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of the international society of soil science

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BERICHTE VON TAGUNGEN

XIth LATIN-AMERICAN CONGRESS OF SOIL SCIENCE AND 2ND CONGRESS OF THE SOIL SCIENCE SOCIETY OF CUBA

La Habana, Cuba, March 11-17, 1990

'Cooperation in the investigation and management of soils as a base for the development of Latin-America' was the theme of the 11th Latin-American Congress of soil science which was held together with the 2nd congress of the Soil Science Society of Cuba in the Palace of Conventions in Havana.

About 400 scientists from 20 nations participated in this event which was organized by the Soil Science Society of Cuba. The programme was based on general lectures by invited speakers, symposia, poster expositions and one-day field excursions.

The general lectures dealt with 'Studies of Latin-American soils with special regard to possible changes in the world climate', 'Acidification of tropical soils and its role in soil fertility', 'Micromorphology of soils' and 'The use of the US Soil Taxonomy in the classification of tropical soils'.

Five symposia concentrated on 'Actual problems in the genesis and classification of tropical soils', 'Spatial variability of soils', 'Actual problems in sol fertility and the use of fertilizers for the intensification of agricultural production', 'Degradation of soils through agricultural use with emphasis on salinization' and 'Soil information systems in Latin-America'. Moreover, a special symposium was held on 'Global Assessment of Soil Degradation (GLASOD) and the progress of the project 'Global

Soils and Terrain Digital Data Base (SOTER)' with special emphasis on the development of SOTER in Latin-America' (LASOTER).

The poster expositions (number of posters in brackets) were dedicated to 'Genesis, classification and cartography of soils' (55), 'Evaluation of soil fertility and the use of fertilizers in the main cropping systems' (79), 'Soil Chemistry' (42), 'Soil Biology' (14), 'Erosion, conservation, improvement of soils and management technics' (59), 'Soil Physics' (19), 'Water and plant production – interactions between water (irrigation and drainage) and nutrient supply' (17), other topics (10).

During the congress several one-day field excursions on soils and soil use systems such as plantations of citrus, sugar cane and pastures were organized as well as a visit of different soil research institutes. Simultaneously, a special symposium on characteristics and management of soils under sugarcane plantations was held. The post-congress excursions were cancelled.

During the congress a general assembly of Latin American soil scientists was held, concluding with the following results:

- A general secretariat of the Latin-American Society of Soil Science will be founded in Bogota, Columbia (for address, see elsewhere in this Bulletin).
- Spain will be accepted as a full member of the Latin-American Society of Soil Science.
- *The Latin-American Society of Soil Science supports unanimously the candidature* of the Soil Science Society of Mexico for the organization of the XVth International Congress of Soil Science in Acapulco/Mexico in 1994.
- Salamanca, Spain was proposed as venue of the XIIth Congress of the Latin-American Soil Science Society in 1993.

This 11th Congress of the Latin-American Soil Science Society and the 2nd National Congress of the Soil Science Society of Cuba were a success in regard to the remarkable standard of scientific communication, bringing together soil scientists from 20 nations. The Cuban Soil Science Society must be thanked for the organization of this congress.

W.E.H. Blum, Vienna, Austria

RECENT DEVELOPMENT OF INTERNATIONAL SYMPOSIA ON EARTHWORM ECOLOGY AND THEIR RELATIONSHIPS WITH SOIL SCIENCE

A group of European taxonomists, specialists on terrestrial oligochaetes, first met in Nitra (Czechoslovakia) in 1969 and subsequently in Padova (Italy) in 1973, in Jacca (Spain) in 1975, and Braunschweig (Germany) in 1976. There was some participation of non-European specialists in the Braunschweig meeting, but these meetings were essentially centred on European oligochaetes. In 1981 the first International Symposium on Earthworm Ecology was organised by Dr. J.E. Satchell at Grange-over-Sands (England). This Symposium was to mark the centenary of the publication in 1881 of Charles Darwin's book, 'The Formation of Vegetable Mould through the Action of Worms, with Observations on their Habits'. The meeting attracted world-wide attention and participation. It included earthworm biogeography and taxonomy, but it particularly dealt with ecological studies and with evaluation of the functional significance of earthworms in natural ecosystems.

The 1981 symposium stimulated further International Symposia on Earthworm Ecology (ISEE), one in Bologna in 1985, dedicated to the memory of Daniele Rosa, and the other in Hamburg in 1987,dedicated to the memory of Wilhelm Michaelsen, respectively the most famous of early Italian and German earthworm workers. These two symposia continued the theme of quantitative ecology, and increasingly dealt with attempts to estimate the effects of earthworms on agricultural ecosystems and with

the consequences of agricultural practices on earthworms.

In June, 1990, the 4th International Symposium on Earthworm Ecology (ISEE4) will be held in Avignon, France, and about 180 communications will be presented, with contributors from all six continents. Soil science (soil physics, soil microbiology, biochemistry and organic matter studies) and land use practices (pastures and croplands, the environment and waste management) will figure prominently in the reports of current earthworm research. Contributors to the symposium will discuss how fundamental biological studies (e.g. taxonomy, biogeography, ecology, genetics) of earthworms relate to knowledge of earthworm behaviour and the role of earthworms in land use.

The study of earthworms has reached a stage where it can reasonably be considered as an important aspect of soil science. It will be proposed in Avignon that Earthworm Ecology might be recognised as a Working Group by the International Society of Soil Science, and if it is approved by the meeting the proposition will be put to ISSS at its 14th Congress at Kyoto in August, 1990.

A. Kretzschmar, Convenor & Chairman, ISEE4, Avignon, France

10th INTERNATIONAL SYMPOSIUM ON SOIL BIOLOGY

Keszthely, Hungary, August 27-31, 1989

The 10th anniversary of the International Symposium on Soil Biology in Keszthely, Hungary, was organized once more by the Soil Science Section of the Hungarian Society of Agricultural Sciences under the theme 'Soil Biology and Conservation of the Biosphere'. Host was the well-known Keszthely University of Agricultural Sciences at the Lake Balaton. Several co-organizers supported the congress.

The programme contained 7 plenary sessions by invited speakers from the international scenery and covered relevant areas of actual soil biological research. In addition, about 120 oral and poster presentations from nearly all fields of Soil Biology were part of the programme. The scientific programme was completed by field excursions. All abstracts were handed out as a booklet at the beginning of the meeting. With only a few exceptions all papers were presented in English.

This 10th symposium was the successful completion of a regular series of meetings during the last 20 years. The symposium was originally initiated by Prof. J. Szegi, Head of the Department of Soil Biology, Research Institute of Soil Science and Agricultural Chemistry, Hungarian Academy of Sciences, Budapest. Prof. Szegi and several colleagues started and maintained this international symposium at a period in which the sciences of soils and plant production were nearly completely a matter of chemistry. Today, the need for international symposia on Soil Biology rather than on Soil Microbiology or Soil Zoology only has become apparent, particularly with respect to the impacts of industrialization and intensive agriculture on soil organisms. This integration rather than differentiation was awarded by the participation of about 150 scientists from 22 different nations. About two-third of the papers referred to soil microbiology. Such a relatively high contribution from Soil Zoology has not been obtained sofar by the Commission for Soil Biology of the ISSS during the last 3 international conferences!

The 10th International Symposium on Soil Biology was a well prepared and organized conference. Unfortunately, a number of papers from eastern Europe nations was not presented because the speakers were unable to participate. We do hope this will be different at the 11th meeting! The results and contributions are being published in Proceedings.

J.C.G. Ottow, Giessen, F.R.G.

REPORT OF THE ISSS SECRETARIAT AND TREASURY, 1986-1990

In compliance with the Rules of the Society, the Report of the ISSS Secretariat and Treasury over the period between the last Congress (Hamburg-FRG, August 1986) and the new Congress (Kyoto-Japan, August 1990) is printed in the Bulletin immediately preceding the latter. Highlights of this report will be mentioned at the Inaugural Session of the Kyoto Congress, and details will be discussed and evaluated in the ISSS Council as convening during the Congress.

Administrative/Financial

The *number of registered members* stood at 6158 in April 1990, against 7222 at the end of 1986 when the last ISSS Membership List was printed. Although a temporary new increase is expected to take place immediately before the Kyoto Congress, the Bureau is rather worried that not more of the approximately 45.000 soil scientists in the world-at-large bother to be kept informed on soil-related problems and programmes in the international sphere. We have tried to provide a useful means of communication, especially through the contents of the six-monthly Bulletin, and it was hoped that newly created services such as the Fellows Fund and Cooperating Journals would attract new members. It is true that the requirement of payment of the annual dues of $ 8.– in convertible currency is a major obstacle for colleagues in many Third-World and Comecon countries. The move to market economies may somewhat improve that situation in the longer run, and a speedier dispatch of the Bulletin may be helpful. The impression prevails however that many would-be members find annual payments, whether on their own or through their respective national societies, rather cumbersome and tend to forget about it. A four-year membership payment, from Congress to Congress and then possibly at a somewhat reduced rate, may be attractive. In any case, the new Officers may want to start a major membership drive, spelling out the ten good reasons for joining the international Society in an attractive brochure in at least three languages.

The *financial situation* (see details on page 10) of the Society is rather healthy, not only because of the rather stringent use of the membership fees, incomplete as they may be. A voluntary contribution over the past twelve years to the upkeep of the ISSS Secretariat by the Dutch Soil Survey Institute (Stiboka, now Staring Centre), to the tune of $ 7500.– per year, permitted to maintain the quality of the Bulletin as it stands now and to build up a strategic reserve.

It may not be superfluous to mention that the three Bureau Officers have been carrying out their societal duties on honorary basis only, enabled to do so by the gracious consent of the Boards of the institutions where they are professionally employed.

The *computerized Membership List* is felt to serve a purpose. Too few members have however bothered to provide information on the scientific (sub)Commission(s) of their interest – which would facilitate contacts for international meetings and programmes. The inclusion in the List of the addresses of the affiliated national and regional societies, their newsletters and/or scientific national journals, is being appreciated. The List is copyrighted and available to members only; it may be useful to make the List and/or computer printouts available to certain outside organisations such as international publishing houses and international development organisations.

The *Life Membership scheme*, started in 1982 is gradually becoming of appreciable size. It now stands at 46 persons, and their one-time contribution of $ 200.– adds to the financial reserve.

The *Fellows Fund* or Young Scientists Travel Fund, started in 1984, is not functioning quite satisfactorily. Only a few national societies (the Netherlands, UK, Canada, USA) support the fund through a $ 1.– addition to their own ISSS membership fees transmittal. The highly valued additional direct support by ICSU's COSTED committee unfortunately stopped in 1988 at its regionalisation. A total of 21 young ISSS members from Third World countries benefitted from the scheme, to attend soil science meetings, mainly in their region or continent, but the amount allotted ($ 500.– per person) did sometimes not entice national institutions to come up with the remainder of the required travel and accommodation costs. The mode of selection of candidates and the transfer of the allotted funds had to be shifted to the local organising committees of the meetings concerned.

The *Cooperating Journals scheme*, providing substantial discount rates for personal membership, is being appreciated on both the supply and the demand side. One can however not yet say that it yields very many extra subscriptions to the four Journals concerned – which is probably related to the high prices to any scientific journal or book by commercial firms. There would seem to be room for one or two extra Journals in the scheme, to cover the full scala of soil science subdisciplines.

The number of affiliated *National Societies* rose to 60 with Senegal and Algeria joining, and several new societies in Third World countries are in-the-making. Two of the early societies celebrated their golden jubilee, viz. the Soil Science Society of America (december 1986, New Orleans) and the Polish Society of Soil Science (September 1988, Warsaw). Much welcomed was the creation of the regional All-African Society of Soil Science, and the strengthening of the already existing Latin American Soil Science Society – both serving as rallying points for soil scientists in smaller Third World countries where a national society is not yet feasible. Regional south-east and west Asian Societies would complete the picture!

Several prominent members of the International Society passed away in the reporting period, and were remembered in the *In-Memoriam* section of the Bulletin. Among them were the ISSS Honourary Members Dr. J.A. Prescott (Australia) and Prof.Dr. K. Krolikovski (Poland). Also mentioned should be Prof.Dr. A. Hoyos de Castro (past President of the Spanish Society), Prof.Dr. E. Schlichting (FRG, past Chairman of Commission V), Dr. G.P. Petrosyan (past Vice Chairman of Subcommission A), Prof.Dr. D. Schroeder (past President of the German Society), Prof.Dr. Z. Fekete (past President of the Hungarian Society), Prof.Dr. Mitsui (past President of the Japanese Society), Prof. Dr. M. Ciric (past President of the Yugoslavian Society) and Dr. M.L. Leamy (past President of the New Zealand Society). Their services over-the-years to the ISSS, in one form or another, are gratefully remembered.

Eight issues of the *Bulletin*, including the present one, were issued since the Hamburg Congress. Their quality and content was maintained at the level of previous years, and the introduction of word processing of the text at the Wageningen office in 1988 helped to reduce the printing costs to some extent. Precious little written comments and suggestions from members on the contents were received by the Secretary-General as the editor. It is however known that the sections on 'International Training Courses', 'Meetings, Conferences, Symposia' and 'New Publications' are much appre-

ciated and used, also by outside organisations. The latter section has been handled by the book review editor, Mr. Hans van Baren of ISRIC, over the past 16 years and his constant and devoted attention to this service deserves the gratitude of all of us.

The dispatch of the Bulletin to all members still had to be done by surface mail from the Treasurer's office in Gent, Belgium, to keep costs down. This is however becoming more and more awkward in view of the increasingly irregular and slow international seal mail services – causing delays in arrival of up to six months in a number of cases. Time may have come to switch systematically to second-class airmailing, which is becoming less expensive. IT will however imply some raise in the membership fee.

To compensate in part for the present sea-mail delays, airmail copies are already being sent from the Wageningen office, directly after printing, to the secretariat/library of all national societies. The same applies to a total of 90 addresses of international scientific or development-oriented organisations that are thought to have an interest in soil science.

Scientific Activities

The amount of activity in-between Congress of the seven scientific Commissions, the four Subcommissions and the sixteen Working Groups varied strongly. Some maintained a lively correspondence with their adherents and organised meetings, others were rather inert. The active ones received up to $ 250.– per year from the Treasury, to pay for the costs of newsletters and some travel. Two new Working Groups, on 'Pedometrics' (PM) and on 'Soils and Groundwater Pollution' (SP) respectively, were admitted mid-term, on a provisional basis.

A total of 35 official *inter-Congress meetings* were organised or co-sponsored (see table), most of them with the active support of the national society concerned. Several of these meetings had only very small international participation because of financial and time constraints of interested members. It may therefore be useful to have fewer of such meetings, but then with subjects that have the combined support of several (Sub)Commissions and Working Groups. Joint organising with international research and development agencies such as IBSRAM and TSBF should be pursued if Third World venues are involved.

Bureau officers of the Society were present at most of the listed inter-Congress meetings, as well as at annual meetings of several national societies. The Secretary-General represented ISSS at meetings organised by UN Organisations, by sister Scientific Unions/Societies such as IUBS and IUFRO, or by ICSU Committees (SCOPE, CASAFA, IGBP). Several of these representations were at little or no costs to the Treasury. Countries visited one or more times during the past four years by the Secretary-General, the Deputy Secretary-General or the Treasurer were: Belgium, Brazil, Bulgaria, Cuba, China, Czechoslovakia, Egypt, France, F.R. Germany, D.R. Germany, Greece, Hungary, India, Italy, Japan, Kenya, Mexico, Poland, Sweden, Thailand, Turkey, Switzerland, Uganda, UK, Uruguay, USA, USSR and Yugoslavia.

International Cooperation

The newly created ISSS *Committee on Standardisation* (CST, chairman Prof.Dr. H.-P. Blume) liaised with the International Standardisation Organisation (ISO), and took part in the consultations of its Technical Committee on Soil Quality (ISO/TC190). THe standards on methods and limits being set by the ISO committee are

potentially of great impact for the form of our Society's scientific output, and it is regrettable that some of the ISSS Commission and Subcommissions have not yet nominated a representative in CST. Fortunately, quite a number of active ISSS members form part of national delegations at ISO/TC190.

The Secretary-general maintained intensive contact with FAO's Land & Water Division, with Unesco's Division of Ecological Science/Man-and-the Biosphere programme, and with UNEP's Environmental Management section, its Desertification Control Centre and GEMS/GRID. The same applies to the International Council of Scientific Unions (ICSU) of which ISSS is an associate member.

An off-spring of ICSU's Scientific Committee on Problems of the Environment (SCOPE) is the new International Geosphere-Biosphere Programme (IGBP), which is organising a major international research network on causes and effects of Global climatic change due to anthropogenic influences on the so-called Greenhouse functioning of the earth's atmosphere.

The Society's standing *Committee on International Programmes* (CIP, chairman Prof. H.-W. Scharpenseel), actively tried to ensure adequate attention to the key role of soils and their use in the IGBP programme, through participation in its Scientific Advisory Committee meetings (IGBP-SAC, Stockholm, October 1988) and in technical meetings of several of its panels and working groups. CIP also developed own initiatives in defining the role of soils in relation to Global Change through:

- co-sponsoring of an international conference, organised by ISRIC, on the present status and future trends concerning the effect of soils and their cover on the fluxes of greenhouse gases, the surface energy balance and the water balance ('Soils and the Greenhouse Effect', Wageningen, the Netherlands, August 1988).
- organising, in cooperation with UNEP, of an international workshop on the effects of expected climate change on soil processes in the tropics and subtropics ('Soils on a Warmer Earth', Nairobi-Kenya, February 1990).
- participation in two IIASA/UNEP sponsored working meetings on the concepts of global anthropogenic soil change ('Global Soil Change', Budapest-Hungary, April 1989 and Moscow-USSR, December 1989).

The proceedings resulting from these meetings, the Conclusions and Recommendations formulated at each of them, and the results of the symposium on 'Global Soil Changes and their Dynamics in a Changing Environment' at the ISSS Kyoto Congress are providing a wealth of elements to be used in a Statement of Interest for presentation at the forthcoming second meeting of IGBP-SAC in Paris – where the core programmes of the Global Change programme will be established definitively.

There is an obvious need in these programmes for quantitative data on soil attributes, especially in the geographic context. The existing FAO/Unesco/ISSS Soil Map of the World and its updating plans, as well as the current programme for the preparation of a digital world soil and terrain data base by the ISSS Working Group DM (in cooperation with UNEP, ISRIC and FAO) can provide such data. The ISSS Working Groups on 'Land Evaluation Information System (LI) and on 'Soil and Moisture Variability in Space and time (MV) can be instrumental as regards methodological aspects. Insight in nutrient, moisture and organic matter cycling in the various major soils in their environmental setting – through field measurements, monitoring and modelling – is another matter of interest to IGBP. Fortunately the IUBS/Unesco Tropical Soil Biology and Fertility (TSBF) networking programme, the IBSRAM soil management networks in Asia and Africa, and the IBSNAT network of USDA/USAID, are beginning to provide some of the essential information for the (sub)tropics. Senior members of ISSS are represented on the Boards of a three entities, and/or

have actively participated in the development of handbooks of methods. More international cooperation is wanted on cycling characteristics of soils in the mediterranean, temperate and cold regions; the existing ISSS Working Group on long-term Soil Fertility Trials (WG/FT) may want to take the lead there, in cooperation with the Long Term Ecological Research (LTER) network of US SCOPE/MAB.

In the context of Global Change, also the UNEP-ISRIC mapping project on Global Assessment of Soil Degradation (GLASOD) should be mentioned. Many regional specialists cooperated on this project, of which the results will be shown at the Kyoto Congress.

Concurrent with the notion that Earth is a unique planetary system where atmosphere-biosphere-pedosphere-hydrosphere-geosphere interactions are being profoundly influenced by man, there is a growing need for international interdisciplinary research including soils as key components of the human life-support systems, as sinks and sources of biogeochemical elements, as membranes or filters for pollutants, as small reactors on their own, and as blocks of memory on past conditions. Cooperation of the soil science community with other scientific disciplines in large international programmes such as IGBP and MAB is however somewhat hampered, at key-decision making moments, by the present status of ISSS viz a viz ICSU (as a scientific associate only, without voting rights). Linking up with one of the regular ICSU scientific member Unions, is not realistic, because our fields of interest tough upon the activities of several of them (soil physics – IUPAP; soil chemistry – IUPAC; soil biology – IUBS/IUB/IUMS; soil fertility and plant nutrition – IUBS/IUNS; soil genesis, classification and cartography – IGU/IUGS; soil mineralogy -IUCr). An International Union of Soil Science(s), with national chapters patterned along the current national societies, while maintaining our prized individual membership, may be called for; it should aim at full scale representation in ICSU, at Unesco and other international bodies, at par with other Unions.

The internal structure of our Society may also need revision; it has not changed basically since its creation in 1927, more than 60 years ago. The ISSS standing *committee on Statute and Structure* (CSS) has developed some options which will be discussed at the Kyoto Council meeting (see also this Bulletin).

A word of thanks

At the end of their tenure the three Bureau officers wish to thank all members for their confidence and moral support over the past twelve years. Each of them wishes to gratefully acknowledge the substantial organisational, financial and staff support given at their respective offices: MLV, DLO, LUW and ISRIC itself in Wageningen, RISSAC in Budapest, and the State University of Gent. They wish their successors the best of success – and stamina to endure!

It promises to be an exciting new period in the history of our Society, not only because of such programmes as IGBP but also because of the current lessening of antagonism between political blocks. Much more effective cooperation in the promotion of soil science and its applications will now be possible between East and West Europe and between the industrialised countries at large. Its only hoped that in the euphory of these new openings the plight of our colleagues in Third World countries, often working in very strenuous circumstances, will not be forgotten!

Wim Sombroek	Istvan Szabolcs	Donald Gabriels
Secretary-General	Dep. Secretary-General	Treasurer
Wageningen	Budapest	Gent

RECEIPTS ACCOUNT FOR THE PERIOD 1986-1987-1988-1989
(treasurer + secretary-general)
(US dollar equivalent)

	1986	*1987*	*1988*	*1989*
Membership fees	45614	38273	52223	44036
Life members	400	600	600	400
Subscriptions	1625	1359	1130	1200
Fellow Funds	3965	2745	4026	3971
Interest	4845	4297	4469	5567
Sale of Books (Hamburg Proceedings)	348	7950		600
Unesco Support Hamburg	7000			
Publicity Hamburg				3500
Subventions/Grant			8970	5339
TOTAL	63797	55224	71418	64613

PAYMENTS ACCOUNT FOR THE PERIOD 1986-1987-1988-1989
(treasurer + secretary-general
(US dollar equivalent)

	1986	*1987*	*1988*	*1989*
Printing	18896	33958	18366	16526
Postal and teleph. charges	12345	29424	23047	17680
Bankcharges	1121	628	732	728
Equipment & Supplies	5110	8882	3805	2896
Travel & Representation (Support Congresses, Commissions & Working Groups)	7502	4771	12254	7238
Secretarial Assistance	3010	4509	5079	4290
Fellow Funds	4090	500	4500	1000
Unesco Support	5256	2004		
Auditing	400			
Purchase book	138		109	1194
Inscription costs	29	29	50	42
Membership Int. Societies		97	264	205
Import taxes		844		
TOTAL	57897	85646	68206	51799

balance over period 1986-1989: receipts: 255052 $eq
payments: 263548 $eq
balance: – 8496 $eq

The financial situation of the Society, although with a negative balance over the period 1986-1989, is still healthy because of a positive savings account collected during the period 1982-1985. The negative balance is mainly caused by the printing and mailing of the membership list in 1987 and the increasing mailing costs. It should also be noted that out of the 6000 to 7000 registered members only 5000 are regular paid-up members.

RAPPORT DU SECRETARIAT ET DE LA TRESORERIE DE L'AISS, 1986-1990

Conformément au règlement de l'Association, le Rapport du Secrétariat et de la Trésorerie de l'AISS couvrant la période entre le dernier Congrès (Hambourg-RFA, Août 1986) et le prochain (Kyoto-Japon, Août 1990) paraît dans le Bulletin précédant immédiatement ce prochain congrès. Les points principaux de ce rapport seront mentionnés au cours de la Session Inaugurale du Congrès de Kyoto, et les détails en seront discutés et évalués par le Conseil de l'AISS qui se réunira au cours du Congrès.

Administration/Finances

Le *nombre de membres affiliés* s'élevait à 6158 en avril 1990, contre 7222 à la fin de 1986, période où la dernière Liste des Membres de l'AISS a été publiée. Bien qu'une augmentation du nombre de membres soit prévue juste avant le Congrès de Kyoto, le Bureau est assez préoccupé par le fait que parmi les quelques 45.000 pédologues du monde, pas plus ne se soucient d'être tenus au courant des problèmes et des programmes d'envergure internationale se rapportant aux sols. Nous avons essayé de fournir un outil pratique de communication, dont la forme principale était le Bulletin, et nous avons espéré que des services nouveaux tels que le Fond pour Aspirants et les Journaux Coopérants attireraient de nouveaux membres. Il est vrai que la nécessité de payer la cotisation annuelle de 8 $ dans une monnaie convertible est un obstacle pour beaucoup de collègues du Tiers-Monde et des pays du Comecon. Le changement d'économie va peut-être apporter, à long terme, quelque amélioration à cette situation. Une distribution plus rapide du Bulletin serait également utile. Cependant, l'impression générale est que les membres potentiels trouvent le paiement annuel incommode, qu'il soit fait individuellement ou par l'intermédiaire de l'association nationale respective, et ont tendance à l'oublier. Une adhésion pour 4 ans, d'un Congrès à l'autre, et éventuellement à un prix réduit, serait sans doute plus attrayante. Quoi qu'il en soit, les nouveaux Membres du bureau pourraient mettre sur pied une campagne de recrutement sous forme d'un dépliant attrayant écrit en trois langues au moins, en y énumérant les 10 bonnes raisons d'adhérer à l'Association Internationale .

La *situation financière* (voir détails page 10) de l'Association est relativement saine, entre autres grâce à l'utilisation parcimonieuse des cotisations, aussi incomplètes soient-elles. Une contribution volontaire de l'Institut Néerlandais de Cartographie (Staring Centre, anciennement Stiboka) au cours des douze dernières années, d'un montant de 7500 $ par an, a permis de maintenir la qualité du Bulletin et de créer un fonds de réserve.

Il n'est pas superflu de mentionner que les trois membres du Bureau, à savoir le Secrétaire-Général, le Secrétaire-Général adjoint et le Trésorier, se sont acquittés de leurs devoirs associatifs de façon honoraire, grâce au consentement des directions des institutions où ils sont employés.

La *Liste automatisée des Membres* est très utile. Cependant, trop peu de membres se donnent la peine de fournir des indications sur leurs intérêts scientifiques (Commissions, Sous-commissions et Groupes de Travail), ce qui faciliterait les contacts entre les programmes internationaux et pour les réunions internationales. Il semble que la publication des adresses des Associations nationales et régionales affiliées à l'AISS soit appréciée. Le droit de reproduction de la liste des membres est réservé, et elle n'est distribuée qu'aux membres; il serait peut-être utile de donner la Liste et/ou un listing d'ordinateur à certaines organisations telles que les maisons d'édition internationales et les organisations internationales de développement.

La possibilité d'*Affiliation à vie*, créée en 1972, est de plus en plus utilisée. 46 personnes sont actuellement membre à vie, et leur cotisation unique de 200 $ permet d'augmenter les réserves financières.

Le *Fond pour Aspirants*, ou Fond de Voyage pour Jeunes Scientifiques, créé en 1984, ne fonctionne pas de façon optimale. Seules quelques associations nationales (Pays-Bas, Royaume-Uni, Canada, USA) supportent ce fond en y versant 1 $ par membre adhérant à l'AISS. Le support très apprécié du comité COSTED de l'ICSU a malheureusement pris fin en 1988 au cours de la régionalisation de ce comité. Au total, 21 jeunes membres de l'AISS de pays du Tiers-Monde ont bénéficié de ce fond, pour participer à des réunions de pédologie, le plus souvent dans leur région ou leur continent. La somme accordée (500 $ par personne) n'a malheureusement pas toujours permis aux institutions nationales de pouvoir mettre le complément pour les frais de voyage et d'hébergement. Le mode de sélection des candidats et le transfert des sommes allouées devrait pouvoir être pris en charge par les comités d'organisation des réunions concernées.

L'agrément sur les *Journaux Coopérants*, qui permet une réduction importante sur l'abonnement pour les membres individuels de l'AISS, est très apprécié, à la fois par les fournisseurs et par les abonnés. Pourtant, on ne peut pas dire que cette nouvelle possibilité ait fourni beaucoup de nouveaux abonnés aux quatre Journaux concernés – ce qui est vraisemblablement lié au fait que les prix de n'importe quel journal scientifique dans le commerce sont très élevés. Il serait possible de passer un tel agrément avec un ou deux autres Journaux, pour recouvrir tous les domaines des sous-disciplines de la science du sol.

Le nombre d'*Associations Nationales* affiliées se monte actuellement à 60. Le Sénégal et l'Algérie sont les deux plus récentes, et plusieurs associations dans les pays du Tiers-Monde sont en cours de fondation. Deux des associations ont célébré leur cinquantenaire: il s'agit de l'Association Américaine de la Science du Sol (décembre 1986, New Orleans) et de l'Association Polonaise de la Science du Sol (septembre 1988, Varsovie). Nous avons pu accueillir une nouvelle association régionale: l'Association Africaine de la Science du Sol, et la consolidation de l'Association de la Science du Sol pour l'Amérique Latine; toutes les deux sont un point de regroupement pour les pédologues de petits pays du Tiers Monde dans lesquels il n'existe pas d'Association Nationale. Des associations régionales en Asie du Sud-Est et en Asie Occidentale compléteraient le tableau!

Au cours de la période 1986-1990, plusieurs membres éminents de l'Association Internationale sont décédés, et ont été commémorés dans la rubrique *In-Memoriam* du Bulletin. Parmi eux, deux membres d'honneur de l'AISS, Dr. J.A. Prescott (Australie) et Prof.Dr. K. Krolikovski (Pologne). Nous nous rappellerons également du Prof.Dr. A. Hoyos de Castro (ancien Président de l'Association Espagnole), Prof.Dr. E. Schlichting (RFA, ancien Président de la Commission V), Dr. G.P. Petrosyan (ancien Vice-Président de la Sous-commission A), Prof.Dr. D. Schroeder (ancien Président de l'Association Allemande), Prof.Dr. Z. Fekete (ancien Président de l'Association Hongroise), Prof.Dr. Mitsui (ancien Président de l'Association Japonaise), Prof. Dr. M. Ciric (ancien Président de l'Association Yougoslave) et Dr. M.L. Leamy (ancien Président de l'Association de Nouvelle Zélande). Nous leurs sommes reconnaissants des services rendus à l'AISS, sous quelque forme que ce soit, au cours de nombreuses années.

Depuis le congrès de Hambourg, huit numéros du *Bulletin* sont parus, y compris celui-ci. Leur qualité et leur contenu a été maintenu au niveau des années précédentes, et l'introduction du traitement de texte au secrétariat de Wageningen en 1988 a permis de réduire quelque peu les frais d'imprimerie. Quelques membres ont fait part de leurs suggestions ou commentaires très précieux au Secrétaire-Général, éditeur du Bulletin. Il est notoire que les rubriques 'Cours Internationaux de Formation', 'Réunions, Conférences, Symposiums' et 'Nouvelles Publications' sont très appréciées et utilisées, également par des organisations externes. Cette dernière section a été assurée par Mr. Hans van Baren, de l'ISRIC, au cours des 16 dernières années, et son travail constant et dévoué pour la réalisation de cette rubrique mérite toute notre reconnaissance.

La distribution du Bulletin à tous les membres a du continuer par voie de surface depuis le bureau du Trésorier à Gand, Belgique, pour limiter les frais. Vu l'irrégularité et la lenteur des services postaux maritimes internationaux, ceci devient un problème de plus en plus gênant. Il faudra sans doute songer à passer systématiquement aux envois d'imprimés par avion, dont les coüts ont diminué. Cela impliquera cependant une augmentation de la cotisation.

Pour compenser en partie les délais actuels du courrier de surface, des numéros 'par avion' sont envoyés du bureau de Wageningen, dès l'impression, aux secrétariats/bibliothèques de toutes les associations nationales. Il en va de même pour 90 organisations internationales scientifiques ou de développement qui sont intéressées par la science du sol.

Activités Scientifiques

Le total d'activités inter-congrès des sept Commissions scientifiques, des quatre Sous-commissions et des seize Groupes de Travail a été très variable. Quelques-uns ont maintenu une correspondance régulière avec leurs adhérents et ont organisé des réunions, d'autres ont été relativement inertes. Les groupes actifs ont reçu 250 $ par an du Trésorier, pour couvrir les coüts de bulletins d'information et quelques frais de voyage. Deux nouveaux Groupes de Travail ont été provisoirement admis: 'Pedometrics' (PM) et 'Pollution du Sol et des Eaux Souterraines' (SP).

Au total, 35 *Réunions Inter-Congrès* ont été organisées ou co-financées (voir tableau ci-dessous); la plupart ont également reçu le soutien des associations nationales correspondantes. Plusieurs de ces réunions n'ont eu que peu de participants étrangers, le plus souvent à cause de contraintes financières ou du manque de temps des participants intéressés. Pour cette raison, il serait utile de diminuer le nombre de ces réunions, mais de choisir les sujets de telle façon qu'ils aient le support de plusieurs (Sous-)Commissions et Groupes de Travail. Si l'on souhaite tenir l'une ou l'autre de ces réunions dans un pays du Tiers Monde, il serait souhaitable de chercher une agence internationale de recherche et développement, telle que l'IBSRAM ou TSBF, comme co-organisateur.

Pour la plupart des réunions inter-Congrès mentionnées, et pour plusieurs réunions annuelles d'associations nationales, il a été possible à l'un des membres du Bureau de l'Association de participer. Le Secrétaire-Général a représenté l'AISS à des réunions organisées par des organisations des Nations-Unies, par des Associations/Unions scientifiques telles que l'IUBS et l'IUFRO, ou par des comités de l'ICSU (SCOPE, CASAFA, IGBP). Plusieurs de ces réunions n'ont rien coüté à la Trésorerie. Au cours de ces quatre dernières années, les pays suivants ont reçu la visite du Secrétaire-Général, du Secrétaire-Général adjoint ou du Trésorier: Belgique, Brésil, Bulgarie, Cuba, Chine, Tchécoslovaquie, Egypte, Etats-Unis, France, R.F.A., R.D.A., Grèce, Hongrie, Inde, Italie, Japon, Kenya, Mexique, Ouganda, Pologne, Royaume Uni, Suède, Suisse, Thaïlande, Turquie, Union Soviétique, Uruguay et Yougoslavie.

Coopération Internationale

Le nouveau *Comité sur la Standardisation* (CST, président Prof.Dr. H.-P. Blume), a établi un lien avec l'Organisation Internationale de Normalisation (ISO), et a pris part à des consultations du Comité Technique sur la Qualité des Sols (ISO/TC190) de cette organisation. Les normes des méthodes et des limites définies par le comité de l'ISO sont vraisemblablement d'une grande importance pour les travaux de notre association, et il est regrettable que certaines Commissions et Sous-Commissions de l'AISS n'aient pas encore nommé de représentant dans le comité CST. Heureusement, bon nombre de membres actifs de l'AISS font partie des délégations nationales représentées au sein de l'ISO/TC190.

Le Secrétaire-Général a entretenu des contacts intensifs avec le Département 'Land & Water' de la FAO, avec la Division des Sciences Ecologiques et le Programme MAB (Man-and-the-Biosphere) de l'Unesco, et avec le département 'Environmental Management' du PNUE, son Centre de Contrôle de la Désertification, et GEMS/GRID. Il en va de même pour le Conseil International des Unions Scientifiques (ICSU) duquel l'AISS est un membre associé.

Le Comité Scientifique de l'ICSU sur les Problèmes de l'Environnement (SCOPE) a créé un nouveau programme: le Programme International Géosphère-Biosphère (IGBP), qui met en place un réseau international de recherche sur les causes et les effets des changements climatiques globaux sur le fonctionnement dit 'de serre' de l'atmosphère de la terre, changements dus aux influences anthropogéniques.

Le *Comité* permanent *des Programmes internationaux*, (CIP, présidé par Prof. H.-W. Scharpenseel), a activement travaillé à ce que le rôle prépondérant des sols et leur incorporation dans le programme IGBP reçoivent l'attention qu'ils méritent; pour cela, ils ont participé aux réunions de son Comité Consultatif Scientifique (IGBP-SAC, Stockholm, octobre 1988) et aux réunions techniques de plusieurs de ses commissions et groupes de travail. Le CIP a également pris l'initiative de définir le rôle des sols en relation aux changements globaux, de la manière suivante:

- co-financement d'une conférence internationale, organisée par l'ISRIC, sur le statut présent et les tendances futures de l'effet des sols et de leur couverture sur les échanges des gaz atmosphériques, l'équilibre de l'énergie de surface et la balance hydrique ('Soils and the Greenhouse Effect', Wageningen, Pays-Bas, août 1989).
- organisation, en coopération avec le PNUE, d'un atelier international sur les effets des changements probables de climats sur les processus des sols dans les pays tropicaux et sub-tropicaux ('Soils on a Warmer Earth', Nairobi-Kenya, février 1909).
- participation à deux réunions de travail, financées par IAASA/PNUE, sur les concepts de changements globaux de sols dus à l'homme ('Global Soil Change', Budapest-Hongrie, avril 1989 et Moscou-URSS, décembre 1989).

Les actes de ces réunions, les Conclusions et Recommandations formulées au cours de chacune d'elles, ainsi que les résultats du symposium 'Modifications Générales des Sols et leur Dynamique dans un Environnement en Mouvement' au congrès de l'AISS à Kyoto, fournissent une quantité d'éléments pour une Déclaration d'Intérêt qui pourra être présentée à la seconde réunion de IGBP-SAC à Paris – où les programmes principaux du programme sur les Changements Globaux seront définitivement établis.

Ces programmes ont un besoin urgent de données quantitatives sur les attributs du sol, principalement dans le contexte géographique. La Carte Mondiale des Sols, par FAO/Unesco/AISS et ses projets de révision, ainsi que le programme actuel du Groupe de Travail DM de l'AISS (en coopération avec le PNUE, l'ISRIC et la FAO) pour la préparation d'une banque mondiale de données digitalisées des sols et des

terrains, peuvent fournir de telles données. Les Groupes de Travail de l'AISS 'Informatique de l'Evaluation des Terres' (LI) et 'Variabilité du Sol et de l'Humidité dans le Temps et l'Espace' (MV) peuvent en être les instruments en ce qui concerne les aspects méthodologiques. Les nutriments, l'humidité et le cycle de la matière organique dans différents sols importants et dans leur environnement – par des mesures de terrain, un suivi des changements, et des modèles – est un autre sujet d'intérêt pour IGBP. Heureusement, le réseau du programme de l'IUBS/Unesco 'Biologie et Fertilité des Sols Tropicaux' (TSBF), le réseau de management des sols de l'IBSRAM en Asie et en Afrique, et le réseau de l'IBSNAT à l'USDA/USAID, commencent à fournir quelques informations essentielles sur les (sub)tropiques. Des membres seniors représentent l'AISS aux bureaux de ces trois entités, et/ou ils ont participé activement à l'élaboration de manuels de méthodologie. On espère plus de coopération internationale sur les caractéristiques cycliques des sols dans les régions méditerranéennes, tempérées et froides; le Groupe de Travail de l'AISS sur les Essais à Long Terme de Fertilité des Sols (WG/FT) pourrait prendre la direction des opérations dans ce domaine, en coopération avec le réseau Recherche Ecologique à Long Terme (LTER) du SCOPE/MAB américain.

Dans le contexte des changements globaux, il faut mentionner le projet de cartographie de l'UNEP-ISRIC pour l'Evaluation Globale de la Dégradation des Sols (GLASOD). De nombreux spécialistes régionaux ont coopéré à ce projet; les résultats en seront présentés au Congrès de Kyoto.

Simultanément à la notion que la Terre est un système planétaire unique où les interactions entre l'atmosphère, la biosphère, la pédosphère, l'hydrosphère et la géosphère sont profondément influencées par l'homme, il se fait sentir un besoin croissant d'une recherche interdisciplinaire internationale incluant les sols comme une composante-clef des systèmes permettant la vie humaine, comme dépôts et sources des éléments biogéochimiques, comme filtres des polluants, comme petits réacteurs indépendants, et comme mémoire des conditions passées. La coopération de la communauté de la science du sol avec d'autres disciplines scientifiques dans des programmes internationaux de grande ampleur, tels que IGBP et MAB, est cependant quelque peu entravée, aux moments décisifs, par le statut actuel de l'AISS vis-à-vis de l'ICSU (en tant qu'associé scientifique, sans droit de vote). Un lien avec l'une des Unions scientifiques membre de l'ICSU n'est pas réaliste, parce que nos domaines d'intérêts touchent aux activités de plusieurs d'entre elles (physique des sols – IUPAP; chimie des sols – IUPAC; biologie des sols – IUBS/IUB/IUMS; fertilité des sols et nutrition des plantes – IUBS/IUNS; genèse, classification et cartographie des sols – IGU/IUGS; minéralogie des sols – IUCr). Il serait possible de créer une Union Internationale des Sciences du Sol, avec des affiliations nationales parallèles aux associations nationales existant actuellement, tout en maintenant nos adhésions individuelles; elle aurait pour but une représentation à part entière au sein de l'ICSU, à l'Unesco et dans d'autres organisations internationales, au même niveau que d'autres Unions.

La structure interne de notre Association nécessite également quelques adaptations; dans ses grandes lignes, elle n'a pas été changée depuis la création de l'Association en 1927, il y a plus de 60 ans de cela. Le *Comité* permanent de l'AISS *sur les Statuts et la Structure* (CSS) a développé quelques options qui seront discutées au cours de la réunion du Conseil à Kyoto.

Quelques mots de remerciement

A la fin de leur mandat, les trois membres du Bureau tiennent à remercier tous les membres de la confiance et du support moral qu'ils leur ont témoigné au cours

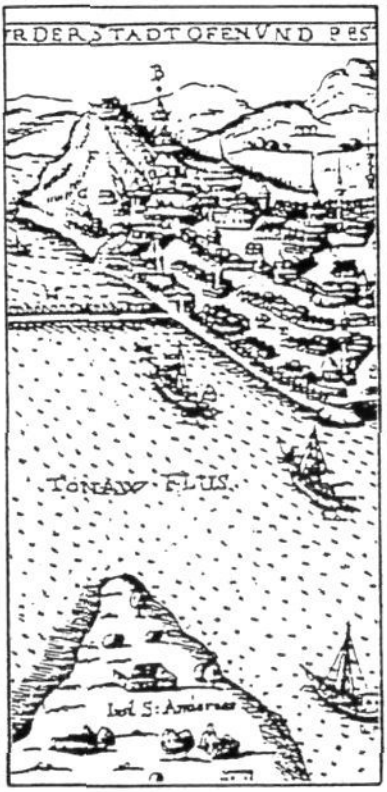
des douze dernières années. Ils tiennent à remercier leurs instituts respectifs: MLV, *DLO*, *LUW* et *ISRIC* à Wageningen, *RISSAC* à Budapest, et *l'Université d'Etat* à Gand, pour l'énorme support organisationnel, financier, et du personnel qu'ils y ont reçu. Ils souhaitent bien du succès à leurs successeurs – et une bonne dose de persévérance!

Cette nouvelle période s'annonce très intéressante pour l'histoire de notre Association, non seulement grâce à des programmes tels que IGBP, mais également grâce à la diminution des antagonismes entre les blocs politiques. Une coopération beaucoup plus efficace va maintenant pouvoir se développer entre l'Europe de l'Est et de l'Ouest, et entre les pays industrialisés en général. Il ne faudra cependant pas que, dans l'euphorie de ces nouvelles ouvertures, nous oubliions la situation de nos collègues du Tiers Monde, qui doivent souvent travailler dans des conditions très difficiles.

Wim Sombroek
Secrétaire-Général
Wageningen

Istvan Szabolcs
Secrétaire-Général Adjoint
Budapest

Donald Gabriels
Trésorier
Gand



BERICHT DES IBG SEKRETARIATS UND DES SCHATZMEISTERS, 1986-1990

Gemäß den Regeln der Gesellschaft wird der Bericht des General-Sekretärs und des Schatzmeisters über den Zeitraum zwischen dem letzten Kongreß (Hamburg, BRD, August 1986) und dem nächsten (Kyoto, Japan, August 1990) in dem Bulletin gedruckt, das diesem unmittelbar vorangeht. Schwerpunkte dieses Berichtes werden in der Eröffnungssitzung des kongresses in Kyoto erwähnt werden. Einzelheiten werden auf der Sitzung des Beirates während des Kongresses diskutiert und bewertet.

Verwaltung/Finanzen

Die *Anzahl eingetragener Mitglieder* betrug im April 1990 6158, während sie Ende 1986, als die letzte IBG-Mitgliederliste gedruckt wurde, bei 7222 lag. Obwohl ein zeitweiliger neuer Anstieg kurz vor dem Kongreß in Kyoto erwartet wird, ist das Bureau ziemlich besorgt darüber, daß sich nicht mehr der schätzungsweise 45.000 Bodenkundler auf der gesamten Welt darum kümmern, über bodenkundliche Probleme und Programme auf internationaler Ebene informiert zu werden. Wir haben versucht, für zweckmäßige Kommunikationsmöglichkeiten zu sorgen, besonders mittels der Inhalte des halbjährlichen Bulletins, und wir hofften, daß neugegründete Organisationen, wie Fellows Fund und Cooperierende Journale, neue Mitglieder anziehen würden. Leider ist tatsächlich die jährliche Zahlungsforderung der Gebühren von 8.– $ (in austauschbarer Währung) ein Hindernis für Kollegen in vielen Ländern der Dritten Welt und des Comecon. Der Schritt zur Marktwirtschaft mag die Situation auf lange Sicht ein wenig verbessern, und auch ein schnellerer Versand des Bulletins kann da hilfreich sein. Es verstärkt sich aber der Eindruck, daß viele 'Möchtegern-Mitglieder' jährliche Zahlungen, entweder von sich selbst oder ihrer jeweiligen nationale Gesellschaft aus, als ziemlich hinderlich betrachten und dazu neigen, diese zu vergessen. Vielleicht wäre ein Beitrag für eine Vier-Jahres-Mitgliedschaft, für die Zeit von Kongreß zu Kongreß, und dann möglicherweise in einer etwas reduzierten Form, attraktiv. Auf jeden Fall sollten die neuen Amtsträger eine große Mitgliederwerbeaktion starten, indem sie in einer attraktiven Broschüre in mindestens drei Sprachen zehn gute Argumente für den Eintritt in die internationale Gesellschaft aufführen.

Die *finanzielle Situation* (Details s.S. 10) der Gesellschaft ist ziemlich gut, nicht nur aufgrund der recht sparsamen Verwendung der Mitgliederbeiträgen, so unvollständig sie auch sein mögen. In den letzten zwölf Jahren wurde es uns durch den freiwilligen Zuschuß des Niederländischen Bodenuntersuchungsinstitutes (Stiboka, jetzt Staring Centre) zum Unterhalt des IBG-Sekretariats in Höhe von jährlich bis zu 7500.– $ ermöglicht, die Qualität des Bulletins auf dem jetzigen Stand zu erhalten und eine strategische finanzielle Reserve anzulegen.

Es erscheint keineswegs überflüssig zu erwähnen, daß die drei Amtsträger der Geschäftsstelle ihren Pflichten für die Gesellschaft auf ehrenamtlicher Basis nachkämen, was ihnen durch die großzügige Zustimmung der Behörden ermöglicht wurde, bei denen sie beruflich beschäftigt sind.

Die *per Computer erfaßte Mitgliederliste* scheint ihren Zweck zu erfüllen. Es haben sich allerdings zu wenige Mitglieder Informationen über die für sie interessanten wissenschaftlichen (Sub-)Kommissionen gegeben. Sie würden damit die Kontaktaufnahme bei internationalen Treffen und Programmen erleichtern. Die Einbeziehung von Adressen der angeschlossenen nationale und regionalen Gesellschaften, ihrer Mitteilungsblättern und/oder ihrer nationale wissenschaftlichen Zeitschriften in die Liste

wird sehr geschätzt. Die Liste ist urheberrechtlich geschützt und nur für Mitglieder verfügbar; es könnte nützlich sein, die Liste und/oder die Computer-Ausdrucke gewissen anderen außenstehenden Organisationen zugänglich zu machen, wie z.B. internationale Verlagen und internationalen Entwicklungsorganisationen.

Das *Programm für eine lebenslange Mitgliedschaft*, das 1982 seinen Anfang genommen hat, wächst schrittweise zu einer beachtlichen Größe heran. Es umfaßt jetzt 46 Personen, deren einmaliger Beitrag von 200.-$ der finanziellen Reserve zugeschlagen wird.

Der *Fellows Fund* oder 'Reisefonds für Junge Wissenschaftler' der 1984 ins Leben gerufen wurde, funktioniert nicht ganz zufriedenstellend. Nur wenige nationale Gesellschaften (die Niederlande, Großbritannien, Kanada, die USA) unterstützen den Fonds mittels eines Aufschlages von 1.– $ auf ihre eigene IBG-Mitgliedschaftsgebühr. Die sehr geschätzte zusätzliche direkte Unterstützung durch das ICSU-COSTED Komitee wurde leider 1988 bei seiner Regionalisierung eingestellt. Insgesamt 21 junge IBG-Mitglieder aus Ländern der Dritten Welt profitierten von dem Programm, um bodenkundlichen Treffen beizuwohnen, hauptsächlich in ihrer Region oder in ihrem Kontinent. Der zugewiesene Betrag (500.– $ pro Person) jedoch konnte die nationale Institutionen in manchen Fällen nicht dazu, die verbleibenden geforderten Reise- und Unterkunftskosten beizusteuern. Mit der Auswahlmethode der Kandidaten und dem Transfer der zugewiesenen Beträge mußten die örtlichen Organisationsausschüsse der entsprechenden Treffen beauftragt werden.

Das *Programm der cooperierenden Journale* das umfangreiche Rabattraten bei persönlicher Mitgliedschaft bietet, wird von beiden Seiten geschätzt, sowohl von der Seite der Anbieter als auch von der Seite der Konsumenten. Man kann aber noch nicht sagen, daß es den vier betreffende Zeitschriften seh viele Extra-Abonnements einbrächte – was vermutlich an den hohen Preisen der Handelsfirmen für wissenschaftliche Zeitschriften oder Bücher liegt. Es scheint noch Platz für ein oder zwei Extra-Zeitschriften in dem Programm zu geben, um die gesamte Skala der bodenkundlichen Unterdisziplinen abzudecken.

Die Zahl der angeschlossenen *nationale Gesellschaften* ist durch den Eintritt von Senegal und Algerien auf 60 gestiegen; außerdem sind mehrere neue Gesellschaften in Ländern der Dritten Welt im Entstehen begriffen. Zwei der früh gegründeten Gesellschaften feierten ihr goldenes Mitgliedsjubiläum, nämlich die Bodenkundliche Gesellschaft Amerikas (Dezember 1986, New Orleans) und die Polnische Gesellschaft für Bodenkunde (September 1988, Warschau). Sehr begrüßt wurde die Gründung einer regionalen gesamtafrikanischen Gesellschaft für Bodenkunde sowie die Vergrößerung der bereits bestehenden lateinamerikanischen Bodenkundlichen Gesellschaft – beide dienen als Sammelstelle für Bodenkundler aus kleineren Ländern der Dritten Welt, in denen eine nationale Gesellschaft noch nicht realisierbar ist. Regionale südost- und westasiatische Gesellschaften würden das Bild abrunden!

Mehrere prominente Mitglieder der Internationalen Gesellschaft sind im berichtszeitraum verstorben. Ihrer wurde im Abschnitt *In-Memoriam* des Bulletins gedacht. Unter ihnen befanden sich die Ehrenmitgliede Dr. J.A. Prescott (Australien) und Prof.Dr. K. Krolikovski (Polen). Ebenfalls sollten erwähnt werden: Prof.Dr. A. Hoyos de Castro (ehemaliger Präsident der Spanischen Gesellschaft), Prof.Dr. E. Schlichting (BRD, ehemaliger Vorsitzender der Kommission V), Dr. G.P. Petrosyan (ehemaliger Vorsitzender der Subkommission A), Prof.Dr. D. Schroeder (ehemaliger Präsident

der Deutschen Gesellschaft), Prof.Dr. Z. Fekete (ehemaliger Präsident der Ungarischen Gesellschaft), Prof.Dr. Mitsui (ehemaliger Präsident der Japanischen Gesellschaft), Prof. Dr. M. Ciric (ehemaliger Präsident der Jugoslawischen Gesellschaft) und Dr. M.L. Leamy (ehemaliger Präsident der Neuseeländischen Gesellschaft). Ihrer langjährigen Dienste für die IBG, in der einen oder anderen Form, wird dankbar gedacht.

Seit dem Hamburger Kongreß wurden acht Ausgaben des *Bulletins*, einschließlich der jetzigen, herausgegeben. Seine Qualität und sein Inhalt wurden auf dem Niveau der vergangenen Jahre gehalten. Die Einführung der Textverarbeitung im Büro in Wageningen im Jahre 1988 half die Druckkosten in gewissem Maße zu reduzieren. Wertvolle kurze schriftliche Kommentare und Anregungen der Mitglieder zum Inhalt wurden vom Generalsekretär als dem Herausgeber in Empfang genommen. Die Bereiche über 'Internationale Schulungskurse', 'Treffen, Konferenzen, Symposien', und 'Neue Veröffentlichungen' werden bekanntlich besonders hoch geschätzt und viel benutzt – auch von außenstehenden Organisationen. Der letztgenannte Bereich wurde in den vergangenen 16 Jahren von dem Herausgeber von Buchbesprechungen, Mr. Hans van Baren der ISRIC, bearbeitet. Seine gleichbleibende und eifrige Aufmerksamkeit bei dieser Arbeit verdient unser aller Dank.

Der Versand des Bulletins an alle Mitglieder mußte, um die Koste gering zu halten, immer noch vom Büro des Kassenwartes in Gent, Belgien, aus auf dem Land/Seeweg erfolgen. Dies erweist sich aber vermehrt als schwierig angesichts der zunehmend unregelmäßigen und langsamen internationalen Übersee-Post-Dienste, die in einigen Fällen sogar Verzögerungen in der Ankunft von bis zu sechs Monaten hervorgerufen haben. Vermutlich ist die Zeit gekommen, systematisch auf 2. Klasse-Luftpost umzusteigen, da dies billiger wird. Allerdings würde das eine Erhöhung der Mitgliederbeiträgen bedeuten.

Um die Verzögerungen der gegenwärtigen See-Post teilweise zu kompensieren, werden vom Büro in Wageningen aus sofort nach dem Druck Luftpost-Kopien an das Sekretariat oder die Bibliothek aller nationalen Gesellschaften verschickt. Das gleiche gilt für insgesamt 90 Adressen internationaler wissenschaftlicher oder entwicklungsorientierter Organisationen, bei denen man ein Interesse an Bodenkunde erwartet.

Wissenschaftliche Aktivitäten

Das Ausmaß an Aktivitäten der sieben Kommissionen, vier Subkommissionen und 16 Arbeitsgruppen in der Zeit zwischen den Kongressen variierte stark. Einige unterhielten eine lebhafte Korrespondenz mit ihren Mitgliedern und organisierten Treffen, andere hingegen waren ziemlich träge. Die aktiven Gruppen erhielten bis zu 250.– $ pro Jahr aus der Kasse, um davon die Kosten für Mitteilungsblättern und einige Reisen zu begleichen. Zwei neue Arbeitsgruppen, auf dem Gebiet 'Pedometrie' (PM) beziehungsweise 'Boden- und Grundwasser-Verschmutzung' (SP), wurden mittlerweile auf einer provisorischen Grundlage zugelassen.

Insgesamt 35 offizielle *Treffen zwischen den Kongressen* wurden organisiert oder finanziert (s. Tab.), die meisten von ihnen mit aktiver Unterstützung der betreffenden nationalen Gesellschaften. Einige dieser Treffen fanden wegen finanzieller und zeitlicher Einschränkungen der interessierten Mitglieder nur sehr geringe internationale Beteiligung. Deshalb könnte es sinnvoll sein, weniger solcher Treffen zu veranstalten, aber dann mit Themen, die die gemeinsame Unterstützung mehrerer (Sub)Kommissionen und Arbeitsgruppen finden. Ein gemeinsames Organisieren mit internationalen Forschungs- und Entwicklungs-Agenturen wie z.B. IBSRAM und TSBF sollte dann

erfolgen, wenn Treffpunkte in der Dritten Welt betroffen sind.

Die geschäftsführenden Amtsträger der Gesellschaft waren auf den meisten der aufgelisteten Treffen zwischen den Kongressen anwesend sowie auf jährlichen Treffen mehrerer nationaler Gesellschaften. Der Generalsekretär vertrat die IBG auf Treffen, die von UN-Organisationen, wissenschaftlichen Schwester-Verbänden/Gesellschaften (wie IUBS und IUFRO), oder von ICSU-Komitees (SCOPE, CASAFA, IGBP) organisiert wurden. Der Kasse wurden durch mehrere dieser Vertretungsreisen gar keine oder nur geringe Kosten verursacht. Die folgenden Länder wurden ein- oder mehrmals in den vergangenen vier Jahren vom Generalsekretär, dem stellvertretenden generalsekretär oder dem Schatzmeister besucht: Ägypten, Belgien, Brasilien, Bulgarien, China, die Bundesrepublik Deutschland, die Deutsche Demokratische Republik, Frankreich, Griechenland, Großbritannien, Indien, Italien, Japan, Jugoslawien, Kenia, Kuba, Mexiko, Polen, Schweden, die Schweiz, Thailand, die Türkei, die Tschechoslowakei, Uganda, Ungarn, Uruguay, die USA und die UdSSR.

Internationale Zusammenarbeit

Das neugegründete IBG-*Komitee für Standardisierung* (CST, Vorsitzender Prof.Dr. H.-P. Blume) setzte sich mit der Internationalen Standardisierungs-Organisation (ISO) in Verbindung und nahm an den Konsultationen ihres Technischen Komitees für Bodenqualität (ISO/TC190) teil. Die Standardmethoden und Grenzwerte, die von dem ISO-Komitee festgesetzt werden, wirken sich möglicherweise auf die Form des wissenschaftlichen Outputs unserer Gesellschaft aus. Es ist bedauernswert, daß einige der IBG-Kommissionen und -Subkommissionen noch keinen Repräsentanten in das CST entsandt haben. Glücklicherweise sind eine ganze Anzahl aktiver IBG-Mitglieder in den nationalen Delegationen der ISO/TC 190 vertreten.

Der Generalsekretär unterhielt intensiven Kontakt mit der FAO-Abteilung für Land & Wasser, mit der Unesco-Abteilung für ökologische Wissenschaft/Mensch-und-Biosphäre-Programm und mit der UNEP-Abteilung für Umwelt-Management, ihrem Kontrollzentrum für Desertifikation und dem GEMS/GRID. Das gleiche trifft auf den Internationalen Rat Wissenschaftlicher Vereinigungen (ICSU) zu, bei dem die IBG außerordentliches Mitglied ist.

Ein Abkömmling des Wissenschaftlichen Komitees des ICSU für Probleme der Umwelt (SCOPE) ist das neue Internationale Geosphären-Biosphären Programm (IGBP), das ein beträchtliches internationales Forschungsnetz zu den Gründen und Auswirkungen der globalen Klimaveränderung organisiert, die auf anthropogene Einflüsse auf den sogenannten Gewächshaus-Effekt der Erdatmosphäre zurückgeht.

Das bestehende *Komitee für Internationale Programme* (CIP, Vorsitzender Prof. H.-W. Scharpenseel) der Gesellschaft versucht aktiv, eine angemessene Aufmerksamkeit gegenüber der Schlüsselrolle von Böden und ihrer Nutzung im IGBP-Programm sicherzustellen, und zwar durch die Teilnahme an Treffen seines Wissenschaftlichen Beratenden Komitees (IGBP-SAC, Stockholm, Oktober 1988) und an technischen Treffen verschiedener seiner Gremien und Arbeitsgruppen. Das CIP entwickelte eigene Initiativen, indem es die Rolle der Böden in Beziehung zu der Globalen Klimaänderung definierte, und zwar durch:

- Unterstützung einer internationalen, von der ISRIC organisierten Konferenz zum momentanen Stand und den zukünftigen Trends der Wirkung von Böden und ihrer Bedeckung auf den Fluß von 'Gewächshausgasen', auf die Oberflächenenergie-Bilanz und den Wasserhaushalt ('Böden und der Gewächshaus-Effekt', Wageningen, Niederlande, August 1989),

- Organisation (in Zusammenarbeit mit der UNEP) eines internationalen Workshops zu den Auswirkungen der erwarteten klimatischen Veränderungen auf Prozesse in Böden der Tropen und Subtropen ('Böden auf einer wärmeren Erde', Nairobi, Kenia, Februar 1990),
- Teilnahme an zwei von IIASA/UNEP geförderten Arbeitstreffen zum Begriff globaler anthropogener Bodenveränderungen ('Globale Bodenveränderungen', Budapest, Ungarn, April 1989 und Moskau, UdSSR, Dezember 1989).

Die Protokolle dieser Treffen, die Schlußfolgerungen und Empfehlungen, die bei jedem dieser Treffen formuliert wurden, sowie die Ergebnisse des Symposiums zu den 'Globalen Bodenveränderungen und ihrer Dynamik in einer sich ändernden Umwelt' auf dem Kyoto-Kongreß der IBG sorgen für eine Fülle an Elementen, die in einem Interessen-Statement verwendet werden können. Dieses wird auf dem bevorstehenden zweiten Treffen des IGBP-SAC in Paris präsentiert, wo die Kern-Programme des Programms zur 'globalen Veränderung' definitiv aufgestellt werden.

In diesen Programmen besteht ein offensichtlicher Bedarf an quantitativen daten über Bodeneigenschaften, besonders im geographischen Zusammenhang. Die bestehende FAO/Unesco/IBG-Welt-Bodenkarte und die Pläne, sie auf den neuesten Stand zu bringen, sowie das laufende Programm der Vorbereitung einer digitalen Weltboden- und Gelände-Datenbasis durch die IBG-Arbeitsgruppe DM (in Zusammenarbeit mit der UNEP, der ISRIC und der FAO) können für solche Daten sorgen. Die IBG-Arbeitsgruppen zum 'Landbewerkungs-Informationssystem' (LI) und zur 'Boden- und Feuchtigkeits-Veränderlichkeit in Raum und Zeit' (MV) können – was methodische Aspekte betrifft – als Instrumente dafür dienen. Ein anderes Interesse des IGBP besteht darin, Einblick in die Kreisläufe von Nährstoffen, Feuchtigkeit und organischer Masse in einigen der wichtigsten Böden in ihrer natürlichen Umgebung zu gewinnen – durch Feldmessungen, Überwachung und Modellentwicklung. Glücklicherweise beginnen das Netzwerk-Programm der IUBS/Unesco Tropische Bodenbiologie und -fruchtbarkeit (TSBF), das IBSRAM Bodenmanagement-Netzwerk in Asien und Afrika und das IBSNAT Netzwerk der USDA/USAID, für grundlegende Informationen für die (Sub-)Tropen zu sorgen. Langjährige Mitglieder der IBG haben aktiv an der Entwicklung von Methoden-Handbüchern mitgearbeitet. Es wird mehr internationale Zusammenarbeit bei der Charakterisierung von Kreisläufen in Böden der mediterranen, gemäßigten und kalten Regionen gefordert; die bestehende IBG-Arbeitsgruppe zu Langzeit-Bodenfruchtbarkeits-Versuchen (WG/FT) mag dort mit gutem Beispiel vorangehen, in Zusammenarbeit mit dem Langzeit-ökologie-Forschungs-Netzwerk der US SCOPE/MAB.

Im Zusammenhang mit den 'Globalen Veränderungen: sollte auch das Vermessungs-Projekt der UNEP-ISRIC zur globalen Einschätzung der Bodendegradierung (GLASOD) erwähnt werden. Viele regionale Experten arbeiteten an diesem Projekt zusammen, dessen Ergebnisse auf dem Kongreß in Kyoto gezeigt werden.

In Übereinstimmung mit der Vorstellung, daß die Erde einen einzigartigen Planeten darstellt, auf dem die Wechselwirkungen zwischen Atmosphäre, Biosphäre, Pedosphäre, Hydrosphäre und Geosphäre so weitreichend durch den Menschen beeinflußt werden, besteht ein wachsender Bedarf an internationaler interdisziplinärer Forschung. Diese sollte die Böden als Schlüssel-Komponenten des menschlichen 'Lebens-Systems' einschließen, als Senken und Quellen für biogeochemische Elemente, als Membranen oder Filter für Schadstoffe, als kleine eigenständige Reaktoren und als 'Erinnerungsstücke' für frühere Umwelt-Bedingungen. Die Zusammenarbeit der bodenkundlichen Gemeinschaft mit anderen wissenschaftlichen Disziplinen in großen internationalen Programme wie z.B. IGBP und MAB ist jedoch – im Moment von Schlüssel-Entscheidung – etwas erschwert durch den augenblicklichen Status der IBG

gegenüber dem ICSU (als dem Status eines wissenschaftlichen Mitgliedes ohne Stimmrecht). Der Zusammenschluß mit einer der regulären wissenschaftlichen Mitgliedsgesellschaften des ICSU ist nicht realistisch, weil unsere Interessengebiete die Aktivitäten mehrerer von ihnen berühren (Bodenphysik – IUPAP; Bodenchemie – IUPAC; Bodenbiologie – IUBS/IUB/IUMS; Bodenfruchtbarkeit und Pflanzenernährung – IUBS/IUNS; Bodenentwicklung, Klassifizierung und Kartographie – IGU/IUGS; Bodenmineralogie – IUCr). Eine Internationale Gemeinschaft der Bodenkunde sollte gefordert werden mit nationalen Gruppen nach dem Muster der bestehenden nationalen Gesellschaften, bei der unsere so hoch geschätzte individuelle Mitgliedschaft erhalten bleibt; ihr Ziel sollte die vollständige Repräsentation im ICSU, bei der Unesco und anderen internationalen Körperschaften sein – in Gleichberechtigung mit anderen Gemeinschaften.

Die interne Struktur unserer Gesellschaft könnte auch eine Überarbeitung gebrauchen; seit ihrer Gründung im Jahre 1927, seit mehr als 60 Jahren also, ist sie nicht grundlegend geändert worden. das bestehende IBG-*Komitee für Satzung und Struktur* (CSS) hat einige Optionen entwickelt, die auf der Ratssitzung in Kyoto diskutiert werden (s. auch im Bulletin).

Ein Wort des Dankes

Am Ende ihrer Amtszeit möchten die drei geschäftsführenden Amtsträger allen Mitgliedern für ihr Vertrauen und ihre moralische Unterstützung in den vergangenen 12 Jahren danken. Jeder von ihnen möchte seine Anerkennung für die umfangreiche organisatorische, finanzielle und personelle Unterstützung zum Ausdruck bringen, die ihnen in ihren betreffenden Büros zuteil wurde: MLV, DLO, LUW und ISRIC in Wageningen, RISSAC in Budapest, und State University in Gent. Sie wünschen ihren Nachfolgern einen größtmöglichen Erfolg – und ein gutes Durchhaltevermögen!

Die neue Periode in der Geschichte unserer Gesellschaft verspricht spannend zu werden, nicht nur wegen solcher Programme wie IGBP, sondern auch wegen der fortlaufenden Verminderung der Antagonismen zwischen den politischen Blöcken. Zwischen Ost- und West-Europa und zwischen den industrialisierten Ländern im allgemeinen wird nun eine sehr viel effektivere Zusammenarbeit in der Förderung der Bodenkunde und ihrer Anwendungen möglich sein. Es bleibt nur zu hoffen, daß in der Euphorie dieser neuen Möglichkeiten die Not unserer Kollegen in der Dritten Welt nicht vergessen wird, die oft unter sehr erschwerten Bedingungen arbeiten!

Wim Sombroek	Istvan Szabolcs	Donald Gabriels
Generalsekretär	Stellv. Generalsekretär	Schatzmeister
Wageningen	Budapest	Gent

LISTING OF ISSS INTER-CONGRESS MEETINGS, 1986-1990

Nanjing, China, 7-11 Sept. 86. *International Conference on the Management and Fertilization of Upland Soils* (Commission IV, co-sponsoring)

Karnal, India, February, 1987. *International Symposium on Saline and Alkali Soils, and their use through Afforestation* (Subcommission A)

Noordwijk, the Netherlands, 30 March-3 April, 1987. *International Conference on the Vulnerability of Soil and Groundwater to Pollutants* (Working Group SP; co-sponsoring)

Brisbane, Australia, 11-15 May, 1987. *International Symposium on Advances in Nitrogen Cycling in Agricultural Ecosystems* (Commission IV; co-sponsoring)

Maracaibo, Venezuela, 14-21 June, 1987. *X Congreso Latinoamericano de la Ciencia del Suelo* (Sociedad Latinoamericano de la Ciencia del Suelo).

Bangkok, Thailand, 18-29 January, 1988. *5th International Soil Conservation Conference* (Subcommission C, co-sponsoring)

Jodhpur, India, 8-12 February, 1988. *International Symposium on Managing Sandy Soils* (Commission VI)

Montevideo, Uruguay, 21-25 March, 1988. *International Workshop on a digital world Soil and Terrain Data Base* (Working Group DM)

Budapest, Hungary, 11-15 April, 1988. *5th International Symposium on Soil Science and Remote Sensing* (Working Group RS)

Las Cruces-NM, USA, 23-26 May, 1988. *International Workshop on Validation of Flow and Transport Models through the Unsaturated Zone* (Commission I and II, and Working Group MV, co-sponsoring)

Oslo, Norway, 26-27 May, 1988. *International Symposium on Health Problems in connection with Radiation from Radioactive Matter in Fertilizers, Soils and Rocks* (Working Group SG)

Osijek, Yugoslavia, 15-20 June, 1988. *International Symposium on Solonetz Soils; Problems, Properties, Utilization* (Subcommission A)

San Antonio-TX, USA, 10-15 July, 1988. *8th International Working Meeting on Soil Micromorphology* (Subcommission B)

Bangalore, India, 7-13 August, 1988. *10th International Soil Zoology Colloquium* (Subcommission D)

Prague, Czechoslovakia, 21-26 August, 1988. *International Symposium 'Humus et Planta IX'* (Commission II and III)

Wageningen, the Netherlands, 22-26 August, 1988. *Symposium on Land Qualities in Space and Time* (Working Groups MV and LI)

Alma-Ata, USSR, 12-16 September, 1988. *International Conference on Soil Classification* (Commission V)

Nagpur, India, 24-29 October, 1988. *International Workshop on Classification, Management and Use potential of Swell-shrink Soils* (Commission V)

Kampala, Uganda, 5-10 December, 1988. *First All-African Soil Science Congress* (All-African Soil Science Society)

Cheing-Mai, Thailand, 6-13 December, 1988. *International Symposium on Paddy-soil Fertility* (Working Group PS)

Nairobi, Kenya, 12-20 March, 1989. *International Workshop on Multipurpose Use of Soil Survey Information for Efficient Land use Management* (Commission V)

Giessen, FRG, 17-19 March, 1989. *International Workshop on Denitrification in Soil, Rhizosphere and Aquifer* (Commissions III and IV)

Tromsø, Norway, 25-26 May, 1989. *Trace elements in relation to Human and Animal Health in Arctic and Subarctic Regions* (Working Group SG)

Bratislava, Czechoslovakia, 29 May – 2 June, 1989. *International Conference on Soil Conservation and Environment* (Commission I and Subcommission C)

Lublin, Poland, 5-9 June, 1989. *International Conference on Soil Compaction as a Factor determining Plant Production* (Commission I and Working Group PT)

Saskatoon, Canada, 11-16 June 1989. *International Conference on Soil quality in Semi-Arid Agriculture* (Working Group LI, co-sponsoring)

Wageningen, the Netherlands, 30 July – 4 August, 1989. *11th International Plant Nutrition Colloquium* (Commission IV, co-sponsoring)

Wageningen, the Netherlands, 14-18 August, 1989. *International Conference on Soils and the Greenhouse Effect* (CIP Committee, co-sponsoring)

Strasburg, France, 27-29 August, 1989. *Symposium on Rock Weathering and Soil Mineralogy + Excursion* (Commission VII)

Rennes, France, 4-6 September, 1989. *International Working Meeting on Soil horizons, and Consultation on an International Reference Base for Soil Classification* (Commission V)

Nanjing, China, 4-10 October, 1989. *International Symposium on the Dynamics of Salt-affected Soils* (Subcommission A)

Addis Abeba, Ethiopia, 6-18 November 1989. *6th International Soil Conservation Conference* (Subcommission D, co-sponsoring)

Nairobi, Kenya, 12-14 February, 1990. *Effects of Expected Climate Change on Soil Processes in the Tropics and Subtropics* (Committee CIP)

La Habana, Cuba, 11-17 March, 1990. *XI Congreso Latinoamericano de Ciencia del Suelo* (Sociedad Latinoamericano de la Ciencia del Suelo)

Harbin, China, 22-27 July, 1990. *1st International Symposia on Forest Soils* (Working Group FS)

STRUCTURE OF THE SOCIETY

Some suggestions by the ISSS Committee on Statute and Structure (CSS)

On the basis of the proposals of Prof. Buringh of Oct. 1985 and the discussions at the second committee meeting at Hamburg (15-8-86), the Chairman invited comments from Committee members. These were debated at a meeting in Gent (2-06-88). The Committee agreed that the 'geographic dimension' of soil science should come more to the fore in the structure of the Society, if we want to gain a rightful and fair place in international fora, such as the present International Geosphere-Biosphere programme. Five main soil geographic regions are advocated by Prof. Dudal viz.: well developed soils of humid and subhumid tropics; of arid and semi-arid regions; of continental temperate regions; of humid temperate regions; and of boreal and arctic regions. They can be complemented with soils of predominantly hydromorphic influence (wetland soils); soils of predominantly lithologic influence (young or shallow soils); and soils of predominantly anthromorphic influence. These could be represented by 'Divisions' – though their short-naming will present problems! – in addition to the present seven discipline-oriented Commissions. Both Divisions and Commissions should ideally be represented in the ISSS Council, through a matrix structure. There are however also soil management orientations, now scattered over Commissions, Subcommissions and Working Groups. The following scheme arose:

I *Fundamental discipline orientations: 'Commissions'*
- soil physics
- soil chemistry
- soil biology

(• soil zoology) (−) = deletion or merging
(• soil microbiology)
(• soil fertility)
(• soil genesis and classification)
- soil mineralogy

(• soil micromorphology)

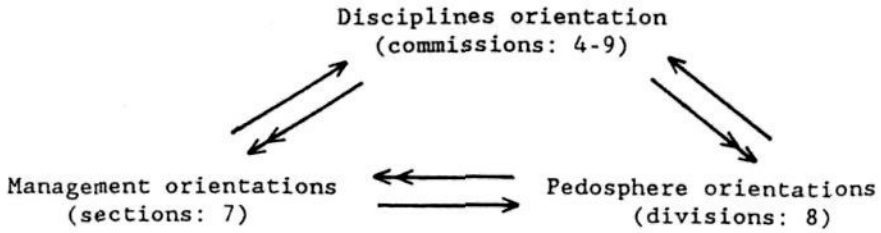
II *Soil development orientation* (soil bodies + soil cover: the pedosphere): *'Divisions'*
mainly climato-morphic soils; well drained and well developed, 'zonal' soils of respectively
- humid and subhumid tropical regions
- arid and semi-arid regions
- continental (contrasting seasons) temperate regions
- coastal (humid) temperate regions
- boreal and arctic (cold) regions

mainly hydromorphic soils (wetland regions)
mainly lithomorphic soils (mountain regions)
mainly anthropomorphic soils.

III *Soil management orientation: 'Sections'*
- soil salinity management
- soil hydrology management
- soil nutrient management
- soil stability/conservation/sustainability management
- soil arability/tillage management
- soil contamination management
- soil-vegetation relationships/soil ecology management
- several others (+ working groups).

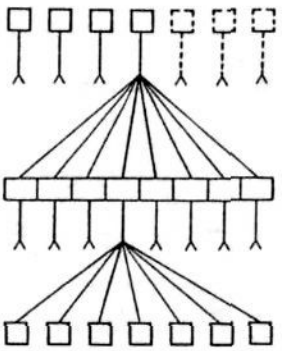
These three orientations interact, which can be schematised in two ways:

A)



or

B)



No consensus was reached on how this should be 'translated' into representation on the ISSS Executive Committee. Options are:

a) all Commissions, Divisions and Sections (about 20 in total) are represented on the EC – implying many elections!
b) maintain the primacy of the discipline orientations (the Commissions)
c) have the Divisions as the main pillars of the Society, making sure that at elections there is a fair representation of specialists on the discipline and management sides.
d) have only one officer for the each of the three orientations in the Executive Committee-implying a reduction in the size of the present Executive Committee.

INVITING COMMENTS FROM ALL MEMBERS
LES COMMENTAIRES DE TOUS LES MEMBRES SONT LES BIENVENUS
KOMMENTARE ALLER MITGLIEDER SIND WILKOMMEN

– *Une version française sera disponible pour les membres du Conseil de l'AISS à Kyoto.*
– *Eine deutsche Fassung wird für die Mitglieder des IBG-Beirats im Kyoto zur Verfügung stehen.*

ISSS Committee on International Programmes (CIP)

DRAFT CONCLUSIONS AND RECOMMENDATIONS OF AN INTERNATIONAL WORKSHOP ON THE EFFECTS OF EXPECTED CLIMATE CHANGE ON SOIL PROCESSES, WITH EMPHASIS ON THE TROPICS AND SUBTROPICS*

12-14 February 1990, UNEP-headquarters, Nairobi, Kenya

I Ecosystem dynamics, interactions with the atmosphere and effect on soils and land use

A scenario and some predictions

The workshop discussed how soils in specific ecosystems respond to changes of climate and the need for soil scientists to work with other disciplines.

We assumed: over a time span of about 50 years a gradual warming of the atmosphere of about 3 °C, with 2 °C in tropics and 5 °C in subpolar areas; 10% increase of precipitation, a sea level rise of 50 cm, and an equilibrium world population of 10 billion; by about the year 2100 a doubling of the atmospheric CO_2 content.

The results of geophysical, geochemical, and biogeochemical processes vary widely in current soil ecosystems. Within a decade changes of temperature and precipitation will influence soil temperature and moisture regimes, pH, base saturation, fertility status, surface litter and biological activity, and the presence of salic and fluvic soil properties where appropriate. Over a period of several decades changes of climate are manifested in soils through the depth and kind of humus in the topsoil, relative fertility, erosion, and in histic, vertic, spodic and calcareous soil properties.

We believe that soil ecosystem responses to changes of biomes and climate differ mainly due to the 'sensitivities' of soil ecosystems to disturbance and modification:

In a Tropical Rain Forest ecosystem (hot, humid) one might expect increases of forest growth, nutrient cycling, and mineral weathering. Ferralsols are common in such biomes and with more percolation through the soil we would expect a decline of the fertility status, slight decreases of pH and base saturation, more litter production but also more biological activity with little change in humus content in the topsoil. Additional weathering of minerals would occur, however due to the great thickness of many saprolites there would be little change in relative fertility over time. Although soil processes would respond to the changes of climate and vegetation the overall impact would be minimal compared to the present ecosystem. These kinds of soils have 'low sensitivity' to the assumed climatic changes.

In a Steppe or Grassland ecosystem (warm, semiarid) the increase of precipitation would increase biomass production and movement of water through and on the soil. In a Chernozem ecosystem, the soil is moisture sensitive and the humus content in the topsoil would increase, carbonates and other soluble salts would leach deeper and salinization might occur in adjacent lower areas. Soil pH and base saturation would decrease slightly but the nutrient supply would remain high. Increased erosion would occur on slopes where vegetation would become stressed.

In a subpolar Boreal Forest ecosystem (cold, subhumid) we would expect an increase of bioproductivity and biogeochemical cycling. In Orthic Podzols the humus content, base saturation, relative fertility status and pH would become higher. The litter and histic horizon if any, would become thinner, leaching would tend to intensify, and

* *The final version of these Conclusions and Recommendations will appear in the formal Proceedings of the Workshop, to be published by Elsevier Science Publishers, Amsterdam, july/august 1990.*

the spodic horizon likely would become thicker. The vegetative cover would minimize erosion of the soil. The soil processes in this ecosystem are fairly 'sensitive' to the assumed climate changes, especially temperature.

We conclude that the changes in soil processes will be substantially more pronounced in cold and temperate regions than in the tropics because the soils outside of the tropics are more 'temperature sensitive' and the temperature changes are expected to be greater there.

As one approaches the transitional zones between ecosystems ('ecotones') it is more difficult to make general predictions about soil changes because of the strong interactions of climate and biota that often occur in such zones.

Exceptions to our generalities for the tropics relate to coastal swampy areas and tropical mountains, where climate/temperature changes can have dramatic effects on the ecosystems. Rising sea levels would generate a host of events such as flooding, salinization, and new erosion and sedimentation patterns that would affect many soil ecosystems. In mountainous areas the ecological zones respond to elevation, thus a warming would push the climatic belts up the mountains creating new conditions.

Getting involved

Although it is possible to make general statements about changing soil processes in response to climatic change there remains the need for more in-depth analysis to clarify and refine these process predictions.

We find it difficult to make statements about the effects of greenhouse warming on precipitation because there is much uncertainty. It is however noted that there could be impacts in low rainfall areas that are far greater than those associated with changes of temperature.

Ecosystem studies would benefit from the involvement and interaction of soil scientists with other disciplines. Soil scientists can assist in providing systematic and standardized soils information essential for IGBP success. The anticipated increase of biomass with a doubling of CO_2 will be important in ecosystem interactions including soil processes. Therefore it is important to consider this effect in future simulation modelling.

A crucial group of soil processes are termed 'anthropogenic' referring to those brought about by the activities of man. These processes likely override all others. The implications of man's direct influence on soil processes, on ecosystems, and on the earth system as a whole are such that they tend to overshadow our attempts to deal with natural ecosystems and climate-induced changes. Such anthropogenic processes have the potential to change the course of civilization, especially if they are ignored.

II Research priorities on effects of expected climate change on soil processes, with emphasis on the tropics and subtropics

The soil research priorities identified during the workshop can be categorised in 6 main groups:

- Collection of baseline data
- Study of soil processes
- Study of land use dynamics
- Modelling of soil processes
- Long-term monitoring of global soil change
- Management and mitigation measures of global soil change.

Furthermore, to carry on many of the soil studies, data are required from other research groups, viz those dealing with climatology, ecology, and crop production.

No priorities were identified for research on emission of greenhouse gases, because these were considered during the recent conference on 'Soils and the Greenhouse Effect' in August 1989 in Wageningen.

The following specific subjects in each of the six categories were identified as priority research subjects.

Base line data

A large number of data bases pertaining to the nature and state of the world's soil cover exist. To predict effects of climatic change on soil properties and, on quantitative and qualitative aspects of ground water recharge and on surface water, it is necessary to identify gaps in these data bases.

A first brief survey indicated the following gaps (some of which may overlap with each other):

a. Soil information on a scale of $1:10^6$, or even smaller, of large parts of Africa, South America, and Asia is not accurate enough for predictive and interpretative purposes; larger scales (up to 1:250,000) are needed.
b. The state of soil/land degradation is generally poorly understood and quantified. An overview will be available soon through the UNEP/ISRIC Global Assessment of Soil Degradation (GLASOD) Project.
c. For climate change studies special attention should be paid to mapping of (potentially) saline, alkaline and acid sulfate soils.
d. Global data bases on actual land use are either out-of-date or too general.

These baseline data should be organized and made available through the development of Land Information Systems (LIS) such as the ISSS Soil and Terrain Digital Database (SOTER).

Paleopedological maps of the world ($1:2.5 \times 10^6$) for two or three climatic periods in the Pleistocene and Holocene will be very helpful in analogue studies to forecast the effect of climatic change on present-day soils and for estimating the carbon cycle changes. As a first priority it would be sufficient to prepare such maps for a number of selected, promising areas, where more background data are available.

The project of mapping soil salinization and potential soil salinization at continental scale should be completed.

Soil processes and their dynamics

In studying soil processes, priorities should be given to processes that operate on a time scale of $10^{-1} - 10^2$ years, including those that may change suddenly or catastrophically. We believe that these are (in order of decreasing potential rate of change):

a. changes in soil salinity and alkalinity (one month to 10 years).
b. changes in soil meso- and macro fauna important for bioturbation and homogenization (1 to 10 years).
c. changes in structural stability and moisture characteristics (1 to 10 years).
d. changes in amount and quality of organic C and N levels (1 to 100 years).
e. changes in nutrient status, acidity, redox regime (10 to 100 years).
f. changes in susceptibility to erosion (10 to 100 years).
g. changes in iron- and amorphous minerals (10 to 100 years).

A number of methods are available for this purpose:

a. analogue studies, using soil chronosequences or situations where e.g. due to deforestation local soil climate has actually changed (problem: during deforestation many more conditions change simultaneously).

b. manipulation studies in the field (small chamber, small watershed), in the greenhouse or the laboratory.
Field studies on soil processes should preferably be carried out in areas involved in a network for long-term monitoring (see 5). An important problem to be addressed is the methodology of scaling down experimental (as well as modelling) results to values that are relevant at smaller, less detailed scales.

Changes in land use

For a number of other disciplines (agronomy, animal husbandry, economics, general politics, medicine) it will be important to predict the changes in land use resulting from climatic change and related changes in soil properties. Soil scientists will be asked to provide data needed to help forecast optimal land use on the short (0-10 y) medium (10-30 y) and long (40-60 y) run.
GIS- or LIS-based expert systems should be very helpful in this regard.

Modelling

Process-oriented simulation models describing changes in soil properties, as a function of temperature and precipitation (time scale of days, weeks, months, or years) are urgently needed. Research on soil processes and collection of long-term monitoring data should provide parameters and opportunities for calibration and validation of these models.

Long-term monitoring

To detect ecologically relevant changes related to climate change, and to provide opportunities for research, a network of stations for long-term monitoring of vegetation-soil properties-topography-hydrology-hydrochemistry-climate of a number of globally representative natural, rangeland, and agricultural ecosystems should be set up. Priority should be given to
a. transitional regions where rapid climate change is expected
b. coastal areas where sea level changes are expected
c. irrigated areas in semi-arid regions
d. deforested areas
e. natural wetlands.
Besides detailed monitoring at field/small catchment scale on the ground, detailed remote sensing monitoring of the general region, representative for the ecosystem, should be carried out. Remote sensing should be directed to estimating vegetation (cover), net primary production, evapotranspiration, surface temperature, infrared radiation and,where applicable, surface soil properties. The monitoring research sites should be run by local organisations and coordinated internationally to promote the use of common methodologies and exchange of data.

Data needed from other disciplines

a. Climatologists:
In addition to forecasts about mean annual temperature and precipitation, it will be very important to obtain estimates of the ranges of year to year and month to month variability, especially in rainfall, and the expected frequency of high intensity, highly erosive rainfall.
b. and c. Ecologists and crop production physiologists:

Effects of increased CO_2on organic matter return to the soil, estimated on the basis of crop production models. In addition to quantity, also qualitative aspects of the organic matter (possible changes in biodegradability) should be considered.

III Adaptation to climate change: soil resources use and management

The workshop participants discussed strategies to counteract increases in greenhouse gases and defend present soils and their uses against adverse effects of climate change. The resulting recommendations are directed at policy makers and the users of the soils. Management strategies were identified that are desirable in their own right as well as in the context of the greenhouse effect. Four sets of concerns with accompanying recommended management strategies are reported:

Increasing CO_2 sinks

The following measures are advocated, recognizing that soil- and land management-related methods of CO_2 fixation would only remove a fraction of the excess atmospheric carbon. Besides removing CO_2, each of these measures would provide direct production benefits to the land user.

- Conditions that favour C retention in soil and biomass include wetness, low temperatures, increased mineral nutrition (soil fertility), deep root development as well as biological activity.
- Management strategies should aim to preserve and, where possible, increase standing biomass and residues in soils. On many soils this will involve appropriate use of mineral fertilizers.
- On acid soils, selection of aluminium-tolerant crops or cultivars and liming of the acid subsoil to encourage deep root development are recommended.
- Irrigation in arid areas, either to produce grassland or annual field crops or to establish perennial vegetation, will increase standing biomass and soil organic matter.
- In the case of hardpans or other root barriers, subsoiling would enable deeper root development.

Reducing N_2O and CH_4 emissions

Conditions favouring N_2O emission from soils include high concentrations of mineral N species and alternation of reduction and oxidation. Conditions favouring methane emission include deep reduction in the absence of sufficient active iron oxides as well as of sulfates.

Management measures to avoid such conditions include the following:

- Proper dosage, timing and placement of nitrogen fertilizers in accordance with the growth stage of the crop, to minimize periodic excess N.
- Drainage or cultivation or other measures to avoid topsoil compaction and periodic reduction in cropland or pastures.
- In wetland soils, efficient water management so as to avoid periodic oxidation. In rainfed conditions, this may involve land shaping, bunding, puddling, supplementary irrigation where feasible.
- Methane emission from wetland soils can be minimized by avoiding incorporation of readily decomposable organic matter, and by addition of material rich in ferric iron, where practical, on soils low in active iron oxides. Also the use of fertilizers with the sulfate anion suppresses methanogenesis.

Adapting to sea-level rise

Sea-level rise causes a destabilized coastline, inland extension of areas affected by salinity and increased flooding depth and wetland conditions in inland parts of coastal plains. These problems can be combatted by one or more of the following measures:

- Sea defense including structural works such as embankments, as well as planting or preservation of protective mangrove forest belts.
- Embankment and pump drainage, or tidal drainage where feasible, of the impoldered land.
- Changing land use to fish farming where protection of the land against fresh-water or saline flooding is not practical.
- Changing to more salt-tolerant crops or cultivars in salt-affected areas.
- Selection of cultivars for higher yield under deep flooding or brackish-water conditions.

Adapting to climatic variability

The main problems to be considered are high-rainfall events and drought. Soil management measures to mitigate their effects in dryland soils should aim to maintain a complete soil cover, minimizing rainfall impact and non-beneficial evaporation; assure good macroporosity, infiltration and aeration; promote deep root penetration.

Such measures include mulching, use of cover crops, relay cropping to improve cover and bioporosity; and subsoil liming where needed and appropriate deep fertilization, especially with P, to increase rooting depth.

Additionally, water harvesting methods and terracing and other recognized water conservation methods would increase amounts of water available to crops.

Response farming techniques including, for example, late topdressing in amounts will capture the benefits of years with good rainfall or minimize costs in poor-rainfall years.

Finally; it should be mentioned that a rise in atmospheric CO_2 can have a positive effect on the water use efficiency of plants due to reduced stomatal openings. Global temperature rise will moreover result in higher precipitation – due to greatly increased evaporation over the oceans – which in places will significantly enlarge the amount of fresh water that can be used for irrigation purposes.

Most of the participants of the Nairobi meeting were invited by UNEP or EEC-CTA and took also part in a subsequent Ad-hoc UNEP Consultation on the Assessment of Global Desertification: Status and Methodologies.

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

Nouvelle Association Nationale: l'Algérie

Nous avons l'honneur et le plaisir de vous informer que l'Association Algérienne de Science du Sol (A.A.S.S.) est née. Elle regroupe déjà 40 membres.

La composition du bureau de l'association est la suivante:

Président:	A. Halitim
1er Vice-Président:	A. Deramchi
2ème Vice-Président:	R. Lhamar
3ème Vice-Président:	A. Dellal
4ème Vice-Président:	T. Moumen
Secrétaire Général:	K. Djili
Secrétaire Général Adjoint:	A. Mesrouk
Trésorier:	*B. Hamouche*
Trésorier adjoint:	A. Habchaoui
Assesseur:	M.E.H. Ould Feroukh

Adresse: Mr. Djili Kaddour, Dept. de Science du Sol, I.N.A. Belfort El Harrach, Alger, Algérie.

Österreichische Bodenkundliche Gesellschaft

Bei der Generalversammlung der Österreichischen Bodenkundlichen Gesellschaft am 24.1.1990 wurde statutengemäß ein neuer Vorstand gewählt. Wir erlauben uns nachfolgend die Zusammensetzung des neuen Vorstandes bekannt zu geben.

Präsident:	Hofrat Dipl.-Ing.Dr. Walter Kilian
Vizepräsident:	Univ.Doz.Dipl.-Ing.Dr. Otto H. Danneberg
Altpräsident:	Univ.-Prof.Dipl.-Ing.Dr. Othmar Nestroy
Generalsekretär:	Dipl.-Ing. Heide Spiegel
Schatzmeister:	Univ.-Doz.Dipl.-Ing.Dr. Eduard Klaghofer
1. Schriftleiter:	Univ.-Prof.Dipl.-Ing.Dr. Othmar Nestroy
2. Schriftleiter:	Dr. Max Eisenhut
Beisitzer:	Univ.Prof. Dipl.-Ing. Dr. Winfried E.H. Blum
	MR. Dipl.-Ing. Alois Geßl
Erweiterter Vorstand:	Dipl.-Ing. Dr. Karl Aichberger
	HR.Prof.Dipl.-Ing.Dr. Walther Beck
	Univ.-Doz.Dipl.-Ing.Dr. Otto Danneberg
	Univ.-Prof.Dipl.-Ing.Dr. Gerhard Glatzel
	OR.Dipl.-Ing. Arnold Köchl
	Dipl.-Ing. Franz Hinteregger
	Rat Dr. Franz Mutsch

Adresse: ÖBG, Gregor-Mendel-Strasse 33, 1180 Wien, Austria

Hungarian Soil Science Society

The General Meeting of the Hungarian Soil Science Society was held in Budapest on 5th February 1990. Prof.Dr. I. Szabolcs, the President of the Society presented a report on the activities, scientific and organizational achievements of the Society during the last 4 years. Special attention was paid in the report to the national and international scientific meetings and conferences and to the contacts with other national soil science societies.

Professor Szabolcs stated his retirement as President. The meeting expresses sincere thanks and appreciation to him for his more than 20 years successful activities in the Society. During the meeting the new officers and the 30-members Board of the Society were elected.

President:	Prof.Dr. G. Várallyay, Director of the Research Institute for Soils Science and Agricultural Chemistry of the Hungarian Academy of Sciences (RISSAC), Budapest
Honorary Presidents:	Prof.Dr. P. Stefanovits, Agricultural University, Gödöllö
	Prof.Dr. I. Szabolcs, RISSAC, Budapest
Vice-Presidents:	Prof.Dr. B. Debreczeni, Pannon Agricultural University, Kezsthely
	Prof. Dr. L. Hargitai, University of Horticulture and Food Industry, Budapest
	Dr. L. Hegedüs, Plant Protection and Soil Conservation Service, Budapest
	Prof.Dr. I. Láng, Secretary General of the Hungarian Academy of Sciences, Budapest
	Prof.Dr. L. Nyiri, Director of the Research Institute for Soil Tillage and Amelioration, Karcag
Secretariat:	Dr. E. Molnár and A. Lukács, RISSAC, Budapest

Chairmen of Commissions:

I. Soil Physics: Prof.Dr. G. Várallyay
II. Soil Chemistry: Prof.Dr. L. Hargitai
III. Soil Biology: Prof.Dr. J. Szegi, RISSAC, Budapest
IV. Soil Fertility and Plant Nutrition: Prof.Dr. B. Debreczeni
V. Soil Cartography: Dr. P. Zilahy, Hungarian Academy of Science, Budapest
VI. Soil Technology: Dr. M. Szinay, TAURUS Company, Budapest
VII. Soil Mineralogy: Dr. L. Gerei, Research Institute for Geography of the Hungarian Academy of Sciences, Budapest.

Address of the Secretariat: RISSAC, Herman Ottó u. 15, 1022 Budapest II, Hungary

Sociedad Latino-americano de la Ciencia del Suelo

The Latin American Society of Soil Science has established a permanent secretariat in Colombia. The address is:

Dr. Francisco Silva M.
Secretario General, SLACS
Carrera 11, no 66-34, oficina 204
Apartado Aereo 51791
Bogotá, Colombia
tel 2113383, telex 42368 icati-co

Association Française pour l'Etude du Sol

La nouvelle composition du Bureau de l'association est la suivante:

Président:	A. Ruellan
1er Vice-Président:	Cl. Cheverry
2ème Vice-Président:	E. Servat
Secrétaire Général:	M.-C. Girard
Secrétaire Général Adjoint:	D. Baize
Trésorier:	D. Tessier.

Du 19 au 21 Novembre 1990 les 2ème Journées Nationales d'Etude des Sols auront lieu à Orléans (France). Les sujets seront:

- Sols et environnements volcaniques
- Normalisation des données sols
- Référentiel Pédologique
- Cartographie assistée par ordinateur
- Communications libres.

A la suite des Journées Nationales de l'Etude des Sols, se tiendra également à Orléans, dans les mêmes locaux, le 108è Congrès de l'AFAS, Association Française pour l'Avancement des Sciences, le thème de ce Congrès étant: l'Homme et le Sol, utilisation et conservation des sols.

Adresse: Dr. M.-C. Girard, Secrétaire Général AFES, 4 rue Redon, 78370 Plaisir, France.

Sociedad Venezolana de la Ciencia del Suelo

The Xth Congress of the Soil Science Society of Venezuela was held in Maturin, Monagas State, on July 2-8, 1989. The theme of the meeting was 'Savanna Soils; Present and Future of Agriculture Development in Venezuela'. The meeting was attended by about 350 participants. Elections were held during the meeting for the new Executive Committee for the period 1989-1991, resulting as follows:

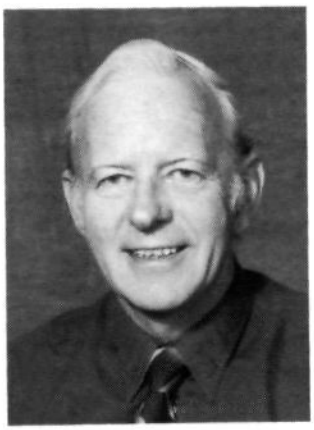
President:	Dr. Ricardo Ramírez
Secretary:	Dr. Graciano Elizalde
Treasurer:	Ing.Agr. Zenaida Lozano
Vocal:	Dr. Raul Zapata.

Commissions:

1. Soil Physics:	Ing.Agr. José V. Salazar and Ing. Adriana Florentino
2. Soil Biology:	Dr. Ivan D. López and Ing. Ramón Gutiérrez
3. Soil Fertility:	Ing. Alejandro Silva and Ing. Rodolfo Delgado
4. Soil Chemistry:	Ing. Anibal Mata and Dr. Fernando Pino
5. Soil Genesis:	Ing. Wilhelmus Peters and Ing. Pedro García
6. Soil Teaching:	Ing. Carmen de Cori and Ing. Omar Bravo

The next annual meeting of the Society will take place in 1991 at the University Francisco de Miranda in Coro, Falcón State. Kindly take note of the *new address* of the Soil Science Society of Venezuela: Sociedad Venezolana de la Ciencia del Suelo, Apartado Postal 312, Maracay 2101, Venezuela

IN MEMORIAM



Dr. M.L. Leamy (1930-1990)

Mike Leamy, formerly Director of the NZ Soil Bureau, died on New Year's Day 1990 in Lower Hutt, New Zealand. Born in Wellington, he joined the NZ Soil Bureau in 1949 and, as a technical trainee, was able to study geology at Victoria University of Wellington where he gained his M.Sc. in 1955. He was awarded a D.Sc. by Victoria University in 1976 for his contributions to soil science and Quaternary geology both in New Zealand and overseas.

His formative years as a young pedologist were spent mainly on soil surveys of semi-arid soils in Central Otago, New Zealand, with the primary aim of assessing soil suitability for irrigation. This work, however, aroused his interest in a wide range of other research topics including soil genesis, loess stratigraphy and paleosols, and nutrient deficiencies affecting stock.

Mike was fortunate to gain overseas experience early in his career, initially with Charles Wright on a soil survey of Fiji in 1955. He subsequently worked on soil surveys in Tasmania and Queensland in 1960/61 under an exchange agreement with CSIRO, spent 12964-66 in Malaysia training soil survey teams and compiling soil survey and soil classification manuals, and also spent 6 months in South Africa in 1970 working on the Upper Orange River Catchment Project, near Ficksburg in the Orange Free State.

In 1970, Mike was appointed Chief Pedologist, responsible to the Director of the NZ Soil Bureau for the organisation of soil surveys in New Zealand and the South Pacific Islands. Under his leadership, soil surveys in New Zealand were increasingly focused on national needs, including the provision of soils information for planning purposes in horticulture, irrigation, forestry and urban development. During the 1970s, he was also responsible for organising soil surveys in the Cook Islands, Niue, Tonga and Fiji.

Mike was quick to recognise the advantages of Soil Taxonomy over the ill-defined New Zealand Genetic Soil Classification and became a strong advocate for its use in New Zealand, at least on a trial basis. This conviction was strengthened by Guy Smith's working visit to New Zealand from late 1976 to 1978, when Guy formulated the Andisol Proposal and otherwise had an enormous impact on pedological thinking. The two men developed both a considerable rapport and a close working relationship, reflected in the published Conversations in Soil Taxonomy and in the fact that Guy Smith subsequently entrusted the further development of the Andisol Proposal to Mike's care.

In 1978, at the 2nd International Soil Classification Workshop in Thailand, the International Committee on the Classification of Andisols (ICOMAND) was established with Mike Leamy as chairman, to develop and test the proposal outlined by Guy Smith while he was in New Zealand. This appointment marked the beginning of Mike's close association with the Soil Conservation Service of the US Department of Agriculture.

The ensuing decade was to prove the most demanding and rewarding of Mike's professional life. He was chairman of the organising committee for the 1981 ISSS Conference on Soils with Variable Charge, held in New Zealand (fittingly the first international meeting to focus on Andisols), and later that year he was appointed

Director of the NZ Soil Bureau. The appointment did not prevent him from attending the 4th International Soil Classification Workshop in Rwanda shortly afterwards, and visiting Kenya and Indonesia to study more Andisols following the meeting. He was to prove very able at coping with both the management of Soil Bureau and the demands of ICOMAND and other international activities which involved, in particular, a great deal of travelling.

Following 10 Circular Letters, and further workshops in Chile and Ecuador, the Canary Islands, North-west USA and Japan, the proposal for the new order of Andisols was finally completed in 1988. Sadly, the principal architect, who had developed and modified the foundations laid by Guy Smith, did not have the satisfaction of seeing the chapter headed 'Andisols' in the Keys to Soil Taxonomy. The Andisol order of Soil Taxonomy will always be linked with Mike's name and many scientists working on soils in volcanic ash will remember his visits. He was seldom happier than studying soils in the field and debating their classification.

Mike was President of the NZ Society of Soil Science in 1976 and 1977, and contributed to the ISSS Congresses in Moscow, New Delhi and Hamburg. He was made a Fellow of the NZ Institute of Agricultural Sciences in 1986 for his contributions to agricultural science, particularly his championing of the need to identify and preserve land of high value for food production. Equally, he won the respect of New Zealand foresters for the perspective he provided on national committees that advised on forestry research programmes.

As Director of the Soil Bureau, Mike successfully led a multi-disciplinary team in the firm belief that pedology was the integrating discipline of soil science. He won the loyalty and affection of staff at all levels. Following his early retirement in 1989, an appreciation in NZ Soil News included the following words: 'You have always had an ear to hear, a word to offer, and the time to do both, and whether it was in technical discussion or in staff relations, the sincerity and good humour was always there'. Mike Leamy will be remembered above all as a natural leader, a wise counsellor an a staunch companion. He will be widely missed.

B. Clayden, Lower Hutt, New Zealand

C.M.J. Sluijsmans (1926-1990)

Clemens Martin Joseph (Sjef) Sluijsmans passed away on 13 March 1990 at Groningen, the Netherlands. He is survived by his wife, three children, and six grandchildren.

Sluijsmans was born on 23 July 1926 at Margraten, The Netherlands. In 1950 he graduated from the Agricultural University ('Landbouwhogeschool') at Wageningen, The Netherlands. In 1952, following military service, where he held the rank of cornet, he joined the State Agricultural Experiment Station & Soil Science Institute – TNO at Groningen, which became the Institute for Soil Fertility ('Instituut voor Bodemvruchtbaarheid') in 1958. Sluijsmans spent more than 35 years at the Institute for Soil Fertility and its predecessor: from 1952-1959 he was researcher in the department of Fertilization in Agriculture, from 1959-1967 he was head of the same department, and from 1967-1985 he was director of the institute. After his illness had forced him to retire as director of the institute, he continued his scientific work as a researcher in the department of Fertilization and Plant Nutrition until his early retirement in 1987.

During the more than 35 years of his professional career, Sluijsmans authored or co-authored more than 150 scientific papers and reports. His early research focused on the role of magnesium in soil fertility and plant nutrition. Later, this research was broadened to include calcium (lime), potassium and sodium. These investigations laid the foundation of the fertilizer recommendations for these elements in The Netherlands. After he became director, Sluijsmans continued to be involved in research. One of the subjects he worked on during that period was the role of animal manures in agriculture. Sluijsmans was among the first in the Netherlands to draw attention to the environmental problems associated with overproduction of animal manures resulting from intensive animal husbandry. At the request of the Commission of the European Communities he compiled a series of reports on the use of animal manures in countries of the EC (1978).

Sluijsmans was an Officer of the International Working Group on Soil Fertility, which comes under Commission IV of the ISSS, and was a Corresponding Member of the Federation of German Agricultural Research Institutions (VDLUFA).

In 1985 Sluijsmans became Knight in the Order of Orange-Nassau, in Royal recognition of his outstanding service to agricultural science in THe Netherlands.

Sjef Sluijsmans was a warm and caring man, with a great sense of humour. He will be dearly remembered by his former colleagues and friends.

Karl Harmsen, Haren, The Netherlands

APPOINTMENTS, HONOURS NOMINATIONS, DISTINCTIONS ERNENNUNGEN, AUSZEICHNUNGEN

Le Professeur **Georges Pedro**, ancien Président de l'Association Française pour l'Etude du Sol, a été appelé à siéger comme Membre titulaire au sein de l'Académie Européenne des Sciences qui a été fondée à Cambridge en septembre 1988.

Dr. **Philip Mahler** was appointed Assistant Director for Environmental Issues at FAO, Rome.

Prof. **Joseph Schell**, Director of the Max Planck Institute for Plant Breeding in Cologne, FRG, was awarded the prestigious Wolf Prize in Agriculture for 1990, in recognition of his pioneering work in genetic transformation of plants.

Dr. **Johanna Döbereiner** from Brazil was the recipient of the 1989 Unesco Science Prize for her contribution to develop sound, practical and cost-effective methods for nitrogen fixing microbiological systems for agriculture in tropical areas.

Prof. **Georges Cohen** from France was one of the two winners of the 1989 Carlos J. Finlay Prize (Unesco) for his contributions to microbial biochemistry and molecular biology.

Dr. **Benny K.G. Theng**, soil chemist/mineralogist has been elected Fellow of the Royal Society of New Zealand.

Dr. **William E. Larson** and Dr. **William C. Moldenhauer**, both from USA, received the Merit Award and the Distinguished Service Award respectively, from the World Association of Soil and Water Conservation.

Prof. **J.M. Lynch**, Vice Chairman of the ISSS Commission on Soil Biology, has become a member of the management committee of the new DECD Research Project on Biological Resource Management.

NOTEWORTHY

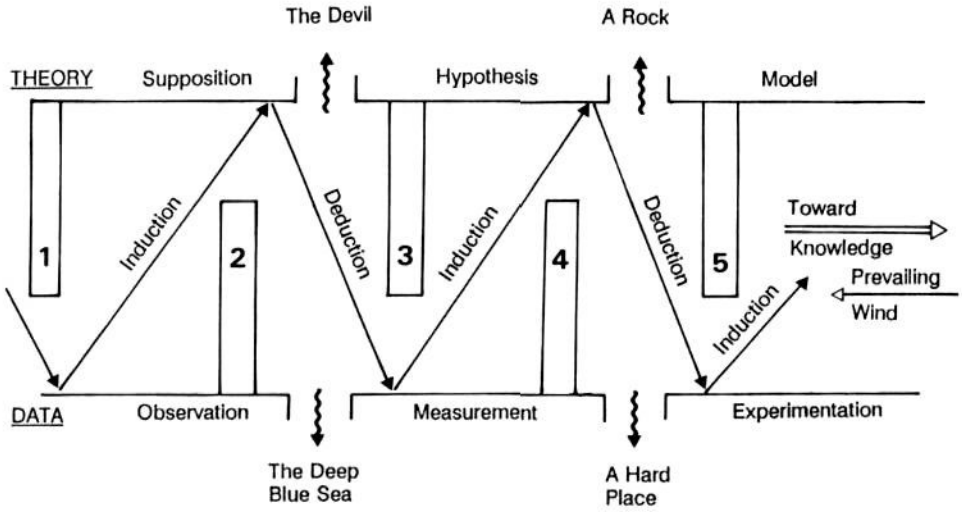
On the tortuous path of research

We present herein a map and travel guide for a typical stretch of that long journey toward knowledge, called research. The way toward knowledge is not a paved road, but a hazardous strait between two rugged shores. The would-be explorer is required to negotiate this channel against the direction of the prevailing wind (being the general resistance to progress) and is given only a small sailboat. Hence one must sail diagonally and tack back and forth between the two banks. The right-hand bank is the Data Bank, consisting of sections representing Observation, Measurement, and Experimentation. The left bank is the realm of Theory, including Supposition, Hypothesis, and Model.

The legs of the journey from the Data Bank to Theory are termed Induction, whereas the alternating legs are Deduction. En route, the navigator-scientist encounters numerous detours and barriers, any one of which can spell the disastrous end of his voyage.

The detours tend to lead the mariner astray. Among them are the following:

1. **The Devil**, being the diabolic temptation to veer farther and farther from Data and venture too deeply into premature speculation and unproven conclusions, in the mistaken belief that Theory alone is truth and that no more facts are necessary.
2. **The Deep Blue Sea**, being the opposite tendency to drift too far from Theory and to sink into the depths of endless Data, which eventually engulf and submerge our explorer in an amorphous mass of seemingly disparate facts without the benefit of a unifying and coordinating theoretical framework.
3. **A Rock** is where, again, the theory-bound scientist flounders upon a hopelessly complex, intractable, and untestable mathematical formation or upon an unstable or non-converging computer model.
4. **A Hard Place** is encountered when one attempts to set up comprehensive, long-term experiments in the field, where the vagaries of climate or heterogeneity of the material or human error or instrumental failure or the intrusion of 'extraneous effects' conspire to defeat one's best laid plans; and where -even at best – everything takes twice as long as it should ,so that one is tempted to give up too soon.



Even while avoiding the detours, the scientist-sailor must discern and contend with the fog-shrouded barriers obstructing progress. Among these are the following: (1) Conventional Wisdom, (2) Institutional Administration, (3) Funding Agencies, (4) Peer Reviews, and (5) Publication Policies. Other possible barriers, unshown on the map, are Committees, Interdisciplinary Divisions, or the lucrative temptations of Private Business and/or Early Retirement.

Only if one is astute or skilful or lucky enough to steer away from the detours and clear of the barriers – then and only then can one hope to progress, however tortuously and painstakingly, toward the acquisition of a bit more knowledge. On rare and unexpectedly fortuitous occasions comes a beneficent gust of wind or chance current (in the form of an inspired hunch or an intuitive leap of the imagination or a bisociation of ideas triggering an insight) that might propel our explorer forward to a sudden discovery. But such blessed occasions cannot be planned or depended upon. For most of the way, the journey is arduous, and new problems arise around each bend, as unforeseen regions come into view, crying to be explored. Alas, the winding journey never ends.

Daniel Hillel, Dept. of Plant & Soil Sciences, Univ. Massachusetts, USA

(copied from N.Z. Soil News 37(6))

INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE VERBINDUNGEN

OECD-AGRICULTURE

Co-operative research project on biological resource management.

In 1979 the Project on Food Production and Preservation of the OECD (Organisation for Economic Cooperation and Development) was established to strengthen co-operative efforts between research scientists and institutions in Member countries (Belgium, Denmark, Finland, France, germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States, Turkey, Yugoslavia). Beginning in 1990, the Project will have a new orientation, biological resource management, but will keep the same institutional and operational framework. Three new themes have been chosen: soil/microbial interactions, biotechnology applied to farm animals, and the impact of the introduction of new organisms in agriculture.

Theme N°1: *Modification of soil/microbial interactions to reduce inputs in farming systems* (Soil/microbe interactions).

Reduced inputs means economical production and less pollution. It may require a long-term integrated approach, involving a change from intensive farming to reduced tillage and the determination of behaviour and effect of micro- and macro-fauna. Investigations should include the effect of changes in water content and the uptake of plant nutrients. Use of naturally-occurring and of genetically-engineered organisms and improved-efficiency organic fertilizers in soil would be examined.

Theme N°2: *Use of biotechnology to improve animal health status and meat quality in farm animals* (Biotechnology for animals).

Several points of focus are important: grasslands, transgenic animals, reduced chemical residues (antibiotics, hormones, medicines) and reduced disease (salmonella), improvement in meat/fat ratio, cloning and animal uniformity, identification of key gene complexes involved in resistance to certain diseases, embryo storage (freezing) and transplantation, and germ plasm preservation. The opportunity exists for co-operation in a series of specialities (serology, biochemistry, DNA technology, pathology, and transgenic transvection), since no one place in the world has them all;

Theme N°3: *Assessment of benefits and risks of introducing new organisms in agricultural practice* (New organism introduction).

This theme would look at positive as well as negative aspects of new organism introduction at the macro- and micro-levels, considering organisms which are artificially-modified, naturally-modified, or unmodified. It would involve elements of biotechnology, environment, and biological control, especially in the rhizosphere. Approaches may include among others, pathogens, engineered organisms, classical unexploited introductions (for principle of comparison), accidental of migratory introductions, crop (food) organisms, and control (vs. pests, frost, stress) organisms. Molecular mechanisms in response to stress due to interactions of biotic and or abiotic factors would be emphasized. OECD's role in determining research protocols, what to assess and how to quantify it, would be essential.

The Project also awards annual fellowships to scientists willing to carry out research abroad on the above topics.

Information on fellowships: Mr. Camille Raichon, Directorate for Food, Agriculture and Fisheries, Organisation for Economic Co-operation and Development (OECD), 2 rue André-Pascal, 75775 Paris Cedex 16, France.

Information on Theme nos: Prof. J.M. Lynch, Head Microbiology Dept., Institute of Horticultural Research, Worthing Road, Littlehampton, West Sussex BN17 6LP, England.

TWAS

The Third World Academy of Sciences has established an 'International Commission on Peace and Food', which is likely to have its headquarters in Trieste, Italy. It will deal with key environmental issues such as destruction of forests, overfishing, soil erosion, depletion of ground-water resources, and the dangerous accumulation of toxic chemicals in soil, water and food. The chairman of the Commission is Dr. M.S. Swaminathan, from India.

Address: TWAS, c/o ICTP, P.O. Box 586, 34136 Trieste, Italy.

UNESCO-MAB

Long-Term Ecological Research: International Workshops I and II.

The recent upsurge in interest in long-term ecological research has been reflected in two international workshops on the topic. A first workshop was hosted by the MAB National Committee of the Federal Republic of Germany in Berchtesgaden in September 1988. The 441-page final report of this workshop was released in August 1989, in time for a second international workshop on long-term ecological research, which was held from 2-4 October 1989 in Albuquerque, New Mexico (ISA). Workshop II built on the results of Workshop I and on the professional contacts that had been fostered during that workshop. Specifically, the first workshop brought together scientists from various countries who began to identify common ecological processes being studies at two or more sites, who recognized that certain broad climatic phenomena were exerting similar influences on different ecological habitats, and who realized the necessity of much broader geographical comparisons and analyses if ecological principles were to be identified and tested.

Thus, the objectives of Workshop II were: (a) to begin the formal development of international coordinating and networking of collaborative long-term ecological research at specific sites; (b) to facilitate the introduction of the newest technologies into these collaborative research efforts; (c) to identify initial working groups in three selected biomes; and (d) to develop specific plants for international collaborative long-term ecological research in each of these three biomes.

Long-term research questions identified during the first workshop in Berchtesgaden provided a starting point for the objectives of Workshop II. The results of the first workshop had indicated that current ecological research in three biomes was particularly amenable to international collaborative investigations: arid to semi-arid grasslands and shrublands, temperate forests, and tundra-boreal forests. Thus, the plenary part of the Albuquerque workshop included a presentation from a representative of each of the tree biomes on the ecological questions that are amenable to long-term ecological research. The plenary also included an analysis of intensive modelling efforts of the boreal forest and a dissection of the reasons for success, and presentations on technologies integral to international long-term ecological research: (a) geographical information systems (GIS) coupled to simulation models; (b) remote sensing and data management such as the NASA First Integrated Field Experiment (FIFE); and (c) new communication technologies for sharing data and analyses.

Following these plenary presentations and discussions, working groups addressed the needs and directions for long-term ecological research in the three biomes, identifying a restricted number of research questions and hypotheses, planning the experimental approach, describing technologies to be employed, providing plans for data analysis, proposing a strategy for funding.

For further information about the Albuquerque workshop, contact Paul Risser, Vice-President for Research, University of New Mexico, Scholes Hall 108, Albuquerque, NM 87131, U.S.A.

from: InfoMAB *13* (1990)

AGRINET

The inaugural workshop of Agrinet, an association of European-based networks for Third World agricultural development was held at the Royal Tropical Institute, Amsterdam, in November 1989. ILEIA (Information Centre for Low-External-Input and Sustainable Agriculture, Leusden-the Netherlands), RRD (Réseau Recherche Développement, Paris) and ODI (Overseas Development Institute, London) were joined by other networks from Denmark, France, West Germany, Netherlands, Sweden, Switzerland and the United Kingdom. The workshop agreed on Agrinet's man

date, which will initially focus on bibliographic and translation services. A steering committee was formed with John Farrington (ODI) as chairman. A seminar is to be held in the next 12-18 months for network members and representatives of donor agencies, focusing on networking as a means or promoting the exchange of experiences among a wide range of practitioners and across language barriers.
More information: John Farrington, ODI, Regent's College, Inner Circle, Regent's Park, London NW1 4NS, England.

FAO-AGL

The allocation, within the approved FAO programme of Work and Budget 1990-1991 for the Land & Water Division (AGL) is US$ 14.4. The long-term goal of the Programme continues to be 'the more productive and efficient use of land, water and farm inputs, to meet present and future food and agricultural demands on a degradation-free and sustainable basis'. Within AGL there are four disciplines-oriented subprogrammes:

- inventory and interdisciplinary planning of optimal use of soil and water resources
- soil management and fertilizers, including integrated plant nutrition systems
- water development and management, including improved water use efficiency and training
- effects of climate fluctuations on cropping patterns and sea-level rise, including a field demonstration programme of sustainable practises, particularly in the field of soil and water conservation.

Information: Mr. Graham Higgins, Director AGL, FAO, via delle Terme di Caracalla, 00100 Rome, Italy.

THE NETHERLANDS PROGRAMME ON INTEGRATED SOIL RESEARCH

The programme was set up by four dutch ministries (Science and Education; Housing, Physical Planning & Environment; Agriculture, Nature Conservancy & Fisheries; Waterways & Public Works) and runs from 1986-1993. It entails stimulating interdisciplinary and multidisciplinary soil research and effectively disseminating the research results to those involved in soil management with respect to soil protection and soil sanitation. Further it should improve the scientific infrastructure in the Netherlands with regard to soil research.

Special funds are reserved for international activities. One is the funding of fellowships for Dutch scientists, to work in other countries to improve their knowledge and strengthen the international contacts in this field of science. Fellowships are also open to scientists from other countries to work in the Netherlands for periods up to 3 months. Applications should be made by the groups or institutes cooperating in the programme.

Another activity is the funding of international workshops on special issues of soil protection and soil sanitation, to be held in the Netherlands and supported by one or more dutch scientific groups or institutes, connected to the programme.

Further it is planned to organize international conferences and a conference on european scale can already by announced: *Eurosol 1992* (see separate announcement in this Bulletin).
Information: Dr. H. Eijsackers, Programme Director, P.O. Box 37, 6700 AA Wageningen, the Netherlands.

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

Meetings etc. marked with *, are organized or (co)-sponsored by ISSS, implying that participation with support from the ISSS Fellows Fund can be considered (for details on the Fund see page 76 of Bulletin 75).

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

Les réunions, etc., marquées d'un astérisque (*) sont organisées ou (co)-financées par l'AISS, ce qui implique qu'il y a possibilité d'y participer avec un financement du Fond pour Aspirants de l'AISS (voir détails page 76 du Bulletin 75).

Tagungen usw, versehen mit (*) werden organisiert bzw (mit)finanziert von der IBG, was bedeutet dass die Möglichkeit gegeben ist sich zu beteiligen mit finanzielle Unterstützung aus der IBG Stipendien (für Einzelheiten siehe Seite 76, Mitteilungsblatt no. 75).

Las reuniones, etc. marcadas con un asterisco (*) son organizadas o (co)-promovidas por la SICS, implicando la posibilidad de participar con el apoyo del Fondo para becarios de la SICS (ver detalles, p.76 del Boletin No.75).

1990

10th Congress of the International Union of Pure and Applied Biochemistry (IUPAB), India, August 1990.
Information: J. Tigyi, Secretary IUPAB, Institute of Biophysics, Medical University, Szigeti ut 12, 7643 Pécs, Hungary.

14th Congress of the International Commission on Irrigation and Drainage (ICID), Rio de Janeiro, Brazil, August 1990.
Information: Secretariat ICID, 48 Nyaya Marg. Chanakyapuri, New Delhi 11, India.

5th International Congress of the International Humic Substances Society (IHSS), Nagoya, Japan, August 5-9, 1990.
Information: Dr. Kiyoshi Zsutsuki, Nagoya University, Faculty of Agriculture, Chicusa, Nagoya 464, Japan.

11th International Congress of the International Union for the Study of Social Insects (IUSSI), Bangalore, India, August 5-11, 1990.
Information: The Secretary, 11th Int. Congress IUSSI, Dept. of Entomology, University of Agricultural Sciences, G.K.V.K. Campus, Bangalore 560 065, India.

6th International Congress of the International Association of Engineering Geology, Amsterdam, the Netherlands, August 6-10, 1990.
Information: Secretary-General of the 6th Intl. Congress IAEG-1990, P.O. Box 157, 2000 AD Haarlem, The Netherlands.

19th World Congress of the International Union of Forestry Research Organisations (IUFRO), Montreal, Canada, August 7-18, 1990.
Information: Secr. IUFRO, Tirolergarten, Schönbrunn, A-1131 Vienna, Austria.

****14th INTERNATIONAL CONGRESS OF SOIL SCIENCE**, Kyoto, Japan, August 12-18, 1990.
Information: Dr. K. Kumazawa, Japanese Society of Soil Science and Plant Nutrition, 26-10-202, Hongo 6-chome, Bunkyo-ku, Tokyo 113, Japan.

Regional Conference of the International Geographic Union on Asian Pacific Countries, Beijing, China, August 12-20, 1990.
Information: IGU Conference Secretariat, The Geographical Society of China, Building 917, Datun Road, Beijing 100012, China.

International Symposium on Remote Sensing and Water Resources, Enschede, the Netherlands, 20-24 August 1990.
Information: Secretariat of the International Symposium 'Remote Sensing and Water Resources', ITC (BPC), P.O.Box 6, 7500 AA Enschede, the Netherlands.

23rd International Horticultural Congress (ISHS), Firenze, Italy, August 22-Sept.1, 1990.
Information: Org. Committa, Societa Orticola Italiana, Via G. Donizetti 6, 50144 Firenze, Italy.

5th International Congress of Ecology, Yokohama City, Japan, August 23-30, 1990.
Information: Dr. A. Miyawaki, Inst. of Environmental Science & Technology, Yokohama National University, 156 Tokiwadai, Hodogaya-ku, Yokohama 240, Japan.

International Conference on Water Resources in Mountainous Regions, Lausanne, Switzerland, August 27-September 1, 1990. IAH and AHS.
Information: Dr. Aurèle Parriaux, Organizing Committee, Laboratory of Geology EPFL (GEOLEP), CH-1015 Lausanne, Switzerland. (telex 454 478 epfv-ch; fax 21 693 5060).

Meeting on Advances in Soil Organic Matter Research and the Impact on Agriculture and the Environment, University of Essex, England, September 3-4, 1990.
Information: Dr. W.S. Wilson, University of Essex, Dept. of Biology, Wivenhoe Park, Colchester CO4 3SQ, United Kingdom.

International Conference on Calibration and Reliability in Groundwater Modelling, September 3-6, 1990.
Information: Conference Secretariat Model CARE 90, c/o KIvI, P.O.Box 30424, 2500 GK The Hague, the Netherlands.

2nd meeting of the Scientific Advisory Committee for IGBP, Paris, France, September, 3-7, 1990.
Information: IGBP Secretariat, Royal Swedish Academy of Sciences, Box 50005, S-10405 Stockholm, Sweden. (telex 17509 igbp-s, fax 46-8-166405)

Seminar on Interaction between Agricultural Systems and Soil Conservation in the Mediterranean Belt, Lisboa, Portugal, September 4-8, 1990. (European Society for Soil Conservation).
Information: Secretariat, Dept. de Engenharia Civil, Secço de Hidráulica, a/c Prof. Miguel Azevedo Coutinho, Instituto Superior Técnico, Universidade Técnica de Lisboa, Av. Rovisco Pais, P-1096 Lisboa Codex, Portugal (telex 63423 istutl p; fax 351-1-89-92-42).

5th International Symposium on Nitrogen Fixation with Non-Legumes, Florence, Italy, September 10-14, 1990.
Information: Organizing Secretariat, Studio EGA, Via dei Brunelleschi 2, 50 100 Firenze (Florence), Italy.

Soil and Land Use in Scotland, Autumn meeting of the British Society of Soil Science, Edinburgh, Scotland, September 17-20, 1990.
Information: Dr. R.M. Rees, Edinburgh School of Agriculture, West Mains Road, Edinburgh EH9 3JG, Scotland.

Conference on Hydrological Research Basins and the Environment; 3rd General Assembly of the European Network of Experimental and Representative Basins, Wageningen, the Netherlands, September 24-28, 1990.
Information: P. Warmerdam, Agricultural University Wageningen, Dept. of Hydrology, Soil Physics and Hydraulics, Nieuwe Kanaal 11, 6709 PA Wageningen, the Netherlands (telex 45917 burlh; fax 31-8370-84759).

Conference on Biological Nitrogen Fixation and Sustainability of Tropical Agriculture, Ibadan, Nigeria, September *25-29, 1990.*
Information: Dr. K. Mulongoy, IITA, Oyo Road, PMB 5320, Ibadan, Nigeria; *or:* IITA, c/o L.W. Lambourn & Co., Carolyn House, 26 Dingwall Road, Croydon CR9 3EE, England

Groundwater Pollution: Control and Prevention, Porto Allegre, Brazil, September 1990.
Information: IAWPRC, 1, Queen Anne's Gate, London, SW1H 9BT, England.

International Symposium on the Use of Stable Isotopes in Plant Nutrition, Soil Fertility and Environmental Studies, Vienna, Austria, October 1-5, 1990.
Information: Dr. G.D. Bowen, Irrigation and Crop Production Section, Joint FAO/IAEA Division, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

23rd General Assembly of the International Council of Scientific Unions (ICSU), Sofia, Bulgaria, October 1-5, 1990.
Information: Mrs. J. Marton-Lefèvre, Executive Secretary, 51 bd de Montmorency, F-75016 Paris, France (telex: icsu 630553 f; fax: (33-1) 42-88-94-31).

1st International Symposium on Environmental Studies on Tropical Rain Forests – FOREST '90, Manaus, Brazil, October 7-13, 1990. (Brazilian Society of the Appraisal of the Environment, a.o.)
Information: Organizing Committee – FOREST '90, P.O. Box 35591, 20001 Rio de Janeiro, R.J. Brazil. (fax 55-21-252-9269).

8th International Soil Correlation Meeting: Classification and Management of Wet Soils, Louisiana, Texas, October 7-20, 1990.
Information: Dr. Hari Eswaran, Soil Management Support Services, P.O. Box 2890, Washington D.C. 20013, U.S.A.

3rd General Conference of the Third World Academy of Sciences (TWAS), Venezuela, October 15-19, 1990.
Information: Executive Secretary, TWAS, P.O. Box 586, Miramare, Strada Costiera 11, 34100 Trieste, Italy. (telex 460392).

10th World Fertilizer Congress of CIEC: Efficient Fertilization, Manuring and Irrigation for Improving Crop Yield, Food Quality and Renewable Resources, Nicosia, Cyprus, October 21-27, 1990; with a one-day **International Symposium on the Role of Allelopathy in Agriculture**, October 26, 1990.
Information: Organizing Committee, 10th World Fertilizer Congress of CIEC, Agricultural Research Institute, Nicosia, Cyprus.

International Conference on Agricultural Engineering, Berlin, Fed.Rep. of Germany, October 24-27 1990.
Information: Dipl.Ing. Erich Luckey, Manager Agricultural Division, Verein Deutscher Ingenieure, Graf-Recke-Straße 84, Pf 1139, 4000 Düsseldorf 1, F.R.G.

Annual meeting of the Soil Science Society of America: 'Agronomy and Environment', San Antonio, Texas, USA, October 27-November 1, 1990.
Information: R.F. Barnes, 677 South Segoe Road, Madison WI 53711, USA.

2nd World Climate Conference, Geneva, Switzerland, October 29-November 7, 1990. (Co-sponsored by WMO, UNEP, Unesco and ICSU).
Information: Coordinator SWCC, c/o World Meteorological Organization, P.O. Box 2300, 1211 Geneva 2, Switzerland.

International Symposium on Photogrammetry and Remote Sensing G.I.S. Utilization and Quality, Strasbourg, France, November 6-9, 1990.
Information: Société Française de Photogrammétrie et de Télédétection, Colloque Strasbourg 1990, 2 avenue Pasteur, 94160 Saint-Mande, France.

International Symposium on Nitrates, Agriculture, Water, Paris, France, November 7-8, 1990.
Information: ADEPRINA, Institut National Agronomique Paris-Grignon, 16 rue C. Bernard, 75231 Paris, France.

2nd International Symposium on Advanced Technolgoy in Natural Resource Management – Resource Technology 90. Wahington, USA, November 12-15, 1990.
Information: Resource Technology 90, 2625 Redwing Rd., Drake Executive Plaza, Suite 120, Fort Collins, CO 80526, U.S.A.

108è Congrès National de l'Association Française pour l'Avancement des Sciences, Orléans, France, 22-24 novembre 1990.
Information: J. Boulaine, INA-PG, 16 rue Claude Bernard, 75231 Paris, France.

General Assembly of the International Cartographic Association, Bournemouth, England, December 1990.
Information: Mr. D.T. Pearce, 24 Strickland Road, Mr. Pleasant WA 6153, Australia.

1st European Society of Agronomy Congress, Paris, France, December 5-7, 1990.
Information: ESA Congress Secretary, INRA, S. de Parcevaux-Bioclimatologie, Centre de Grignon, 78850 Thiverval-Grignon, France.

3rd International Conference on Contaminated Soil, Karlsruhe, FRG, Dec. 10-14, 1990.
Information: Dr. A. Breeuwsma, Staring Centre, PO.Box 125, 6700 AB Wageningen, the Netherlands; *or:* Dr. A. Ayoub, Environmental Management, UNEP, P.O. Box 30552, Nairobi, Kenya

1991

International Workshop on Soil Water Balance in the Sudano-Sahelian Zone, Niamey, Niger, February 18-22, 1990.
Information: Dr. M.V.K. Sivakumar, Principal Agroclimatologist, ICRISAT Sahelian Center, B.P. 12404, Niamey, Niger (telex icrisat 5406 ni; fax 73-43-29).

International Seminar on Photogrammetry and Geographic Information Systems, Zürich, Switzerland, April 8-12, 1991.
Information: Secretariat Photogrammetry/GIS, Geographisches Institut, Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich (fax 41-1-362-5227).

International Conference on Environmental Pollution, Lisboa, Portugal, April 15-19, 1991. European Centre for Pollution Research, UNEP and Unesco co-sponsoring.
Information: ICEP Conference Office, ICTR Secretariat, 11-12 Pall Mall, London SW1Y 5LU, U.K. (telex 925312 reico g; fax 01-976-1587).

4th International Rangeland Congress, Montpellier, France, April 22-26, 1991.
Information: H.N. Le Houérou, Chairman, CNEARC, B.P. 5098, F-34003 Montpellier Cedex, France

4th International Symposium on Land Subsidence, Houston, Texas, USA, May 12-18, 1991.
Information: Ivan Johnson, Chairman FISOLS, A. Ivan Johnson Inc., 7474 Upham Court, Arvada CO 80003, USA.

7th World Congress on Water Resources – 'Water for Sustainable Development in the 21st Century', Rabat, Morocco, May 13-18, 1991. (International Water Resources Association -IWRA)
Information: 7th IWRA Congress Secretariat, Administration de l'Hydraulique, Direction de la Recherche et de la Planification de l'Eau, Rue Hassan Benchekroun, Agdal-Rabat, Morocco.

1st European Symposium on Terrestrial Ecosystems. Forests and Woodlands. Florence, Italy, May 20-24, 1991.
Information: ICARIA, Via Zannoni, 45, 40134 Bologna, Italy. *or:* A . Teller, European Science Foundation, C/o C.E.C. DG XII-E, 200 rue de la Loi, 1049 Brussels, Belgium.

International MAB Workshop on Phosphorous Dynamics and Retention in Ecotones of Temperate Lowland rivers and Lakes. Mikolajki, Poland, May 20-26, 1991.
Information: A. Hillbricht Ilkowska, Institute of Ecology, Polish Academy of Sciences, 05-092 Lomianki, Poland.

International Symposium on Soil Crusting: Physical and Chemical Processes, Athens, Georgia, United States of America, May 30-June 1, 1991.
Information: Ms. Amy Stewart, Georgia Center For Continuing Education, Room 279 Georgia Center, University of Georgia, Athens, GA 30602, U.S.A.

17th Pacific Science Congress, Honolulu, Hawaii, May 27-June 2, 1991, including a symposium on global environmental change in the Pacific.
Information: R.W. Grigg and F.R. Mackenzie, Organizing Committee, 2424 Maile Way, Fourth Floor, Honolulu, HI 96822, U.S.A.

12th Conference of the International Soil Tillage Research Organization (ISTRO), IITA, Ibadan, Nigeria, July 8-12, 1991.
Information: Dr. R. Lal, Dept. of Agronomy, 2021 Coffey Road, The Ohio State University, Columbus, Ohio 43210-1086, U.S.A.

13th Congress of the International Union for Quaternary Research (INQUA), Beijing, China, August 2-9, 1991.
Information: Dr. Ch. Schluchter, Engineering Geology, ETH-Hönggerberg, Ch-8093 Zürich, Switzerland.

3rd Conference of the International Federation of Classification Societies, Edinburgh, Scotland, August 6-9, 1991.
Information: IFCS-91 Organizing Committee, Conference Centre, Heriot-Watt University, Edinburgh EH14 4AS, Scotland.

20th General Assembly of the International Union of Geodesy and Geophysics, with symposia and workshops by the International Association of Hydrological Sciences (IAHS), such as 'Hydrological Basis of Ecologically Sound Management of Soil and Groundwater' and 'Hydrological Interactions between Atmosphere, Soil and Vegetation', Vienna, Austria, August 11-24, 1991.
Information: Dr. F. Nobilis, BM für Land- und Forstwirtschaft, Hydrographisches Zentralbüro, Marxergasse 2, A-1030 Vienna, Austria; *or:* Mr. H.J. Colenbrander, Secretary-general IAHS, P.O. Box 297, 2501 BD The Hague, The Netherlands.

2nd International Symposium on Soil Testing and Plant Analysis in the Global Community, Orlando, Florida USA, August 22-27, 1991.
Information: Council on Soil Testing and Plant Analysis, Georgia University Station, P.O. Box 2007, Athens, GA 306012-0007, U.S.A. (fax 404-548-4891).

21st International Conference of Agricultural Economists, Tokyo, Japan, August 22-29, 1991.
Information: XXI ICAE Secretariat, c/o International Communications Inc., Kasho Bldg. 2F, 2-14-9, Nihombashi, Chuo-ku, Tokyo 103, Japan (telex 222-3585 ics j; fax 3-273-2445).

***11th International Zoology Colloquium.** Jybaskyla, Finland, August 1991. (ISSS Subcommission D).
Information: K. Lee, CSIRO Division of Soils, P.O.B. 2, PO Glen Osmond, SA 5064, Australia.

24th General Assembly of the International Union of Biological Sciences, and Associated Symposia, Amsterdam, the Netherlands, September 1-7, 1991.
Information: IUBS Secretariat, 51 bd de Montmorency, 75016 Paris, France.

10th World Forestry Congress of FAO, Paris, France, September 17-26, 1991.
Information: M. Jean Gadant, Centre Technique Forestier Tropical, 45bis Avenue de la Belle Gabrielle, 94736 Nogent-sur-Marne Cedex, France (telex: cetefo 264 653 f; fax: 1-43-94-44-96) *or:* M. Michel Khouzami, FAO, Dépt. des Forêts, Via delle Terme di Caracalla, 00100 Rome, Italie (telex 610 181 fao-i; fax: 39-6-51-41-368)

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

Simposio Internacional Uso y Manefo de Suelos Volcánicos Endurecídos, Montecillo, México, Octubre 21-26, 1991.
Información: Héctor M. Arias, Centor de Edafologia, Colegio de Postgraduados, Montecillo, Méx., 56230, México. (fax 52-595-4-5077.

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

*** 2nd African Soil Science Society Conference** 'Soils and Water Management for Sustainable Productivity', Cairo, Egypt, November 4-10, 1991.
Information: Prof.Dr. A.M. Elgala, Chairman of the Organizing Committee, Dept. of Soil Science, Faculty of Agriculture, Ain Shams University, Shobra El-Khaima, Cairo, Egypt (telex 94070 ushms un).

8th Afro-Asian Regional Conference on 'Land and Water Management in Afro-Asian Countries' ntative), Bangkok, Thailand, November 18-23, 1991.
Informatio.. Secretary-General ICID, 48, Nyaya Marg, Chanakyapuri, New Delhi 110021, India.

1992

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

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

2nd United Nations Conference on Environment and Development, Brasilia, Brazil, June 1992. (With a parallel NGO 'Congress of the Peoples of the Earth).
Information: Dr. Maurice Strong, Secretary-General UNCED, c/o United Nations, Geneva, Switzerland.

***11th International Soil Zoology Colloquium**, August 1992, Jyvaskyla, Finland (ISSS Subcommission D).
Information: K. Lee, CSIRO, Division of Soils, P.B.2, P.O. Glen Osmond, SA 5064, Australia

27th International Geographical Congress, Washington, USA, August 9-14, 1992
Information: L.A. Kosinski, Secretary-General IGU, Dept. of Geography, University of Alberta, Edmonton, Canada T6G 2H4.

European Conference on Integrated Soil Research, Maastricht, the Netherlands, September 6-12, 1992.
Information: Dr. H. Eijsackers, Programme Director, Netherlands Programme on Integrated Soil Research, P.o. Box 37, 6700 AA Wageningen, the Netherlands. (fax (0)8370-82419).

NEW PUBLICATIONS
NOUVELLES PUBLICATIONS
NEUE VERÖFFENTLICHUNGEN

Titles of new publications are listed here for information. Orders can not be handled by the ISSS Secretariat but should be placed through a bookstore or directly with the publishers. Nearly all publications mentioned can however be viewed at the seat of the Society, c/o the International Soil Reference and Information Centre (ISRIC) in Wageningen, the Netherlands.

Les titres de nouvelles publications sont mentionnés à titre d'information. Veuillez adresser vos commandes non pas au Secrétariat de l'AISS, mais à une librairie ou directement aux éditeurs. Presque toutes les publications mentionnées peuvent être consultées au siège de l'AISS, p/a Centre International de Référence et d'Information Pédologique (ISRIC) à Wageningen, Pays-Bas.

Die Titel neuer Veröffentlichungen sind hier zu Information angeführt. Bitte richten Sie Ihre Bestellungen nicht an das IBG Sekretariat sondern an den Buchhandel oder direkt an die Verlage. Fast alle Veröffentlichungen sind jedoch zu besichtingen an der Stelle der IBG, p/a Internationales Bodenreferenz und Informations Zentrum (ISRIC) im Wageningen, Holland.

Los titulos de nuevas publicaciones son citados para su información. Las pedidas deben ser dirigidas a través de una librería o directamente al editorial. Sin embargo casi todas las publicaciones mencionadas pueden ser consultadas en la sede de la SICS en el Centro Internacional de Referencia e Información de Suelos en Wageningen, Holanda.

Humic Substances II. In Search of Structure. M.H.B. Hayes, P. MacCarthy, R.L. Malcolm and R.S. Swift. John Wiley & Sons, Chichester, New York, 1989, xiii + 764 p. ISBN 0-471-92279-X. Hardbound.

The motto of The International Humic Substances Society (IHSS) is 'To Advance the Knowledge, Research and Applications of Humic Substance'. It was decided, when the Society was founded in 1988, that a forum was needed to bring together soil, water, and coal scientists with interests in humic substances, and to provide opportunities for them to exchange ideas, skills, and viewpoints. Thus a decision was taken to convene biennial conferences which would focus attention on specific aspects of the nature and chemistry of humic substances. The early conferences were structured to allow invited participants to present their views of the state of the art for specific topics, and, on the basis of discussions with delegates, to modify their concepts as needed when preparing manuscripts for publication in a series of books proposed by the Executive Board of the Society. In this way it was hoped that there would emerge authoritative texts written and edited by scientists who are recognized as being experts in their fields.

The first international conference of IHSS was held in Estes Park, Colorado, during August, 1983 and the first of the IHSS books, Humic Substances in Soil, Sediment, and Water (edited by G.R. Aiken) published in 1985 by Wiley, deals with the geochemistry, isolation and characterization of the humic substances from the different natural environments. The second conference was held at the University of Birmingham in July, 1984. This book, the second in the series promoted by the IHSS, is based on the invited papers presented at the Birmingham conference, and the third book in the series Humic Substances III. Interactions with Metals, Minerals and Organic Chemicals (edited by P. MacCarthy et el.) to be published by Wiley, also has its origins in invited papers presented at that conference.

The search for structure in humic substances has continued since the development of chemistry has allowed progress to be made in understanding composition and structure of other major naturally occurring polymers, such as proteins and polysaccharides. This search has been hampered by the complexities of the structures, and by the fact that a vast variety of molecules is present in any small batch of humic substances. In the days before 'factory farming' was introduced, farmers understood and had respect for the role of humus in the soil, and there was not an urgent need to understand the extents or the mechanisms by which humic substances interacted with the other soil constituents. Nowadays, however, the ravages of erosion which arise from the depletion of humus reserves where continuous cultivation is practised, and the reliance on the additions of chemicals to soil and to water supplies, have given a new awareness of the importance and influences of humic substances in soils and in waters.

Price: £ 65; US$ 119.60.
Orders to: see below.

The Rhizosphere. Wiley Series in Ecological and Applied Microbiology. J.M. Lynch, editor. John Wiley & Sons, Chichester, New York, 1990, xiv + 458 p. ISBN 0-471-92548-9. Hardback.

The productivity and quality of flowers, fruit, leaves and seeds are determined by the activities of root systems and their associated physical and biological environment.

The rhizosphere has become an important area to test and evaluate new opportunities being developed in biotechnology. This is, of course, not a new concept for the rhizosphere, as rhizobial inoculants have

been used to enhance nitrogen fixation and growth of legumes since the turn of the century. However, the novelty in recent years is the recognition that biological processes are regulated and can be manipulated genetically, opening enormous opportunities in the future for optimization of plant productivity in managed and natural ecosystems, while minimizing the potential of environmental damage by misuse of agrochemicals so feared by Rachel Carson in *Silent Spring*.

This book stresses the need for an interdisciplinary approach to the rhizosphere involving agronomy, ecology, genetics, microbiology, plant pathology and physiology and soil science. Its applications range from the environmental impact of genetically engineered organisms to reduced-input framing systems.

An international team of authors at the forefront of research contribute to make this book essential reading for microbiologists, plant pathologists, agronomists, plant and soil scientists.
Price: £ 60.00
Orders to: John Wiley & Sons, Baffins Lane, Chichester, West Sussex, PO19 1UD, England; *or:* John Wiley & Sons, 1 Wiley Drive, Somerset NJ 08873, U.S.A.

Atlas of the Surface Heat Balance of the Continents. Components and Parameters Estimated from Climatological Data. D. Henning. Gebr. Borntraeger, Berlin, Stuttgart, 1989, vi + 402 p. ISBN 3-443-01025-3. Hardback.

This volume is a continuation and completion of F. Albrecht's investigations on the continental heat balance carried out in the early 1960s. First results (Albrecht, 1965) were published shortly after the author's death. Estimates of the heat balance components for the oceans, however, were completed by Albrecht in 1961.

Thanks to modern computer facilities and because of the considerable augmentation of climatological data after Albrecht's death, the scope of the present investigation was expanded beyond the original target by applying a few more procedures in order to assess the power of Albrecht's approach. The methods which were considered appropriate for that purpose are those of Budyko and Penman. The physical bases of these methods are not too different from each other, and the approaches of Budyko and Penman had received a fairly high degree of publicity for a long time.

In the maps and tables, absolute figures are given only for the results derived by the Albrecht method while results obtained by the two other methods are presented in relative units only, i.e. as differences or quotients. The assessment of the Albrecht results to be, on a global scale, the least erroneous approaches to reality is strongly based on comparisons of the calculated figures for net radiation with those derived from measurements.

Perhaps, the most exciting term of the surface heat balance is the flux of latent heat because it is a component of both the heat and the water balance. Here a compromise has been made in favour of the water balance: the flux of latent heat is always referred to and shown as evaporation or evapotranspiration, respectively.

The maps are prepared in the equal-area Mollweide projection at scales between 1:28 million for Europe, and 1:58 million for Asia. Alltogether, the atlas has 327 continent maps.

The surface fluxes and related parameters presented here, in general, cannot yet be derived from satellite measurements, at least not in the temporal reference used here. It is therefore believed that the estimates obtained by the Albrecht method represent a competitive contribution, or alternative, to all aspects of heat balance climatology.
Price: DM 178.
Orders to: E. Schweitzerbart'sche Verlagsbuchhandlung, Johannesstrasse 3A, D-7000 Stuttgart 1, Fed.Rep. of Germany.

Soils for Development. ITC-Ghent, Publication Series No.1. O. van Cleemput, editor. State University Ghent, 1989, 107 p.

This publication contains the contributions given at the symposium commemorating the 25th anniversary of the International Training Centre for Post-Graduate Soil Scientists, ITC, in Ghent, Belgium. After an introduction by C. Sijs and an address by W.G. Sombroek, Secretary-general of the ISSS, five papers were presented on soil classification, land use, soil suitability, nitrogen and soil conservation.
Requests to: ITC, Geological Institute, State University Ghent, Krijgslaan 281/S8, B-9000 Ghent, Belgium.

Man and the Biosphere Series – MAB-Series. Editor J.N.R. Jeffers. Published by Unesco and the Parthenon Publishing Group.

Improving scientific understanding of natural and social processes relating to man's interactions with his environment, providing information useful to decision-making on resource use, promoting the conservation of genetic diversity as an integral part of land management, enjoining the efforts of scientists, policy-makers and local people in problem-solving ventures, mobilizing resources for field activities, strengthening of regional cooperative frameworks. These are some of the generic characteristics of Unesco's Man and the Biosphere Programme.

The Man and the Biosphere (MAB) Programme was launched by Unesco in the early 1970s. It is a nationally based, international programme of research, training, demonstration and information diffusion. The overall aim is to contribute to efforts for providing the scientific basis and trained personnel needed

to deal with problems of rational utilization and conservation of settlements. MAB emphasized research for solving problems: it thus involves research by interdisciplinary teams on the interactions between ecological and social systems; field training; and applying a systems approach to understanding the relationships between the natural and human components of development and environmental management.

The Man and the Biosphere Series has been launched with the aim of communicating some of the results generated by the MAB Programme to a wider audience than the existing Unesco series of technical notes and state-of-knowledge reports. The series is aimed primarily at upper level university students, scientists and resource managers, who are not necessarily specialists in ecology. The books will not normally be suitable for undergraduate text books but rather will provide additional resource material in the form of case studies based on primary data collection and written by the researchers involved; global and regional syntheses of comparative research conducted in several sites or countries; and state-of-the-art assessments of knowledge or methodological approaches based on scientific meetings, commissioned reports or panels of experts.

The series will span a range of environmental and natural resource issues.

The Control of Eutrophication of Lakes and Reservoirs. Man and the Biosphere Series Volume 1. S.O. Ryding and W. Rast, editors. Unesco, Paris and the Parthenon Press, Carnforth and Park Ridge, 1989, xxii + 314p. ISBN 1-85070-257-8. Hardbound.

Eutrophication of lakes and reservoirs continues to rank as one of the most pervasive water pollution problems. this book focuses on the practical control of eutrophication and attempts to bring existing knowledge and experience together in a form for use by both a technical and non-technical audience. It has been designed to cover most of the lake and reservoir situations where eutrophication is likely to be encountered – in temperate, tropical and sub-arctic regions, as well as both natural lakes and man-made reservoirs.

Among the questions addressed are: What factors are most important to policy-makers? What factors affect the extent of eutrophication? How can models be helpful? What should be measured in the watershed and in the waterbody? How should new information be used? What measures are available to treat eutrophication or to re-use nutrients for other purposes? How can an overall control strategy be developed? What practical experience and case studies are available?

The book has been prepared by a multi-national team of authors and represents a collective international effort geared to serve the needs of people dealing with eutrophication in different countries of the world.
Price: £ 28.
Orders to: see below.

An Amazonian Rainforest. The Structure and Function of a Nutrient Stressed Ecosystem and the Impact of Slash-and-Burn Agriculture. Man and the Biosphere Series Volume 2. C.F. Jordan, editor. Unesco, Paris and The Parthenon Press, Carnforth and Park Ridge, 1989, xii + 176p. ISBN 1-85070-230-6.

The contents of this book arose form an intensive study of the ecology of the rain forest at a research site in the Amazon Territory of Venezuela, at San Carlos de Rio Negro. The book does not, however, attempt to present the results of the whole of that study, which represented a major research project. It concentrates, instead, on a limited range of questions related to nutrient stress in tropical rain forest, namely: (1) Are the plants and animals of rain forest under nutrient stress, and, if so, how have they adapted to that stress? (2) What are the effects of slash-and-burn agriculture on the nutrient status and productivity of tropical forest sites?

The answers to these questions are of crucial importance for the management and conservation of tropical forest, and it is necessary, therefore, to consider the extent to which the results obtained at San Carlos can be applied to other tropical forests.

Resource managers, administrators, politicians and interested, but non-scientific, members of an increasingly well-informed general public will find much that is of both interest and value in the book, at a time when the rapid disappearance of tropical forest is becoming an issue of international concern. Much of that concern is currently focused on the effects of global climatic warming, but the fate of essential nutrients when tropical forests are felled is also of considerable importance, particularly for the countries in which the forests are situated.
Price: £ 28.00
Orders to: The Parthenon Publishing Group Ltd., Casterton Hall, Carnforth, Lanc. LA6 2LA, England; *or:* 120 Mill Road, Park Ridge, NJ 07656, U.S.A.; *or:* Unesco Library, Paris or Unesco's official distributors around the world.

Succession in Abandoned Fields. Studies in Central Bohemia, Czechoslovakia. Geobotany 15. J. Osbornová, M. Kováová, J. Lep and K. Prach, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1990, xv + 168p. ISBN O-7923-0401-2. Hardbound.

Secondary succession in abandoned fields, often called old-field succession, has been frequently studied in the last three decades. Abandoned fields offer several advantages for ecological research: they are worldwide and thus allow comparison of results from various geographical regions; particular stages of succession sometimes occur in relatively large and homogeneous areas and it is possible to determine their age exactly and independently (i.e. not on the basis of current vegetation characteristics); and succession can be initiated experimentally.

In Czechoslovakia, abandonment of agricultural land is a rare practice at present. Nevertheless, in the middle seventies, we were able to find a sufficient number of differently aged abandoned fields in the Bohemian Karst near Prague.

The project was designed to describe some basic temporal patterns in the successional development and to test some hypotheses of successional theory at the levels of the population, community and ecosystem. The results appear to be relevant even for comparison with some new theories that have emerged during the last decade. Both plant and animal populations, as well as various characteristics were investigated. However, various aspects were covered unequally; some aspects were not covered at all.

The study remains vegetation-centred but some environmental characteristics, especially the soil subsystem, are also assessed. The data assembled in the text, together with numerous illustrations, provide a proportional view of successional patterns in abandoned fields in the landscape, with many general ecological implications, relevant for the contemporary ecological theory, including concepts of stability, life-history strategies and dynamics of nutrient allocation.

Price: Dfl. 185; US$ 94; £ 62.

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

Typologie des sols de l'Yonne, Plateaux de Bourgogne. D. Baize, illustrations par L. Rousset. INRA, Paris, 1989, 154p. ISBN 2-7380-0202-1.

La région naturelle dite 'Plateaux de Bourgogne' est d'abord présentée sous tous ses aspects: géologie, relief, paysage rural, végétation, en insistant sur les relations étroites qui existent entre la nature des roches (calcaires plus ou moins durs et marnes du Jurassique), l'aspect du paysage et la nature des sols.

Puis, grâce aux connaissances accumulées au cours de 22 ans de cartographie minutieuse et d'analyse du milieu, l'auteur présente 46 fiches qui détaillent les caractères et les propriétés des 46 'types de sols' répertoriés au sein de cette région naturelle.

Le secteur étudié concerne le département de l'Yonne, mais les sols présentés et les faciès géologiques décrits se prolongent très largement dans les départements voisins. C'est pourquoi cet ouvrage présente un intérêt d'ampleur régionale. C'est aussi, au plan méthodologique, un exemple de ce qui peut être fait pour valoriser et compléter les travaux de cartographie des sols.

Rédigé en termes simples, ce guide pratique comporte 2 cartes et de nombreuses illustrations dont plusieurs planches en couleur. Il s'adresse à tous ceux qui veulent étudier les sols et comprendre comment ils sont répartis dans le paysage: agro-pédologues, agronomes, techniciens agricoles, forestiers, écologues et phyto-écologues, géographes, ... mais aussi enseignants de tous niveaux.

Prix: FF 160.

Commandes à: voir ci-dessous.

Pâturages et Alimentation des Ruminants en Zone Tropicale Humide. Pointe-à-Pitre (Guadeloupe), 2-6 juin 1987. A. Xande et G. Alexandre, éditeurs. INRA, Paris, 1989, xviii + 535p. ISBN 2-7380-0154-8.

L'alimentation est l'un des principaux facteurs limitant de la production régulière des ruminants en zone tropicale.

Les progrès des connaissances sur la production des fourrages et pâturages dans ces zones, le développement des recherches sur la nutrition des ruminants, la prise en compte de l'animal adapté à son milieu et de sa conduite valorisant les disponibilités locales, sont autant de facteurs favorisant mais malheureusement trop peu considérés de façon concertée par les chercheurs dispersés à travers l'immensité des Milieux Tropicaux.

Ce symposium avait l'ambition de réunir les équipes désireuses de confronter leurs résultats et de faire le point sur l'avancement de leurs travaux. Seize ans après le Colloque sur les Fourrages, la Station de Recherches Zootechniques a accumulé de nombreux résultats sur le plan de la Valeur alimentaire des Aliments Tropicaux et de leur Méthodologie d'Etude. La variabilité saisonnière quantitative et qualitative, particulièrement en zone humide à saison sèche marquée, accentue les difficultés d'exploitation optimale de la biomasse produite et constitue un obstacle à l'intensification nécessaire dans ces zones de la production des ruminants.

Si la production individuelle semble s'accroître progressivement grâce aux effets d'hétérosis, cette voie génétique trouve ses limites dans la possibilité d'expression des potentiels obtenus qu'offrent les fourrages tropicaux. La notion de Systèmes de Production adaptés aux différents milieux semblent être la voie de progrès durable. Elle nécessite de cerner correctement les champs de notre Recherche, d'harmoniser les méthodologies et d'accroître les collaborations. Elle demande une connaissance approfondie du milieu et nécessite d'affiner les recherches nutritionnelles y compris pour adapter les technologies transférées.

Puisse cet ensemble de communications faire ressortir l'importance du travail réalisé mais aussi des problèmes posés.

Cet ouvrage rassemble les textes présentés au symposium, regroupés en trois thèmes permettant de faire le point des connaissances acquises et des travaux en cours sur les connaissances, sur les ressources fourragères et leur utilisation pour la production des ruminants, plus particulièrement dans les régions de la Caraïbe et de l'Amérique Latine. Dans ces pays où les disponibilités alimentaires sont particulièrement déséquili-

brées (déficiences azotée et minérale), la notion de ration équilibrée, au moindre coût, incluse dans des systèmes bien adaptés, est fondamentale pour un développement rationnel de l'élevage des ruminants.

L'introduction des légumineuses associées aux graminées exploitées en banque de protéine a constitué une partie importante des travaux consacrés aux fourrages verts. Leur stratégie d'utilisation en liaison avec l'accroissement de la valeur alimentaire de la ration de base constitue un axe privilégié des travaux conduits actuellement sur les fourrages tropicaux.

Cet ouvrage est destiné à un public de chercheurs, de techniciens, d'enseignants, d'étudiants et de praticiens.

Prix: FF 250.

Commandes à: INRA, Service des Publications, Route de St-Cyr, F-78026 Versailles Cédex, France.

Soil Physical Conditions and Crop Growth. L.L. Somani, editor. Geo-Environ Academia and Drvyajyoti Prakashan, Jodhpur, 1988, xi + 254p. ISBN 81-85147-22-1. Hardback.

The need to produce more food and fibre for the ever increasing population of developing countries has been a long realisation. The earlier approach, in most of the developing countries, was to bring more area under cultivation. In most regions crop production follows a rapid decline after the development of land in spite of using adequate plant nutrients, growing of genetically potent varieties and adopting judicious plant protection measures, mainly because of deteriorating soil physical conditions. This degradation is usually referred to as a deterioration of soil structure. Now, with limited possibility to bring more land under cultivation, ever increasing demand for food production has intensified the quest for more production per unit area per unit time.

Research on management of physical properties of soils in developing world has been neglected for too long, and at a very high price. For the successful implementation of large scale land development schemes for arable crop production in the developing countries, the importance of meaningful and practical oriented research on the management of soil physical properties can not be overemphasized. The failure of many well-intentioned large scale projects is a testimony to this fact.

The objective of this monograph is collate and review the existing information on physical properties of soils in relation to their management. This has been done with a view to identifying gaps in our knowledge of the important soil physical properties. It is hoped that this information will prove useful to researchers, administrators, and planners in implementing sound land development projects that are so essential to increasing food production in the developing countries.

Price: In India Rs. 250; *elsewhere:* US$ 50.

Orders to: see below.

Soil Microorganisms and Crop Growth. L.L. Somani and S.C. Bhandari, editors. Drvyajyoti Prakashan, Jodhpur, 1989, xvi + 263p. ISBN 81-85312-04-4. Hardback.

Soil microorganisms play a pivotal role both in the evolution of agriculturally useful soil conditions and in stimulating plant growth. The potential for harnessing biological sources of nitrogen is particularly great in the tropics and sub-tropics. Evidently the fertility and the productivity of soil depends not only on its physical and chemical composition but also on the qualitative and quantitative nature of microorganisms inhabiting it.

This monograph deals with various types of interactions between soil microorganisms and higher plants and the importance of some microbial metabolites which are relevant to the growth and well-being of plants. It also describes certain microbiological activities in soil which have a bearing on the mobilization of nutrients in soil for absorption by plants. It also includes the interactions among pesticides, microorganisms and plants.

The knowledge of soil microbiology is expanding exponentially and the development of sophisticated equipments, electronic revolution and use of computers in monitoring laboratory and field data, has opened several new dimensions of soil microbial research.

However, a periodic evaluation of the available world data on the development of concepts and their adoption at field level, is essential. In the present monograph, efforts have been made in this direction to examine important topics at international level of soil microbial research and to make suggestions for future lines of research.

The objective has been to collate and review the existing information on microbiological properties of soil in relation to soil and crop productivity. This has been done with a view to identify gaps in our knowledge of the important soil microbial properties.

Price: In India Rs. 250; *elsewhere:* US$ 50.

Orders to: see below.

Alkali Soils. Their Reclamation and Management. L.L. Somani. Drvyajyoti Prakashan, Jodhpur, 1990, 331p. ISBN 81-85312-05-2. Hardback.

Salt-affected soils are widespread in several countries of the world and present a serous problem for crop production in view of their peculiar inhospitable characteristics for plant growth. The nature of this problem is such that it restricts economic utilization of land resources thus adversely affecting crop production, especially in the semi-arid and arid conditions. Faced with the dilemma of salt-affected soils for a

long time, mankind considered such soils as uncultivable waste lands and confined their energies to better soils. This is notably the case as sodic alkalization hinders agricultural production or even makes it impossible on otherwise fertile areas and on areas being important from the point of view of farming.

Efforts of the soil scientists, agronomists, plant physiologists and agricultural engineers have been afoot to diagnose and rectify the limps and shrinks of salt-affected soils, all over the world. The accurate and precise adoption of ameliorative measures is very important because the right and useful treatment accruing practical results depends on that.

The objective of this book is to provide research findings in a concise form so that scientists and planners can help the farmers to make the best use of their money invested in reclamation. Only a thorough knowledge of different amelioration techniques makes possible to select the proper methods for the optimal utilization of soils. An effort has been made to systematically describe different ameliorative approaches for restoring their productivity.

Price: In India Rs. 250; *elsewhere:* US$ 50.

Orders to: Scientific Publishers, P.O. Box 91, Jodhpur 342001, India.

Applied Geography. Issues, Questions, and Concerns. The GeoJournal Library. M.S. Kenzer, editor. Kluwer Academic Publishers, Dordrecht, Boston, 1989, ix + 209p. ISBN 0-7923-043801. Hardbound.

Applied geography is well-settled in academic geography programs in many countries. The attention has been directed toward job opportunities rather than geography's traditional role as a problem-solving discipline that contributes to a broad, well-rounded, liberal arts eduction. The purpose of this collection is to focus rigorous attention on the applied movement in geography: to understand the rationale behind it; to determine the degree to which applied geography has become a major research priority within the discipline; and to document curricular changes in graduate departments as a result of the movement. The objective is an explication and better understanding of the movement's origins, its current and anticipated influence, the arguments both for and against it, and the extent to which an academic geography affected by the applied movement will be able to satisfy its societal obligation to address the public's trust.

The book has five sections: Ruminations and philosophical queries; the educational issue; considerations in physical geography; appraisals from human geographers; and : the 'taken for granted' side of applied geography.

Price: Dfl. 145; US$ 73; £ 48.

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

Report on MAB Workshop 'International Scientific Workshop on Soils and Soil Zoology in Urban Ecosystems as a Basis for Management and Use of Green/Open Spaces, Berlin, September 1986. MAB-Mitteilungen 30. Edited by German National Committee of MAB. Free University, Berlin, 1989, 169p. ISSN 0723-4112.

The purpose of the workshop on urban soils and urban management was to discuss the aspects by a group of experts in a familiar atmosphere without public auditory. Each participant presented results from his field of scientific research, statements and theses towards an interdisciplinary approach to urban ecology and management. The participants were conscious of the thematic restriction; e.g. soil microbiology, landscape management and other scientific or practical aspects might have been better represented. But there was an agreement that a workshop with more than about ten members would have been too big for intensive discussions.

The contributions outlined the advancements on characteristics of urban soils, urban soil fauna, a theoretical approach on urban ecosystem structure, questions of urban soil pollution and soil fauna responses, aspects of ecological planning and nature preservation in urban ecosystems, ecological management based also on soil zoology/ecology as on public demands of green space usage. The discussions on this large item led to some general and special statements and management recommendations, which are the common results of the workshop's participants.

The publication contains the presentations and the results and conclusions.

Requests to: Karl-Heinz Erdmann, MAB, Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Godesberger Allee 90, D-5300 Bonn 2, Fed.Rep. of Germany.

Acid Deposition. Sources, Effects and Controls. J.W.S. Longhurst, editor. British Library-Technical Communications,1989, x + 348p. ISBN 0-946655-25-1. Hardcover.

Acid deposition, more popularly called acid rain is one of the most urgent of our contemporary environmental problems. Effects attributed, at least in part, to acid deposition are reported from most if not all industrial nations and an increasing number of developing nations. These effects are reported for both freshwater and terrestrial components of ecosystems and, increasingly, to economic and culturally important materials. The immediate importance of these problems tends to indicate that the phenomenon of acid deposition is of recent origin. However, the subject has a relatively long history. As early as 1852 R.A. Smith collected and analyzed rainwater in north west England, neologised the term acid rain and described its effects upon terrestrial ecosystems and materials. At this time, sulphur was the major pollutant and the effects of acid deposition were most clearly experienced at the urban and near urban scale.

The purpose of this collection of papers is to review our understanding of the cause and effect of acid deposition, to present new data that assists in the provision of a fuller understanding of cause, process and implication and thus to assist in defining the research agenda of the future. The book will ideally serve both as a course text in undergraduate studies for many disciplines and as a reference text to libraries or researchers wishing to see a wider perspective than their own narrow disciplinary competence. The materials presented are deliberately European in perspective, drawn from the Federal Republic of Germany, Hungary, Norway, Sweden and the United Kingdom. The current position as regards deposition monitoring, ecological effects and control technologies is presented in five sections: acid deposition monitoring, freshwater acidification, soils and forest systems, structural materials and control technologies. Each section is introduced by an overview paper outlining the contemporary understanding and identifying areas requiring future work. Specialist papers presenting new dat or re-interpretations of existing information comprise the remainder of each section.
Price: In U.K. £ 45, elsewhere £ 47.
Orders to: Technical Communications, 100 High Avenue, Letchworth, Herts. SG6 3RR, England.

Soils and the Greenhouse Effect. A.F. Bouwman, editor. John Wiley & Sons, Chichester, New York, 1990, xviii + 575p. ISBN 0-471-92395-8. Hardbound.

This book covers the present status and future trends concerning the effect of soils and vegetation on the fluxes of greenhouse gases, the surface energy balance and the water balance. It forms the proceedings of a conference under the same title, held at Wageningen, August 1989.

Many atmospheric trace gases are of importance for the Earth's climate. Changing atmospheric mixing ratios may cause climate changes. Furthermore, changing concentrations are important for a wide range of environmental problems such as oxidation of acidic species, formation of oxidants and depletion of the atmospheric ozone.

In this book the role of soil and land use related emissions of greenhouse gases and the impact of changing land cover/land use on the surface radiative balance will be discussed. The emphasis is on geographic aspects of present and future fluxes of carbons dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and on land use changes. Methods for estimating gas fluxes (comprising measurement techniques, remote sensing, and scaling techniques) are also discussed. This book should appeal to scientists working in the field of soil science and microbiology, data base development, remote sensing, monitoring of land use and vegetation, and atmospheric chemistry.
Price: £ 45.00 in U.K., elsewhere US$ 90.60, DM 150 or Dfl 160 at ISRIC.
Orders to: John Wiley & Sons, Baffins Lane, Chichester, West Sussex, PO19 1UD, England; *or:* John Wiley & Sons, 605 Third Avenue, New York, NY 10158-0012, USA; *or:* ISRIC, P.O.Box 353, 6700 AA Wageningen, the Netherlands.

Agroecology. Biological Resource Management Series. C.R. Carroll, J.H. Vandermeer and P.M. Rosset, editors. McGraw-Hill Publ. Comp., New York, St. Louis, 1990, xiv + 641p. ISBN 0-07-052923-X. Hardbound.

Agroecology, a science emerging from four distinctly different disciplines – agriculture, ecology, anthropology and rural sociology – has evolved out of a worldwide increase in farm production juxtaposed against a growing concern for our environment. Scientists have come to recognize that the much lauded (and necessary) improvements in agricultural technology are not without environmental costs. The study of agroecology will help not only ecologists and agronomists, but also horticulturists, botanists and agricultural economists seek a balance between the need for improved food production and preservation of the world's already damaged land and water resources.

The chapters in this book are written by experts in a particular field, and the topics range from theoretical to very pragmatic. The book is arranged into four parts. Part 1, 'General Background to Agroecology', deals with the most general topics in the form of an overview. Part 2, 'Ecological Background to Agroecology', treats general ecological principles, focusing on their application in the context of the agroecosystem. Part 3, 'Some Management Questions', drawing on the ecological principles elaborated in Part 2, discusses the more practical aspects of agroecosystems. Part 4 treats a general topic that should be thought through by every student of agroecology – the question of research in agricultural systems.
Price: DM 211.40
Orders to: McGraw-Hill Publ. Comp., 1221 Avenue of the Americas, New York, NY 10020, U.S.A. *or:* McGraw-Hill Book Co. GmbH, Lademannbogen 136, D-2000 Hamburg 63, Fed.Rep. of Germany.

Fertilité des Terres de Savanes. Bilan de trente ans de recherche et de développement agricoles au sud du Sahara. C. Pieri. Ministère de la Coopération et du Développement et Centre de Coopération Internationale et Recherche Agronomique pour le Développement (CIRAD), 1989, 444p. ISBN 2-87614-024-1.

La France participe au développement agricole du domaine soudano-sahélien de l'Afrique depuis plus d'un demi-siècle. Les liens de coopération scientifiques et techniques ont continué, sans rupture, avec les organismes nationaux de recherche et de développement des divers états concernés.

Cet ouvrage veut faire le point de l'évolution de la fertilité des terres de cette zone à partir de l'expérience acquise par cet ensemble d'organismes de recherche et de développement agricoles.

Analyse agronomique la plus quantitative possible du matériau existant, cette étude traduit la priorité accordée aux aspects techniques concernant l'ensemble 'sol-plante'. La variable privilégiée constituée par la densité de population, illustre le rôle des conditions socio-économiques dans l'évolution de ce système.

La vocation du CIRAD est d'assumer les implications pratiques de ces travaux: la conclusion générale est donc consacrée aux recommandations techniques que ces recherches permettent de formuler pour orienter les actions de développement dans les savanes au sud du Sahara.

Prix: FF 150.

Commandes à: CIRAD-IRAT, B.P. 5035, F-34032 Montpellier Cedex 1, France.

Asian Regional Symposium on the Modernisation and Rehabilitation of Irrigation and Drainage Schemes. Volume II: Discussions and Special Lectures. Hydraulics Research, Wallingford, 1989, 145p.

The Symposium was held to encourage a dialogue between the various disciplines involved at all stages of the modernisation and rehabilitation of irrigation and drainage schemes.

During the three days, 28 papers were presented and the ensuing discussions demonstrated the interest with which they were received. Two reporters were appointed for each session and their texts are included in this volume. No attempt has been made to give verbatim questions and answers, but the reporters' brief was to produce notes about the papers in each session and their own, individual impressions of the discussions they engendered. It is hoped that this 'digest' approach will give readers who were unable to be present, a better feel both for the discussions and the reasoning behind them.

The Organising Committee invited four internationally recognised speakers to present general lectures covering farmer involvement, evaluation, crop diversification and management strategy. Transcripts of these lectures are included in this volume.

Price: £ 15.00, plus £ 5.00 postage and packing for addresses outside the U.K.

Orders to: R. Wooldridge, Hydraulics Research, Wallingford, Oxon OX10 8BA, U.K.

Proceedings of the XVIII International Forum on Soil Taxonomy and Agrotechnology Transfer. Korea, October 1987. Rural Development Administration, SMSS and IBSNAT, 1988, 376p.

The objectives of a forum are to refine Soil Taxonomy and its application, to improve the potential of soil survey interpretation and to provide technical assistance for agrotechnology transfer from one region to another through worldwide linkages.

The present publication contains chapters on the soils of, mainly South, Korea, and the descriptions and full analytical data of 18 representative profiles. A copy of the 1985 soil map of South Korea at 1:1M, using Soil Taxonomy, is enclosed.

Requests to: Soil Management Support Services, USDA, P.O. Box 2890, Washington, DC 20012, U.S.A.

Soils and Micromorphology in Archaeology. Cambridge Manuals in Archaeology. M.A. Courty, P. Goldberg and R. Macphail. Cambridge University Press, Cambridge, New York, 1989, xx + 344p. ISBN 0-521-32419-X. Hardback.

Cambridge Manuals in Archaeology are reference handbooks designed for an international audience of professional archaeologists and archaeological scientists in universities, museums, research laboratories, field units, and the public service. Each book includes a survey of current archaeological practice alongside essential reference material on contemporary techniques and methodology.

Micromorphology is concerned with the study of undisturbed soil and loose sediments and other materials (e.g. bricks, mortars, ceramics) at a microscopic scale. The most practical and most commonly used technique – and that which is emphasized in this book – involves the use of the thin section, which is a 25 to 30 micron-thick slice of soil or sediment, mounted on a glass slide. The authors' experience with geological and pedological problems in archaeology has shown that micromorphology is the most suitable technique for tackling a broad spectrum of geoarchaeological problems that other methods by themselves are not capable of doing.

The aims of this book are twofold and complementary. The first is to explain the basic micromorphological techniques and to provide the basic information necessary for the study and interpretation of thin sections from archaeologically related soils and sedimentary materials. The second is to demonstrate the value and usefulness of the method by presenting cogent examples of its application in a variety of archaeological situations and phenomena. Micromorphology is a technique and not an end in itself, and consequently should not be a substitute for field work nor make other analytical techniques redundant.

After an historical introduction and sections on basic field description, sampling and macroscopic analysis, the authors concentrate accordingly on microscopic studies and the preparation, analysis, and interpretation of thin sections. Sedimentation and natural pedological processes are discussed and characterised, but the focus throughout remains squarely on the information micromorphology can provide about early human behaviour. Fire, organic occupation remains, agriculture and buildings are examined in detail, and an extensive range of case studies is provided to underline the worldwide application of the techniques discussed.

Price: £ 40 or US$ 65.

Orders to: Cambridge University Press, the Pitt Building, Trumpington Street, Cambridge CB2 1RP, U.K.
or: Cambridge University Press, 40 West 20th Street, New York NY 10011, U.S.A.

Le Sahel en Lutte Contre la Désertification. Leçons d'Expériences. CILSS, PAC et GTZ. Ouvrage collectif dirigé et rédigé par R.M. Rochette. Margraf, Weikersheim, 1989, 592p. ISBN 3-8236-1171-2.

A l'occasion de la conférence internationale sur la désertification, qui s'est tenue à Nairobi en 1977, la république fédérale d'Allemagne a fait connaître son intention de consentir un effort important en vue de contribuer à la lutte engagée à grande échelle contre l'avancée du désert. Afin de traduire cet engagement politique dans les faits, la Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) a reçu pour mission de développer conjointement avec le CILSS un programme spécial, connu entre-temps sous le nom de PA-CILSS (programme allemand CILSS); l'objectif assigné à ce programme était de recueillir et d'exploiter les expériences réunies au Sahel ainsi que de proposer et de tester de nouveaux moyens de lutte soutenue contre la désertification.

La publication du présent ouvrage correspond à l'aboutissement d'une partie importante de notre mission. L'approche retenue s'exerce dans trois directions: analyser, à l'appui d'exemples concrets, les problèmes liés à la dégradation des ressources naturelles; décrire et documenter les stratégies de lutte tentées un peu partout dans le Sahel par les organisations les plus diverses; et pour finir esquisser les perspectives de développement qui s'offrent à ces stratégies.

La structure de ce livre privilégie l'approche du terrain en présentant une vingtaine d'expériences en première partie. La seconde partie essaie de dégager quelques leçons en quatre chapitres: (1) Qu'est-ce que la sécheresse et la désertification pour le Sahel, pour ses hommes et ses femmes et pour les projets ou actions de développement? (2) Quelles sont les actions de lutte contre la désertification qui ont fait leurs preuves techniques, dans quelles situations agro-écologiques, à quelles conditions et avec quelles limites? (3) Comment initier et soutenir la participation responsable de la population, engendrer son auto-développement? A quels besoins répond-elle? Peut-on concilier les objectifs d'auto-suffisance alimentaire et d'amélioration des revenus et des conditions de vie? Quelles aides matérielles, financières et alimentaires et sous quelles formes? Comment s'exercent les contraintes foncières et institutionnelles et comment contribuer à les lever? (4) Enfin, les expériences étudiées conduisent-elles à des propositions concrètes pour la mise en oeuvre de l'approche globale, intégrée et concertée, et de l'approche aménagement du terroir et du territoire qui sont deux des options fondamentales dans la recherche de nouveaux équilibres socio-écologiques?

Une conclusion très courte s'ouvre sur l'avenir. Elle s'appuie sur 'Les enseignements de la lutte engagée par le Sahel contre la Désertification' présentés en prologue.

Prix: DM 59.

Commandes à: Verlag Josef Margraf, Postfach 105, D-6992 Weikersheim, Rép.Féd. d'Allemagne.

Advances in Soil Science. B.A. Stewart, editor. Springer-Verlag, New York, Berlin.

The purpose of these series is to provide a forum for leading scientists to analyze and summarize the available scientific information on a subject, assessing its importance and identifying additional research needs. It was formulated to be international in scope and to cover all subjects related to soil science. A wide array of subjects has been addressed by authors from many countries in the initial ten volumes of the series. The quick acceptance of the series by both authors and readers shows that a need did exist for a medium to fill the gap between the primary scientific journals and the comprehensive reference books and monographs. Volume 11 is the first of the series devoted entirely to a single topic – soil degradation. Future volumes will include both single-topic volumes as well as volumes containing reviews of different topics of soil science, as in the case of the first ten volumes.

Advances in Soil Science, Volume 11, Soil Degradation. R. Lal and B.A. Stewart, editors. Springer-Verlag, New York, Berlin, 1990, xii + 345p. ISBN 0-387-97126-2 (USA edition), 3-540-97126-2 (Fed.Rep. of Germany edition). Hardbound.

In this first volume to focus on a single topic, it is fitting that the chosen subject is devoted to one of the most pressing issues in soil science, the degradation of soils. In this volume overviews on eight major issues, all with immense practical applicability have been assembled. The volume highlights principle processes of soil degradation in major ecological regions of the world, outlines their effects in crop production, and prioritizes strategies in restoring degraded lands and minimizing risks of additional soil degradation. This in-depth review of soil degradation will be particularly valuable both for graduate students in soil science and for research scientists concerned with natural resource management and with sustaining the food productivity of a limited and fragile resource.

Advances in Soil Science, Volume 12. B.A. Stewart, editor. Springer-Verlag, New York, Berlin, 1990, ix + 221p. ISBN 0-387-97121-1 (USA edition), 3-540-97121-1 (Fed.Rep. of Germany edition). Hardbound.

This volume contains contributions from experts of four countries on subjects ranging from soil structure changes under different cropping systems, Azospirillum inoculation and clay mineralogy analyses to the evaporation in relation to tillage.

Prices: Vol.11 DM 218 or US$ 98, Vol.12 DM 186 or US$ 85.

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

Management of Acid Soils in the Humid Tropics of Asia. E.T. Craswell and E. Pushparajah. Copublished by the Australian Centre for International Agricultural Research (ACIAR) and the International Board for Soil Research and Management (IBSRAM). ACIAR, Canberra, 1989, x + 118p. ISBN 1-86320-001-0.

This is a joint publication of ACIAR and IBSRAM. It stems form a workshop held in Kuala Lumpur in early 1989. The papers cover the current research on the management of the acid infertile soils which dominate the humid tropics of Asia. There are also descriptions of the technological solutions emerging from research into problems of acid soils, and of the ASIALAND-Management of Acid Soils Network initiated at the workshop to foster a more cohesive approach to solving the difficulties facing smallholders in Asia.

Price: $A 25.00, including postage.

Orders to: Inkata Press, 13/170 Forster Road, Mt. Waverley, VIC 3149, Australia. Requests from developing countries for a complimentary copy to: Communications Coordinator, ACIAR, GPO Box 1571, Canberra, ACT 2601, Australia.

Farming Systems for Low-Fertility Acid Sandy Soils. CTA Seminar Proceedings. D. Walmsley, editor. CARDI, St. Augustine and CTA, Wageningen, 1989, 215p.

Low fertility acid sandy soils are found in fairly large quantities in Guyana, Surinam, Brazil, and elsewhere in the world. At a seminar, held in Georgetown, Guyana, in December 1988, issues relating to the management of these soils to obtain greater agricultural production were discussed. Papers were presented in the following sessions: the management of acid sandy soils, crops for acid sandy soils ,livestock enterprises, economics of farm systems, and presentations of discussion groups.

Requests to: CTA, P.O. Box 380, 6700 AJ Wageningen, the Netherlands.

Time Scales and Water Stress. Proceedings of the 5th International Conference on Mediterranean Ecosystems (MEDECOS V). F. di Castri, Ch. Floret, S. Rambal and J. Roy, editors. The International Union of Biological Sciences (IUBS), Paris, 1988, xxii + 678p. ISBN 92-9046-0725.

This volume includes most of the presentations to the Fifth Conference on Mediterranean Ecosystems (MEDECOS V). The contributions are presented as synthesis chapters, short articles and summaries of posters. MEDECOS V was organized under the aegis of the International Society of Mediterranean Ecology (ISOMED) and was held in Montpellier, France in July 1987.

Some 200 research workers from more than twenty countries participated in this Conference. The five regions of the world with a mediterranean-type climate (the Mediterranean Basin *sensu lato*, California, Chile, Cape Province in South Africa, South West and Southern Australia) were represented.

The International Biological Programme (IBP), launched by ICSU (International Council of Scientific Unions) between 1964 and 1974, facilitated the shaping and consolidation of a number of important individual efforts into the framework of a world programme.

As for the previous conferences, it was intended to place MEDECOS V within the specific context of current scientific trends. These trends can be characterized as follows: a) to recognize the forthcoming global climatic change produced by human actions; b) to realize that this kind of global problems cannot be faced in isolation by disciplines fragmented by too different scales of time and space; c) to realize also that predicting future patterns cannot be achieved without a better understanding of the past; and d) to reach the conviction that evolutionary ecology and functional ecology have necessarily to meet and to work together to establish the unitary logic of a science. These are also underlying themes of the newly launched ICSU programme, IGBP (International Geosphere-Biosphere Programme).

The central theme and the title of MEDECOS V, 'Time scale of water stress response of mediterranean biota', have been therefore inspired by the current scientific challenges: global climatic change, changes of the scales of research, and changes in the mentality and behaviour of research workers. The articles are distributed in five sections: paleoecological aspects (3 papers); daily response (9 papers); seasonal response (37 papers); interannual variability (25 papers); and evolutionary aspects (25 papers).

Requests to: International Union of Biological Sciences, 51 Boulevard de Montmorency, F-75016 Paris, France.

SOLTROP 89. Actes du 1er Séminaire Franco-Africain de Pédologie Tropicale, Lomé, 6-12 Février 1989. Collection Colloques et Séminaires, Editions de l'ORSTOM, Paris, 1989, v + 484 + xi p. ISBN 2-7099-0963-4; ISSN 0767-2896.

Le but de ce premier séminaire pour des participants de l'Afrique francophone était de discuter des sujets suivants: organisation des sols dans le paysage; aspects actuels de la connaissance des sols à différentes échelles; et caractérisation des sols sous culture. Les discussions tenues pour chacun des thèmes sont reprises dans cette ouvrage, ainsi que les synthèses.

Ce livre est destiné aux pédologues, agronomes et aménageurs travaillant en Afrique, ainsi qu'à tous ceux qui souhaitent disposer d'une vision générale des connaissances et des concepts acquis sur les sols africains depuis une cinquantaine d'années.

Prix: FF 164, port compris.

Commandes à: Editions de l'ORSTOM, 70 route d'Aulnay, F-93143 Bondy Cedex, France.

Combating Desertification in the Southern African Region: an Updated Regional Assessment. M.B.K. Darkoh. United Nations Environment Programme, Desertification Control Programme Activity Centre, Nairobi, 1989, 371p.

During the last decade and a half, the subject that has caught the attention and interest of the international development community is desertification. This was precipitated by the severity of the five-year Sahelian drought form 1968 to 1973, in which over 150,000 people and millions of cattle and other livestock perished in the region. Since that time drought has resurged in Africa, with increasing intensity, affecting not only the Sahel, from Cape Verde in the west to the Horn in the east, but extending to other areas, notably southern and eastern Africa, from the Kalahari in the west to Madagascar in the east. The situation is worsening as the Sahara is encroaching on useful arable and pasture lands at the rate of 1.5 million hectares per annum. Since about 15 years there has been a flurry of activities at the national, regional and international levels aimed at containing the problem and halting the process of desertification. THis study reviews the efforts in combating desertification in the Southern Africa Region (SAR). Its primary task is to survey the state of desertification and drought within six countries in this sub-region of Africa, paying special attention to national projects and programming activities designed to solve them. The countries discussed are: Botswana, Lesotho, Madagascar, Tanzania, Zambia and Zimbabwe.

Chapter 1 gives a general background information about desertification and drought and describes the general characteristics of the Southern Africa Region (SAR). Chapter 2 gives a synthesis of the problem of desertification, reviews the underlying socio-economic and institutional factors and gives a synopsis of the progress in combating desertification, and the constraints and the lessons derived from the experience gained in the region. Chapters 3 to 8 are the country case studies. In these chapters, the main issues for each country are encapsulated under the following general format: General Features; Dimensions of the Desertification Problem; Progress in Combating Desertification; Main Anti-Desertification Programmes Before 1977; Main Anti-Desertification Programmes After 1977; Summary.

Requests to: Desertification Control Programme Activity Centre, UNEP, P.O. Box 30552, Nairobi, Kenya.

Quantitative Genetics in Maize-Breeding. Second edition. A.R. Hallauer and J.B. Miranda. Iowa State University Press, Ames, 1988, xii + 468p. ISBN 0-8138-1522-3. Hardback.

Maize breeding and improvement started when people realized the potential of the species for food, feed, and fuel. Although the ancestral pedigree of maize has not been resolved, the early maize breeders certainly played an important role in developing the species as we know it today. The ancestral form of cultivated maize would be weedlike for survival, and the transition from a weed species to a cultivated crop species that depends on care for survival required years and patience of the early maize breeders.

Selection procedures used by them would seem primitive compared with present-day breeding methods, but they recognized the traits needed to sustain their civilizations. The effectiveness of selection by early maize breeders is evident from the 250 New world races and thousands of varieties that have been collected and described. Maize can be grown throughout almost the complete range of altitudes and latitudes around the world.

Maize is an economically important crop in the world economy and is an ingredient in manufactured items that affect a large proportion of the world's population. To meet the increasing and divergent uses of maize, breeding methods have evolved to increase the effectiveness and efficiency of selection for many traits. Modern maize breeding methods are primarily a twentieth century phenomenon. Successful development of the inbred line-hybrid concept of maize to a useful form is still considered one of plant breeding's greatest achievements.

Although the basic breeding methods for development of maize inbred lines and hybrids were described in 1910, significant contributions have been visualized and tested for modernizing the basic breeding methods. The main concern in this volume is to describe how the principles of quantitative genetics and cyclical selection schemes have been used in maize breeding research. In addition to the principles discussed, data are summarized from reported studies.

Price: US$ 44.95, plus $ 2.00 for postage and handling.

Orders to: Ms. Neelum Chaudhry, Iowa State University Press, 2121 South State Avenue, Ames, Iowa 50010, U.S.A.

Drought Tolerance in Winter Cereals. Proceedings of an International Workshop, October 1985, Caprio. J.P. Srivastava, E. Porceddu, E. Acevedo and S. Varma, editors. John Wiley & Sons, Chichester, New York, 1987, xvi + 387p. ISBN 0-471-91650-1. Hardback.

One of the major objectives of the International Centre for Agricultural Research in the Dry Areas (ICARDA) is to develop improved winter cereals for the dry areas of West Asia and North Africa. In the case of barley, this scope is wider since ICARDA has the world mandate for this crop within the Consultative Group on International Agricultural Research (CGIAR).

Experience over the years has shown that wheat and barley yields in stressed dryland areas have increased only modestly. The simultaneous occurrence of two or more abiotic stresses such as drought, cold and heat coupled with the high seasonal and interannual variability of the environment slows down the improvement process. The physiological basis of the genetic improvement is not fully understood. However, plant physiologists, based on their knowledge of the underlying processes affecting yield under moisture stress,

have suggested many traits to be of importance for increasing yield and stability of yield under such conditions. This knowledge has not yet been applied to improve the effectiveness of plant breeding programs.

In recognition of the need to systematically explore the use of a physiological basis in crop improvement programs, the National Research Council of Italy and ICARDA jointly organized an international symposium 'Improving Winter Cereals for Moisture-limiting Areas'. Its primary objective was to encourage a dialogue between plant breeders and physiologists with a view to increasing the stability and production of wheat and barley in areas, particularly those in West Asia and North Africa, where availability of water – or rather the shortage of it – is the major constraint.

The text is organized into four sections. Section I deals with the role of agroclimatology and of agroecological models in developing a meaningful approach for crop improvement. Section II reviews and compares the efficiency of current breeding methods and presents some new approaches. Section III deals with physiological research for drought avoidance and tolerance and its implication in breeding programmes, and section IV with plant characteristics required for improved performance in moisture-limiting environments. A set of recommendations of the symposium is also included.

Price: £ 25.50

Orders to: John Wiley & Sons, Baffins Lane, Chichester, West Sussex, PO19 1UD, England; *or:* John Wiley & Sons, 1 Wiley Drive, Somerset NJ 08873, U.S.A.

Proceedings of the Symposium on Biosphere Reserves. 4th World Wilderness Congress, September 1987, Estes Park. W.P. Gregg, S.L. Krugman and J.D. Wood, editors. U.S. Dept. of the Interior, Atlanta, 1989, 291p. Stock no. 044-000-022-71-1.

UNESCO's international network of biosphere reserves is an effort to establish a coordinated association of information-sharing areas in each of the world's upland, coastal, and marine biogeographical regions. The purpose of the network is to develop the knowledge, skills, and attitudes needed to integrate conservation and economic uses of ecosystems locally, to serve as hubs for regional cooperation on scientific and educational activities, and to contribute information for addressing multi-regional and global environmental problems. Biosphere reserves provide a flexible paradigm for linking many of the world's outstanding conservation ares, its centres for basic and applied ecosystem research, and its sites for demonstrating sustainable economic uses. They should serve as centres for demonstrating the benefits of synergistic relationships among policy-makers, scientists, resource managers, and local people , and for marshalling technical and financial resources from local, national, and international sources to solve problems.

The symposium, held at YMCA of the Rockies, Estes Park, Colorado, is a 'window' on the biosphere reserve program as it is being implemented under a wide variety of ecological, social, cultural, economic, and institutional situations. The objectives were to provide an overview of the biosphere reserve concept twelve years after UNESCO designated the first biosphere reserves, to demonstrate its remarkable flexibility in adapting to the needs of different nations and regions, and, through case studies of some of the most innovative biosphere reserves, to demonstrate the practical accomplishments on the ground.

The present publication begins with a series of concept papers. After presentations on coastal and marine biosphere reserves, experiences with these reserves in the developed as well as in the developing countries are being discussed. The first appendix lists all 269 biosphere reserves in 70 countries, totalling about 1.430.000 km^2 (March 1988), the second presents the adopted resolution.

Price: US$ 15.00

Orders to: GPO Bookstore, 710 North Capitol Street, Washington, DC 20401, U.S.A.

Soils and their Management. A Sino-European Perspective. Commission of the European Communities. E. Maltby and T. Wollersen, editors. Elsevier Applied Science, London and New York, 1989. xi + 394p. ISBN 1-85166-427-0. EUR 12444. Hardbound.

This book contains the proceedings of a Sino-European Soil Science Workshop, held in Guangzhou in April-May 1988.

Soil science is of particular importance to China in view of the fact that only about 10% of the whole country is arable land. Careful soil conservation is therefore a subject of high priority. A solid knowledge and understanding of the characteristics and functioning of the soils is pre-requisite for their conservation and the very broad European expertise in temperate as well as tropical and sub-tropical climatic zones could well contribute to the efforts of Chinese soil scientists to modernise their methodologies and classification. This contribution, however, could not be envisaged as a unilateral technical assistance. Indeed, the only promising way to come to a real contribution is through joint research involving Chinese as well as European scientists. This is exactly the purpose of these Sino-European workshops. Their main objective is to identify mutual research interests and to initiate joint research projects.

The basic idea when organising the soil science workshop was to provide a rather large sample of tropical soil science, deliberately avoiding any narrow focus on some particular subject. It was also attempted to gather a representative group of soil scientists from Europe and China. Nine European soil scientists from five countries and ten scientists from different parts of China attended to discuss: (1) Soil classification, genesis and mapping; (2) Soil physics and chemistry relating to water supply for crops and soil erosion; (3) Maintaining, reclaiming and increasing soil fertility; and (4) Lowland agriculture.

The range of presentations in this volume is diverse but highlights some of the main themes of current research in soil science, with particular reference to China. Interest in the development of sound management and planning strategies for soil resources underpins many of the chapters. The idea of comprehensive utilisation is a common theme of the Chinese papers together with the problems of soil degradation if land is subjected to inappropriate uses. The sustainability of soil resource use is an essential pre-requisite for sound agricultural development policy and should be compatible also with the maintenance of environmental quality. This is a particulary sensitive issue in relation to coastal and other wetland environments. These themes are explored in the volume.
Price: £ 48.00.
Orders to: In U.S.A. and Canada: Elsevier Science Publishing Company, 655 Avenue of the Americas, New York, NY 10010, U.S.A. *Elsewhere:* Elsevier Science Publishers, Crown House, Linton Road, barking, Essex 1G11 8JU, England.

A Global Data base on National Agricultural Research Systems. ISNAR Agricultural Research Indicator Series. P.G. Pardey and J. Roseboom. Cambridge University Press, Cambridge, New York, 1989, 547p. ISBN 0-521-37368-9. Hardback.

This volume represents the culmination of an effort, begun by the International Service for National Agricultural Research (ISNAR) in late 1984, to compile a global set of commensurable statistics of basic national agricultural research system (NARS) indicators. The unavoidably disparate nature of the data sources and the subject itself, national agricultural research activity, means these statistics are likely to be subject to revision which, in some cases, may be substantial. However, this fully sourced and extensively documented series seeks to establish a basis for informed revision.

The Indicator Series contains country-specific files of the basic resources committed to NARS. It includes, where possible, annual observations from 1960 to 1986 on agricultural research expenditure and personnel series at the system or national level for 154 developing and developed countries.

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The structure of the Indicator Series facilitates its use at three levels: (1) the data series themselves – primarily of use for 'broad brush' comparative analysis; (2) the data series plus personnel and expenditure comments – for use in more focused analysis at the regional level; (3) the data, comments and citations (both sources and additional references) – for use in more targeted analysis at the country and/or issue-orientated level.
Price: £ 35.00 or US$ 59.50.
Orders to: Cambridge University Press, The Edinburgh Bldg., Shaftesbury Road,Cambridge CB2 2RU, England; *or:* Cambridge University Press, 40 West 20th Street, New York, NY 10011, U.S.A.

Resource Management in Amazonia: Indigenous and Folk Strategies. Advances in Economic Botany Volume 7. D.A. Posey and W. Balée, editors. The New York Botanical Garden, Bronx, 1989, vii + 287p. ISSN 0741-8280. ISBN 0-89327-340-6.

In recent years, there has been a spate of books about Amazonia, the world's largest expanse of tropical rain forest. These books, to some extent, fulfil an urgent need to learn how to manage the ecosystem, given the current wave of destructive deforestation. Although originally based on a symposium, the present volume is more than ordinary symposium proceedings. It is an outgrowth of that meeting, which brings together a balanced collection of papers on ethnoecological research in the region. The authors have gathered an enormous body of data on traditional concepts of ecology and agriculture. The type of data herein comes from long-term study and a deep understanding of and close relationship with the residents of Amazonia. Many new ideas and data are presented here, so this volume represents a major step forward in Amazonian ethnoecology.

One of the strengths of this book is that it includes both studies of indigenous groups and the long-ignored *caboclos* or *Mestizos*. The two papers on *caboclo* ecology clearly demonstrate that there is much to learn from these people. They, in turn, had learned much from the Indians, but over several generations, they developed their own management systems and understanding of the region. The inclusion of these people in the final chapters clearly demonstrates that experimentation and adaptation to the region is a dynamic, continuous process. The *caboclos* and the Indians, like us, are experimenters. For this reason, many different ecological systems exist throughout the Amazon region and new management ideas are constantly being implemented.

This volume demonstrates the diversity of ecosystems and vegetation types which exist in Amazonia and how people have adapted to them. It examines the resource use practices of eight tribal groups as well as of the caboclos, non-tribal rural farmers, fishermen, and foragers. In a variety of habitats – floodplain and upland forests, savannas, highlands, white, black and clear water rivers – these peoples have developed management practices that can provide new insights for the conservation and wise use of these threatened ecosystems.
Price: In U.S.A. US$ 62.65, elsewhere US$ 64.20.
Orders to: Scientific Publications Office, The New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.

Aménagement Intégré du Massif du Fouta-Djalon. Compilation et présentation des résultats des études de base et cartes thématiques du milieu. Rapport établi sur la base des travaux de J.C. Griesbach. PNUD et FAO, Rome, 1988, 17p. 17 cartes.

En vue de la définition des mesures correctives à prendre et de l'ébauche d'une stratégie de mise en valeur du massif du Fouta-Djalon en Guinée, il était indispensable d'évaluer l'état de dégradation du milieu naturel et de faire l'inventaire des potentiels disponibles et, dans ce but, de rassembler toutes les données de base requises pour la réalisation des bilans.

Les inventaires et bilans ont porté sur le milieu physique naturel et humain du périmètre d'étude et ont été effectués grâce à une action conjointe de la FAO (agence principale), l'Unesco et l'OMM.

Ce rapport porte sur la définition des paramètres bio-climatiques et physico-nationaux en général et donne d'une façon succincte, appuyés par des cartes thématiques, les acquis et produits qui en ont découlé.

En plus des cartes thématiques, une évaluation quantitative et qualitative de la dégradation de l'environnement a été faite par photo-interprétation comparée.

Les activités ont consisté dans la photo-interprétation et l'analyse des images satellitaires et dans les contrôles de terrains. Le processus méthodologique suivi est décrit en détail dans ce rapport.

Les cartes, dans leur ensemble, sont présentées en copies héliographiques monochromes, à l'exception de l'utilisation de terres/couverture végétale, et agroclimatologique/classification des terres, dont des copies en couleurs à l'échelle du 1/500 000 ont été tirées.

Les résultats et produits du projet tels que décrits dans ce rapport fournissent des informations homogènes à un niveau de détail considéré comme de reconnaissance (échelles cartographiques comprises entre 1/500 000 et 1/250 000), c'est-à-dire à la fois nécessaire et suffisant pour définir les grandes unités de paysage avec les implications agroclimatiques, morpho-dynamiques et hydrologiques.

Commandes à: FAO, Service des Publications, Via delle Terme di Caracalla, 00100 Rome, Italie.

Hillslope Form. H.J. Parsons. Routledge, London and New York, 1988, xvi + 212p. ISBN 0-415-00905-7. Hardbound.

The study of hillslopes is a central element of geomorphology and many of the major methodological disputes in the subject have been focused around hillslopes. Yet, paradoxically, there has been a comparative neglect of hillslopes when compared to the level of study accorded to other geomorphic features.

This book describes the present state of knowledge of hillslope form and indicates the unresolved problems in its understanding. It analyses the results of measurements of hillslope form, deals with the observed variations in its form across the surface of the earth and evaluates the relationships of form to process. Within the context of changes of hillslope form through time, it reviews attempts to comprehend the manner of hillslope evolution and discusses the issues of hillslope age and the persistence of hillslope forms. By examining the influence of man on hillslopes it assesses how far our understanding of natural hillslopes can help in the management of those which are man-made.

Price: £ 30.00

Orders to: Routledge, 11 New Fetter Lane, London EC4P 4EE, England; *or:* Routledge, 29 West 35th Street, New York, NY 10001, U.S.A.

Etude de la Dégradation des Etats de Surface du Sol par Télédétection. Analyses spectrale, spatiale et diachronique. D. Courault. Thèse de doctorat, Université de Paris VI, 1989. Sols N° 17, INA Paris-Grignon, 1989, 239p.

Cette étude présente une nouvelle approche pour la caractérisation des états de surface du sol par télédétection. Les états de surface se situent à l'interface sol-atmosphère et sont le siège d'interactions importantes.

Les modifications qu'ils subissent telle que la dégradation structurale sous l'action des pluies conditionnent le comportement du sol vis à vis de l'eau (infiltration, ruissellement...). La battance est un exemple extrême d'un état de la surface qui peut conduire à des phénomènes d'érosion importants dans certaines régions. La télédétection est un moyen de suivre ces modifications de surface sans perturber l'état structural et d'obtenir des mesures précises à différentes échelles.

Le rôle des principaux facteurs intervenant sur la réponse spectrale des sols a été observé au laboratoire sur des échantillons variés. (1) Les facteurs stables dans le temps sont essentiellement ceux liés à la composition minéralogique du sol. La matière organique et le fer diminuent la réflectance, le calcaire augmente la réflectance. (2) Les facteurs évolutifs au cours de l'année, sont l'humidité et la rugosité. La couleur dépendant de ces deux types de facteurs a un rôle important.

Sur le terrain on s'est intéressé essentiellement au facteur rugosité, par des mesures radiométriques. On a suivi l'évolution de surfaces rugueuses jusqu'à des surfaces lisses battantes pour diverses situations. Un modèle entre la réflectance et le stade de dégradation de la surface a été défini sous des conditions d'humidité et d'éclairement bien déterminées.

Les diverses relations mises en évidence au laboratoire et sur le terrain permettent de mieux interpréter les images satellitaires. On a complété l'analyse du contenu des plages homogènes par l'analyse du contenant (formes et limites des plages).

La faible résolution des images Spot et la répétitivité dans le temps permettent un suivi des phénomènes d'érosion.

Prix: FF 182.

Commandes à: INA-PG, Laboratoire de Science des Sols, F-78850 Thiverval Grignon, France.

Climate and Geo-Sciences. A Challenge for Science and Society in the 21st Century. A. Bergen, S. Schneider and J.Cl. Duplessy, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1989, xxv + 724p. ISBN 0-7923-0412-8 (paperback); 0-7923-0404-7 (hardback).

It is widely acknowledged that, in order to make scientific progress on such problems as the effect of CO_2 on climate, the viability of a given site for nuclear waste disposal, etc., it is necessary to integrate knowledge from a wide range of disciplinary areas. This is particularly true of the climatic sciences, where an understanding of the cause of the ice ages, the effects of industrial pollution on the future climate, or even the likelihood of severe climatic consequences in the aftermath of nuclear was all require state of the art input from many geoscientific disciplines – climatology, oceanography, meteorology, chemistry, ecology, glaciology, geology, astronomy, space technology, computer technology, mathematics, etc. Mere rhetorical pleading is not enough, however, and this book presents a series of expert reviews of recent progress in many climate-related disciplines. The future is also signposted, with contributions on emerging technologies, such as space observing instruments and supercomputers, and with the report of a distinguished panel charged with drafting *specific* recommendations on how individual disciplines might work together to accelerate progress on important climate-related problems on the global change agenda.
Price: Dfl 140 or US$ 69 (paperback) and Dfl 265 or US$ 134 (hardback).
Orders to: In USA and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.
Elsewhere: Kluwer Academic Publishers Group, P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Les Etats de Surface de la Zone Sahélienne. Influence sur l'Infiltration. A. Casenave et Ch. Valentin. Editions de l'ORSTOM, Paris, 1989, 229p. ISBN 2-7099-0984-7; ISSN 1142-2580.

L'importance des problèmes liés à l'utilisation de l'eau dans la zone sahélienne a entraîné, depuis une dizaine d'années, le développement des études sous pluie simulée. Elles ont permis de déterminer les facteurs conditionnels de l'infiltration et du ruissellement sur une vaste zone géographique et de hiérarchiser l'importance relative de ces différents facteurs. C'est ainsi que s'est manifesté, en zone sahélienne, le rôle prépondérant des caractéristiques de surface sur l'infiltrabilité, au premier rang desquelles se classent le couvert végétal, l'activité faunique, le microrelief et le type de croûte.

L'étude des processus et l'analyse des facteurs de réorganisation superficielle, associée à la description des microhorizons, aboutit à la définition d'une typologie morpho-génétique des principales croûtes sahéliennes. De l'identification de ces grands types de croûte, et d'autres critères relatifs à l'activité faunique, à la couverture et au travail du sol, découle une typologie des principales surfaces élémentaires. A chacune, correspond un comportement hydrodynamique particulier, caractérisé par un certain nombre de paramètres de l'infiltration et du ruissellement.

A une échelle supérieure, la combinaison de ces surfaces élémentaires mène à la définition du concept d'état de surface, base d'une méthode cartographique originale. Celle-ci fait appel à un système normalisé de description du milieu. Les unités, ainsi définies, répondent à des critères d'homogénéité tant au niveau de leur dynamique évolutive qu'à celui de leur fonctionnement hydrologique. En outre, cette cartographie des états de surface s'est avérée extrapolable par télédétection. En zone sahélienne, la conjugaison des études sous pluie simulée, de la télédétection et d'une modélisation à petits pas de temps constitue un outil performant pour la simulation des écoulements, la prédétermination des crues de fréquence rare, et la transposition des résultats à un bassin non observé.

La typologie des surfaces élémentaires peut être utilisé pour le diagnostic de l'état de dégradation des milieux sahéliens. De surcroît, son caractère génétique permet de prévoir leur évolution sous les effets conjugués de la sécheresse et de la surexploitation par l'homme.
Commandes à: editions de l'ORSTOM, 70 route d'Aulnay, F-93140 Bondy, France.

Farmer First. Farmer innovation and agricultural research. R. Chambers, A. Pacey and L.A. Thrupp, editors. Intermediate Technology Publications, London, 1989, xx + 218p. ISBN Hardback 1-85339-008-9, Paperback 1-85339-007-0.

This book presents a new paradigm and methods for agricultural research. Starting with farmers' own capacity for innovation, contributors from the agricultural and social sciences, ecology, economics and geography, make the case for a farmer-first mode to complement the traditional transfer of technology.

The theme is that much of the problem has been the processes of generating and transferring technology, and much of the solution lies in farmers' capacities and participation. This follows and fits recent shifts in perception and priority. The successes of the green revolution have been largely limited to irrigated and well-watered environments. Elsewhere, in rainfed, fragile, and difficult environments, the performance of agricultural research has been disappointing. Poverty, population projections, deforestation and environmental degradation together point to the need for sustainable increases in production in these areas to provide livelihoods for hundreds of millions more poor people. The challenge is to find more effective ways to serve their complex, diverse and risk-prone small farming systems.

This book has been written for all who are concerned with policy, practice and management for agricultural research, extension and development, regardless of discipline, profession or organization. It has been arranged as a text convenient for teaching and training. For all those who work in international and national agricultural research systems, in extension, in agricultural universities and faculties, and in non-governmental organization, the approaches and methods described are a professional challenge.
Price: £ 12.50 hardback, £ 2.25 paperback
Orders to: IT Publications, 103-105 Southampton Row, London WC1B 4HH, England.

Amazônia: Facts, Problems and Solutions. Proceedings of the meeting, Sao Paulo, July-August 1989. Brazilian Institute for Space Research (INPE) and University of Sao Paulo (USP), 1989, 583p.

The national and international debate on the Amazônia, as the Amazon Region is called in Brazil, has been carried on in a highly emotional climate, marked by equally partial and passionate accusations and defenses.

It is necessary, at this point, to rise above irrationality, xenophobia and political narrowness in order to make the necessary decisions. What one needs is arrive at the facts in the most objective fashion possible, so as to intelligently diagnose the problems and attempt to find solutions that are economically viable, socially just and politically acceptable.

To this end, national and foreign scientists studying the Amazon from different perspectives met to gather information, analyze what is happening and study possible alternatives. Not only the current state of development regarding resources, patterns and alternative development possibilities were discussed, but also global change phenomena related to carbon dioxide and ozone. This publication forms an interesting overview and discussion on major issues confronting the Amazon regions.

Orders to: Dr. R. Peirera de Cunha, Space Research Institute of Brazil – INPE, P.O. Box 515, 12201 So José dos Campos – SP, Brazil.

Weed Management in Agroecosystems: Ecological Approaches. M.A. Altieri and M. Liebman, editors. CRC Press, Boca Raton, *1988, 354p. ISBN 0-8493-6816-2. Hardbound.*

Over the last several decades, weed management in agroecosystems of developed countries has been characterized by intensive use of herbicides. In developing countries, national and international organizations have generally promoted herbicides as requirements for modernization and amplification of agricultural production. However, several recent trends are forcing agriculturalists in both developed and developing countries to reappraise their dependence on herbicides. Herbicides, like other purchased inputs, are continuing to increase in price at time of low crop prices and economic hardship for many farmers. Herbicides are now commonly detected in the ground-water of agricultural areas and there is growing concern over their effects on nontarget organisms and human health. There are increasing reports of shifts in weed community composition toward species and genotypes that are more difficult and more expensive to control chemically, leading some researchers to wonder whether we may be creating new pesticide treadmills, similar to those which developed with heavy use of insecticides.

These developments are leading both farmers and researchers to seek effective weed management strategies that minimize their reliance on herbicides. A necessary first step toward decreased dependence on herbicides is a comprehensive understanding of weed ecology .When weed management strategies are based on well-developed knowledge of ecological phenomena and principles, herbicides can be used as carefully chosen tactical options rather than absolute requirements. In some cases, attention to the details of weed ecology, crop sequence, and tillage practices may make use of herbicides unnecessary.

The chapters of this book describe the physiological, population, and community ecology of weeds within agroecosystems, with the goal of recognizing details relevant for better weed management. Recognition of the germination, establishment, growth, and reproduction requirements of different weeds will allow identification of life stages that are particularly susceptible to attack. Recognition of the effects of different tillage and crop rotation systems on weed population and community dynamics will allow better predictions of which weeds will be present in a particular field at a particular point in time. Recognition of how crops, insects, and pathogens affect weed performance through resource competition, allelopathy, herbivory, and disease will suggest better ways to use these phenomena in integrated approaches to wee management. Recognition of how and when weeds affect crop performance through resource competition, allelopathy, and positive and negative interactions with crop insect and disease pests will provide insights into when *and how thoroughly weed management tactics should be imposed.*

Price: £ 166.

Orders to: see below.

Soil Fungicides. 2 Volumes. A.P. Sinha, K. Singh and A.N. Mukhopadhyay, CRC Press, Boca Raton, 1988. Vol. 1, 187 p. ISBN 0-8493-4548-0; Vol. 2, 174p. ISBN 0-8493-4549-9. Hardbound.

The need for fungicides is created by fungal activities detrimental to the welfare of mankind. As the bases for such destructive activities are identified, compounds are sought to control the fungi involved. Soil fungicides have been used for a long time to control soil-inhabiting plant pathogens successfully, and within the last two decades, a striking increase has occurred in their use. Moreover, a great number of compounds have since been discovered, new techniques of application have been developed, and new concepts on modes of action have evolved. Tremendous achievements have also been made in their use with reference to plant disease control .At no time in the past has interest in fungicides been greater than during the current period of transition from the protective to systemic fungicides.

The success of soil fungicides depends on the complex nature of soil, which modifies the action of these compounds. Moreover, in field tests, a number of factors are operative, i.e., formulations, intrinsic weakness in the compound, mode of action, changes in physical and chemical properties of soil, and mechanical pretreatment of the soil. Also the amount of chemical residues and economic considerations have to be taken into account for the effective and efficient utilization of the soil fungicides. An understanding of

the basic scientific principles involved would clear the way for future success. There has been a rising awareness of the toxicological hazards and the environmental impact of fungicides. With the advent of more selective fungicides, fungal resistance has emerged as a major problem.

Of the many aspects of pesticide behaviour in the soil environment which have currently received scientific attention, there has been a notable acceleration in the microbiological field in research institutions globally. The vast amount of information generated is widely dispersed in diverse scientific journals, in several languages. These volumes represent an attempt to summarize and evaluate recent developments, to integrate them with significant developments of the past, and to attempt some projections for the future.

They contain 13 chapters. In Volume 1, the first chapter deals with introduction, definitions, history, classification, formulations, and methods of application. Chapters 2 through 8 deal with individual groups of fungicides and their members, with regard to their manufacturers, chemical name, toxicological information, mechanism of action, and disease control developed for commercial use of experimental work. In Volume 2, Chapters 9 through 12 deal with the various aspects of soil fungicides, such as factors affecting their efficacy, microbial interactions, nontarget effects of pesticides on soil borne plant pathogens, and development of resistance to fungicides. In the last chapter, evaluations of fungicides have been included because of their significance in the fungicidal recommendation. Literature pertaining to each chapter has been cited in the last, so that the reader can obtain more detailed information on the topic(s).

Price: Volume 1 £ 115, Volume 2 £ 101, in U.K.

Orders to: Wolfe Medical, 2-16 Torrington Place, London WC1E 7LT, England; In U.S.A.: CRC Press, 2000 Corporate Blvd., N.W., Boca Raton, FL 33431, U.S.A.

Soil Erosion on Agricultural Land. J. Boardman, I.D.L. Foster and J.A. Dearing, editors. John Wiley & Sons, Chichester, New York, 1990, xviii + 687p. ISBN 0-471-92602-7. Hardbound.

The chapters in this book were presented at a workshop on Soil Erosion on Agricultural Land sponsored by the British Geomorphological Research Group (BGRG) as its contribution to the Annual Conference of the Institute of British Geographers. The conference was held at Coventry in January 1989.

The aim of this book is to provide a representative selection of aspects of the soil erosion problem presented at the conference. Soil erosion is a broad topic which cannot be comprehensively covered in a single book, let alone one based on a specific conference. However, several contributors were invited to review broad areas in a series of keynote papers.

A secondary aim of the workshop was to bring together erosion researchers from different disciplines rather than confining discussions to geomorphological aspects of the topic. This proved to be difficult to achieve, but to the extent that the volume contains contributions from computing, agronomy, soil science, sedimentology, geology and agricultural economics, the organizers were partially successful.

The contributions to the book are arranged in three sections: 1, Erosion Processes: Past and Present (19 papers); 2, Assessment and Prediction (13 papers); and 3, Conservation and Policy (12 papers). These section titles represent the division of the topic into broad areas corresponding to assessment, prediction and management. The book concludes with a chapter entitled 'Soil Erosion Studies: Some Assessments'.

Price: £ 65.00

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

Geoderma Special Issue. Transport of Water and Solutes in Macropores. Vol. 46, nos. 1-3, March 1990. M.Th. van Genuchten, D.E. Ralston and P.F. German, editors. Elsevier Science Publ., Amsterdam, Oxford, 1990. ISSN 0016-7061.

This issue consists of a collection of papers presented during a special Symposium on 'Transport of Water and Solutes in Macropores' at the 80th Annual Meeting of the American Society of Agronomy in 1988. Main purpose of the Symposium was to review and discuss various experimental and theoretical approaches to quantifying the movement of water and dissolved constituents in macroporous soils.

The subject of solute transport in structured soils remains a significant and problematic area of research in soil science and hydrology. While the subject matter is certainly not new and has been studied for many decades, recent concern about the long-term quality of our soil and ground-water resources has motivated renewed studies os water and solute movement through soil macropores. For example, field and laboratory research now suggests that the standard equations predicting waterflow and solute transport in homogeneous soils are largely inadequate for describing water and solute movement in structured (aggregated, macroporous, or fractured) field soils. Water and dissolved chemicals or particulate matter can move preferentially from the soil surface through the vadose zone towards the ground-water table. The result is an increased potential for pollution of underlying ground-water systems by surface-applied or soil-incorporated fertilizers, pesticides and other chemicals released into the environment. Much laboratory and field evidence has been gathered over the last few years that demonstrates this preferential flow/transport process, alternatively termed also incomplete or partial mixing, macropore transport, fracture flow, preferred flow, short-circuiting, and non-Fickian transport.

The papers should give the reader a comprehensive and multi-disciplinary view of the current state-of-the-art in research on solute transport in macroporous soils.

Orders to: Journals Dept., Elsevier Science Publishers, P.O. Box 211, 1000 AE Amsterdam, the Netherlands.

Trees for Development in Sub-Saharan Africa. Proceedings of a seminar held by the International Foundation for Science (IFS), Nairobi, February 1989. IFS, Stockholm, 1989, v + 361p. ISBN 91-85798-21-5.

Tropical forests are of particular importance to mankind because of their ability to provide timber, food and other products, and to meet environmental and sociological needs. Since its creation in 1974, the International Foundation for Science (IFS) has supported research in the fields of forestry and agroforestry, and would like to increase its support, because only 8% of the IFS grantees are working in this field at present. One group of these researchers aims at improving silvicultural and afforestation techniques, while the other is concerned with the conversion of tropical forests to tree crop plantations and to mixed agricultural systems, so-called agroforestry systems. In both areas, scientific information on which development can be based is either lacking or not available in usable form.

To encourage the ongoing grantees and reach more potential applicants from Africa to submit forestry and agroforestry projects to IFS, the Foundation decided to organize a Regional Seminar and asked the International Council for Research in Agroforestry (ICRAF) for its help. Of modest size, the meeting was a great success and served to bring together many researchers from both francophone and anglophone countries of Africa south of the Sahara.

The papers in this volume are grouped under the following headings: Agroforestry Systems (6 papers); Tree Species for Agroforestry (13 papers); Reforestation and Soil Conditions (5 papers); Soil – Vegetation Relationships (7 papers); Genetic Improvement and Propagation (5 papers) and Symbiotic Microorganisms (7 papers). They are in French or English with the abstracts in both languages. The questions and discussions were collected during and after each session and are printed to provide additional information.

Price: US$ 41.00, plus mailing charges for orders from developed countries; free for developing countries.

Orders to: IFS, Grev Turegatan 19, S-11438 Stockholm, Sweden.

United Nations Environmental Programme Environmental Data Report, Second edition, 1989/90. Prepared for UNEP by the GEMS Monitoring and Assessment Research Centre, London. Blackwell, 1989, viii + 547p. ISBN 0-631-16987-3. ISSN 0956-9324.

Part of the mandate of the United Nations Environment Programme (UNEP) is to co-ordinate and to support monitoring of the global environment. Gathering information on environmental quality and resource availability is an important stage in the process of understanding and maintaining a healthy environment. Such information can then be used to manage resources and to reduce or eliminate environmental degradation. Construction of data banks and compilation of the 'Environmental Data Report' are some of UNEP'S contributions to these goals.

This second edition built on the information base established in the first edition of 1987 with updated information on key issues and the inclusion of new topics and many additional data. As before, most dat are presented in tabular form with some graphical representations of time trends or spatial variation.

As in the last edition, the topics of environmental concern included are pollution, climate, natural resources, energy, transport and wastes together with information relevant to man's interaction with the environment such as population and settlements, human health and disasters. Some sections have been expanded to include topics of current concern and some new information is presented for the first time, providing a more comprehensive base for environmental assessment and management.

The Report aims to present the best available dat and to indicate the most reliable sources. Succinct explanatory text highlight significant emerging trends and gives enough related background information for the user to understand these trends an see their implications for the future. All the dat are in the form of easy-to-read tables and figures in two colours.

Together with such publications as the World Resources Report of the World Resources Institute in Washington, this is a very useful reference package of environmental and resource information.

Orders to: Basil Blackwell, 108 Cowley Road, Oxford OX4 1JF, England; *or:* Basil Blackwell, 3 Cambridge Center, Cambridge MA 02142, U.S.A.

Floods. Hydrological, Sedimentological and Geomorphological Implications. K. Beven and P. Carling, editors. John Wiley & Sons, Chichester, New York, 1989, xii + 290p. ISBN 0-471-92164-5. Hardbound.

Floods are the extremes of the hydrological record, and are events of large magnitude. They are of interest to government authorities, water supply and waste disposal bodies, the emergency services, insurance agencies and many others. Planning for and dealing with the effects of flood events can be facilitated by greater scientific understanding of the mechanisms involved. The work of scientists from many disciplines, such as hydrologists, hydraulic engineers, sedimentologists, and geomorphologists, needs to be brought together to develop such an understanding.

This volume of papers arises from a workshop held at the university of Lancaster as a joint meeting of the British Geomorphological Research group and the British Hydrological Society. the main aim of the workshop was to bring together scientific researchers with a common interest in the dynamics of fluvial floods and their effects on the landscape. The workshop was intended to provide a forum for presentations and discussion involving all areas of expertise and to encourage the sharing of experience and understanding between the different disciplines.

Price: £ 39.00

Orders to: John Wiley & Sons, Baffins Lane, Chichester, West Sussex, PO19 1UD, England; *or:* John Wiley & Sons, 1 Wiley Drive, Somerset NJ 08873, U.S.A.

Interrelationships between Microorganisms and Plants in Soil. Developments in Soil Science 18. V. Vancura and F. Kune, editors. Elsevier, Amsterdam, Oxford, 1989, 492p. Published in co-edition with Academia, Prague. ISBN 0-444-98922-6 (this volume); 0-444-40882-7 (series). Hardbound.

This volume documents our present knowledge of the interrelations between microorganisms and plants in the rhizosphere. Over sixty contributions by microbiologists specialized in this area examine the function of microorganisms in the root system of crop plants and in its immediate vicinity. The papers were presented at a meeting in Liblice, near Prague, in June 1987.

One of the most exciting recent advances is that the determination of certain properties of rhizobia has made it possible to predict the efficiency of a strain without the need for vegetation experiments. Using genetic engineering methods, it has been possible to develop new efficient rhizobial strains. Remarkable results have been achieved by the novel application of exomycorrhiza in the inoculation of forest tree seedlings planted in poor soils or spoil banks in coal mining areas. there is now more information available on the intracellular interactions with the host plant in vesicular-arbuscular endomycorrhiza, the introduction of mycorrhiza to the rhizosphere and its effect on biochemical processes, nutrition, health and yields of plants.

Many of the papers on associative microorganisms of the root system dealt with molecular nitrogen-fixing microorganisms and their potential importance to plant nutrition. Other rhizoplane microorganisms were examined with a view to determining their ability to absorb nutrients and proliferate when introduced into the rhizosphere, in order to produce biologically active substances which would improve the nutrition and health of plants and stimulate their growth and yield by changing the composition of the microbial community.

Other papers examined the prospects of suppressing phytopathogenic soil microorganisms and phytotoxic microorganisms by biological media.

All these lines of research are intimately associated with the problems of soil fertility and crop yields, which in turn have a direct bearing on the nutrition of mankind and the protection of man's environment.

Price: Dfl. 260.00.

Orders to: In U.S.A. and Canada: Elsevier Science Publ.Comp., P.O. Box 882, Madison Square Station, New York NY 10159, U.S.A. *In Eastern Europe:* Academia, Prague, Czechoslovakia. *Elsewhere:* Elsevier Science Publ., P.O.Box 211, Amsterdam, the Netherlands.

Taming the Yellow River: Silt and Floods. Proceedings of a Bilateral Seminar on Problems in the Lower Reaches of the Yellow River, China. The GeoJournal Library 13, L.M. Brush, M.G. Wolman and Huang Bing-Wei, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1989, x + 690p. ISBN 0-7923-0416-0. Hardbound.

This volume brings together a comprehensive collection of papers dealing mainly on the lower part of the river Huanghe or Yellow river. From the viewpoint of average discharge the Yellow river is not very large. Its average discharge measures about 1/20 of the China's largest river Chang Jiang or Yangzi and is about half of the river Rhine. However, its maximal floods and the extreme sediment load creates already for millennia notorious dangerous situations for mankind. The Yellow river flows through the loess plateau, where waterloss and soil erosion are very serious. The floods often carry a tremendous amount of sediments, which is deposited in the North Chinese lowland. Embankment has led to continuous raising of the riverbed between the dikes. The problems of sediment and flooding on the Yellow river are unique and of worldwide scientific and economic interest. While focusing on the lower Yellow river, an excellent view of the effects of erosion of the 'loess plateau' despite aggressive soil conservation measures is given with the concomitant effects on downstream reservoirs, the floodplain of the river along the North China Plain, and aggradation along the river as it passes toward the delta to the Bohai sea.

Attention is also given to flood forecasting and warning systems as well as the predicted effects of water diversions and flooding caused by icing of the river.

In addition to papers dealing directly with the Yellow River, many discuss processes of erosion, deposition and the transport of sediment which have a bearing on the problems at hand. A view of the usefulness of the 'systems' approach is also portrayed.

All of the problems of the Yellow River have not been solved, but this collection of papers gives up-to-date analyses of what is known and indications of fundamental problems requiring additional inquiry.

Price: Dfl 395.00, US$ 195.00 of £ 129.00

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

J.H. Kauffman, Wageningen, the Netherlands.

Physical and Chemical Weathering in Geochemical Cycles. NATO ASI series C, vol. 251. A. Lerman and M. Meybeck, editors. Kluwer Academic Publ., Dordrecht, Boston, 1988. xvii + 375p. ISBN 90-277-2821-6. Hardbound.

Physical and chemical weathering in geochemical cycles was the topic of a two-weeks NATO Advanced Study Institute held in September 1988 at Aussois, France. The present volume contains 17 invited papers presented at this meeting.

An impression of the wide coverage of these proceedings can best be obtained by a listing of the paper titles: 1) Weathering rates and major transport processes – An introduction. 2) Rate control of weathering

of silicate minerals at room temperature and pressure. 3) Microbial weathering processes in natural environments. 4) Paleosols and the evolution of the atmosphere. 5) Slope erosion and mass movement in relation to weathering and geochemical cycles. 6) Loess, its formation, transport and economic significance. 7) Lake sediments as indicators of changes in land erosion rates. 8) Movement and storage of sediment in river systems. 9) Influence of acid rain on weathering rates. 10) Freshwater carbon and the weathering cycle. 11) Weathering and erosion in the humid tropics. 12) How to establish and use world budgets of riverine materials. 13) Transport and deposition of suspended matter in estuaries and the nearshore sea. 14) Riverborne materials and the continent-ocean interface. 15) Strontium storage and release during deposition and diagenesis of marine carbonates related to sea-level variations. 16) Sediment cycling during earth history. 17) Solid earth as a recycling system in temporal dimensions of global tectonics.

The book is completed by a subject index.

Price: Dfl 185, US$ 89, £ 54.

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

Agro-Ecological Condition of the Oxisol-Ultisol Area of the Amazon River System. A. Tanaka et al. Fac. of Agriculture, Hokkaido University, Sapporo, 1989, 105p.

The Amazon region is attracting the attention not only of agricultural scientists but also of environmental scientists, because of its potential for producing more food, the fragile nature of its ecosystem, and the suspected influence on the global climate when the ecosystem is disturbed. For this reason, a series of surveys was started by Japanese scientists to grasp the agro-ecological condition of the region where Oxisols and Ultisols are major soils. The ultimate goal of these surveys is to understand the relationship between ecological condition and agricultural activity for establishing a rational background in order to design optimal farming systems, with which a high productivity is sustained and nature preserved under various agro-ecological conditions.

In the preliminary survey, four broad regions were recognized in the Amazon River System: (i) Lower and Central Amazon Basin, (ii) Upper Amazon and Orinoco basin, (iii) Easter Ranges and Foothills of the Andes, and (iv) Central Brazilian Highland. In the preceding survey, Llanos (savanna) in the Orinoco Basin of Colombia and forests of Peru in eastern ranges and foothills of the Andes were compared.

In the present survey, the area expanding from Brasilia to Cruzeiro do Sul in Brazil was surveyed, which covers five states. if one goes from east (Central Brazilian Highlands) to northwest (Upper Amazon Basin) in the survey area, the altitude decreases, precipitation increases, the duration of the dry season becomes shorter, temperature increases, vegetation changes from Cerrado to forest, and the intensity of human activity decreases, in general. In this area, there are also swampy areas. Thus, this survey area provides a unique opportunity to analyze the relationship between agro-ecological condition and agricultural activity.

Besides a general description of the survey area, the publication includes details about the different land systems, the energy balance and water regime, pedo-geomorphic processes, vegetation types, and farming systems. It has many photographs – some in colour -, and tables with soil data.

Requests to: Prof. T. Sakuma, Fac. of Agriculture, Hokkaido University, Kita 9, Nishi 9, Kita-ku, Sapporo 060, Japan.

Global Ecology. Towards Science of the Biosphere. M.B. Rambler, L. Margulis, R. Fester. Academic Press, Boston, San Diego, 1989, xii + 204p. ISBN 0-12-5768909-7. Hardbound.

Public awareness and concern over environmental degradation has reached an all time high, as the effect of man's activities on the global environment grows to greater and greater proportions. To understand the consequences of these activities, it is necessary to understand the fundamental nature of the system that supports life on a planetary scale. This book provides an introduction to the entire biosphere; the space that encompasses all life on Earth. Recognizing that the science of ecology as presently taught has expanded to include the techniques of planetary exploration, gas detection and computer modelling, the purpose of this text is to demonstrate that the scientific tools for understanding our planet may be in hand. Important conclusions from current scientific activities in several fields have been combined to create a basis for viewing the Earth as a cohesive, integrated system. The reader is guided through chapters on the Earth's feedback mechanisms, the components and interactions of ecosystems, remote sensing techniques, and the importance of the atmosphere in environmental maintenance.

Price: £ 16.00

Orders to: see below.

Environmental Ecology. The Impacts of Pollution and Other Stresses on Ecosystem Structure and Function. B. Freedman. Academic Press, San Diego, New York, 1989, x + 424p. ISBN 0-12-266540-6. Hardbound.

The intended audience for this book is students taking a course in environmental ecology, in which ecological impacts of pollution and other stresses are the primary focus. In addition, this book will be useful for other students and to ecologists and other professionals whose specific interests fall within the field of environmental science.

Price: £ 29.00

Orders to: Academic Press, 24-28 Oval Road, London NW1 7DX, U.K.; *or:* Academic Press, 1250 Sixth Avenue, San Diego, CA 92101, U.S.A.

Nutrient Cycling in Terrestrial Ecosystems. Field Methods, Application and Interpretation. A.F. Harrison, P. Imeson, and O.W. Heal, editors. Elsevier Applied Science, London and New York, 1990, xvii + 454p. ISBN 1-85166-388-6. Hardbound.

During recent years, ecological research has been considered a high priority area by both the scientific community and the community at large. Public awareness of serious ecological problems i growing and it is now widely recognised that there is a basic need for research which could contribute to a remedy.

This book is the product of a venture by the European Science Foundation as part of the Forest Ecosystem Research Network (FERN) which has been created to co-ordinate and integrate national research activities already being implemented or planned for the future. The aim is to establish a network of European research groups in the field of forest ecology.

A wide range of methods for the estimation of nutrient fluxes are covered and the book is divided into sections dealing with inputs, turnover, losses and plant uptake processes. Each section contains a keynote and a summary chapter which introduce the reader to the ecological background of the subject area. The latest methodologies are summarised in this one volume.

The book will provide a source of information for environmental scientists, soil scientists and conservationists who are involved in research into the inputs, cycling and losses of nutrients in terrestrial ecosystems. It will also be of interest to geographers and those concerned with the study of forestry, agriculture and hydrology.

Price: £ 65.00

Orders to: In U.S.A. and Canada: Elsevier Science Publ.Comp., 655 Avenue of the Americas, New York, NY 10010, U.S.A. *Elsewhere:* Elsevier Applied Science Publishers, Crown House, Linton Road, Barking ,Essex 1G11 8JU, England.

Lehrbuch der Bodenkunde. Scheffer/Schachtschabel. 12., neu bearbeitete Auflage von P. Schachtschabel, H.-P. Blume, G. Brümmer, K.-H. Hartge und U. Schwertmann. Ferdinand Enke Verlag, Stuttgart, 1989, xvi + 496S., 220 Abb., 102 Tabellen, 1 Farbtafel. ISBN 3-432-84772-6. Gebunden.

Die hiermit vorgelegte 12. Auflage des bekannten Lehr- und Handbuches der Bodenkunde ist gegenüber der 11. Auflage (1982) weitgehend neu bearbeitet und stärker internationalisiert.

Nahezu alle Kapitel des Buches wurden auf den neuesten Wissensstand gebracht. Viele Abbildungen wurden ausgetauscht und die Anzahl um 34 vermehrt. Die Farbtafel mit gemalten Bodenprofilen wurde durch eine Tafel mit 10 farbigen Fotos typischer Böden aus allen Teilen der Erde ersetzt. Wenngleich vor allem Eigenschaften der Böden Mitteleuropas behandelt werden, so wurden doch die Aussagen über Böden anderer Klimate stark erweitert.

Stark erweitert wurde auch die Bedeutung der Bodenorganismen für Bodenentwicklung, -ökologie, -nutzung und -filtervermögen. Die Bodenacidität wurde unter Berücksichtigung der Waldbodenverhältnisse neu konzipiert und die Schwermetalladsorption neu aufgenommen. Einen Schwerpunkt des Buches bilden weiterhin Bodenbelastungen durch Verdichtung und Erosion, Überdüngung, Versauerung sowie anorganische und organische Schadstoffe, für deren Vermeidung Empfehlungen gegeben werden. Bei der Pedogenese wurde vor allem das Geschehen in Böden arider Klimate erweitert.

Preis: DM 76,- *Bestellungen an:* siehe unten.

Die Physikalische Untersuchung von Böden. 2., vollig neu bearbeitete Auflage. K.-H. Hartge und R. Horn. Ferdinand Enke Verlag, Stuttgart, 1989, xii + 175S. ISBN 3-432-82122-0.

Seit einigen Jahren hat das Konzept des Bodenschutzes und der Bodenerhaltung immer mehr an Bedeutung gewonnen. Gleichzeitig hat die Technik zunehmend Möglichkeiten eröffnet, Böden zu verformen, zu verdichten und zu transportieren. In größerem Maße als früher können damit Volumen- oder Gefügeveränderungen erzeugt oder Böden mit unterschiedlichen Eigenschaften hergestellt bzw. rekultiviert werden.

Dabei zeigt sich dann, daß zur Beurteilung sowohl der Ausgangssituation als auch deren Veränderung physikalische Eigenschaften wie Körnung, Dichte, Durchlässigkeit/Festhaltekapazität für Luft und Wasser sowie Stabilität gegen Verknetung und Verschlämmung die zunächst wichtigsten Parameter sind.

In dem hier vorliegenden Text werden Methoden zur Erfassung der genannten Eigenschaften beschrieben. Auswahl und Beschreibung der Arbeitsweisen ist auf den Praktikumsbetrieb der Bodenkunde ausgerichtet.

Das erste Kapitel bringt in geraffter Form Grundsätze zum Ansatz der Untersuchungen einschließlich Hinweisen auf statistische Probleme. Das zweite Kapitel behandelt die Entnahme von Bodenproben. Die Auswahl der in den Kapiteln 3 bis 14 beschriebenen Methoden erfolgte aus dem Blickwinkel heraus, daß es in meisten Fällen der Beurteilung bodenkundlicher Sachverhalte und Zusammenhänge genügt, Meßergebnisse einer durchschnittlichen Genauigkeit zu verwenden, sofern nur die Problemstellung richtig erfaßt wurde.

Das letzte Kaptel (15) hat wieder allgemeineren Charakter. Es soll zu weiteren Interpretationen von Meßwerten anleiten, wo die vorliegenden Daten Aussagen erlauben, die über die Feststellung eines Unterschiedes zwischen zwei Probengruppen oder über Veränderungen in einer Richtung (z.B. die Tiefe im Bodenprofil) hinausgehen. Hier steht die örtliche Zuordnung zum Beispiel in bezug auf ein Flurstück oder eine Profilwand im Vordergrund.

Preis: DM 48,–.

Bestellungen an: F. Enke Verlag, Rudigerstrasse 14, D-7000 Stuttgart 30, Bundesrepublik Deutschland.

Global Soil Change. Report of an IIASA-ISSS-UNEP Task Force on the Role of Soil in Global Change. R.W. Arnold, I. Szabolcs and V.O. Targulian, editors. IIASA, Laxenburg, 1990, 110p. Publ. CP-90-2.

The present report is one of a series of documents by soil scientists in preparation of a coordinated input by various national and international centres on soil research and management into the International Geosphere-Biosphere Programme (IGBP) or 'Global Change' Programme, initiated by the International Council of Scientific Unions (ICSU).

The present publication on Global Soil Change is addressed to the world community of scientists involved in IGBP, e.g. ecologists, climatologists, hydrologists, biologists, etc. as well as decision- and policy-makers of high level, who need to elaborate the holistic and comprehensive concept of global soil change as a part of the general concept of global geosphere-biosphere change.

The main stimuli for the preparation of this publication were: (1) the necessity of the global and holistic spheric approach to world soils and soil patterns, that is, to land pedosphere and to all interactions of the pedosphere with the other natural spheres and with all kinds of human activity and human life; (2) the peculiarity of the pedosphere as an independent genetical, structural and functional subsystem within the biosphere-geosphere with its own laws of evolution, distribution and functioning; (3) the international and interdisciplinary aspiration to understand the essence and spatial-temporal distribution of the major mechanisms of pedospheric changes due to both natural and anthropogenic factors and forces; (4) the desire to understand the major consequences and results of pedospheric changes on other components of nature and society; the feedback from pedosphere to biosphere-geosphere-society systems; and last but not least (5) the feeling of resentment for the lack of scientific recognition that pedology is such an interesting, attractive, exciting and profound science, and for such an important and polyfunctional natural body as soil and the world's pedosphere.

The book, based on an analysis of the existing knowledge of the past, present and future of soils of the world, besides the description of processes and situations, also includes some predictions and recommendations. It is written for both specialists and interested laymen.

Price: US$ 15, including surface mail.

Orders to: IIASA, A-2361 Laxenburg, Austria; *or to:* ISSS, c/o ISRIC, P.O.B. 353, 6700 AJ Wageningen, The Netherlands.

Land Use Planning. Techniques and Implementation. Revised edition. T.W. Patterson. Robert Krieger Publ.-Comp., Malabar, 1988, xv + 352p. ISBN 0-89874-944-1. Hardbound.

The success of urban and regional planning lies ultimately in the effectiveness of translating plans and policies into programs and projects which are effectively and satisfactorily carried out. Increasing concern among planners and their clients about the problems of bringing plans and policies into realization, have in the last few years led to both criticisms of the planning implementation process, and significant innovations in legal and organizational techniques and strategies involving both conventional means and unconventional means. The purpose of this book is to describe and evaluate most of the means available for carrying out land use plans with an emphasis on the more promising innovations. It is limited to looking at land use planning because in most settings this is still the predominant task of urban and regional planners.

This Second Edition endeavors to bring the earlier edition up to date and add pertinent new information. Although less than a decade has passed, there have been significant changes in the climate for land use planning, in the emphases of planning programs and the implementation techniques employed. Accordingly, this edition traces the changing trends and ongoing transformations of planning policies and strategies at the various levels of government in the U.S.A.

The first chapter looks at the background and context in which planning takes place. Chapters 2, 3 and 4, respectively deal with the traditional tools, zoning, subdivision regulations, and other supplemental regulations and related development policies. Chapter 5 deals with financial planning which is becoming a critical tool in the guidance of development. Chapter 6 discusses the advantages and disadvantages of the use of special districts for planning, guiding and carrying out development. And the last two chapters deal with growth guidance systems and summarize the author's conclusions concerning possibilities for improving the land use plan and policy implementation process.

Designed primarily to serve as a text and reference book for students of urban and regional planning, the book will also be of value to professionals in their efforts to improve implementation processes.

Price: US$ 34.50.

Orders to: Robert E. Krieger Publ. Comp., P.O. Box 9542, Melbourne, FL 32901-9542, U.S.A.

Lunar Base Agriculture: Soils for Plant Growth. D.W. Ming and D.L. Henninger, editors. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, Madison, 1989, xix + 255p. ISBN 0-89118-100-8. Hardbound.

The National Aeronautics and Space Administration (NASA) is scrutinizing the possibility of permanently extending the presence of humans beyond Earth. As part of the planning process, selected missions are being evaluated as case studies, including (i) the human exploration of Mars and its satellites, (ii) the establishment of a lunar science outpost, and (iii) the evolutionary expansion of humans into our solar system.

The first step will probably be the formation of a lunar base. A self-sufficient lunar base will require the use of on-site resources. Producing food at a lunar base is a concern. Lunar materials will indeed play

an important role in the development of lunar base agriculture. The study of lunar surface materials and how they might react as a soil, source of plant nutrients, or both opens a new frontier for researchers in the agricultural community.

The present publication is the result of a NASA-sponsored workshop where the goal was to identify a course of research dealing with the interaction of lunar resources and agricultural systems. The publication focuses on (i) lunar base scenarios, (ii) the lunar environment, (iii) chemical and physical considerations for a lunar-derived soil, (iv) biological considerations for a lunar-derived soil, (v) current research in controlled ecological life support systems, and (vi) future research needs for plant growth at a lunar base.

Price: US$ 24.00. Advance payment and 10 percent per book is required on all orders outside the U.S.A.

Orders to: ASA, CSSA, SSSA Headquarters Office, Attn. Book Order Dept., 677 South Segoe Road, Madison, WI 53711, U.S.A.

Soil Conservation for Small Farmers in the Humid Tropics. FAO Soils Bulletin 60. T.C. Sheng, FAO, Rome, 1989, 104p. ISBN 92-5-102869-9.

Soils are the very basis of our existence. Through the past, in the present, and through the foreseeable future, they remain the foundation of our food supply chain – a vital recurrent and capital resource of each nation. People should be keenly aware that the soil mantle which supports human life is very thin and that soil formation is a slow process. Once the thin top layer is eroded away it is difficult to restore. Damage invisible to the naked eye may seriously affect productivity. Soils are much more vulnerable than is generally thought. Only under proper management they can be regarded as renewable resources.

In the humid tropics, where many of the developing countries are situated and where individual holdings are usually small, the risk of soil erosion is likely to be high due to frequent and intense rains. When exposed by improper farming and cultivation the soils in these areas can be badly eroded in a short time. The need for careful soil conservation in these areas is apparent.

This bulletin describes problems, approaches and techniques of soil conservation in the humid tropics and in particular is intended to assist farmers on small holdings in these regions ('small farmers') to overcome their soil erosion problems. The terms which frame this objective are defined briefly as follows: (1) Soil Conservation: the scientific use and protection of land; including wise choice of land use and the pursuit *of necessary measures of soil management and of erosion control (especially against erosion by water);* (2) Small Farmer: Any farmer who farms less than 5 hectares. An average would be around 2 hectares; and (3) Humid Tropics: Land between the Tropics of Cancer and of Capricorn having a tropical climate and annual rainfall of at least 1 000 mm.

Price: US$ 7.50.

Orders to: see below.

Radioactive Fallout in Soils, Crops and Food. FAO Soils Bulletin 61. F.P.W. Winteringham. FAO, Rome, 1989, 84p. ISBN 92-5-102877-X.

Notwithstanding its tragic human consequences, the Chernobyl nuclear power plant accident in the USSR in April 1986 provided a timely reminder of the need for constant vigilance and preparedness. Above all, it demonstrated the importance of communication and cooperation at UN Agency level, and how the release of radioactive substances into the environment can rapidly achieve international and even global significance. The problems were especially significant in relation to agriculture, contingent food supplies, to their dependent communities and, therefore, in relation to FAO's interests and responsibilities.

The original FAO Atomic Energy Branch in Rome represented FAO's concern with the problems of radioactive contamination since the effective start of the 'atomic energy era' in the first post – 1945 decade. Responsibilities of the Branch were later transferred to the joint FAO/IAEA Division in Vienna on the latter's creation in 1964.

Protection against the effects of radioactive fallout and contamination has, understandably, been a worrying subject for the layperson since the first atomic bombs. However, a proliferation of terms, definitions, the introduction of a new set of units of radioactivity and radiation levels, and a bewildering series of publications by the very many national and international organizations concerned have also complicated the subject.

Part 1 of this review is designed to provide an up-dated background to the subject in relation to FAO's interests and responsibilities in scientifically accurate but non-technical language.

Part 2 is concerned more specifically with the problems of radioactive fallout over pasture and cultivated soils. Moreover, it is mainly concerned with problems of international significance under peacetime conditions and which are likely only to arise as a result of a major nuclear reactor accident or, possibly, some unintended nuclear explosion. However, relatively local problems of soil contamination could arise (and have done so) as a result of other kinds of accidents.

Price: US$ 6.00.

Orders to: FAO Sales Agents around the world, or, in case of difficulty: Distribution and Sales Section. FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

Alley Farming in the Humid and Subhumid Tropics. Proceedings of an international workshop held at Ibadan, Nigeria, 10-14 March 1986. B.T. Kang and L. Reynolds, editors. International Development Research Centre, Ottawa, 1989, x + 251p. ISBN 0-88936-540-7. IDRC-271e.

An urgent challenge facing agricultural scientists working on upland food-crop production in many parts of the humid and subhumid tropics is the need to find viable, sustainable, and environmentally sound alternatives to the ancient shifting cultivation and bush-fallow, slash-and-burn cultivation system. The traditionally extensive, food-crop production system, which is stable and biologically efficient, operates effectively only when sufficient land is available to allow a long fallow period to restore soil productivity, which is exhausted during the short cropping cycle. Over the years, however, the traditional system has undergone rapid changes as a result of various socioeconomic factors such as rapid population growth.

In tropical Africa, the population is increasing at an annual rate of over 3.0%. Although the land for upland farming in tropical Africa is adequate, the land available to maintain the needed long fallow period is insufficient. This has severely pressured the land productivity under traditional farming systems and has led to increased deforestation. As productive land becomes scarce, smallholders are compelled to exploit more fragile and marginal lands that cannot support large populations practising subsistence agriculture.

The theme of this workshop was the development of more productive, sustainable farming methods with low inputs in the humid and subhumid tropics using alley farming techniques. The objectives were to review the state of the art of alley farming research and application, woody species in tropical farming systems, and training and research needs and to establish channels for collaborative research. The present proceedings contain the papers presented, providing a comprehensive review of the issues in alley cropping.
Orders to: IDRC, P.O. Box 8500, Ottawa, Canada K1G 3H9.

Asialand Workshop on the Establishment of Soil Management Experiments on Sloping Lands. IBSRAM Technical Notes No.3. E. Pushparajah and S. Panichapong, science editors, C.R. Elliott, publication editor. IBSRAM, Bangkok, 1989, 432p. ISBN 974-86952-4-7.

The International Board for Soil Research and Management (IBSRAM) recognizes that refresher courses and group discussions on specific subjects are increasingly relevant to present-day research. This is particularly important in relation to the need for constant adjustments to the new knowledge which is regularly evolved. Thus IBSRAM's training activities have dealt essentially with refresher-course elements combined with discussion on methodological guidelines.

The workshop on Site Selection, Characterization and the Establishment of Experiments for Soil Management Networks was part of IBSRAM's general endeavour to promote training activities. The workshop was held in Chiang Mai in November 1989, and was attended by all the frontline scientists and coordinators involved, or prospectively involved, in the Asialand network on the management of sloping lands.

The choice of approach and the contents of the training courses were made with the idea of bringing network participants to a measure of reciprocal understanding and of achieving mutual endorsement of methodologies. The topics were of importance and immediate use to the network cooperators.

A multidisciplinary approach was adopted with regard to the subject matter in order to create awareness of areas of concern outside specialized interests. The practical work in the field involved the use of different techniques, and complemented the theoretical background by relating academic training to field work in experimental areas. The discussions that followed, and the use made of the knowledge gained in drafting the methodological guidelines at the end of the training workshops, revealed the complexity of the issues involved in improving soil management.

This publication contains the texts of the papers presented on the network approach, the agroecological approach, farming systems, site selection for experiments, site characterization, physical and chemical parameters, and on experimental design and monitoring.
Price: US$ 20.00
Orders to: Agribookstore, Winrock International, 1611 North Kent Street, Arlington VA 22209, U.S.A.; *or:* IBSRAM, P.O.Box 9-109, Bangkhen, Bangkok 10900, Thailand.

Landscape Ecology – Geomorphology. H. Rohdenburg. Catena Paperback, Catena Verlag, Cremlingen-Destedt, 1989, 177p. ISBN 3-923381-15-8.

This volume contains the unfinished text of a first draft written by Prof. Heinrich Rohdenburg, before his sudden death. He intended that it should become a text on 'Geomorphology and Landscape Ecology'. In this first part he attempted to outline speculations, hypothesis and models which were to be expanded, exemplified and compared with the field evidence later in the text. Regrettably, he did not have time to develop the text further, to add examples, figures, photographs or to improve on the first draft. The hypotheses and speculations will provide a stimulus to other researchers, and provide a fresh attack on the neglected larger spatial scales and longer time scales of geomorphological evolution.

The introductory chapter discusses the present importance of geomorphology in landscape ecology. In the text that follows the process is shown to generate particular landforms. The landform itself serves only as an 'indicator value for the analysis of the three-dimensional structure of the landscape'. As stated in the introduction, one of the main concerns of the book is to 'encourage synthesis by a discussion of the 'intellectual tools' and by reference to relevant but often neglected facts. Examples are used as a basis for deduction even though complete analysis is not yet possible'.

Only the first part of the book the 'intellectual tools' had been completed (Chapters 1-10). Of the second part, in which these intellectual tools were to be used for the interpretation of process patterns, only the discussion of one example, 'the wet-dry tropics' (ch. 11) had been started.
Price: DM 44, US$ 28.
Orders to: In U.S.A. and Canada: Catena Verlag, P.O. Box 368, Lawrence, KS 66044, USA; *Elsewhere:* Catena Verlag, Brockenblick 8, D-3302 Cremlingen-Destedt, Fed. Rep. of Germany.

Disturbance in Grasslands. Geobotany 10. J. van Andel, J.P. Bakker and R.W. Snaydon, editors. Dr. W. Junk Publishers, Dordrecht, 1987, xii + 317p. ISBN 90-6193-640-3. Hardbound.

Disturbance, both man-induced and natural, has received increasing attention from ecologists in the last decade. This increasing interest has probably been stimulated by a recognition, sometimes perhaps not conscious, that more can be learned about the functioning of communities and populations by studying their response to disturbance than by studying these systems in equilibrium. Such studies may be of systems that have been naturally disturbed, unintentionally disturbed by man, or intentionally disturbed by man. Ideally, studies should be made of systems that have been experimentally disturbed, where the treatments have been imposed after careful consideration, and a valid experimental design used with replication.

This volume is the result of a Symposium to celebrate the Silver Jubilee of the Department of Plant Ecology of the University of Groningen. The Department has, since its inception, been involved with studies of grasslands, and especially with the effects of human interference on grassland communities. It has been especially involved in an almost unique enterprise to convert areas of grassland from intensive agricultural production to nature reserves. with over-production of most food commodities in the EEC, and increasing interest in various types of 'set aside' schemes, this initiative now seem to be remarkably prescient.

This volume covers many aspects of disturbance in a variety of grasslands. Disturbance is considered at both the community and the population level, and the principles and processes underlying those responses are explored. A variety of disturbances is considered, though the main emphasis is on those factors of particular interest to the Department of Plant Ecology, especially defoliation, soil fertility, drainage and salinity.
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Bodennutzung und Bodenschutz. H.J. Fiedler. VEB Gustav Fischer Verlag, Jena, 1990, 268S. ISBN 3-334-00302-7.

Die Erhaltung des Bodens in notwendiger Menge und Qualität als eine Lebensgrundlage der Bevölkerung erfordert wissenschaftlich durchdachte Maßnahmen zum vorbeugenden Schutz. Wesentlich ist eine die Bodeneigenschaften und Bodenprozesse berücksichtigende Bewirtschaftung. Programme für Schutzmaßnahmen haben aber auch die gesellschaftlichen und ökonomischen Verhältnisse zu beachten. Insgesamt geht es um interdisziplinäres, planmäßiges und langfristiges Arbeiten, das zunächst wirtschaftszweigspezifisch orientiert ist (z.B. Industrie, Landwirtschaft, Forstwirtschaft, Wasserwirtschaft), wobei auf entscheidenden Gebieten dann volkswirtschaftlich vertretbare Gesamtlösungen anzustreben sind. Zu diesem Denken in Zusammenhängen will dieses Buch mit anregen.

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Fertilizer Policy in Africa. Lessons from Development Programs and Adjustment Lending, 1970-87. MADIA Discussion Paper 5. U. Lele, R.E. Christiansen and K. Kadiresan, editors. The World Bank, Washington, 1989, 76p. ISBN 0-8213-1321-5. Stock no. 11321.

The MADIA (Managing Agricultural Development In Africa) study and the papers comprising this MADIA Discussion Paper Series are important both for their content and the process of diagnosis and analysis that was used in the conduct of the study. The MADIA research project has been consultative, nonideological, and based on the collection and analysis of a substantial amount of concrete information on specific topics to draw policy lessons; it represents a unique blend of country-oriented analysis with a cross-country perspective. The conclusions of the studies emphasize the fundamental importance of a sound macroeconomic environment for ensuring the broad-based development of agriculture, and at the same time stress the need for achieving several difficult balances: among macroeconomic, sectoral, and location-specific factors that determine the growth of agricultural output; between the development of food and export crops; and between the immediate impact and long-run development of human and institutional

capital. The papers also highlight the complementarity of and the need to maintain a balance between the private and public sectors; and further the need to recognize that both price and nonprice incentives are critical to achieving sustainable growth in output.

The present papers first discuss the trends in donor policy towards fertilizer use, and the actual use of fertilizers. The policy reforms in the context of past performance in three East and three West African countries are mentioned, followed by a discussion of determinants of the economic benefits of fertilizer use. It ends with a summary, conclusions and implications.

Orders to: Sales agents around the world *or:* Publications Sales Unit, The World Bank, 1818 H Street, Washington, DC 20433, U.S.A.; *or:* Publications, The World Bank, 66 avenue d'Iéna, F-75116 Paris, France.

Resource Conservation and Desertification Control in the Near East. Report of the International Training Course, July-August 1988 by D. Rappenhöner. Food and Agriculture Development Centre (ZEL), Feldafing, 1989, 294p. ISBN 3-924441-47-2. DSE Dok N° 1571 A/a-TK78-300-88.

The problem of desertification in arid and semi-arid areas has a long history through the past centuries. It has always been an overlap of long-term changes in climate and of human activities. The ecological consequences of human activities remained relatively insignificant or were concentrated in a limited area, as long as population density of both men and cattle in a desertification-endangered area was sufficiently low.

With rising population and, therefore, growth in consumption of the very limited resources, scope and intensity of interference with ecosystems by human activities grew rapidly, leading to severe degradation of vegetation, soil, and water – the natural sources of human existence.

A large part of the ESCWA (Economic and Social Commission for West Africa) region is arid and semi-arid and most of the ESCWA countries suffer from various types and stages of desertification processes. An interpretation of the FAO-Unesco Soil Map of the World shows that as much as 98 per cent of the land area in the region is subject to desertification, out of which 65 per cent has been affected severely or very severely, while 35 per cent has been affected by slight or moderate degrees of desertification. Thus, the issues of resource management, conservation, and development are of crucial importance to this region.

The ESCWA is emphasizing the need to identify and implement a set of action-oriented problem-solving activities toward a concerted effort against desertification. Promotional measures against desertification are also within the framework of development policies of the Federal Republic of Germany. In pursuance of this, ESCWA and DSE (Deutsche Stiftung für internationale Entwicklung) have jointly organized a training course.

The present publication contains the papers in the following sessions: seven country reports; desertification problems in several regions and land uses; methods and techniques for the identification of desertification processes; monitoring of indicators of desertification processes and desertification control; and strategies. The report of an excursion in Jordan concludes the publication.

Requests to: DSE, Wielingerstrasse 52, D-8133 Feldafing, Fed.Rep. of Germany.

Oribatid Mites of the Neotropical Region II. The Soil Mites of the World, volume 3. J. Balogh and P. Balogh. Elsevier, Amsterdam, Oxford, 1990, 332p. ISBN 0-444-98809-2 (volume). ISBN 0-444-99654-0 (series). Published in cooperation with Akadémiai Kiadó, Budapest.

Soil mites are of great biological importance both in natural and in cultivated soils. Of late, much attention has been paid to them especially because of their sensitivity to a number of chemicals used in agriculture. Of the soil mites, the Oribatids represent the largest number of both individuals and species. Unfortunately, the study of Oribatids has been greatly hampered by the lack of modern reference works from which they can be identified.

This volume presents the second part of brief characterizations and identification keys for oribatid mites inhabiting the Neotropical Region, as well as a check-list and bibliography of all described species from this area.

Over one-thousand oribatid species had been described from the Neotropical Region up to the preparation of the manuscript of this volume. It must be stressed, however, that there remains much to be studied. Almost all recent publications contain descriptions of new species. In previously collected neotropical materials new species and even new genera are found. The authors are convinced that intensive research should commence on oribatid mites, especially on those of Central America, the Andes Region, the southern tip of South America, many species await discovery.

Originally it was intended to include a catalogue of the oribatid species of the Neotropical Region at the end of the volume. In the meantime, however it was decided to publish a complete list of all oribatid species of the Extraholarctic Region in a forthcoming volume. Hence only a simple check-list with basic data is included here.

Bibliographic information of the companion volume 1: Oribatid Mites of the Neotropical Region I, J. Blogh and G. Balogh, Elsevier, 1988, ISBN 0-444-98935-2, price Dfl. 260.00.

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Orders to: In U.S.A. and Canada: Elsevier Science Publ. Comp., P.O.Box 882, Madison Square Station, New York NY 10159, U.S.A. *In Eastern Europe:* Kultura, P.O.Box 149, H-1389 Budapest 62, Hungary. *Elsewhere:* Elsevier Science Publ., P.O.Box 211, 1000 AE Amsterdam, the Netherlands.

Geomechanics in Tropical Soils. 2 volumes. Publications Committee of 2 ICOTS, editors. A.A. Balkema, Rotterdam and Brookfield. Vol.1, 1988, 44p. ISBN 90-6191-817-0; Vol.2, 1990, 182p. ISBN 90-6191-818-9. Set ISBN 90-6191-816-2. Hardbound.

The Technical Committee on Tropical and Residual Soils (TC 25) was set up in 1985 by the International Society for Soil Mechanics and Foundation Engineering. One task of this committee was to organise an international conference on tropical soils following the successful one that was held in Brazil in 1985.

The committee was invited to hold the Second Conference on Tropical Soils (2ICOTS) in Singapore in December 1988. The main purpose of the conference was to review the progress that has been made since 1985 with respect to the geotechnical properties and classification of tropical and residual soils, soil exploration and testing, stability of slopes and excavations, use of tropical soils as construction material for e.g. roads, airfields and earth dams and as foundation for different types of structure.

Problems with tropical and residual soils are often connected with the high annual rainfall in many countries in the tropics and the effect of the water on e.g. the erosion and the stability of slopes and the control of the water content during compaction. Of special interests are the effects of the negative pore water pressure and the cementation on the strength of residual soils and of weathered rocks, and the importance of the soil structure on the permeability and the drainage. Of interest are also the possible relationships between the Atterberg limits and the shear strength and compressibility of tropical and residual soils. Commonly used relationships are not applicable.

The papers presented at the conference are published in two volumes, one volume before the conference with all the papers and the second volume after the conference with the special lectures, general reports and discussions. The volume contains papers on (1) Characterization, identification and classification of tropical soils (13 papers); (2) Engineering properties of tropical soils (20 papers); (3) Stability of slopes and excavations in tropical soils (11 papers); (4) Foundations of buildings in tropical soils (5 papers); and (5) Construction of dams, roads, airfields, harbours, land reclamation in or on tropical soils (13 papers).
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Elsewhere: A.A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, The Netherlands.

The IUCN Sahel Studies 1989. M. Norton Griffiths and P. Rydén, senior editors. IUCN, Gland, 1989, xxii + 154p and 1 map. ISBN 2-88032-977-9 (English version); 2-88032-978-7 (Les études de l'UICN sur le Sahel, 1989).

The Sahel Programme of IUCN – the World Conservation Union – stems from a resolution adopted by the IUCN General Assembly of 1984 stating that it was '*deeply alarmed* by the effects of the current drought in the Sahel and the Horn of Africa, which revealed the dramatically declining ability of the natural ecosystems in these areas to sustain lives of all kinds'.

In response to this resolution, the IUCN Secretariat initiated a range of activities that led to the establishment of the Sahel Programme. A Task Force was set up in 1985 to prepare a framework for an integrated action plan for ecological rehabilitation and restoration within those Sahelian countries affected by drought and environmental degradation. 'The IUCN Sahel Report – A Long-Term Strategy for Environmental Rehabilitation' was published in 1986.

The IUCN Sahel Programme covers ten countries, namely (west to east) Senegal, Mauritania, Mali, Burkina Faso, Niger, Chad, Sudan, Ethiopia, Somalia and Djibouti. The long-term objectives of the Programme are to develop ways to manage living natural resources that better correspond to prevailing climatic conditions, and which permit sustainable development to take place. The Programme also aims to help preserve the biological diversity of the Sahel as well as to monitor the process of change.

The first volume of the Sahel Studies aims to provide background information on the processes leading to the present situation in the Sahel. The factors considered most relevant included climate (specifically rainfall); population, food production; forestry and fuelwood use. Information was also gathered on the present status of the protected areas in the Sahel. The economics of resource use as well as the effects of land tenure on resource use and conservation were also considered as vital subjects and warranted analysis with respect to their implications for sustainable development. It was also thought that information on governments' priorities and goals regarding natural resource use and development and on development community activities were needed to complete the picture.
Price: £ 12.50 plus postage and packing, or US$ 25.
Orders to: IUCN Publications Service Unit, 219c Huntingdon Road, Cambridge CB3 0DL, England.

Proceedings of the Hungarian-Polish Seminar on Soil Water Problems (Budapest, June 1987) and **Proceedings of the Hungarian-Swedish Seminar on Soil Mapping** (Budapest, June 1988) Agrokémia és Talajtan, vol. 38, no. 3-4, 1989, pp 517-840. I. Szabolcs, editor-in-chief.

This issue of the journal Agrochemistry and Soil Science contains all papers presented at the above mentioned joint seminars. At the Hungarian-Polish seminar 12 papers, at the Hungarian-Swedish seminar, 14 papers were presented.
Orders to: Prof. I. Szabolcs, Research Institute for Soil Science and Agricultural Chemistry, Herman Ottó u. 15, H-1022 Budapest II, Hungary.

Information Sources in the Earth Sciences. Second edition. D.N. Wood, J.E. Hardy and A.P. Harvey, editors. Bowker-Saur, London, Edinburgh, 1989, 518p. ISBN 0-408-01406-7. Hardcover.

The literature available in the field of earth sciences can perhaps best be described as staggering. This book has been written for librarians, information specialists and practising scientists who need to identify specific items from among the plethora of earth science information available – books, journals, indexes, maps, theses, conference proceedings, databanks, and databases to name but some. Specific subject areas such as palaeontology, mineralogy and crystallography are covered in some considerable depth.

This publication is an evaluative guide. Its authors, all librarians and practising scientists with day-to-day experience of the information services about which they write, identify and describe the most useful and informative from among the thousands of information sources available.

Price: £ 45.00.

Orders to: Bowker-Saur, Butterworths, Borough Green, Sevenoaks, Kent TN15 8HP, England.

Environmental Management and Development in Drylands. The Natural Environment: Problems and Management Series. P. Beaumont. Routledge, London and New York, 1989, xix + 505p. ISBN 0-415-00457-8. Hardbound.

Environmental management is now the focus of much academic study and research. Growing scientific understanding, heightened appreciation of the need for rational use of resources, and increased awareness of the politics of the environment have all combined to make this a rapidly expanding field of interest.

The new series offers a contemporary treatment of critical environmental topics. Adopting an interdisciplinary, international approach, it will be an important source of information for the academic, the practitioner, and the student of environmental affairs.

In this study the term 'drylands' is used to distinguish all those areas which experience regular water shortage on a seasonal or longer-time basis. This obviously includes all the arid lands of the world, defined by their extremely low precipitation totals, but also encompasses regions, which may record significant rainfall for at least part of the year. In this context, the term 'drylands' involves a much broader interpretation than is the case with the more commonly used term 'arid lands'.

Environmental management of dryland areas is extremely important in order to conserve and use resources in the best possible way. Misuse of resources, as has repeatedly happened in the past, can often have severe deleterious consequences with long-term implications. This book examines the drylands of the world and their management. It begins by describing drylands in a systematic way, by assessing the way human societies have evolved in response to the harsh and demanding nature of the physical landscape and by classifying the different human uses of drylands. It goes on to present a number of case studies on the human management of drylands in Africa, Australia, the United States, Israel and the Arab Gulf countries. The book concludes by assessing the likely future of drylands.

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- ☐ III Soil Biology/Biologie du sol/Bodenbiologie
- ☐ IV Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und Pflanzenernährung
- ☐ V Soil Genesis, Classification and Cartography/Genèse du Sol, Classification et Cartographie/Bodengenetik, Klassifikation und Kartographie
- ☐ VI Soil Technology/Technologie du sol/Bodentechnologie
- ☐ VII Soil Mineralogy/Minéralogie du sol/Bodenmineralogie

Subcommissions/Sous-commissions/Subkommissionen

- ☐ A Salt affected soils/Sols salins/Salzböden
- ☐ B Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
- ☐ C Soil Conservation and Environment/Conservation du Sol et Environment/Bodenerhaltung und Umwelt
- ☐ D Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit IUBS)

Working Groups/Groupes de Travail/Arbeitsgruppen der Kommissionen

- ☐ AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden (Comm. VI)
- ☐ CO *Soil Colloid Surfaces/Surfaces des Colloïdes du Sol/Kolloidale Oberflächen in Böden/Comm. II)*
- ☐ DC Desertification/Désertification/Verwüstung (Subcomm. C)
- ☐ DM Digitized International soil and terrain map/Carte internationale numérique des sols et terrains/Digitalisierte Internationale Boden- und Landkarte (SOTER, Comm. V)
- ☐ FS Forest-Soil relationship/Relations Sol-Forêt/Wald-Boden Beziehungen (Comm. III)
- ☐ FT Soil Fertility Trials/Essais de Fertilité des Sols/Bodenfruchtbarkeitsproben (Comm. IV)
- ☐ HP History, Philosophy and Sociology of Soil Science/Histoire, Philosophie et Sociologie de la Science du Sol/Geschichte, Philosophie und Soziologie der Bodenkunde (Comm. V & IUHPS)
- ☐ LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/Landbewertung und Informationssysteme (Comm. VI)
- ☐ MV Soil and Moisture Variability in Time and Space/Variabilité du Sol et de l'Humidité dans le Temps et l'Espace/Boden- und Feuchtigkeitsvariabilität in Raum und Zeit (Comm. I)
- ☐ PP Paleopedology/Paléopédologie/Paläopedologie (Comm. V & INQUA)
- ☐ PS Paddy Soil Fertility/Fertilité des sols rizicoles irrigués/Fruchtbarkeit von Reisböden (Comm. IV)
- ☐ PT Pedotechnique/Pédotechnique/Pedotechnik (Comm. VI)
- ☐ RS Remote Sensing for Soil Surveys/Pédologie et Télédétection/Fernerkundung für Bodenkartographie (Comm. V)
- ☐ RZ Rhizosphere/Rhizosphère/Rhizosphäre (Comm. IV)
- ☐ *SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedizin (Comm. VII)*

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Prof. Zhao Qiguo, Nanjing Institute of Soil Science, Academia Sinica, Nanjing, Jiangsu, China

B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie
Dr. N. Fedoroff, I.N.A. Paris-Grignon, Géologie-Pédologie, 78850 Thiverval-Grignon, France

C. Soil Conservation and Environment/Conservation du Sol et Environnement/Bodenerhaltung und Umwelt
Dr. S.A. El-Swaify, university of Hawaii, Dept. of Agronomy & Soil, 1910 East-West Road, Honolulu HI 96822, USA

D. Soil Zoology/Zoologie du Sol/Bodenzoologie (with avec mit IUBS)
Dr. M.B. Bouché, CEPE-CNRS, B.P. 5051, 34033 Montpellier, France.

Working Groups of the Commissions/Groupes de Travail des Commissions/Arbeitsgruppen der Kommissionen – Chairmen/Présidents/Vorsitzende

AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden(Comm.VI)
Prof.Dr. L.J. Pons, Dept. of Soil Science and Geology, Agric. University, P.O. Box 37, 6700 AA Wageningen, Netherlands

CO Soil Colloid Surfaces/Surfaces des Colloïdes de Sol/Kolloidale Oberflächen in Böden(Comm.II)
Prof.Dr. M.F. de Boodt, Fak.Landbouwwet., R.U.G., Coupure Links 653, 9000 Gent, Belgium

DC Desertification/Désertification/Verwüstung (Subcomm.C)
Prof.Dr. H.E. Dregne, Texas Technical Univ., P.O. Box 4169, Lubbock TX 79409, USA

DM World Sois and terrain Digital Data Base/Carte Internationale Numérique des Sols et des Terrains/ Digitalisierte International Boden- und Landkarte (SOTER, Comm.V)
Prof.Dr. M.F. Baumgardner, Dept. of Agronomy, Purdue University, West Lafayette IN 47907, USA

FS Forest-Soil Relationship/Relations Sol-Forêt/Wald-Boden Beziehungen (Comm.III)
Dr. P.K. Khanna, CSIRO, Div. of Forest Research, P.O. Box 4008, Queen Victoria Terrace ACT 2600, Australia

FT Soil Fertility Trials/Essais de Fertilité des Sols/Bodenfruchtbarkeitsproben (Comm.IV)
Prof.Dr. H. Scharpenseel, Inst.für Bodenkunde, Allende-Platz 2, D-2000 Hamburg 13, FRG

HP History, Philosophy and Sociology of Soil Science/Histoire, Philosophie et Sociologie de la Science du Sol/Geschichte, Philosophie und Soziologie der Bodenkunde (Comm.V & IUHPS)
Prof.Dr. D.H. Yaalon, Dept. of Geology, Hebrew University, Jerusalem 91000, Israel

LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres/Landbewertung und Informationssysteme (Comm.VI)
Dr. J. Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ontario, Canada K1A 0C6

MV Soil and Moisture Variability in Time and Space/Variabilité du Sol et de l'Humidité dans le Temps et l'Espace/Boden- und Feuchtigkeitsvariabilität in Raum und Ziet (Comm.I)
Prof.Dr. J. Bouma, Dept. of Soil Science and Geology, Agric. University, P.O. Box 37, 6700 AA Wageningen, Netherlands

PM Pedometrics (provisional) (Comm. I)
Dr. R. Webster, Rothamsted Exp. Station, Harpenden, Herts AL5 2QJ, England

PP Paleopedology/Paléopédologie/Paläopedologie (Comm.V & INQUA)
Dr. J.A. Catt, Rothamsted Exp. Station, Harpenden, Herts, AL5 2JQ, England

PS Paddy Soils Fertility/Fertilité des Sols Rizicoles Irrigués/Fruchtbarkeit von Reisböden (Comm.IV)
Prof.Dr. H. Wada, Faculty of Agriculture, University of Tokyo, Bunkyo-ku, 113 Tokyo, Japan

PT Pedotechnique/Pédotechnique/Pedotechnik (Comm VI)
Dr. R. Horn, Inst. of Plant Nutrition & Soil Science, Olsenhausenstrasse 40-60 HS 20A, 2300 Kiel-1, FRG

RS Remote Sensing for Soil Survey/Pédologie et Télédétection/Fernerkndung für Bodenkartographie (Comm.V)
Mr. F.W. Hilwig, ITC, P.O. Box 6, 7500 AA Enschede, Netherlands

RZ Rhizosphere/Rhizosphère/Rhizosphäre *(Comm.IV)*
Prof.Dr. A. Jungk, Inst. f. Agrikulturchemie, Von Sieboldstrasse 6, 3400 Göttingen, FRG

SG Soils and Geomedicine/Sols et Géomédecine/Böden und Geomedicin (Comm.VII)
Prof. J. Låg, Dept. of Soil Science AUN, P.O.Box 28, 1432 As-NLH, Norway

SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Bodenwasserverschmutzung (Comm. II)
Mr. A.J. Thomasson, Soil Survey and Land Research Centre, Silsoe, Bedford MK45 4DT, England

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