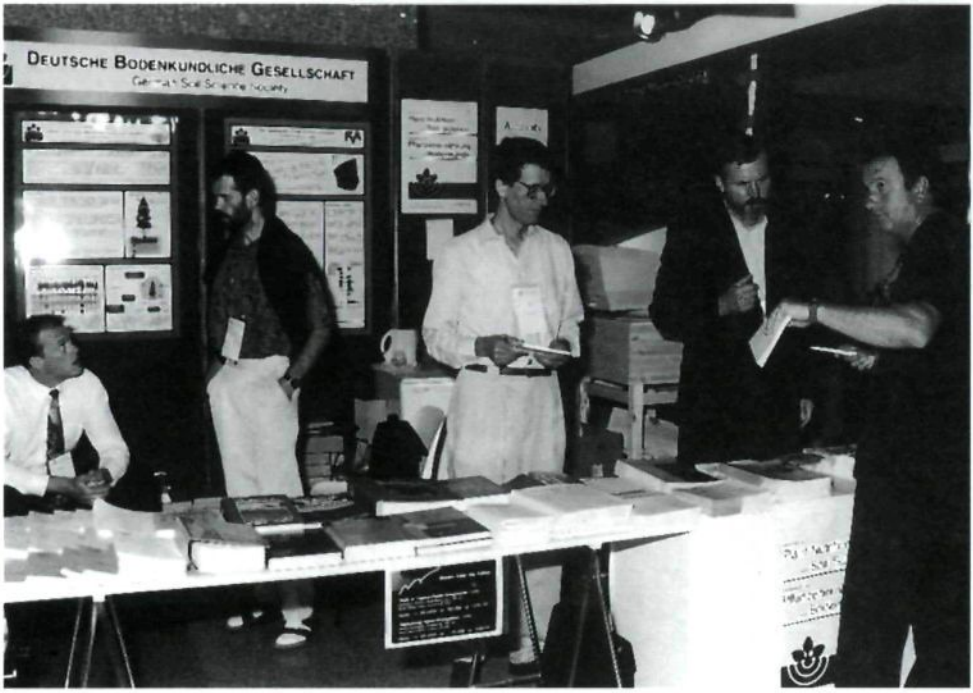


Inauguration of the exposition by the President

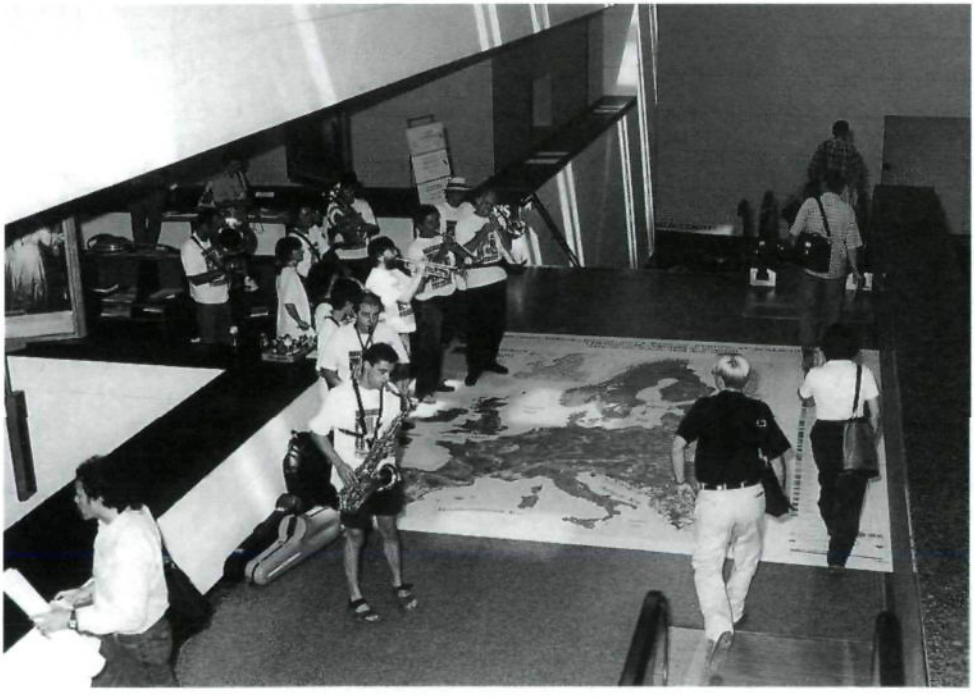
Debate on soil science matters, on the first day

The Council

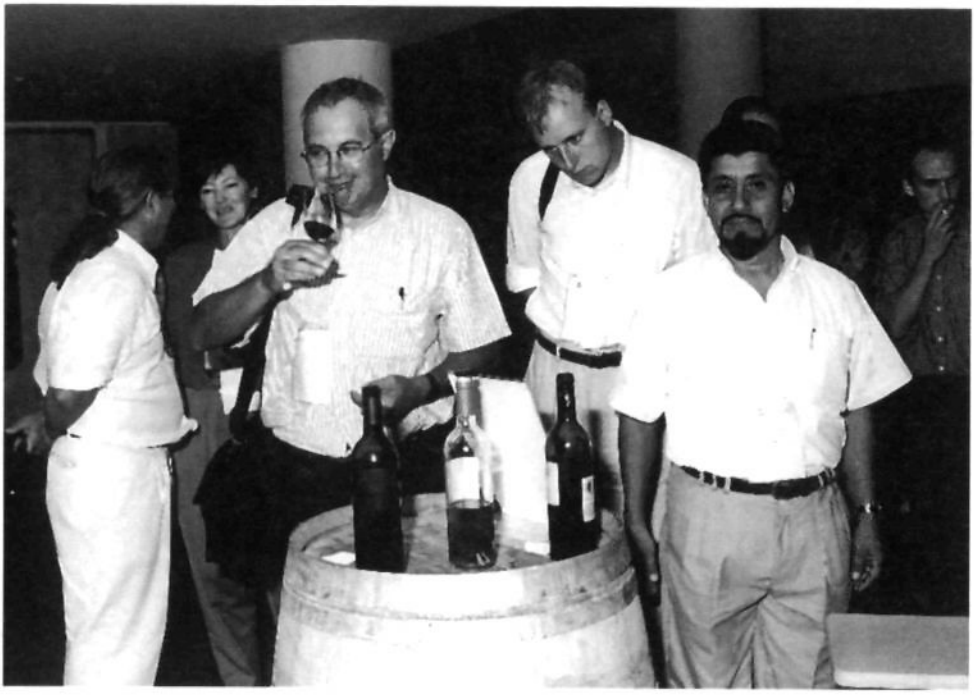
Council in action



Exposition booth

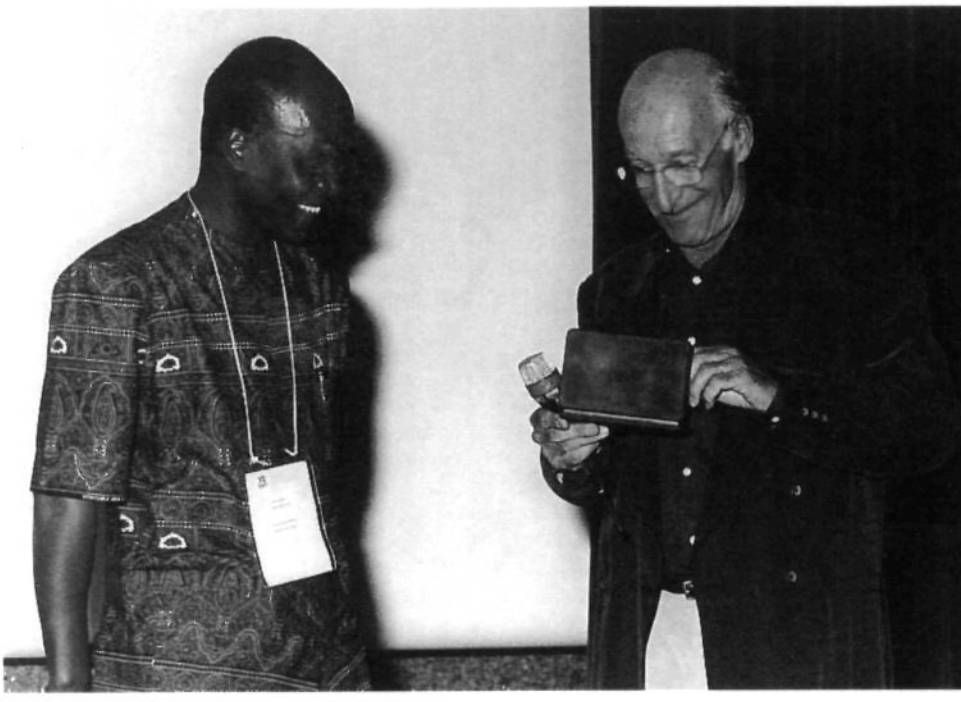


Brass band playing during the Congress

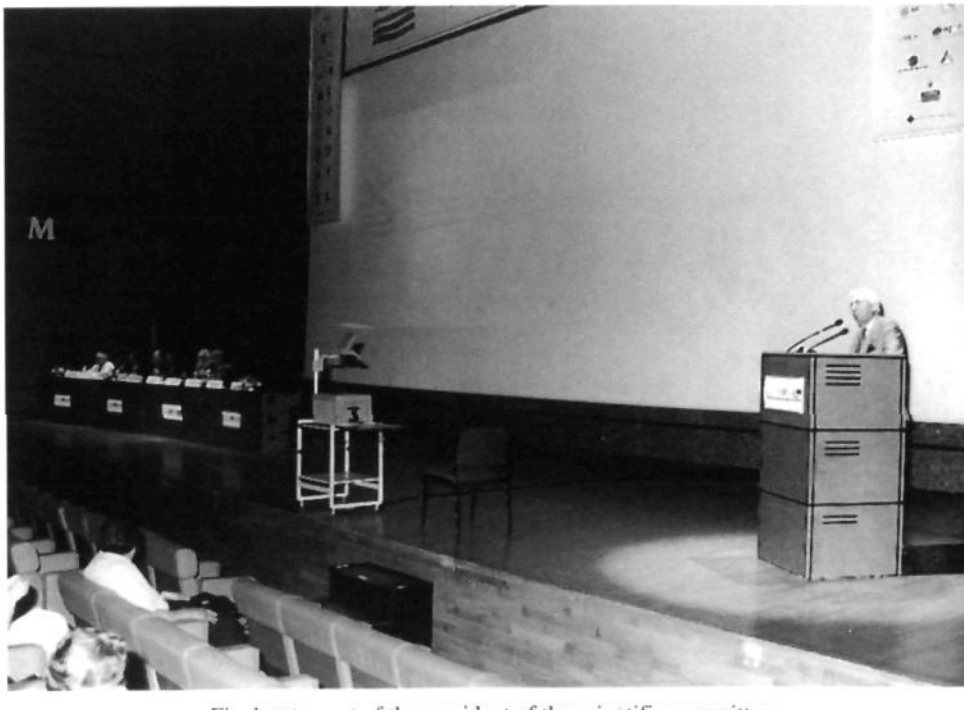


Wine testing

Gala dinner



The Prize of the City of Montpellier is awarded at the closing ceremony



Final statement of the president of the scientific committee

Happy faces of the members of the organizing committee at the end of the Congress

... and of their assistants

Transfer of powers.....and of responsibilities
From left to right: Marcel Jamagne, Irb Kheoruenromne, Sompong Theerawong, the Minister Pongpol Adireksan, Alain Ruellan and Winfried Blum

The new and the past Vice President, the Past President and the new President at the closing ceremony of the 16th World Congress of Soil Science

16th WORLD CONGRESS OF SOIL SCIENCE (ISSS / IUSS)

Montpellier - August 1998

I - OBJECTIVES OF THE CONGRESS

A number of strongly-felt ideas in the scientific community led to the suggestion for the theme of this 16th Congress:
»Current functioning of the world soil systems in relation to the various types of land use by human societies«.

»Recommendations« had been made during the *15th World Congress on Soil Science*, in 1994, held in Acapulco, Mexico, notably:
- soil science must be enlarged by close contacts with other disciplines possessing knowledge of the natural environment, and must take better account of the needs of the different social systems around the world;
- field work should be pursued, since this is the precursor of basic research projects and enables hypotheses and results obtained to be validated;
- problems associated with the periurban environment must be taken into account;
- we have to : - anticipate risks of soil degradation, notably through the development of quantitative estimation methods, - intensify research in fields relating to soil and water quality, - develop education, communication and circulation of information.

In this context and after four years of effort, the *main ways of work* of this 16th Congress were:
- make sure that *soil science commits itself to basic research to avoid the risk of stagnating as a purely applied science.* The scientific program of the 16th Congress was decided with this point in mind. Basic research in soil science - morphological, physical, chemical, biological, pedological - must be supported and developed. Quality applied research is only possible if it is backed up by high-level basic research.
- intensify *relations with other scientific disciplines:* soil science needs to work with other specializations - and vice-versa.
-develop research and studies concerning the *relations between soils and human activities*, between pedologic systems and social systems. This was indeed the central theme of the 16th Congress: - how are soils modified by human activities?, - how are soil dynamics more-or-less deeply transformed?, - how do such transformations influence other components of the environment in which we live?, - and, most important, how will these transformations of the soils and their dynamics affect man's future?
- structure and develop *education in soil science*, and support training in soil awareness.

o o o

II - PROCEEDINGS OF THE CONGRESS

2.1 - Inaugural Ceremony

Opening speeches

Opened by President Alain Ruellan, and co-ordinated by Mrs. M. Eimberck, the Secretary-General of the French Soil Science Society (AFES), the first part of this session consisted of inaugural addresses by several personalities: M. Jamagne, President of AFES and Vice-President of ISSS, W. Blum, Secretary-General of ISSS, B. Lesaffre, representing the French ministerial authorities, J. Meyer-Roux, representing the European Union and international organizations, M. Nucé de Lamothe, Director of Agropolis and representing the French research organizations, and M Guibal, representative of the city of Montpellier.

Introductory conferences

Four introductory conferences were presented by recognized scientific experts: José Pereira de Queiroz Neto (Brazil), Garrison Sposito (USA), Michael Swift (Kenya) and Marc Latham (France), each of whom spoke of the essential themes of the work planned for the Congress.

Round table

A wide debate was then held, under the leadership of the President, on the following themes: the objectives of soil science, its challenges and the services that it can and should provide. The participants in this round table were the four introductory speakers and a number of other eminent guests, not all of them specialists in soil science but rather in physics, chemistry, geochemistry, biology, economics, land management, land development, etc.

2.2 - Scientific activities of the Symposia and Workshops

In 45 symposia and 6 workshops, more than 2,600 participants presented and discussed almost 2,000 papers, of which 1,700 were in the form of posters.
These symposia were grouped by commissions or sub-commissions, or corresponded to permanent working groups or committees. They included 6 to 7 verbal addresses, one by invitation, and the presentation of posters during two half-days. Each symposium concluded with a broad general discussion.

2.3 - Meetings of the ISSS Council

Five meetings of the ISSS Council were held during the Congress. The main task on the agenda was the restructuring of our association into the International Union of Soil Sciences, as part of its integration within ICSU.

2.4 - Exhibitions

The traditional scientific and technical exhibitions provided the participants with a practical overview of recent projects and modern techniques in the various sectors of soil science.
One remarkable exhibition was intended to explain all the possibilities of education in soil science. Open to the general public, it enjoyed particular success.

2.5 - Scientific tours

Fourteen scientific tours, in France, other European countries, and Africa, took place before, during and after the Congress. Many participants seized this opportunity to visit areas of very different soils and landscapes, observing their exploitation and anthropic impacts, and appropriate conservation measures.

2.6 - Closing ceremony

On the occasion of the closure, a first review of the Congress's achievements was presented by A. Ruellan, President of the Congress, G. Pédro, President of the Scientific Committee, and W. Blum, Secretary-General of ISSS. The results of the election of the new ISSS honorary members were announced, along with the selection of the best posters of the Congress, which was carried out by Mrs. S. Staunton, with Professors A. Tanaka and A. Aguilar Santelises.
A representative of the city of Montpellier made a formal address in which he paid tribute to three eminent members of our Union, W. Blum, L. Thiombiano and B. Tinker, and presented them with a commemorative medal of the city.

The Director of Research, D. Nahon, then made an address on behalf of the French Minister of National Education, Research and Technology.
Dr. Pongpol Adireksan, Minister of Agriculture of the Kingdom of Thailand, formally invited all the members of the Union to attend the 17th World Congress of Soil Science to be held in Bangkok in 2002.
Finally, the former President and Vice-President of the ISSS, A. Ruellan and M. Jamagne, handed over their responsibilities to their successors, Sompong Theerawong and Irb Kheoruenromne, within the framework of the International Union of Soil Sciences, wishing them and the IUSS much success.

o o o

III - SHORT REPORT ON THE WORK OF THE CONGRESS

As President Alain Ruellan correctly pointed out, this congress was remarkable for its quality and diversity, but most importantly for the significance of the opening up of our discipline - towards other disciplines and towards the general public.
This observation would appear to confirm a positive response by the community of soil scientists to the recommendations made in Acapulco, notably as regards interdisciplinary actions, the integration of social aspects in our work, and indeed all matters relating to human actions.
The relations between man and soil were clearly of great interest to all: importance of the causes and consequences of anthropization; respect for the environment; conservation of the natural heritage. Indeed, the many themes discussed included the efforts to counter environmental degradation, the problems of remediation of polluted soils, the impact of urbanization, etc.
It was also noted that the knowledge and recommendations of farmers, the actual users of the soil, are increasingly being taken into consideration both in research and in applications. Indeed, it is essential to adapt to the different social systems throughout the world.
The notions of sustainable agriculture and sustainable development have always been at the heart of our debates: how do we assure sufficient profitability for agricultural producers while making sure that their resources are conserved?
Knowledge of soils around the world has developed considerably, as regards their genesis, their history and their present functioning, notably thanks to new discoveries. We are indeed seeing the emergence of new techniques, new approaches and concepts, in all basic disciplines and in application.
It is clear that we are entering a new era that will be marked by what we could broadly describe as »management of soils in their ecosystems«. We must therefore include in our work the valuable contributions made by other disciplines to our understanding of the world's varied landscapes, which of course imposes an interdisciplinary approach.
Finally, a consensus has clearly emerged on the need to progressively organize structured networks to monitor soil quality.

SOME SIGNIFICANT RESULTS

The sections below give an overview of the latest work in soil science presented during the Congress.

Soil physics

The soil-water system remains the major preoccupation in soil physics. New methods have led to major improvements in the analysis and measurement of the hydrodynamic properties of soils; these methods include fractal approaches, percolation techniques, notably associated with the use of fuzzy logic. Experiments are under way on the use of scanners and nuclear magnetic resonance.
Recent studies reveal that many soil properties depend on the intimate association of very fine particles of clay, organic matter and oxides. The associations between clay and organic matter notably have a decisive effect on soil stability in a multi-scale spatial context, from aggregate to catchment basin. The essential results show the importance of simultaneous knowledge of the nature and origin of the constituents, mineral or organic, in order to understand the physical properties; the very fine constituents are clearly the most important.

On the subject of water transfer in the soil, new models of porous media were presented, along with the spectacular developments in imagery techniques enabling observation of pore space geometry and particle morphology.
Non-destructive and indirect methods are now therefore recommended, since they respect as far as possible the conditions of the natural environment and thereby simplify the problems of scale transfers, in other words the generalization of the collected data to landscape levels.
Recent advances have revealed potential developments in the technique of time-domain-reflectometry and in the study of phenomena of water repellency caused by organic soil constituents.
Major progress has also been made in the development of in-situ measuring systems for spatiotemporal observation of preferential flow channels, and in the prediction of the pollutant flows into ground and surface water, taking account of the spatial distribution of the soils, agricultural practices and discontinuities created by man.
Two avenues of research appear to offer great promise: relating the transfer process to the description of the poral system, and new methods of modeling linking porosity characteristics to the prediction of preferential flows.

Soil chemistry
The period of analyses made on destructured materials is apparently over, for very sensitive and separative methods of analysis are now used to characterize humic substances and chemicals at trace levels. The reactivity of complex systems close to the »real« soil can be studied, with allowance for the spatial variabilities: particle size, type of soil structure.
Sophisticated mathematical, physical and chemical methods (fractal geometry, spectroscopy, microscopy and ultramicroscopy) are used to understand the heterogeneity of soils, which is no longer considered to be a obstacle but rather an actual object of study.
There have been numerous studies on the evolution, mobility, speciation, dynamics, and extractability of metals, metalloids and radionuclides in soils and their constituents.
We can now model the dynamics of organic matter by simultaneous use of chemical and physical fractionating and isotopic and biological tracing. Research is revealing the influence of the type of land use on the stored quantity of organic matter.
It has been confirmed that the evolution of xenobiotics is closely linked to the properties and »turnover« of carbon in the soil. At a larger scale, it has been shown by modeling that the leaching of phytosanitary molecules is modulated by the spatial variability of the stocks of organic matter in the soils.

Soil mineralogy
From a crystallochemical point of view, the location and incorporation of trace elements in the fine mineral fractions of contaminated soils is of great importance. Certain elements are particularly toxic, even in very small quantities. New techniques are progressively being developed, notably spectroscopic and microanalytical ones, in order to be able to measure very low concentrations. It is especially important to be able to define the location and spatiation of heavy metals so as to assess their mobility and bioavailability, and the role of organic matter and organometallic complexes on the formation of undesirable metal oxides. One of our most important advances is the application of techniques developed on synchrotron radiation which, through the use of various types of X-rays, facilitate the detection of very small traces, providing information at atomic or molecular level.
The association of microanalysis and the use of electronic transmission or scanning microscopy is proving to be extremely fruitful for the localization at particle level - whatever the complexity of the constitution is (clays, oxides, organic matter).
The importance of iron and its form defined as »green rust«, or fougerite, has been confirmed, as has that of lepidocrocite for the behavior of hydromorphic soils. Acidification of soils is one of the world's most common natural processes. The influence of minerals present in the soil and the parent material explains notably the role of the nature of clays in the control of acidity. The problem here is the buffering capacity of the soils, related essentially to the weathering rate. Evaluation of the impact of acid rain on soils and ecosystems implies a calculation of the critical loads.

Soil biology

Attempts have been made to make a number of definitions in soil biology, for example that of the »functional domain«: the zone of the soil subject to the influence of a dominant regulating factor, biotic or abiotic. The scale of study is between aggregates, horizons or soil profiles. The biotic factors involved could be, for example, earthworms, termites or ants, whereas the abiotic factors could be alternating freezing and thawing, or shrinkage cracking. This concept is clearly common to both ecology and soil science, and is therefore interdisciplinary.

This Congress confirmed the increased awareness of the scientific community as regards the importance of the activity of live organisms in the formation of soils, in the acquisition of their characters and properties, in the transfer of materials, in the transformation of organic matter and in the stabilization of organic products.

Zoological research has revealed the important role of invertebrates in pedologic systems, whatever their genesis, functioning, conservation and restoration. Anthropic activities (agriculture, forestry) sometimes have far-reaching impact on the populations of fauna in the soil, mainly in fragile soils in non-temperate regions.

Biodiversity, until recently very poorly understood, can now be evaluated using molecular biology techniques. The general impression is that this subject is moving very fast, thanks to new techniques, and the factors controlling biodiversity are being progressively discovered.

New orientations in soil biology are: - research on the functional role of soil fauna, - allowance for spatial heterogeneity, notably by the use of geostatistical methods, - evaluation of changes in biodiversity, in the medium-to-long term, by setting up reference sites serving as »observatories«.

In the field of organo-mineral interaction, notable research is underway on the consequences of the adsorption of enzymes on minerals in the soil, interactions between microorganisms and minerals (iron-reducing bacteria, bacteria solubilizing phosphates, etc.), the importance of mycorrhizal fungi, interactions between microorganisms and organic matter, notably in soil decomposition. We can conclude by asserting that the interactions between microorganisms and soil constituents influence the metabolic transformation of natural organic compounds and the evolution of metals.

We should also highlight recent methodological innovations that facilitate the study of physical and chemical processes in the rhizosphere. Concerning chemistry, variations of pH and ionic concentrations can now be studied by micropotentiometry and videodensitometry of colored indicators, which notably provides access to the measurement of fluxes of protons set free in the rhizosphere. The development of micro-suction cups technique facilitates in-situ micro-sampling; samples are then analyzed by capillary electrophoresis. These fine determinations improve our knowledge of the bioavailability of nutritive elements such as phosphorus, or undesirable ones such as aluminum, trace elements and radionuclides. As regards the physical properties of the immediate environment of roots, other new techniques such as X-ray tomography or new biomechanical approaches appear to be promising.

Spatial analysis

In the last four years, significant advances have been made in the analysis of the distribution of soils in the landscape, using modern methods and tools. The use of Geographic Information Systems (GIS) and Digital Elevation Models (DEM), predictions of soil properties by mathematical modeling, simultaneous use of several aerial photographs or satellite datas, and the ever-increasing data processing power of computers are all making decisive contributions to our understanding of the spatial distribution of soils. Field pedologists are therefore seeing their traditional tools vastly reinforced by these new techniques, and the information collected is much more complete than that provided by maps.

Two major themes were covered during the Congress: first, the acquisition of spatialized data on soils using sampling techniques, remote sensing, non-destructive geophysical techniques, use of DEMs; secondly, the development of information systems and their use in the evaluation of land.

This prodigious advance in the use of computerized databases containing data from local to planetary

scales is completely changing specialists' approach to soil mapping. However, this does impose an effort to standardize the information to enable data interchanges, and an indispensable standardization of the definition of soil quality.
The remarkable working tool provided by the WRB (World Reference Base for Soil Resources) will help to unify the efforts of soil specialists world-wide and facilitate communication between them. This base has been constituted to make it as accessible as possible to a broad public, in particular natural science teachers. A motion was put forward to incite all ISSS members to adopt this international baseline.
Concerning actual spatial analysis, the consensus is that we need to develop gauges to complete classical tools, notably those used in geophysics. This will enable the development of modeling methods, in particular those based on DEMs, and allow for the uncertainty inherent in the use of maps by applying the principles of fuzzy logic and artificial intelligence.

Soil technology
A new technology has recently appeared, i.e. that of »reconstituted soils«. These techniques are useful in many applications, for example the rehabilitation of old quarries or disused industrial sites (mines), improvement of dug earth by addition of organic waste such as sewage treatment sludges, and preparation of substrates used in horticulture (peat-based mixtures) or in market gardening in greenhouses. Artificial soils include soils reconstituted for tree planting in towns, for green areas, parks, dikes, roadsides, etc. Others correspond to constructions for isolation and vegetalization.
Obviously, new methods need to be found to study artificial soils, other than traditional techniques applied to natural ones.
The soil-plant purification system, the cleansing capacities of materials, and the impact of fertigation using waste water or the use of residual sludges and composts made from organic waste are at the center of numerous scientific, ecological and political debates.
In the field of soil and water conservation, in many countries devastating soil erosion by water or wind is endemic; often the causes are closely linked to thoughtless human activity. What emerges from the studies presented is the importance that needs to be given to spatial patterns of surface horizons and soil profiles characteristics. This is of utmost importance for understanding the processes of run-off and soil erosion by water, and for the recommendation of efficient conservation techniques.

Soil fertility
An organo-biological approach to the evaluation of fertility stimulated considerable interest among the participants. Although mineral fertilization still appears to be a necessity, in one form or another, it is not always sufficient in the long term to assure the perennity of agricultural systems - unless it is complemented by organic and biological soil management.
The socio-economic aspects of fertility and environmental problems were discussed at various levels. The importance of the perception of fertility by farmers was highlighted, as was the need for »participative« approaches placing the farmer upstream, downstream and at the center of the research. New effective alternatives for restoring soil fertility and for environmental protection are being tested in peasant communities; these approaches take much greater account of local natural resources than past ones and involve farmers directly.
The bioavailability of elements in the soil is an approach that owes much to an environmental vision of the problems. This is a new approach to the management of natural resources that aims at a more balanced fertilization.

Soils and environment

The recent interest in the study of urban and suburban soils as ecosystems strongly linked to human activity has led to great mobilization of the community, since they pose novel problems. The modifications of soils are far-reaching: impact of industrialization, town history, accumulation of organic and inorganic debris and waste around the peripheries, and so on.

Soils in towns are a meeting point for a multitude of disciplines, so soil scientists must necessarily collaborate with other specialists: historians, archeologists, economists, sociologists, civil engineers, medical experts, local authorities, etc.

One of the most-studied themes has been the presence of metallic trace elements in soils, and it has become clear that we need to take better account of the natural geochemical background.

In another vital area, the close relation between the use of cultivated land and the emission of gasses by the soil can be a determinant factor in climatic change. The role of prairies, forests and cultivated *plants as sinks or emitters of »greenhouse« gasses is the object of many current studies.*

The microbiological and chemical processes operating in soils are generators of greenhouse gasses and chemically reactive trace gasses. These gasses are identified (CO_2, CH_4, N_2O, NO_x, NH_3) as are their proportions and their effects on the environment: warming, eutrophication and acidification. Questions concerning the quantification of fluxes of gasses into the atmosphere were the subject of animated discussions. The variability over time and the problems of spatial generalization are such that this subject presents serious difficulties.

Regarding the relations between soil and water quality, the catchment basin is clearly the landscape unit that should be mostly taken into account.

Finally, we note the progress of national and European plans to monitor soil quality and set up observatories.

Soil rehabilitation

The main types of contamination and degradation were covered, on numerous types of soils and in more or less anthropized environments in various climates.

Possibilities of treatment of inorganic pollutions (metals and non-metals) by phytoremediation were abundantly described. This approach appears to be particularly promising, in the framework of environmental biotechnology. Various types of materials were mentioned for stabilizing and immobilizing these pollutants: clays, zeolites, organic material. Chemical and electrochemical methods also received much attention.

There was much discussion about the validity of chemical, biological and physical indicators as criteria for evaluating risks and for assessing the rehabilitation of soils polluted by organic products or metallic trace elements.

At present, the appreciation of pollution or rehabilitation levels is made without defining thresholds, despite the fact that present-day demand for environmental protection would need them.

The debates and perspectives concerned essentially our knowledge of the behavior of contaminants and pollutants, the definition of soil quality criteria, the dangers and risks, the feasibility and choice of treatments, and the decision to treat (or not to treat) soils according to the risks.

Importance of soil history

Soil has been a vital factor in the evolution of human societies. The examination and evaluation of the complex records of the past have become a major challenge in the culture history and the environment. Improved knowledge of the past should help us to determine an appropriate and satisfactory balance in human activity, between profit and degradation of the soil.

Education in soil science

There is a basic and pressing need for global education in soil-related matters and the importance of soil in the daily life of people the world over.

Presentations of a large number of pedagogic experiments, using a wide range of means, concerned notably discoveries in the field of soils in their actual landscapes, awareness of the vital importance of soil, and education in soil science itself.

Environmental concerns are constantly being mentioned today, along with the notion of sustainability, yet this must not hide the fact that our knowledge of the soil environment tself is far from complete.

° ° °

IV - CONCLUSION

Genuine awareness of the complex interrelations between the various compartments of the physical environment, as between the various areas of human activity, emerged in fact only relatively recently. The management of natural resources, the new need for agricultural planning at the international scale of the market, and the global concern for ecological issues are just some of the factors that have brought about this change in attitudes.

To sustain this movement, many countries are creating structures and tools to assure a maximum degree of interdisciplinary interaction. Soil science is acquiring renewed importance owing to the privileged place of the soil as the interface between the atmosphere, lithosphere, hydrosphere and biosphere, and its essential role in supporting human activities.

However, it is important that soil science must retain its identity, while associating itself with other disciplines involved with the natural environment and society in general, and of course by making use of the basic sciences.

Acknowledgments

The Organizing Committee of the Congress would like to offer its thanks to all the participants for their efforts, intense activity and understanding. Sincere thanks are also due to the many bodies and institutions that provided enthusiastic support for this international event.

Marcel JAMAGNE, Georges PEDRO and Alain RUELLAN

LE 16e CONGRES MONDIAL DE SCIENCE DU SOL - AISS / UISS
Montpellier - Août 1998

I - OBJECTIFS DU CONGRES

Un certain nombre d'*idées fortes* avaient conduit à proposer le thème de ce 16e Congrès :
" Fonctionnement actuel des systèmes pédologiques mondiaux en relation avec les divers types d'utilisations des sols par les sociétés humaines ".

Des " *recommandations* " avaient été émises lors du *15e Congrès Mondial de Science du Sol*, organisé au Mexique, à *Acapulco*, en 1994, dont on peut rappeler notamment :
- que la Science du Sol doit s'élargir par des contacts privilégiés avec les autres disciplines traitant de la connaissance du milieu naturel, et doit prendre en compte les besoins des différents systèmes sociaux existant de par le monde ;
- que les travaux de terrain sont à soutenir, car ce sont eux qui permettent de générer les recherches et de tester les hypothèses et les résultats obtenus ;
- qu'il convient : de prendre en compte les problèmes de l'environnement périurbain ; - de prévoir les risques de dégradation des sols, notamment par la mise au point de méthodes d'estimation quantitatives ; - d'intensifier les recherches dans le domaine des relations qualité des sols / qualité des eaux ; - de développer l'éducation, la communication et la diffusion de l'information.

Quelles furent, dans ce prolongement, les *grandes directions de travail* du *16e Congrès* , quatre ans plus tard ?
- Faire en sorte que la *Science du Sol existe par elle-même et non pas seulement par ses applications.* Le programme scientifique du 16e Congrès a été conçu en tenant compte de cet impératif. La recherche fondamentale en science du sol : morphologique, physique, chimique, biologique, pédogénétique, doit être soutenue et développée. Il ne peut y avoir de recherche appliquée de qualité sans recherche fondamentale de qualité.
- Intensifier les *relations avec les autres disciplines scientifiques* ; la Science du Sol a besoin de travailler avec les autres sciences, qui ont elles-mêmes besoin de travailler avec la Science du Sol.
- Développer les recherches et études concernant les *relations entre les sols et les activités humaines*, entre les systèmes pédologiques et les systèmes sociaux. Il s'agit en fait du thème central du 16e Congrès : - en quoi les sols sont-ils modifiés par les activités humaines ? - en quoi leurs dynamiques sont-elles plus ou moins profondément transformées ? - en quoi ces transformations influencent-elles les autres composantes du milieu où nous vivons ? - et surtout, en quoi ces transformations des sols et de leurs dynamiques, influencent-elles l'avenir des Sociétés Humaines ?
- Structurer et développer l'*éducation en Science du Sol*, la formation à la connaissance des sols.

o o o

II - DEROULEMENT DU CONGRES

2.1 - La Séance Inaugurale

- Allocutions d'ouverture
Ouverte par le Président A. Ruellan, et animée par Mme M. Eimberck, Secrétaire Générale de l'AFES, la première partie de cette séance a permis à différentes personnalités d'intervenir : MM M. Jamagne, Président de l'AFES et Vice président de l'AISS, W. Blum, Secrétaire Général de l'AISS, B. Lesaffre, représentant les autorités ministérielles de France, J. Meyer-Roux, représentant l'Union Européenne et les organisations internationales, M. de Nucé de Lamothe, Président d'Agropolis et représentant des organismes français de recherche, ainsi que M. Guibal, représentant de la ville de Montpellier.

- Conférences introductives

Quatre conférences introductives ont été présentées par des personnalités scientifiques largement reconnues : José Pereira de Queiroz Neto du Brésil, Garrison Sposito des Etats Unis, Michael Swift du Kenya et Marc Latham de France, qui ont chacun évoqué les thèmes essentiels des travaux prévus pour le Congrès.

- Table ronde

Animé par le Président, un vaste débat a ensuite pris place, sur les thèmes suivants : les objectifs de la science du sol, les défis que cette dernière doit relever et les services qu'elle peut et doit rendre. Ont participé à cette table ronde : d'une part les quatre conférenciers, d'autre part différentes personnalités éminentes non spécialistes de science du sol, mais de la physique, de la chimie, de la géochimie, de la biologie, de l'économie, de la gestion des terres, de l'aménagement, ...

2.2 - Les activités scientifiques des Symposiums et Ateliers

Plus de 2600 participants ont présenté et discuté près de 2000 communications, dans le cadre de 45 symposiums et de 6 ateliers, dont 1700 sous forme de posters.

Ces symposiums étaient regroupés par commissions ou sous-commissions, ou correspondaient à des groupes de travail ou comités permanents. Ils comportaient 6 à 7 communications orales, dont une sur invitation, ainsi que la présentation de posters durant deux demi-journées. Une large discussion entre les participants a efficacement clôturé chacun d'entre eux.

2.3 - Les réunions du Conseil de l'AISS

Cinq réunions du Conseil de l'AISS se sont tenues durant le Congrès, concrétisant notamment la restructuration de notre association en Union Internationale des Sciences des Sols, UISS, dans le cadre de son intégration à l'ICSU.

2.4 - Les expositions

Les expositions traditionnelles, scientifiques et techniques ont permis aux congressistes d'approcher de manière concrète un ensemble de réalisations récentes et de techniques modernes dans les différents domaines de la science du sol.

La nouveauté a résidé dans la tenue d'une remarquable exposition concernant toutes les possibilités d'éducation en science du sol, ouverte au grand public, et dont le succès fut particulièrement grand.

2.5 - Les tournées scientifiques

14 tournées scientifiques, en France, en Europe et en Afrique, ont précédé, accompagné et suivi le Congrès. Un grand nombre de participants ont pu apprécier la présentation de sols très différents, répartis dans des paysages très variés, en prenant connaissance de leur utilisation, des influences anthropiques, et des mesures de conservation appropriées.

2.6 - La cérémonie de clôture

Au cours de cette cérémonie, un premier bilan du Congrès a été présenté par A. Ruellan, Président du Congrès, G. Pédro, Président du Comité Scientifique, et W. Blum, Secrétaire Général de l'UISS. Les résultats de l'élection des nouveaux membres d'Honneur de l'UISS ont été annoncés, ainsi que ceux concernant la sélection des meilleurs posters du Congrès, effectuée par Mme S. Staunton et les Professeurs A. Tanaka et A. Aguilar Santelises.

Une allocution a été prononcée par le représentant de la ville de Montpellier, qui a honoré trois membres éminents de notre Union, MM W. Blum, L. Thiombiano et B. Tinker, en leur remettant une médaille commémorative de la cité.

Le Directeur de la recherche D. Nahon, est alors intervenu pour représenter Monsieur le Ministre de l'Education Nationale, de la Recherche et de la Technologie.

Ensuite, le Dr Pongpol Adireksan, Ministre de l'Agriculture du Royaume de Thaïlande, a officielle-

ment invité tous les membres de l'Union à se rendre à Bangkok en 2002 à l'occasion du 17e Congrès Mondial de la Science du Sol.
Enfin, A. Ruellan et M. Jamagne, Président et Vice-Président de l'AISS, ont passé le relais à leurs successeurs dans le cadre de l'UISS, MM Sampong Theeravong et Irb Kheoruenromme, en leur souhaitant bonne chance pour une poursuite fructueuse des activités de l'Union Internationale des Sciences du Sol.

° ° °

III - COMPTE RENDU SYNTHETIQUE DES TRAVAUX

Ce Congrès fut marqué, comme le dit le Président Alain Ruellan, par la qualité et la diversité, certes, mais également par l'ouverture, ouverture au sein même de notre discipline, vers les autres disciplines, vers les agriculteurs, vers le public, ...
Il apparaît, de ce fait, que les activités ont largement répondu aux recommandations émises à Acapulco, notamment dans les domaines de l'interdisciplinarité, de la prise en compte des aspects sociaux, dans la prise en considération de tout ce qui concerne les actions humaines.
Les relations sols / hommes ont été particulièrement évoquées et discutées : importance des facteurs et des conséquences de l'anthropisation, du respect de l'environnement et de la conservation du patrimoine. En effet, une large place a été accordée à la lutte contre la dégradation, aux problèmes de réhabilitation des sols pollués, à l'impact de l'urbanisation, ...
On notera, d'autre part, une prise en compte de plus en plus évidente, dans la recherche comme dans les applications, des connaissances et avis des agriculteurs, principaux utilisateurs des sols. Il convient en effet de s'adapter aux différents systèmes sociaux existants de par le monde.
Les notions d'agriculture durable et de développement durable ont toujours été au coeur des débats : assurer une rentabilité suffisante de la production agricole d'un territoire tout en veillant à la conservation de ses ressources.
La connaissance des sols du monde s'est largement développée, tant en ce qui concerne leur génèse, leur passé et leur fonctionnement actuel, et ce grâce notamment à des apports nouveaux. On constate en effet l'apparition de nouvelles techniques, de nouvelles approches et concepts, que ce soit dans les disciplines de base ou dans celles traitant des applications.
De manière évidente, nous entrons dans une ère nouvelle que l'on pourrait définir comme celle de la " Gestion des Sols dans les Ecosystèmes ". Il convient donc d'intégrer dans notre analyse tout ce que les autres disciplines apportent dans la compréhension des différents paysages du monde, et ceci implique bien entendu une interdisciplinarité.
Enfin, un consensus s'est clairement dégagé sur la nécessité de prévoir progressivement l'organisation de réseaux structurés pour la surveillance de la qualité des sols

Quelques résultats significatifs

En physique du sol

Le système sol-eau demeure la préoccupation majeure en physique du sol. On note de ce fait des améliorations importantes dans l'analyse et les mesures des propriétés hydrodynamiques des sols par des méthodes nouvelles, dont les approches fractales, les techniques de percolation, associées notamment à la logique floue. Des expérimentations sont menées sur l'utilisation des scanners et de la résonance magnétique nucléaire.
Les études récentes montrent que beaucoup de propriétés des sols dépendent de l'association intime de particules très fines que sont les argiles, les matières organiques et les oxydes. Les associations argile-matière organique du sol jouent notamment un rôle fondamental sur la stabilité des sols dans un contexte spatial multi-échelles, de l'agrégat au bassin versant. Les principaux résultats montrent combien est importante la connaissance simultanée de la nature et de l'origine des constituants, tant minéraux qu'organiques, pour la compréhension des propriétés physiques, le plus important apparaissant clairement être celles des constituants finement divisés.

En ce qui concerne les transferts d'eau dans le sol, de nouveaux modèles de milieux poreux ont été présentés, ainsi que de spectaculaires développements des techniques d'imagerie permettant d'observer la géométrie de l'espace poral et la morphologie des particules.
Les méthodes non destructrices et indirectes sont donc maintenant largement préconisées, car elles permettent de se rapprocher le plus possible des conditions du milieu naturel, et ainsi favoriser les possibilités de transfert d'échelle, c'est-à-dire la généralisation au niveau d'unités de paysage des données recueillies.
Des avancées récentes ont permis de mettre en évidence des développements potentiels de la technique de réflectométrie temporelle et la prise en compte des phénomènes d'hydrophobicité dus aux constituants organiques du sol.
Des progrès importants sont également enregistrés d'une part dans la mise au point de dispositifs de mesure in-situ pour l'observation dans l'espace et dans le temps des voies de flux préférentielles, d'autre part dans la prévision des flux polluants vers les eaux souterraines et de surface, en prenant en compte la distribution spatiale des sols, les pratiques agricoles et les discontinuités créées par l'homme.
Deux voies de recherche apparaissent très porteuses pour l'avenir : relier processus de transfert et description du système poral, et étudier de nouvelles approches de modélisation reliant caractéristiques de la porosité et prévision des flux préférentiels.

En chimie du sol

La période des analyses sur matériaux déstructurés semble révolue, et des méthodes d'analyse très sensibles et séparatives sont maintenant utilisées pour caractériser les substances humiques et les espèces chimiques à l'état de traces. La réactivité de systèmes complexes proches du sol « réel » peut être étudiée, et la prise en compte de la variabilité spatiale intervient : taille des particules, type de structure du sol.
Des méthodes mathématiques, physiques et chimiques avancées : géométrie fractale, spectroscopies, microscopies et ultramicroscopies sont utilisées pour la compréhension de l'hétérogénéité des sols qui n'est plus considérée comme un obstacle, mais comme un réel objet d'étude.
De nombreux auteurs ont traité du devenir, de la mobilité, de la spéciation, de la dynamique, de l'extractabilité des métaux et métalloïdes, et des radionucléïdes dans les sols et leurs constituants.
On peut maintenant modéliser la dynamique de la matière organique par utilisation simultanée des fractionnements chimique et physique et du traçage isotopique et biologique. On met en évidence notamment l'importance du mode d'utilisation des sols sur la quantité de matière organique stockée.
Il a été confirmé que le devenir des xénobiotiques est très lié aux propriétés et au « turn-over » du carbone dans les sols. A plus grande échelle, il est démontré par modélisation que le lessivage des molécules phytosanitaires est modulé par la variabilité spatiale des stocks de matière organique des sols.

En minéralogie des sols

Au plan cristallochimique, la localisation et l'incorporation des éléments traces dans les fractions fines minérales des sols contaminés est d'une grande importance. Certains éléments sont particulièrement toxiques, même à très faible concentration. De nouvelles techniques sont progressivement mises au point : spectroscopiques et microanalytiques, pour pouvoir réaliser des déterminations pour des concentrations très faibles. Il convient notamment de pouvoir préciser à la fois la localisation et la spéciation des métaux lourds pour en apprécier la mobilité et la biodisponibilité, ainsi que le rôle de la matière organique et des complexes organo-métalliques sur la formation d'oxydes métalliques néfastes. Une des avancées les plus importantes enregistrées est l'application de techniques développées sur rayonnement synchrotron. Elle permettent notamment, par l'utilisation de différents types de rayonnements X, de détecter des teneurs très faibles, fournissant des renseignements au niveau atomique ou moléculaire.
Le couplage entre microanalyses et microscopie électronique à transmission ou à balayage s'avère également très porteur pour des localisations au niveau des particules, qu'elles soient de constitution simple ou complexe : argiles, oxydes, matière organique.

L'importance du fer, et de sa forme définie comme « rouille verte », ou fougérite, a été confirmée, tout comme celle de la lépidocrocite, pour le comportement des sols hydromorphes.
L'acidification des sols est l'un des processus naturels les plus fréquents au monde. L'influence des minéraux présents dans le sol et la roche-mère expliquent notamment le rôle de la nature des argiles dans le contrôle de l'acidité. Le problème est ici celui du pouvoir tampon des sols, lié essentiellement au taux d'altération. L'évaluation de l'impact des pluies acides sur les sols et les écosystèmes implique de calculer les charges critiques.

En biologie des sols

L'élaboration d'un certain nombre de définitions a été tentée en biologie des sols, dont celle de « domaine fonctionnel » : zone du sol soumise à l'influence d'un facteur régulateur dominant, biotique ou abiotique. L'échelle d'étude est comprise entre agrégats, horizons ou profils de sol. Les facteurs biotiques concernés peuvent être des vers de terre, des termites, des fourmis,...tandis que les facteurs abiotiques peuvent être, par exemple : alternances gel / dégel, fentes de retrait. Ce concept est à l'évidence commun à l'écologie et à la science du sol, il est donc interdisciplinaire.
Ce congrès a vu s'accroître la prise de conscience de la communauté scientifique sur l'importance de l'activité des organismes vivants dans la formation des sols, dans l'acquisition de leurs caractères et propriétés, ainsi que sur le transfert de matière, sur la transformation de la matière organique et sur la stabilisation des produits organiques.
Les travaux en zoologie ont mis en évidence le rôle important des invertébrés dans les systèmes pédologiques, que ce soit dans leur génèse, leur fonctionnement, leur conservation et leur restauration. Les activités anthropiques (agriculture, exploitation forestière) influent, parfois grandement, sur des populations de la faune du sol, principalement dans les sols fragiles des zones non tempérées.
La biodiversité, boîte noire jusqu'à ces derniers temps, peut maintenant être évaluée grâce aux techniques de la biologie moléculaire. L'impression générale est que nous évoluons particulièrement vite sur ce thème, par l'intermédiaire des nouvelles techniques, et les facteurs contrôlant la biodiversité sont progressivement révélés.
De nouvelles tendances en biologie des sols sont : - des recherches sur le rôle fonctionnel de la faune du sol, - la prise en compte de l'hétérogénéité spatiale, notamment par l'utilisation d'approches géostatistiques, - une évaluation des changements dans la biodiversité, à plus ou moins long terme, par la mise en place de sites de références constituant des « observatoires ».

Dans le domaine des interactions organo-minérales, ont été abordées notamment les conséquences de l'adsorption des enzymes sur les minéraux du sol, les interactions entre microorganismes et minéraux des sols (rôle de bactéries ferri-réductrices, de bactéries solubilisant les phosphates, ...), l'importance de champignons mycorhiziens, les interactions entre les microorganismes et la matière organique du sol, et notamment sa décomposition. On peut conclure en affirmant que les interactions entre les constituants du sol et les microorganismes influencent la transformation métabolique des composés organiques naturels et le devenir des métaux.

Il convient d'autre part de mettre l'accent sur les innovations méthodologiques récentes permettant l'étude des processus physiques et chimiques dont la rhizosphère est le siège. En ce qui concerne la chimie tout d'abord, les variations de pH et de concentrations ioniques peuvent être maintenant cernées par la micropotentiométrie et la vidéodensitométrie d'indicateur coloré, permettant notamment l'accès à la mesure des flux de protons libérés dans la rhizosphère. La mise au point de micro-bougies poreuses permet le prélèvement in situ de micro-échantillons qui sont ensuite analysés par électrophorèse capillaire. Ces déterminations fines débouchent sur une augmentation de nos connaissances concernant la biodisponibilité d'éléments nutritifs, comme le phosphore, ou indésirables, tels l'aluminium, les éléments traces ou les radionucléides. En ce qui concerne les propriétés physiques de l'environnement immédiat des racines, d'autres techniques nouvelles, telle la tomographie de rayons X ou certaines approches bio-mécaniques semblent très porteuses.

En analyse spatiale

Les avancées dans l'analyse de la répartition des sols dans les paysages, à l'aide de méthodes et d'outils modernes, sont très significatives depuis quatre ans. L'utilisation des Systèmes d'Information géographique (S.I.G.) et des Modèles Numériques de Terrain (M.N.T.), les prédictions des propriétés des sols par modèles mathématiques, l'utilisation simultanée de plusieurs missions photographiques aériennes ou satellitaires, la puissance de calcul et de traitement informatique, sont sans conteste des *apports déterminants pour la compréhension de la distribution spatiale des sols. Le pédologue de terrain* voit donc ses outils classiques puissamment renforcés par ces nouvelles techniques, et l'information ainsi recueillie est bien plus complète que ce que les cartes pouvaient fournir.

Deux grands thèmes ont notamment été traités : d'une part l'acquisition de données spatialisées sur les sols : techniques d'échantillonnage, télédétection, techniques géophysiques non desctructrices, utilisation des MNT ; d'autre part l'élaboration de systèmes d'information et leur utilisation pour l'évaluation des terres.

Ce bond prodigieux des bases de données informatisées, de l'échelle locale à l'échelle mondiale, renouvelle l'approche des spécialistes de la cartographie des sols. Mais cela suppose des efforts de standardisation de l'information nécessaires à l'échange de données, et de normalisation indispensable à la définition de la qualité des sols.

Le remarquable outil de travail constitué par le WRB (World Reference Base for Soil Resources) est destiné à unifier les efforts de tous les spécialistes des sols du monde et à faciliter la communication entre eux. Ce document est écrit de manière à être accessible à un public le plus large possible, notamment les enseignants en sciences naturelles. Une motion a été présentée pour inciter l'ensemble des membres de l'UISS à utiliser ce référentiel international.

En ce qui concerne l'analyse spatiale proprement dite, les idées-forces sont en fait les suivantes : développer des capteurs complétant les outils classiques, provenant notamment de la géophysique, développer les approches de modélisation, prendre en compte l'incertitude pour l'utilisation des cartes en utilisant les notions de logique floue et d'intelligence artificielle.

En technologie des sols

Une technologie nouvelle est apparue récemment : celle des « sols reconstitués », pour réhabiliter d'anciennes carrières ou des sites industriels abandonnés (mines), pour améliorer des sols de déblais par des apports de déchets organiques (boues d'épuration), pour préparer des substrats utilisés en horticulture (mélanges à base de tourbes) ou en maraîchage sous serre, ... Les sols artificiels concernent des sols reconstitués pour des plantations urbaines, ceux des espaces verts, des digues, des talus de routes, ...D'autres correspondent à des matériaux pour isolation et végétalisation.

Il est évident que de nouvelles méthodes sont à mettre au point pour étudier les sols artificiels, autres que les déterminations traditionnelles appliquées aux sols naturels.

Le système épurateur sol-plante, les capacités épuratrices des matériaux, les irrigations fertilisantes avec des eaux usées, l'impact des boues résiduaires et des composts de déchets organiques, sont autant de thèmes qui animent de nombreux débats scientifiques, écologiques et politiques.

Dans le domaine de la conservation des sols et des eaux, l'érosion des sols est un fléau endémique qui ravage de nombreux pays, qu'elle soit hydraulique ou éolienne, et qui est très liée aux excès des activités humaines. Ce qui ressort des travaux présentés est l'importance qu'il convient d'accorder aux « motifs » de distribution des horizons de surface et des profils de sols caractéristiques. Ceci d'une part pour la compréhesion des processus de ruissellement et d'érosion hydrique des sols, d'autre part pour l'efficacité des techniques de conservation à préconiser.

En fertilité des sols

Il s'est dégagé un intérêt particulièrement fort pour tout ce qui concerne une approche organo-biologique de l'évaluation de la fertilité. En effet, si la fertilisation minérale, quelle que soit sa forme, apparaît toujours comme une nécessité, elle n'est pas toujours suffisante sur le long terme pour assurer la durabilité des systèmes de culture, si elle n'est pas associée à une gestion organique et biologique des sols.

Les aspects socio-économiques de la fertilité et des problèmes environnementaux ont été pris en compte à différents niveaux. Ont été mis en évidence d'une part l'importance de la perception de la fertilité par les agriculteurs, d'autre part l'intérêt et la nécessité des approches « participatives » en plaçant l'agriculteur en amont, au centre et en aval de la recherche. De nouvelles alternatives efficaces de restauration de la fertilité et de protection de l'environnement sont testées en milieu paysan, et prennent beaucoup plus en compte que par le passé, à la fois les ressources naturelles locales et la participation directe de l'agriculteur.
La biodisponibilité des éléments du sol est une approche qui doit beaucoup à une vision environnementale des problèmes. Il s'agit d'une nouvelle approche de la gestion des ressources naturelles qui permet une fertilisation davantage équilibrée.

Dans le domaine sols et environnement

L'intérêt récent pour l'étude des sols urbains et suburbains comme écosystèmes intensément liés à l'activité humaine conduit à une forte mobilisation de la communauté scientifique, car ils posent des problèmes nouveaux. Les modifications sont profondes : impact de l'industrialisation, marques de l'histoire des villes, accumulation de débris et de déchets organiques et inorganiques en périphérie des villes.
Les sols dans la ville constituent un carrefour de nombreuses disciplines, et les scientifiques de science du sol qui s'en préoccupent doivent nécessairement travailler avec d'autres spécialistes : historiens, archéologues, économistes, sociologues, ingénieurs, médecins, juristes, ...
Un des thèmes les plus étudiés a donc été celui concernant les éléments traces métalliques dans les sols, et la nécessité de la prise en compte du fond géochimique naturel est devenue évidente.
Dans un autre domaine crucial, la forte relation entre l'utilisation des terres cultivées et des émissions gazeuses par le sol peuvent jouer un rôle déterminant dans les changements climatiques. Le rôle des plantes comme puits et sources de gaz à effets de serre dans les sols cultivés, les prairies ou les forêts fait actuellement l'objet de nombreuses études.
Les processus microbiologiques et chimiques intervenant dans les sols sont générateurs de gaz à effet de serre et de gaz traces chimiquement réactifs. Ont été évoqués leur nature : CO_2, CH_4, N_2O, NO_x, NH_3, leur pourcentage d'émission, et leur effet sur l'environnement : réchauffement, eutrophisation et acidification. Ont été abondamment discutées les questions concernant la quantification des flux de gaz vers l'atmosphère. La variabilité temporelle est telle, et les problèmes de généralisation spatiale si considérables que de grandes difficultés sont rencontrées.
En ce qui concerne sol et qualité de l'eau, c'est le bassin versant qui représente de manière évidente l'unité paysagique à prendre en compte.
On note enfin la progression d'une réflexion aux plans nationaux et européen sur la surveillance de la qualité des sols et la mise en place d'observatoires.

En réhabilitation des sols

Ont été traités les grands types de contamination et de dégradation, sur de nombreux types de sols et dans des milieux plus ou moins anthropisés de différentes régions climatiques.
Les possibilités de traitement des pollutions inorganiques (métaux et non-métaux) par phytorémédiation ont été abondamment évoquées. Cette approche apparaît comme une voie particulièrement prometteuse pour l'avenir, dans le cadre de la biotechnologie de l'environnement. Divers types de matériaux ont été cités pour stabiliser et immobiliser ces pollutions inorganiques : argiles, zéolites, matières organiques, et les méthodes chimiques et électrochimiques ont également fait l'objet d'une attention particulière.
La validité d'indicateurs chimiques, biologiques et physiques en tant que critères d'évaluation des risques et d'appréciation de la réhabilitation des sols pollués, soit par des produits organiques, soit par des éléments traces métalliques, a fait l'objet de nombreuses discussions.
L'appréciation des niveaux de pollution ou des niveaux de réhabilitation se pratique cependant actuellement sans définition de seuils, alors que la demande en protection de l'environnement l'exigerait.
Les débats et perspectives ont porté essentiellement sur : la connaissance du comportement des contaminants et polluants, la définition de critères de la qualité des sols, des dangers et des risques, sur la

faisabilité et le choix de traitements, mais également sur le choix de traiter ou ne pas traiter en fonction des risques.

Importance de l'histoire des sols
L'histoire de l'humanité montre toute l'importance qu'ont pris les sols dans l'évolution des sociétés humaines. L'examen et l'évaluation des enregistrements complexes du passé sont devenus des soucis majeurs dans l'histoire des cultures et de l'environnement.
La connaissance du passé devrait nous éclairer et nous aider à trouver un équilibre approprié et satisfaisant dans les actions humaines, entre profit et détérioration des sols.

Pour l'éducation en science du sol
La nécessité d'une éducation globale pour faire connaître le sol et son importance dans la vie quotidienne des peuples est fondamentale.
La présentation de très nombreuses expériences pédagogiques, avec des moyens très divers, a notamment concerné : la découverte sur le terrain des sols dans les paysages, la prise de conscience de son importance vitale, l'éducation en science du sol proprement dite.
Le fait d'insister actuellement sur l'environnement et sur la notion de durabilité, ne doit pas masquer que beaucoup de choses restent à faire pour la connaissance du milieu sol en tant que tel.

° ° °

IV - EN CONCLUSION

Ce n'est en fait que relativement récemment que s'est produite une réelle prise de conscience du jeu complexe des interrelations entre les divers compartiments du milieu physique comme entre les différents domaines de l'activité humaine. La gestion des ressources naturelles, le besoin nouveau d'une planification agricole aux dimensions supranationales du marché, la mondialisation des enjeux écologiques, sont autant de questions qui ont aidé à cette mutation.
Pour la soutenir, beaucoup de pays mettent en place des structures et des outils à même d'assurer une interdisciplinarité la plus large possible. La Science du Sol y trouve une importance renouvelée en raison de la place privilégiée qu'occupe le sol à l'interface entre l'atmosphère, la lithosphère, l'hydrosphère et la biosphère, et de son rôle essentiel de support des activités humaines.
Cependant, il est nécessaire que la Science du Sol garde son identité, en s'appuyant certes sur des sciences de base, mais en s'associant à d'autres disciplines du milieu naturel et de la société.

Remerciements
Le Comité d'organisation du Congrès remercie chaleureusement tous les congressistes pour leur participation, leur intense activité et leur compréhension. Il manifeste également toute sa reconnaissance aux nombreux organismes et institutions qui ont soutenu de manière remarquable l'organisation de cette manifestation mondiale.

Marcel JAMAGNE, Georges PEDRO et Alain RUELLAN

16th WORLD CONGRESS OF SOIL SCIENCE

EXCURSIONS

EXCURSION A-1 : Lorraine, Alsace, Franche-Comté

A group of 22 soil scientists or accompagnants, coming from 10 countries and 4 continents, had the excellent opportunity of trying different aspects of landscapes, soils, culture in North-East France, during the excursion A1 organized by AFES, before the XVI ISSS Congress in Montpellier.

The main steps of the tour were : Nancy (Lorraine), Strasbourg (Alsace), Besançon (Franche-Comté).

The participants of Tour A1

We crossed and visited different lanscapes, looking at different land uses, discussing of quite variable soil-landscape relationships and soil management problems, such as :

1. the management of agricultural soils in the Lorraine plain, facing to pesticides and nitrate pollution ;

2. the study, evaluation and management of urban and industrial soils (including a quick visit beyond the French border, in the Saarbrücken area) ;

3. the soil-landscape relationships in the Vosges mountains (podsolization, acid rains) ;

4. the management of recreation areas and the correlation between soils and wines in the Rhône Valley ;

5. the soil geography of Jura mountains (soil formation and mapping in a karstic environment, pedogenesis on limestone).

During the field trip, leaded by B. Jabiol, G. Echevarria and C. Schwartz in a hearty way, our group had many opportunities of discussion, of meeting soil scientists charged with local programs (Gaiffe, Gury, Lucot, Toutain, and many others whom we acknowledge very much), of tasting excellent wines and special French foods.

The weather was very nice all along the trip, except for the last afternoon, when we knew the so called »tropical cold climate« of Jura mountains.
Many thanks to »Bernie« and friends, including our driver Michel : we will take with us a piece (of soil ?) of that part of the world.

Romano RASIO, ERSAL, Italy

Excursion A-3 : South-West of France

Within the World Congress of Soil Science I joined the excursion A3 which took soil scientists from 11 countries under the first-class-leadership of Dominique Arrouays and Clément Matthieu from Bordeaux over Arcachon, Pau, Toulouse, Montauban and Carcassonne to Montpellier. The first day was dedicated to the wine growing area around Bordeaux. We were showed different soils of the region Saint-Emilion and Pomerol and its worldwide famous red wines were demonstrated for tasting. We learned that top qualities are only attainable on soils, which for other cultivations are of minor quality. The most important fact is the occurrence of at least one stress factor, which can mean a lack of water in a stony and dry rendzina, a lack of oxygene in a valley ground with a high ground water table or a small amount of nutrients: this leads to only poor profits, but with a good wine producers´management excellent qualities can be achieved.

The next day we learnt to know not only the sandy spodisols of the Landes of Gascony, which nowadays is used as a pine forest, but also the highest active coastal dune of Europe (107 m), on which several dated fossile soil horizons were shown. In the region of Pau the silty soils of fhe "Garluche", the Pyrenean Piedmont, were impressing. Their deeply humic (more than 50 cm) A horizon should be formed by earthworms under acid forest conditions. For 50 years an intensive agriculture has been carried out, which e.g. with corn shows top profits of up to 15 tons of grains, if intensively fertilized and complementarily watered. In the region of Toulouse mainly the problems of soil erosion and compaction were excellently demonstrated and intensively discussed.

The varied experts´ program was completed by tourist highlights like sightseeing in Pau and Carcassonne. The receptions by the mayors of the visited cities as well as the discussions with wine-growers and farmers helped us to understand the country and its people. In total this excursion has not only offered many specialities in experts´views, but has lead to new contacts among the participants. All this was possible by the outraging engagement of our French colleagues.

H.-P. Blume, Kiel

EXCURSION A-3 : du Sud-Ouest de la France

Les régions Aquitaine et Midi-Pyrénées font partie des régions agricoles les importantes de France. De plus, la diversité des milieux, des production agricoles et des sites touristiques y est extrêmement grande. Il s'agit de ce fait d'un contexte exceptionnel pour mener une tournée pédologique. Ce que Dominique Arrouays de l'INRA d'Orléans et C. Mathieu de l'ESA Purpan ont fait de main de maître en s'appuyant également sur de très fortes compétences locales de l'INRA, du CNRS, de l'ENSA Toulouse ou de Chambre d'Agriculture.

Cette tournée a été suivie par un groupe cosmopolite de 26 personnes : 5 français, 5 australiens, 4 japonais, 3 allemands, 2 italiens, 2 malais, 1 portugais, 1 canadien, 1 belge, 1 néerlandais, 1 américain. Les membres de ce groupe avaient des âges, des fonctions et des spécialités fort diverses, mais il s'est instaurée très rapidement une excellente ambiance et même une grande complicité. La verve de D. Arrouays, les talents de polyglotte de R. Dudal, et il faut bien l'avouer les nombreuses dégustations de vin ou les repas gastronomiques gargantuesques, ont soudé ces gens venus de tous horizons découvrir les sols du Sud-Ouest, mais également ses héritages culturels ou culinaires. La tournée a ainsi su trouver un rythme alliant des discussions scientifiques de haut niveau autour de fosses pédologiques ou de sites expérimentaux et des moments de découverte touristique.

Les participants de l'excursion A-3

La première journée, consacrée à l'étude des sols viticoles de St-Emilion et de Pomerol, a été l'occasion de développer de façon pratique, y compris par un apprentissage à la dégustation, la notion de terroir et les liens pouvant être mis en évidence entre la qualité du vin et les caractéristiques du pédoclimat. Le lendemain, l'observation de sols podzoliques dans les Landes de Gascogne a permis de présenter des travaux portant sur la dynamique de la matière organique, les effets du drainage ou les techniques d'irrigation, sous forêt ou sous monoculture intensive de maïs. Ce type de discussion s'est pro-

longé les jours suivants pour les sols limoneux organiques de la Chalosse et pour les luvisols hydromorphes des terrasses de la Garonne en abordant également l'incidence des pratiques agricoles sur la qualité des eaux. Enfin, l'impact des pratiques agricoles sur l'érosion dans des zones à forte pente a été explicité dans le cas des sols argilo-calcaires sur molasse de l'Aquitaine.

Ce circuit pédologique a également permis la découverte de joyaux touristiques ou culturels : la vieille ville de Bordeaux, l'église troglodytique de St-Emilion, la dune du Pilat, la baie d'Arcachon, le château de Pau, Toulouse, la forteresse de Carcassonne... Ainsi, cette tournée a parfaitement rempli sa mission de présentation des sols et de leur fonctionnement, tout en permettant la découverte des richesses d'une région. L'ensemble du groupe en a chaleureusement remercié les organisateurs.

Christian WALTER, Ensa Sol, Rennes, France

Excursion A-4: Tunisia, August 11/18.1998

The excursion, which took place prior to the Congress of Montpellier (France), was organized by the Tunisian Society of Soil Science (**TSSS**), whose President, Dr. Amor Mtimet (also Director of the Soil Department in the Ministery of Agriculture) was its coordinator. Nineteen Tunisian collegues collaborated in the organization of the excursion, mainly researchers and engineers from the department of soils of Tunisia and the district soils services of the CRDA (Regional Departments for Agricultural Development) of the visited regions, as well as researchers and professors from several institutes, notably: Mrs Nadira Ben Aïssa (INAT), Pr. Boubaker Houmène (Faculty of Science of Tunis), Dr. Mohamed Hachicha (INRGREF), and two French researchers from ORSTOM: Eric Braudeau and Jean Collinet.

The 16 participants were from eight countries: South Africa, Germany, Canada, Spain, USA, France, Japan and Switzerland.

In only six days (12-17 August) about 2000 km were covered, from north to south, and from east to west. In accordance with the purpose of the 16th World Congress of Soil Science, **'Man and Soil'**, the excursion permitted us to discover an important part of Tunisia: the Mediterranean country, crossroads of civilizations, evidence of several climatic changes between the Mediterranean Sea and the Sahara; it was subject to successive transformations of landscapes and soils under the combined effects of man and the aridification of climate. Human activity has often shown negative effects on soils, causing erosion, salinization, and dersertification. During the last decade, a considerable effort has been made for stopping this deterioration of soils and promoting a harmonious economically and socially sustainable agricultural development. The two main objectives of the scientific research in this domain have been, for nearly 50 years, especially since the independence (1956), a better management of water and soil resources, hence the rapid social and economic progress of Tunisia, in spite of the population growth (from 3 to 9 million inhabitants).

The itinerary lead from the semi-arid mediterranean climate (xeric) in the north, the arid in the centre and the lower arid in the south, up to the desertic limit of the Sahara:

- In the north of Tunis, in the Mejerda estuary, an intensive irrigated horticulture on saline and alkali alluvial soils, the problem of irrigation with low-salinity waters (Ca>Na) : the control of the water table with high Na content (Na>Ca) : considerable efforts for improvement and reclamation through irrigation and drainage networks, cultivation, etc.

- In the south east of Tunis, from Zaghouan to Siliana, through Jebel Bargou, a sequence of soils on which cereals and olive-trees are grown; pine forest; a general survey of the hydraulic management system of the small dams (Mrichet and El-Gattar) installed on slopes in order to hold back the run off water, stop the gulling of soils and possibly make the farmers settle down thanks to an irrigated horticulture ; the visit of a big dam (El-Howreb) at the outlet of a large catchment area, built for developping an intensive irrigated agriculture in the plain of Kairouan ; (location of IAEA – Project TUN 5/017) higher up on the slope of Mrichet, a good example of a topo-litho-sequence : from rendizina on hard calcarous to vertisol on marls.

The participants of the excursion

- In the Center-West, on the high plateaux, from Kairouan to Kasserine, with arid summers and cold winters: uphill, near Kasserine, the steppe of Esparto (Stipa Tenacissima) and the control of its exploitation for the production of paper pulp : downhill, near Sidi Bouzid, the development of fruit tree cultivation (almonds, olive trees, apple trees) thanks to hydraulic management: spreading of floods by deviation to Oued El-Fekka, and surface wells ; the problem of semi-arid soils with calcarous accumulations, eroded or with colluvium, complex, and with a dense horizon near the surface (even in alluvial plains).

- In the South, in the large tectonic ditch of the Gulf of Gabès, up to Chott El-Jerid, which marks the border of the Sahara : seasonal saline lakes (SO4 and Cl, Ca and Na) Gypsous and chlorides crusts are formed; ancient fixed dunes and recent live dunes ; as well as ancient oases (Tozeur, Douz, Gabès) of date palms around artesian wells, and new palm groves created thanks to deep drillings for hot water (El Hamma), which permit three levels of vegetation (date palms, apple-trees and horticulture) and even intensive horticulture in every season. Outside the oasis, a very sparse steppe covering vast glacis and hills whose soils are nearly infertile. Around the Chotts and Sebkats (saline lakes) the saline substratum of clay and send is covered with a veil of aeolian sand (quartz, sypsum, calcite, chlorides, etc.)

almost infertile (Glacis of Methouia). Due to the extension of the recent live dunes in the west of Gabes, considerable works are undertaken in order to stop the progression of desertification (area of Menzel Habib).

- In the desiccated high plateau of Matmata, north of Gabès : a sparse steppe and soils with calcareous encrustings, which are very eroded and covered with loess, sometimes saline, probably originating from saline lakes and the Eastern Erg; an ancient form of management in terraces in the small valleys, 'the Jessours' is practised, permitting to accumulate water in the wet season and soil behind packed down earthen works, and spaced out plantations of olive-trees and date palms and some rainfed crops.

- From Gabès to Tunis and from the south to the north, the most important agricultural and touristic regions of Tunisia : in the regions of Sfax, under an arid climate, (annual rainfall : 200 mm), vast plantations of olive trees on sierozems, alluvial sandy soils with low calcarous accumulations and moderate alkalinity ; near the city of Sousse, under a semi-arid climate (rainfall : 330 mm), ancient olive groves on chestnut brown soils are managed in 'meskats', which are ingenious systems partitioned by earthern levees ('tabias'), with an impluvium uphill for retaining water and sediments.

- Finally, south of Tunis, in the Cap Bon, under a markedly more humid climate (annual rainfall : 550 mm at the summit and 450 mm in the littoral area), a good toposequence, climatic and lithodependent : at the summit, a forest and leached red ferrallitic soils on sandstone ; on the hills, cereal crops and vertic and red brownsoils on marls ; on the calcareous coastal terraces, intensive irrigated arboriculture and horiticulture on brown calcarous or red ferralitic soils with a calcareous encrusting near the surface. On this terrace, between Lebna and Menzel Temime, we visited an ultra-modern farm (leased by the goverment to a private firm), in which ultramodern techniques for the management of water, soil and crops (for exportation to Europe) are being tried out, and which represents an ultimate model of intensification of the Tunisian agriculture.

We congratulate our Tunisian colleagues and friends on their respective presentations. We greatly appreciate their efforts in allowing us to discover the beauty of the landscapes, the richness of their culture and the progress of the agricultural development in Tunisia.

We savoured the sweetness of the 'biblical' fruits of their agriculture (wheat bread, olive oil, milk, honey, dates, prickly pears, etc.), we shared their knowledge and their problems, and in particular, we enjoyed the unforgettable warmth of their hospitality.

A. Mtimet, Tunis,Tunisia
P. Quantin, Dijon,France

Excursion B-1 : Beaujolais/Bourgogne/Champagne

The bus Tour started in Montpellier on 27 August and ended in Paris on 3 September. The objective was to give its participants a broad view of the relationships between the geology, landscape, soils, agriculture and forestry of the Beaujolais, Bourgogne and Champagne regions of France. Overnight stops were in Macôn, Dijon, Beaune, Avalon, Troyes and Reims. This allowed for good opportunities to visit and appreciate examples of local history and architecture.
The rigors of this tightly-scheduled study tour were pleasantly interrupted by timely samplings of the wines representative of the main growing areas.

The tour was expertly conducted by Dr. Jean Chrétien (INRA - Sols, Dijon),Prof. Dr. Francis Andreux (University of Bourgogne, Dijon) and Dr. Jean-Jacques Lambert (USA, formerly INRA, Orléans). The latter served as good-humored interpreter and as consultant to solve minor crises.

With the assistance of local government officials and private producers, we were given a thorough insight in the subtleties of vineyard management and wine production. Historically, growers have found ways to take advantage of the most favorable combinaison of the local geology, the gentle slopes, and temperate exposures. The final product resulting from the delicat processing and controlled fermentation of the Chardonnay and Pinot Noir grapes leads to the treasured registration and certification (« appellation ») of each field (« terroir »).

The actual tour started near the Rhône Valley city of Macôn in the Beaujolais region with its siliceous soils on volcanic Devonian geology. It then moved north to the Bourgogne region with its calcareous soils on Triassic and Jurassic limestones and the soils on Pleistocene alluvium of the Saône Valley. Next, to the Champagne region with its soils formed on the Cretaceous chalks of the Paris Basin.

There were 12 well-exposed soils profiles and accompanying laboratory data for detailed study and observations ; five related to vineyard, four to crop production and three to forestry. Agricultural sites allowed for discussion of local crop and pasture production systems. This included studies on the control of nitrates in groundwater contamination through land use restrictions in the Saône Valley ; and lysimetry studies on the effects of land application of various wastewaters and biosolids on soil nutrient movement. At several forest sites, there was discussion on production of oak staves for wine barrels, and on forest management for wildlife. In the economically important Douglas fir forests, we visited the Vauxrenard field laboratory which is used for the detailed study on the adequacy of nutrient budgets in relation to tree harvesting methods and lengh of rotation.

The tour benefitted from exceptional weather conditions and the generous hospitality of our hosts at the various sites. Twenty participants from 14 different nations arrived in Paris with many new insights, and with a sense of gratitude for an outstanding effort by our French team leaders.

William van Eck, USA

EXCURSION B-4 : the Rhône Valley and the Frech-Swiss Alps

After having been together with about 3.000 other participants in the World Congress of Science at Montpellier and intensively exposed to lectures and posters on soil research around the World for 7 days, it was both relaxing an a joyful experience to be together with a smaller group of soil scientists from around the world for eight days and get a chance in the field to be introduced both to the soil research which has been and is going on the Rhône Valley and in the French and Swiss Alps, and to have a look at the differents of land use systems in that area.

We were in the lucky situation to have the Director of Research at INRA-ENSA, Montpellier Dr. Michel BORNAND as leader of the tour. Together with his colleagues (more of 20 french and swiss researchers and engineers of several institutes and members of regional agricultural development in the different visited sites) he made the tour something we will keep remembering for a long time.

The participants of Tour B4 on the Plateau de Saisies. Background: Mont-Blanc

Plateau de Saisies: leached podzolic soil on flysch

As our manager has carried out a large amount of soil research in the Rhône Valley he was a goo guide, not only to the soils in the area but also to the land use systems practised there. We got both a good impression of the impact of the glaciers up through the Pleistocene on soil development in the valley and first when seeing the importance of weathering processes and losses of finest particles on the soils in the area, one really grasps the impact of loss in earth and of erosion and how these phenomena come to an end when a 10-20 cm thick stone layer is formed on the soil surface. How the farmers in the area are able to make a living by growing grapes on such soils is surprising for an outsider like me, but we found that the wine produced there, certainly was of good quality.

Michel BORNAND had also been able to draw on the experience of some of the top scientists at the universities in the south eastern part of France to come for a day and two to introduce us to the soil and land use research they had carried out previously in the Alps. But the help of such experts we got a good impression of the soil develop-

ment, soil pollution problems - mainly heavy metal pollution - and the land use systems, both in the Rhône Valley area and the Fench Alps.

During the tour we got the chance both to visit a cherry farmer, an irrigation project, and see how cheese production play an important role in some of the villages in the Alps. In the Beaufort village the mayor himself showed us the cheese factory and took us around in the village. The trip ended in the village church where he showed us the beautiful wood carving there, but he underlined that the church there was not a museaum; but it was filled with people at the church service every sunday.

Many other interesting and joyful events could be mentioned, for instance we got up about 3.000 meters elevation first in Val d'Isère at the top of the olympic skislope, than in Chamonix valley to have to about a look down on gletchers ; we visited a large mansion, in which both 200-300 years old furniture and household equipment were present together with TV, telefax, electrical stove, etc.

I am sure that all we, who participated, will remember the friendliness, kindness and helpfulness we met all over for years to come, both in the Rhône Valley and in the french and swiss Alps.

So in short, thanks to Michel BORNAND and colleagues we got an unforgettable Post-Congress tour.

Jens Peter MØBERG

EXCURSION B-5 : Morocco
Marrakech, Beni-Mellal, Fès, Rabat

This tour was organized under the auspices of the Moroccan Soil Science Association (A.M.S.SOL) on the initiative of its president, Mr Mohamed Badraoui.
It brought together participants from Europe, Asia and America. Some of us knew very little about the specific problems in agricultural production in arid areas. This tour was therefore a discovery of the many faces of Morocco.

The participants of Tour B 5

In Morocco irrigation is necessary for obtaining high and regular crop yields. The accumulation of soluble salts in soils is the fastest degradation process. Our Moroccan colleagues showed us the work carried out in agriculture development and their ability to manage irrigated soil and intensive cropping. A 300-page dossier was distributed to each participant in addition to the maps and different documents about the soil. We each therefore had a source of information that could be freely consulted in the future.

We began the tour in Marrakech, a city in southern Morocco. We travelled into the Atlas Mountains, towards Beni-Mellal and Fès. We then headed towards the irrigated areas of the Gharb, finally reaching Rabat. Most of the engineers and managers in the development offices of the areas visited played a part in the tour. They gave clear, excellent-quality presentations, thus making it possible to understand better complexities of managing of water and soil.

The discussion topics were enthralling, particularly water management and quality, and soil classification. Great importance was placed on the nature of soil components in managing sodicity and salinity in long-term soil quality management.

We will not forget the visits to Marrakech, the cedar forest in the Middle Atlas with its monkeys, Fès, the ruins of the Roman city of Volubilis, and Rabat.

We warmly thank our Moroccan colleagues for quality for the tour offered to us. This is the result of much time and effort by the organizing committee, as well as the farmers and the management office staff in the irrigated areas who worked together in preparing this tour.

Daniel Tessier

Post Congress Tour B-6: Environment and Soilscapes in Southwest Germany
August 27 – September 1, 1998

Fifteen soil scientists, from France, Benin, Vietnam, Italy, Japan, Finland and Germany, greatly enjoyed the six days post-congress excursion through southwest Germany. The program offered to us kept a nice balance between soils, agriculture, forestry and landscape of southwest Germany. The itinerary passed the picturesque landscape of the upper Rhine valley, including the ancient Kaiserstuhl volcano, through the Black Forest and the Hegau mountains to Lake Costance, the subalpine hills of the Allgäu and ended at Stuttgart.

The excursion started in Breisach, a very pleasant town which lies on a small hill formed by volcanic material related to the Kaiserstuhl volcano and where we had a very appreciated wine tasting.

During the second day, we visited the Rhine valley (West of Freiburg) and the Kaiserstuhl volcano area. In the Rhine floodplain, due to the construction of an artificial channel, the river is no longer able to inundate its former floodplain; as a consequence, in the soil viewed at the first stop (a *Calcaric Fluvisol*), the organic matter accumulation by sedimentation and accumulation of O.M. through litter fall has decreased.This trend reversed with the plantation of pines since the 60th. In contrast to the Rhine floodplain, the soils in the western part of the lower terrace (*Chromic Luvisols*) are decalcified to a depth of 60-100 cm and show proves of rubefication and clay illuviation. Kaiserstuhl volcano derives its name from the U-shaped morphology of the massif. In this area soil development is very variable depending on parent rock, relief and land use. Very impressive were the loess deposits which cover a large part of the area and on which we saw a *Calcic Chernozem* caracterized by processes of decalcification and organic matter accumulation. Not very far from this soil, on periglacial basaltic debris with

The participants with the chef of the restaurant after a culinary stop

loess admixture evolves a *Humi-Vertic Cambisol* characterized by a slightly acid profile in which the dominant process is clay formation.

The third day was dedicated to the visit of the southern area of the Black Forest and to the Convent Forest research area. In the Black Forest a good example of soil catena was shown. This soil catena, called Buggenried catena, evolves on granitic rocks and is made by a *Stagni-Dystric Cambisol*, a *Stagni-Dystric Gleysol*, a *Ferri-Gleyic Cambisol*. The first soil is strongly acidic and shows stagnic properties; in the second, the stagnant conditions are clearly visible due to a bleached horizon and depend on dense and clayey layers in the profile, which is acid; in the third soil, stagnant water appears to be less prominent (in view of the previous), while the most prominent characteristic in this soils is the Fe-accumulation. High pH-values also indicate an addition of basic cations.

The Convent Forest research area is located between 700 and 860 metres above sea level in the southern part of Black Forest and shows sufficient access to water and nutrients, so it can be assumed that the essential biogeoecological cycles are intact. The purpose of the Convent Forest ecosystem study is the analysis of deposition caused mobilisation and storage processes in forest soils. This requires long-term measurements and monitoring. The comparison between even aged, monoculture stands and mixed stands, as well areas with varying tree species, helps to rate the ecological impact of foresting methods. This ecological study, with its focus on element budgets and preservation of site quality, can complement the economic evaluation of silvicultural strategies. In this day we had lunch at Salzhof organic farm in which the main product is gost cheese, but also the local smoked ham tasted excellent.

The fourth day was dedicated to a visit of the Reichenau island and the Hegau mountains. The Reichenau island lies in the southwestern part of Lake Constance. The surface area of the island is 450 hectares of which 233 hectares serve for agricultural production. 167 hectares are used for vegetable cultivation. The other uses are 49 hectares green plots, 12 hectares vineyards, 4 hectares flowers and 1 hectar orchads. In the Reichenau island, due to the long-lasting horticultural activities, 90% of the soils are influenced by anthropogenic disturbance leading to carbonaceous soils enriched to great depth

by organic matter. Nearly all crops are irrigated with the lake Costance water. Every year one million m3 are pumped from four stations towards the island. With the exception of filtering, no water treatment is applied. The lake waters are subjected to regular analyses in order to guarantee high quality irrigation water.
The Hegau mountains lie in the northwestern area of Lake Costance. From the point of view of geology they are not comparable to any of the adjacent areas since a great variety of different rock and sediments from Jurassic to Quaternary age are present. Depending on the great variety of parent rocks, soil found in the Hegau are very different one from onother. Four pedons were shown in this area: a *Vertic Cambisol* developed from layered basalt mudflows; an *Eutric Leptosol* developed from a gritty basaltic bomb tuff; a *Vertic Cambisol* developed on marls; a very impressive *Fibric Histosol.*
The fifth day was dedicated to Pleistocene and cuesta landscapes of the northern area of the Costanza lake. An *Haplic Luvisol* and a *Vertic Cambisol* were shown before to reach Aach where a karst spring called "Aachtopf" exists which is connected to the Danube river. The spring output, has an average of 9 m3/sec. After lunch in a tipic restaurant in Aach, following the Danube river we reached the "Knopfmacherfels", an exposed rock which allows a nice view over the Danube river valley, which crosses gorge-like massive limestone. The last pedon of the day was observed before to reach Hohenheim. It was a very interesting *Chromic Cambisol*
The last day of the tour was spent in the University of Hohenheim where we visited the experimental field for soil gas exchange measurements, the laboratory of the Departement of Soil Science and the wonderful garden which is in front of the main building of the University.
To summarize such a tour and the experiences that it offered in a few words is a difficult task but I am sure that all those who went on it would wish to thank the people who served on organising the tour and particularly our guides Professor K. Stahr and Dr L. Herrmann. This was undoubtely a most memorable experience for all involved and strengthened further the bonds of friendship between partecipants from different countries.

C. Dazzi,University of Palermo, Italy

Excursion B-6 : Germany

Tour B 6 was organized and conducted by Prof. Dr. Karl STAHR and Dr. Ludger Herrmann of the Institute of Soil Science of the University Stuttgart-Hohenheim. The topic of this 5-day tour, starting in Breisach on August 27 and ending in Stuttgart on September 1, was: »Environment and soils in south-western Germany«. There were only few participants, two from Japan, one from Finland, one from Italy, two from Benin, two from Vietnam and three from France, among them Prof. G. Aubert and his wife. Favoured by really agreeable weather conditions, the tour was judged a great success by its participants, who were all very motivated and enjoyed the amicable atmosphere.

Very comprehensive guide-books (137 pages, with very detailed analytical tables, including information on clay minerals and geochemistry) were distributed among the participants. In addition, the German soil scientists supplemented the descriptive and analytical data of the soil profiles by extensive explanations, pointing out the interactions between soil science and geomorphology, tectonic history, and human influence. For each profile, an interpretation from the point of view of quantitative geochemistry was given. Among the subjects treated during this tour were: tertiary volcanic action of the Kaiserstuhl and the Hohenstoff, pleistocenic glaciation in the Rhine Valley (Hegau), the forest ecosystems of the Black Forest, karstic phenomena (jurassic), and histosols, to name only a few. Different kinds of rock parent material and an equally wide range of different soils were studied. An experiment concerning the emission of gas in soils, in connection with climatic variability concluded the field trips in the Stuttgart region.

The participants of tour B 6

In addition to the scientific sites that were visited in the course of the tour, the participants also had the opportunity to do some sightseeing, particularly in Breisach (wine festival), in Freiburg, at Lake Constance, at the gorges of the Danube, of Reichenau, not to forget the Black Forest with the majority of the fifteen soil profiles. During the good-bye dinner, the participants thanked their German hosts who had spoken English during the whole journey, each of them using his or her mother tongue: Japanese, Finnish, Italian etc., which means neither English nor German ...

Roger Fauck, Vernon, France

Post-Congress Tour B7: »West Africa: Burkina Faso and the Ivory Coast«
(28 August - 05 September 1998)

This Post-Congress Tour B7 was organized by the West and Central African Soil Science Association (AOCASS), under the direction of Dr. Lamourdia Thiombiano, with the collaboration with Drs. Prosper N'Zombre and François Pallo of the National Association of Soil Science (ASSOB) in Burkina Faso, and Drs. Daniel Boa and Désiré Djidji of the Association of Agronomic Sciences (AISA) in the Ivory Coast.

This remarkably well-organized scientific tour was particularly useful from many points of view, not least by the hands-on contact it provided with crucial problems of land and water management and of the use and conservation of soils.
Our very international group (almost 80 participants from 17 countries) covered a large part of the West African territory between Ouagadougou and Abidjan.
The itinerary comprised a wide range of climates, from Sahelian steppes, Sudanese zones of savanna to Guinean subequatorial rain forest. This enabled the participants to observe very varied agro-pedoclimatic situations and the typical pedological systems of these zones.

The main characteristics of the *climate* show the existence of two gradients in the direction Burkina Faso - Ivory Coast: a rainfall gradient and a thermal gradient.
Geologically, the region is characterized by a basement of mainly Precambrian formations, varying according to their age: granites, migmatites, gneiss, schists, quartzites, basic rocks, sandstone. The upper part contains rocks of volcanic origin: dolerites, gabbros and basalts. Tertiary sediments, sandy-gritty, sandy and clayey, are found mainly in Ivory Coast. Quaternary formations, resulting from changes due to the successive climatic periods, are of course found across the whole region.
The *geomorphological* characteristics are essential factors in our understanding of the pedolandscapes of West Africa. The present-day appearance of the landscapes in Burkina Faso reflects the impact of the climatic conditions on the different rock material over long periods of time, and more particularly during the Quaternary. A very marked leveling reveals some residual reliefs, remnants of older periods. Throughout most of the country we can find pediments and alluvial deposits along the drainage channels. Across the Ivory Coast, the landscape changes from plateaus developed in pediments to a plain with a relatively disorganized drainage net. In fact, we can distinguish several geomorphologic units. The plateaus of the north, of tabular appearance, are generally capped with a lateritic ferruginous crust. Residual hills, so called »inselbergs« emerge locally from these plateaus. This relief progressively gives way to hills and little valleys, than to vast, slowly undulating plains, and finally to the coastal area.
In Burkina Faso, *agriculture and livestock* largely dominate the economy: sorghum, millet, maize and rice; there are also some cash crops (cotton, fruits and vegetables, groundnuts). The agriculture of Ivory Coast is among the most productive ones of West Africa: cacao, coffee, rubber, cotton, rice, yams, plantains, palm oil, manioc, pineapples, bananas, and sugar cane.
A collection of maps of *soil distribution* have been produced, based on the extensive work carried out successively by French organizations and scientists from Burkina Faso and Ivory Coast. These maps show that West Africa has a wide range of different soils, although with marked predominance of *Lixisols* and *Ferralsols*.

Sahelian zone
The Sahelian climate is particularly arid, and the landscape is characterized by the presence of dunes, of pediments, and of depressions or »ponds«, with some residual rocky or crusted buttes. Steppe-type vegetation predominates: grasses, shrubs or trees, with some riparian formations near the ponds and waterways.
In *Djomga* and *Dori*, we noticed dune-sandy soils of Arenosol type, and the highly characteristic Cambisol-type soil of the endoreic »ponds«. At the *Katchari* research site, a study of the causes of the desertification was undertaken as early as 1963. This complete and multidisciplinary program includes the characterization of the soils and vegetation, and the quantification of water and wind erosion.

North Sudanian zone
The landscape reflects the presence of a basement of crystalline rocks: migmatites and granites, with occasional volcano-sedimentary formations. The vegetation is savanna, wooded to shrubby, although the action of man and livestock on the vegetation is predominant: brush fires, over-grazing, deforestation.
The range of soils in this zone comprises essentially leached tropical ferruginous soils : Lixisols, associated with lithosols on ferruginous duricrusts. The toposequence at *Boudtenga* is typical, located on a pediment resulting from the destruction of duricrust products.

South and Sub-Sudanian zones
The major part of these zones consists of a smoothly undulating peneplain, and here again, the duricrusts form the main lines of relief. The vegetation reflects the much less arid conditions characterizing this sector: it is a region of savanna with sparse woodland in some areas.
The dominant pedogenetic process is the ferruginization that characterizes both the crystalline formations and the sandstone sediments. The soils, Lixisols and Ferralsols, are very diversified according to the origin of the materials, but generally they are gravelly and of varying thickness, the uppermost

of them overlying the crust. Most of them are leached and impoverished. The ferrallitic domain as such, characterized by Ferralsols, as at *Dindérosso*, is preferentially located on the more gritty formations.
Simple weathering, of a «brunification» type, is however observed in the form of spots on clayey or sandy-clayey materials resulting from basic rocks, in association with topomorphic vertisols and hydromorphic soils, for example the vertic Cambisol at *Boni*.
The toposequence of Ferralsols at *Ferké* is also very characteristic. At the bottom of the slopes, we observe impoverishment of the superficial horizons, essentially due to lateral (surface and hypodermic) flows. Their differentiation and behavior therefore categorizes these soils with the Lixisols.

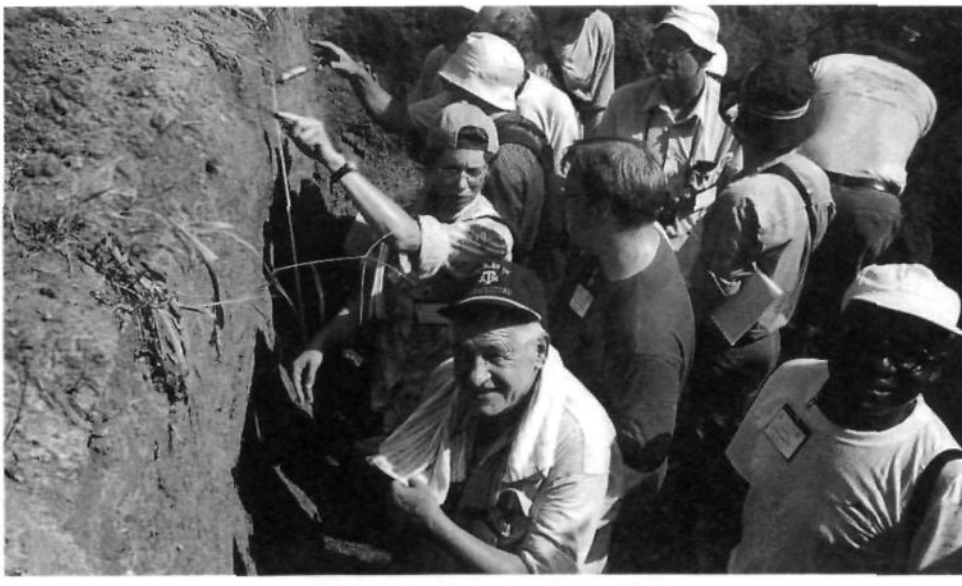
Sudanian-Guinean zone
Situated in the center of the Ivory Coast, this region forms the transition between the savanna in the north and the rain forest in the south. The vegetation is therefore a mosaic of wooded and savanna formations.
The toposequence at the *Adrao* station shows a succession of different soils that are used for different types of crop production. This is a large pediment with a characteristic sequence developed on granite-gneiss, from typical Acrisols to hydromorphic Acrisols suitable for rice production.
In *Konkondekro* we find the oldest African experiment on the dynamics of ligneous vegetation in relation with bush fires. The soils are Lixisols developed on weathered granite. This experiment has highlighted the inexorable replacement of forest by savanna, a total absence of fire over 60 years being necessary to reconstitute a dense, humid, semi-deciduous forest.

Guinean zone
This zone, marked by heavy rainfall, is the domain of the evergreen tropical rain forest. The forest is now very much affected by human presence. The use of the Ferralsols that developed from schists and granites is largely dominated by perennial cash crops: mainly coffee, cacao, palm oil and rubber, sometimes along with food crops.
At the *Bimbresso* site, located on the Tertiary sands, the forest was cleared and the site planted with hevea from 1964 onwards. The soil, sandy to sandy-clayey, is a typical Ferralsol that represents our general observations on these materials fairly well. We observed a redistribution of formerly highly weathered sediments, whose properties are therefore ferrallitic, despite the dominant yellowish color.
Finally, the region of *Grand-Bassam* enabled us to observe the sandy coastal formations of the South Atlantic bordering the Gulf of Guinea. Coconut plantations dominate the landscape, along with some cultivation of food crops.

The megatoposequence that could be studied, extending from the Sahel to the Gulf of Guinea, is characterized by marked variations of climate, geological context, vegetation, soils and types of land use. The use of these soils by the communities along this transect are therefore varied, ranging from cereal-growing and pastoral activity in the north, to perennial cultures in the south, with transition systems in the Sudanian zone.
The behavior of all these soils is characterized by progressive fragilization, erosion and degradation, increasing the risks of desertification. Our analysis of the ecosystems and agro-systems in these territories highlights two major phenomena: the desertification in the Sahelian region and, in the Sudanian-Guinean region, the recession of the forest giving way to savanna.

During a convivial »au revoir« evening gathering, all the participants expressed their satisfaction to the organizers, who received well-deserved praise for the high level of the scientific content, the quality of the sites that were visited and commented, and the efficient logistical organization. Finally, and perhaps above all, everyone appreciated the particularly friendly atmosphere that was maintained throughout our stay in West Africa. Our visits were valued occasions to discover elements of the social life, traditions and culture of these fascinating countries.

The participants (from 17 different countries!) at the »Cascade de Bérégadougou, between Burkina Faso and Ivory Coast



Lixisol or ferralsol, what do you think?

In short, the Post-Congress Tour B7 was a great success, and the AOCASS Organizing Committee deserve our hearty thanks, in particular its leader, Dr. Lamourdia Thiombiano.
This scientific tour, the last one of the Congress, provided a fitting finale for the 16th World Congress of Soil Science.

Marcel JAMAGNE, French Soil Science Society

Excursion B8: Catalonia and Aragon

Participants of post-congress study tour B8 assembled the day after the close of the meetings in Montpellier and proceeded by coach across the Pyrenees to Lleida. Following the valleys of the Tet and Segre rivers, evidence of glaciation was observed in cirques upon the higher mountains, solifluction slopes and extensive river terrace deposits in the valleys. A visit was made to the city and cathedral of La Seu d'Urgell. On arrival at Lleida, the group was received officially by the University of Lleida and presented with documentation for the remainder of the visit.

On the first day of the excursion, the group travelled to Quinto, near Zaragoza in Aragon, where a range of Gypsisols and associated topography were demonstrated. The results of long-continued irrigation in the "Huerta" land unit were compared with newly installed schemes on the "Monte" land unit. In the profiles, gypsum could be seen in various forms, vermiform (pseudomycelium), flour-like and crystalline (petrogypsic), and their effect upon the soil profile described. Minor effects of salinization and sodification as a result of salt movement within the profile and landscape were discussed.

The solution of problems arising from flood-irrigation schemes introduced following the Spanish Civil War in the Rio Flumen valley of the Huesca region were shown to participants. Analysis of the landscape showed that lower slopes had become affected by salinization and sodicity. Piping and gulleying was also a problem in these silty soils and drainage systems became clogged with silt. Returning to the Lleida area, the organisers demonstrated the significance of the terraces of the river Segre which have acted as positive features in the landscape, with lower-lying lands occurring between the terraces and alluvial fans extending from the surrounding upland areas. This relationship of soils are relief gave conditions which restricted drainage and allowed accumulation of salts in the landscape.

Stone terraces (bancals) had been constructed during the 18th century in the Les Garrigues district, south of Lleida, allowing olive cultivation on steep slopes. The profiles of soils on these terraces were completely changed from their natural condition, varying from 20 cm to 1.50 cm in depth across the terrace, an irregular distribution of organic matter, good structure and abundant features of biological activity as well as secondary calcite accumulations. At the conclusion of their stay in Lleida, members of the tour were guests of the Diputacio de Lleida at a dinner hosted by Professor Jaume Porta, Rector of the University of Lleida.

Moving on to the Girona district, participants observed the complex structure of the Catalonian mountain ranges parallel to the coast and inspected soils on old alluvial fans in the Emporda basin. The oldest surface had a soil developed in Tertiary deposits with a red argic B horizon but the younger surfaces had less differentiated Calcaric Fluvisols. On the final day of the tour the emphasis moved to soil management in vineyards. The expertise of the Catalonian soil scientists has been engaged to help restrict erosion from terraces and to limit gully erosion. The efficacy of their work was demonstrated in the field followed by an equally effective demonstration of the value of the product when the group was entertained to lunch by the Moet Hennessy company that produces Chandon Brut Reserva Champagne.

The excursion was ably led by Dr Jaume Boixadera (Service Resource Evaluation and New Technologies, Government of Catalonia) Dr Rosa Poch (Department of Environment and Soil Sciences, Lleida University) and Dr Juan Herrero (Agricultural Research Service of the Government of Aragon). Substantial contributions were made by Professor Jaume Porta, staff and post-graduate students of the Department of Environment and Soil Science of the University of Lleida and staff of the Soil Survey section of the Service Resource Evaluation and New Technologies of the department of Agriculture of the Government of Catalonia. A comprehensive and highly informative guidebook edited by J. Boixadera, R. M. Boch and C. Herrero was presented to all participants. Formal thanks on behalf of the participants were expressed by Dr E.M. Bridges (UK), Dr M. Isambert (France), Dr W. Lynn (USA) and Dr T Asami (Japan) during the social functions which took place during the tour.

E.M. Bridges, ISRIC/University of Wales

Excursion B-8 : Espagne, Catalogne et Aragon

L'excursion B8 s'est déroulée comme prévu entre le matin du 27 Août et le soir du 2 Septembre. Le premier jour a permis d'aller de Montpellier à Lleida, point central de l'excursion en Catalogne et en Aragon. Puis nous avons rayonné vers l'Ouest (Quinto de Ebro et Zaragoza) le 28 Août, vers le Nord-Ouest (San Juan de Flumen) le 29 Août, vers le Nord (Balaguer) le 30 Août, vers le Sud de Lleida (Garrigues) le 31 Août, toujours en contexte aride. Le 1er septembre, nous avons rejoint le Nord-Est (Girona) et, le 2 Septembre, nous avons terminé notre périple dans les environs de Barcelone en milieu méditerranéen subhumide.

Organisée de main de maître par Jaume Boixadera, cette excursion a été préparée et animée par lui-même et par Rosa Poch de l'Université de Lleida, avec le soutien du Recteur Jaume Porta. Plusieurs collègues universitaires ou des gouvernements de Catalogne ou d'Aragon les ont aidés à préparer et à présenter les thèmes abordés. Des jeunes chercheurs, thésards et post-doc, sont intervenus pour exposer leurs résultats personnels ou ceux de leur équipe de travail.

Les excursionnistes venaient de Thaïlande (1), d'Argentine (1), d'Afrique du Sud (1), des Philippines (3), du Japon (2), des USA (1), d'Allemagne (1), d'Italie (1), de Grande-Bretagne (1) et de France (2). En outre, trois épouses de pédologues ont participé au voyage. Au total, une trentaine de personnes occupaient les places du car très confortable, conduit par un sympathique et dévoué chauffeur. Les contacts et les discussions ont été ainsi facilités entre hôtes et visiteurs, dans le car et dans le fond des fosses pédologiques. Un personnel technique en véhicule spécial a permis de voir des profils rafraîchis et hors d'eau. Un livret-guide étoffé et très bien présenté illustre en détail les sols et les problèmes.

The participants of Tour B 8

Les thèmes abordés :

A partir de problèmes pratiques posés par des aménagements de systèmes d'irrigation en milieux arides, une première série de thèmes pédogénétiques et/ou de fonctionnement actuel dans la zone Ouest, la plus sèche :

- formation de croûtes gypseuses,
- salinisation des sols par des eaux mises en contact avec les matériaux géologiques riches en sel,
- formation de croûtes calcaires,
- modes d'irrigation le long de la vallée de l'Ebro : submersion traditionnelle, aspersion, goutte à goutte,
- problèmes de mises en culture de ces sols (chimie, physique, mécanique, hydrologie, structures, microclimat) : culture de l'olivier, de l'amandier, riziculture.

Dans la zone Est, plus arrosée, les organisateurs nous ont fait réfléchir et échanger :

- sur des sols profonds, porteurs d'une superbe arboriculture fruitière,
- sur un sol à forte salinité liée à sa situation géographique, sous le niveau de la mer,
- sur l'aménagement colossal de collines viticoles pour lutter contre l'érosion hydrique en ravines (2 à 3 dizaines de mètres de large et de profondeur, avant réaménagement !).

Nous avons visité aussi plusieurs sites touristiques (Lleida, Girona, Seu d'Urgell) et apprécié les spécialités culinaires (le flan catalan, paella catalane... et des vins de qualité !)

Voilà les principaux éléments de travail que la dynamique équipe de Lleida nous a proposés, contribuant aussi au succès du 16e Congrès International du Sol.

Michel ISAMBERT et Didier MICHOT

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

The Proceedings include:
- CD-ROM
- Summaries in 2 volumes (not sold separately)
- Programme
- Introductory Conferences and Debates
- Scientific and Technical Exhibition Catalogue
- Educational Exhibition Leaflet
- List of Participants

Price : FRF 600

One can buy the CD-ROM separately. It includes summaries of all papers (oral presentations and posters), the introductory conferences and debates.

Price FRF 300.

Orders to:

Congrès Mondial Science du Sol
Agropolis International
Avenue Agropolis
F-34394 Montpellier Cedex 5
France
Fax: +33 67 04 75 49
Email: isss@agropolis.fr.
Web site: http://www.cirad.fr/isss.html

Payment: *check to »AFES CONGRESS 1998«, or bank transfer to the account »AFES CONGRESS 1998« N° MON 0451645PO30, Compte Chèque Postal de Montpellier, France; établissement n°20041; guichet n°01009; clé rip n°77.*

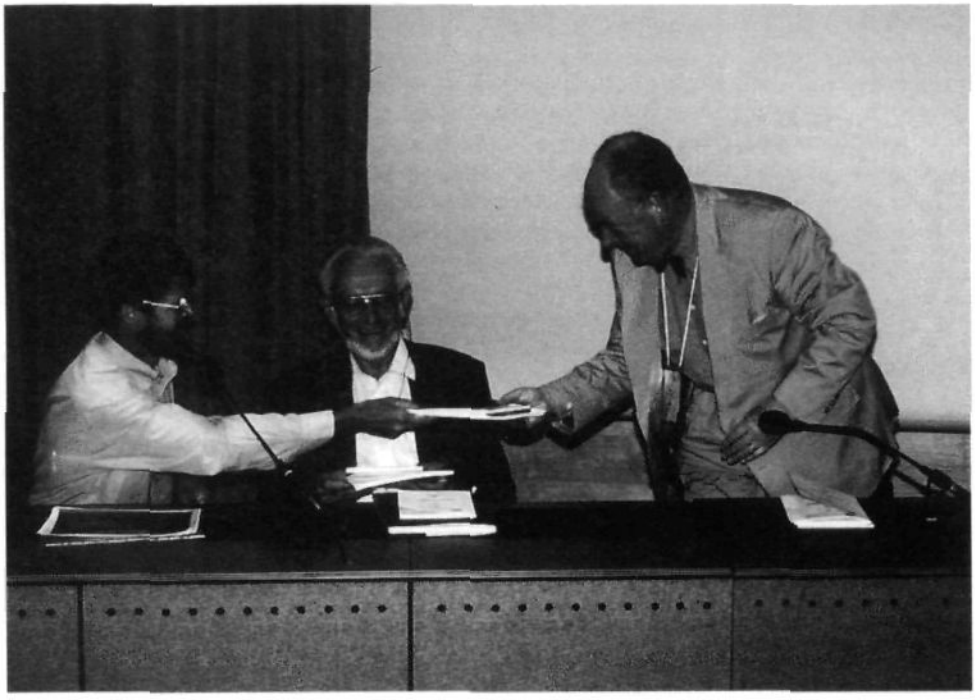
WRB at Montpellier

After 4 years of testing, revising, updating and modifying, the draft World Reference Base for Soil Resources, issued during the 1994 15 th World Congress of Soil Science at Acapulco Mexico, the first edition of the World Reference Base for Soil Resources was presented at Montpellier in the form of three books:

1. World Reference Base for Soil Resources. Introduction
2. World Reference Base for Soil Resources. Atlas
3. World Reference Base for Soil Resources

During a special press conference the three books were handed over officially by the Chairman of the Working Group RB to the President and Secretary-General of the ISSS, and to representatives of the collaborating institutions, FAO and ISRIC. It was also distributed among the scientific press and the congress organising committee. During the congress over a hundred sets of the WRB publications were sold at the ISRIC stand.

The symposium No. 42, 'Standardisation and Management of Soil Resources at International Level', focussed on the recent developments as well as on some special topics of WRB. About 250 persons attended the meeting. Presentations were given by Spaargaren on WRB developments, Pazos on applications of WRB in South America, Ahrens on recent developments in Soil Taxonomy, Nestroy on Austrian issues, Cox on representation of lateral soil sequences in Australia and Schwertfeger on Anthrosols. Special thanks go to Prof. Ph. Duchaufour who, on very short notice, gave a presentation on strengths and weaknesses of various international soil classifications compared to WRB, to replace a scheduled presentation by Lebedeva. In addition J.P. Legros gave an excellent summary of the posters related to this symposium, highlighting the world-wide testing of the WRB system.



Prof. Deckers hands over the first copy of WRB to Prof. Blum, Secretary-General of ISSS.
At the centre: Prof. Ruellan, the President of ISSS

A subsequent business meeting was held to discuss future WRB activities. The re-elected chairman, Seppe Deckers, presented priorities, listing:

Continued field-testing;
Further elaboration of the qualifiers;
Compilation of a reference database including photos;
Compilation of a handbook of field methods;
Follow-up on translations, in French, German, Spanish, Italian and Chinese; and
Elaboration on a fundamental and scientific rationale of selected WRB Reference Soil Groups.

The above programme of work was endorsed by the meeting.

The ISSS Council, having studied the WRB, has passed a motion to adopt WRB as the Union's system for international correlation of soils. Furthermore it recommends the consistent use of WRB in international peer-reviewed scientific journals.

Otto Spaargaren
Secretary, IUSS Working Group RB.

5th ICOBTE '99

5th International Conference on the Biogeochemistry of Trace Elements

University of Agricultural Sciences, Vienna, Austria
July 11-15, 1999

In continuation of a highly successful conference series that was started in 1990 in Orlando, Florida, USA, with follow-ups in Taipei, Taiwan (1993), Paris, France (1995), and in Berkeley, USA (1997), we are pleased to invite you to participate in the 5th ICOBTE taking place in Vienna, Austria. This conference is dedicated to exploring and discussing emerging issues in biogeochemistry research of trace elements. Biogeochemistry has developed into an interdisciplinary science linking phenomena observed in the biosphere to physical and chemical reactions of the lithosphere. This conference provides a forum of researchers, scientists, and engineers to present their most recent findings and to discuss with colleagues from around the world the state-of-the-art in innovative methodology, analytical techniques, and process development.

Conference venue: Technical University of Vienna, located in downtown Vienna

Special symposia will focus on:

- Bioavailability, fluxes and transfer of trace elements in soils and soil components;
- Biosolids and wastes applied to land;
- Fate of radionuclides;
- Fate of trace elements in the rhizosphere;
- Kinetics and mechanisms of trace element sorption / release on natural materials;
- Metal-organic interactions;
- Phytoremediation;
- Remediation of metal-contaminated soils;
- Trace elements and pedology;
- Trace elements in urban environments;
- Trace element issues in developing countries.

Technical sessions: Various technical sessions will cover further contemporary topics in trace element research

Conference tours: 1-3 day tours in Austria, Czech Republic, Hungary, Slovenia & Switzerland

Information: Walter W. Wenzel, P.O. Box 81, A-1183 Vienna, Austria
Fax:++43 1 47654 3105 Phone:++43 1 47654 3119, Email:icobte@edv1.boku.ac.at

Visit our homepage in the Internet: <http://www.boku.ac.at/boden/icobte/icobte.html
The homepage provides well-illustrated, updated information on the deadlines, scientific program, call for papers, accommodation, tourist and social events and conference tours.

Main Sponsors: University of Agricultural Sciences Vienna, International Union of Soil Science, Soil Science Society of America, The European Research Board Office, Austrian Federal Ministry of Science and Transport, The City of Vienna, Vienna Convention Bureau.

14° 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

Ë 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.
Ë 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 científica elegida impostergablemente, y pagar su derecho de inscripción antes del 30 de marzo de 1999.
Ë 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.
Ë 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 14° CLACS-99

FORMULARIO DE PREINSCRIPCION
(Intención de participar)

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

Institución:.....

Dirección:.....
.....

Ciudad:..... Pafs: .....

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

E-mail: .....

Presentación oral ❑ Poster ❑ Comisión ❑

Titulo de la Presentación:

.....

SOIL ECOLOGICAL TOUR IN RUSSIA

Summer 1999

A group of young soil scientists are organising bus excursions from Moscow to Volgograd, crossing several soil-geographical zones with the participation of German soil scientists and students.

The tour is patronised by the Timiriazev Agricultural Academy in Moscow; it is being planned and supervised by specialists in soil and environmental sciences from different Russian research institutes. The objectives of the tour comprise: education in the fields of soil science, ecology and geography, scientific contacts – exchange of ideas, development of personal contacts, discussing probable joint research projects, including those aimed at supporting scientific experimental stations or natural reserves.

The field tour gives an opportunity to study zonal soils, climate, and vegetation, to observe basic features of landscapes, including characteristics of relief and sediments, processes of natural ecosystems' evolution and dynamics, as well as their Holocene history, and to study problems of sustainable land use and environmental control. Differences of nutrient circulation in agricultural and natural ecosystems are tackled.

The tour starts in the southern Taiga zone north of Moscow (PODZOLS, PODZOLUVISOLS), crosses the forest-steppe (LUVISOLS, GREYZEMS) and typical steppe zones (PHAEOZEMS, CHERNOZEMS), where a unique biospheric reserve with a deep Russian Chernozem (»Streletskaya steppe« near Kursk) is shown, as well as 100 year old experiments on sustainable land use, initiated by V.V. Dokuchaev (the »Dokuchaev oasis« in the Kamennaya steppe). Semidesertic soils – CALCISOLS, SOLONETZES, VERTISOLS and an evolutionary sequence of FLUVISOLS within the Volga valley are shown near Volgograd.

About 30 soil pits will be shown during the tour (more than one third of the soil types according to FAO-classification) is focused on discussing soil morphology as related to soil-forming agents and processes; it is followed by discussing correlations between the Russian and International taxonomic systems (FAO, German classification), land use facilities.

Students and young research and teaching professionals, specialised in soil science, land management and control, agricultural sciences, geography, environmental studies are invited. This tour is interesting for both high-class specialists for their own research programmes and discussions with Russian participants, as well as for non-specialists wishing to get acquainted with Russian nature, history and mode of living.

This three-week bus tour (July 10-28 and July 22-August 9) with camp stops and visits to famous historical monuments is provided with German and/or English simultaneous translation.

Additional information about the next tour, costs, program etc. may be obtained from:

Yakov Kuzyakov, Institute of Soil Science and Land Evaluation (310), University of Hohenheim, 70599 Stuttgart, GERMANY.
Tel: (+49)(0)711 / 459-3669; Fax: (+49)(0)711 / 459-4071; E-mail: kuzyakov@uni-hohenheim.de; Internet: http://www.uni-hohenheim.de/~kuzyakov/soil-ex.htm.

MISCELLANEOUS INFORMATION
FAITS DIVERS
VERSCHIEDENES

Crop and Food Supply Assessment Mission Reports on the WEB

The above mentioned mission reports, dealing with many developing countries, published recently by the Food and Agriculture Organization of the U.N. (FAO) and the World Food Programme (WFP), identify a lack of access to fertilizers as a critical constraint to achieving food security in many countries, particularly in Sub-Saharan Africa.
All reports are available on the web at: http://www.fao.org/GIEWS

USDA Agricultural Handbook No. 60

Diagnosis and Improvement of Saline and Alkali Soils. USDA Agricultural Handbook no. 60. L.A. Richards, editor. US Salinity Laboratory Staff, USDA, Washington, 1954, 159 p.

Since the time that **Handbook No. 60** went out of print, there have been numerous attempts to revise it and re-issue the handbook. The reasons why this has not been done are complex.

Because of continued interest in the Handbook, for all its successes and despite its failing, this historic document is reproduced in electronic format.
Please see: http://www.ussl.ars.usda.gov/hb60/hb60helo.htm

International Network for Soil and Water Conservation Committee (INC) formed by the Soil and Water Conservation Society (SWCS).

The SWCS has formed the INC to replace the International Affairs Committee. This committee will liaison with the World Association of Soil and Water Conservation (WASWC) and other SWCS committees and task forces. At all SWCS annual conferences the INC will convene a forum to promote international exchanges of information. The INC will look for opportunities to cooperate with other organizations to promote understanding by SWCS members of international resource problems and efforts of address them.

Prof. Samir El-Swaify has agreed to chair the INC and is looking forward to this role in exchanging information, helping internationally-oriented SWCS members, and broadening the reach of SWCS on global resource issues. If you are interested in participating in INC consult: http://www.swcs.org *or*: fax +1-515 289-1227, *or* write SWCS, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021-9764, U.S.A.

Shaping Agriculture in the 3rd Millenium

In the year 2000 at its eighth session, the United Nations Commission on Sustainable Development (CSD-8), which was established to monitor progress with Agenda 21, will focus on agriculture.

A number of countries and organizations have indicated their willingness to participate in the preparation for CSD-8. In particular, the Netherlands Government has taken the initiative to organize a conference entitled 'Multifunctional Agriculture and Land Management' in September 1999.

This event has an expected participation of over 200 countries, international organizations and NGOs. FAO, as designated 'task-manager' for Agenda 21 chapters 10 (land resources), 11 (forests), 13 (mountains) and 14 (sustainable agricultural and rural development), will provide major technical support for the preparation of this Conference, and is inviting other partner countries and institutions to join.
The Government of the Netherlands has indicated its willingness to present the recommendations resulting from this conference to the FAO Member Nations Conference in 1999 for review and formal endorsement. If endorsed, the recommendations will be officially presented by FAO to CSD-8.

The conference objectives are:
To review progress achieved since the 1992 Rio Summit in the implementation of Agenda 21, in particular through a stocktaking of success stories and best practices; To identify and analyze the main issues to be addressed such as the relationships between food security and the multiple functions of agriculture.
FAO is inviting government institutions, research and training institutes, the private sector and NGOs to provide technical input and help shape the conference agenda.
Further information can be obtained from the Sustainable Development Dimensions page of the FAO web site: www.fao.org/sd/agr99 or from: Mr. P. Koohafkan, Chief AGLS, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy. Fax: +39 06 5705 6275. E-mail: Parviz.Koohafkan@fao.org

INTERNET NEWS - A NEW BULLETIN ITEM

Your feedback is required.

It is the aim of this new section of our Bulletin to include selected important Internet addresses in the field of *Soil Science* in a wide sense.

It will also contain information about newsgroups, publicly accessible mailing lists, journals, links to other sources which are on Internet.

All information will be put on the IUSS Website in due course.

Please send your information and suggestions to: iuss@isric.nl.

IWF-INFO

Unser Acker – durch schwere Landmaschinen gefährdet? (Soils – degraded by compaction?)

Nahrungsproduktion früher: Viel menschliche Arbeitskraft war nötig. Heute sichert modernste Landmaschinen-Technik unsere Nahrungsproduktion. Mehr und mehr wird jedoch die negative Seite dieses Wirtschaftens sichtbar: Der Bodendruck wächst!

Dieses Video stellt die Folgen von Bodenverdichtung für lößbürtige Böden dar. Es präsentiert gemeinsame wissenschaftliche Ergebnisse von Bodenphysikern, Biologen und Ertragskundlern. Stichworte wie Verlust an Bodenleben, Staunässe oder Trockenstreß, Erosion, Wurzelstau oder Ertragsrückgang zeigen, wie notwendig eine fächerübergreifende Zusammenschau ist, will man die Lage beurteilen und Gefahren abschätzen.

Auch wird geprüft, welche Rolle der Pflug dabei spielt. Er ist nach wie vor das Leitgerät der Ackerwirtschaft, wenn es gilt, verdichteten Boden wieder aufzulockern. Die Ergebnisse belegen: Bearbeitungssysteme ohne Pflug mit nur oberflächlicher Bodenlockerung sind eher geeignet, die Tragfähigkeit eines Bodens zu erhöhen und die Folgen einer Verdichtung zu mildern.

Adressaten: Studierende der Agrarwissenschaften, Bodenkunde und Ökologie, Landwirte, landwirtschaftliche Beratungsstellen.

Technische Daten:

Video	Farbe, 32,5 min
Sprachfassungen	deutsch und englisch
Autor:	Wilfried Ehlers, Universität Göttingen
Publikationsjahr:	1998
Bestell-Nr.	C 2004

Adresse:

Institut für den Wissenschaftlichen Film (IWF)
Nonnenstieg 72
37075 Göttingen, Deutschland
Fax: +49(0)551-5024-400
E-mail: iwf-goe@iwf.gwdg.de
URL: http://www.iwf.gwdg.de

FOR OUR COMMON INTEREST

Effectively communicating research findings is a challenge facing many scientific disciplines. This is imperative in the times of restricted funding where those who know how to get the message across receive more funding and have better chance to survive in the scientific arena. Soil science forms no exception to this need. Traditionally we communicate our findings in peer-reviewed journals and for example JEQ and SSSAJ regularly include instructions how to write better papers, reflecting the demand for effective communication amongst our fellows. In the past decade, many soil scientists have also stressed the need to interact with non-soil scientists. For example, we need to interact with other biophysical scientists like environmentalists, agronomists, foresters, biologists, and ecologists but also with a different breed like economists, sociologists, anthropologists, and of course with farmers, industrialists, politicians and the society at large.

Maybe you have different experiences but I attended at the 16th World Congress of Soil Science in Montpellier quite a number of poor presentations. In some presentations 25 overheads passed in 10 minutes with numerous sheets containing tables of 10 rows and 15 columns. Then there were sheets which were printed too small or unclear. During the various social events in Montpellier, I discussed this observation with colleagues and many agreed on the low level of presentations. Generally, students had the best presentations followed by the scholastic and senior soil scientists. But in between

there was fair a bit of rubbish and the level of presentation was quite different from the national soil conferences in various countries. This may have to do with a lack of competition at the World Congress level but it may also have to do with the inability of soil scientists to communicate their findings. So if soil scientists are not able to communicate skillfully their research findings amongst their own colleagues, how are they ever going to communicate effectively with non-soil scientists?

A few weeks before the 16th World Congress of Soil Science there was an interesting article in *Nature* [1998, 394: 403] on the level of conference presentations. It was noted that presentations which leave an audience dumbfounded, confused, exasperated or just plain bored are a fact of life. It was suggested that oral presentations are a form of theatre (if all too often of a breed that Eugene Ionesco would have relished) and that skill can be accomplished by training. Were this article read by some of the congress participants before they had come to Montpellier, we might have seen more impeccable presentations of interesting soil science.

Alfred E. Hartemink, ISRIC, Netherlands

POSSESSION IS NINE POINTS OF THE LAW

For an academic books are imperative, a source of thinking, inspiration and sometimes income. Most soil scientists - at the least the ones I know – have books on their shelves. Most would like to have more, but new books are expensive, and books of some series have gone absolutely unaffordable. In various parts of the world, there are some good second hand book shops with a fine selection on soils. Second hand books are often cheap but usually dated and therefore not of interest. Those that you are particular after are usually hard to find and the costs of sending faxes and letters to various antiquarian booksellers may be higher than the price of the book. Since a few years such faxes and letters are unnecessary since most second hand book seller have gone with their business on the WWW. Very nice - provided you can locate their websites.

The exciting news - which I thought is of interest for readers of this bulletin - is that there are websites which bring together the databases from booksellers around the world. Such an example is Bibliofind (http://www.bibliofind.com) where nine million old, used and rare books are offered for sale by thousands of booksellers. The website has an excellent search engine where one can search by subject, titlewords, author(s) or other entries.

There are thousands of soils books in the Bibliofind database and I recently picked up nice clean copies of Nye and Greenland's »The soil under shifting cultivation« and Jenny's »Factors of Soil Formation«. Admittedly, there are many soil books from the USA but there are also books from Australia and Europe like for example the first edition of Russell's »Soil Condition and Plant Growth« of 1912. If the book you are seeking is not in the database you may put it on a wanting list after which you receive a computer generated notification when the book has been added to the database. There is another website, equally of interest and roughly the same: the Advanced Book Exchange (http://www.abebooks.com). There are perhaps similar websites but after finding these two sites I have stopped looking for other possibilities to fill in the historical gaps in my personal library.

Alfred E. Hartemink, ISRIC, The Netherlands

ADDRESSES OF THE OFFICERS AND CHAIRPERSONS OF COMMISSIONS, SUBCOMMISSIONS, WORKING GROUPS AND STANDING COMMITTEES OF IUSS

OFFICERS:

President:	Sompong Theerawong, Soil and Fertilizer Society of Thailand, Dpt. of Soil Science, Kasetsart University, Chatuchak, Bangkok 10900, Thailand.
Vice President:	Irb Kheoruenromne, Soil and Fertilizer Society of Thailand, Dpt. of Soil Science, Kasetsart University, Chatuchak, Bangkok 10900, Thailand.
1st Past President:	A. Ruellan, AGROPOLIS, Ave. Agropolis, 34094 Montpellier Cedex 5, France.
2nd Past President:	A. Aguilar Santelises, Universidad Autónoma de Chapingo, Mexico.
3rd Past President:	A. Tanaka, Hokkaido Univ., Faculty of Agric., Kita 9 nishi 9 Kita-ku, Sapporo 060, Japan.
Secretary-General:	W.E.H.Blum, Inst. f. Bodenforschung der Universität für Bodenkultur, Gregor Mendel-Str.33, 1180 Vienna, Austria.
Deputy-Secret.Gen.:	J.H.V. van Baren, ISRIC, P.O. Box 353, 6700 AJ Wageningen, Netherlands.
Treasurer:	P.U.Lüscher, Eidg. Forschungsanstalt für Wald, Schnee u.Landschaft (WSL), Zürcherstr.111, CH-8903 Birmensdorf, Switzerland.

COMMISSION I:

Chairperson:	D. Tessier, Science du Sol, INRA Route de Saint Cyr, 78026 Versailles Cédex, France.
Past Chairperson:	R. Horn, Institut f. Pflanzenernaehrung u. Bodenkunde, Olshausenstr. 40, 24118 Kiel, Germany
1st Vice Chairperson:	M. Pagliai, Istituto Sperimentale per lo Studio e la Difesa del Suolo, 50121 Firenze, Italy.
2nd Vice Chairperson:	Cao Zhihong, Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing 210008, China
3rd Vice Chairperson:	

COMMISSION II:

Chairperson:	D.L. Sparks, Univ. of Delaware, Dept. of Plant & Soil Sci., Newark, DE 19717-1303, USA.
Past Chairperson:	Nicola Senesi, Univ. of Bari, Istituto di Chimica Agraria, Via Amendola 165/A, 70126 Bari, Italy.
1st Vice Chairperson:	A. Piccolo, Dpt. de Scienze Chimico-Agrarie, 80055 Portici, NA, Italy
2nd Vice Chairperson:	L. Martin-Neto, EMBRAPA/CNDDIA, Rua XV de Novembro 1452, 13560 970 Sao Carlos SP, Brazil
3rd Vice Chairperson:	

COMMISSION III:

Chairperson:	J J.K. Ladha, I.R.R.I., P.O. Box 933, 1099 Manila, Philippines
Past Chairperson:	J.M. Tiedje, Center for Microbial Ecology, Michigan State Univ., 540 Plant&Soil Sci. Bldg., East Lansing, MI 48824-1325, USA.
1st Vice Chairperson:	R.G. Burns, Univ. of Kent, Dpt. of Biosciences, Canterbury, Kent CT2 7NJ, UK
2nd Vice Chairperson:	M.H. Beare, Inst. for Crop & Food Res., Private Bag 4704, Christchurch, New Zealand
3rd Vice Chairperson:	

COMMISSION IV:

Chairperson:	M.J. Swift, Carolyn House, 26 Dingwall Road, Croydon, CR9 3EE, UK
Past Chairperson:	P.A. Sanchez, ICRAF, United Nations Av., Gigiri, P.O.Box 30677, Nairobi, Kenya
1st Vice Chairperson:	B.H. Janssen, Elterse Hof 7, 6721 ZX Bennekom, Netherlands
2nd Vice Chairperson:	N. Pasricha, Punjab Agric. University, Dpt. of Soils, Ludhiana 141004 P.B., *India*
3rd Vice Chairperson:	

COMMISSION V:

Chairperson:	A.R. Mermut, University of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask. S7N 5A8, Canada
Past Chairperson:	V.O. Targulian, Inst. of Geogr., Russian Acad. of Sci., Staromonetny, 29, Moscow 109017, Russia.
1st Vice Chairperson:	T.F. Urushadze, Georgian State Agrarian Univ., Av. David Agmashenebeli, Tbilisi 31, Georgia.
2nd Vice Chairperson:	M.S. Pazos, Fac. de Agronomía, UNCPBA, 7300 Azul, Argentina
3rd Vice Chairperson:	

COMMISSION VI:

Chairperson:	P. Rengasamy, CRC Soil and Land Management, PMB2 Glen Osmond S.A. 5064, Australia
Past Chairperson:	S.M. Virmani, ICRISAT, Pantancheru P.O., 502 324 Hyderabad, India
1st Vice Chairperson:	B.N. Swami, Manglam 129/3, Hiran Magri, Udaipur-313 002, India
2nd Vice Chairperson:	
3rd Vice Chairperson:	

COMMISSION VII:

Chairperson:	K.Stahr, Univ. Hohenheim/Bodenkunde, Emil-Wolff-Str.27, 70599 Stuttgart, Germany.
Past Chairperson:	M. Robert, INRA, Science du sol, Route de Saint Cyr, 78026 Versailles Cedex, France
1st Vice Chairperson:	R.W. Fitzpatrick, CSIRO, Div. of Soils, P.M.B. 2, Glen Osmond, S.A. 5064, Australia
2nd Vice Chairperson:	D.G. Schulze, Purdue University, Dpt. of Agronomy, West Lafayette, IN, USA
3rd Vice Chairperson:	

COMMISSION VIII:

Chairperson:	Ch. de Kimpe, Agriculture Canada, Direction Générale de la Recherche, Sir J. Carling Bldg. 725, 930 Carling Av., Ottawa, Ont. K1A 0C5, Canada
1st Vice Chairperson:	J. Bech Borras, Londres 84, 08036 Barcelona, Spain
2nd Vice Chairperson:	F. Andreux, Centre des Sciences de la Terre, Université de Bourgogne, 6, bd. Gabriel, 21000 Dijon, France
3rd Vice Chairperson:	

SUBCOMMISSION A:

Chairperson:	S. Arunin, Land Development Department, Phahon Yo Thin Rd., Chatuchak 10900, Thailand
1st Vice Chairperson:	D.L. Suarez, USDA-ARS, US Salinity Lab, 450 Big Springs Rd., Riverside CA 92507-4617, USA
2nd Vice Chairperson:	V. D'Costa, Dpt. of Soil Science Cavs., P.O. Box 30197, Nairobi, Kenya
3rd Vice Chairperson:	

Secretary: J. Batlle Sales, Departamento Biología Vegetal, Facultad de Farmacia, Universitat de València, Avda. Vicent Andrés Estellés, 48100 Burjasot, Valencia, Spain.

SUBCOMMISSION B:

Chairperson: S. Shoba, Moscow State University, Dokuchaev's Soil Inst., Pygevsky per 7, 109017 Moscow, Russia

1st Vice Chairperson: K. Tovey, School of Environmental Sciences, Univ. of East Anglia, Norwich NR4 7TJ, UK

2nd Vice Chairperson: K. Oleschko, Colegio de Postgraduados, Centro de Edafología, 56230 Chapingo, Mexico.

3rd Vice Chairperson:

Secretary: L. Sullivan, School of Res. Sci. & Management, Southern Cross Univ., POB 157, Lismore NSW 2480, Australia

SUBCOMMISSION C:

Chairperson: S.C.F. Dechen, Escola Superior »Luiz de Queiroz«, Av. Pádua Dias, 11 - Cx.P.9, 13400 Piracicaba - SP, Brazil

1st Vice Chairperson: D. Gabriels, University of Gent, Coupure Links 653, 9000 Gent, Belgium.

2nd Vice Chairperson: F. Delgado, UNELLEZ – Programa RNR, Mesa de Cavacas, 3323, Guanare, Edo. Portuguesa, Venezuela

3rd Vice Chairperson:

Secretary: G. de Noni, ORSTOM, B.P. 5045, 34032 Montpellier Cedex 1, France

SUBCOMMISSION D:

Chairperson: H. Eijsackers, National Institute of Public Health and the Environment, Antonnie van Leeuwenhoeklaan 9, P.O.Box 1, 3720BA Bilthoven, The Netherlands

1st Vice Chairperson: I. Barois, Instituto de Ecología, Apt. Postal 63, 91000 Xalapa, Veracruz, Mexico

2nd Vice Chairperson: J.T. Curry, 172 Pleasant Str., Millis, MA 02054, USA

3rd Vice-Chairperson:

Secretary: Jürgen Kühle, ITEC GmbH, Grimlinghauser Str. 21, 40221 Düsseldorf, Germany

SUBCOMMISSION E:

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

1st Vice-Chairperson: A. Schulte, Univ. Paderborn, Forest Ecology, An der Wilhelmshöhe 44, 37671 Höxter, Germany

2nd Vice-Chairperson: M.A.V. Madeira, Inst. sup. de Agronomia, Tapada da Ajuda, 1399 Lisboa Codex, Portugal

3rd Vice-Chairperson:

Secretary:

SUBCOMMISSION F:

Chairperson: D. Dent, UK., University of EastAnglia, School of Env. Sci. Norwich, Norfolk NR4 7TJ, UK

1st Vice-Chairperson: D. Rossiter, Walkottenlanden 80, Enschede MT 7542, The Netherlands

2nd Vice-Chairperson: A. Ramalho-Filho, EMBRAPA-CNPSOLOS; Rua Jardin Botanico 1024, 22460-000, Rio de Janeiro, Brazil

3rd Vice-Chairperson:

Secretary:

SUBCOMMISSION G:

Chairperson: S. McGrath, IACR, Rothamsted Experim.Station, Harpenden, Herts. AL5 2JQ, UK

1st Vice-Chairperson: W. Wenzel, Univ. f. Bodenkultur, Inst. f. Bodenforschg., Gregor Mendel-Str. 33, 1180 Vienna, Austria

2nd Vice-Chairperson: G. Pierzynski, Dpt. of Agronomy, Throckmorton Hall, Manhattan KS 66506-5501, USA

3rd Vice-Chairperson:

Secretary:

WORKING GROUP AS:

Chairperson: Dr. F. Cook, CSIRO, Dpt. for Environm. Mechanics, Canberra, ACT 2601, Australia

WORKING GROUP CR:

Chairperson: Dr. C. Tarnocai, Centre for Land & Biol. Resources Research, K.W. Neatby Bldg., Ottawa, K1A 0C6, Canada

WORKING GROUP DM:

Chairperson: Dr. W. Sombroek, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands

WORKING GROUP FA:

Chairperson: Prof.Dr. P. Sequi, Istituto Sperimentale per la Nutrizione delle Piante; Via della Navicella 2-4, 00184 Roma, Italy

WORKING GROUP GC:

Chairperson: Prof.Dr. Rattan Lal, School of Natural Resources, The Ohio State University, 2021 Coffey Road, 210 Kottman Hall, Columbus, OH 43210, USA.

WORKING GROUP IC:

Chairperson: Prof. Dr. Hans Hurni, Centre for Development and Environment (CDE), Institute of Geography, University of Berne, Hallerstr. 12, 3012 Berne, *Switzerland.*

WORKING GROUP LD:

Chairperson: Dr. Hari Eswaran, USDA Natural Resources Conservation Service, POB 2890, Washington D.C. 20013, USA

WORKING GROUP LI:

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

WORKING GROUP MO:

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

WORKING GROUP PM:

Chairperson: Prof.Dr. M. Van Meirvenne, Univ. of Gent, Dpt. of Soil Managemt. and Soil Care, Coupure 653, 9000 Gent, Belgium.

WORKING GROUP PP:

Chairperson: Prof.Dr. Arnt Bronger, Dpt. of Geography, University of Kiel, 24098 Kiel, Germany

WORKING GROUP PS:

Chairperson: Dr. Rogelio N. Concepcion, Bureau of Soils and Water Management SRDC, Building, Elliptical Road, Diliman, Quezon City, Philippines.

WORKING GROUP PT:

Chairperson: Dr. J. Koolen, Dept. of Soil Tillage, Wageningen Agric. Univ., Diedenweg 20, 6703 GW Wageningen, Netherlands

WORKING GROUP RB:

Chairperson: Prof.Dr. J. Deckers, Wildenhoge 13, 3020 Winksele, Belgium

WORKING GROUP RS:

Chairperson: Dr. M. Mulders, Dept. of Soil Sci. & Geology, Wageningen Agric. Univ., P.O. Box 37, 6700 AA Wageningen, Netherlands

WORKING GROUP RZ:

Chairperson: Dr. Ph. Hinsinger, INRA UFR de Science du Sol, Place Viala, 34060 Montpellier Cedex 2, France.

WORKING GROUP SG:

Chairperson: Prof. Dr. J. Låg, Dept. of Soil Sci.- AUN, P.O.Box 28, 1432 Ås-NLH, Norway
Prof. Stein, Norway (co-chair)

WORKING GROUP SM:

Chairperson: Prof Dr. R. Horn, Inst. f. Pflanzenernährung u. Bodenkunde, Olshausenstr. 40, 24118 Kiel, Germany.

WORKING GROUP SP:

Chairperson: Dr. J.W. Hopmans, Univ. of California, Dpt. of LAWR, Davis, CA 95616, USA

WORKING GROUP SU:

Chairperson: Prof.Dr. W. Burghardt, Univ. GH Essen, Inst. of Ecology, Universitätsstr.5, 45117 Essen, Germany

Standing Committee on Statute and Structure (CSS):

Chairperson: Prof.Dr.P.B.Tinker, GCTE Associate Project Office, Deptmt. of Plant Sciences, University of Oxford, South
Parks Road, Oxford OX1 3RB, U.K.

Standing Committee on International Programmes (CIP):

Chairperson: Dr. J. Kimble, SCS/NSSC, Federal Bldg., Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866, USA.

Standing Committee on Standardization (CST):

Chairperson: Dr. S. Nortcliff, Dept. of Soil Sci., Univ. of Reading, Whiteknights, P.O.Box 233, Reading RG6 2DW, U.K.

Standing Committee on Budget and Finances (CBF):

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

Standing Committee on Education in Soil Science (CES):

Chairperson: Prof.Dr. M. Dosso, CNEARC, 1101 Av. Agropolis, B.P. 5098 Montpellier Cédex, France.

Standing Committee on the History, Philosophy and Sociology of Soil Science (CHP):

Chairperson: Prof.Dr. D.H. Yaalon, Institute of Earth Sciences, Hebrew University, Givat Ram Campus, Jerusalem 91904, Israel.

Committee on Statute and Structure (CSS), to ensure correct application of Statutes and Bylaws of IUSS, and to propose changes in the organizational structure as required.
Chairman: Prof.Dr. P.B. Tinker, GCTE Associate Project Office, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford OX1 3RB, U.K.
Members: Prof.Dr. W.E.H. Blum (Austria), Dr. S. El-Swaify (USA), Dr. N.N. Goswami (India), Prof.Dr. K.H. Hartge (Germany), Prof. Dr. K. Kyuma (Japan), Dr. F.N. Muchena (Kenya), Prof.Dr. I. Pla-Sentis (Venezuela), Dr. W.G. Sombroek (The Netherlands) and Prof.Dr. G. Varallyay (Hungary).

Committee on International Programmes (CIP), to liaise with international organizations and to promote joint programmes.
Chairman: Dr. John M. Kimble, USDA-NRCS-NSSC, Federal Bldg. Room 152, 100 Centennial Mall North, Lincoln, NE 68508-3866, USA
Members: Prof.Dr. A. Aguilar Santelises (Mexico), Dr. I.P. Abrol (India), Dr. R.W. Arnold (USA), Prof.Dr. W.E.H. Blum (Austria), Prof.Dr. A.M. Elgala (Egypt), Dr. A. Gennadiev (Russia), Dr. D.J. Greenland (UK), Prof.Dr. K. Kyuma (Japan), Dr. H.U. Neue (Philippines), Prof.Dr. P.A. Sanchez (USA), Prof.Dr. H.W. Scharpenseel (Germany), Dr. W.G. Sombroek (The Netherlands), Prof. J.W.B. Stewart (Canada), Prof.Dr. P.B. Tinker (UK), Dr. G. Vachaud (France), Prof.Dr. G. Varallyay (Hungary), Prof.Dr. D.H. Yaalon (Israel).

Committee on Standardization (CST), *to liaise with the International Standardization Organization* (ISO, Geneve-Switzerland) and its Technical Committee on Soil Quality (ISO/TC 190, NNI, Delft, The Netherlands).
Chairman: Dr. Stephen Nortcliff, Dptmt. of Soil Science, PO Box 233, Whiteknights, The University of Reading, Reading, RG6 6DW, UK
Members: vacancy (Comm.I), Prof. A.L. Page(USA, Comm.II), vacancy (Comm.III), Prof. K. Syers (Thailand, Comm.IV), vacancy (Comm. V), Y.P. Kalra (Canada, Comm.VI), vacancy (Comm.VII), vacancy (Comm. VIII), Prof. Somsri Arunin (Thailand, Subcomm.A), Dr. W. McDonald (Australia, Subcomm.B), Prof. R. Lal (USA, Subcomm.C), Prof. L. Brussard (Netherlands, Subcomm.D), Dr. K.-J. Meiwes (Germany, Subcomm E), Dr. A. Mtimet (Tunisia, Subcomm. F), vacancy (Subcomm. G).

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

Committee on Education in Soil Science (CES), with particular attention to secondary school/college level
Chairwoman: Prof.Dr. M. Dosso, CNEARC, B.P. 5089, 1101 Av. Agropolis, 34033 Montpellier, France.
Members: Rabah Lahmar (Algeria), Pamela Hazelton (Australia), Stephen Nortcliff (Great Britain), John Hatzopoulos (Greece), Mamadou Khouma (Senegal), Angélique Lansu (The Netherlands), Bruce James (USA).

Committee on History, Philosophy and Sociology of Soil Science (CHP)
Chairman: Prof.Dr. Dan H. Yaalon, Inst. of Earth Sciences, The Hebrew University, Jerusalem 91 904, Israel.
Members: to be defined

IUSS Representatives in Committees/Commissions of International Organizations:

ICSU-SCOPE	Scientific Committee on Problems of the Environment: Dr. F. Fournier (France).
ICSU-CSFS:	Scientific Committee on Sciences for Food Security: Prof.Dr. W.E.H. Blum, (Austria).
ICSU-IBN	International Biosciences Networks: Prof.Dr. P.A. Sanchez (USA).
ICSU-IGBP	International Geosphere-Biosphere Programme: Prof.Dr. H.W., Scharpenseel (Germany).
ICSU-COSPAR	Committee on Space Research: Dr. Karale (India).
ICSU-CODATA	Committee on Data for Science and Technology: Prof.Dr. M.F. Baumgardner (U.S.A.).
IUBS-UNESCO-TSBF	Prof. Dr. H.W. Scharpenseel (Germany)

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

News from the IUSS Working Groups DM and RS

In 1995, the Working Groups DM en RS cooperated in organizing in Ouagadougou (Burkina Faso) the Symposium »Monitoring Soils in the Environment with Remote Sensing and GIS«. Many examples of application of Remote Sensing (RS) and GIS in studies on land degradation were presented and discussed. In Round Table discussions, the potential of RS for assessing indicators on land degradation was detailed and harmonized procedures for data selection, - collection and generation were recommended to compose geographical databases. The SOTER approach was mentioned as a suitable system.

The cooperation of the two working groups was considered to have been useful and has led to joint activities in preparating of a symposium, to be held in 22-27 August 1999 in Kathmandu (Nepal) with the following title: »RS and GIS for Monitoring Soils and Geomorphic Processes to assist Integrated Development of Mountainous Land«

This symposium is dedicated to the effective use of databases, GIS and RS to study the mountainous environment. The International Association of Geomorphologists (IAG), ITC (Enschede, the Netherlands) and the International Centre for Integrated Mountain Development (ICIMOD, Kathmandu, Nepal) are also involved in the organization. These institutes, each with expertise in various fields, will provide for exchange of knowledge on dynamic geomorphic processes, technical aspects of databases, RS and GIS application of this knowledge in formulation of protection and sustainable use of mountainous land. The focus on mountainous areas can be considered as very timely, in view of the recent disastrous events in mountainous areas of Central America.

For more information see section Meetings, Conferences and Symposia.

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

Highlights of WRB field tours in Vietnam and China, November/December 1998

WRB experts and Vietnamese and Chinese participants met during two subsequent field tours to study and discuss the applicability of WRB in (1) strongly weathered soils on basalt in Vietnam (Ferralsols, Nitisols, Plinthosols, Acrisols, Cambisols), and (2) soils with strong human influences in China (Anthrosols, Luvisols, Cambisols, Regosols).

The meetings were convened and excellently prepared by (1) National Institute for Agricultural Planning and Projection (sub-NIAPP Nha Trang) in Vietnam, and by the Institute of Soil Science-Academia Sinica (ISS-AS) of Nanjing, China.

The field visits in Vietnam led to lively discussions on particular elements of WRB, notably the use

of the qualifiers and some definitions of Reference Soil Groups. During indoor group discussions after the field visits, proposals were drafted and discussed to adapt present definitions and to include some new ones. In particular, discussions centred on gleyic properties, the ferralic horizon and Ferralsols, the argic horizon, soils with an argic horizon in general and Alisols in particular, and the plinthic horizon, as well as structuring of the qualifiers in the Reference Soil Groups.

The WRB team investigating a Humi-Acric Ferralsol in the Dak Nong area, Dac Lac Province, Vietnam

Prof. Gong Zitong explaining the soil landscape in Guangzhou, Guandong Province, China

The WRB team investigating an Irragri-Terric Anthrosol on the Loess plateau, Shaanxi Province, China

In China, the focus of the attention went to soils modified by and/or influenced by men, the local techniques used to improve soil fertility (earth manuring, night soil additions, strategic irrigation) as well as on how well these activities are reflected in WRB.
In Southern China soils under short and long-term paddy rice cultivation were studied in detail, the first ones still showing many properties of the original soils with only an anthraquic surface horizon, the latter ones showing clear combination of both the anthraquic and hydragric horizons. In the Löss plateau Region, (Shaanxi Province), Terric and Irragric Anthrosols, including soils showing a combination of both were visited. An attempt was made to clarify the differences between the various man-made surface horizons, particularly the Terric, Irragric, Hortic and Plaggic horizons. Among other parameters, available phosphate content seems to be a useful criterion. More data are required to establish a meaningful threshold value for these soils.

In addition, some simple field methods to establish redoximorphic conditions were demonstrated to the participants (Eh electrode method and use of &&-dipyridyl).

In conclusion, it appears that field correlation tours like these are extremely valuable to test the applicability of WRB under various ecological conditions as well as to establish its weaker points which may be subject for further research and ev entual modifications. It also proved to be an important tool for triggering awareness for updating national soil classification systems.

J. Deckers
Chairman, IUSS Working Group RB

SYMPOSIUM: SOIL AND WATER USE RELATING SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PROTECTION

Sarajevo, Bosnia-Herzegovina, 17-19 June 1998

After an indescribable war destruction, Bosnia-Herzegovina needs huge investments in its reconstruction and development. These investments must be integrately coordinated with environmental protection and conservation of soil and water resources. In order to analyse and debate the typical themes related to a rational reconstruction of devastated lands, a Symposium, dealing with such a broad spectrum of problems, was held in Sarajevo (Republic of Bosnia and Herzegovina) from 17 to 19 June, 1998.

The Symposium «Soil and Water Use relating Sustainable Development and Environmental Protection » was jointly organized by the Academy of Science and Arts of Bosnia-Herzegovina, the Soil Science Society of Bosnia-Herzegovina and the Society for Irrigation and Drainage of Bosnia-Herzegovina. The meeting was attended by almost one hundred specialists from Bosnia-Herzegovina, Austria, Italy, USA, Czech Republic, Croatia, and Yugoslavia.

The opening session included an introduction by the President of the Organising Committee Dr. M.Vlahinic after which a range of local Authorities welcome the Participants. After that, there were presentations by Professor Dr. H.Resulovic (President of the Soil Science Society of Bosnia-Herzegovina) on "Soil Resources in Bosnia-Herzegovina" and by Professor Dr.W.E.H.Blum (Secretary-General of ISSS) on "Sustainable Land Use and Environmental Protection", followed by submitted contributions.
Within the program 30 oral presentations and many posters were offered. Topics discussed in the symposium were:
- soil and water for sustainable agriculture
- classification, mapping, improvement and restoration problems of anthropogenic and technogeneous soils
- soil mapping and GIS applications for land, soil and water management
- soil erosion and degradation modeling and protection measures
- environmental geochemistry and radioactive contamination
- water resource management and pollution prevention
- international standards for environmental protection.

Two tours provided the Participants with impressive visits to the sites devastated during the war: the Mt.Igman area, the city of Sarajevo and the Tuzla centre.
A field excursion from Sarajevo to Tuzla was organized to show soils, vegetation, geology. Then the Participants visited _icki Brod, Dzakovici, Ni_ici, Dzurdzevic, and Tuzla where anthropogenic soil profiles (i.e. Recultisols, Combustosols, Deposols, Cinerosols), undergoing restoration and recultivation processes, were viewed. These sites provided excellent opportunity for wide ranging discussions linking many aspects of ground subsidence, anthropogenic desertification and land degradation connected with coal strip mining, fly-ash deposal and salt exploitation.
Proceedings of full papers are expected to be available from January 1999.
The Organizers made the meeting an unforgettable event, in spite of the strong environmental problems resulting from the war consequences.

Franco Previtali, University of Milan, Italy

Collaboration: Societas Pedologica Slovaca – Österreichische Bodenkundliche Gesellschaft

In the period September 14th – 18th, 1998, a group of Slovakian soil scientists made an excursion to the south-eastern part of the Alps, in continuation of the long-standing co-operation between the two a.m. Societies. The cooperation between soil scientists of both countries was intensified in the year 1990, starting with the exchange of theoretical findings and – after a close collaboration in the field of water erosion studies – also practical work.

Prof. Nestroy lectures at a soil profile in Seckau, Austria (Cambisol)

Slovak and Bohemian soil scientists participated in the field trip that included soils, soil profiles and terrain conditions of agriculture in the south-eastern part of Austria, and the Dolomites in Southern Tyrol/Italy. The soil scientists had, under the guidance of Prof. O. Nestroy, the chance to recognize soils, technologies used, geomorphic composition of the landscape and the general pedo-climatic conditions of the local agriculture.

Prof. Nestroy gave valuable information as to the pedological, geological and geomorphological landscapes. The group of pedologists migrated between altitudes of 300 m and 2500 m, in order to see a wide variety of soil typological, geological and textural features.

The final impression of all the participants was highly positive. They had an excellent chance to see new soil situations, enjoy scenic views and experience the friendly atmosphere of the land. The findings that resulted from this excursion are very promising for the future.

Dr. Pavel Jambor, President, Societas Pedologica Slovaca

SYMPOSIUM »HUMIC SUBSTANCES IN THE ENVIRONMENT-2«
Slovakia, June 14-18, 1998

The second Symposium »Humic substances in the environment-2« was held in Rackova Dolina (High Tartras, Northen Slovakia) from 14 to 18 June 1998, at the Teaching and Recreation Centre of the Slovak Agricultural University. The Symposium was organized by Prf. Anton ZAUJEC, from the Slovak Agricultural University, Department of Pedology and Geology (Nitra, Slovakia) in cooperation with: the Soil Fertility Research Institute (Bratislava, Slovakia), and the University of Technology and Agriculture, Department of Soil Chemistry (Bydgoszcz, Poland)

The main conference topics were:
- Transformations of organic matter in soils, sediments and water;
- Turnover of humic substances in ecosystems;
- Structure and properties of terrestrial and aquatic humic substances;
- Organic fertilizers and preparations from organic wastes;
- Humic substances in university education.

Approx. 30 oral communications and 12 posters were presented, from about 60 scientists from the Czech Republic, Slovakia, Poland, and Spain. The subjects that attracted most attention were those dealing with the structure and microbiology of humic substances. A selected number of these papers will be published in a special volume in the near future.

An excursion was organized, so that the participants should get an impression of the soils (rendsinic and podzolic soils) and forests (spruces, Scottish pines, and larix; some oaks, betula, and alders) of High Tatras National Park (TANAP). Some calcaric caves from the Low Tartras were also visited.

The third Symposium '*Humic substances in the environment-3*' will be held at Bydgoszcz (Poland) in 1999, organized by Dr. S. S. GONET from the Department of Soil Chemistry, University of Technology and Agriculture.

The new issue of the international journal '*Humic Substances in the Environment*' was also discussed with the editor Dr. Slawomir S. GONET (E-mail: <humus@rol.atr.bydgoszcz.pl>). This journal invites the specialists in humic substances to send papers to the first number of the journal (which will appear in 1999).

Juan F. GALLARDO LANCHO, Spain.
FAX: 34.923219609, E-mail: jgallard@gugu.usal.es

5th CONGRESS OF THE UKRAINIAN SOCIETY OF SOIL SCIENTISTS AND AGROCHEMISTS

Rivne, Ukraine, July 6-10, 1998

The 5th Congress of the Ukrainian Society of Soil Scientists and Agrochemists was held at the Ukrainian State Academy of Water Resources, Rivne, July 6-10, 1998 with the theme »Soil Science – Ecology – Food Production«.

Approximately 150 delegates and guests took part in the Congress. Among them where the Secretary-General of the International Union of Soil Sciences, Prof. Dr. W.E.H. Blum, Prof.Dr. G.V. Dobrovolsky, the President of the Russian Society of Soil Science (Dokuchaev Society), the Vice-President of the Ukrainian Academy of Agrarian Sciences, Dr. P.I. Kovalenko, to name only a few.

The discussions which took place during the Congress showed the great efforts of Ukrainian scientists for the solution of today's problems in the field of soil science and agrochemistry, as referring to the use and conservation of Ukrainian soil and water resources. Great attention was paid to the necessity of the soils and agrolandscapes and their ecological remediation, and the creation of unexpensive fertilizers and ameliorants and technologies for their application, in order to facilitate sustainable food production.

The participants of the Congress especially underlined the unsatisfactory status of Ukrainian agriculture at present and during the last seven years, referring to such problems as soil erosion, soil pollution, secondary soil salinization, unrational use of drained and irrigated land, problems in the application of ameliorants and fertilizers, and the sharp decrease in the yield of crops. These problems are the result of increasing soil degradation processes.

In view of the above mentioned problems, the congress participants agreed on several items that will need practical measures to be urgently taken. These include:

- the development of the theoretical and methodological principles of soil science and agrochemistry for ecological stabilization of the soil cover, its rational use and the solution of technical problems;
- the creation of a systematic monitoring of local and endangered soils with the help of databases of different levels, for the improvement of land and water resources.

The delegates confirmed the report of the former Central Council, approved of the changes to the Rules of the Society, elected a new Central Council and determined the next 6th Ukrainian Congress venue, the Uman Agricultural Academy. The Council appointed the new President of the Society, Prof. P.G. Copytko, Deputy Rector of the Uman Agricultural Academy, and a new Secretary-General, Prof. Dr. V.V. Medvedev, Director of the Ukrainian Institute for Soil Science and Agrochemistry Research and Academician.

The participants of the Congress

Prof.Dr. V.V. Medvedev, Secretary-General of the Ukraininan Society of Soil Scientists and Agrochemists, Dr. G.V. Dobrovolsky, President of the Russian Society of Soil Science, Prof. S. P. Poznyak.

The Honorary Members of the Ukrainian Society of Soil Scientists and Agrochemists, who were elected by the delegates at the Congress, are scientists of great distinction and international reputation: the Secretary-General of the International Union of Soil Sciences, Prof.Dr. W.E.H. Blum and the President of the Dokuchaev Society, Prof. Dr. G.V. Dobrovolsky.

The participants of the Congress approved the Address to the President of the Ukraine, in which the modern problems of Ukrainian Agriculture related to Soil Science and Agrochemistry are explained.

There was a post-congress tour to the north-western part of the Ukrainian Forest Zone.

Address:
Prof. Dr. V.V. Medvedev
Secretary-General of the
Ukrainian Society of Soil Scientists and Agrochemists
c/o Institute for Soil Science and Agrochemistry Research
Chajkovsky St., 4, Kharkov
310024 Ukraine
Tel: +380-572-470531
Fax: +380-572-478563
E-mail: itl93@online.kharkov.ua

Prof. V.V. Medvedev

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

Italian Society of Agricultural Chemistry
(Società Italiana di Chimica Agraria)

The Italian Society of Agricultural Chemistry was founded on 24 July 1981, for the purpose of promoting and publishing studies and research in the field of chemistry applied to agriculture. The Society is particularly interested in all the chemical aspectes of the soil-plant system and of the environmental factors influencing this system. The Society carries out its activities through general and extraordinary meetings, congresses, symposiums, seminars and publications, often in collaboration with other Italian or foreign societies.

The Board of Directors elected for 1997-1998 is composed of the following members:

President:	Prof. Luciano Scarponi
Past President:	Prof. Carlo Gessa
Vice President:	Prof. Paolo Nannipieri
Members:	Prof. Maurizio Cocucci
	Dr. Liviana Leita
	Prof. Teodoro Miano
	Prof. Antonio Violante
Secretary/Treasurer:	Dr. Luca Martinetti

Current address:
Società Italiana di Chimica Agraria
c/o Istituto di Chimica Agraria – Università de Perugia
Borgo XX Giuno, 72 – 06121 Perugia – Italy
Tel.: +39-75-585-6226, Fax: +39-75-585-6239, E-mail: agrochim@unipg.it

Sociedade Portuguesa da Ciéncia do Solo

The Protuguese Society of Soil Science has a new executive committee, elected on May 11, 1998:

President:	Manuel Madeira
Secretary:	Nuno Cortez
Treasurer:	Fernando Monteiro

The new address is:

Sociedade Portuguesa da Ciência do Solo
Instituto Superior de Agronomia
Departamento de Ciências do Ambiente
Tapada da Ajuda
1399 LISBOA Codex
PORTUGAL

Soil Science Society of America

At the annual meetings of ASA, CSSA and SSSA in Baltimore, USA, in October 1998, **Gary W. Petersen** took over office as President of SSSA, **H.H. Cheng** as President of ASA. **Donald L. Sparks** is the new Presient-Elect of SSSA.

Biofertilizer gives boost to yields.

More than two thousand smallholder farmers on communal land in Mashonaland, Zimbabwe are now obtaining soybean yields which are comparable to those on large commercial farms. Since 1996, Mashonaland farmers, who traditionally cultivated maize, have started soybean production and tested the effects of *Rhizobium* 'biofertilizer'. Atmospheric nitrogen can only enter plants after it has been 'fixed' in the root nodules of leguminous plants by a bacterium called *Rhizobium* that lives in the soil. Under natural conditions, legumes do not find the best bacteria to fix sufficient quantities of nitrogen for high yields. By inoculating seeds with *Rhizobium* in liquid form, yields have more than doubled in field trials. These fields performed better than fields treated with 145 kg per hectare of commercial fertilizer. At the current price levels, this means a saving of USD 50 per hectare.
The International Atomic Energy Agency has been helping the Zimbabwean authorities with nitrogen-15 isotopic analysis to monitor nitrogen through the entire plant growth cycle. By this means the most efficient strains of *Rhizobium* can be identified and made available to farmers for a cost that can be quickly recouped in increased yields.
The Soil Productivity Research laboratory of the Ministry of Agriculture is responsible for the production of biofertilisers in Zimbabwe. The extension work on the application of the biofertiliser is done jointly with Agritex, the extension department of the Ministry of Agriculture.
Contact: Dr. C. Mushambi, Director of the Soil and Chemistry Research Institute, Soil Productivity Research Laboratory, Private Bag 3757, Marondera, Zimbabwe. Fax: +263 4 728317.
(From: Spore 77, CTA, Ede, The Netherlands).

Proposal to Hold »Eurosoil 2000«

Introduction

The British Society of Soil Science, in collaboration with other European Societies, is pleased to invite soil scientists interested in a range of soil science topics to an international conference in England, during September 2000. The proposed venue is the Dept. of Soil Science, University of Reading.

Aims of the Conference

The conference aims to explore the results of recent studies and would be complementary to specialist meetings and workshops on specific subjects and those held within the context of, for example, EU or ESF activities. The meeting would cover topics from throughout Europe, not only the European Union, with close contact being maintained with EU activities and Directorates General so that maximum benefit is gained from them.

The Society is keen to establish the level of interest in this meeting and asks potential contributors to register an interest.

Scientific Programme

Possible symposia subjects include

- Soil quality – concepts indicators and uses.
- Genetic and functional diversity in soil populations.
- Managing nutrients to meet agricultural and environmental objectives.
- Protecting soils from erosion.
- Soils and global environmental change.
- Soil organic matter turnover – concepts, methods and models.
- Soil science in land use planning.
- Remediation of polluted soil.

Timetable and Deadlines
1 January 1999, First Circular
1 July 1999, Second Circular
1 January 2000, Submission of Abstracts
1 June 2000, Final date for registration.

Location
The proposed location is the University of R87eading with good rail road links from London.

Cost
The anticipated cost will be finalised for inclusion in the first circular but every attempt will be made to minimise costs using University accommodation and halls. All accommodation and meals, including costs to cover a proposed field trip will be included.

Pre-Registration
Where possible the Society would like to receive replies to this information by e-mail. Please reply to **j.gauld@mluri.sari.ac.uk**, if you are interested in obtaining further details. If this is not possible, please write for further details to **Dr. Jim Gauld, Macaulay Land Use Research Institute, Craigiebuckler, Aberdeen AB15 8QH, UK.**

Asian-Region E-mail Conference on Desertification

An Asian-region e-mail conference on desertification has been initiated by the Environment Liaison Centre International (ELCI) and the Society for Conservation and Protection of Environment (SCOPE). The conference is a significant initiative towards implementation of the United Nations Convention to Combat Desertification (CCD). Approximately 80 NGOs, CBOs, individuals, and institutions are members of the conference, and it is hoped that by the end of this year the number will be up to 300.

NGOs in Asia and pacific regions are invited to send brief reports/articles (1-3 pages) about controlling land degradation through innovative and participatory methods, experiences in sustainable land management, drought mitigation, community organization, water harvesting, lobbying and advocacy. The conference language is English.

For more information, contact:

Dr. Jamil H. Kazmi
SCOPE
P.O. Box 15913
Karachi-75080, PAKISTAN
Tel: +92-(21)496-5042, Fax: -4001; E-mail: scope@khi.compol.com

Report
XXVIIIth annual meeting of the European Society for New Methods in Agricultural Research (ESNA), working group soil-plant relationships and of the International Union of Radioecologists (IUR) working group soil-plant-transfer

The annual meeting was held in Brno, Czech Republic from 26-29 August 1998. The working group was well attended and 41 scientists from 20 countries actively participated giving oral or poster presentations. Besides the sessions, which focussed mainly on radioecology and soil science and plant nutrition the working group held one joint session with WG 5 (Quality of Agro-Ecosystems) on stable isotope techniques and a special session dedicated to protocols in soil-plant transfer studies.

The majority of oral presentations (18) focussed on radionuclide behaviour in the soil-plant system. The papers described e.g. surface versus water table contamination of soils with respect to migration of Cs (Wadey et at., Marchant et al.). A series of papers focussed on the behaviour of radiocesium in seminatural environments including modelling (Drissner et al.) and the effect of countermeasures like liming (Konoplev et al.) and potassium fertilization (Nikolova and Johanson), the first diminishing soil-plant transfer of ^{137}Cs by a factor of 8-20, the second by a factor of 2-4, respectively.

Concepts of radionuclide soil-to-plant transfer were adressed by five presentations. Frissel showed an approach using characterization of the ecosystem, Herren and Riesen discussed alternatives to the Kd-concept and Tompkins et al. highlighted the main influencing factors, which should be taken into account for uptake models. Waegeneers et al. and Roca Jove and Vallejo Calzada demonstrated the great impact of K concentration in soil solution being a key parameter for Cs uptake models. Additional papers focussed on soil-tree transfer of Cs (Skarlou et al.), the translocation of Sr and Cs from contaminated leaves to fruits (Carini et al.), the impact of physiological factors and stress on ^{137}Cs absorption by plants (Kravets), the impact of elevated radionuclide levels on chromosomal abberations in plants of the exclusion zone (Goncharova et al.), the ^{137}Cs transfer as influenced by contamination level (Cojocaru et al.) and the use of zeolithes as countermeasure (Oncsik Bíróne).
Additionally 5 posters were presented in the field of radioecology (Todorovic et al., Kravets, Grodzinsky et al., Tsyganov et al.). The work of Wright et al. on identifying vulnerable regions in Europe concerning Cs-deposition based on the soil map of Europe was esteemed to be of high relevance.
The working group held a special session to discuss a draft document (FAO/IAEA/IUR) on protocols in soil-plant transfer studies (Frissel). Many suggestions were made and the revised protocol will be published in the proceedings of the working group.

11 oral presentations were given in the field of soil science and plant nutrition. Esteban-Mozo presented interesting results on the impact of sewage sludge on soil fertility and nutrient movement. A highly valuable data set from a 30 years old long-term fertilizer experiment (NPK) was presented by Nankova and Kirchev. These data might provide a sound basis for production models. Another two oral presentations elucidating N fertilization were presented by Brohi et al. and Hejnak and Lippold. In the latter paper leaching of ^{15}N under different soil conditions and the priming effect of mineral nitrogen on initial soil N could be quantified. In a joint session with working group 5 the use of stable isotope techniques were discussed. Gerzabek started with a review on the use of stable isotopes in soil organic matter studies. Grego and Megusar highlighted the mechanisms of N immobilisation in biomass, the role of the rhizosphere in this respect and the fixation of N in clay minerals, respectively. Moutonet discribed experiments in horticulture using the N-fertigation tensionic device for sampling soil solution.

The last session focussed on the use of fertilizers in general. Zeleny et al. discussed the sulfur supply of Czech soils considering plant demand, fertilizer input and SO_2-immissions. Esengün and Akay evaluated the fertilizer effect on crop yields in Tokat/Turkey. Gürler et al. amended that with data from the fertilizer industry. 6 Posters were presented in the field of soil science and plant nutrition. Topics ranged from mineralization of organic fertilizers (Budoi et al.), different aspects of plant nutrition

(Budoi et al., Stanica, Nankova et al., Draga et al.) to the uptake of Be by plants and its effect on crop growth (Hlusek and Richter).

The extended summaries of the presentations will be published in the proceedings late this year. The next annual meeting of ESNA and the IUR working group soil-to-plant transfer will be held in Wye College/U.K. (8-12 September 1999). Further links to the soil science community will be established in the future. M. Gerzabek was appointed by the Council of the International Union of Soil Sciences (IUSS) during the World Congress of Soil Science in Montpellier as Liaison Officer to the IUR to stimulate exchange of information between the two unions.

Martin H. Gerzabek
Chairman, Working Group

International Fertilizer Award

Invitation to nominate candidates from developing countries

The IFA International Fertilizer Award is offered every year for research which has led to a significant advance in the efficiency of mineral fertilizer use, and which has been communicated successfully to the farmer in the form of practical recommendations.

Any individual researcher, from the public or private sector, from the fertilizer industry, research or educational institutes whose work concerns the use of fertilizers, is eligible for nomination. Candidates must be nominated by an IFA member company (IFA will send a list of member companies in your country on request).

The recipient of the Award will receive 10,000 US$ and will be invited as a guest to the IFA Annual Conference.

For details please contact:

1999 International Fertilizer Award
c/o International Fertilizer Industry Association
28, rue Marbeuf, 75008 Paris, France
Tel: +33-153-930-500
Fax: +33-153-930-545
E-mail: ifa@fertilizer.org
http://www.fertilizer.org

Addressing Land Degradation in Africa through GEF projects.

Klaus Töpfer, Executive Director, United Nations Environment Programme.

Desertification has long been recognized as a major economic, social, and environmental problem. It affects one sixth of the world's population, 70% of all drylands, and one quarter of the total land area of the world. In Africa, desertification threatens the lives of millions of persons and seriously affects more than 39% of the continent's total area.

The world community has responded to this massive problem in several ways. In 1997, under the auspices of UNEP it adopted a Plan of Action to Combat Desertification. In 1992 it adopted Agenda 21, which highlights (in Chapter 12) the need for an ecosystem approach to the world's fragile drylands. Agenda 21's call for a legally binding international instrument on desertification was adopted in 1994.

Unlike the other Rio conventions (on biodiversity and climate change), this new convention was not provided with a new source of additional international financial support (although the Global Mechanism will promote resource transfers). Fortunately, in 1997 the restructured Global Environment Facility (GEF) agreed that activities related to land degradation - primarily desertification and deforestation - are eligible for GEF funding to the extent that they relate to the GEF's focal areas of biodiversity, climate change, and international waters. As the GEF will soon be replenished for another four-year period with some USD 2.75 billion, the value of GEF should not be overlooked by dryland countries.

Opening the door.

Building on its experience with the earlier Nairobi Plan of Action to Combat Desertification, UNEP has taken a lead role in helping the GEF to design a policy framework within which to develop a meaningful portfolio of projects dealing with land degradation, particularly in Africa. This effort was driven by the GEF's Scientific and Technical Advisory Panel (STAP), which is composed of 12 eminent experts and a secretariat hosted by UNEP.

In September 1996, STAP convened a workshop on land degradation which adopted policy recommendations and strategic guidelines that were instrumental in enabling the GEF Executive Council to adopt a GEF policy framework for land degradation. This made it possible to develop GEF projects than can contribute to the Convention to Combat Desertification (CCD) while satisfying the GEF's own original objectives and mandate.

As a result, for the first time UNEP presented to the GEF Executive Council at its March 1998 meeting in New Delhi a full-scale project on desertification. The proposal addresses various issues relating to transboundary land degradation between Mauritania and Senegal. These two least developed countries, among the most affected by desertification, will benefit from a five-year, USD 12.3 million project that will address the root causes of biodiversity loss from land degradation in five critical ecosystems encompassing 60,000 km_2 of the transboundary Senegal River Valley.

In July 1998, the GEF Council will have before it another UNEP project of USD 10 million for addressing the management of indigenous vegetation for the rehabilitation of degraded rangelands in the arid zones of Africa, particularly Botswana, Kenya, and Mali. Another seven transboundary land degradation projects worth of USD 50 million and covering the five African sub-regions and 20 African countries are in the pipeline.

(From; Down to Earth, Newletter of the CCD, Number 9, June 1998)

Excerpt of the Annual Report for 1997 of the International Atomic Energy Agency, IAEA, 1998

Soil and Water Management and Crop Nutrition

Adequate supplies of water and nutrients are two key inputs in sustainable crop production. The neutron moisture probe, an instrument developed more than 40 years ago for measuring soil water con-

tent, is finding expanding applications in the quest for more efficient use of scarce water resources. For example, studies conducted within the framework of a Coordinated Research Programme (CRP) have shown that the amount of irrigation water applied to wheat could be reduced by up to 30% compared with conventional practices without any loss of grain yield. Optimal use of water also prevented water tables from rising and promoted the efficient use of nitrogen fertilizer by avoiding nitrate leaching, which causes environmental degradation through groundwater pollution and soil acidification. A modest reduction of 5% in fertilizer nitrogen losses would result in savings of USD 94 million in China and India, where 3.36 million tonnes of nitrogen are applied annually to 23 million hectares of wheat.

The feasibility of using saline groundwater in arid and semi-arid environments to irrigate salt tolerant plant species (including food crops, forage and fuel woods) is being tested in seven countries in a technical co-operation Model Project which was developed following a CRP on this subject. The proper management of saline irrigation water requires the monitoring of soil water and estimation of the water balance in order to avoid accumulation of salt in the soil profile. Some salt tolerant varieties/strains of kallar grass, acacia, eucalyptus, the *Atriplex* species, sesbania, the *Tamarix* species, rapeseed, barley and pistachio have been successfully grown.

The value of nitrogen fixing trees for rehabilitating and maintaining the fertility of tropical soils was also clearly demonstrated in a recently concluded CRP. Results from eight countries highlighted the importance of nitrogen-15 techniques in identifying species such as *Gliricidia, Acacia, Chamaecystisus* and *Leucaena*, which performed well in both nitrogen fixation and biomass production. From studies conducted in Malaysia and Nigeria, it was evident that management practices have a direct effect on nitrogen fixation. For example, frequently pruned trees showed more consistent nitrogen fixing abilities. The time, rate and method of adding prunings to soils were crucial in achieving synchrony between nutrient supply from decomposing residues and crop nutrient demand.

The role of legume green manures in enhancing crop production on degraded soils was investigated in a recently concluded CRP in Central America, where maize and beans have been the basic staples since the ancient Mayan civilization. Yields are very low because the crops are grown by peasant farmers on eroded hillsides with poor technology and little diversification. Isotope aided field experiments aimed at understanding and improving the traditional farming system were carried out in Costa Rica and Guatemala. It was demonstrated that some nitrogen fixing legume crops such as 'mucuna' and 'canavalia', grown as green manure, are important sources of nitrogen and organic matter in these degraded soils. If properly managed in a rotation, they can supply up to 80 kg of nitrogen per hectare, which is sufficient to obtain good yields of the maize or sorghum crops that follow.

The development of isotope based methods for estimating the contribution of organic materials applied to soils for plant nutrition is crucial in evaluating the benefit of residues as compared with mineral fertilizers. A novel concept developed at the Agency's Laboratories at Seibersdorf assesses this contribution indirectly by comparing the isotopic composition of plants grown in nitrogen-15 labelled soil with and without unlabelled residue addition. The advantage of this technique is that it does not depend on the production of labelled residues which, while permitting direct estimation of the contribution, is either too expensive or impractical with materials such as animal manure.

For more information: Division of Public Information, IAEA, P.O.Box 100, A-1400 Vienna, Austria. Fax: +43-1-20607. E-mail: official.mail@iaea.org. Homepage: www.iaea.or.at/wordatom.

ICSU Awards

Three major awards were granted by ICSU under its New Grants Programme in 1998.

One of them was made to a project concerned with food security in urban an peri-urban areas. Food production systems in Cairo, Madras and Kathmandu are being studied as test cases. The availability, sustainability and accessibility of food in these metropolitan cities will be examined by interdiscipli-

nary teams. An international workshop, at which the results will be presented, will be organized after ICSU's General Assembly, from October 2-4,1999, in close cooperation with the Aim Shams University in Cairo. Funds of $69,000 were awarded to this project which is coordinated by the IUSS, the IGU and ICSU's new Committee on Sciences for Food Security, chaired by Winfried E.H. Blum, Secretary-General of IUSS.

The International Programme for Technology and Research in Irrigation and Drainage (IPTRID) Now Hosted by FAO

The International Programme for Technology and Research in Irrigation and Drainage (IPTRID) has now moved to its new home within the Water Resources, Development and Management Service (AGLW), of the Land and Water Development Division (AGL), of the FAO in Rome.

IPTRID is a partnership between international research institutions, multi- and bilateral donors and six major international institutions – Global Water Partnership (GWP), FAO, The World Bank, the United Nations Development Programme, International Water Management Institute (IWMI), and the International Commission on Irrigation and Drainage (ICID). IPTRID was founded in 1991 and originally hosted by the World Bank. As part of its reorganisation, the programme has now moved to the FAO, a more specialised organisation with a wealth of expertise in irrigation. IPTRID's three-year action plan has four priority areas:
- knowledge synthesis;
- national research and development;
- knowledge dissemination through networks.

In order to support developing countries in their search for more productive irrigation techniques, IPTRID is refocusing its efforts toward synthesis and dissemination of knowledge and capacity building to improve the application of research results »on the ground«. In this last area, ten existing country networks will be strengthened and 12 new country networks will be set up. In irrigation, as in many other fields, networking is increasingly being used to transcend geographical boundaries and make knowledge available to all who need it.

Information about the programme and network can be found on the IPTRID website: http://www.hrwallingford.co.uk/projects/IPTRID/

The Programme Office can be contacted via e-mail to Arumugam.Kandiah@fao.org or by fax to +39-6-570-56275.

From: Hogeveen, Jippe, Land and Water Electronic News

International Soil Tillage Research Organization (I S T R O)

The officers of ISTRO for the period 1997 – 2000 are:

President:	John Morrison (USA)
President-elect:	Mac Kirby (Australia)
Secretary General:	Birl Lowery (USA)
Asst. Secretary General:	Bev Kay (Canada)

Treasurer:	Guy Richard (France)
Board Members:	V.W. Medvedev (Ukraine)
	H.B. So (Australia)
	M. Birkas (Hungary)
	T. Borresen (Norway)

The address is:

ISTRO
Birl Lowery
Secretary General
Department of Soil Science
University of Wisconsin-Madison
1525 Observatory Drive
Madison WI 53706-1299
USA

Web page: http://bob.soils.wisc.edu/istro

From: ISTRO-Info Extra, Spring 1998

News from the International Mineral Association Commission on »Ore Mineralogy«.

Though many people working in the earth and materials sciences are involved with aspects of »ore mineralogy«, communication is limited to established routes such as journals or conferences. The Commission on Ore Mineralogy (COM), one of the working commissions of the International Mineralogical Association (IMA), has set up a COM server at Eötvös University, Budapest, in order to facilitate communications. If you are interested in joining the mailing list please contact Gyorgy Lovas in Budapest. His address is »lovas@ulixes.geobio.elte.hu«
In addition, a Directory of Ore Mineralogists will be compiled on the basis of a questionnaire. We invite those who have not already done so to complete the questionnaire. The information will be used in planning future activities of the COM as well as in facilitating communications. The questionnaire is available, on line, via the internet at the address: »http://.ruhr-uni-bochum.de/mineralogie/mineral/zem/form.htm«.
Contacts are also feasible by mail, fax or email to:
H.J. Bernhardt, Ruhr Universität, Zentrale-Elektronen-Mikrosonde, D-44780 Bochum, Germany.
Fax: + 49-234.7094.286; Email: heinz.juergen.bernhardt@ruhr-uni-bochum.de.

Louis J. Cabri
Chairman, IMA/COM.

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

Julia Marton-Lefèvre, Executive Director of *LEAD International*, has been named the recipient of the 1999 AAAS Award for International Scientific Cooperation.

The following distinguished scientists were named Fellows of the Soil Science Society of America: **Paul M. Bertsch, Iskandar K. Iskandar, Lanny J. Lund, Maurice J. Mausbach, Kevin McSweeney, D. Wayne Reeves, Charles B. Roth**.

Martinus Th. van Genuchten received the Don and Betty Kirkham Soil Physics Award.

Marion F. Baumgardner and **Albert L. Page** both received the Soil Science Award for Distinguished Service.

P. Suresh Chandra Rao received the Soil Science Research Award.

B.L. Allen received the Soil Science Education Award.

John Kimble, Chair of the IUSS Standing Committee on International Programmes, received the International Soil Science Award.

Andrew N. Sharpley received the Soil Science Applied Research Award.

John G. Graveel received the Agronomic Resident Education Award.

Dennis Keeney received the Agronomic Service Award.

Dr. John Ryan of Aleppo, Syria, has been elected Fellow of the American Society of Agronomy in May 1998.

Hans W. Wolter has been appointed to succeed R. Brinkman as the Director of FAO's Land and Water Development Division (AGL). Mr. Wolter, who was born in 1939, is of German nationality. He was appointed Chief of the Water Development and Management Service of AGL.

P.M. Huang, professor of soil science at the University of Saskatchewan and Chair of the IUSS Working Group MO has received the university's Distinguished Researcher Award and has been invited to give a public lecture entitled Environmental Soil Chemistry and Human Welfare. Dr. Huang also has been elected a fellow of the American Association for the Advancement of Science for his work in environmental soil chemistry.

M.A. Arshad, research scientist at Agriculture and Agri-Food Canada, has been elected a Fellow of the Canadian Society of Soil Science.

Book winner

At the World Soils Congress in Montpellier, 1998, CABI Publishing (a division of CAB International) held a competition to win a CABI book of choice.

The winner was **Dr/Mrs Danuta Czepinska-Kaminska**, Associate Professor, Soil Science Department, Agricultural University, 26/30 Rakowiecka Str., Warsaw 02-528, Poland. She chose Dictionary of Natural Resource Management as her prize. »Congratulations Dr Czepinska-Kaminska!«

IN MEMORIAM

Brian W. Avery

1921-1998

Brian Avery, who died on July 27 1998 at the age of 76, was the UK's outstanding pedologist over a period of four decades. He was born in Chilton, UK on August 27, 1921. He obtained a B.Sc. degree in Agricultural Chemistry from Reading University, graduating with a First Class Honours Degree.

On leaving University he held a number of short appointments including: Soil Surveyor at the University College of North Wales, Bangor (1943-5); Assistant Lecturer in Agricultural Science, Monmouthshire Institute of Agrculture (1945-7); and Soil Chemist with the National Agricultural Advisory Service (1947-8).

He joined the Soil Survey of England and Wales, based at Rothamsted Experimental Station, in 1948 and was to spend the rest of his professional career with this national organisation and play a pivotal role in its scientific development.

His first task was to map the soils of the Glastonbury district which he completed in 1954 and this was followed by the epic work on the soils of the Chiltern Hills and the Vale of Aylesbury. The memoirs he wrote of these mapped areas were masterpieces, revealing a gifted understanding of geological processes, landscape development and soil formation and they laid the foundations for all later memoirs on the soils of England and Wales.

Already in the 1950s he recognised the need for an improved soil classification scheme to support the soil mapping in England and Wales and published his first developments of this at the International Congress on Soil Science in Paris in 1956. With the reorganisation of the Soil Survey of England and Wales in the late 1960s he was given the responsibility for soil classification, correlation and laboratory services and set about developing and refining the classification system for England and Wales using specific properties to define soil classes. He published an outline system in 1973 which, following trials, was used in all soil survey publications from 1975. He published a Technical Monograph on *Soil Classification For England and Wales* in 1980. In the year 1987 he wrote a Technical Monograph on *Soil Survey Methods* and in retirement in 1990 wrote his book on *Soils of the British Isles.*

Brian Avery is survived by his son, Michael and a granddaughter, Christine.

He will be remembered by colleagues and friends nationally and internationally for his important contributions to the development of pedology.

Prof. Peter Bullock, Silsoe, UK

Prof.Dr. Todor Boyadjiev (1929-1998)

On October 29, 1998, Bulgarian soil science lost an active and enthusiastic soil scientist. Prof. Todor Boyadjiev, who specialized in the fields of soil genesis, classification and cartography, was a long-time expert at FAO, the director and coordinator of international projects dealing with soil degradation and desertification in different regions of the world and he also contributed greatly to the development of soil science in his own country.

As a recognition of his outstanding achievements in soil science, he had been appointed leader of the Working Group on Soil Resources of Desert Ecosystems of the International Society of Soil Science.

Prof. Boyadjiev obtained his PhD in geology and mineralogy at the Royal University in Gent, Belgium. Later, he earned his Dr.Sc. at the N. Poushkarov Institute of Soil Science and Agroecology, in Sofia. He was a long-standing member of the International Society of Soil Science and the Belgian Society of Soil Science, and a member of the board of Directors of the Bulletin of European Soil Science. He was president of the Bulgarian Society of Soil Science from 1993 to his death. In this position he worked at increasing the authority of soil science in Bulgaria. He was author of a great number of monographs, articles and soil maps.

We feel deep sorrow for the loss of this invaluable friend and colleague.

Prof.Dr. R. Dilkova

Prof. Dr. Don Kirkham

Don Kirkham was born on February 11, 1908 in Provo, Utah. After graduating from school, he spent 2-1/2 years in Germany, and then continued his education at Columbia University in New York City, where he was awarded the B.A. degree in physics, in 1933, the M.A. degree in 1934 and the Ph.D. degree in 1938.
BILD L-KIRPLO
Prof. Kirkham started his professional career in 1937 as an instructor and assistant professor in mathematics and phyiscs at Utah State University. He became interested in soil physics and published his first articles on soil drainage. During World War II he served as a civilian scientist with the U.S. Navy, and in addition, he continued to study the physics of soil water and to publish on
soil drainage. In 1946 he joined the staff at Iowa State University as Associate Professor of Soils and Physics, and was made Professor in 1948. In this capacity, Don Kirkham served Iowa State University until 1978. In that year he was named Professor Emeritus. He carried on research, and initially also teaching, until shortly before his death on March 7, 1998.

Through his long and intense engagement in both research and teaching Dr. Kirkham has had an enormous impact on developments in the science of soil and ground water. However, his influence is not restricted to soil drainage and hydrology, but compises the entire field of soil physics. He is author or co-author of more than 200 research papers, numerous chapters in handbooks and monographs, and of a worldwide highly regarded textbook entitled »Advanced Soil Physics«. He is one of the very few scholars who contributed to all three monographs on soil drainage. Rendering service to his profession, he travelled extensively and spent extended periods of time in such countries as the Netherlands, Bel-

gium, Egypt, and Turkey. He served on the editorial boards of both Soil Science and Water Resources Research and served actively, at home and abroad, as a member on numerous committees for organizations such as the Soil Science Society of America, the National Science Foundation, the National Research Council, and the FAO.

Dr. Kirkham has received numerous honors and awards. Among them are the Honorary Doctor's Degrees from the Royal Agricultural University in Ghent (Belgium) and from the Ohio State University, the International Wolf Foundation Prize for Agriculture from the State of Israel, the Stevenson Award from the Soil Science Society of America, the Horton Medal for Outstanding Contributions to the Geophysical Aspects of Hydrology from the American Geophysical Union, the Bouyoucos Soil Science Award from the Soil Science Society of America, and the title of Charles F. Curtiss Distinguished Professor of Agriculture from Iowa State University. He was, among other things, an Honorary Member of the International Society of Soil Science. He also was the first Inductee to the Drainage Hall of Fame.

Highly remarkable are also Don Kirkham's achievements as a counselor of graduate students. Under his supervision, 72 students were guided towards an advanced degree in soil physics, many of them became unviersity professors themselves, either in the USA or abroad. This large number of students explains partly Don Kirkham's lasting impact on soil physics and agricultural drainage.

In addition to his exceptional abilities in research and teaching, Don Kirkham was a man of outstanding character and integrity. He was gentle, generous and unpretentious, and recognized unenviously skills and achievements of others. To honor and commemorate him and his wife, colleagues, friends and former students recently have established the Don and Betty Kirkham Soil Physics Award Program and the Don Kirkham Conference Program that will permanently promote basic research in soil physics. Both programs are managed by the Agronomic Science Foundation of the ASA, CSSA, and SSSA.

It is fitting that the monograph »Agricultural Drainage« is dedicated to this unique scientist and man.

R.R. van der Ploeg, Hannover, Germany

Prof.Dr. Rafi Mamedov

Prof.Dr. Rafi Mamedov, President of the Soil Science Society of Azerbaijan, passed away on September 3, 1998, at the age of 68.

He received his academic education at the Azerbaijan Agricultural Academy and began his professional career in 1951, at the Institute of Soil Science and Agrochemistry of the Azerbaijan Academy of Sciences. He specialized in soil soil physics and for many years has been successfully developing this field of soil science in Azerbaijan and in the former Soviet Union. In 1956, he received his Doctoral Degree, in 1970 he became Professor and Head of the Soil Physics laboratory, a position which he held until his death.

R.Mamedov was an exceptionally loyal and highly valued member of the Soil Science Society of Azerbaijan. He served as council member, vice-president and president of the ASSS. He also was a member IUSS (1982-1998). His work will live on and will be appreciated by coming generations.

Prof. A.Geraizade , Secretary of ASSS

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

Important Notice

IUSS, as a Scientific Union Member of the International Council for Science (ICSU), subscribes to the principle of free movement of bona fide scientists; patronage or sponsoring will therefore automatically be withdrawn if the country of venue denies or purposely delays visa awarding to any IUSS member who wishes to participate in the meeting concerned.

1999

Soil Conservation in Large-scale Land Use, Bratislava, Slovak Republic, May 12-15, 1999.
Information: Dr. Pavel Jambor, Soil Fertility Research Institute, Gagarinova 10, 827 13 Bratislava, Slovak Republic; Tel: (+421)7-5220-866 (43-420-866); Fax: +421-7-295-487 (43-2954-478)

International Workshop of Commission I - Soil Physics, IUSS: 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.

CHEMRAWN XII - African Food Security and Natural Resource Management: The New Scientific Frontiers. Kenya, June 20-24, 1999.
Information: F.J.C. Chandler, CHEMRAWN XII Organising Committee, ICRAF, P.O.Box 30677, Nairobi, KENYA. Fax: USA +1 650 833 6646/KENYA +254 2 521 001; E-mail: F.Chandler@cgnet.com.

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: +34-3-402-1465; Fax: +34-3-411-2842. E-mail: jabechbo@porthos.bio.ub.es, Website: http://www.arrakis.es/~lansac/

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.

International Conference on Enzymes in the Environment : Activity, Ecology, and Applications, Granada, Spain, July 12-16, 1999.
Information: Dr. Richard P. Dick, Dpt. of Crop and Soil Science, Oregon State University, 3017 ALS, Corvallis, OR 97331-7306, USA. Tel: +1-541-737-5718; Fax: -5725; E-mail: richard.dick@orst.edu
Registration: Dr. Jocé-Miguel Barea, Granada, Spain. Fax: +34-58-129600; E-mail: jmbarea@eez.csic.es

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 IUSS 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://www.itc.nl/~shrestha/rs_symp.html.

10th Nitrogen Workshop, Copenhagen, Denmark, August 23-26, 1999.
Information: 10th Nitrogen Workshop Office, The Royal Veterinary and Agricultural University, Plant Nutrition and Soil Fertility Laboratory, Throvaldsensvej 40, DK-1871 Frederiksberg C (Cobenhagen), Denmark; Fax: +45-352-83460; E-mail: nitro@kvl.dk.

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.

FAO/Netherlands Conference on Multifunctional Agriculture and Land Management. Netherlands, September 1999.
Information: Mr. L. Janssen, FAO/SDRN, Viale delle Terme di Caracalla; 00100 Rome, Italy. Fax: +39-6-5705-3369; Website: www.fao.org/sd/agr99.

Congress of the Polish Society of Soil Science: »The role of soil in the functioning of ecosystems«, Lublin, Poland, September 7-10, 1999.
Information: Dr. Jacek Chodorowski, Dept. of Soil Science, University of Maira Curie-Sklodowska, Akademicka 19, 20-033 Lublin, Poland.

Sustainable Management of Soil Organic Matter, Edinburgh, UK, September 15-17, 1999.
Information: Dr. Bob Rees, SAC, West Mains Road, Edinburgh, EH9 3JG, UK; E-mail: b.rees@ed.sac.ac.uk.

GCTE Focus 3 Conference: Food & Forestry: Global Change and Global Challenges, Reading, UK, September 20-23, 1999.
Information: Mrs. Sarah Wilkinson, Food & Forestry: Global Change and Global Challenges, Elsevier Science Ltd, the Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK; Tel: +44-(0) 1865-843-691; Fax: +44-(0) 1865-843-958; E-mail: sm.wilkinson@elsevier.co.uk; Website: http://www.elsevier.nl/locate/gcte99

6th International Meeting, IGU Commission on Land Degradation and Desertification (COMLAND), Perth, Australia, September 20-28, 1999.
Contact: Dr. Arthur Conacher, Dpt. of Geography, University of Western Australia, Nedlands, WA 6907, Australia. Tel.: +61-08-9380-2705; Fax: +61-08-9380-1054; E-mail: ajconach@geog.uwa.edu.au; Internet: http://www.general.uwa.edu.au/u/dpannell/comland2.htm.

Silicon in Agriculture Conference, Fort Lauderdale, Florida, USA, September 26-30, 1999.
Information: Ms. Nikki Rogers, University of Florida Office of Conferences, Tel: +1-352-392-5930; Fax: +1-352-392-9734; E-mail: njr@gnv.ifas.ufl.edu; Website: http://www.ifas.ufl.edu/~conferweb/.

XIV International Symposium on Environmental Biogeochemistry, September 26-October 1, 1999, Huntsville, Ontario, Canada.
Prof. Grant Ferris, Dpt. of Geology, University of Toronto, 22 Russell Str. Toronto, Ontario M5S 3B1, Canada. Tel: +1-416-978-0526; Fax: +1-416-978-3938. E-mail: ferris@mica.geology.utoronto.ca; Website: http://www.rpi.edu/locker/23/001023/ISEB.html.

3rd Conference of the IUSS 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

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

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

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: +91-11-575-5529; E-mail: icmnr@bic-iari.ren.nic.in.

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

3rd *Symposium* ISMOM2000 »*Soil Mineral-Organic Matter-Microorganisms Interactions and* Ecosystem Health«, Naples and Capri, Italy, May 23-27, 2000.
Information: Prof. Antonio Violante, Chairman, ISMOM2000, Dipartimento di Scienze Chimico-Agriarie, Università di Napoli »Federico II«, Via Università 100, 80055 Portici (Napoli) Italy; Tel: +39-081-7885317; Fax: -7755130; E-mail: violante@unina.it.

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

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

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

11th International Working Meeting on Soil Micromorphology, Amsterdam, the Netherlands and Gent, Belgium, August 16-31, 2000.
Information: Dr. J.J.M. van der Meer, Fysisch Geografisch en Bodemkundig Laboratorium, University of Amsterdam, Nieuwe Prinsengracht 130, 1018 VZ Amsterdam, The Netherlands. Tel: +31-20-525-7451; Fax: -7431; E-mail: j.j.m.meer@frw.uva.nl.

International Symposium on Microbiology of Composting, Innsbruck, Austria, October 18-20, 2000.
Information: Prof. Heribert Insam, Inst. of Microbiology, University of Innsbruck, Technikerstr. 25, 6020 Innsbruck, Austria; Tel.: +43-512-507-6009; Fax: +43-512-507-2928; E-mail: submeco@uibk.ac.at.

2001

5th International Conference on Geomorphology, of the International Association of Geomorphologists, Tokyo, Japan, August 23-28, 2001.
Information: Prof. Kenji KASHIWAYA, Secretary, 5th ICG, Laboratory for Hydro-Geomorphology, Department of Earth Sciences, Kanazawa University, Kakuma, Kanazawa 920-1192; Japan, Tel. and Fax: +81-76-264-5735; E-mail: kashi@kenroku.kanazawa-u.ac.jp.

INTERNATIONAL TRAINING COURSES
COURS INTERNATIONAUX DE FORMATION
INTERNATIONALE FORTBILDUNGSKURSE

The University of Reading, UK, offers a **6-week course on »Plant and Soil Analysis«** for laboratory managers, supervisors and senior technicians, from August 16 – September 24, 1999.
Information: Dr. I. Mueller-Harvey, Faculty Analytical Laboratory, The University of Reading, P.O. Box 236, Reading RG6 6AT, UK; Fax: +44-118-935-2421; E-mail: i.mueller-harvey@reading.ac.uk.

The International Institute for Land Reclamation and Improvement (ILRI), Wageningen, The Netherlands, organizes its

38th International Post-Graduate Course on Land Drainage from August 23 – December 10, 1999.
Information: ILRI, Lawickse Allee 11, P.O Box 45, 6700 AA Wageningen, The Netherlands; Tel: +31-317-490-144; Fax. +31-317-417-187, E-mail: ILRI@ILRI.nl; Website: http://www.ilri.nl.

International Course on Management of Agricultural Information Services, IAC and KIT, Wageningen Amsterdam, the Netherlands, 13-24 September ,1999.
Information: International Agricultural Centre, Information Services, 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; Internet: www.IAC-agro.nl.

Post-graduate Courses in Soil Science, Plant Production, and Ecology. MSc and PhD Degree, Universidad de Buenos Aires, Argentina.
Language: Spanish
Information: Ing.Agr. Marta E. Conti, Facultad de Agronomía. UBA, Escuela para Graduados, Av. San Martín 4453. (1417) Buenos.Aires, Argentina. Fax: (+541)522-1687. E-mail: conti@ifeva.edu.ar and epg@ifeva.edu.ar.

The University of Gent and the Free University of Brussels, Belgium offer:
International Interuniversity Post-Graduate Programmes in Physical Land Resources. Diploma and Master Courses,
Information: Prof.Dr. G. Stoops, Chairman Steering Committee, Programme Secretariat, Krijgslaan 281, B-9000 Gent, Belgium; Tel: +32-9-264-46-18; Fax: +32-9-264-49-91; E-mail: PLRprog.adm@rug.ac.be.

The Interactive Remote Instructional System (IRIS®) is an internationally recognized distance learning program in the hydrologic and environmental sciences and genineering. This porgram provides continuing education and professional development for scientists, engineers and administrators working in the environmental field. 12-week courses are offered on:

- **Ground Water Hydrology**
- **Ground Water Flow Modeling using MODFLOW**
- **Aquifer Test Analysis/Well Hydraulics**
- **Soil and Ground Water Contamination**
- **Site Remediation**
- **Environmental Geophysics**

Information: The Center for Ground Water Management, Wright State University, Dayton, Ohio 45435-0001; Tel: +1-937-775-3648; Fax: +1-937-775-3649; E-mail: IRIS19@wright.edu; Web: http://geology.wright.edu/iris.html.

The University of Reading, Department of Agriculture, offers 6 week courses for Laboratory Managers, Supervisors and Senior Technicians in:
- Plant and Soil Analysis (August 16 - September 24, 1999)
- Animal Feed and Products Analysis (August 14 - September 2000)
Information: Dr I Mueller-Harvey, Faculty Analytical Laboratory, Department of Agriculture, The University of Reading, Earley Gate, P O Box 236,
Reading, RG6 6AT, U.D. Tel +44-118 931-6619, Fax +44-118 935-2421. Telex +44-118 984-7813; E-mail: i.mueller-harvey@reading.ac.uk

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

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

The Katholieke Universiteit Leuven and the Vrije Universiteit Brussel offer, among others a:
2-year Master'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
- Plant Production
- Animal Production
- Environment
- Agricultural Marketing
Information: Instituto Agronómico Mediterráneo de Zaragoza; Apartado 202, 50080 Zaragoza, Spain; Tel: (34-76)57-60-13; Fax: (34-76)57-63-77

ITC Postgraduate Diploma and MSc Degree Courses, Enschede, The Netherlands,
ITC offers a wide range of courses for example:
- MSc. Degree Courses: Geoinformation for Sustainable Soil Resource Management
- MSc Degree Course: Rural Land Ecology – Agriculture, Conservation and Environment
- Professional Master Degree Course: Rural Land Ecology Survey

- Msc Degree Course: Environmental Systems Analysis and Monitoring

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

For information on the **ITC's Natural Resources Management Programme,** please contact: Drs. T.M. Loran, Tel: +31-53-4874545; Fax: +31-53-4874399; E-mail: lorantm@itc.nl.

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

Silsoe College, Bedford, England, offers a wide range of post-graduate courses and studies, e.g.: **Agribusiness Management and Technology (MSc.), Agroforestry (MSc.), Land Resource Management and Planning (MSc. and Postgraduate Diploma programmes), Engineering for Rural Development (MSc.), Agricultural Engineering (Agrochemicals Application Technology - MSc., etc.), Management for Agricultural Development (MSc.), Agricultural and Food Marketing (MSc. and PD), Agricultural Water Management (MSc.), Crop Production Technology (MSc.), Information Technology (MSc.),** etc.

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

External Programme, specialised courses on Managing Agricultural Development, Environmental Management in Agricultural Development, Kent, UK.

Information: The External Programme, **Wye College, University of London,** Ashford, Kent TN25 5AH UK (Tel.: 0233 812401; Fax: 0233 813320; Telex: 94017832 WYEGG).

ICRA, Centre International pour la Recherche Agricole orientée vers le Développement - International Centre for Development Oriented Research in Agriculture

Formation post-académique pour de jeunes chercheurs agricoles des pays en voie de développement et leurs collègues des pays développés qui ont une expérience de travail dans des pays en voie de développement.

Post-academic training for young agricultural scientists from developing countries and their colleagues from developed countries who have some working experience in developing countries.

Information: The Director of ICRA, P.O.Box 88, 6700 AB Wageningen, The Netherlands. Fax: -31-8370-27046; 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

The University of East Anglia, Norwich, UK, offers a specialist training for development. Tailor-made courses are organized in different fields, e.g.:

- **Natural resource policy and management**
- **Agroforestry and cropping systems**
- **Farming systems research**
- **Land use planning**
- **Rangeland, livestock and pastoralism**
- **Fisheries assessment and management**

- **Demographic and population studies**
- **HIV/AIDS impact assessment**
- **Industrial development and policy**

and others

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

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

The Soil Science Department, Faculty of Agriculture, of the Minia University, Minia, Egypt, organizes the following International Courses:
- **International Course on Soil and Plant Analysis** (in cooperation with theRoyal Tropical Institute, Amsterdam, The Netherlands;
- **International Training Course for Extension Workers on Soil and Water Problems;**
- **International Training Course on Water Analysis for Agricultural Purposes;**

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

ILRI
- International Course on Water Management in Irrigation Systems, The Netherlands, 4 months.

  Information: ILRI, see below.
- International Course on Land Drainage, The Netherlands, 4 months.

  Information: ILRI, see below
- International Course on Land and Water Management, The Netherlands, 3 weeks.

Information: ILRI, Training Coordinator, P.O.Box 45, 6700 AA Wageningen, The Netherlands.
Fax: +31-317-417187; E-mail:ilri@ilri.nl

Wageningen Agricultural University
MSc Course Soil and Water, The Netherlands, 17 months.
Wageningen Agricultural University, Laboratory of Soil Science & Geology, P.O.Box 37, 6700 AA Wageningen, The Netherlands. Fax: +31-317-482419; E-mail: michel.mulders@bodlan.beng.wau.nl.

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

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

- Water Management, United Kingdom, 3 months.

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

CNEARC, France

Techniques d'Irrigation. France, 5 semaines.

Centre National d'Etudes Agronomiques des Régions Chaude (CNEARC), B.P. 5098, F-340033 Montpellier Cedex 01, France.

Fax: +33-467-410232.

Deutsche Lehranstalt für Agrartechnik

Irrigation and Drainage Management Training, Germany, 2 months.

Deutsche Lehranstalt für Agrartechnik, Training Centre, Krefelder weg 41, D-47906 Kempen, Germany.

Fax: +49-2152-205799; Email: deula@t-online.de.

CATIE

- Desarrollo rural basado en el manejo de ecosistemas naturales tropicales, costa rica, 1 semanas.
- Gestión Ambiental. Costa Rica, 2 semanas.

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

CIRAD

Relation Elevage/Agriculture pour la Gestion des Terroirs, France, 1 mois.

Information: CIRAD, Dép. d'Elevage et Médecine V_térinaire, B.P. 5053, F-34000 Montpellier, France. France: +33-467-593797; E-mail: devallet@cirad.fr.

Université des Sciences Agronomiques

Diplôme en Gestion et Développement des Milieux Intertropicaux, Belgique, 1 année.

Information: Université des Sciences Agronomiques, Passage des Déportés 2, B-5030 Gembloux, Belgique.

Fax: +32-81614544; E-mail: boudoin@fsagx.ac.be.

INSTITUTO NACIONAL DE CIENCIAS AGRICOLAS, Cuba

Maestría »Nutrición de las plantas y biofertilizantes«

Duración: 2 años

Fecha de comienzo: febrero

Precio: 2500.00 USD

Coordinador: Dr. Ramón Rivera Espinosa

Para más información diríjase a: Dr. Walfredo Torres de la Noval, Dirección de Educación y Relaciones Públicas, Instituto Nacional de Ciencias Agrícolas (INCA), Gaveta Postal 1, San José de las Lajas, La Habana, Cuba CP 32700; Telf: (53)(64)6-3867, 6-3773; Fax: (53)(64)6-3867; E-mail: inca@ceniai.cu; inca@reduniv.edu.cu

Master Courses in Applied Environmental Geoscience at the University of Tuebingen, Germany

Information: Dr. C.I. McDermott M.Sc. (AEG Course Administrator) Chair of Applied Geology, Sigwart Str. 10, 72074 Tuebingen, Germany; E-mail: chris.mcdermott@uni-tuebingen.de; Tel: (+49) (0)7071-2978921; Fax: (+49) (0)7071-5059.

99

IUSS COOPERATING JOURNALS/JOURNAUX COOPERANTS DE L'UISS/IBU 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 IUSS 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 IUSS 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 IUSS 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 IUSS members: Dfl 420.00

5. JOURNAL OF PLANT NUTRITION & SOIL SCIENCE/ZEITSCHRIFT FÜR PFLANZENERNÄHRUNG UND BODENKUNDE, international journal covering all aspects of plant nutrition and soil science.
Size: 6 issues per year.
Publisher: Wiley-VCH, Weinheim, Germany.
Editors-in-chief: Prof.Dr. W. Fischer, Hannover, Germany, Prof.Dr. H. Beringer, Hofgeismar, Germany.
Personal subscription rate for IUSS members: 115.00 DM, including postage.

6. PEDOBIOLOGIA, international journal, focusing on soil biology, especially on soil zoology and microbiology.
Size: 6 issues per year, in 1 volume with 450 pages.
Publisher: G. Fischer, Jena, Stuttgart, New York.
Editors-in-chief: Prof.Dr. M. Schaefer and Dr. J. Schauermann, Göttingen, Prof.Dr. G. Weigmann, Berlin.
Subscription rate 1998: DM 578.00, plus postage

7. 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 IUSS members: £ 74.00

8. SOIL TECHNOLOGY, journal concerned with applied research and field applications on soil physics, soil mechanics, soil erosion and conservation, soil pollution, soil restoration, drainage, irrigation and land evaluation.
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 IUSS members (available from the publisher only): Dfl 150,— per year (including postage/handling)

Cooperating Journals

Journaux Cooperatives

ISSS-AISS-IBG

Kooperierende Zeitschriften

APPLICATION FOR SUBSCRIPTION/DEMANDE D'ABONNEMENT/ ANTRAG AUF ABONNEMENT

From: Family name: .....

First name(s) and title(s): .....

IUSS membership No.: .....

Full address: .....

.....

.....

.....

Telephone: ..... Fax: .....

To: P.U.Lüscher
Treasurer IUSS
WSL, Zuercherstr.111
CH-8903 Birmensdorf/Switzerland

I should like to take a personal subscription for the following Cooperating Journal(s) (price rate 1997):

- ❍ Arid Soil Research and Rehabilitation (US$ 105.00)
- ❍ Biology and Fertility of Soils (DM 597.60)
- ❍ Catena (Dfl. 375.00)
- ❍ Geoderma (Dfl 420.00)
- ❍ Journal of Plant Nutrition and Soil Science (DM 115.00)
- ❍ Pedobiologia (DM 94.00 + postage)
- ❍ Soil Biology & Biochemistry (£ 74.00)
- ❍ Soil Technology (Dfl 150.00)

I took note that the payment(s) will be made directly to the publisher(s) of the Journal(s) and not to the IUSS. I will receive respective instructions from the publishers.

Date: Signature:

For official use only:
- membership status: .....
- to Cooperating Journal(s): .....

NEW PUBLICATIONS
NOUVELLES PUBLICATIONS
NEUE VERÖFFENTLICHUNGEN

Analyse physique des sols. Méthodes choisies. C. Mathieu, F. Pieltain. TEC&DOC Lavoisier, Paris, 1998, 256 p.
Analyse physique des sols est avant tout un manuel pratique décrivant des analyses et des mesures physiques des sols réalisées soit in situ, soit en laboratoire. Ces analyses et méthodes sont rassemblées en 7 grandes rubriques:
- le prélèvement et la préparation des échantillons de terre;
- l'analyse granulométrique;
- les mesures de porosité;
- les mesures de la stabilité structurale;
- les mesures des limites et indices d'Atterberg et de la limite de retrait;
- les tests de filtration de l'eau;
- les mesures des humidités caractéristiques.

Pour chaque rubrique, les auteurs rappellent les définitions et les concepts des mesures. Ils exposent les méthodes choisies et le matériel nécessaire avec les modes opératoires en précisant les limites des méthodes, leurs avantages et leurs inconvénients. Des exemples de résultats et de présentation de résultats sont donnés.
Analyse physique des sols est destiné à tous ceux qui doivent choisir et réaliser des analyses physiques des sols: chercheurs en sciences de la terre, enseignants et étudiants en pédologie et en agronomie, professionnels de l'agriculture, de l'environnement et de la protection des milieux naturels. Il sera également précieux pour les profrssionnels des laboratoires agréés d'analyses.
L'ouvrage peut être utilisé aussi bien pour l'analyse des sols en régions climatiques qu'en zones méditerranéennes, arides ou tropicales.
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.
Prix: FRF 295

The following ISSS proceedings is still available:

Assessment of Soil Surface Sealing and Crusting. Proceeding of the Symposium held in Ghent, 1985, 372 p. Editors: F. Callebaut, D. Gabriels and M. de Boodt.
Price: USD 15, including mailing charges.
Orders to: Dr. D. Gabriels, State University of Ghent, Coupure Links 653, B-9000 Gent, Belgium. Fax: +32.9.2646247. E-mail: donald.gabriels@rug.ac.be.

MicroLEIS on the Internet. Integrated System for Land Datatransfer and Agro-ecological Land Evaluation. PC Software and Documentation. Version 1998 (bilingual, English/Spanish).
This Internet edition of **MicroLEIS** combines all the facilities of Version 4.1, 1996, with the convenience and advantages of the World Wide Web. The Spanish and English software+documentation are located on the Web, and have been developed and refined bearing in minds the possibilities of the information and knowledge seeker.

MicroLEIS system provides an orderly arrangement of rural resources data through geo-referenced databases (including the SDBm soil profile database from FAO-ISRIC-CSIC) and computerised land evaluation models (quality/vulnerability assessment), having the following major characteristics: engineering of information and knowledge through the use of a variety of database and land evaluation techniques; scaling-up of process knowledge from the micro-scale to the landscape-scale (regional, national and continental); evaluation of the following study-units: place (climate), soil (site+soil), land (climate+site+soil) and field (climate+site+soil+management); use of monthly meteorological data and standard information as recorded in routine land surveys; integrated agro-ecological approach, combining biophysical data with agricultural management experience and incorporating the sustainability concept; prediction of global change impacts by creating hypothetical scenarios; and generation of data output in a format readily accepted by GIS packages. The **MicroLEIS** package is an interactive software with comprehensive documentation for anyone researching, planning or teaching the sustainable use and management of rural resources, with especial reference to the Mediterranean regions. Its installation and use are quite easy.
MicroLEIS on the Internet can be viewed and printed in HTML format. The full content of the documentation is available cost free by visiting the homepage, and the full version of the software (installation disks and source codes), which requires registration, can be downloaded from this URL site:
http://www.irnase.csic.es/microlei.htm
Also, this version of **MicroLEIS** is available on CD-Rom.
More information: Prof D. de la Rosa, Land Evaluation Unit, Instituto de Recursos Naturales y Agrobiologia de Sevilla, CSIC, P.O.Box 1052, E-41080 Sevilla, Spain. E-mail: diego@irnase.csic.es.

Terminology for Integrated Resources Planning and Management. K. Choudhury and L.J.M. Jansen, editors. FAO, Rome, 1998, 69 p.
An integrated approach to the planning and management of land resources has been developed by FAO since its appointment as Task Manager for the implementation of Chapter 10 of Agenda 21. The approach emphasizes two main characteristics: 1.: the active participation of stakeholders at national, provincial and local levels in the process of planning and decision making; and 2.: the integration of technical, institutional, legal and socio-economic aspects. To achieve the implementation of land-use planning and land management cooperation among experts from the disciplines involved and integration of the respective results are required in order to identify and evaluate all biophysical, socio-economic and legal attributes of the land. The glossary aims to contribute to the development of a

common technical language in land resources planning and management. The terms, methods and concepts used by the different sectors involved should be understood by all partners in an identical way, independent from their backgrounds and professional experiences. The terms and definitions which are included encompass conservation and management of soil, (fresh-) water and vegetation; climate; farming systems; crop production, livestock and fish production; land tenure and sustainable development.
Requests to: Chief, Soil Resources, Management and Conservation Service (AGLS), FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy. Fax: +39-6.57056275; E-mail: Parviz.Koohafkan@fao.org.
Information on this publication can be obtained from the Internet, either:
http://www.fao.org/waicent/faoInfo/Agricult/AGL/AGLS/infolulc.htm, or
http://www.fao.org/waicent/faoInfo/SUSTDEV/Eldirect/Elre0019.htm

Sustainable Land Management. Guidelines for Impact Monitoring. Workbook & Toolkit. K. Herweg, K. Steiner and J. Slaats. Centre for Development and Environment, Berne, 1998.
These guidelines have been developed as a joint effort of many development agencies. The contents has been compiled from published and non-published documents and from discussions with colleagues from numerous organisations experienced in Sustainable Land Management (SLM). There are already a number of useful guidelines concerned with Impact Monitoring (IM) in general. Most documents deal with general issues and leave many questions open to the user who is looking for more specific information. Relating impact monitoring guidelines to an important topic (e.g. SLM) allows more specific information and provides additional and more practical guidance. SLM as a trans-sectoral theme, which includes ecological, economic, social and political aspects from local to national level, reflects an important part of sustainable development and is not too narrow in focus. Using SLM as a point of departure, the IM procedure can be adapted more easily to other important development issues, such as education, health, etc. The SLM-IM Guidelines presented here have been created as a set of working documents. The four modules can either be used as a set to conduct a complete SLM-IM procedure, or they can be used selectively. To improve the user-friendliness and quality of the Guidelines, a test phase during which the Guidelines will be applied, discussed and improved will be carried out. The authors hope that these Guidelines will continue to be developed in an interactive process. All users with development organisations and projects are invited to report their experiences and suggestions to the authors.
For copies, please apply to: Dr. Karl Herweg, CDE, Institute of Geography, University of Berne, Hallerstrasse 12, CH-3012 Berne, Switzerland. Fax: +41-31.6318544. E-mail: herweg@giub.unibe.ch.

Soil Organic Matter and Organic Residue Management for Sustainable Productivity. ISSS Bulletin 19. T.D. Biswas, G. Narayanasamy, editors. Indian Society of Soil Science, New Delhi, 1998, 164 p.
This publication contains the papers presented at a symposium of the Indian Society of Soil Science in October 1996. Different aspects of soil organic matter and organic residue management are discussed in 13 papers. The studies reported are mostly concerned with India, but will be of interest to other regions as well.
Requests to: Indian Society of Soil Science, Division of Soil Science and Agricultural Chemistry, Indian Agricultural Research Institute, New Delhi-110012, India. Fax: +91 11.5755529; E-mail: soilsoc@nde.vsnl.net.in.

Soil and Water Conservation. Challenges and Opportunities. 8th International Soil Conservation Conference. L.S. Bhushan, I.P. Abrol and M.S. Rama Mohan Rao, editors. Volume 1 and 2. Oxford & IBH Publishing Co., New Delhi, 1998, xix + 1700 p. (Volume 1 and 2). ISBN Vol. 1: 81-204-1080-3; Vol. 2: 81-204-1081-1; Set: 81-204-1082-x. Hardcover.
Materials for these two volumes were presented of the 8th ISCO Conference held in New Delhi, December 1994. The conference was organized by the Indian Association of Soil & Water Conservationists, to assess the challenges pertaining to soil and water conservation and examine opportunities for recommending research and developmental strategies to stem degradation and bringing about sustainability. The conference theme was in line with the Rio Declaration (1992) of the UN Conference on Environment and Development. The conference was attended by 347 delegates from 43 countries. In all 166 papers were presented on different topics in 30 technical and 4 plenary sessions. It was realized that due to increasing population pressure, food shortage and other socio-economic compulsions, marginal and fragile land is being brought under cultivation in many countries. The programme emphasized the need to understand degradation processes, consequences and rehabilitation strategies. A large number of papers dealing with transfer of technology, people's participation covering the entire spectrum of soil and water conservation appeared in appreciation of traditional technologies and bottom up approach for meeting the requirement of mankind in the next few decades. These volumes contain 153 revised and edited papers presented at this ISCO-event.
Price: USD 145; NLG 295.
Orders to: Indian Association of Soil & Water Conservationists, 218 Kaulagarh Road, Dehra Dun 248 195, India. Fax: +91-135.754213; E-mail: cswcrti@x400.nicgw.nic.in *or* A.A. Balkema Publishers, P.O.Box 1675, 3000 BR Rotterdam, The Netherlands. Fax: +31-104135947; E-mail Balkema@Balkema.nl.

Soil Organisms and Soil Resource Management. Special Issue of Applied Soil Ecology, vol. 9, nos. 1-3, September 1998. C.A. Edwards and J.P. Curry, editors-in-chief. Elsevier, Amsterdam, Lausanne, 1998, viii + 546 p. ISSN 0929-1393.
This issue contains a selection of the papers presented at the XII International Colloquium on Soil Zoology which was held in Dublin on 22-26 July, 1996. The Colloquium is held every 4 years and is the main scientific

meeting of the Soil Zoology Sub Commission of the International Union of Soil Science. The overall theme of the XII Colloquium was 'Soil Organisms and Soil Resource Management«, and 270 oral and poster presentations on many aspects of soil biology and ecology were made in the five sessions of the Colloquium. The main topics addressed were the biodiversity of soil biota, their role in ecosystem processes, influence on soil properties, response to agricultural and other forms of land use and their role as bioindicators of environmental impacts. This volume contains the papers accepted by the Colloquium Editorial Board and approved for publication by the Editors of the journal.
Orders to: Elsevier Science, Customer Support Department, P.O.Box 211, 1000 AE Amsterdam, The Netherlands. Fax: +31 20-485-3432. E-mail: nlinfo-f@elsevier.nl.

Development and Implementation of Soil Conservation Strategies for Sustainable Land Use. (vol. 46, nos. 1 and 2) K. Auerswald, editor.
This issue contains selected and edited papers presented at the Second International Congress of the European Society of Soil Conservation, held in Freising-Weihenstephan, September 1996. The papers focus on single issues and give an impression about the width, ranging from ecological to economical and technological topics form western and eastern Europe, Scandinavia and the Mediterranean regions. K. Auerswald is guest editor.

Soil & Tillage Research - incorporating Soil Technology, is the name of the journal reflecting the merger between the two journals. W. Reeves is editor-in-chief and M. Kutílek is co-editor-in-chief. The journal will be published in five large format volumes in 1998. ISSN 0167-1987.
Three special issues have appeared: **State of the Art in Soil Physics and in Soil Technology of Anthropic Soils** (vol. 47, nos. 1 and 2), which contains selected and edited papers presented at four symposia held during the World Congress of Soil Science, August 1998, in Montpellier. Guest editors are M. Kutílek, R. Horn, B.E. Clothier and A.J. Koolen; **Tillage and Crop Management Impacts on Soil Carbon Storage** (vol. 47, nos. 3 and 4), which stems from a symposium organized to summarize and synthesize information on soil organic matter from long-term agricultural field experiments across North America. K. Paustian, E.T. Elliott and M.R. Carter are guest editors.
For further information about contents and ordering: www.elsevier.nl/locate/still, *or* Elsevier, P.O.Box 211, 1000 AE Amsterdam, The Netherlands. Fax: +31-20.4853432; E-mail: nlinfo-f@elsevier.nl.

Soil Biota and Global Change. Thematic Issue Global Change Biology (vol. 4, Number 7, 1998, 699-796. Blackwell Science. ISSN 1354-1013
Soil contains approximately twice the amount of carbon stored in the atmosphere. The interactive forces of Global Change, especially changes in land cover and land use, and in expected changes in global climate usually decrease the soil's storage capacity, resulting in a net carbon emission to the atmosphere. The degree to which this is happening depends largely on location (and hence soil, climate and vegetation type), the nature of the change and scale of analysis. In all cases, however, the impacts are mediated by the soil biotic community, and its response to these changes will determine future carbon fluxes from the soil system. The series of papers in this Thematic Issue consider the varied aspects of the impacts on soil biota and begin to explore the implications for ecosystem functioning. They thereby build on the earlier issue of *Global Change Biology* (volume 3, number 4, August 1997) which was devoted to microbially mediated atmospheric change by considering the soil's biotic community in a wider sense, and its interaction with a range of global change driver. A meeting was convened in October 1996 in Paris, entitled 'The Functional Role of Soil Biota under Global Change: An Ecosystem-Level Perspective'. Background papers on several key topics were presented in plenary session and Working Groups than helped to refine the texts; the final papers are published in this Thematic Issue.
Information on this journal can be accessed at: http://www.blackwell-science.com/products/journals/gcb.htm.
Orders to: Blackwell Science, P.O.Box 88, Oxford OX2 0NE, UK. Fax: +44-1865.206219; E-mail: journals.cs@blacksci.co.uk.

Proceedings of International Conference on Soil Condition and Crop Production, Gödöllö, Hungary, September 1998, Magyar Talajmuvelok Társasága-Hungarian Branch of ISTRO, 1998, 237 p. and on internet.
This conference provided an open forum for the discussion of priority problems and new achievements in the various technical, economical and environmental aspects of different soil tillage systems and possibilities of preventing and moderating soil degradation; impacts of conservation tillage practices on crop growth, yields, soil properties, water and wind erosion processes; relationships between soil physical parameters and rational plant nutrition, as well as the aspects of soil and water pollution. The proceedings contain the texts of five plenary papers and 52 oral and poster presentations. They are mostly concerned with Central Europe. The proceedings can be viewed at **http://www.fa.gau.hu/dep/fmtt/huistro**.

Using scientific and indigenous knowledge at different scale levels to develop sustainable agriculture *in the Sudano-Sahelian zone of West Africa.* Special Issue of the Netherlands Journal of Agricultural Science, Vol. 46, no. 1, May 1998, 138 p. Royal Society of Agricultural Sciences, Wageningen. ISSN 0028-2928.
The purpose of this special issue is to contribute to the development, in partnership, of sustainable land-use systems that increase food production in West Africa. The papers in this special issue cover three main topics: i). methodological aspects of research prioritisation, basic data collection and spatial variability; ii). alternative or improved technologies and iii) integrated studies with computer models. The more than 30 sites in the

papers are in the Sudano-Sahelian zone from Senegal up to Niger and Nigeria.
Orders to: KLV, P.O.Box 79, 6700 AB Wageningen, The Netherlands. Fax: +31-317.483976. Homepage: www.gcw.nl/kiosk/njas.

International Symposium on Soil, Human and Environment Interactions. Zhihong Cao, editor. China Science & Technology Press, Beijing, 473 p. ISBN 7-5046-2526-4. Softbound.
This publication contains the papers and abstracts of presentations given at the International Symposium on Soil, Human and Environment Interactions, which was held in Nanjing, May 1997. It was organized by the Institute of Soil Science, the Laboratory of Material Cycling in Pedosphere, the Soil Science Society of China and the Commission VII, Soils and the Environment of the IUSS, and was attended by 140 scientists from 21 countries. The conference provided a forum to discuss the progress of soil sciences on soil resources and management, soil and environmental degradation and how to better use the soil for sustainable development.
Requests to: Prof. Qiguo Zhao, Institute of Soil Science, Chinese Academy of Sciences, P.O.Box 821, Nanjing 210008, P.R. of China.

Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. N. Scialabba, editor. Food and Agriculture Organization of the United Nations, Rome, 1998, xi + 255 p. ISBN 92-5-104132-6. Paperback.
These guidelines address the incorporation of agriculture, forestry and fisheries planning into integrated coastal area management (ICAM). The external or internal environmental effects that each of these sectors generate, as well as the environmental impacts originating outside these sectors and affecting them need to be taken into account in sector plan formulation. These guidelines examine issues specific to the agriculture, forestry and fisheries sectors, and suggest the processes, information requirements, policy directions, planning tools and possible interventions that are necessary for ICAM. These guidelines advocate coordinated sectoral management according to commonly agreed goals and objectives for coastal area development. Negotiation, conflict resolution, and participatory planning are central elements.
Requests to: FAO Bookshop, Viale delle Terme di Caracalla, 00100 Rome, Italy. Fax: +39-6-57055155; E-mail: publications-sales@fao.org.

Data Book of Desertification/Land Degradation. CGER—DO13-'97. Hiroshi Kadomura, editor in chief. Center for Global Environmental Research. National Institute for Environmental Studies. Environment Agency of Japan, 1997, 68 p. ISSN 1341-4356.
This book with Japanese and English texts mainly contains the maps published in the UNEP World Atlas of Desertification, first edition, 1992, which is mainly based on ISRIC material in the framework of the Global Assessment of Human-Induced Soil Degradation Project (GLASOD). It also gives information about some other related activities, e.g. the Réseau International d'ONG sur la Désertification (RIOD) and the UN Convention to Combat Desertification.
Requests to: Center for Global Environmental Research, 16-2 Onogawa, Tsukuba, Ibaraki 305, Japan. Fax: +81-298-58-2645; e-mail: cgerdb@nies.go.jp. Homepage: www.cger.nies.go.jp.

Guidelines for quality management in soil and plant laboratories. FAO Soils Bulletin 74. FAO Land and Water Development Division, Rome, 1998, 143 p. ISBN 92-2-104065-6.
This Bulletin, compiled by L.P. van Reeuwijk of the International Soil Reference and Information Centre (ISRIC) at Wageningen, sets out guidelines for quality management in soil and plant laboratories for the use of both heads and staff, and are aimed at improving laboratory performance. A number of essential basic measures are introduced to be adopted in a laboratory. These include standard operating procedures and protocols, organization and personnel, facilities and safety, equipment and working materials, analytical or testing systems, basic statistical tools, internal and external quality control, and reporting. Practical aspects such as the use of control charts, validation of own procedures, and rounding of results to the significant number of decimals are discussed. The book emphasizes the change in attitude and practices of all laboratory personnel with respect to quality assurance and control without substantial additional cost. The guidelines are based on the principles of Good Laboratory Practice. Many examples and model documents are included to facilitate the adaptation and adoption of procedures and documents.
Price: USD 20.
Requests to: FAO Sales Agents, or directly to Sales and Marketing Group, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy.
(Information also from ISRIC, P.O. Box 353, 6700 AJ Wageningen, the Netherlands. *E-mail:* soil@isric.nl)

Soil Research and Management in Papua New Guinea. Special issue of: Papua New Guinea Journal of Agriculture, Forestry & Fisheries, 1998. Vol 41 no. 1., 101 pp (Edited by A.E. Hartemink).
This special issue of the Papua New Guinea Journal of Agriculture, Forestry & Fisheries is dedicated to soil research in Papua New Guinea. It is authored by 13 soil scientists and the issue includes four review and four research papers. Papua New Guinea has a long and interesting history of soil research of which Geoff Humphreys gives an overview in the first paper of this issue. David Freyne describes in the second paper PNGRIS (Papua New Guinea Resource Information System) which contains digitized information on the natural resources, land use and population of the country. There is a large soil component in PNGRIS that, as the author shows, can be used for several purposes. David Radcliffe and Matthew Kanua used PNGRIS to estimate the cover of Andisols and they review the specific chemical and physical properties and management of these soils. Although Andisols cover a relative small area, they are extensively used for cultivation. Coffee is an

important source of income for one-third of the population in Papua New Guinea and Paul Harding and Potaisa Hombunaka review the nutritional aspects of the crop. They summarize many years of research conducted at the Coffee Research Institute and throughout other parts of the Papua New Guinea highlands. Research papers include a report on changes in soil properties resulting from continuous sugarcane cultivation. At last there are three papers on nutrient management under sweet potato which is the main staple crop in Papua New Guinea.

Orders to: Distribution officer, Publication section, DAL, P.O. Box 417, Konedobu NCD, Papua New Guinea. Price U$15 or Aus$20 (incl. airmail postage).

NEW JOURNALS, NOUVEAU PÉRIODIQUES, NEUE ZEITSCHRIFTEN

Agronomy Journal (ISSN 1435-645), Organ of the American Society of Agronomy; **Crop Science** (ISSN 1435-0653), Organ of the Crop Science Society of America; **Soil Science Society of America Journal** (ISSN 1435-0661), Organ of the Soil Science Society of America.

These three agricultural journals are now available as online electronic editions from Springer-Verlag. For further information, please contact the publishers via: **access@link.springer.de**, or fax: +49-62214872888. Webpages: **link.springer.de**, or: **link.springer-ny.com**.

Regional Environmental Change Journal. Natural and Social Science Perspectives. Chief Editor: W. Salomons. Springer Publishing Company.

The aim of this journal is to focus on the interactions of human and natural systems at the regional level within the context of global change. Regions that will be considered are river catchments, estuaries, seas adjacent to deltas and wetlands as well as the interactions between cities and their environment. In particular multidisciplinary approaches to the study of these systems will be considered.

Information and submission of manuscripts: Prof.Dr. W. Salomons, GKSS, D-21502 Geesthacht, Germany. E-mail: wim.salomons@gkss.de.

Sciences of Soils. Online Journal for the Soil Sciences. Springer. Th. Hintze, editor-in-chief. ISSN 1432-9492. This online journal, established by Th. Hintze some years ago and freely accessible, is from January 1999 available at subscription only. Its features include: graphical features and coordinate sets for 3-D models; complete multimedia presentation which make it suited for scientific publishing.

For more information see: http://link.springer.de/link/service/journals/10112/index.htm

Subscription information 1999: Institution DEM 698 (Online+Annual Archive Print Edition+Annual Archive CD-ROM Edition); Individuals: DEM 198 (Online+Annual Archive CD-ROM Edition).

Orders to; Springer for Science, P.O.Box 503, 1970 AM IJmuiden, The Netherlands. Homepage: www.springer.de.

Geographical & Environmental Modelling. J. Pooler, editor. ISSN 1361-5939. Carfax Publishing Limited, Abingdon, 1997.

This new journal is fully refereed and provides an international forum for original research in the fields of geographical, ecological, environmental and spatial modelling. Approaches to modelling may be conceptual or mathematical, empirical or theoretical. In addition to the presentation of the results of empirical model building and testing, debates about purpose, methodology and relevance are supported. Efforts to remodel - to rethink the status quo - are provided for, as are efforts to remodel existing theories in a gender-sensitive manner. New and innovative approaches to modelling are encouraged.

Subscription rates: Institutional GBP 78; Personal GBP 30 (including postage/air speeded delivery).

Orders to: Carfax Publishing Ltd, P.O.Box 25, Abingdon, Oxfordshire OX14 3UE, UK *or to* Carfax Publishing, 875-81 Massachusetts Avenue, Cambridge, MA 02139, USA. By fax: +44 1235.401550. Homepage: www.carfax.co.uk; E-mail sales@carfax.co.uk.

International Union of Soil Sciences

Union Internationale de la Science du Sol

IUSS-UISS-IBU **Internationale Bodenkundliche Union**

❍ REGISTRATION FOR MEMBERSHIP/DEMANDE D'AFFILIATION/AUFNAHMEANTRAG

❍ CHANGE OR CORRECTION OF ADDRESS/CHANGEMENT OU CORRECTION D'ADRESSE/ANSCHRIFTENÄNDERUNG

❍ STATEMENT ON SPECIAL INTEREST/DECLARATION D'INTERETS SPECIAUX/ANZEIGE VON SPEZIALINTERESSEN

- Please return this form, completed at both sides, to the Treasurer of IUSS: Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Switzerland

- Veuillez bien renvoyer ce formulaire, complété des deux côtés, au Trésorier de l'UISS:Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Suisse

- Bitte senden Sie dieses Formular, ausgefüllt auf beiden Seiten, an den Schatzmeister der IBU: Peter U.Luescher, WSL, Zuercherstr.111, CH-8903 Birmensdorf/Schweiz

Membership number (if applicable)
Numéro d'affiliation (si applicable)
Mitgliedsnummer (wenn anwendbar)

* Surname (Apellido/Sobrenome)
* Nom de famille.....
* Familienname

First name(s) (Nombre/Nome) or initials, and title(s)
Prénom(s) ou initiales, et titre(s).....
Vorname(n) oder Initialen und Titel

Address (Institution & Dept., Street and no. P.O.Box, Town & Zipcode, Country)
Adresse (Institution et Département, Rue et no., Boîte Postale, Ville et Code Postal, Pays)
Anschrift (Institut & Abteilung, Strasse & No., Postfach, Postleitzahl, Stadt, Land)

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

Phone/Tel.:..... Fax:.....

Date..... Signature .....
Datum Unterschrift

---

* For composite names, please indicate first the part of the name to be used for listing it in alphabetical order
* Pour les noms composés, prière de marquer en premier lieu l'élément du nom à utiliser dans une liste alphabétique
* Bei zusammengesetzten Namen wird gebeten, zuerst den Teil des Namens anzugeben, der in einer alphabetischen Folge erscheinen soll

please turn over!/voir au verso!/bitte wenden!

Specially interested in the activities of/intérêt particulier pour les activités/besonders an folgenden Bereichen interessiert:

(C) Commissions/Commissions/Kommissionen

0	I	Soil Physics/Physique du Sol/Bodenphysik
0	II	Soil Chemistry/Chimie du Sol/Bodenchemie
0	III	Soil Biology/Biologie du Sol/Bodenbiologie
0	IV	Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/*Bodenfruchtbarkeit und Pflanzenernährung*
0	V	Soil Genesis, Classification and Cartography/Genèse du Sol, Classification et Cartographie/Bodengenetik, Klassifikation und Kartographie
0	VI	Soil Technology/Technologie du Sol/Bodentechnologie
0	VII	Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie
0	VIII	Soils and the Environment/Sols et l'Environnement/Boden und Umwelt

Subcommissions/Sous-commissions/Subkommissionen

0	A	Salt affected soils/Sols salins/Salzböden
0	B	Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
0	C	Soil Conservation and Environment/Conservation du Sol et Environnement/Bodenerhaltung und Umwelt
0	D	Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit UBS)
0	E	Forest Soils/Sols forestiers/Waldböden
0	F	Land Evaluation/Evaluation du Terrain/Landbewertung
0	G	Soil Remediation/Restitution des sols/Bodensanierung

Preferred language/Langue préférée/Gewünschte Sprache

0	English
0	Français
0	Deutsch
0	Espanol

Payment/Cotisation/Jahresbeitrag

Payment of the yearly due of US$ 12 or equivalent will be made:
La cotisation annuelle de 12 dollars E.U. ou leur équivalent sera versée:
Der Jahresbeitrag von US$ 12 oder Gegenwert wird bezahlt:

0 through the national society of/par l'intermédiaire de l'association nationale de/durch die nationale Gesellschaft von (country, pays, Land)

.....

0 by cheque (personnel cheque = 17 US$)
par chèque (chèque personnel = 17 dollars E.U.)
mit Scheck (Privatscheck = 17 US $)

0 by international money order/par mandat international/durch Banküberweisung

0 as Unesco coupons/sous forme de bons de l'Unesco/mit Unesco-Kupons

0 life membership/affiliation pour la vie/Mitgliedschaft auf Lebenszeit (US$ 300 or equivalent, after four years of regular membership/dollars E.U. 300 ou leur équivalent, après quatre ans d'affiliation régulière/US$ 300 oder Gegenwert, nach 4 Jahren Normalmitgliedschaft)

Account/Compte/Konto: Union Bank of Switzerland (UBS), CH-8903 Birmensdorf, ISSS (IUSS), 817338.61T

IUSS-UISS-IBU

MEMBERSHIP LIST
of the International Union of Soil Science

LISTE DE MEMBRES
de l'Union Internationale de la Science du Sol

MITGLIEDERVERZEICHNIS
der Internationalen Bodenkundlichen Union

Number of pages: approx. 150, size DIN A4
Price: 30 US$, including surface mail (airmail not possible)

I order ..... membership list(s) at a price of US$ 30.— each, and include a check/money order on the amount of ..... US$ for payment (dispatch of list only upon receipt of payment).
Please send the membership list to:

Name: .....

Address: .....

.....

.....

.....
signature

Please return this form to:

Dr. P. Luescher
Treasurer, IUSS
WSL, Zuercherstr. 111
8903 Birmensdorf
SWITZERLAND
Telefax: (+41)1-739-2215; E-mail: peter.luescher@wsl.ch

IUSS-UISS-IBU

CHANGE OF ADDRESS

If your address changes, please let us know in time, so that you will receive the IUSS Bulletin without delay.

In the case of a change of address, please fill in this important information:

Membership number: .....

Country: .....

Name: .....

New address: .....

.....

.....

.....

Tel./Fax.: .....

E-mail: .....

Please return this form to:

Dr. P. Luescher
Treasurer, IUSS
WSL, Zuercherstr. 111
8903 Birmensdorf
SWITZERLAND
Telefax: (+41)1-739-2215
E-mail: peter.luescher@wsl.ch

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

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

B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
Prof.Dr. S. Shoba, MSU, Dokuchev's Soil Institute, Pygevsky per 7, 109017 Moscow, Russia

C. Soil and Water Conservation/Conservation des Sols et des Eaux /Boden- und Wasserschutz
Prof.Dr. S.C.F. Dechen, Escola Superior «Luiz de Queiroz», Av. Padua Dias, 11 - C'x P 9, 13400 Piracicaba - SP, Brazil

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

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

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

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

CR Cryosols/Cryosols/Frostböden
Dr. C. Tarnocai, Centre for Land and Biological Resources Research, K.W. Neatby Bldg., Ottawa, K1A 0C6, Canada

DM World Soils and Terrain Digital Data Base/Carte Internationale Numérique des Sols et des Terrains/Digitalisierte Internationale Boden- und Landkarte (SOTER)
Dr. W. Sombroek, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands

FA Soil Organic Fertilizers and Amendments/Produits organiques d'engrais et d'amendement du sol/Organische Dünger und Bodenverbesserungsmittel
Prof.Dr. P. Sequi, Istituto Sperimentale per la Nutrizione delle Piante Via della Navicella 2-4, 00184 Roma, Italy

GC Soils and Global Change/Sol et Changements Globeaux/Böden und globale Änderungen
Prof.Dr. Rattan Lal, School of Natural Resources, The Ohio State University, 2021 Coffey Road, 210 Kottman Hall, Columbus, OH 43210, USA.

IC International Soil Convention/Convention Internationale des Sols/Internationale Bodenkonvention
Prof. Dr. Hans Hurni, Centre for Development and Environment (CDE), Institute of Geography, University of Berne, Hallerstr. 12, 3012 Berne, Switzerland.

LD Land Degradation and Desertification/Degradation des Sols et Désertification/Bodendegradation und Wüstenbildung
Dr. Hari Eswaran, USDA Natural Resources Conservation Service, POB 2890, Washington D.C. 20013, USA

LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/ Informationssysteme zur Landbewertung
Dr. J. Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ont. K1A 0C6, Canada

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

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

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

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

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

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

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

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

SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin
Prof. Dr. J. Låg, Dept. of Soil Sci.- AUN, P.O.Box 28, 1432 Ås-NLH, Norway.
Prof. Stein, Norway (co-chair)

SM Environmental Soil Mechanics/Mechanique du Sol et l'Environnement/Bodenmechanik und Umwelt
Prof.Dr. R. Horn, Inst. f. Pflanzenernährung u. Bodenkunde, Olshausenstr. 40, 24118 Kiel, Germany.

SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Grundwasserverschmutzung
Dr. J.W. Hopmans, Univ. of California, Dpt. of LAWR, Davis, CA 95616, USA

SU Soils of Urban, Industrial, Traffic and Mining Areas/Sols en Milieux Urbains, Industriels, d'Infrastructures et Miniers/Böden in städtischen, industriellen, Verkehrs- und Bergbaugebieten
Prof.Dr. W. Burghardt, Univ. GH Essen, Inst. of Ecology, Universitätsstr. 5, 45117 Essen, Germany

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

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

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

CST Committee on Standardization/Comité sur la Standardisation/Standardisierungskomitee
Prof.Dr. S. Nortcliff, Dept. of Soil Sci., Univ. of Reading, Whiteknights, P.O Box 233, Reading RG6 2DW, 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 Res., Univ.of California, Berkeley, Calif. 94720, USA.

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

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

Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften

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

IUSS MEMBERSHIP

Membership of the International Union of Soil Sciences is open to all persons engaged in the study and the application of soil science, through their membership in a National or Regional Soil Science Society. In those countries where no national society exists, individual membership is possible. Information can be obtained from the Treasurer (address see below). Non-membership subscription to the Bulletin, by library services, institutes, etc., is US$ 50.- annually.

ADHÉSION À L'UISS

Toute personne engagée dans l'étude et l'application de la science du sol peut adhérer à l'Union Internationale de la Science du Sol au travers de son adhésion à une Association Nationale ou Régionale. Une adhésion individuelle n'est possible que dans des pays où il n'existe pas d'association nationale. Des informations détaillées sont disponibles auprès du trésorier (adresse voir ci-dessous). L' abonnement au Bulletin sans adhésion, pour les institutions, services de bibliothèques etc., sont de 50 dollars US. par an.

IBU MITGLIEDSCHAFT

Durch die Mitgliedschaft in einer nationalen oder regionalen bodenkundlichen Gesellschaft können alle Personen, die auf dem Gebiet der Forschung und Anwendung der Bodenkunde arbeiten, Mitglieder der Internationalen Bodenkundlichen Union werden. Für Personen aus jenen Ländern, in denen keine nationale Organisation besteht, ist eine Einzelmitgliedschaft möglich. Für weitere Informationen wenden Sie sich bitte an den Schatzmeister (Adresse siehe unten). Der Preis für ein Abonnement der Mitteilungen ohne Mitgliedschaft, für Institute, Bibliotheken u.s.w. beträgt US$ 50 jährlich.

SOCIOS DE LA UISS

Todas las personas involucradas en el estudio y la aplicación de la ciencia del suelo pueden ser socios de la Union Internacional de la Ciencia del Suelo, siendo socios en una sociedad nacional o regional de la ciencia del suelo. Para personas de paises donde no hay sociedad nacional, es posible hacerse socio individual. Para mas información por favor dirijanse al tesorero (dirección v. abajo). Suscripciones al Boletín, sin ser socio, de parte de servicios de bibliotecas, institutos etc. son de 50 dolares EUA por año.

Account/Compt/Konto/Cuenta: Union Bank of Switzerland (UBS), CH-8903 Birmensdorf, IUSS, 817338.61 T
Treasurer/Trésorier/Schatzmeister/Tesorero: Peter U. Luescher, WSL, Zuercherstr. 111, CH-8903 Birmensdorf/Switzerland