



bulletin

of the international society of soil science

bulletin

de l'association internationale de la science du sol

mitteilungsblatt

der internationalen bodenkundlichen gesellschaft

boletín

de la sociedad internacional de la ciencia del suelo

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

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

Founded/Fondée/Gegrundet: 19-05-1924. Individual membership/Membres individuels/Individuelle Mitgliedschaft: 7000. Affiliated national Societies/Associations affiliées/Angeschlossene nationale Gesellschaften: 60. A scientific-associate member of ICSU since/Membre associé scientifique de l'ICSU depuis/Wissenschaftliche-assozierte Mitglied der ICSU seit: 1972.

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(Ethiopian highlands)

Season's Greetings
Meilleurs Voeux
Beste Glückwünsche

The Officers of the International Society of Soil Science
Le Bureau de l'Association Internationale de la Science du sol
Der Vorstand der Internationalen Bodenkundlichen Gesellschaft

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**NOTICE FROM THE ORGANIZING COMMITTEE OF THE
14TH INTERNATIONAL CONGRESS OF SOIL SCIENCE,
KYOTO, JAPAN, AUGUST 1990**

1. *The State of Application for Presentations.*

We have got 1,084 extended summaries including 567 for symposia, as of September 1, 1989. They are now carefully being selected and prepared for a framework of symposia by each convener.

2. *Poster Award.*

The best poster of each Commission will be selected and a prize will be awarded at the closing session.

3. *Special notice to the Authors for Registration Fee's Payment.*

For the authors whose registration fees are still unpaid, their papers for the symposium or poster session will not be accepted for the publication in the Proceedings.

Those who intend to have their papers published in the Proceedings, have to send the registration fee before March 31, 1990.

In case of difficulty in payment before March 31, 1990, please contact the Secretariat of the 14th ICSS Organizing Committee as soon as possible.

4. *Excursions.*

There are a few vacancies at the Japan Inland Tours (Tour A-F).

The deadline of definitive application for the Japan Inland Tours and the China Tours is extended till May 1, 1990. New applicants are welcome.

According to the number of persons, there is a possibility of changes in the course of the Japan Inland Tours.

5. *Displays.*

Each national Society is being requested to inform us on their wishes as regards desk displays.

International Organizations and Centres dealing with soil-related matters (FAO, Unesco, UNEP, MAB, IBSRAM, ICRAF, TSBF, SMSS, ISRIC, etc.) may want to have special display space. They are invited to send details of their requirements to the Organizing Committee.

6. *First International Symposium on Forest Soils.*

Details on this congress satellite meeting in Harbin, P.R. of China, are given in a separate announcement in this Bulletin.

7. *Address:*

Prof.Dr. K. Kumazawa tel.: (81) 3-815-6720
c/o 14th ICSS Secretariat fax: (81) 3-815-6018
26-10-202, Hongo 6-chome
Bunkyo-ku, Tokyo 113, Japan

Pre-Congress Field Study Tours

Japan Inland Tours:

Tour A: Hokkaido (6 days, August 6-11). Sapporo-Obihiro-Kyoto.

¥115,000 (double occupancy) ¥140,500 (single occupancy)

(5 breakfasts, 5 lunches and dinners included)

(Excluding travelling fare from Sapporo to Kyoto)

Landscapes, soils, land use and sightseeing in Hokkaido: Peat and paddy soils in Bibai; rice farming in cool temperature region; heavy clay soils and their improvement in Takikawa; forestry and upland farming in Abashiri; Akan National Park, vitric volcanic ash soils and dairy farming in Konsen; volcanic ash soils and upland farming in Tokachi.

Tour B: Tohoku (6 days, August 6-11). Tokyo-Sendai-Kyoto.

¥129,800 (double occupancy) ¥135,300 (single occupancy)

(5 breakfasts, 5 lunches and 4 dinners included)

Landscape, soils and land use in Tohoku: Tsukuba science city, Andosols and intensive agriculture in the suburban area; Andosols, Nikko-shrines, and National Grassland Research Institute in Tochigi; paddy and orchard soils in Fukushima, Bandai-Asahi National Park, and Fruit Tree Experiment Station; Experimental Farm of Tohoku University, paddy soils, and boat cruising in Matsushima Bay; sightseeing in Sendai.

Tour C: Kanto and Tokaido (6 days, August 6-11). Tokyo-Ise-Kyoto.

¥97,900 (double occupancy) ¥111,000 (single occupancy)

(5 breakfasts, 5 lunches and 4 dinners included)

Intensive horticulture, upland farming, pearl farm and sightseeing in Kanto and Tokaido; greenhouse horticulture in Hiratsuka and forest site in Hakone; sightseeing around Mt. Fuji and Nihondaira; tea plants in Makinohara and Hamanako-lake; water culture in Yatomi and plant biotechnology at National Research Institute of Vegetables, Ornamental Plants and Tea; Ise-shrine and pearl farm.

Tour D: Seto Inland Sea and San-in (5 days, August 7-11), Osaka-Matsue-Kyoto.

¥82,500 (double occupancy) ¥86,700 (single occupancy)

(4 breakfasts, 4 lunches and 3 dinners included)

Soils, lake eutrophication and sightseeing in Seto Inland Sea Area and San-in: Seto Inland Sea National Park and Hiroshima; lakes Shinji-ko and Naka-umi in Shimane, polder and paddy soils; Mt. Daisen National Park, volcanic ash soils, pear orchards and sand-dune agriculture in Tottori.

Tour E: Kyushu (5 days, August 7-11). Fukuoka-Kumamoto-Kyoto.

¥92,400 (double occupancy) ¥96,700 (single occupancy)

(4 breakfasts, 4 lunches and 3 dinners included)

Soils, land use and sightseeing in Kyushu: Upland farming, soils derived from basalt etc., china making, paddy cultivation in Saga; orchard, red-yellow soils, upland farming, 'Imogo' and volcanic ash soils, natural forest preservation and sightseeing in Kumamoto; paddy and orchard soils on Chikugo river alluvium and terraces.

Tour Conditions:

Tour fare includes: 1) Hotel rooms: Economy class rooms on half-twin or single basis (at Soun-kyo Spa and Lake Akan on Tour A, room sharing basis only); 2) Meals as specified in each itinerary; 3) Railways: tourist-class reserved tickets on 'Bullet'; 4) Sightseeing and transfers as shown in the itineraries, by motor-coaches and/or sightseeing boats on seat-sharing basis, including admission fees to temples, shrines, etc. 5) Baggage: transfer and handling (one or two normal size pieces per person).

'Trans-Siberia' Tour:

July 28-30 Moscow to Novosibirsk by train (54 hours)

July 31-August 1 Stopover at Novosibirsk with technical tours

August 2-3 Novosibirsk to Irkutsk by train (32 hours)

August 4-5 Stopover at Irkutsk and technical tours

August 6-7 Irkutsk to Khabarovsk by train (45 hours)

August 8-9 Stopover at Khabarovsk and technical tours

August 10 Khabarovsk to Kyoto via Niigata by plane and train

Maximum number of Participants: 150

850 Roubles (Including transportation, hotels at Novosibirsk, Irkutsk and Khabarovsk, three meals a day, transportation in technical excursions, services of guides, interpreters and excluding travel charges to Moscow and from Khabarovsk to Kyoto).

Note: If anybody wants to know further information, please contact All-Union Society of Soil Science of the USSR directly. Correspondence: c/o Prof. Boris G. Rozanov, Vice President All Union Society of Soil Science of the USSR, Moscow State University, 119899 Moscow, USSR.

One-day Field Study Tours during congress

Tour G: EXPO'90, The International Garden and Greenery Exposition (Osaka) 1990. August 14 or 15, ¥8,000.

Tour H: Mt. Hieizan, Enryaku-ji temple, Lake Biwa, paddy field in Siga Agricultural Experiment Station, hydroponic system. August 14, ¥10,000

Tour I: Research Institute for Food Science and other research institutions in Uji campus of Kyoto University, Byodo-in temple, Okura sake (rice wine) factory. August 16, ¥3,600.

Post-Congress Field Study Tours

Japan Inland Tour:

Tour F: Tokaido and Kanto (5 days, August 19-23), Kyoto-Ise-Tokyo.

¥57,000 (double occupancy) ¥71,200 (single occupancy)

(1 breakfast, 2 lunches and 1 dinner included)

China Tours:

Dates and charges for each tour: US\$ 110 per person per day for lodge, meals, transportation (airfare exclusive) and admission, plus US\$ 50 for overnight before departure. US\$ 40 per companion per day.

Tour CN-A: North China (8 days, August 20-27). Beijing-Tienjin-Beijing. US\$ 820.

Intensive agriculture in the suburbs of Beijing, highland cinnamon soils, brown earths, Zhangbei pasture calcic chestnut soils, alkaline soils, coastal saline soils and North China paddy soils. Sightseeing: the Great Wall, Ming Tombs, Summer Palace, Forbidden City, etc.

Tour CN-B: Northeast China (8 days, August 20-27). Dalian-Shenyang-Harbin-Beijing. US\$ 885 (including airfares from Harbin to Beijing).

Intensive agriculture in the suburbs of Beijing, highland cinnamon soils, brown earths, castanozems, paddy soils, irrigated area by sewage water, vegetable producing farms nearby Shenyang, a typical deep black soil, bog soils and the landscape, dark brown earths and their vegetation.

Sightseeing: the Great Wall, Ming Tombs, Forbidden City, Summer Palace, the Forbidden City in Shenyang, North and East Tombs of Qing Dynasty at Shenyang, and Sunny Island at Harbin.

Tour CN-C: East China (8 days, August 20-27). Shanghai-Suzhou-Wuxi-Nanjing-Yixing-Hangzhou-Shanghai. US\$ 820.

High yielding paddy fields of the Yangtze river Delta, yellow brown earths, soils distributed in undulating hills and their utilization in the northern part of the mid subtropical zone; highly intensive land use, bamboo forest, karst caves, mulberry field and fish pools, Nanjing Institute of Soil Science, China Tea Research Institute. Sightseeing: Suzhou Gardens, Tai Lake, Mausoleum of Dr. Sun Yatsen, Pottery Center, West Lake.

Tour CN-D: South China (8 days, August 20-27). Guangzhou-Foshan-Guilin-Guangzhou. US\$ 970 (including airfares from Guangzhou to Guilin and from Guilin to Guangzhou).

Lateritic red earths, comprehensive utilization of hilly areas, mulberry fields and fish ponds, lateritic red earths and yellow earths under tropical rain forest, rendzina, brown rendzina, terra rossa, and paddy fields with lime hardpan. Sightseeing: Karst mountains and Li river in Guilin, and ancient temple in Foshan.

Tour CN-E: East + South China (Tour CN-C + Tour CN-D) (14 days, August 20-September 2). Guangzhou-Guilin-Hangzhou-Shanghai-Nanjing-Hong Kong. US\$ 1,763 (including airfares from Guangzhou to Guilin, from Guilin to Guangzhou and from Nanjing to Hong Kong).



**COMMUNICATION DU COMITE D'ORGANISATION DU
14ème CONGRES INTERNATIONAL DE LA SCIENCE DU SOL,
KYOTO, JAPON, AOUT 1990**

1. *Demandes de présentations.*

Au 1er Septembre 1989, nous avons reçu 1.084 résumés, y compris 567 pour des symposiums. Actuellement, le président de chaque symposium en fait une sélection, afin de pouvoir établir les grandes lignes de chaque symposium.

2. *Prix du meilleur poster.*

Le meilleur poster de chaque commission sera élu, et un prix lui sera décerné au cours de la session de clôture.

3. *Communication spéciale aux auteurs en ce qui concerne les frais d'inscription:*

Les communications des auteurs qui n'ont pas encore payé leurs frais d'inscription, que ce soit pour les symposiums ou pour les posters, ne seront pas acceptées pour leur publication dans les Compte-Rendus.

Les auteurs qui veulent voir leur communication publiée dans les Compte-Rendus doivent avoir fait parvenir leurs frais d'inscription avant le 31 mars 1990.

En cas de difficulté à payer avant le 31 mars 1990, veuillez contacter le Secrétariat du Comité d'Organisation du 14ème Congrès de la Science du Sol.

4. *Excursions.*

Il reste encore quelques places dans les excursions au Japon (Excursion A-F). La date limite d'inscription définitive pour les Excursions au Japon est repoussée au 1er mai 1990.

En fonction du nombre de personnes, il se peut que l'itinéraire de certaines des Excursions au Japon soit modifié.

5. *Expositions.*

Chaque Association Nationale est priée de nous faire savoir de quelle place elle a besoin pour exposer son matériel.

Les Organisations et les Centres internationaux ayant des activités se rapportant à la science du sol (comme FAO, Unesco, PNUE, MAB, IBSRAM, ICRAF, TSBF, SMSS, ISRIC, etc.) peuvent également disposer d'une place spéciale pour exposer. Ils sont priés de faire connaître au Comité d'Organisation la place dont ils ont besoin.

6. *Premier Symposium International sur les Sols de Forêts.*

Ce symposium aura lieu à Harbin, Chine. Vous trouverez plus de détails sur cette réunion satellite du Congrès dans une annonce séparée (voir les premières pages de ce bulletin).

7. *Adresse:*

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26-10-202, Hongo 6-chome
Bunkyo-ku, Tokyo 113, Japan

**MITTEILUNG DES ORGANISATIONSKOMMITTEES FÜR DEN
14. INTERNATIONALEN BODENKUNDLICHEN KONGRESS,
KYOTO, JAPAN, AUGUST 1990**

1. *Zur Lage der Anmeldungen von Vorträgen und Postern.*

Bis zum 1. September 1989 haben wir 1084 ausführliche Zusammenfassungen einschließlich 567 für die Symposien erhalten. Sie werden nunmehr durch die Vorsitzenden sorgfältig ausgewählt und für ein Symposiumsprogramm vorbereitet.

2. *Auszeichnungen von Postern.*

Das beste Poster jeder Kommission wird ausgewählt und in der Abschlusssitzung mit einem Preis ausgezeichnet.

3. *Besonderer Hinweis für Autoren in Hinblick auf die Zahlung der Registrierungsgebühr*

Symposiumsvorträge und Poster von Autoren, deren Registrierungsgebühr noch nicht bezahlt worden ist, werden nicht zur Veröffentlichung in den Tagungsberichten angenommen. Autoren, die eine Veröffentlichung in den Tagungsberichten wünschen, müssen die Registrierungsgebühr vor dem 31. März 1990 eingesandt haben. Sofern Schwierigkeiten bei der Einzahlung vor Ablauf dieses Datums entstehen, setzen Sie sich bitte möglichst bald mit dem Sekretariat des 14. IBG-Organisationskomitees in Verbindung.

4. *Exkursion.*

Es sind noch einige Plätze frei auf den Inland-Touren in Japan (Touren A-F). Der Stichtag für die endgültige Anmeldung zu den Inland-Touren in Japan und die Touren in China ist hinausgeschoben worden auf 1. Mai 1990. Je nach der Anzahl der Teilnehmer kann sich der Ablauf der Inland-Touren in Japan möglicherweise noch ändern.

5. *Ausstellungen.*

Alle nationale Gesellschaften werden gebeten, uns über ihre Wünsche hinsichtlich Ausstellungsfläche zu informieren. Internationale Organisationen und Institutionen, die der Bodenkunde nahestehende Gebiete bearbeiten (FAO, Unesco, UNEP, MAB, IBSRAM, ICRAF, TSBF, SMSS, ISRIC, usw.) wünschen möglicherweise gesonderte Ausstellungsfläche. Sie werden eingeladen, Einzelheiten ihrer Anforderungen an das Organisationskomitee einzusenden.

6. *Erstes Internationales Symposium über Waldböden.*

Einzelheiten über diese dem Kongreß zusätzlich angeschlossene Tagung in Harbin, V.R. China, werden in einer gesonderten Information in diesem Mitteilungsblatt gemacht.

7. *Adresse:*

Prof.Dr. K. Kumazawa tel.: (81) 3-815-6720
c/o 14th ICSS Secretariat fax: (81) 3-815-6018
26-10-202, Hongo 6-chome
Bunkyo-ku, Tokyo 113, Japan

Announcement
FIRST INTERNATIONAL SYMPOSIUM ON FOREST SOILS
(a satellite meeting of the 14th International Congress of Soil Science)
Harbin, P.R. of China, July 22-27, 1990

'Forest Soil and Modern Forest Management'

Objectives:

- To promote international scientific interaction and exchange of results on recent research in the forest soil science;
- To examine the possibilities for intensive management of forests (such as planted forests, natural forests and seed bearer forests) to increase forest vigour and land productivity.
- To examine the improvement of soil for forestation on degraded land and bog soil;
- To examine the improvement of nursery soil to increase seedling vigour and land productivity;
- To publish proceedings, consisting of highlights of current research, thesis implications for forest soils and modern forest management, as well as directions for future research.

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

1. Forest soils and forest productivity;
2. Forest soils and intensive management of nursery plants;
3. Forest soils and intensive management of regenerating forests;
4. Forest soil improvement for reforestation;
5. Forest soils and intensive management of forest plantations.
(soil biology, soil pollution, fertilization, fire, will be included into the above five headings).
6. Forest soil geography, genesis, classification, study methods and relationships between soil and the forest.

Language: symposium language will be English. It is planned to publish the invited and voluntary papers and posters in a proceedings of the symposium.

Call for papers: Papers and posters are welcome in all topics mentioned in the program. They have to be written in English as camera-ready copies for publication in the symposium proceedings. Form and layout for printing will be sent on request. All papers must be original, no simultaneously submitted to nor previously published elsewhere.

Poster exhibition: For each poster there will be an area available which is 1.8 m wide and 2.4 m high. Please ensure that letters and numbers are readable from a distance of at least 2 m.

Please write to the following address for registration and further information:

1st ISFS Organizing Committee, Box 317, Northeast Forestry University, Harbin 150040, CHINA

NOTICE OF INTENT

First International Symposium on Forest Soils
July 22-27, 1990

Surname

First Name

Affiliation

Mailing address

I would like to receive further information Yes No

I intend to participate: Yes No Perhaps

I wish to submit a voluntary paper/poster Yes No

Title:

I will/may be accompanied by person(s)

Date Signature

**REPORTS OF MEETINGS
COMPTE-RENDUS DE REUNIONS
BERICHTE VON TAGUNGEN**

**ADVANCED RESEARCH WORKSHOP ON MECHANICS AND
RELATED PROCESSES IN STRUCTURED AGRICULTURAL SOILS**
St. Paul, Minnesota, USA, September 13-16, 1988

The 1988 International Workshop on Mechanics and Related Processes in Structured Agricultural Soils was a sequel to the First International Workshop on Soil Physics and Soil Mechanics in Hannover, F.R.G., August 11-13, 1986 (cf. ISSS-Bulletin N° 71, pp13-14). This second Workshop was organized by the President of the Soil Mechanics Workshop Group, Prof.Dr. R. Horn (F.R.G.), Prof.Dr. W.E. Larson and Prof.Dr. R.R. Allmaras (USA), and Mr. W.B. Voorhees (USA). The workshop, which was partially sponsored by grants from NATO and USDA, was attended by about 60 soil mechanics specialists, coming from 20 countries.

There were about 20 oral and 30 poster presentations, arranged according to the following themes: 1) Advances in soil mechanics of structured soils, 2) Modelling soil structural behaviour, 3) Root responses, 4) Tillage and compactive effects. Compared with other scientific meetings on related subjects, this workshop paid considerably more attention to soil mechanical/physical behaviour as affected by material properties of soil components. It was interesting that several contributions discussed soil processes on a micro level, or dealt with changes over time of soil properties such as cohesion and stability.

To establish recommendations on new research priorities and to promote cooperation among soil mechanics specialists, work group discussions associated with the four workshop themes were held. A report on these work group discussions will be published in one of the next issues of Soil Technology. During a session in which future activities of the soil mechanics workshop group were explored, it was recognized that the proceedings of this group are of great interest to the ISSS-Working Group PT (Pedotechnique), which is concerned with all technical activities in the pedon. A close cooperation between both groups will be of mutual benefit. Consequently, during the workshop or shortly afterwards, 22 people applied for membership of Working Group PT.

Harlan R. Finney (USA) guided a one-day field trip to see research on problem soils and to get acquainted with the agriculture of North Central USA. During the trip, compaction plots at the Southern Experiment Station at Waseca, and three widely different farms were visited. The social programme included a reception at Prof. Larson's home, which is nicely situated on the border of one of the legendary 10 000 lakes of Minnesota.

The Proceedings of the Hannover Workshop were recently published by Catena Verlag (Catena Supplement 11, 180 pp., price: DM 149,-). The Proceedings of this very successful second Workshop will be published by Martinus Nijhoff Publishers. The Third International Workshop on Mechanics and Related Processes in Structured Agricultural Soils will be held in May 1991 in Ghent, Belgium.

A.J. Koolen and C. van Ouwerkerk
Wageningen/Haren, the Netherlands

XIth INTERNATIONAL PLANT NUTRITION COLLOQUIUM
Wageningen, the Netherlands, July 30-August 4, 1989

Under this title an international scientific conference is held every fourth year in a different country. This year it was held in the International Agricultural Centre Wageningen, the Netherlands, where it was organized by Prof. A. van Diest, head of the organizing committee and Congress President. Dr. M.L. van Beusichem served as secretary. About 260 scientists from all over the world attended the conference. The scientific program consisted of 4 days of both oral and poster sessions, and one day excursions. The oral sessions were directed to the following topics: 1. Phosphate acquisition by plant roots; 2. Micronutrient acquisition; 3. Micronutrients and rhizosphere pH; 4. Aluminium toxicity and tolerance; 5. Salinity and salt effects; 6. Nitrogen fixation; 7. Nutrient distribution and assimilation; 8. Nitrogen fertilization; and 9. Nutrient management decisions. The list of poster sessions included: 1. Nutrient acquisition by plant roots; 2. Stress factors in the root environment; 3. Fertilizer soil-plant relationships; and 4. Nutrient management in the plant-soil system.

One session was devoted to general discussion and aimed at an evaluation of scientific achievements in the field of plant nutrition. This session was introduced and summarized in a most capable fashion by two moderators, Profs. H. Marschner (F.R.G.) and D.J. Greenwood (Great Britain). It was argued that in the field of basic research evidence has been presented for good progress made in understanding the plant-soil system in the processes of nutrient acquisition and mechanisms which enable the plant to grow under conditions of stress factors such as deficiencies or excess of nutrients, and other elements, soil compaction and acidity as well as drought or water logging. This progress became particularly evident in regard to understanding the physiological and ecological processes involved but also with respect to quantifying the factors affecting them. Mathematical models have been developed to describe and predict quantitatively nutrient transfer from soil into plants under given ecological conditions, also permitting a better understanding of the interactions between a given plant and its site.

In regard to the applied aspects of plant nutrition more emphasis is now being placed on the impact of organic and mineral fertilizers on agricultural and forest ecosystems as well as on the pollution of groundwater and the atmosphere. It was agreed that the preservation of the environment is as important as the production of food for the rapidly growing human population of the world. The development of methods for the fertilization of plants which are optimal in regard to both economy and ecology deserve highest priority.

The contributions presented at the XIth International Plant Nutrition Colloquium will be published as Proceedings, with selected papers to appear in a special issue of 'Plant and Soil'.

A. Jungk, Göttingen, F.R.G.



The Chair of the Plant Nutrition Colloquium: Prof. Horst Marschner, Prof. Duncan Greenwood and Prof. Anton van Diest (right).

INTERNATIONAL CONFERENCE ON SOIL COMPACTION AS A FACTOR DETERMINING PLANT PRODUCTIVITY

Lublin, Poland, June 5-9, 1989

The papers submitted during the Conference and the discussion covered a wide area of soil compaction research. The main topics being: causes for soil compaction, effects of soil compaction on void-size distribution, soil compactibility, controlling the content and transmission of water, air, heat and nutrients in soil, soil mechanical impedance, plant development, and modelling of these effects.

It was shown that soil compaction is of great economical and ecological importance.

1. Relatively many studies have been conducted on characterizing of state of the soil compaction by precondition load value, bulk density, porosity, micromorphology, penetration resistance, and relative degree of compactness.
2. Very few studies were devoted to the energetic and economical aspects of soil compaction.
3. The quantification of mechanical loading (intensity, kind of loading and number of loading events) and its effects on soil deformation process should be intensified with respect to soil climatic and management factors.
4. Further studies are needed on the classification of the physical, chemical, mineralogical and biological properties of soil on its compaction and the impact of soil compaction on the above properties.
5. Persistence of soil compaction and residual effects after re loosening of various soils should be more investigated.
6. Studies on the biological processes in compacted soils including soil-borne diseases should be more developed.
7. Studies on spatial variability of soil compaction should be extended.
8. Defining in which situation and in which range soil compaction has a favourable or negative effects on soil processes, plant growth, plant yield and the environment.
9. More attention should be paid to determine processes affecting availability of water and nutrients to plants in compacted soils.
10. The development of techniques for estimation of soil compaction effects on soil conditions and on root and plant growth is needed.
11. The definition of soil compaction has to be further discussed in respect to the effect of anthropogenic and natural processes.

J. Glinski, Lublin, Poland





Participants of the salt-affected soils meeting in China, october 1989.

INTERNATIONAL SYMPOSIUM ON DYNAMICS OF SALT-AFFECTED SOILS

Nanjing, China, October 4-10, 1989

Report and Recommendations

The Subcommittee of Saline and Alkali Soils of the Soil Science Society of China, the Subcommittee on Salt-Affected Soils of the International Society of Soil Science, and the Institute of Soil Science, Academia Sinica, organized an International Symposium on Dynamics of Salt-Affected Soils (water and salt movement in the soil, prediction of secondary salinization and alkalization) at the Institute of Soil Science, Academia Sinica, in Nanjing Oct. 4-10, 1989. The symposium was attended by over 50 participants representing 8 countries (Australia, China, Federal Republic of Germany, Hungary, the Soviet Union, Switzerland, Thailand, USA) and the ISSS.

25 papers were delivered on the results of investigations on salt and water movement, their modelling, theoretical and practical problems and the prediction of secondary salinization. Concurrently 10 posters were exhibited. The papers, which were published in the proceedings of the symposium (207 pages) were distributed among the participants before the symposium.

On the agenda of a board meeting of the Subcommittee A, held on Oct. 5th, the following questions and plans were discussed:

1. The preparation for the XIVth Congress of ISSS, taking into account the forthcoming elections of new board members.
2. A proposal of the Dokuchaev Institute of Soil Science and Photosynthesis (Moscow, USSR) to organize an international symposium on the genesis and the management of the fertility of salt-affected soils, to be held in September 1991 in Moscow and Volgograd, was also accepted and supported by the Subcommittee.
3. An information was passed by the board from the Land Development Department of Thailand, Bangkok, through the Thai delegate participating in the symposium, about organizing a conference in 1992 entitled: 'strategies for utilizing salt-affected lands', referring to the recommendations of the last symposium held in Osijek (Yugoslavia), June 1988.
4. The board meeting received with pleasure another proposal from the side of the University of California to organize a conference on the 'diagnosis and improvement of saline and alkali soils' in Riverside, California, USA, on the occasion of the 40th anniversary of the publication of Handbook N°60.

In the afternoon of Oct. 6th, the participants of the conference visited the Institute of Soil Science, Academia Sinica. A detailed information on the extended research activities of the Institute was given by the Director. The soil monolith and map exhibition, the library, and the well equipped laboratories were demonstrated.

On 7, 8 and 9 October, a three-day excursion took place in Fengqiu County, Henan Province. The participants visited the Irrigation Research Institute (MWREP and CAAS), the Yinjue Experimental Station and the Fengqiu Agroecological Experimental Station of Academia Sinica. Profiles of salt-affected and other soils were demonstrated in the visited area.

The participants of the symposium expressed their sincere thanks to the hosts, particularly to the Subcommittee of Saline and Alkali Soils of the Soil Science Society of China, the Institute of Soil Science, Academia Sinica, and the Organizing Committee headed by Prof. Zhao Qiguo, the Symposium Secretary General, Prof. Zhu Shouquan and the Secretary, Prof. Zheng Wenqin for the excellent preparation and conduction of the symposium and for the cordial hospitality and help which was offered to the guests.

Josef Breburda, Giessen, F.R.G.

INTERNATIONAL CONFERENCE ON SOIL CONSERVATION AND ENVIRONMENT

Piestany, Czechoslovakia, May 29-June 2, 1989

The organization of the Conference was done by the International Soil Science Society, Subcommission C, and at the same time it was a VIIIth Czechoslovak Soil Science Conference. The technical organization was done by Soil Fertility Research Centre, Bratislava, Czechoslovakia. Together with 195 Czechoslovakia participants 45 guests from Austria, Bulgaria, Canada, DDR, Great Britain, Hungary, Italy, The Netherlands, Poland, Rumania, Tanzania, the Soviet Union and the USA, took part at the Conference. Also the ISSS General Secretary participated.

The Conference objective was to estimate soil properties deterioration, impact due to unproper use, management, and pollution of soils. 42 oral and 43 poster papers were presented in four sections. Two Conference days were devoted to an excursion, allowing a visual introduction to the problems connected with the conference orientation.

The conclusions from the Conference confirmed the global character of contemporary problems of soil use and conservation, and the resulting need of internationally coordinated research in prevention, diagnosis and therapy. Apart from the soil productivity function the need of soil conservation as an ecosphere element was stressed.

The Conference conclusions were:

1. Chemical soil pollution in some regions has such great extent that it not only influences the soil environment and production obtained from soils, but it also expressively threatens ecological and thereby social soil functions. We must recognise the mechanism of chemical pollutants, investigate geochemical migration in ecosphere compounds (geochemical monitoring), work out scientifically justified standardization (limit concentrations), and track the behaviour of polluting substances in soils. Norms for the use in soil reclamation of agricultural, industrial and municipal wastes and manures should be established. The methods for recognition of chemically polluted soils have been insufficiently worked out. Soil pollutants identification and ways to recuperate chemically contaminated soils need urgent attention.
2. Non-uniform and uncoordinated development of techniques and technologies at soil management lead to degradation of physical soil conditions, and to increase of erosion on agricultural land. Limits and criteria should be investigated on soil physical



Prof. J. Hrasko, Czechoslovakia, Conference Chairman and Dr. W. G. Sombroek, Secr. Gen. ISSS, speaking.

condition in topsoil and subsoil that affect agricultural use of the soil. The methods of prevention of (sub)soil compaction should be perfected. Conservation oriented soil management with the aim to secure high soil productivity without any negative impacts on their development and quality should be further developed.

3. Many problems connected with soil management, modification and reclamation, including irrigation impact on soil fertility and water balance in territorial complexes, were pointed out. The problems result from non-respecting of the interactions between soil properties, natural environment, and climate characteristics. Consequently, supplementary irrigation can negatively influence the soil physical and chemical properties. The increased risk of soil salinization because of secondary processes was pointed out, especially at irrigation and alterations of groundwater levels in the terrains influenced by water management structures.

4. In connection with protection of the productivity and ecological soil function it is necessary to perfect the principles of soil use and management. A continuing obstacle for non-disturbed soil functioning development has been the contradiction between the economy and ecology.

5. Progress should be made at elaboration of functional and purpose-oriented soil classifications with the use of modern factor analysis and numerical taxonomy methods. At international level uniform information on soil properties is needed.

Most papers of the Conference will be published in full by Catena and Elsevier publishers.

J. Hrasco, Bratislava, Czechoslovakia

INTERNATIONAL CONFERENCE 'SOILS AND THE GREENHOUSE EFFECT'

Wageningen, the Netherlands, August 14-18, 1989

The International Conference 'Soils and the Greenhouse Effect', held in Wageningen, The Netherlands August 14-18, 1989, was organized by the International Soil Reference and Information Centre (ISRIC) on behalf of the Netherlands' Ministry of Housing, Physical Planning and Environment (VROM). It forms a contribution to the International Geosphere-Biosphere Programme (IGBP) of the International Council of Scientific Unions (ICSU).

A number of invited papers covered the complete field of knowledge with respect to the contribution of world soils and their land use/land cover to global climatic change. Furthermore, the programme included oral and poster presentations of accepted extended abstracts related to one of the above topics. Four Working Groups met during the conference to identify research gaps and to give concise and practical recommendations.

The greenhouse gases CO_2 , CH_4 and N_2O were discussed. The relative contribution of CO_2 , CH_4 and N_2O to global warming is 15, 5 and 1, respectively. If only biotic sources are considered, their relative contributions is 5, 4 and 1. While CO_2 is chemically inert, CH_4 and N_2O have an important impact on many atmospheric photochemical reactions in addition to their effect on the atmospheric radiative balance.

Far more information is available for CO_2 than for the other gases. The total budget of CH_4 is relatively well known, but individual sources are poorly known. About 70% of all atmospheric methane is of biotic origin, the rest is fossil. For global extrapolations more flux measurements and data on process-regulating factors are needed. Methane emissions from wetland rice systems are especially important, because they can probably be influenced by management practices. Permafrost areas are likely tar-

gets for an early reaction to a climate warming and should receive attention. Data are lacking for a proper estimate of methane emission from landfills. These can be harvested and such actions should be promoted.

Approximately 90% of all N_2O is of biogenic origin. The atmospheric sink is relatively well known. The allocation of N_2O to the different ecosystems and soils requires intensive research. Special attention should be paid to areas with high rates of organic matter and N turnover such as tropical (rain-)forests, areas with marked dry-wet seasons (tropical and subtropical savanna) as well as heavily N-fertilized areas.

Four major areas or ecosystems, which may show changing trends in trace gas emissions through land use changes or through climate changes, deserve priority attention: Paddy rice areas, tropical forest areas, areas threatened by desertification and permafrost areas.

With respect to methods, international coordination is needed to integrate flux measurements (process studies) with geographical mapping whereby data requirements for process studies should drive data base development. A combination of measurement techniques (chamber, eddy correlation, gradient) is generally necessary to appropriately quantify the spatial and temporal variability of a system.

A number of policies were recommended. Data and information should be available at a low cost to scientists and decision makers. Governments are requested to support actions to reduce slash and burn agriculture by improving farming practices, improving forest management, and by rapid reforestation of waste lands. Expansion of agricultural and other land uses must be evaluated with respect to land suitability. Expansion of unproductive cattle pastures (often the land use after uncontrolled forest clearing) and of other unsustainable systems should be discouraged. Effectiveness of N fertilizers should be increased. Agronomic techniques to reduce methane and nitrous oxide emissions without sacrificing rice yields are to be developed.

The conclusions and recommendations will be included – with the conference background paper, invited papers and extended abstracts of accepted presentations – in a book to be published by Wiley (UK) early 1990.

N. van Breemen, Wageningen, Holland

VIth INTERNATIONAL SOIL CORRELATION MEETING (VIth ISCOM)
'CHARACTERIZATION, CLASSIFICATION AND UTILIZATION OF
COLD ARIDISOLS AND VERTISOLS'
*August 6-18, 1989, Saskatchewan, Canada
Montana, Idaho, Wyoming and Utah, USA*

The VIth International Soil Correlation Meeting was organized by the Soil Management Support Service, Agency for International Development (USAID) and Agriculture Canada, with the collaboration of the Soil Conservation Service of the US Department of Agriculture, the US Department of Interior, Bureau of Land Management, the International Committee on Aridisols (ICOMID), the International Committee on Vertisols (ICOMMERT), and the University of Saskatchewan, Saskatoon, Canada. The Meeting addressed the Aridisols and Vertisols, discussing the final drafts of the proposal for updating the classification as prepared by ICOMID and ICOMMERT. The Meeting was attended by more than 100 participants, representing 15 different countries and organizations.

The specific purpose of the VIth ISCOM was to: (1) Test proposed changes to the Keys to Aridisols and Vertisols to enhance the interpretation potential of the system; (2) Evaluate recent information on the properties, management and utilization of



Dr. A. Mermut, University of Saskatchewan, Canada, presenting the micro aspects of the churning process in cold Vertisols at the 6th ISCOM meeting.

Aridisols and Vertisols; and (3) Document the world-wide occurrence and distribution of Aridisols and Vertisols.

The Meeting was opened on Saturday, August 5th, in Saskatchewan and addressed by Dr. C. Tarnocai, Agriculture Canada, Dr. R. Arnold, Director Soil Survey Division, SCS, and Dr. J. Stewart, University of Saskatchewan, Canada.

In addition to working document of the International Committees on Aridisols and Vertisols, many international collaborators contributed before and during the meeting; 30 papers on the subject were delivered and discussed during the first two days of the Meeting in Saskatoon and on the 13th August in Bozeman, Montana. A large field of subjects related to Aridisols and Vertisols of many different areas of the world was covered by reporters. Apart from specific classification problems, several pedological, physical, chemical and mineralogical questions were also included in the papers. Numerous posters were also exhibited.

Concurrently with the programme, Committee meetings of ICOMID and ICOM-MERT groups were also organized in order to elaborate the recommendations for the modification and updating of the Soil Taxonomy system, with particular regard to salt affected soils.

The three days in-door technical sessions were completed with ten days field excursions guided by J. Kimble, T. Cook and numerous local colleagues, starting in Saskatoon, Saskatchewan (Canada) and ending at Salt Lake City (Utah, USA), covering approx. 4000 km through Saskatchewan, Montana, Idaho, Wyoming and Utah. Nearly 20 different profiles were observed and soil formation, soil properties, classification and some practical problems were discussed. An excursion guide-book of approx. 300 pages was prepared by the organizers prior to the Meeting, which enabled the participants to get familiarized with site descriptions, analytical data, landscape and other information for the whole field programme.

One important item that was presented but not resolved was the utilization of the soil moisture regime at the Order level. By implication, the suggestion was to eliminate the Order of Aridisols, and bring in the aridic SMR at the suborder level in several Orders. This would make the Taxonomy more systematic. Currently there are already suborders of Torrerts, Torrox and Torrands and the suggestion is to create Torrepts, Torralfs, Torralts, and Torrolls. ICOMID will be considering this suggestion.

August 18th, a closing dinner was given in the Little America Hotel in Salt Lake City, Utah, where participants from different countries and organizations gave voice to the success of the Meeting and acknowledged the efforts of organizers.

The Proceedings of the Meeting, including all the presented papers, will be published in a separate volume by the Soil Conservation Service of the US Department of Agriculture.

The Vth International Soil Correlation Meeting was a very well prepared conference. It will definitely contribute to the further development of soil survey and classification, with particular regard to Aridisols and Vertisols. The organizers not only prepared the professional programme and route of excursions with great care but also paid due attention to show the environment and natural beauties during the trip.

Information on this ISCOM and other future ISCOMs can be obtained from Dr. Hari Eswaran, National Leader, World Soil Resources, Soil Conservation Service, USDA, P.O.Box 2890, Washington DC 20013, USA.

I. Szabolcs, Budapest, Hungary

INTERNATIONAL CONFERENCE ON SOIL QUALITY IN SEMI-ARID AGRICULTURE

Saskatoon, Canada, June 11-16, 1989

The Conference addressed the question: Can the semiarid agroecosystems of the world be managed for productive and sustainable agriculture given the cyclic nature of weather and the intensive use of land?

The conference was sponsored by the Canadian International Development Agency, the Saskatchewan Institute of Pedology, the Global Agriculture and Technology Exposition (GATE) and the ISSS. It was hosted by the College of Agriculture, University of Saskatchewan. The ISSS was represented through the LI Working Group and the Canadian Society of Soil Science. The Conference attracted some 198 delegates representing 46 countries with semiarid lands. A post-conference tour took many delegates through Saskatchewan and Alberta, with visits to farms, provincial and federal research institutions and to a Farm Progress Show.

Invited speakers gave global overviews of the sustainability of semiarid lands, and discussed concepts and policies for maintenance or improvement of farming systems in semiarid regions. Emphasis was placed on development of physical, biological and economic criteria for sustainability, and maintenance or improvement of soil quality. This was followed with regional overviews, poster sessions and workshops.

Semiarid regions are characterized by fragile soils and high climatic variability. Currently, however, these areas are coming under increasing population and land use pressures. The Conference noted the rapid and accelerating rate of soil quality deterioration in semiarid areas, caused primarily by these rising population pressures, but intensified by inappropriate production techniques and the general lack of attention to these areas by national and international agencies. The deterioration in soil quality is manifested in deteriorating water and nutrient availability, decreased organic matter levels and aeration, and increased acidification, salinization and erosion.

The situation is most serious in the semiarid tropics, which are the 'next frontier'

for food production, but the problems exist also in North America and Australia. It was recognized that these regions have considerable potential for increasing production and that given proper management, the land could be managed for sustainable agriculture. It is, therefore, all the more important to understand the processes of maintaining soil quality. It is equally important, however, to develop risk management strategies to assist farmers in coping with the high variability in these areas under current and potential climatic conditions.

The Conference concluded with a statement identifying the urgent need to sustain and improve both the research capability and the technology transfer within semiarid regions. It recommended the development of a global focus to address these problems. There is a need to develop and coordinate international information networks; to strengthen existing national and international institutions including extension services; to develop suitable technology transfer packages involving male and female producers; to focus research efforts and attention to understanding the major controlling processes. It is essential that technological and fiscal means are found to continuously disseminate research information from existing centres, to all parts of the globe with the same problems. The Conference, while stressing the urgency of the problem and the need for a major focus of world institutions on semiarid lands, realized that the quickest way to do this was by strengthening the coordinating mechanisms between existing organizations such as ICRISAT and IBSRAM. Underlying all these efforts must be a renewed emphasis on education and awareness as one of the primary means of achieving long term sustainability. The problems are as much social as technological, and 'instant cures' are not available.

The keynote papers and working group conclusions will be published in a conference proceedings.

J. Dumanski, Ottawa, and
J.W.B. Stewart, Saskatoon, Canada

Correction: The international workshop on Denitrification in Soil, Rhizosphere and Aquifer, as reported upon in Bulletin 75, page 9, was organized by ISSS Commissions III and IV, not II and III.

'When the nature of your soil is cold, or even if your plants and growing things have been stricken with cold, apply a compost made from the ash of hot-natured plants such as mint, jasmine, dog-rose, wild thyme, basil and parsley, all mixed with earth. When a refreshing compost is needed, make it by adding the stalks, leaves and flowers of poppies to manure.'

— *A Moorish Calendar*
from the book of *Agriculture of Ibn al-Awam (12th Century A.D.)*, Translated by Philip Lord, The Black Swan Press, Wantage, U.K., 1979; quoted by New Zealand 'Soil News'.

ACTIVITIES OF THE COMMISSIONS AND WORKING GROUPS ACTIVITES DES COMMISSIONS ET GROUPES DE TRAVAIL TÄTIGKEIT DER KOMMISSIONEN UND ARBEITSGRUPPEN

ISSS Committee on Standardization

International Standardization on Soil Quality

The aims and the organizational structure of the Technical Committee on 'Soil Quality' (TC 190) of the International Standards Organization (ISO) are given in the ISSS Bulletins n°70, 1986/2 (page 48) and n°72, 1987/2 (page 48).

The fourth meeting of ISO-TC 190 after the Hague (1986), Milan (1987) and London (1988) took place in West Berlin (10-14 April 1989). 93 delegates represented Austria, France, Germany D.R., Germany F.R., Italy, the Netherlands, Switzerland and the U.K. But more chemists than soil scientists could be observed. On behalf of the ISSS Committee on Standardisation (see ISSS Bulletin n°72, page 84) this meeting was attended by Prof.Dr. H.-P. Blume (Germany) and Prof.Dr. P.W. Arnold (U.K.).

SC 1 (subcommittee on terminology) is cooperating with other SCs in discussing a list of terms and definitions related to soil quality. A draft proposal for a bilingual (english and french) terminology on soil description, including terms for rocks and soil classification, will be available by January 1990; there are many differences to concepts of FAO and IRB.

SC 2 (sampling methods) accepted a draft proposal about 'general aspects of soil sampling'; working drafts about 'sampling strategies' and 'sampling tools' will be prepared.

SC3 (chemical methods): working drafts about determination of heavy metals, nitrogen, sulphur, cyanide, phosphorus, mineral oil, PCB, pesticides, pH and CEC are in preparation; inter-laboratory tests were and will be organized.

SC 4 (biological methods) will prepare draft proposals on toxicity of chemicals to earthworms, and for a 'rapid plant toxicity test'. For 'bio-degradation' and for 'soil microbiological processes' standardization will be difficult for the moment.

SC 5 (physical methods) accepted draft proposals about 'water retention characteristics', and 'water content by neutron probe'. Working drafts about 'saturated hydraulic conductivity', 'water content (gravimetrically)', 'tensiometry', 'piezometry', 'particle size distribution' and 'bulk density' are in preparation. All delegates agreed that texture fraction of fine soil should be divided into clay ($< 2\mu\text{m } \varnothing$), silt (2-63 μm) and sand (63-200 μm).

A new subcommittee about *radiological methods* was installed to prepare working drafts for 8-spectrometry (laboratory and field), Strontium 90, Residual β and Gross α . The next meeting is scheduled for July 2nd to 7th, 1990 in Budapest.

H.-P. Blume, Kiel, F.R.G.

ISSS Working Group PM (Pedometrics)

Interest in application of mathematical methods in soil science has been growing for some years. Training in this field is now offered at most universities giving a degree course in soil science. With a growing number of practitioners and interest in sophistication and potential usefulness of the methods there is a need for a forum for scientists to discuss and present their work on an international basis. Up till now, however, there were no working groups specifically dealing with the application of mathematical methods in soil science. The working group on pedometrics has been set up to play that role.

The scope of the working group might be outlined as follows. Application of mathematical methods is a large subject and the aims in the first instance should be fairly specific. The vast area of simulation with deterministic models is highly specialized

according to the type of processes being simulated. Furthermore, this kind of work already seems to be reflected adequately by the present pattern of activities in our Society. The working group can therefore mainly concentrate on the application of statistics and operations research. Typical subjects of interest are: prediction in space and time ('geostatistics'), design and analysis of field experiments and sample surveys, numerical classification, ordination, calibration, image analysis, stereology, generalised linear models, stochastic differential equations, risk analysis and optimization of utility functions.

One activity of the working group has been to cooperate with the Bernoulli Society for Mathematical Statistics and Probability in organizing the conference on 'Statistics, Earth and Space Sciences', August 22-26, 1989, in Leuven (Belgium). We took the opportunity to discuss future activities of the working group with participating soil scientists in an informal meeting.

Activities for the period 1989-1993:

(i) Create and maintain a mailing list of those interested in pedometrics; (ii) Initiate a newsletter with information on activities and developments in pedometrics; (iii) Exploit the possibilities of e-mail services; (iv) A conference of two or three days in 1991 in the Netherlands.

If you wish to participate in the working group please inform the secretary (see below), so that you are put on the mailing list. Further suggestions about activities are also very welcome.

The officers of the working group are:

Chairman: Dr. R. Webster, Rothamsted Experimental Station, Harpenden Herst AL5 2QJ, United Kingdom

Secretary: Dr. J.J. de Gruijter, Agricultural Mathematics Group, P.O. Box 100, 6700 AC Wageningen, The Netherlands.

ISSS Commission VII (Soil Mineralogy)

At the 9th International Clay Conference of the AIPEA (Association Internationale pour l'Etude des Argiles) held at Strasbourg, France, during the last week of August, 1989, and attended by some 700 participants, two parts of the programme were organized in cooperation with Commission VII of the ISSS.

The first was the two-day pre-conference tour visiting the Black Forest and upper Rhine Graben in S.W. Germany. The topic of the tour was the development of soil minerals in relation to parent material and environmental conditions. There are considerable climatic differences in the area ranging from the warmest and driest place in Germany (the 'Kaiserstuhl' in the Rhine Valley) to the chilly and rainy mountains up to an elevation of 1500 m. The parent material varies from alluvial loam through limestone, sandstone and glacial till to volcanic rocks. Therefore, over relatively short distances, a beautiful range of soils could be inspected. This excursion was very well organized by Dr. Karl Stahr and included a memorable evening of tasting the wines of the area during which the grey eminence Dr. Georges Aubert entertained with a lecture on the French philosophy on wines.

The second part was a whole conference day spent on soil mineralogy. This was the most busy of all and particularly participants presenting a poster-paper had a hard time to study the other papers of that day. A round table session, chaired by Dr. Adrien Herbillon, was held to discuss the highlights of the papers. After that, an impromptu session, chaired by Joe Dixon, was held on allophane and related materials. It was felt necessary to update the definition of allophane but no agreement could be reached. It was decided to convene again at the Kyoto Soils Conference in 1990. Proposals for a modern definition of allophane are invited by Dr. Roger Parfitt, Division of Land & Soil Sciences, D.S.I.R., Pte. Bag, Lower Hutt, New Zealand.

ISSS Commission V (Soil Genesis, Classification and Cartography)

Working Meeting on Soil Horizons, Rennes, France, 4-6 September 1989

This working meeting was organised by Dr. E.A. Fitzpatrick of Aberdeen University and Dr. P. Auroousseau of the Ecole Nationale Supérieure Agronomique (ENSA) – Institut National de la Recherche Agronomique de Rennes, where the meeting was held. More than 30 soil scientists participated from Algeria, Belgium, Brazil, Britain (2), Bulgaria, France, Germany, Italy, Indonesia, Poland, Spain, the USA (3) and FAO. Some additional papers were sent in and will be included in the proceedings.

The objective was to discuss the concept of soil horizons and its role in soil characterization, classification and mapping. Excellently documented and explained long transverse soil profile pits demonstrated the importance of lateral transformation of horizons in catenary sequences and how they may be used for studying and mapping the three dimensional organisation of soils at the levels of elements, assemblages, horizons and soil systems. The field trip was built on the work of P. Auroousseau and students of ENSA. Dr. Fitzpatrick expounded and applied his well-known systematic method of characterising and naming soil horizons and grouping them by a soil formula for classification for various purposes, which has been made readily accessible by the pocket book 'Soil Horizon Designation Classification' recently published by ISRIC.

Eight other papers covered a diversity of subjects. The historical development of various horizon concepts provided a background for new concepts. A well illustrated argument was made for greater use of micromorphology to distinguish numerous soil horizons. A study from Wisconsin of soil landscape analysis using the spatial arrangement of horizons was accompanied by a plea that wondering admiration of the three-dimensional computer displays of overlays should not diminish appreciation of the real benefits from such techniques.

Accounts were given of the place of horizons in the Référentiel Pédologique Français and the US and FAO systems of soil description and classification.

The general conclusions were that the traditional ABC field nomenclature would continue to be employed in field mapping. Field testing and increasingly wide use of the Fitzpatrick system would have many advantages particularly for detailed studies. Appreciation of the three-dimensional nature of soil and of the necessity to understand the lateral as well as vertical transitions and linkages between horizons would also be promoted.

These ideas were made good use of in the three days meeting which followed to discuss the International Reference Base for Soils. The latter analyzed the descriptions of the main soil groups which have been sent in and refined the format for description of soil groups to be used by the contributors to the IRB.

M.F. Purnell, FAO, Rome

ISSS Working Group AS (Acid Sulphate Soils)

The working group has published the second number of its newsletter in December 1989. This newsletter, which is meant to keep those active in acid sulphate soils research acquainted with recent developments in this field, contains contributions from a number of authors with a wide geographical scope.

In the newsletter contributions can be found by Willett and co-authors on acid sulphate soils research in Australia; a report by Ukkerman and van Gent on soil fertility work done in the acid sulphate soils of Guinea Bissau as part of a Dutch Government sponsored project; a report by Janssen and co-authors from Kalimantan, Indonesia on the origin of the brown mineral layer which is found on large scale in the acid sulphate areas of Kalimantan and an abstract of the PhD thesis of Dr. Syaka Sadio, a Senegalese soil scientist. The thesis deals with the genesis and land use possibilities

of the saline acid sulphate soils in the Sine Saloum area, Senegal. There is also a short report on the International Symposium on Rice Production on Acid Soils in the Tropics, which was held in Kandy, Sri Lanka, in June 1989.

Two contributions, by Pons et al. and by Fanning & Witty are presented, both dealing with the classification of acid sulphate soils. In fact, both contributions were presented at the third International Symposium on Acid Sulphate Soils held at Dakar, Senegal, in 1986, but were not published in the proceedings. We feel, however, that they should be brought to the attention of a wide audience, in order to get comments or additions to the proposals. The Fanning and Witty contribution is mainly based on the situation in the USA, the Pons et al. contribution on the mineral acid sulphate soils of the Mekong delta in Vietnam. They can both serve as starting points for a discussion, which could lead to an amelioration and urgently needed extension of the classification of acid sulphate soils within Soil Taxonomy and the FAO/Unesco Legend.

Those of you interested to receive a copy of this newsletter please apply to: M.E.F. van Mensvoort, secretary ISSS Working Group on Acid Sulphate Soils, Department of Soil Science and Geology, Agricultural University of Wageningen, P.O.Box 37, 6700 AA Wageningen, the Netherlands.

ISSS Working Group PP (Paleopedology)

Future meetings

- Joint Loess-Paleopedology meeting in Greece, May 1990. Symposium and tour, date to be set. Organizers: R. Paepe and I. Mariolakos.
- Working Group on Paleogeography of Loess meeting in USSR summer 1990. Symposium and boat tour along Lena River. Organizers: M. Alekseev, A. Dodonov and A. Velichko.
- Loess-Paleopedology working meeting in Argentina, November 1990. Organizer: M. Zarate
- INQUA 1991 in China. Special paleopedology events are being considered. Organizer: An Zhisheng
- Symposium on Paleopedology: Progress since 1970. A main conference proposed for June 1992, Champaign, Illinois, USA. Organizers: L. Follmer and D. Johnson
- No paleopedology activities are known for the 1990 ISSS Congress in Japan.

Journal of Paleopedology. Interest in an independent journal was discussed but is not likely to succeed. The new journal *Quaternary International* and other journals can meet the needs of publishing special collections of paleopedological works.

Affiliation with the International Union of Geological Sciences (IUGS) under the Commission on Stratigraphy (ICS) is being sought.

Other business

- Paleosol Handbook: final draft is in review.
- Register of Paleosols: because of G. Beckman's untimely death, the status of the register is uncertain.
- Bibliography of Paleopedology: a new, post-1982 bibliography appears unneeded in light of computer access to current references.
- Paleopedological Maps: a goal of depicting world soils at 18,000 yr B.P. is on hold until the Global Change project selects their primary goals on reconstruction of past climates.

Address of the Secretary/Treasurer of the Working Group: Leon R. Follmer, Illinois State Geological Survey, 615 East Peabody Drive, Champaign, IL 61820, USA.

ISSS Working Group HP (History of Soil Science)

The Earliest Soil Maps and their Logic

A soil map is primarily a graphic representation for transmitting information about the spatial distribution of soil attributes. Usually prepared with a specific objective in mind or for a particular purpose, it is at the same time a synthesis or generalization of the information available at that particular time. Like in all other fields of soil science, the preparation of soil maps has undergone significant development and considerable change in the course of time, since the preparation of the first soil maps nearly 200 years ago.

The concept of mapping natural resources made its earliest appearance in a paper presented to the Royal Society of London in March 1683 by Martin Lister. But it was only in the middle of the 18th century that the earliest thematic maps were actually produced. All the early surveys and maps offered some information on soils, earth, clays, etc. but the first set of maps with a specific soil legend was prepared only in the 1790's. Commissioned by the British Board of Agriculture, to be included with the review reports on agriculture of each county, they were prepared by several naturalists. Over 100 county volumes were published until 1814, each dealing mainly with the nature of agriculture and husbandry, but including also significant background material on the geology, waters, climate, vegetation and soils of the respective county. The soils were characterized mainly on the basis of textural properties (clay, loam, sandy...), geological material (chalky, marly...), or vegetation and moisture conditions (fen, peat, bog...) with some indication of land use capabilities. Though both regional prevalence and large local variation were clearly recognized, no uniform soil classification seems to have been developed. The coloured soil maps, mostly on a scale 1:63,360 or smaller, delineated between four to ten soil mapping units. Because of the variable quality and detail of the maps, which were not always in agreement with the accompanying descriptions, a contemporary critic and reviewer of these county reports, William Marshall (1809) considered only about one third of the over 20 soil maps published as a truthful representation of the field conditions. However the delineations on some of them, e.g. those of Norfolk, Devon or the Costwolds were so accurate that they can be recognized on the modern county soil maps prepared 150 years later.

The simple logic of these soil maps was to delineate homogeneous or acceptably heterogeneous areas with intrinsic soil attributes useful in determining land use. There was no attempt at a more formal soil classification or grouping into broader classes, and while soil depth, carbonates, stoniness and nature of the substratum were duly recognized as significant intrinsic properties, only limited attempt was made to relate these attributes to the various environmental factors.

The pioneering aspect of these soil maps as precursors of later detailed and more formalized soil mapping is considerable. By the middle of the 19th century somewhat similar concepts were applied in several countries of the European continent, mainly in detailed mapping for cadastral and tax purposes. They were based on a limited number of physical (texture) or chemical (carbonates, acidity) properties or the geological substratum. They gradually evolved, especially in the German countries, into what has been called the agro-geological or technical school of mapping. In many cases the selected attributes were a poor indicator of the natural soil profile.

At the opposing spectrum of the soil mapping effort was the small scale generalized map for the purpose of depicting general knowledge of the soils of the region. Agricultural expansion from the middle of the 19th century and onwards, both in North America and Russia, required a different approach and led to the preparation of a number of remarkable small scale maps, synthesising and extrapolating the accumulated knowledge for larger regions. In Russia small scale soil maps were prepared on which the broad regularities of the soil distribution pattern were discernible. The first essentially pedologically oriented soil map was probably prepared in 1856 by A.I. Grossul-Tolstoy of the Crimea region, some 25 years before Dokuchaev formally conceptualized the approach.

In the 1880's Dokuchaev postulated the concept of soil as an independent natural-historic body formed by the interaction of specific soil forming factors. Beginning with 1879 a hierarchical soil classification was used, with the primary grouping into normal, transitional and abnormal soils (later changed to zonal, intrazonal and azonal soils).

Essentially the Russian pedological school postulated that 'once the natural soil district and its genetic soil types are accurately determined it is possible to begin a detailed agricultural-economic investigation and mapping of these districts in relation to natural conditions'. This approach, stressing the genetic soil type above all, rather than the intrinsic features of the soil profiles, became the axiomatic guideline for soil identification and mapping promulgated by the Russian genetic school.

In the United States the 1860 and 1880 soil maps of Hilgard of the southern cotton states, from Texas to the Atlantic coast, were a similar soil-regionalization approach relating soils to the environmental factors. A hierarchical grouping was established and his soil regions, differentiated by soil colour, texture, carbonate content and vegetation criteria, are akin to the later grouping of great soil groups. However, eventually Whitney's ideas and terminology of soil types and soil series prevailed, differing or reflecting intrinsic, mainly physical, properties as determined by detailed soil surveys. With the establishment of the survey in 1899, he initiated the detailed soil survey and mapping of soil types on a large scale. It took many years before these two essentially opposing logics of soil mapping became reconciled.

D.H. Yaalon, Jerusalem, Israel

DISSERTATION
ON THE
NATURE OF SOILS,
AND THE
PROPERTIES OF MANURE:

TO WHICH IS ADDED,
THE METHOD OF MAKING
A UNIVERSAL COMPOST,
TO SUPPLY THE PLACE OF DUNG,
WHERE THAT USEFUL AND NECESSARY ARTICLE
CANNOT BE OBTAINED:

THE WHOLE FORMING A BODY OF INTELLIGENCE CALCULATED
TO ESTABLISH FACTS THAT MAY BE APPLIED FOR
THE BENEFIT OF MANKIND.

WITH
A SYNOPSIS
OF
THE SCIENCE OF AGRICULTURE,
PRACTICALLY DELINEATED;
POINTING OUT THE NECESSARY THINGS TO BE TAKEN INTO CONSIDERATION
IN THE MANAGEMENT OF A FARM.

LONDON:
PRINTED FOR SHERWOOD, GILBERT AND PIPER,
PATERNOSTER-ROW.

1833.

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

All-Union Society of Soil Science, USSR

The All-Union Society of Soil Science of the USSR held its 8th Congress at the Academian Town in Novosibirsk, Western Siberia, from 12 to 18 August 1989. Almost 800 delegates from all over the Soviet Union participated in the Congress, representing ca 8000 members of the Society. Nearly 1400 abstracts of scientific papers were incorporated in six volumes of the proceedings of the Congress which were published in advance and distributed among the participants.

At the plenary session of the Congress, after the opening ceremonies, several major reports were presented. They were: G.V. Dobrovolsky: Main results and goals of soil science development; A.N. Kashtanov: Problems of agriculture development in the USSR; D.N. Durmanov: State and prognosis of the fertility status of soils of the country; I.M. Gadgiev: Soil Cover of Siberia; V.I. Kirjushin: Agricultural problems of Siberia.

Seven congress symposia considered the following important topics representing major areas of concentration of scientific efforts at present: Soil fertility management in intensive agriculture; Specificity and effectiveness of soil amelioration in Siberia and the Far East, prognosis of development of large-scale amelioration; Soil biota and its participation in soil processes, functional interrelations between plants, soil fauna, microflora and soil organic matter; Soil conservation, recultivation of destroyed soils, problems of pollution of soils, landscapes and agricultural products, and measures to prevent the pollution; Development of the theory of soil science as fundamental to Earth science; Cryogenesis and its role in soil formation and soil fertility; Soil classification.

The following themes were considered by the Commissions and Sub-Commissions of the Society:

- I Theory and methods of control of soil physical properties and regimes; Modelling of soil physical properties, processes, and regimes; Physical properties and regimes of cold and cryogenic soils; Mechanism of the processes of soil compactation and loosening under the impact of agricultural machinery.
- II Soil humus; Physico-chemical processes, and problems of technogenic soil pollution.
- III Soil biology and its fertility; Ecology of soil organisms and their role in soil formation; Anthropogenic impacts on soil macro-, meso-, and micro-fauna.
- IV Rates and directions of soil fertility parameters in intensive agriculture; Models as a basis for soil fertility reproduction; Balance and transformation of nutrients in soil-fertilizers-plant system, and methods of prognosis of fertilizers requirement; Agrochemical soil properties, fertilizers, quality of agricultural products, and the state of the environment.
- V Soil genesis and evolution; Soil classification; Soil cartography:
 - Sub-Commission on Forest Soils: Soils in forest ecosystems;
 - Sub-Commission on Soil Evaluation: general problems of soil evaluation and land assessment in intensive agriculture; Agroproductivity grouping of soils, and soil re-igning; Land cadastre and the cost of land;
 - Sub-Commission on Soil Mathematics: Mathematical modelling as a tool of knowing soil processes and organization; Mathematical modelling in elaborating and improving agricultural systems; Programming and use of computers in soil science; Mathematical methods of data analysis in soil science;
 - Sub-Commission on Soil Micromorphology: Micromorphological diagnostics of anthropogenic soil changes; Micromorphology of soils of Siberia and the Far East;
 - Sub-Commission on Soil Remote Sensing: Aerospace visual and instrumental methods of soil study and cartography; Remote sensing soil and agricultural monitoring; Automated methods of soil cartography.

- VI Specifics of salt accumulation in soils and problems of soil regioning; Amelioration of solonetz and alkaline soils; Ecological problems of soil amelioration; Quality of irrigation water and its influence on soils, landscapes and agriculture; Irrigated chernozems, their anthropogenesis, and fertility management; Soil regimes under different drainage conditions;
- Sub-Commission on Wet Soils: Evolution of hydromorphic soils under anthropogenic impact; *Genetical and economical aspects of amelioration of swampy soils and swamps*; Modelling of soil-forming processes in wet soils;
 - Sub-Commission on Soil Erosion: Erosion processes, factors of their expression, and soil protection measures; Diagnostics of eroded soils and soil erosion cartography; Properties of eroded soils and the influence of agricultural chemicals on crops.
- VII Mineralogical and crystallochemical indicators of soil state, and their changes under anthropogenic impact.
- Sub-Commission on Soil Recultivation: Recultivation and soil formation; Optimisation of technogenic ecosystems; Organisation and technology of recultivation works.
- Commission on Standardization: Standardization and the scientific technical progress in soil science*; Standards as a form of extension of fundamental studies in soil science; Standardization and soil conservation; Standardization in area of terminology.
- Commission on Soil Science Teaching: Soil science and ecology.*
- Commission on History of Soil Science: Little known and forgotten names of national soil science*; History of soil science development in Siberia and the Far East; History of the doctrine of soil fertility; History of studies on soil conservation.

The Congress was accompanied by several scientific excursions into different places of interest in Western Siberia and Altai Mountains.

On the occasion of the 8th Congress, the All-Union Society of Soil Science elected new governing bodies and Honorary Members, the Central Council consisting of 89 leading scientists, its Executive Bureau of 15 members and the officers.

As per August 1989, the new members of the Executive are:

President: Prof. G.V. Dobrovolsky, Dean, Faculty of Soil Science, Moscow State University, Moscow

Honourary President: Prof. V.A. Kovda, Moscow

Vice-Presidents: Dr. Il.M. Gadgiev, Novosibirsk (Society Affairs)
Acad. A.N. Kashtanov, Moscow (Interorganizational affairs)
Prof. B.G. Rozanov, Moscow (International affairs)

Scientific Secretary: Dr. T.P. Kokovina, Moscow

Chairmen of the Commissions:

I Prof. A.D. Voronin, Fac. of Soil Science, Moscow State University

II Prof. D.S. Orlov, Fac. of Soil Science, Moscow State University

III Prof. D.G. Zvjagintzev, Fac. of Soil Science, Moscow State University

IV Dr. D.N. Durmanov, Dokuchaev's Soil Institute, Moscow

V Prof. B.G. Rozanov, Fac. of Soil Science, Moscow State University

VI Dr. B.A. Zimovetz, Dokuchaev's Soil Institute, Moscow

VII Dr. B.P. Gradusov, Dokuchaev's Soil Institute, Moscow

Standardization: Dr. V.A. Rozhkov, Dokuchaev's Soil Institute, Moscow

History: Dr. I.A. Krupenikov, Dimo's Soil Institute, Kishinev

Chairmen of the Subcommissions:

Forest Soils: Dr. L.O. Karpachevsky, Moscow State University

Soil Evaluation: Dr. I.I. Karmanov, Dokuchaev's Soil Institute, Moscow

Soil Mathematics: Prof. E.A. Dmitriev, Moscow State University

Micromorphology: Dr. S.A. Shoba, Moscow State University

Remote Sensing: Dr. V.L. Andronikov, Dokuchaev's Soil Institute

Wet Soils: Prof. F.R. Zajdelman, Moscow State University

Soil Erosion: Prof. M.S. Kuznetsov, Moscow State University

Recultivation: Prof. A.P. Travleev, Dnepropetrovsk State University
Mountain Soil: Prof. T.F. Urushadze, Agric. Institute, Tbilisi
Soil Technology: Dr. A.G. Bondyrev, Dokuchaev's Soil Institute, Moscow
Chemical Thermodynamics of Soils: Dr. I.Sh. Shaimukhametov, Dokuchaev's Soil Institute, Moscow

The next 9th Congress of the AUSSS will be convened in 1993.

B.G. Rozanov, Vice-President AUSSS, Moscow, USSR

Pochvovedenie ('Soviet Soil Science') is 90 Years Old

Pochvovedenie, the Russian soil science journal of world renown, is celebrating the 90th anniversary of its foundation which took place in 1899 in St. Petersburg. That time was the period of the formation of soil science as an independent natural discipline, separated from geology, due to the activities of such great scholars as Dokuchaev in Russia, Hilgard in the US, Russell in England, Raman in Germany, and others. Pochvovedenie was the first scientific journal of pedology and contributed much to strengthening collaboration among soil scientists not only in Russia but also internationally.

During these 90 years it appeared almost without interruption and among its editors we can find the best Russian and Soviet soil scientists of the given period, and among the authors a great number of internationally respected pedologists from many many countries. The first International Agrogeological Congress held in Budapest in 1909 declared Pochvovedenie the international journal of soil science and that remained so until new journals appeared – first of all 'Soil Science' in the USA in 1916.

At present Pochvovedenie is published under the supervision of the Academy of Sciences of the USSR, edited by G.B. Dobrovolsky and his two deputies A.D. Voronin and S.V. Zonn.

The address of the editorial office is at Pijevsky Pereulok 7, 109017 Moscow Zh 17.

The journal appears in 12 issues per year, each on about 150-180 pages. As the papers are published in Russian, a short summary is given in English in each issue to help those who do not speak Russian. Besides, under the title 'Soviet Soil Science', it is selectively translated in the US.

Pochvovedenie is 90 years old but very young in its spirit and in keeping pace with the developments of modern soil science and related subjects. The members of the International Society of Soil Science and other circles of pedology congratulate the Journal on the occasion of its 90th anniversary, wishing it all the best for the years to come.

I. Szabolcs, Budapest, Hungary

22th Congress of the Brazilian Soil Science Society

Recife/Pernambuco, 23 to 31 July 1989

'Soils and Irrigation in Agriculture' was the central theme of this 22th national congress, held at the Conference and Exposition Centre of Pernambuco with more than 800 participants. Seven plenary sessions were dedicated to the management of soil irrigation and to regional and national irrigation politics and developments. Moreover, three round tables were organized on 'Soil classification for irrigation', 'Rules and criteria for soil mapping' and the 'Brazilian system of soil classification'.

291 voluntary papers were presented, 156 of them in technical sessions and 135

in poster sessions. In 'Soil physics', 24 papers discussed the impact of agricultural soil management on physical soil characteristics, especially on soil structure and water availability. In the section 'Soil chemistry and mineralogy' most of the 25 papers were concentrated on methodological aspects in soil chemistry and mineralogy and the occurrence and distribution of clay minerals and oxides in different soil types. In the section 'Soil biology', 32 publications dealt with the importance of micorrhiza in agriculture, microbial turnover processes and the relation between chemical soil characteristics and soil biological activity. Most of the 106 voluntary papers in the section 'Soil fertility and plant nutrition' were concentrated on the influence of different land use practices, especially fertilization, on soil fertility and plant growth. In the section 'Soil genesis, morphology and classification' 24 papers dealt with soil characteristics, related to genesis and classification and questions of soil mapping. In the section of 'Soil and water conservation and management', 41 presentations discussed the influence of soil management practices on the conservation of water and soils and the determination and assessment of soil fertility for irrigation purposes. Further topics were 'Teaching in soil science' with 2 presentations, 'Fertilization and soil improvement' with 10 contributions and 'Pollution of soils and quality of the environment' with 5 contributions.

The standard and quality of the presentations was remarkable. Moreover, it was most impressive to meet a very large number of students and young scientists, demonstrating that soil science in Brazil is an attractive subject. Through the excellent organization, a dialogue between the different research sections was possible. Especially the plenary sessions and round table discussions contributed to an intensive contact between the participants.

A two day's post congress excursion into the interior of the state of Pernambuco, starting from the humid coast and reaching the extreme arid inner part of the state gave a comprehensive view on typical soils of arid and semiarid areas such as Solonchaks, Solonetztes, Planosols, Vertisols, Regosols and others. The organizing committee must be congratulated for the excellent organization.

Winfried E.H. Blum, Vienna, Austria

Deutsche Bodenkundliche Gesellschaft

Der Vorstand der Deutschen Bodenkundlichen Gesellschaft setzt sich für die Wahlperiode 1990/1993 wie folgt zusammen:

Präsident:	Prof.Dr. Kuntze, Bremen (Wiederwahl)
Vizepräsident:	Prof.Dr. Blume, Kiel (Wiederwahl) Prof.Dr. Wiechmann, Hamburg
Geschäftsführer:	Dr. P. Hugenroth
Kommission I (Bodenphysik):	Prof. Horn, Kiel
Kommission II (Bodenchemie):	Prof. Sticher, Zürich
Kommission III (Bodenbiologie):	Dr. Haider, Braunschweig-Völkenrode
Kommission IV (Bodenfruchtbarkeit und Pflanzenernährung):	Prof.Dr. Sauerbeck, Braunschweig-Völkenrode
Kommission V (Bodengenetik, Klassifikation und Kartierung):	Dr. Finnern, Kiel (Wiederwahl)
Kommission VI (Bodentechnologie):	Prof.Dr. Stahr, Stuttgart-Hohenheim

Es wurde eine neue Arbeitsgruppe 'Ungesättigte Zone', Obmann Dr. Becker, Göttingen gegründet. Den Vorsitz des Arbeitskreises 'Bodensystematik' hat Präsident Wittmann, München übernommen. Den Vorsitz der Arbeitsgruppe 'Informationssysteme in der Bodenkunde', Dr. Heineke, Hannover.

Die Geschäftsstelle der Deutschen Bodenkundlichen Gesellschaft wurde von Göttingen nach D-2900 Oldenburg, Wilhelmstr. 19, Tel. 0441/2570 verlegt. Anlässlich der Jahrestagung 1989 in Münster wurde die Deutsche Bodenkundliche Gesellschaft mit der Dokuschajew-Medaille der Sowjetischen Bodenkundlichen Gesellschaft ausgezeichnet.

Erstmalig wurde auf der Jahrestagung in Münster der Fritz-Scheffer-Preis verliehen für 1987 an Dr. Welp, Bonn für seine Arbeit 'Einfluß des Stoffbestandes von Böden auf die mikrobielle Toxizität von Umweltchemikalien' und für 1989 an Herrn Dr. Bachmann, Hannover für seine Dissertation 'Auswirkungen der organischen Substanz verschiedenen Zersetzungsgrades auf physikalische Eigenschaften'.

Der Präsident der Deutschen Bodenkundlichen Gesellschaft, Prof.Dr. Kuntze, Bremen wurde durch den Bundesminister für Ernährung, Landwirtschaft und Forsten in das Kuratorium der Forschungsanstalt für Landwirtschaft, Braunschweig-Völkenrode berufen.

Prof.Dr. H. Kuntze, Präsident

Adresse: DBG, Wilhelmstrasse 19, D-2900 Oldenburg, BRD

Österreichische Bodenkundliche Gesellschaft

Die Zusammensetzung des am 25-01-1989 neu gewählten Vorstandes der Österreichischen Bodenkundlichen Gesellschaft ist folgendes:

Geschäftsführender Vorstand:

Präsident:	Univ.-Prof.Dipl.-Ing.Dr. Othmar Nestroy
Vizepräsident:	HR.Dipl.-Ing.Dr. Walter Kilian
Altpräsident:	Univ.-Prof.Dipl.-Ing.Dr. Winfried E.H. Blum
Generalsekretär:	Dipl.-Ing. Heide Spiegel
Schatzmeister:	Univ.-Doz.Dipl.-Ing.Dr. Eduard Klaghofer
1. Schriftleiter:	OR.Dr. Maximilian Eisenhut
2. Schriftleiter:	Univ.-Prof.Dipl.-Ing.Dr. Othmar Nestroy
Beisitzer:	MR.Dipl.-Ing. Alois Geßl HR.Dr. Josef Gusenleitner
Erweiterter Vorstand:	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 Dr. Franz Hinteregger Dr. Franz Mutsch

Adresse: ÖBG, Gregor-Mendel-Strasse 33, 1186 Wien, Austria

Soil Science Society of East Africa

The 9th Annual General Meeting of the Society was held at Kisumu, Kenya from 7 to 10 August 1989.

The theme of the meeting was 'Appropriate Soil and Water Resources Management in Agricultural Production'. A total of 30 technical papers were presented covering a wide range of topics on soil fertility and plant nutrition, fertilizer use, soil chemistry, soil survey, soil structure, irrigation and soil waters, soil erosion, nitrogen fixation and methodology development. About 50 researchers from universities, research institutes and private sector in the three East African countries participated in the workshop.

A full day excursion was organized where participants had the opportunity to visit a rice irrigation scheme, see various environments under which farming system is practised under very limited land resources and varying agroclimatic zones. The soil characteristics at all the sites were described in detail. At the end of the workshop, several recommendations were made for the future follow up.

The recommendations made were:

- a) Efforts should be made to identify areas of research on which collaborative work would be carried out among scientists in the three partner state of Kenya, Uganda and Tanzania.
- b) Farmers should be involved as much as possible in the Society's activities.
- c) Methodologies for routine measurement should be standardized.
- d) Publication of lay reading material, especially through the newsletter should be promoted.
- e) In view of the low levels of organic matter in our soils, the possibility of using locally available organic matter to enrich the soil should be explored.
- f) Soil sites be characterized extensively for research purposes.
- g) Membership be extended to other neighbouring states who may be willing to join the Society.
- h) Potential donor agencies be approached to relieve the financial constraints that have hampered the effective operations of the Society.

The following office-bearers were elected for the year 1989-1990:

Chairman: Dr. F.N. Muchena; Nairobi, Kenya

Vice Chairman (Uganda): Prof. K. Zake; Kampala, Uganda

Vice Chairman (Tanzania): Mr. A. Moshi; Arusha, Tanzania

Secretary-General: Mr. G.O. Ayaga; Nairobi, Kenya

Treasurer-General: Ms. S. Ikeru; Tanga, Tanzania

Treasurer (Kenya): Mr. C.M. Njihia; Nairobi, Kenya

Treasurer (Uganda): Ms. M. Silver; Kampala, Uganda

Committee members:

Kenya Prof. V. da Costa and Dr. B.O. Mochoge, Nairobi

Uganda Ms. Joy Kimahaire and Mr. John K. Kavuma, Kampala

Tanzania Mr. B. Gama, Mwanza, and Mr. J.P. Magoggo, Tanga

The next meeting is scheduled for Arusha, Tanzania at a date to be decided later. Current membership stands at about 200.

Address: Mr. G.O. Ayaga, Secretary General SSSEA, National Agricultural Laboratories, P.O. Box 14733, Nairobi, Kenya.

British Society of Soil Science

Royal Society International Discussion Meeting on Quantitative Theory in Soil Productivity and Environmental Pollution. London, UK, 7-8 March 1990.

A 2-day meeting organized by D.J. Greenwood FRS, P.H. Nye FRS and A. Walker. Much progress has been made in developing quantitative theories for key soil processes and applying them to the solution of problems of public concern, especially environmental, pollution and food production. The basic physical, chemical and biological processes governing the behaviour of nutrients in soil have much in common with those determining the fate of pesticides. Recent development in theories for these processes and their combination into high level predictive models will be discussed. Included will be case histories of some important models for predicting soil productivity, soil deterioration and the accumulation of unwanted chemicals in soil and in the water supply.

No charge is made for attending the meeting. Details and further information can

be obtained from: Miss Christine Johnson, Scientific Meetings Secretary, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, U.K.

Association Française pour l'Etude du Sol

Les 22-23-24 novembre 1990 aura lieu à Orléans (France) le 108ème Congrès national de l'Association Française pour l'Avancement des Sciences (AFAS) sur le thème: *exploration, utilisation et conservation des sols*.

Dans la séance d'ouverture le Jeudi 22 novembre un hommage sera rendu à J. von Liebig à l'occasion du cent-cinquantième anniversaire de la publication de son livre qui est à l'origine de l'utilisation des engrais chimiques et des progrès spectaculaires de la production agricole dans le monde.

Les conférences, assez synthétiques, sont programmées pour présenter un tableau aussi actuel que possible des progrès récents de la science des sols et de ses contributions à la perception correcte et au traitement efficace des problèmes mondiaux: érosion, pollution, production d'aliments, cycle de l'eau, protection de la nature, conservation des sols, etc...

Ce congrès de l'AFAS sera coordonné avec le congrès national de l'Association Française pour l'Etude du Sol (AFES) qui aura lieu les jours précédents (19-20-21 novembre 1990).

Adresse: Secrétariat AFES, 4 rue Redon, 78370 Plaisir, France.

Sociedad Cubana de la Ciencia del Suelo

En enero de 1989 se celebró el Primer Congreso de la Sociedad Cubana de la Ciencia del Suelo, con la participación de 300 delegados y presentación de 250 trabajos. Durante el mismo se celebró la Asamblea General de Miembros y fue elegido un nuevo Comité Ejecutivo integrado por:

Presidente	Ing. Abilio Cárdenas García
Vicepresidente	Ing. Rafael Villegas Delgado, CDr.
Vicepresidente	Ing. Victor Paneque, CDr.
Secretario	Ing. Alberto Hernández Jiménez, CDr.
Tesorero	Lic. Arnaldo Rodríguez Pichardo
Relaciones publicas e Internacionales	Ing. Regla Margarita Chang Ravelo
Jefe Comisión Génesis, Clasificación y Cartografía de Suelos	Ing. José Luis Durán Alvarez
Jefe Comisión Erosión y Conservación de Suelos	Ing. Mario Riverol Rosquet, CDr.
Jefe Comisión Biología de Suelos	Ing. Rafael Martínez Viera, CDr.
Jefe Comisión Agroquímica	Ing. Nicolás Medina Basso, CDr.
Jefe Comisión de Suelos	Ing. Antonio Obregón Santoyo, CDr.

El próximo Congreso Cubano de la Ciencia del Suelo se celebrará del 12 al 18 de marzo de 1990 de forma simultánea con el XI Congreso Latinoamericano en el Palacio de las Convenciones, Ciudad de La Habana.

Ing. Rafael Villegas Delgado, Habana, Cuba

Asociación Argentina de la Ciencia del Suelo

The new editorial Board of 'Ciencia del Suelo', the journal of the Argentine Society of Soil Science is as follows:

Editor: Perla A. Imbellone; Co-Editor: José L. Panigatti.

Associate Editors: Section 1 (Physics and Chemistry): Lidia Giuffré and Mabel E. Vázquez; Section 2 (Biology and Biochemistry): Wilma V. Hansen and Carlos G. Delorenzini; Section 3 (Management and Fertilizers): Néstor A. Darwich; Section 4 (Genesis, Classification and Cartography, Mineralogy and Micromorphology): Jorge E. Giménez.

Editorial Address: Calle 3 N° 584, 1900 La Plata, Argentina.

Soil Science Society of America (SSSA)

At the 1989 annual meeting of the Society, jointly with the American Society of Agronomy (ASA) and the Crop Science Society of America (CSSA), the following persons took office:

President: W.R. Gardner, University of California, Berkeley

President-Elect: F.P. Miller, Ohio State University

Past-President: J.J. Mortvedt, National Fertilizer Development Center, TVA, Muscle Shoals

Exec. Vice-President: R.F. Barnes, Madison (continuing)

The following awards were given:

International Soil Science Award: Prof. S.W. Buol, North Carolina State University at Raleigh

Bouyoucos Soil Science Distinguished Career Award: Prof. D. Kirkham, Iowa State University at Ames

Soil Science Applied Research Award: Prof. D.H. Sander, University of Nebraska at Lincoln

Soil Science Distinguished Service Award: Dr. Sterling R. Olsen, USDA-ARS, at Fort Collins

Soil Science Research Award: Prof. W.A. Jury, University of California at Riverside

Soil Science Education Award: Prof. G.E. Van Scoyoc, Purdue University

Emil Truog Award: Dr. K.F. Nieto, University of California at Riverside

The following Fellows of the Society were named: Armand Bauer (USDA-ARS), Dale W. Cole (Univ. of Washington), John E. Foss (Univ. of Tennessee), William K. Griffith (PPI), Woody N. Miley (Univ. of Arkansas), Petrus A.C. Raats (IB, Netherlands), P. Suresh C. Rao (Univ. of Florida), Donald C. Reicosky (USDA-ARS), E. Moyo Rutledge (Univ. of Arkansas), Joseph Shalhevet (Volcani Center, Israel), Alvin J.M. Smucker (Michigan State Univ.), Donald L. Sparks (Univ. of Delaware), Steve J. Thien (Kansas State Univ.), Robert J. Wagenet (Cornell Univ.) and Raymond E. Wildung (Batelle Inc.).

The 1990 annual meeting of ASA-CSSA-SSSA will be held in San Antonio, Texas from 27 October to 1 November. The theme is 'Agronomy and the Environment'.

Address: R.F. Barnes, 677 South Segoe Road, Madison WI 53711, USA.

Soil Science Society of Turkey

The 11th National Soil Science Congress of the Soil Science Society of Turkey was held at the mediterranean coast of the country in Antalya, October 31-November 4, 1989, and was attended by about 400 participants: members of the Society and invited persons from nearly ten countries and international organizations.

On 31 October in the inauguration of the Congress, under the Chairmanship of Prof.Dr. Burhan Kacar, Prof.Dr. Nuri Munsuz, the President of the Soil Science Society of Turkey opened the meeting. In the following, Prof.Dr. Tuncer Karpuzoglu,

President of the Akdeniz University, and the local authorities addressed the Congress. At the same session Tevfik Aksoy and A. Turgut Köseoglu delivered the invitational paper entitled 'Soil and fertilization problems in Antalya region', which was a good introduction to the forthcoming programme and to get acquainted with the region in which the Congress and the professional excursions took place.

In the afternoon of 31 October, as well as in the morning of 2nd November, and in both the morning and afternoon of 3rd November plenary sessions took place, followed by sessions 1 and 2, respectively. The topics of Section 1 were related to soil genetics, soil geography and cartography, soil chemistry, physics and mineralogy as well as soil reclamation and utilization, while the topics of Section 2 were mainly related to the problems of fertilizers, technology of conservation and increasing of soil fertility, as well as soil biology.

Participants from abroad were appointed to deliver the plenary lectures, while in the sections mainly Turkish soil scientists presented their papers. After a firm selection of the submitted papers by the Organizing Committee, more than seventy papers were presented altogether in the plenary and section sessions. So there remained sufficient time for the vivid discussions which often continued at the meals and informal evening meetings. This was facilitated by the fact that all participants were accommodated at the seashore resort of the PTT.

The abstracts of the papers were published and distributed at registration. The Organizing Committee will also publish the Proceedings of the Congress during the next year.

The topics of invited papers covered a wide range of contemporary problems of soil science, including the soil-water conditions (Prof. M. de Boode and Prof. E. Hartmann, Belgium), problems of soil degradation, their methods of prediction and prevention (Prof. I. Szabolcs and Prof. G. Varallyay, Hungary), sophisticated experimental techniques (Prof. E.P. FitzPatrick, UK; Prof. Ph. Couchat and Prof. P. Moutonnet, France). An interesting paper was presented by A. Banin (Israel) on the soils of Mars (??).

The presentations of Turkish soil scientists covered practically the whole field of soil science and agricultural chemistry and they gave a good picture on the recent status of all disciplines in Turkey. There was a great number of papers with excellent quality, which gave important and up-to-date information both theoretically and practically for research and production related to soils in Turkey. Besides well-known senior Turkish soil scientists numerous young colleagues presented remarkable results proving the achievements of their studies.

A half-day mid-Congress and a full-day post-Congress professional excursion was organized demonstrating the dominating soil types of the region (mainly Terra rossa) as well as the achievements of agricultural production with particular regard to irrigation, greenhouse production, horticulture and animal husbandry. The organizers paid attention to demonstrate how much the pedological and agricultural chemical research in their country is related to the problems of national economy. This was exceptionally conspicuous by visiting the progressive farming, as well as impressing hydro-power plants and irrigation systems.

The Soil Science Society of Turkey, which gathers several hundreds of soil scientists in the country who are engaged in teaching, research or working in extension and practice, prepared and conducted the Congress very well. The organizers, led by Prof. Dr. Nuri Munsuz, President of the Society, may be satisfied with its great success. Besides the professional programme, the hospitality and beautiful milieu of the region will also remain a long-lasting memory for all the participants.

I. Szabolcs, Budapest, Hungary

IN MEMORIAM

Joseph-Guillaume Thirion (1921-1989)

Jo Thirion s'en est allé pour son dernier voyage le 4 février 1989. Il était né le 16 octobre 1921, à Bomal-sur-Ourthe (Ardennes belges). De 1938 à 1943 il fit ses études à l'Institut de l'Université Catholique de Louvain, où il obtint les diplômes d'Ingénieur Agronome et des Eaux et Forêts. Il se spécialisa en pédologie chez le Professeur Bayens.

De 1947 à 1960 il travailla au Kivu, province de l'ex Congo Belge, à la prospection pédologique en vue de développement des cultures industrielles des zones d'altitude. Il y devint Directeur du 'Domaine' de la Société 'Comité National du Kivu', gestion agricole et forestière.



En 1961 il fut recruté par la FAO dans le cadre d'un projet du Gouvernement de l'Equateur, relatif à la réforme agraire dans la Sierra. De 1963 à 1972 la FAO le chargea de missions au Liban (Projet d'études en vue de l'irrigation), au Sénégal (Projet d'aménagement hydro-agricole du fleuve Sénégal) et en Bulgarie (Projet d'assistance à l'Institut Poushkarov de la Science du Sol). C'est à Sofia que nous avons connu, admiré, et noué une très grande amitié avec le Professeur Hans Jenny, que nous avons revu à Berkeley en 1984.

De 1972 à 1981 Jo Thirion fut membre d'une équipe pluridisciplinaire chargée de l'inventaire national des problèmes de l'érosion et de l'établissement de schémas d'aménagements anti-érosifs des bassins versants au Maroc. Il était plus particulièrement responsable de l'inventaire des ressources en sols et de la détermination des besoins en conservation.

De 1977 à 1981, il fut le Directeur de Projets spécialement destinés à la lutte contre l'érosion et la conservation des sols au Maroc. Il y participait également à la préparation d'une requête de financement, auprès de la Banque Mondiale, pour l'aménagement du bassin versant de Loukkos dont il assumait la coordination des études.

Vint l'âge de la retraite. Mais il restait disponible pour les missions de consultant. C'est ainsi que, de 1982 à 1987, la FAO le chargea de 13 missions (Tunisie, Iles du Cap Vert, Paraguay, Pakistan, Salvador, Maroc, Chine, Madagascar, Turquie, etc..). Il s'était également attaché, avec un immense dévouement, à une occupation bénévole, en coopération avec les professeurs de Louvain-la-Neuve. Il accueillait, informait et orientait, dans le cadre d'une ONG, les jeunes étudiants volontaires qui désiraient partir dans les Projets du Tiers-Monde.

Ainsi s'est terminée sa vie. Il n'aimait pas briller, ni se mettre en avant. Mais il portait en lui, comme une force tranquille, l'orgueil et la fierté de ses réalisations. Ceux qui travaillaient avec lui le savent bien.

Annie Thirion, 149 Drève de Nivelles, Boîte 36, 1150 Bruxelles, Belgique

Prof.Dr. Milivoje Ciric (1923-1989)

Am 13. Juli 1989 starb Prof.Dr. Milivoje Ciric, ordentlicher Professor für Bodenkunde der Forstlichen Fakultät Sarajevo, Jugoslawien. Milivoje Ciric wurde am 8.12.1923 in Kumanovo-Jugoslawien geboren. Er begann 1945 das Studium der Landwirtschaft an der Universität Belgrad und damit nahm eine glänzende wissenschaftliche Karriere seinen Anfang. Als Student nimmt er an zahlreichen Arbeiten im Bereich der Wissenschaft und Forschung teil und veröffentlicht seine ersten wissenschaftlichen Beiträge. Er war Schüler von Prof. Stebut. 1949 schloß er das Studium an der Landwirtschaftlichen Fakultät ab, 1954 promovierte er an der Universität Belgrad, wo er eine gewisse Zeit als wissenschaftlicher Assistent an der Landwirtschaftlichen Fakultät Zemun/Belgrad für den Bereich Bodenkunde tätig war.

Milivoje Ciric setzte seine wissenschaftliche Laufbahn an der Forstlichen Fakultät Sarajevo fort, seit 1956 als Dozent und später als ordentlicher Professor für Bodenkunde bis zu seiner Versetzung in den Ruhestand im Jahre 1984.

Milivoje Ciric besaß eine große Energie und ein umfangreiches Wissen, das er bei der Erforschung der Böden und Waldökosysteme systematisch einsetzte.

Seine Schaffensbereich war unendlich breit: die Bodengenese und -klassifikation (besonders auf Kalkstein, Dolomit, Peridotit, Gabbro); die regionale Bodenklassifikation Jugoslawiens; die Bodengeographie; die Klassifikation und Nutzung der Waldökosysteme sowie am Ende die Entwicklung und Anwendung der Informationssysteme in der bodenkundlichen Wissenschaft.

Durch diese umfangreichen Arbeiten konnte er auch äußerst erfolgreich mit anderen Kollegen aus den verschiedensten wissenschaftlichen Disziplinen zusammen arbeiten.

Für die bodenkundliche Wissenschaft Jugoslawiens leistete er einen großen Beitrag, und nicht nur das: über die Grenzen hinaus fand er internationale Anerkennung.

Milivoje Ciric war ein ausgezeichnete Pädagoge und unterrichtete viele junge Menschen, indem er ihnen die Liebe zum Boden, zu den Waldökosystemen und zur Natur allgemein beibrachte. Er unterwies junge Wissenschaftler, führte sie bis zur Verleihung akademischer Grade (Spezialist, Magister, Dokortitel) sowohl in ganz Jugoslawien als auch im Ausland.

Er verfaßte eine große Anzahl wissenschaftlicher Arbeiten im In- und Ausland, vor allem leistete er einen wesentlichen Beitrag für die Fach- und Lehrbuchliteratur für Studenten an Universitäten sowie für die praktische Arbeit in der Forst- und Landwirtschaft.

Milivoje Ciric nahm auch sehr aktiv an der Arbeit in der Jugoslawischen Bodenkundlichen Gesellschaft teil, und zwar als ihr Vorsitzender und Vorsitzender einzelner Arbeitsgruppen. Er war Mitglied der Akademie der Wissenschaften Bosniens und der Herzegowina. Seine Mitarbeit in der Internationalen Bodenkundlichen Gesellschaft war von wesentlicher Bedeutung. Er nahm an vielen Kongressen, Symposien und wissenschaftlichen Treffen teil, und in der Periode von 1974-1979 war er Vorsitzender der V. Kommission. Er arbeitete als Experte der FAO-Organisation, wobei er einen bedeutenden Beitrag für die Erforschung und Nutzung der Böden in der Welt leistete. Er war auch Vertreter für Jugoslawien in der Europäischen Wissenschaftlichen Fondation und in der UNEP.

Für seine langjährige fruchtbare Tätigkeit in Wissenschaft und Forschung sowie für seine pädagogische Arbeit erhielt er zahlreiche Anerkennungen und Auszeichnungen im In- und Ausland, unter anderem wurde er Ehrenmitglied der Bodenkundlichen Gesellschaft der UdSSR.

Prof.Dr. Milivoje Ciric, der in der ganzen Welt als Wissenschaftler hoch angesehen war, wurde von uns allen, nicht nur seinen nächsten Mitarbeitern und Freunden, sondern auch von vielen Kollegen und Freunden aus dem Ausland geschätzt und geliebt. Wir werden immer die Erinnerung an ihn bewahren.

Prof.Dr. Ivan Vukorep, Sarajevo, Jugoslawien

H.C.T. Stace (1916-1988)

As well known Australian soil chemist, Charles Stace, died in Adelaide on the 24th December, 1988, in his 72nd year.

Charlie Stace was born in Adelaide and completed his secondary education at Unley High School by becoming Dux of the school. He then worked for a period as a butcher to finance his study of organic and physical chemistry at Adelaide University. After obtaining his bachelor's degree he worked for several years during World War II in a munitions factory. After a short period at the State Department of Chemistry, he joined C.S. Piper's Chemistry Section of the Division of Soils, CSIRO, initially housed at the Waite Agricultural Research Institute, University of Adelaide, but later (1958) in separate accommodation on the Waite campus. He retired in 1976 after about 30 years service.

Charlie's research work was broadly based within a solid pedological framework. He completed a master degree on the 'Terra rossa and rendzina soils of South Australia' in the mid-1950s. When spectrochemical methods were developed, he was an early innovator, initially with the Lundergardh air-acetylene flame technique and later when atomic absorption and laboratory automation appeared, he was an early user for soils research. His approach to laboratory procedures was methodical and he was frequently associated with K.M. Cellier in using statistical approaches for optimizing new techniques. Practical aspects of his work included the design of soil coring tubes (with Andy Palm).

In 1961, he published a compilation of 'The morphological and chemical characteristics of representative profiles of the Great Soil Groups of Australia' as a supplement to C.G. Stephens' 'A manual of Australian soils'. This led to the work for which Charlie was best known. In cooperation with six others, he produced the often quoted Stace et al. 'A handbook of Australian soils' for the 1968 International Soil Congress in Adelaide.

Charlie Stace was a very caring and thoughtful man who put other people first. He has left his mark on soil science, and was admired by those who knew him. He will be greatly missed by his former colleagues and their sympathy and condolences are extended to his family.

from: ASSS 'Soil News 78, May 1989

Edward H. Tyner (1908-1989)

Emeritus Professor of soil fertility Edward Henry Tyner, of the university of Illinois, USA, died on 16 May 1989 in Peoria, IL, at the age of 81. He was entombed in the Mount Hope Mausoleum, near the University of Illinois campus. He is survived by his wife, three daughters, and several grandchildren and great grandchildren.

Dr. Tyner had retired from the University of Illinois in 1975 and continued to live in Champaign until his poor health and that of Mrs. Tyner required them to enter the Lutheran Nursing Home in Peoria.

A graduate of the University of Nebraska with M.S. and Ph.D. degrees from the University of Wisconsin, Dr. Tyner came to Illinois in 1950. He had earlier been with the USDA in North Dakota and had served on the faculties at Nebraska, North Dakota State, and West Virginia Universities. At West Virginia, he became involved in studies on the regeneration of strip-mine spoil, making pioneering contributions decades before the significance of such environmental problems was generally recognized. He was perhaps the first soil scientist to become involved in mine reclamation work.

Dr. Tyner did extensive research in soil chemistry-fertility and plant nutrition and also contributed to the economic interpretation of soil fertility data. Early in his career, he published his critical levels of major nutrient elements in corn leaves, values that

are still considered standard for diagnosis of deficiencies by foliar analysis. He was the first to discover and publish on the efficiency of hexametaphosphate as a soil dispersant. This reagent is used almost universally in mechanical analysis procedures in soil laboratories.

At Illinois, Dr. Tyner taught soil chemistry-fertility courses and served as advisor to graduate students. He was among the first members of the Department of Agronomy of the University of Illinois to become active in international agriculture. He served a long-term assignment in the Philippines on a Cornell University contract in 1958 and 1959 and returned for the Rockefeller Foundation at the International Rice Research Institute while on sabbatical leave in 1962 and 1963. Later he was a consultant for IRRI in Brazil in 1965, and in 1969 was a consultant on the University of Illinois project at Njala University College in Sierra Leone, Africa. He was one of the last western soil scientists to visit Vietnam before the war there and brought back many soil samples. Consequently, he was frequently sought out for information and advice about the soils and soil conditions of Vietnam.

As a result of his service and interest in the Philippines, many students came to the University of Illinois to study for graduate degrees. Several of the resulting theses dealt with the chemistry of sulfur in soils, a subject often associated with serious problems in paddy conditions and in soils developed under marshy conditions from strip-mine spoil. HE and his students made important contributions to the fractionation of soil phosphorus. They showed electron micrographs of micro crystals of apatite inside sand grains and published on the fate and chemical nature of residual phosphate fertilizer in soils.

Dr. and Mrs. Tyner became on-campus sponsors and surrogate parents for many students from the Philippines and other Asian countries.

About 1960, when foreign non-degree students seeking informal training in soils had reached a significant number, Dr. Tyner worked with Earl Terwillinger of USDA to initiate an international soil testing course. This course enabled the department to train many foreign soil technicians in groups in soil testing techniques with greater *efficiency of staff time and more effective curriculum presentation*. He was the leader of the course for many years, arranging the local curriculum and program, and cooperative visits to universities in the south and west in order to give the students an orientation in more diverse soils and conditions than were available in Illinois.

He served as associate editor of the SSSA Proceedings from 1954 to 1958 and was a consulting editor of *Tropical Agriculture* in 1969. He was a Fulbright Fellow at the University of the West Indies in 1964.

from: Agronomy News

Juan A. Bonnet Benítez (1899-1989)

Juan A. Bonnet Benítez, one of the leading experts on tropical soils died 15 March, 1989.

Dr. Bonnet was born in Vieques, Puerto Rico, on 24 June 1899. He attended the Santurce Central High from 1912 to 1916 and the University of Michigan from 1916 to 1920, where he obtained a B.S. in chemical engineering. He earned an M.S. in soil microbiology at Rutgers University in 1930 and his Ph.D. in soil chemistry from University of Wisconsin in 1939.

In 1950 he was named fellow of the ASA. He also received outstanding service awards from SSSA and the Puerto Rico Agriculture Experimental Station in 1964; and the Manuel A. Perez Award from the Puerto Rico Commonwealth in 1966. He was an Emeritus Professor and scientist of the University of Puerto Rico.

Dr. Bonnet published more than 100 scientific articles and two books.

from: Agronomy News

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

Dr. **Hari Eswaran** has been appointed National Leader for the World Soil Resources Section of the Soil Survey Division of the USDA Soil Conservation Service, Washington DC, USA.

Prof. Dr. **Johan Bouma** of Wageningen University, the Netherlands, has been elected to the Royal Dutch Academy of Sciences in Amsterdam.

Prof. Dr. **Hans Jenny** (90!) has been awarded the Berkeley Citation 'in recognition of continued outstanding service to his profession, to the University, and to the people of California'.

Dr. **James D. Rhoades** has been appointed director of the prestigious U.S. Salinity Laboratory at Riverside, California.

Dr. **Keith Norrish** of Glen Osmond, Australia, has been made an Officer in the general division of the Order of Australia.

The **Oficina Nacional de Evaluación de Recursos Naturales** (ONERN) of Lima, Peru, figures among the 'Global 500' honour roll 1988 of UNEP 'for outstanding achievements in protecting and improving the environment'.

(*correction:*) Prof. Dr. **G. Miehl**, Hamburg, wurde zum 1.7.88 auf eine C4-Professur für Bodenkunde an der Universität Hamburg ernannt; Prof. Dr. **J. Richter** an der T. U. Braunschweig.

NOTEWORTHY

A Soil Science Hero, by P. Carey, 1988, 511 p. Oscar & Lucinda, Published by University of Queensland Press.

At last English literature has given Soil Science a hero; and an Australian one at that! In the Booker prizewinning novel, Oscar and Lucinda, Peter Carey introduces us to Abel Leplastrier, the father of the eponymous heroine Lucinda. Carey tells us Abel Leplastrier was 'a soil scientist, but secretly romantic'. Are these two qualities of necessity mutually exclusive?

Carey further describes Abel's peculiar passion: 'He carried paper bags with him at all times. Any bag that came his way was carefully folded and he would not hesitate to beg or borrow from anyone who possessed a bag but did not seem to value it. Lucinda was never embarrassed by this. She never knew that a stage of life where everything her parents did – the way they spoke or combed their hair – was an embarrassment. She was not critical of paper-bag collecting. She knew the bags were to hold her papa's soil samples and that he might at any moment (like this one now, as he jumps down from the buckboard and unfolds the handle of his neat little spade) might use the bag that had hitherto held jelly crystals to contain a scoop of astringent sand, or a pungent, black heavy soil, heavy with humus, or a clay so perfumed it seemed to her senses, anyway, to be as luxuriant as privet. The clay in this cutting was a wonder. You might pass through it like a lesser person, a neighbour called Houlihan, Molloy or Rourke, a person who thought no more about this clay than he thought about Livy or Montaigne, but once you stopped you could contemplate a crimson bright enough for all the robes of paradise, a nankeen yellow that might – her papa joked – be mustard of your plate. This joke led to her eating the soil when they were off again (labouring up *Dyer's hill from which broad plateau they would descend into their own little valley*) expecting she would taste, at last, that hot forbidden substance; she found it only gritty mud which her laughing father wiped off her solemn face with a handkerchief'.

The eccentricity of his pedological persuasion perhaps does not surprise us. Lucinda's attempted pedophagia perhaps does. Abel was an amateur in the true sense of the word.

Mr. Carey makes me realise that the standardisation of soil colour names, e.g., nankeen yellow might be coded as 10Y3/3, has its cost in popular appeal. We are also reminded that smell or taste are no longer considered useful senses for the description of soil. Alas, sensuous soil description has seen its demise.

This is a deftly sewn tapestry of a book. It's a pity our pedohero was killed off by a horse on page 82. Let's hope that Mr. Carey can be persuaded to write more about A.L. for we are told too little about him.

Perhaps there are other pedological heroes in literature. Sadly, if they exist, I'm ignorant of them. I should be glad of enlightenment.

Alex McBratney, University of Sydney
from: ASSS Soil News N^o79

RESEARCH NEEDS AND ISSUES IN SOIL SCIENCE

The Soil Science Society of America committed one of its members, Dr. Fred Miller, to prepare a list of seven to ten research priorities. Though it is meant in first instance for the USA situation, the listing may also be of use for soil research planning groups in other countries and for international entities on soil research and management. Therefore the full text is reproduced in this bulletin, by kind permission of SSSA:

Research Needs:

Protect and sustain soil productivity and soil ecosystem

- Characterize, classify, and determine genesis of soil resource base.
- Characterize and quantify the biological, chemical, physical, and mineralogical systems in the upper vadose zone.
- Characterize tillage systems with respect to surface runoff, groundwater quality, soil and crop production sustainability, and environmental compatibility.
- Enhance soil-water management strategies.
- Control erosion and sedimentation through improved technologies and strategies.
- Maintain/enhance structural stability.
- Maintain/enhance and manage organic matter.
- Maintain/enhance soil fertility and plant nutrient availability and a sustainable soil-plant nutrient regimen.
- Maintain/enhance soil faunal activity and diversity.
- Prevent/manage compaction.
- Enhance productivity and management of range and forest lands.
- Develop better soil erosion prediction models/methods.

Within the crop production trinity (i.e. soil, water, climate), soil is often the natural resource most vulnerable to deterioration by humankind. While plant production can be accommodated in the absence (e.g., hydroponics) of soil, the thermodynamics of such systems are negative and depend upon energy-intensive investments. Thus, the soil resource appears to be critical to the sustenance of humankind well into the future. The aforementioned research categories include both basic and adaptive research components. The expected results of this research are a better understanding of the soil resource and ultimately its management and value in relation to competing land uses and environmental compatibility.

Soil water behaviour and management

- Characterize and quantify micropore and macropore transport.
- Determine moisture dissipation character of soils and relationship to meteorology.
- Manage soil moisture, including improved management practices for controlling the build-up of salts and toxic trace elements in drainage waters.
- Enhance water use efficiency.
- Characterize and quantify soil water and plant use relationships.
- Determine thermal-induced transport processes.

Recent observations and research with no-tillage and reduced tillage systems has raised the question of macropore water and solute transport in relation to the traditional theory of soil hydrology under saturated and unsaturated conditions. Can the moisture regimen of soils be characterized to reflect meteorological conditions? Are the soil moisture parameters used in the Palmer Index adequate or reflective of meteorological characteristics outside of drought conditions? Can soil moisture be predicted from meteorological, cropping systems data as in the case of soil temperature gradients and by remote sensing? What are the strategies for adapting agriculture to reduced

water supplies and/or higher temperatures that may result from greenhouse effect warming trends? Characterization and predictive models are necessary with respect to plant root zone water use. Soil moisture gradients with depth need to be correlated with plant root uptake potential and plant physiology limitations/mechanisms. Can soil scientists, breeders, and molecular geneticists/biologists advance the capability of crops to use more of the soil moisture available within or beyond the current rooting depth?

Protect and enhance water quality

- Prevent surface water and groundwater pollution through development of improved soil and crop management systems, including nutrient management, pesticide management, waste and residue management, erosion control, and other best management practices.
- Determine attenuation mechanisms, capacities, and models of soils for xenobiotics, nutrients, and by-product (waste) use.
- Develop vulnerability or potential use ratings of soils for production/waste inputs.
- Determine risks associated with loadings and concentrations of production/waste inputs.
- Assess processes, mechanisms, type, and rate of soil degradation in relation to management systems.

Soils vary in their production potential as well as their capacity to sorb, transport, and attenuate production and waste inputs. Research must be done on the mechanisms of solute transport and attenuation in order to model and manage soil systems with respect to their capacity to accommodate production inputs and soil manipulation with respect to surface and ground water contamination. Toxicological research must determine the concentrations that are health-threatening to humans and fauna and flora. A soil may have the capacity to attenuate all but a few parts per billion of a given compound, but what risk does this concentration pose? The answer to this question will determine whether the resource is used and managed or eliminated/banned.

Incorporate soil science into systems research

- Determine soil influence and management response under cropping systems.
- Determine energy investment/return with respect to soil unit and cropping system.
- Determine rhizosphere influence and management – bridging mineralogy, physical chemistry, and microbiology.
- Determine production resource alternatives and levels for various cropping systems that are economically sustainable and environmentally compatible.

For a variety of reasons, soil and plant science research have taken a reductionist course over the past decades rather than a systems approach. Today's questions and research needs demand systematic experimentation. Experimental designs in crop production and other soil uses must be more interdisciplinary. Can the soil scientist contribute to, or learn from, the plant breeder, rhizosphere scientist, agricultural engineer, hydrologist, etc., in the interpretation of data and management of soil as a medium for crop production and other uses?

Predicting and modelling soil use systems

- Determine crop yield potential vs. resource inputs and their response.
- Characterize and quantify loading rates (manures, sludges, waste by-products, etc.) and solute concentration yield.
- Develop GIS and artificial intelligence systems.

- Develop and evaluate BMPs for addressing potential losses of production resources.
- Determine the carrying capacity of soils in regions of high population pressure.
- Review and enhance protocols for assessing competitive uses of land for both land use planning and mitigating conflicts. These protocols should include soil mechanics and low load bearing capabilities of soils.

Soil characterization data and production resource input calibration-response data must be translated into usable indexes and prediction models for both agricultural and nonagricultural uses. The soil must be viewed as a natural medium for plant growth as well as a receptacle for waste recycling and attenuation, load-bearing, and a variety of other uses. Soil as a component of land must be assessed with respect to its suitability (e.g., capacity, stability, energy requirement, ecosystem alteration, sustainability, etc.) for various uses and the trade-offs or risk/benefit analysis for such uses. In the future, resource investments for plant production will occur most likely on a prescription basis as economics and environmental/health regulations dictate. Thus, precise soil data-characterization and production resource calibration-response data will be necessary to apply these resources and resource substitutes on a soil need-cost effective basis rather than a spatial (e.g., field or farm) basis.

Global-international issues/concerns

- Mitigate the greenhouse effect through carbon (organic matter) maintenance/enhancement in soil with tillage options and other management systems.
- Develop characterization programs and response models for soils when sensitive ecosystems (e.g., tropical rain forests, semi-arid savannas, etc.) are disturbed, cleared, or altered.
- Determine carrying capacity and sustainable management options for major ecosystem units.
- Develop management schemes/options for soil-plant ecosystems under changing climates and their response to such change (e.g., inundation via sea level rise).
- Enhance input of soil science into global models on production potential, sustainability, and land adequacy-quality.

Soil science must play a role in determining the agenda for research on global natural resource issues and contribute to the research protocols of our major, life-supporting ecosystems, including both agricultural and natural ecosystems. The major global ecosystem responses to acid rain, increased greenhouse gases and atmospheric toxification, ground-level ozone, increased salinity, decreasing soil fertility, desertification, regional soil erosion, and potential climate changes (growing season alteration, sea level rise, etc.) all have a potential impact on, or response from, the soil resource. Policy options must be considered for (i) protecting favourable soil ecosystems for agricultural production where high-input agriculture may relieve the pressure on marginal ecosystems that are being ruined under low-input agriculture in many developing regions, (ii) assessing coastal and alluvial soils that may be worth protecting (via dikes, etc.) against rising sea levels, and (iii) developing soil management options that contribute to both a sustainable agriculture and global environmental health such as the restoration of organic matter (carbon) and the coincident scrubbing of much carbon from the atmosphere, thereby reducing the greenhouse effect.

Issues

Develop soil science recognition and contribute to a comprehensive, unified national agricultural agenda

- Develop public recognition of soil as an important natural resource.
- Develop scientific community recognition of soil science as an area of science worthy of support, eg., through NSF.
- Develop a comprehensive research agenda for soil science as well as an agenda contributing to the broader agricultural research agenda.

Soil science has been practised too long in virtual obscurity from the public and much of the scientific community. If we are to take our rightful place within the scientific community and be recognized by the various publics demanding a safe, sustainable agriculture, better land use, and improved environmental quality, we must strengthen our visibility and cultivate our stature among these publics and the scientific community. As Congressman G.E. Brown (Rep.-CA) has stated before our own societies, it is difficult to allocate federal research dollars to diverse agricultural requests when other science disciplines have outlined major, goal-oriented research targets and agendas. The general public is aroused by such issues as food safety, farm worker protection, and the environmental impact of agricultural production. Agriculture is perceived not to have a unified and convincing message that the goal of federally funded agricultural research is to help the society that pays for it (Brown, G.E., *J.Prod.Agric.*2:98-102, 1989). We as soil scientists have our work cut out for us, convincing the various publics of the importance of our soil resources and their vulnerability to abuse without being alarmists, convincing the scientific community of the worthiness of funding soil science research, and contributing to a unified and comprehensive agenda of agricultural research that is understood and accepted by the public and Congress.

Develop and maintain scientific knowledge and expertise

- Attract and retain quality students and scientists in soil science.
- Assess and improve curricula where appropriate.
- Develop and improve facilities, instrumentation, and field and other practical experiences.
- Assess and publicize career opportunities.
- Incorporate earth sciences into high school curricula.
- Develop soil-geotechnical service courses for high school science teachers and the relationship of soil science concepts to various land use impacts on environmental quality.

Unless we attract the very best students into soil science, especially those with a sound science background, this discipline is destined to languish behind other disciplines and be relegated to the status of mediocrity. The history of soil science is replete with examples of scientists from geology, chemistry, physics, etc., who advanced soil science by major increments. Internship experiences need to be cultivated to expose students to the field aspect of soil science as well as its applications and interpretations.

from: Agronomy News, Sept. 1989

**INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE VERBINDUNGEN**

FAO/IAEA (International Atomic Energy Agency)

The joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture is organizing an International Symposium on the Use of Stable Isotopes in Plant Nutrition, Soil Fertility and Environmental Studies at Vienna, Austria, from 1-5 October 1990.

The use of stable isotopes in plant nutrition, soil fertility, ecological and environmental studies has increased considerably over the past decade. Stable isotopes have advantages in that they usually occur naturally, e.g., ^{15}N , ^{13}C , ^{18}O , ^{34}S and changes in their distribution in soils and plants and in their natural abundance can give important information on the functioning of ecosystems, organic matter dynamics, and on important processes such as the efficiency of water use by plants. The experimental use of isotopes such as ^{15}N and ^{13}C has been useful in applications such as measurement (and management) of nitrogen fixation, in following biochemical pathways, in assessing fertilizer use efficiency, uptake of nutrients and their physiological function in plant, and in dynamics of nutrients in soil, including loss by leaching. As well as mass spectrometry and emission spectrometry, techniques such as nuclear magnetic resonance (NMR) and gas chromatography, mass spectrometry (GC-MS) and the automated $^{15}\text{N}/^{14}\text{N}$ analyzer mass spectrometer (ANCA-MS) are playing an increasing role in soil/plant nutrition research, being often the only direct and most reliable methods available. For example, the ANCA-MS may be adapted to work with each of the 14 essential elements in plants which exist as stable isotopes.

The objective of the symposium is to evaluate progress in the use of stable isotopes in various aspects of soil fertility/plant nutrition (including aquatic environments) and in environmental problems, the potential and limitations of existing methods and possibilities for further development.

List of topics:

- (i) New methodologies and approaches in stable isotope analysis.
- (ii) Evaluation of methods for measuring biological nitrogen fixation (BNF) using ^{15}N fertilizer addition.
- (iii) The ^{15}N natural abundance method for measuring BNF-practicalities and possibilities.
- (iv) Special applications in ^{15}N methods on BNF.
- (v) Stable isotopes in soil organic matter studies.
- (vi) N transformations in soil.
- (vii) Ground water pollution by nitrogen.
- (viii) Plant nutrient uptake and use.
- (ix) Plant metabolism (including plant/microbial systems).
- (x) Carbon flow in aquatic ecosystems.
- (xi) $^{13}\text{C}/^{12}\text{C}$ as a measure of water-use efficiency.
- (xii) ^{13}C studies related to the efficiency of N fixing systems, and C balance in plants and ecosystem.
- (xiii) H_2^{18}O transport studies in soil and plant.
- (xiv) Sulphur flows and transformation.
- (xv) Stable isotopes in atmospheric phases.
- (xvi) The use of stable S and N isotopes in the study of plant responses to air pollution.
- (xvii) Studies with other stable isotopes.

Participation: All persons wishing to participate in the meeting are requested to complete a Participation Form and send it as soon as possible to the competent official authority (Ministry of Agriculture, Foreign Affairs, National FAO Committee or National Atomic Energy Authority) for subsequent transmission to the Joint Secretariat. A participant will be accepted only if the Participation Form is transmitted through the government of a Member State of the sponsoring Organizations or by an organization invited to participate.

Expenditures and Grants: As a general rule, the sponsoring Organizations do not pay the cost of attendance, i.e. travel and living expenses of participants. However, limited funds are available to help meet the cost of attendance of selected specialists mainly from developing countries with low economic resources. Generally, not more than one grant will be awarded to any one country.

If governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the Director General of the International Atomic Energy Agency to this effect.

Secretariat: The Scientific Secretary of the symposium is Mr. G.D. Bowen of the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

Address of the Joint Secretariat: International Atomic Energy Agency, IAEA-SM-313, Vienna International Centre, P.O. Box 100, A-1400 Vienna, Austria. Tel:43-1-2360-1648; Telex: 1-12645; Telefax: 43-1234564; Cable: Inatom vienna.

TSBF

The Tropical Soil Biology and Fertility Programme of IUBS/Unesco should be of interest to many ISSS members (see previous Bulletins).

Major events and developments for TSBF started with decisions being made at, and implemented following, TSBF IV, held in Harare in June 1988. The proceedings from this meeting are being produced by IUBS in the normal way, this time as Special Issue n°20 in *Biology International*. Concurrent with TSBF IV was the launching workshop for the TSBF African network of research sites (Afnet). The development and consolidation of Afnet was seen as a priority for the Programme this last year or so, and consequently this has received much attention.

The TSBF Board of Management was inaugurated in March 1989. This puts TSBF on a more formal footing, and various aspects of coordinating the expanding Programme are improved. With the inauguration of the Board came the creation of the posts of TSBF Chairman and Director. Dr. Pedro Sanchez and Prof. Mike Swift were elected to these two positions respectively.

The TSBF Headquarters moved from the University of Zimbabwe to the Unesco Regional Office for Science and technology in Africa in Nairobi. The address etc. for the new office are given below. The main reason for the move was to improve communications, especially within Africa, and to better liaise with the many organizations based in Nairobi.

TSBF studies are still being conducted at the original ten Programme Centres. This year has seen the addition of a Programme Centre at Manaus, Brazil, and discussions are underway for further Programme Centres at the International Rice Research Institute, Los Baos, the Philippines, at the University of Costa Rica, and at Carimagua, Colombia. Research at Programme Centres generally continues to be in-depth studies of one or more of the TSBF Principles: *Synchrony, Soil Organic Matter, Soil Water, Soil Fauna* and the *Integration of Biological Processes*.

The TSBF Handbook of Methods was finally published earlier this year. The intention is that participants in TSBF should adhere to the describe methods as far as possible, in order to facilitate data exchange and interpretation. Copies are made available to all formal TSBF participants free of charge. Others wishing to obtain copies are kindly requested to order them directly from the publishers. The reference is given in this Bulletin (New Publications). Several members of ISSS cooperated in the compilation of the Handbook, and the methods proposed have therefore been endorsed by the Society. ISSS also contributed financially to the publication of the Handbook.

The full membership of the TSBF Board of Management now comprises: Dr. P.A. Sanchez, USA (Chairman); Prof. M.J. Swift, Nigeria (Director); Dr. J.M. Anderson, UK; Dr. E. Cuevas, Venezuela; Dr. M. Hadley, Unesco; Dr. A.T. Halm, Ghana; Dr. O.W. Heal, UK; Prof. P. Lavelle, France; Dr. F.N. Muchena, Kenya; Prof. M.P. Salema, Tanzania; Prof. Dr. H.W. Scharpenseel, F.R.G. (for ISSS liaison) and Dr. T. Younes, France (ex officio). The Board of Management will be the policy decision making and implementation committee of TSBF, replacing the former Steering Committee. The Director will take responsibility for all activities other than those of the TSBF Afnet, which fall to the Afnet Coordinator.

Address for TSBF correspondence: John Ingram, TSBF Programme Coordinator, c/o Unesco ROSTA, P.O. Box 30592, Nairobi, Kenya.

from: TSBF News Report, October 1989

CORNELL UNIVERSITY

The Mann Library of the College of Agriculture and Life Sciences at Cornell University has received a \$ 550,000 grant from the Rockefeller Foundation to identify the core literature of the agricultural sciences that is appropriate for education and research in Third World countries. Mann has been identifying the core literature of agricultural economics and rural sociology for 18 months. The four-year Rockefeller grant will enable concentration on Third World needs and extension into other subject disciplines.

The core literature will be determined by citation analysis and other bibliometric techniques, and be qualitatively reviewed by specialists in eight subject disciplines. The work will be published in eight volumes: Agricultural Economics and Rural Sociology, Agricultural Engineering, Plant Sciences-Basic, Plant Sciences-Applied, Animal Science, Economic Entomology, Forestry and Silviculture, and Soil Sciences.

Reviewer scholars will be sought who have a thorough knowledge of the literature and are interested in assisting Third World students, researchers and institutions. They will be from the Third World as well as industrialized countries.

An International Advisory Board is being established with Third World librarians and scientists. Beginning with Engineering, each volume will have a steering committee. The project will work closely with the professional societies in the U.S. for each of the subjects to be studied. Organizations or individuals with interest in this project should contact the project officer in the Mann Library, or Mann Director Jan Olsen, Cornell University, Dept. of Agronomy, 1018 Bradfield Hall, Ithaca NY 14853, USA.

EUROPEAN SOCIETY OF AGRONOMY

Initiatives have been taken to come to the establishment of a new European Society, bringing together agronomists from all over Europe, to stimulate the further integration of knowledge on crop physiology, ecophysiology, plant-soil relationships, crop production, crop management, cropping systems, crop growth modelling, farming systems and related subjects. The aim is to cover these fields taking into account the existing scientific organizations in related fields.

Currently scientists from Belgium, France, West Germany, Italy, Netherlands, Portugal, Spain, and United Kingdom are involved in the preparations. Further contacts are made with other countries, also in Eastern Europe.

The start of a Society Journal (new of modified from existing journals) is considered. *Information:* Alan Scaife, Institute of Horticultural Research, Soil Science and Plant Nutrition, Wellesbourne, Warwick CV35 9EF, United Kingdom; *or:* Siebe van de Geijn, Centre for Agrobiological Research, P.O. Box 14, 6700 AA Wageningen, the Netherlands.

DEVisING A RAtIONAl LAnd USE POLICY FOR EUROPE

Last summer, European ministers responsible for regional planning established principles for a new policy on land use, reflecting the requirements for ecologically balanced development as well as the urgent need for soil protection. The delegates, meeting at the 1988 Ministerial Conference on Regional Planning in Lausanne, Switzerland, came from the 21 member states of the Council of Europe (and Finland and Yugoslavia).

The rational use of land, as both the basis and limiting factor of development, was the theme of the conference. With this in mind, the ministers set out to develop ways and means for promoting and implementing a policy of judicious, restrained land use. They formulated an approach to land use that includes environmental impact studies, and the use of cartography, remote sensing, financial and tax considerations, and compensatory measures.

Cooperation between public authorities and the private sector, increased information for and participation by the public, and the formulation of rural development policy were seen as other measures to strengthen this approach to land use.

The next conference, on the theme *Mechanisms for achieving rational use of land* is scheduled for 1991 in Turkey.

For more information, contact the Information Department, Council of Europe, 67006 Strasbourg Cedex, France.

from: Sustainable Development, vol.10, n°2, August 1989

SOIL CONSERVATION IN AUSTRALIA 1938-1988

Only 150 years after European farming techniques were introduced into Australia widespread deterioration of the soil resources, compounded by drought and dust storms, prompted the establishment of the Soil Conservation Service of New South Wales in 1938. The growth and development, research and achievements of the New South Wales Soil Conservation Service from 1938 to 1988 is traced in a magnificently illustrated Jubilee Edition of the Journal of Soil Conservation NSW (vol.44, n°1, 64pp, 1988). The SCS of NSW employs 236 professional soil conservationists for its manifold activities in land rehabilitation and now also provides overseas consultancies (65 projects in about ten countries during the last fiscal year).

The Jubilee number recounts the history and changing attitudes toward land degradation in the Australian environment. Increasingly the stress is on prevention rather than cure. Sustainable programs of soil, water and vegetation conservation management are now addressed on the catchment level. At the same time the Jubilee number heralds the closing of the NSW Journal of Soil Conservation (44 volumes), its role being taken over by the recently formed Soil and Water Conservation Association of Australia, producing a country-wide Australian Journal of Soil and Water Conservation (vol.1, 1988).

D.H. Yaalon, Jerusalem, Israel

INTERNATIONAL FOUNDATION FOR SCIENCE: supporting Third World scientists in applied fields.

The International Foundation for Science (IFS) was founded as a nongovernmental organisation in Stockholm in 1972. Members are 83 academies and research councils in 70 countries, of which two thirds are developing countries and one third are industrial countries. The Foundation's secretariat is located in Stockholm.

The Foundation supports young scientists from developing countries who have successfully finished their studies in an industrial country or a reputable scientific institution in a developing country, and who are ready to start their independent research work. The young researcher must be attached to a local institution or university so that his salary and scientific research facilities are provided for.

The IFS makes grants of up to US\$ 12,000 a year per applicant. These grants can be renewed three more times, so that the individual scientist can be supported for a maximum time of four years. Between 1974 and June 1988, grants were awarded to 1,353 researchers in 88 countries in Asia, Africa and Latin America.

These grants enable the researcher to purchase equipment, literature, and expendable supplies. The Foundation's purchasing department assists grantees in buying scientific equipment.

The IFS organizes regional workshops and training courses for its grantees. Experienced senior scientists from industrial and developing countries are also invited to attend these scientific gatherings, thereby giving grantees an opportunity to discuss and acquaint themselves with up-to-date techniques in their own field.

Supplementary travel grants are awarded in order that grantees may attend scientific congresses or workshops and present the results of their own work.

When starting work in 1974, the Foundation decided to limit support for the time being to the field of applied biology. Scientific areas in which young scientists can apply for support are the following:

Aquaculture: Research in aquaculture includes selection of sites, design and construction of aquaculture facilities; breeding, rearing and disease control of cultivable organisms in monoculture, polyculture or other farming systems; and relevant aspects of aquatic biology, nutrition, and ecology.

Animal production: Research in animal production includes breeding reproduction, and nutrition; health and diseases; the development, production, and conservation of feed; and animal production systems.

Crop Science: The IFS supports research on production of agricultural and horticultural crops and fruit trees; crop management including soil, water, fertilizer studies; plant-microorganism relationships, i.e. mycorrhiza and nitrogen fixation; disease, pest and weed control; cultivar improvement by breeding; farming systems.

Forestry: Research in forestry and agroforestry includes tree production, forest management and agroforestry systems; disease and pest control; soil studies; tree-microorganism relationships, i.e. mycorrhiza and nitrogen fixation; forest products in general.

Food Science: Aspects of research include food technology and processing, fermentation and microbiology; storage and packaging; nutrition, composition, contamination, and toxicology.

Natural Products: Identification, isolation, characterization, and preparation of organic compounds to produce medicinal, biological, and industrial products. Included in this area is research on the development of traditional medicines: ethnobotanic studies, chemical and pharmacological investigations, and clinical testing.

Rural Technology: Research-oriented technology associated with the IFS priority areas is supported, including the development of locally available materials for use in construction and the development and use of non-fossil fuel.

Each application for support submitted to the IFS is classed in the respective area and evaluated by an international group of senior scientists. Grant decisions are the responsibility of the Foundation's Executive Committee meeting twice a year, in May and in December. For more information, contact: *IFS, Grev Turegatan 19, S-114 38 Stockholm, Sweden.*

CENTER FOR FIELD RESEARCH GRANTS

The Center for Field Research, a program sponsored by the nonprofit organization Earthwatch, is launching an initiative to develop a coherent program of physical and ecological science research.

In 1990 Earthwatch will award grants of \$ 10,000 to \$ 100,000 with funds primarily derived from the contributions of participating volunteers selected from Earthwatch membership. Non-specialist volunteers must be integrated effectively into the research design.

The research supported spans many of the physical and biological sciences, and proposals are considered from scholars of any nationality for any geographical region. Projects have been funded in botany, ichthyology, herpetology, ornithology, terrestrial and marine mammalogy, primatology, conservation biology, population biology, animal behaviour, sociobiology, entomology, and terrestrial and marine ecology.

Preliminary proposals (reviewed monthly) may be made by telephone or detailed letter to The Center. Upon favourable review, full proposals will be invited for submission 12 months before the proposed project fielding date. Full proposals will be peer-reviewed, and awards are announced quarterly.

Contact: David S. Silverberg, Associate Director, Physical & Ecological Sciences, The Center for Field Research, 680 Mount Auburn Street, P.O. Box 403, Watertown MA 02272, USA.

from: LTER Network News N°6, 1989

ACAL

Programa TWAS/ACAL Fondos de Viaje para Investigadores y Estudiantes Avanzados de América Latina.

La Academia de Ciencias de América Latina (ACAL), organismo no gubernamental dedicado a promover el desarrollo científico en los países de América Latina, ofrece conjuntamente con la Academia de Ciencias del Tercer Mundo (TWAS), un programa de seis (6) fondos de viaje para investigadores y estudiantes avanzados de América Latina. El fondo debe ser solicitado para apoyar la participación del candidato en un taller de trabajo, curso avanzado de corta duración o pasantía de investigación de cuatro o más semanas en un laboratorio, preferiblemente de un país de América Latina distinto al de su residencia. Cada fondo tiene un monto máximo de ochocientos dólares (\$ 800.00) y deberá ser utilizado principalmente para cubrir los gastos de transporte del beneficiario.

Requisitos: (i) Carta de solicitud explicando la naturaleza, duración e importancia para el candidato de la actividad en que desee participar; (ii) Curriculum vitae; (iii) Copia de la solicitud o invitación para participar en el taller de trabajo, curso avanzado o pasantía de investigación; (iv) Carta de apoyo del tutor cuando se trate de un estudiante; (v) Enviar un informe al finalizar la actividad.

Enviar la solicitud a: Academia de Ciencias de América Latina (ACAL), a/c Instituto Internacional de Estudios Avanzados (IDEA), Apartado 17606, Caracas 1015-A, Venezuela. Fax: (582)9621603.

**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 Boletín No.75).*

1990

***International Meeting on 'Global Soil Dynamics in a Changing Environment'**, Nairobi, Kenya, February 12-16, 1990. UNEP; co-sponsoring by ISSS Committee on International Programmes).

Information: Prof. Dr. H. Scharpenseel, Chairman ISSS-CIP, Institut für Bodenkunde, Allende-Platz 2, 2000 Hamburg 13, F.R. of Germany; *or:* Dr. A. Ayoub, Environmental Management, UNEP, P.O. Box 30552, Nairobi, Kenya

Biotic Interactions and Soil Borne Diseases, Wageningen, the Netherlands, February 26-March 2, 1990.

Information: Dr. A. Tempo, Secretary of the Organizing Committee, P.O.Box 31, 6700 AA Wageningen, the Netherlands.

International Symposium on Land Drainage for Salinity Control in Arid and Semi-arid Regions, Cairo, Egypt, 26 February – 3 March, 1990

Information: Drainage Research Institute (DRI), Irrigation Bldg., 13 Giza Street, El Giza, Cairo, Egypt. telex: 94014 exwap un; *or:* ILRI, P.O.Box 45, 6700 AA Wageningen, the Netherlands. telex: 75230 visi nl.

International Meeting on Quantative Theory in Soil Productivity and Environmental Pollution, London, UK, March 7-8, 1990.

Information: Miss Christine Johnson, Scientific Meetings Secretary, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, England.

***XI Congreso Latinoamericano y II Congreso Cubano de la Ciencia del Suelo**, 11-17 de marzo, 1990, Ciudad Habana, Cuba.

Información: Sociedad Cubana de la Ciencia del Suelo, Finca Tres Margaritas, Km8-1, Carretera de Vento, Capdevila, Ap. Postal 8022, Ciudad de la Habana 10800, Cuba.

Chapman Conference on Global Biomass Burning: Atmospheric, Climate, and Biospheric Implications, Williamsburg, Virginia, March 19-23, 1990.

Information: J.S. Levine, Atmospheric Sciences Division, NASA Langley Research Center, Hampton VA 23665-5225, USA.

23rd International Symposium on Remote Sensing of Environment, Bangkok, Thailand, April 18-25, 1990.

Information: Environmental Research Institute of Michigan, P.O. Box 8616, Ann Arbor, MI 48107-8618, USA.

International Symposium on Regionalization in Hydrology (IAHS), Ljubljana, Yugoslavia, April 23-26, 1990.

Information: Prof. M. Brilly, Fac. of Architecture, Hydraulics Dept. Hajdrihova 28, 61000 Ljubljana, Yugoslavia.

International Conference on Metals in Soils, Waters, Plants and Animals, Orlando, Florida, April 30-May 3, 1990.

Information: Dr. D.C. Adriano, Savannah River Ecology Lab, Drawer E, Aiken SC 29802, U.S.A.

International Conference on Ground Penetrating Radar, May 14-18, 1990.

Information: Gary R. Olhoeft, USGS, P.O. Box 25046 DFC MS964, Denver CO 80225-0046, USA.

International Congress on Nitrogen Fixation, Knoxville, Tennessee, USA, May 20-26, 1990.

Information: R.F. Barnes, 677 South Segoe Road, Madison WI 53711, USA.

8th World Congress of the International Association of Agricultural Librarians and Documentalists (IAALD), Budapest, Hungary, May 28-31, 1990.

Information: IAALD VIII. Congress, Organizing Committee, AGROINFORM, Ms Virág Sipos, Pf. 15, H-1253 Budapest, Hungary; *or:* Mr. J. Van der Burg, Secretary IAALD, c/o Pudoc, Jan Kopshuis, P.O. Box 4, 6700 AA Wageningen, the Netherlands.

4th International Conference on Geotextiles, Geomembranes and Related Products, the Hague, the Netherlands, May 28 – June 1, 1990.

Information: G. den Hoedt, Holland Organizing Centre, Lange Voorhout 16, 2514 EE The Hague, the Netherlands.

***International Symposium on 'Human and Animal Health in Relation to Circulation Processes of Selenium and Cadmium**, Oslo, Norway, May 31-June 1, 1990. (Norwegian Academy of Science and Letters, and ISSS Working Group on Soils and Geomedicine).

Information: Prof. J. Låg, Norwegian Academy of Science and Letters, Drammensv. 78, 0271 Oslo 2, Norway.

International Symposium on Research Needs and Applications to Reduce Erosion and Sedimentation in Tropic Steplands (IAHS/IUFRO), Suva, Fiji, June 11-15, 1990.

Information: Prof. D.E. Walling, Dept. of Geography, University of Exeter, Amory Building, Rennes Drive, Exeter EX4 4RY, England.

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

Information: Ivan Johnson, Symposium Chairman, 7474 Upham Court, Arvada CO 90003, USA.

2nd International Symposium on Plant-Soil Interactions at low pH, Beckley, West Virginia, USA, June 24-29, 1990.

Information: Dr. Paul Murrmann, Conference Chairman, USDA-ARS, Appalachian Soil & Water Conservation Research Laboratory, P.O.Box 1061, Beckley, West Virginia 25802-1061, USA.

International Symposium on Primary Data Acquisition for the Amazonian Region: How Can Remote Sensing Contribute? (INPE/ISPRS Commission I), Manaus, Brazil, June 24-29, 1990.

Information: INPE-DDS, Manaus/1990, Caixa Postal 01, 12630 Cachoeira Paulista, SP, Brazil.

International Symposium on Climatic Risk in Crop Production, July 1990, Brisbane, Australia.

Information: Mr. Vic. Catchpole, Symposium Secretary, CSIRO Division of Tropical Crops & Pastures, Cunningham Laboratory, 306 Carmody Road, St. Lucia, Qld 4067, Australia.

National Congress of the Soil Science Society of South Africa, July 10-12, 1990, Pretoria, South Africa.

Information: Soil Science Society of South Africa, P.O.Box 30030, Sunnyside 0132, South Africa.

12th International ICSU-CODATA Conference 'Data for Discovery', Columbus, Ohio, USA, July 15-19, 1990.

Information: 12th International CODATA Conference, Applied Information Technologies Institute, 1880 Mackenzie Drive, Suite 111, Columbus, OH 43220, U.S.A.

Conference on Irrigation Research and Development in the 1990s, Lethbridge, Alberta, Canada, July 17-20, 1990.

Information: Conference Coordinator IRDC-90, Water Resources Institute, University of Lethbridge, Lethbridge, Alberta Canada T1K 3M4.

***1st International Symposium on Forest Soils** (a satellite meeting of the 14th International Congress of Soil Science), Harbin, China, July 22-27, 1990.

Information: 1st ISFS Organizing Committee, Box 317, Northeast Forestry University, Harbin 150040, China.

4th International Symposium on Spatial Data Handling, Zurich, Switzerland, July 23-27, 1990.

Information: Symposium Secretariat, Geographisches Institut, Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland

3rd International Desert Development Conference: Desert Development: Balancing Economic and Ecological Constraints, July 23-28, 1990, Beijing, People's Republic of China

Information: Prof. Zhu Zhenda, Institute of Desert Research, Academia Sinica, 174 Donggang West Road, Lanzhou, Gansu, China; *or:* IDDC Conference Coordinator, International Center for Arid and Semi-arid Land Studies, P.O. Box 4620, Texas Tech University, Lubbock, TX 79409-1036, U.S.A.

10th Congress of the International Union of Pure and Applied Biochemistry (IUPAB), India, August 1990.

Information: J. Tigyí, Secretary IUPAB, Institute of Biophysics, Medical University, Szigeti út 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, Chikusa, Nagoy 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 5-11, 1990.

Information: IUFRO Secretariat, 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 Calibration and Reliability in Groundwater Modelling, September 3-6, 1990.

Information: Conference Secretariat ModelCARE 90, c/o KIVI, P.O.Box 30424, 2500 GK The Hague, the Netherlands.

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.

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.

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.

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, Postfach 1139, 4000 Düsseldorf 1, F.R.G.

Annual meeting of the Soil Science Society of America: 'Agronomy and Environment', San Antonio, Texas, USA, October -November 1, 1990.

Information: R.F. Barnes, 677 South Segoe Road, Madison WI 53711, USA.

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.

General Assembly of the International Cartographic Association, Borunemouth, England, December 1990.

Information: Mr. D.T. Pearce, 24 Strickland Road, Mr. Pleasant WA 6153, Australia.

1991

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

12th International Conference on Tillage for Sustainable Crop Production, 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), Vienna, Austria, August 11-24, 1991.

Information: Dr. F. Nobilis, BM für Land- und Forstwirtschaft, Hydrographisches Zentralbüro, Marxergasse 2, A-1030 Vienna, Austria.

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.

14th International Conference on Plant Growth Substances, Beijing, September 1991.

Information: Dr. J.H. Hulse, CASAFA, 1628 Featherston Drive, Ottawa, Ontario, Canada K1H 6P2.

8th Afro-Asian Regional Conference on 'Land and Water Management in Afro-Asian Countries' (tentative), Bangkok, Thailand, November 18-23, 1991.

Information: Secretary-General ICID, 48, Nyaya Marg, Chanakyapuri, New Delhi 110021, India.

1992

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.

***11th International Soil Zoology Colloquium**, August 1992, Jyväskylä, 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.

1993

15th International Congress on Irrigation and Drainage, The Hague, the Netherlands, September 6-12, 1993.

Information: Dr. J.H. van Kampen, Ministerie van Verkeer en Waterstaat, Directie Flevoland, Afd. Landinrichting, P.O. Box 600, 8200 AP Lelystad, the Netherlands



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.

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

Ecology of Arable Land Perspectives and Challenges. Developments in Plant and Soil Sciences 39. M. Clarholm and L. Bergström, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1989, viii + 295 p. ISBN 0-7923-0424-1 Hardbound.

Agriculture in the industrial world has gone through dramatic changes over the past decades. Mechanization in combination with high inputs of fertilizers and pesticides has turned deficits or agricultural products into surplus. Over the same period we have experienced increased environmental problems in both the atmosphere and our water resources, which have been associated with the changes in management practices.

Concern about the potential pollution by nitrogen fertilizers as well as the low utilization efficiency of applied nitrogen by plants has created a need for a better understanding of nitrogen cycling in the plant-soil-water system. To achieve this, it is necessary to study process interactions and process regulation in an ecosystem context. During the last decade many ecosystem studies have been initiated where more comprehensive sets of data have been gathered, mostly with a high resolution and synchronization in time.

A multidisciplinary research project emphasising the ecosystem approach was established in Sweden in 1979 entitled: 'Ecology of Arable Land. The Role of Organisms in Nitrogen Cycling'. The objective of the project was to investigate the functions of soil microorganisms and soil fauna, with a particular attention to their importance for the circulation of nitrogen and carbon in four cropping systems. The experimental phase of the project was finished in 1985, while the termination date for the project was 1 July 1987.

A synthesis volume 'Ecology of Arable Land - Organisms, Nitrogen and Carbon Cycling' will be published by Ecological Bulletins (Copenhagen) in 1989. A workshop was held in conjunction with the preparation of the synthesis volume in May 1987, where a number of leading scientists were invited to review the synthesis efforts to date. To take full advantage of their presence, an open symposium was arranged immediately after the workshop. The speakers were asked to cover 'new and challenging findings' in their area of expertise and also to indicate future directions of research. This volume contains their contributions.

The common thread running through it is the search for a greater understanding of nutrient cycling and the turnover of organic matter in terrestrial ecosystems. The topics treated are primary production, including root-derived carbon and nitrogen budgets, the interactions of carbon, nitrogen and phosphorus, and soil fertility. The role of mycorrhizae and animals - from protozoa to earthworms - in nutrient cycling are discussed as well as the movement of nitrogen in the ground and its loss to the air and groundwater. Quantification of the processes involved in nitrogen cycling and theories of control of microorganisms performing the process are also presented. Most of the contributions suggest areas towards which future research should be directed, in particular the possibility of applying new-found knowledge of the behaviour of nitrogen in practice.

Half the papers discuss agroecosystems, while one third deal with natural grassland, bog and forest. This mix highlights the unifying factors to be found in nutrient cycling studies, while at the same time emphasizing the differences between annual and perennial systems.

Price: Dfl 225, US\$ 119, or £ 75.00

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

Management Systems to Reduce Impact of Nitrates. J.C. Germon, editor. Published for the Commission of the European Communities by Elsevier Applied Science, London and New York, 1989, viii + 274p. ISBN 1-85116-402-5. Hardbound.

Nitrate concentration in water is a topic of pressing concern in many areas of Europe. Commission of the European Communities (CEC) regulations stipulate that nitrate levels in drinking water shall be less than 11.3 mg l^{-1} of nitrate nitrogen. Such a concentration is easily reached in soil solution when 23 kg ha^{-1} of nitrate nitrogen is dissolved in 200 mm of leached water. In many situations, excesses of nitrogen fertilization are higher than 23 kg ha^{-1} .

As a result of its concern about this problem of deteriorating water quality, the CEC held a meeting entitled 'Management Systems to Reduce Impact of Nitrates', which was organized within the framework of the Community Programme on Land and Water Use Management (DG VI). The themes of the seminar were complementary to the topic of 'Nitrogen Efficiency in Agricultural Soils' of the Energy programme and provided the Commission with the opportunity to perceive management systems for control of nitrate fluxes.

The main aims of the meeting were as follows: (1) to provide an overview of the different methods developed in EEC countries to limit and, if possible, to reduce nitrate pollution due to agriculture; (2) to record the main steps of the nitrogen cycle by which it is possible to control nitrate availability in soil and to evaluate recent progress; and (3) to highlight areas needing more research in order to manage more efficiently the nitrogen cycle in agriculture.

The publication contains papers in the following sections: (1) Nitrogen balance in agricultural system (2 papers); (2) Management of livestock effluents in order to reduce nitrate leaching (4 papers); (3) Agricultural practices to reduce nitrate leaching (7 papers); (4) Nitrogen availability in soil (4 papers); and (5) Optimization of nitrogen fertilization (3 papers). Also added are the conclusions and recommendations from the seminar.

Price: £ 36.00

Orders to: In USA and Canada: Elsevier Science Publ.Co., 655 Avenue of the Americas, New York, NY 10010, USA. Elsewhere: Elsevier Applied Science Publ., Crown House, Linton Road, Barking, Essex IG11 8JU, England.

Lectures on Soil Science. Project FAO-Bulgaria. V. Valev and T. Boyadgiev, editors. N. Poushkarov Institute of Soil Science and Yield Prediction, Sofia, 1989.

This publication contains lectures given during a symposium and are addressed to soil scientists from developing countries in the Mediterranean region and the Near East. The publication has chapters on soil classification systems; diagnosis, genesis and geography of soils in the Mediterranean area; soil survey; chemistry and physics of soils; land degradation and protection; and on land use planning.

Requests to: Dr. T. Boyadgiev, N. Poushkarov Institute, P.O. Box 1369, Sofia 101/1731, Bulgaria.

The Fragile Environment. The Darwin College Lectures. L. Friday and R. Laskey, editors. Cambridge University Press, Cambridge, New York, 1989, x + 198p. ISBN 0-521-36337-3. Hardbound.

This is the second in the Darwin College Lecture Series, inaugurated in 1986 to provide a range of annual public lectures on topics of general interest. The first was entitled 'Origins' and it considered subjects such as the origin of the universe, the origin of man, and the origin of language. The present series explores the impact of the human species on its environment and deals with such topical questions as the death of forests, acid rain and pollution, desertification, the greenhouse effects and other descriptions to the global climate. The contributors to the series address themselves to a broad general readership.

Orders to: Cambridge University Press, the Pitt Building, Trumpington Street, Cambridge CB2 1RP, England; or: 32 East 57th Street, New York, NY 10022, U.S.A.

Téledétection Appliquée. Zones tempérées et intertropicales. Collection Science Agronomique. M.C. Girard et C.M. Girard. Masson, Paris, 1989, 228p, 16 planches en couleurs. ISBN 2-225-81202-0.

Écrit par deux enseignants-chercheurs, ingénieurs agronomes, appliquant la télédétection dans leur spécialité depuis plus de 15 ans, cet ouvrage présente le fruit d'une expérience et d'une réflexion originales.

L'exposé est divisé en plusieurs parties, correspondant à une progression depuis l'initiation aux phénomènes physiques, au traitement informatique des images, jusqu'aux applications dans des disciplines précises: botanique, agronomie, pédologie, océanographie. Cela permet au lecteur, quel que soit son niveau de formation, d'y trouver des renseignements très variés.

Les nombreux schémas et figures rendent la lecture aisée, et des reproductions en couleurs illustrent les exemples d'applications. Les tableaux exposés correspondent à des résultats originaux dont certains n'ont jamais été publiés précédemment.

Ce manuel est destiné aux naturalistes, agronomes, géographes, océanographes ou pédologues, étudiants ou professionnels, qui désirent utiliser la télédétection dans leur discipline. Il pourra aussi être utile aux enseignants qui pourront y trouver des bases de cours ou d'applications.

Prix: FF 290

Commandes à: Masson, 120 boulevard Saint-Germain, F-75280 Paris Cedex 06, France.

European Coordinated Effort for Monitoring the Earth's Environment. A Pilot Project Campaign on Landsat Thematic Mapper Applications (1985-87). T.-D. Guyenne and G. Calabresi, editors. European Space Agency, 1989, 343p. ISBN 92-9092-000-9.

Earthnet operations within the framework of the European Space Agency's Earth Observation Programme started in early 1977. The main role of the Earthnet programme over the past decade has been the acquisition, pre-processing, archiving and distribution of data from the major US remote-sensing satellite missions.

The experience gained in handling data from different platforms and payloads has been most valuable; but a new dimension was added to Earthnet's work when the Thematic Mapper (TM) was flown in 1984.

The direct read-out of the TM payload started with Landsat-4 and continued with Landsat-5. The use of TM 30-m ground-resolution power and its seven different channels including the thermal band ensured multitemporal analysis and Earth resources monitoring.

It was in 1985 that Earthnet decided to promote the use of the Thematic Mapper in Europe with the so-called 'Pilot Project Campaign'. The considerable volume of data received was then made available to the user community at particularly favourable conditions. The campaign stimulated a wide range of projects and studies in almost all European countries. The role of Earthnet's National Points of Contact (NPOC) in selecting, among many requests for data allocation, the most interesting application projects was fundamental.

Over a hundred projects covering different application fields were carried out during the two-year campaign and each one was described in a technical report. The authors were given the opportunity to present the results of their studies at a Workshop entitled 'Landsat Thematic Mapper Applications' organised by Earthnet at Frascati in December 1987. As a record of the Workshop, thirty-six contributions are contained in the present document in the following fields: Snow cover (2 papers); Hydrology (5 papers); Coastal waters (2 papers); Geology (8 papers); Land use (5 papers); Forestry (9 papers); and Cartography (5 papers).

This document will be a valuable tool for further research and studies, and a new step towards a coordinated European remote-sensing programme.

Price: Dfl 80 or US\$ 40, including postage.

Orders to: ESA Publication Division, ESTEC, P.O. Box 299, 2200 AG Noordwijk, the Netherlands.

Tropical Soil Biology and Fertility: A Handbook of Methods. J.M. Anderson and J.S.I. Ingram, editors. C.A.B. International, Wallingford, 1989, 171p. ISBN 0-85198-63508. Spiral binder.

Based on the work of the Tropical Soil Biology and Fertility (TSBF) Programme, this is a practical handbook of recommended and validated methods for the characterization and analysis of tropical soils, with the aim of achieving sustainable use of soil resources. The objectives of the programme revolve around five main themes: synchrony of nutrient release and plant growth demands; management of soil organic matter; soil water balance; effects and management of soil fauna; and integration of biological processes into the maintenance of soil fertility. The methods given are endorsed by the International Society of Soil Science, and are part of the International Union of Biological Science and Unesco 'Man and the Biosphere' Programme. *It is an indispensable handbook for student and professional soil scientists.*

Price: £ 16.50 or Dfl/DM 60, including postage. Prepayment required.

Orders to: C.A.B. International, Wallingford, Oxon OX10 8DE, England; or: ISRIC, P.O.Box 353, 6700 AJ Wageningen, the Netherlands.

Soil Biology. M. Wood. Blackie, Glasgow and London. In U.S.A Chapman and Hall, New York, 1989, 154p. ISBN 0-216-91786-7 (UK); 0-412-00951-X (USA). Paperback ed.

There is currently great interest in the biology of soil, stimulated by an increased concern to conserve natural resources, not only in agriculture but also in natural ecosystems. Recent developments in molecular biology have increased the possibilities of manipulating soil organisms and the processes they carry out, to improve food production and the quality of the environment. But important environmental questions associated with the application of this new biotechnology to soils are still to be resolved. Issues such as the desirability of using genetically-engineered microorganisms in soil can be discussed sensibly only in the light of an understanding of naturally-occurring organisms in soil.

Although on a global basis food production continues to increase, man's current relationship with the soil in many parts of the world is characterised by decreasing soil fertility and increasing population pressure. Soil Science has an important role to play in the future, helping to solve these problems.

It has been the author's aim to produce an integrated account of the organisms in soil - from viruses to trees - the environment in which they live, and the ways in which they can modify soil by their biochemical processes; the ways in which organisms interact, particularly with plant roots, and the possibilities for manipulating soil organisms are also discussed.

This book has been written for final year undergraduate and postgraduate students in agriculture, biology, botany, ecology, microbiology and soil science. Although most students will already have been introduced to biology, the soils aspect of this subject may be new to them. Terms which are likely to be unfamiliar to readers are briefly explained, and references to general texts on soil science are given.

Price: £ 10.95, paperback ed.; £ 23.00 hardback ed., ISBN 0-216-91782-4.

Orders to: Blackie and Son Ltd., Bishopbriggs, Glasgow G64 2NZ, Scotland, UK; or: Chapman and Hall, 29 West 35th Street, New York NY 10001-2291, USA.

Land Conservation for Future Generations. Proceedings of the Fifth International Soil Conservation Conference, Bangkok, January 1988. S. Rimwanich, editor. Dept. of Land Development, Bangkok, Bangkok, 1989, 1311p. in 2 volumes.

The impacts of world population increase are fairly well understood. Concurrently, the shrinkage of the land base as a result of decline in productivity from improper conservation or an absence of conservation is not fully realized. It is estimated that over 500 million hectares of rainfed agricultural land will decline in productivity by the end of this century.

Although awareness of the agronomic and environmental implications of soil erosion is substantially increasing world-wide, soil conservation is still not getting off the ground in many developing countries. The International Soil Conservation Organization (ISCO) was recently established due to the growing concern about the destruction or misuse of soil resources. The major activity of the Organization is to arrange International Conferences covering various aspects of soil conservation in order that the existing problems could be correctly and wisely solved within an appropriate period of time. Previous conferences were held in Belgium (1978), United Kingdom (1980), United States (1983) and Venezuela (1985) respectively.

The fifth conference was designed to be a forum for scientists of various disciplines to exchange information and develop strategies for conserving the land resources for sustainable agriculture. During the conference, the following items were discussed: (1) recent research, investigation and system approach in erosion control, including sediment transport and watershed management; (2) evaluation of the impact of erosion, particularly as it relates to environmental degradation, crop productivity and associated social and economic repercussions; (3) evaluation of the constraints to soil conservation practices in developing countries and development of strategies for more efficient mechanisms for delivery of technology to farmers; (4) opportunities for developing countries in evolving a network of collaborating institutions for the exchange of information and technologies on soil conservation; (5) case studies on the performance of soil and water conservation programs and their implementation; soil and water conservation in watershed and farm-level management, and the transfer of appropriate technologies in less developed countries.

The volumes contain the texts of the keynote papers and the other oral and poster presentations in the following sections: (1) Environmental degradation and socio-economic impacts (15 papers); (2) System analysis for erosion evaluation (15 papers); (3) Conservation and erosion data base (14 papers); (4) Advances in water erosion research and practices (19 papers); (5) Advances in wind erosion research and practices (3 papers); (6-8) Conservation strategies and technology transfer (from national to farm-level) (22 papers); (9) Constraints and solutions to application of conservation practices in developing countries (6 papers); and (10) use of soil survey information in soil conservation (8 papers). Also included is a summary report of panel discussions.

Orders to: Dept. of Land Development, Ministry of Agriculture and Cooperatives, Bangkok, Bangkok 10900, Thailand.

The Ecology of Intercropping. J. Vandermeer. Cambridge University Press, Cambridge, New York, 1989, xi + 237p. ISBN 0-251-34592-8, Hardbound.

The practice of growing two or more crops together is widespread throughout the tropics and is becoming increasingly practised in temperate agriculture. The benefits of nutrient exchange, reduced weed competition and pathogen control can generate substantial improvements in growth and yield.

In this book, the author shows how classical ecological principles, especially those relating to competition and population ecology, can be applied to intercropping. Despite the large amount of research activity directed towards the subject over the last 20 years, the practice of intercropping has, until now, received very little serious academic attention. This book is unique in approaching the question of intercropping from a theoretical point of view. In addition the details of the approach will take as their starting point well-accepted ecological theory. Using this basis the author shows how the approach can be used to design and evaluate intercropping systems to improve agricultural yields.

Price: £ 30 or US\$ 59.50

Orders to: Cambridge University Press, The Pitt Bldg., Trumpington Street, Cambridge CB2 1RP, England; or: Cambridge University Press, 32 East 57th Street, New York NY 10022, U.S.A.

Soil Acidity and Plant Growth. A.D. Robson, editor. Academic Press, Sydney, San Diego, New York, 1989, xii + 306p. ISBN 0-12-590655-2. Hardbound.

In Europe and the U.S.A., the need for regular dressings of lime has been accepted for many years as a basic principle of good farming on soil with low lime reserves.

In Australia, the ubiquitous and acute deficiencies of phosphorus and nitrogen, the relatively high cost of liming in the dominantly extensive agricultural systems, and the frequent induction of severe trace element deficiencies by liming have led to a much more cautious approach: much greater emphasis has been given to understanding the nature of lime responses with a view to correcting their primary causes rather than using blanket dressings of lime. The present book has arisen directly from concerns over increasing acidification of soils under improved pastures over wide areas of southern Australia.

While the book has its origin in the problems of acidification of Australian soils under pastures, the authors examine soil acidity within a much broader framework, making their views relevant to all agricultur-

al and natural ecosystems on acid soils. The first two chapters are concerned with the chemistry of soil acidity and the ecological processes leading to it. They are followed by three chapters on biological responses to soil acidity including mineralisation of soil nitrogen, incidence of plant diseases, plant mycorrhizal associations, symbiotic nitrogen fixation in legumes, and genetic variability in plant response to toxicities.

The book concludes with two chapters on the correction of soil acidity problems by liming; Chapter 6 is concerned with the rates of application and effectiveness of liming materials and Chapter 7 with the development and use of computer modelling procedures both for assisting researchers in identifying the effects and interactions of soil pH on component processes and to provide assistance to farmers in the management of long-term subtterranean clover pastures. Throughout the book, the authors emphasise the need to understand the processes involved in soil acidification and in the response of plant growth.

Price: £ 41.00

Orders to: Academic Press, 24/28 Oval Road, London NW1 7DX, England; *or:* Academic Press, 1250 Sixth Avenue, San Diego, CA 92101-4311, USA; *or:* Academic Press, 30-52 Smidmore Street, Marrickville, NSW 2204, Australia.

Training Guidance for the Integrated Environmental Evaluation of Water Resources Development Projects. H.C. Torno, L. Hartmann, I. Bogardi, F.H. Verhoog and L.W.G. Highler. UNEP/EMINWA and Unesco, 1988, 83p and appendices.

Besides the expected benefits, water projects may also have unfavourable effects on the hydrological regime, on the environment in general, and on the health and living conditions of the population concerned. Rational water management should take into account both the favourable and unfavourable effects. This implies the assessment of the socio-economic and environmental impacts of changes in the hydrological regime.

The influence of man on the hydrological cycle and the impact of water projects are priority areas for both UNEP and Unesco in their respective water programmes.

Within the International Hydrological Programme (IHP), the influence of man on the hydrological cycle has been a priority area since the start of the International Hydrological Decade in 1965. This area covers scientific studies of the influence of man on the hydrological cycle, including water quantity and quality. The activities of man are considered to include direct action, such as land use changes, consumptive use of water, physical operations on river systems, and addition of contaminants of various kinds, as well as those of a more indirect nature such as man-induced climatic changes. These studies also include the effects of changes in the hydrological cycle on social, environmental and ecological aspects relative to water resources.

UNEP's water programme is focused on the Environmentally Sound Management of Inland Water (EMINWA). This programme is designed to assist governments to integrate environmental considerations into the management and development of inland waters, with a view to reconciling and ensuring the development of water resources in harmony with the water-related environment throughout entire water systems.

The present *Training Guidance* was prepared in the framework of the UNEP/Unesco project *Integrated Environmental Evaluation of Water Resources Development*. This project further includes the publication of a draft classification system for freshwater bodies, and teaching material for the use of that classification system.

An interactive computer program has been developed to simplify methodology application and serve as a valuable learning aid.

Orders and enquiries: Dr. F. Verhoog, Unesco, Division of Water Sciences, B.P. 3.07, F-75015 Paris, France.

Proceedings of the International Conference and Workshops on the Validation of Flow and Transport Models for the Unsaturated Zone, Ruidoso, May 1988. P.J. Wierenga and D. Bachelet, editors. College of Agriculture and Home Economics, New Mexico State University, 1988, 545p.

The purpose of the conference was to discuss the capabilities of existing and future models for water flow and contaminant transport through the unsaturated zone, and the need for field validation of such models. Numerical and analytical models are presently used to analyze field scale problems such as: leaching of chemicals from agricultural fields, from waste disposal sites, and from lagoons or landfills; movement in soil of hazardous materials leaking from underground tanks; storage of nuclear waste and spent nuclear fuel in the unsaturated zone. Only a few of these models have been validated in the field, mostly due to lack of complete field data sets.

The conference brought together experts in modelling and field validation to discuss data requirements to use in models for field-scale predictions. The issue of what constitutes validation was also discussed. Approximately 230 soil scientists, hydrologists, engineers and chemists attended the conference. Fifty-eight presentations are included in the present publication.

Requests to: Dept. of Agronomy and Horticulture, College of Agriculture and Home Economics, New Mexico State University, Las Cruces NM 88003-0003, U.S.A.

Pédogénèse et Potentialités Forestières des Sols Sulfatés Salés des Tannes du Sine Saloum, Sénégal. S. Sadio. Thèse Université de Wageningen, 1989, 269 p.

Les sols du domaine des tannes du Sine Saloum, Sénégal, se caractérisent par une grande hétérogénéité due à leur morphologie et leurs propriétés physico-chimiques. Leurs caractéristiques sont étroitement liées à la topographie, au type de matériau et à l'hydrologie. Leur évolution pédogénétique actuelle est une conséquence de la sévère sécheresse qui a régné sur l'ensemble du Sénégal, et particulièrement dans les domaines fluvio-marins, depuis les années 1971. Elle a entraîné des conséquences dramatiques sociales et sur l'environnement écologique.

Les déficits pluviométriques engendrés par l'aridité du climat ont déclenché et amplifié la sursalure et l'acidification des sols sur l'ensemble du domaine.

La sursalure, peu répandue avant les années 1971, a vite atteint tous les sols, depuis les terrasses basses jusqu'au glacis de raccordement.

Les sols restent sursalés pendant presque toute l'année. Néanmoins, on observe pendant l'hivernage, un dessalement des sols sableux des glacis de raccordement et des levées sableuses, et des sols limoneux des terrasses hautes à topographie plane grâce aux eaux de pluie.

L'acidification de ces sols peu connue avant les années 1971, s'est très vite développé et propagée sur l'ensemble du bassin. Elle résulte de l'oxydation de la pyrite contenue dans les sédiments, provoquée par le drainage très marqué et le dessèchement prolongé des sols sous les effets conjugués de l'abaissement des nappes phréatiques et de l'évaporation.

La sursalure et l'acidification ont entraîné une forte dégradation chimique des sols et annihilé les possibilités de mise en valeur à cause de la toxicité due à l'accumulation excessive des sels et des produits acides. Les recherches de reboisement montrent que, dans les conditions actuelles d'aridité et du niveau de connaissances scientifiques du fonctionnement de ces sols, les seules voies possibles d'utilisation de ces terres demeurent, pour le moment, la mise en valeur forestière et pastorale par l'introduction d'espèces acido-halotolérantes.

Commandes à: Section de Pédologie et Géologie, Université Agronomique de Wageningen, B.P. 37, 6700 AA Wageningen, Pays-Bas.

The Impact of Climate and Man on Land Transformation in Central Sudan. Applications of Remote Sensing. Eva Ahlcrona. Lund University Press, 1988, 140p. ISBN 0-86238-169-X.

The study focuses upon the impact of climate and man on land transformation in semi-arid regions in central Sudan. Remote Sensing monitoring, interviews, analysis of rainfall and crop statistics, and analysis of environmental field data have been the tools in this research.

The implication of the study is that the major impact on the land's biological productivity has been caused by climatic factors and not by man. The only observed indication of man-made land degradation is a qualitative deterioration of the vegetation.

It is indicated that the present very dry period, which commenced in 1966, may constitute a medium-termed climatic change towards drier conditions.

Furthermore, a strong relation is established between Landsat data and field cover/grass biomass. This implies a high potential use of Landsat data for grass resource monitoring. The strong relationship is not specifically regarded as a function of the vegetation reflectance, but is also highly related to the effect of vegetation shadows on light-coloured soils.

Price: £ 20.50

Orders to: Chartwell-Bratt, Old Orchard, Bickley Road, Bromley, Kent BR1 2ND, England.

Agriculture and Soils in Zaire. A Case Study of Farming Systems in the Lake Kivu Area and Characterization of Volcanogenous Soils. S. Hirose and M. Mubanda, editors. Nihon University, 1989, 147p.

This is the final report of the results of a five-year field research project entitled 'Agriculture and Soils in the Great African Rift Valley Areas'. One objective was to survey and understand the present state of traditional agriculture, which has been adapted to changing sets of social and natural conditions over many generations, in the semiarid regions of Africa. For this purpose, agronomists and an agricultural economist conducted a survey in the Embu District of Kenya and identified characteristics of the traditional ways of farming and their relationship to agro-ecological factors, particularly those of climate and soil. In this paper, the results of agronomic research carried out in the Lake Kivu area of Zaire in the same way as in Kenya are presented and compared with those of Kenya (part A).

Soils were another aspect of our research. The soil scientists of the team have been working on volcanogenous soils in Japan and elsewhere. They conducted a study in Kenya to characterize Kenyan volcanic ash soils, and they compared them with similar soils in Japan. The region of Kivu, Zaire, where the team carried out this study is on the edge of the western rift of the Great African Rift Valley. For this purpose, many soil samples were collected, characterized, and evaluated. In the part B of this volume, the characteristics of volcanogenous soils in the Lake Kivu area are reported.

Requests to: Prof. Shohei Hirose, College of Agriculture and Veterinary Medicine, Nihon University, 3-34-1 Shimouma, Setagaya-ku, Tokyo, Japan.

Statistical Procedures for Developing General Soil Fertility Models for Variable Regions. CSIRO, Div. of Soils Divisional Report N°93. J.D. Colwell, A.R. Suhet and B. van Raij. CSIRO, Canberra, 1988. ISSN 0725-8526.

The yields of crops and their responses to applications of fertilizers vary within agricultural practices. These vary from site to site and also from year to year. General soil fertility models attempt to represent these effects in the form of mathematical equations that express yield variables as functions of site variables, the yield variables being for level of crop yield and yield response to fertilizers and the site variables being for the factors that vary and cause the yield variables to vary within regions. Hence the name general soil fertility model: general for a regional relationship, soil fertility for crop yield and response to fertilizers and model for functional relationships between fertility and site variables. Such models when derived from data representing the range of growing conditions that are normally encountered in regions can be used to explain regional variations in soil fertility and to aid farmers by predicting profits and optimal rates of fertilizer application. This monograph describes statistical procedures for developing and applying such models for variable regions with examples based on data from fertilizer experiments in Brazil and Australia. The descriptions are intended primarily for use by research agronomists and soil scientists engaged in research with fertilizers and accordingly most sections contain only general indications of the supporting mathematical and statistical theory. A summary of this theory is given however, in later sections, for reference by specialists.

Requests for a free copy: CSIRO, Div. of Soils, Private Bag N°2, Glen Osmond, SA 5064, Australia.

Landslides, Extent and Economic Significance. E.E. Brabb and B.L. Harrod, editors. A.A. Balkema, Rotterdam and Brookfield, 1989, xiv + 385p. ISBN 90-6191-876-6. Hardbound.

This publication contains the proceedings of the symposium on landslides, held at the 28th International Geological Congress, Washington D.C. in July 1989.

It provides the first systematic documentation of the extent and expense of the landslide problem in more than 100 countries and subsea areas. It also provides an overview of factors that contribute to landsliding, such as precipitation, earthquake shaking, volcanism, and weak geologic units. Summaries of dominant landslide mechanisms and descriptions of major destructive landslides are included. The value and number of fatalities related to landsliding are given for the first time in several countries of Africa, Asia, Europe, Central America, and South America. Landslide susceptibility maps are provided for a few countries. This information will be useful in determining whether landslides have been considered adequately in proposals for constructing dams, roads, railroads, pipelines, airfields, mining facilities, electrical and telephone transmission lines, petroleum wells and production facilities, canals, sewers, bridges, port facilities, lumber mills, fish hatcheries, recreation areas, and farms. Other landslide information will serve as a benchmark to determine whether steps to reduce landslide hazards are effective.

Price: Dfl. 130 or US\$ 65.

Orders to: In U.S.A. and Canada: A.A. Balkema Publ., Old Post Road, Brookfield, VT 05036, U.S.A. *Elsewhere:* A.A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, Netherlands.

Policy and Practice in the Management of Tropical Watersheds. Sir H. Charles Pereira. Westview Press, Boulder/Belhaven Press, London, 1989, xvi + 237p. ISBN 0-8133-7731-5 (U.S.); 1-85293-089-6 (U.K.). Hardbound.

Misuse of land on tropical watersheds in developing countries is increasing rapidly in association with accelerating population growth and the accompanying poverty. Destruction of natural vegetation without replacement by productive agriculture or forestry imposes severe penalties of soil erosion and sediment transport. Sedimentation destroys reservoir storage capacity and inhibits investment in power generation and irrigation.

Tropical meteorological events create seasonal water surpluses that produce floods in the lowlands. Flood abatement requires construction of storage structures in addition to good land use: only storage dams can both regulate flows and harvest the energy from them. Watershed management for stable conditions of vegetation, soils, and water is a critical requirement for investment in such flood protection.

In a unique combination of theory and practice, the author examines the issues of agriculture, animal husbandry, water for both household use and energy generation, and fuelwood in the context of tropical watersheds. The often competing demands on watersheds, resulting from these various uses, are assessed in terms of developing strategies for the management of the watershed as an ecological and policy unit in and of itself. Downstream demands on the system are incorporated in the analysis. Also included are numerous case studies from various countries. This book provides a useful tool for those actively engaged in development in the Third World as well as essential information for those interested in the articulation of environmental concerns and the human uses of natural resources.

Price: £ 25.00 in U.K.

Orders to: Belhaven Press, 25 Floral Street, Covent Garden, London WC2E 9DS, England; *or:* Westview Press, 5500 Central Avenue, Boulder CO 80301, U.S.A.

Methodological Aspects of the Study of Pesticide Behaviour in Soil. Aspects Méthodologiques de l'Etude du Comportement des Pesticides dans le Sol. P. Jamet, editor. INRA, Paris, 1989, xvi + 255p. ISBN 2-7380-0115-7.

The French pesticide market ranks third in the world after the USA and Japan, and it is by far the first in Europe. Moreover, the twelve EEC member-states will account for a close to \$5 billion market in 1993, thereby topping the list worldwide. Less than four years before this common market opens, a meeting of the European research teams studying pesticide movement in soil appeared to be essential. The meeting was held in Versailles in June 1988.

The soil ecosystem plays a determining role in treatment efficiency, and above all controls the first stages of molecule dispersion in the environment. For this reason, the behaviour of pesticides in soil has been increasingly studied for the past twenty years.

Lack of standardization makes it practically impossible to compare the results obtained by the various research teams working on pesticide movement in soil. Since it is essential that, in a very near future, research carried out on a new molecule in one of the EEC countries can be accepted in any other member-state, common standardized methods should be defined by the national authorities and the laboratories involved.

At the workshop were examined the various methodologies used in the European laboratories involved in this field, and the possible new approaches to the subject.

Among the 18 papers contributed, six dealt with degradation, five with adsorption-desorption processes, three with transport and soil mobility prediction, and two with pesticide bioavailability. Two papers were concerned with reflections on the selection of representative soils. This essential issue may be difficult to solve because of the variety in soil and climate conditions within the EEC. Of the 16 posters presented, six related to adsorption, and three to degradation and the problems raised by the presence of residues.

Price: FF 135.00

Orders to: Service des Publications, Route de St-Cyr, F-78026 Versailles Cedex, France.

Agricultural Research & Technology Transfer. I. Arnon. Elsevier Applied Science, London and New York, 1989, xv + 841p. ISBN 1-85166-275-8.

Agricultural research was probably the first and is the most widespread form of organised research in the world, and one in which both the most developed and developing countries are engaged. Whilst most forms of research activity, such as in the field of medicine, have worldwide application, agricultural research, by its very nature, has to be regional; practically no research finding can be adopted without studying the results of its application under the infinite number of ecological situations with which the farmers of the world are faced.

The improvement of agricultural production is the essential first step whereby developing countries can hope to raise their standard of living. Research is therefore an activity in which no developing country can afford *not* to engage; nor can countries in which agriculture has reached a high level of development and sophistication afford to neglect agricultural research. The spiralling of research costs, the increasing difficulties in mobilising and retaining research personnel for agriculture and the need to advise developing countries on the most efficient use of their scarce human and material resources have lent a special urgency to these activities. This work contributes to the mutual understanding of research and extension systems by presenting a detailed study of the organisation planning, management and objectives of agricultural research and technology transfer.

A critical analysis of existing systems provides the basis for concrete proposals for improvement and relates to a wide range of organisational, conceptual and planning problems. The limited impact of research in Third World countries is a result of the deficient relationship between research, extension and the farmer, therefore this book will be essential reading for agricultural institutes and research organisations, project managers, agronomists, extension specialists, and ministries of agriculture and development.

It has the following chapters: agricultural research systems; agricultural research – form and content; human resources in agricultural research; organizational structure at the institutional level; administration in the service of research; and the transfer of technology.

Price: £ 85.00

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 Science Publishers, Crown House, Linton Road, Barking, Essex IG11 8JU, England.

The Use of Environmental Isotope Techniques in Arid Zone Hydrology. A Critical Review. Technical Documents in Hydrology, J.Ch. Fontes and W.M. Edmunds. Unesco, Paris, 1989, 75p.

The publication introduces major hydrological problems of arid zones, describes specific features of unconfined and confined aquifers in these regions and advises on the use of isotopes for the solution of hydrological problems particularly with regard to salinization, recharge, aquifer vulnerability and the conclusions which can be drawn from the presence of environmental isotopes.

Requests to: Director, Div. of Water Sciences, Unesco, B.P. 3.07, F-75700 Paris, France.

Nature Management and Sustainable Development. W.D. Verwey, editor. IOS, Amsterdam, Springfield, 1989, xx + 532p. ISBN 90-5199-015-4.

On the basis of the Report 'Our Common Future', submitted by the World Commission on Environment and Development to the UN General Assembly in 1987 (the so-called 'Brundtland Report') the Congress participants studied and elaborated on one of the crucial problems faced by mankind today: the relationship worldwide between the management of nature (reconstruction, prevention and safeguard-oriented measures) and the realization of sustainable development, prosperity and welfare. Within an interdisciplinary framework of various scientific disciplines, politics, trade & industry and law, fifty-eight prominent speakers from more than twenty countries presented papers and introductions. These contributions served as a basis for panel discussions in which additional expert resource persons and the more than seven hundred Congress participants took part and from which practical proposals for ways towards a sustainable future were derived.

This volume contains all papers submitted to the Congress. They are arranged in order of nine topics covered: 1. Management of the atmosphere: climatic change and rises in sea level; 2. Management of tropical forests; 3. Management of European forests; 4. Management of mountain forests in the Third World: the Himalayas; 5. Management of protected areas; 6. Management of grasslands and desertification control in Africa; 7. Management of wetlands; 8. Management of trans-boundary rivers: the Rhine; and 9. Management of the seas: the North Sea.

Price: Dfl 130 or about US\$ 65, including postal charge when prepaid.

Orders to: IOS, Van Diemenstraat 94, 1013 CN Amsterdam, the Netherlands. *In U.S.A. and Canada:* IOS, P.O. Box 2848, Springfield, VA 22152-2848, U.S.A.

Surface and Subsurface Mapping in Hydrogeology. M. Erdélyi and J. Gálfi. John Wiley & Sons, Chichester, New York, 1988, 384p. ISBN 0-471-90923-8. Hardcover. Co-published with Akadémiai Kiadó, Budapest.

Hydrogeology is one of the fast growing branches of the geosciences due to fundamental changes in the economic and social structures in the last three decades, owing partly, to the population explosion. The rapidly increasing contamination of streams, freshwater lakes and groundwater aquifers is a world-wide problem. The causes are well known. Industrial development with the increasing predominance of new industrial branches producing earlier unknown toxic substances in large quantities, the wide-spread use of chemicals (fertilizers, bactericides, pesticides) in agriculture, and piped-water supply without sewage treatment are the main contamination factors of surface waters as well as of the groundwater from the near-surface clastic and karstic aquifers. The concept of thinking in basins, especially where dealing with deep-lying and large area aquifers, requires the interdisciplinary evaluation of the whole hydrogeological unit by using research methods of groundwater hydraulics, exploration geophysics, geothermics, geology, remote sensing and water chemistry for the determination of the direction and relative velocity of groundwater movement in the subsurface space in conduits determined by natural conditions (topography, soil, mineralogy, tectonics).

This book covers all aspects of surface and subsurface hydrogeological, engineering and environmental protection mapping, applying methods of remote sensing (including photogeology), geophysics (surface and borehole), geothermics and water chemistry. Mapping methods are discussed in separate chapters.

Each chapter deals with a well-defined geological structure (environment), e.g. sedimentary lowland, river valley, karstic area, etc.

This book begins where most hydrogeological manuals end and presupposes the users' thorough knowledge of hydrogeology, exploration geophysics and water chemistry, fundamentals of soil science, borehole technics and remote sensing methods (including photogeology).

This text addresses: Preparation for hydrogeological field survey, consisting of collection, critical evaluation and filing of data; hydrogeological evaluation of all available maps and the use of remote sensing technique (Ch.2); Knowledge of hydrogeological maps: scale and symbols of maps and cross-sections, data interpretation on maps and cross-sections, description of hydrogeological maps (Ch.3); Hydrogeological mapping and prospecting, consisting of mapping hydrogeological properties and structures, preparation of mapping schedules, field work, mapping of the groundwater regime, the surface phenomena, bedrock and covered areas, quality of water (ch.4), as well as prospecting in regions of climatic extremes and the preparation of the final report (ch.4); Hydrogeologically oriented discussion of methods and techniques (e.g. remote sensing, exploration geophysics, drilling and water chemistry) applicable for every groundwater environment (Chapters 5, 6, 7 and 8). Mapping methods according to the environment, e.g. crystalline and metamorphic terrains (ch.9) or volcanic areas (Ch.10) are discussed separately. Sedimentary areas are the predominant groundwater reservoirs, therefore their common hydrogeological characteristics and mapping methods are discussed generally (Ch.11). Structures and aquifer formations containing most of the groundwater resources are carbonate terrains (Ch.12), river valleys (Ch.13) and large lowland basin filled up by clastic deposits (Ch.14). The last chapter (15) deals with the hydrogeological aspects of engineering and environmental protection geology.

Price: £ 45.00

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.

Agricultural Engineering Soil Mechanics. Developments in Agricultural Engineering 10. E. McKyes. Elsevier Science Publishers, Amsterdam, New York, 1989, xii + 292p. ISBN 0-444-88080-1. Hardbound.

This book provides an introduction to classical soil mechanics and foundation engineering, and applies these principles to agricultural engineering situations. Theoretical design formulae are given, plus tables and graphs dealing with bearing capacity factors, wall pressure factors, soil cutting numbers and soil mechanical properties. Many example problems of design and analysis are solved in the text, and there are unsolved problems given for each chapters.

The book is directed primarily at professional university students in Agricultural Engineering, but will also be of interest to scientists working in other engineering branches, landscape architecture, soil physics and the like. It has the following chapters: 1. Origins and classification of soils; 2. Soil shear strength; 3. Shallow foundations; 4. Water flow in soils. 5. Slope stability; 6. Lateral earth pressures; 7. Soil erosion and protection; 8. Soil cutting and tillage; 10. Geotextiles; and 11. Soil freezing.

Price: Dfl 120.00

Orders to: In U.S.A. and Canada: Elsevier Science Publ. Comp., P.O. Box 882, Madison Square Station, New York NY 10159, U.S.A. *Elsewhere:* Elsevier Science Publishers, P.O. Box 211, 1000 AE Amsterdam, The Netherlands.

Food and Natural Resources. D. Pimentel and C.W. Hall, editors. Academic Press, San Diego, New York, 1989, xviii + 512p. ISBN 0-12-556555-0. Hardbound.

Food is an essential resource for the more than 5 billion humans who now live on earth. Adequate food supplies depend on the availability and use of numerous natural resources, including land, water, solar energy, fossil energy, forests, plant and animal species, and fisheries. Whereas solar energy is nearly infinite, fossil energy is finite. The other resources are renewable but only within certain use limits; in a sense they are therefore also finite. The interdependencies and interaction among these various resources are clearly complex. The interrelated factors described here are but some of the many that have reciprocal actions.

Along with solar energy, fertile cropland and sufficient water are the most basic resources used in agricultural production. Information detailed in several chapters points to the growing concern about the supply of these resources.

To investigate the interdependency of food and natural resources that affect society, a group of scientists and engineers representing several disciplines have shared their data and careful assessments. This base of knowledge will help individuals and government leaders to develop and implement the types of programs that will result in the effective use and management of land, water, energy, and biological resources for improved food production and a higher standard of living for everyone.

It will be a useful textbook for students and scientists interested in environmental sciences and planning.

Price: £ 61.50

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

Colmatación de Drenes en Suelos Afectados por Salinidad (Pipedrains siltation in salt-affected soils), by J. Herrero, R. Rodriguez and J. Porta. Inst. Fernando el Católico, Zaragoza, 1989, 133p., colour photos. ISBN 84-7820-0428.

Drainage is one of the reclamation practices in the salt-affected soils appearing in Monegros irrigation district (NE Spain). The book displays some research carried out in a ten years old experimental farm whose subsurface drain pipes had become quickly silted. The soils are Typic Torrifluvents and the experimental field includes PVC and tile pipes with three envelopes.

All these combinations were dug for inspection and sampling and were studied by chemical, physical and micromorphological techniques. The same was done for soils, parent material and surface formations (puffed crusts and efflorescences). Sodicity and high silt percent in the soil and parent material agree with the low structural stability. Millimetric alternating layers of silt and clay enhance both the instability under irrigation and the low hydraulic conductivity. The classical thresholds of drainability established from granulometric data cannot be applied. Characteristics such as layering, alternating granulometry, mineralogy and void pattern as well and irrigation water and climatic data, must be considered for further drainage projects.

Price: pesetas 1300

Orders to: Inst. Fernando el Catól., Plaza España 2, 50004 Zaragoza, Spain.

Nutrient Management for Food Crop Production in Tropical Farming Systems. J. van der Heide, editor. Institute for Soil Fertility, Haren and Universitas Brawijaya, Malang, 1989, 394p.

This publication contains the proceedings of the Symposium Nutrient Management for Food Crop Production in Tropical Farming Systems, which was held in Malang, Indonesia, in October 1987. All 33 papers presented are included.

Price: Dfl 40.50 + Dfl 9.00 for postage outside the Netherlands. Prepayment required.

Orders to: Institute for Soil Fertility, P.O. Box 30003, 9750 RA Haren (Gr), the Netherlands.

Soil Compaction as a Factor Determining Plant Productivity. Abstracts of Papers presented at a Conference in Lublin, June 1989. J. Glinski, editor, 173p.

This conference on the influence of soil compaction on plant growth was sponsored by the ISSS. This book includes the abstracts of the nearly 100 papers presented.

Price: US\$ 7.00. Prepayment to account 5.01132-4000 0082-151-5-787 of the Instytut Agrofizyki with DHN PAN Bank, PKO SA IV 0 / Warszawa is required.

Information: Prof. Dr. J. Glinski, Polish Academy of Sciences, Inst. of Agrophysics, 20-076 Lublin, Poland.

Soils, Vegetation, Ecosystems. Conceptual Frameworks in Geography. Greg O'Hare. Oliver & Boyd, Edinburgh, 1988, 204p. ISBN 0-05-004237-8.

The volumes in the series Conceptual Frameworks in Geography are designed for sixth form geography students sitting the most recent A level examinations, and for students in Higher Education. They have a common structure with in-text assignments, additional activities, summaries of key ideas, and reading lists for each chapter.

This text provides an analysis of soils and vegetation and of the ecosystems, or general environments, in which they occur. The elements and properties of soils are introduced in Chapter 1. Chapter 2 examines a range of British soil types, covering their nature, formation and distribution. Chapter 3 turns to vegetation and focuses on its character, distribution and field survey. The information in Chapters 1 to 3 serves as a foundation for the subject of ecosystems, which is introduced in Chapter 4. Chapters 5 and 6 cover the structure and function respectively of the main global ecosystems (biomes) and the climates, soil, vegetation and animals, including humans, that they contain. In Chapter 7, elements from previous chapters are combined in an investigation of those ecosystems which have been particularly disturbed by human agency. Two chapters of a practical nature complete the book. Chapter 8 deals with the laboratory analysis of soils and their properties, while Chapter 9 concerns the field observation of soil profiles.

Wherever possible, ecological concepts have been reinforced by using recent quantitative data sources but the use of technical terminology has been kept to a minimum. A glossary of ecological terms is provided at the end of the text.

Orders to: Oliver & Boyd, 1-3 Baxter's Place, Leith Walk, Edinburgh EH1 3BB, Scotland, U.K.

Carta dei Suoli della Sicilia – Soil Map of Sicily. 1:250,000. G. Fierotti, C. Dazzi and S. Raimondi. Regione Siciliana and Univ. degli Studi di Palermo, Palermo, 1988. With explanatory text. Text in Italian and English.

This new soil map has been drawn up on the basis of several new surveys carried out after the first soil map of the island was published in 1968. For the purpose, the French CPCS system was modified to suit the soil conditions, while use is being made of the USDA Soil Taxonomy and the FAO-Unesco Soil Map of the World legend. Thirty-three soil associations have been mapped and described in terms of their constituent soil units, parent material, landscape, present use and use potential.

Price: free of charge.

Orders to: Istituto di Agronomia Generale, Cattedra di Pedologia, Univ. degli Studi di Palermo, Viale delle Scienze, I-90128 Palermo, Italy.

Irrigation Drainage and Flood Control in Canada. Aly M. Shady, editor. Canadian International Development Agency, Hull, 1989, xxvi + 309p.

This publication traces the development and achievements of Canada in the fields of irrigation, drainage and flood control.

The publication is presented in twelve chapters, each providing a comprehensive coverage of the specific topic of the chapter to allow the reader to have a fuller picture of the subject without having to cover the entire text.

The text presents subjects of national coverage in the first five chapters. The following seven chapters are devoted to covering the regional aspects related to main topics.

The initial chapter sets out the 'Canadian Scene'. Here, the national economy is concisely described, as are the primary elements relating to agricultural development, including spatial distribution of agricultural lands, crops produced, yields, soils, climate and farm economy. All of these factors have had a bearing on the need for, and extent of irrigation, drainage and flood control developments in the various parts of the country.

Chapter 2 describes the water resources of Canada and the country's major water development projects, such as hydroelectric and irrigation dams and navigation, while Chapter 3 deals with Canadian regional and international arrangements. Chapter 4 sets out various environmental and social concerns that generally accompany the development of irrigation, drainage and flood control projects in Canada. Chapter 5 provides details of the status and growth of technical knowledge and practices associated with water resources development in the country. Chapter 6 to 12 provide details of irrigation, drainage and flood control developments in each of the Canadian Provinces.

The text is well illustrated with figures, maps and colour photographs. Data and statistics are presented where needed.

Requests to: Dr. Aly M. Shady, Chief Irrigation Section, Canadian International Development Agency, 200 Promenade du Portage, Hull, Quebec, Canada K1A 0G4

Arid Zone Geomorphology. D.S.G. Thomas. Belhaven Press, London and Halsted Press, New York and Toronto, 1989, 372p. ISBN 1-85293-020-9 (in U.K.) 0-470-21341-8 (in U.S.A.). Hardbound.

Arid environments may not be the most hospitable places on earth, but the 30 per cent or more of the global land surface which they cover does support an ever-growing human population and has fascinated travellers, explorers and scientists for centuries. Recent years have seen an enhanced rigour in the investigation and explanation of landforms and geomorphological processes in arid lands. New data have been gathered by techniques ranging in scale from the detailed monitoring of processes in the field to remote sensing from space; old theories have been questioned and new ones, based on evidence rather than surmise, have been proposed.

The idea for this volume grew out of these advances and the absence of a recent book which encapsulates them. The present 'state-of-the-art' book-length review pulls all recent work together and places it in a coherent framework. All authors are actively involved in arid-zone research. Coverage is comprehensive, thorough and thematic, emphasising geomorphological process and product, including the role of environmental change and evidence from extraterrestrial arid environments.

Price: £40.00

Orders to: Pinter Publishers, 25 Floral Street, Covent Garden, London WC2E 9DS, England; or: John Wiley & Sons, 1 Wiley Drive, Somerset NJ 08873, U.S.A.

Flow Regimes from Experimental and Network Data (FRIEND). Vol. I Hydrological Studies, Vol. II Hydrological Data. A. Gustard, L.A. Roald et al. Institute of Hydrology, Wallingford, 1989, 591p. and 1 map. ISBN Vol. I 0-948540-117, Vol. II 0-948540-125, set 0-948540-109.

A large number of individual basin studies have been carried out as contributions to the International Hydrological Decade (IHD) and subsequent International Hydrological Programme (IHP). However, the results of these studies have seldom formed the basis for transferring research results to ungauged areas or been used to increase the understanding of the regional characteristics of hydrological behaviour. A proposal from the United Kingdom to focus on this issue was therefore presented to the sixth session of the IHP Intergovernmental Council meeting in March 1984. This took the form of a major international study and was seen as a contribution to the third phase of the IHP. There was substantial support for the proposal and a period of consultation followed, which resulted in the establishment of an international team of scientists.

The project brought together scientists from seven West European countries. The team has used a wide range of different techniques, from statistical descriptions of catchment response to conceptual and physically based models. Furthermore, both natural hydrological regimes and studies of human influences have been embraced by the project.

The FRIEND (Flow Regimes from Experimental and Network Data) project is a contribution to the Third International Hydrological Programme, the aim of which is 'The use of representative and experimental basins for monitoring natural and man made changes in hydrological regimes'. At the outset of the project it was realized that data from research basins and national hydrological services would be of value in meeting these aims. Three main themes have been followed in the study. The first, a regional analysis of hydrological extremes. The second, a study of techniques for the analysis of data from small research basins. The third, a study of human impacts on the hydrological regime. This, the final report of the FRIEND project, is divided in two volumes.

Hydrological Studies (Volume I) describes the data selection, archiving and analyses of the data and presents the conclusions and recommendations of the FRIEND research programme. *Hydrological Data* (Volume II) contains a series of tables summarising the data which were used in the study.

Orders to: Institute of Hydrology, Wallingford, Oxon OX10 8BB, England.

Effects of Soil Characteristics on Corrosion. ASTM STP 1013. V. Chaker and J.D. Palmer, editors. ASTM, Philadelphia, 1989, vi + 172p. ISBN 0-8031-1189-4.

Corrosion of metals in soils is responsible for a large percentage of corrosion worldwide. Several individual characteristics have been used to indicate the corrosivity of soils. However, no documentation describes the synergistic effect of several soil characteristics. This led the American Society for Testing and Materials, Subcommittee G1.10 on Corrosion in Soils to create a task group to discover the answer. The task group decided to sponsor an international symposium to find the latest activities in the field of corrosion of metals in soils. The symposium was held 12 May 1987 in Cincinnati. Eleven papers were presented, followed by question and answer sessions.

The symposium revealed specific projects that are being carried on. Several papers expanded the knowledge of one parameter: oxygen concentration cells and their effect on concentric neutral cables. The most promising work was in a paper in which many soil characteristics were correlated using statistical analysis. The technical contributions of each paper are highlighted in the summary in the back of the book.

More work is needed in the field of corrosion of metals in soils. Such information could be very important in identifying the synergistic effect of all the synergistic parameters, leading to more technically and economically effective methods of corrosion control.

Price: £22.00

Orders to: American Technical Publishers, 68a Wilburg Way, Hitchin, Herts SG4 0TP, England; or: ASTM, 1916 Race Street, Philadelphia, PA 19103, U.S.A.

Nitrogen in Organic Wastes applied to Soils. J.A. Hansen and K. Henriksen, editors. Academic Press, London, San Diego, 1989, xiv + 381p. ISBN 0-12-323440-9. Hardbound.

Organic wastes, including nitrogen compounds, are produced in agriculture, industry, and society in general; farmyard manure and slurries, food processing wastes and sewage sludge are examples. Organic wastes are traditionally applied to land to recover the fertilizer value, but ironically this 'natural' fertilizer is difficult to manage. Microbial turnover of the organic compounds in soil is often out of phase with the demand of the growing plants, and thus nutrients may be lost and act as potential pollutants to water and air. In contrast, chemical fertilizers are easily applied and readily available to plants at times when they are most needed. Hence chemical fertilization may be more amenable to environmental protection.

Soil application of organic wastes is therefore a particular challenge to agricultural and environmental engineers. By liaison with scientists in microbiological ecology, soil chemistry and hydrology, it may be possible to identify good practice for organic waste management. A seminar served the purpose of furthering such interdisciplinary processes by providing up-to-date information and recent research results. Twenty seven presentations were accepted and grouped in four sessions: (1) Nitrogen and carbon transformations (13 papers); (2) Gaseous losses (8 papers); (3) Chemical means of controlling nitrification (2 papers); and (4) Nitrate leaching (3 papers).

In the call for papers and subsequent selection of authors attention was given to experimental and modelling methodology. High quality data and comparable results of experiments are imperatives for progress in the modelling that is now inherent in both science and practice.

The highlights of the discussions are contained in an executive summary. In a concise form the summary contains a state-of-the-art view as well as a useful identification of needs for further research.

Price: £ 41.50

Orders to: Academic Press, 24/28 Oval Road, London NW1 7DK, England; or: Academic Press, 1250 Sixth Avenue, San Diego, CA 92101-4311, U.S.A.

Soil Genesis and Classification. Third Edition. S.W. Buol, F.D. Hole and R.J. McCracken. Iowa State University Press, Ames, 1989, xiv + 446p. ISBN. 0-8138-1462-6. Hardbound.

This book discusses the field-oriented studies of the formation and classification of soils as natural bodies. It also examines the necessary supporting auxiliary activities of the main themes of genesis and classification. This book summarizes a vast body of knowledge assembled since 1880 by soil scientists and ecologists about soils. As with the previous editions of the book, this third edition is on the growing edge of soil science, offering new concepts and approaches, as well as explaining familiar fundamentals. Although soil genesis and classification are the main themes, the related activities of soil survey – morphology, characterization and geography – are also discussed.

The third edition updates and expands the discussions of soil taxonomy. In addition, it is revised to include recent changes in soil classification. It also includes discussions of the international activities in reclassifying Oxisols and low activity clay Ultisols and Alfisols. A complete chapter examines the proposed new order of Andisols, and a new chapter provides a holistic view of how soil forming factors and processes interact within landscapes to create systematic special variation in soil profiles. The new developments and approaches in soil survey interpretation are reflected in an expanded chapter on that subject. This leading textbook for over 16 years is well-illustrated.

Price: US\$ 44.95.

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

Land Qualities in Space and Time. Proceedings of an International Symposium, Wageningen, Netherlands, 22-26 August 1988. J. Bouma and A.K. Bregt, editors. Pudoc, Wageningen, 1989, 356p. ISBN 90-220-0973-4, Hardbound.

The symposium was organized by the ISSS Working Group MV (Soil and Moisture Variability in Time and Space) and Working Group LI (Land Evaluation Information Systems). It was sponsored and financially supported by the International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT).

Land qualities are physical attributes of land that are important for its use. Examples of attributes are moisture-supply capacity, trafficability and aeration status. Different procedures are discussed to determine land qualities at different levels of detail, which can vary with the type of problem being studied. Much emphasis is placed on using existing soil survey data to obtain data to be used for modelling. In this context, geographical information systems are increasingly being used and several papers describe these systems.

After three introductory papers, 12 contributions on data collection and information systems follow. In the section on data use and simulation modelling 16 papers were presented, followed by 12 papers on studies at a regional scale and 8 on studies at field scale.

The book also contains a number of specific recommendation for future work in soil survey and land evaluation that are based on the discussions that took place during the symposium.

The proceedings of this symposium should be relevant for students, teachers and professionals involved with operational field projects.

Price: Dfl 140 or US\$ 80

Orders to: Pudoc, P.O. Box 4, 6700 AA Wageningen, the Netherlands.

III^e Colloque AISS: Pédologie – Télédétection – Informatique. Rapports. S. Bialousz, redactor. Polskie Towarzystwo Gleboznawcze, 1988, 202p.

From 1-5 June 1981, the 3rd Colloquium of the ISSS Working Group Remote Sensing for Soil Survey took place in Jablonna, Poland. The present publication contains 15 of the 24 papers presented at the meeting, as well as abstracts in English, French and Polish.

Requests to: Polish Society of Soil Science, Ul. Wisniowa 61, 02-520 Warszawa, Poland.

Fragipans: Their Occurrence, Classification, and Genesis. SSSA Special Publication Number 24. N.E. Smeck and E.J. Ciolkosz, editors. Soil Science Society of America, Madison, 1989, xvii + 153p. ISBN 0-89118-790-1.

Fragipans are very important pedological features that occur in Europe, New Zealand, the USA, and other parts of the world. From an agricultural perspective, fragipans are undesirable because they restrict rooting depth and retard removal of excess water that results in decreased productivity. Nonagricultural uses of soils with fragipans are primarily impacted by restricted water percolation through the soil. Thus, uses such as on-site waste water disposal are limited or, in many cases, impractical.

As a result of their extent and importance, fragipans have intrigued pedologists for more than 50 yr. It is probable that more papers have been presented and manuscripts published on fragipans than any other soil feature. Most pedologists have at one time or another studied fragipans. Despite all of this efforts, the mechanism of fragipan formation is still uncertain, and the identification of a fragipan is subject to considerable individual interpretation. The identification of fragipans is currently envisioned as a field problem involving a combination of clues because there is no single unique property that defines a fragipan. Some of the clues concern the presence of a polygonal pattern, root restriction, brittleness, and slaking in water. Genetically fragipans are just as intriguing; some pedologists contend that they are primarily a physical phenomenon, others contend that they are a result of chemical bonding.

The objective of the symposium at the 1987 meetings of the Soil Science Society of America, which gave rise to this publication, was to update information on fragipans by emphasizing the most recent investigations and innovative approaches to the study of fragipans. It was not the intent of this symposium to provide a comprehensive understanding of the genesis of fragipans nor unanimous agreement on a theory for fragipan formation. The goal was to provide an update of the state of knowledge regarding fragipans in order to provide a starting point for future work. Ideally this publication will point out the need for and direction of future scientific inquiry that will foster rapid advancement in our understanding of fragipans.

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

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

Clay Dispersion and Pedogenesis of Soils with an Abrupt Contrast in Texture – a hydro-pedological approach on subcatchment scale. T.M.W. van den Broek, Thesis, University of Amsterdam, 1989. Lab. of Physical Geography and Soil Science, University of Amsterdam, 1989, 109p. and appendices. ISBN 90-9003088-3.

The aim of this thesis is to study the process of clay dispersion under field conditions, and to relate this process to the genesis of soils with an abrupt contrast in texture. The study is based upon data collected in the field, dispersion experiments carried out at the laboratory and additional textural, chemical and mineralogical analysis.

Texture contrast soils are found, all over the world, under different conditions. Consequently, it is likely that soils with a textural change may form in different ways, according to various soil forming processes. These soil forming processes have been reviewed and discussed. In this study the attention is focused on one of these soil forming processes, viz. impoverishment. It is a process of natural soil degradation by dispersion and selective erosion of mainly fine clay.

On the forested, gently undulating outcrop of a marl formation in Luxembourg, texture contrast soils have developed. The forested, first order subcatchment in which these texture contrast soils are located, provide rather ideal conditions for identification and quantification of the various natural soil degradation processes, contributing to the development of the abrupt contrast in texture. Moreover, a hydro-pedological process presumably involved in the genesis of the texture contrast soil, is visible. During and after rainfall a subsurface flow is generated, transporting and exporting dispersed clay downslope at the interface between the silty surface and clayey Bg-horizon.

The pattern of the texture contrast soil on the slopes in these forested catchments is quite uniform. A relative coarse, silty surface horizon of 10 to 20 cm abruptly overlies a clayey, heavy Bg-horizon. The boundary between the silty surface horizon and the clayey Bg-horizon is smooth, but very abrupt. The increase in texture, from 22% clay in the surface horizon to 50% in the subsurface horizon within 2 cm, is found at the whole slope. This abrupt contrast in texture is not present on the crest and at footslopes.

Requests to: Lab. of Physical Geography and Soil Science, Univ. of Amsterdam, Dapperstraat 115, 1093 BS Amsterdam, the Netherlands.

Introduction and Guide to the Geographic Information System Tutorial (GIST). Geir-Harald Strand and Md. Ehsan Ullah. Norwegian Computing Center, 1989, 70p. ISBN 82-539-0314-6. With one diskette.

The Geographic Information System Tutorial (GIST) is a simple raster based package that can carry out spatial analysis on a limited dataset. The package is aimed at training, not analysis. Hence, it has some serious limitations attached to the range of data that can be handled. On the other hand, most basic GIS functions such as the manual input of geodata in both raster and vector formats; data recording by single value, range of values, logical statements and by corridors, and different techniques for map overlay can be carried out by the package.

The GIST is written and compiled in Turbo-Pascal 4.0. It is configured for IBM-XT/ATs or compatibles, preferably with a hard disk, using an EGA card and monitor, and running under MS-DOS version 3.2 or above. Hardcopy graphic printouts require a dot matrix printer supporting the IBM print-screen function.

GIST is easy to use for people with a background in geography and some elementary computing knowledge.

Price: US\$ 25,00 (manual and software).

Orders to: Norwegian Computing Center, P.O. Box 114, Blindern, 0314 Oslo 3, Norway.

A. Bregt, Wageningen, the Netherlands

Les Sols Cultivés. R. Morel. Technique & Documentation-Lavoisier, Paris, 1989, ix + 373p. ISBN 2-85206-513-4.

Cet ouvrage a pour ambition de décrire le sol et d'en analyser le fonctionnement, en utilisant dans la mesure du possible les informations théoriques et expérimentales acquises sur les sujets abordés. Il souligne l'intérêt agronomique de la question traitée. Aussi est-ce à dessein que les différents chapitres sont présentés comme une étude de l'environnement racinaire: de la qualité de cet environnement dépend en effet dans une large mesure la productivité des sols cultivés.

L'ouvrage débute par un chapitre d'initiation à la connaissance du sol, traitant des grandes lignes de sa composition, de son fonctionnement et soulignant son caractère hétérogène.

Faisant suite à ces généralités, une étude des constituants fondamentaux du sol (chapitres 2, 3, 4), de leur composition, de leur structure et de leurs propriétés, apparaît comme un préliminaire indispensable pour aborder le fonctionnement même du sol; celui-ci dépend en effet largement, sous de multiples aspects, des propriétés des constituants des sols.

Les chapitres 5, 6 et 7, traitant de l'environnement racinaire, envisagent sous ses différentes approches le fonctionnement du sol et forment la partie essentielle de l'ouvrage.

Les chapitres 5 et 6, relevant des disciplines physique, chimique et physico-chimique permettent, entre autres, de souligner l'unité de fonctionnement observée dans les transferts de natures cependant fort diverses qui se produisent dans le sol et dont l'ampleur obéit à une relation mathématique simple, linéaire (exemples: circulation de l'eau, diffusion en phase liquide, en phase gazeuse, propagation de la chaleur). Ils révèlent, en revanche, de grandes difficultés, voire une impossibilité, à saisir actuellement les mécanismes de mise à la disposition du végétal de certains éléments nutritifs retenus par le sol, tels le phosphore ou le potassium.

Le chapitre 7 s'ouvre à l'activité biologique du sol responsable, notamment, de la transformation des substances organiques et de la libération d'éléments nutritifs (azote, phosphore, soufre ...). Le problème de l'entretien organique des sols est analysé. Les questions relatives à la dynamique de l'azote nitrique, questions souvent délicates sinon préoccupantes (fertilisation azotée, pollution des nappes), sont présentées dans ce chapitre ainsi que dans le chapitre précédent.

Prix: FF 285

Commandes à: Lavoisier, 11 rue Lavoisier, F-75384 Paris Cedex 08, France.

Minerals in Soil Environments. Second edition. SSSA Book Series: I.J.B. Dixon and S.B. Weed, co-editors. Soil Science Society of America, Madison, 1989, xxvii + 1244p. Hardbound.

A thorough knowledge of soil minerals is vital to our understanding and proper use of soils. Soil scientists use this knowledge in fundamental and adaptive research on soil erosion, weathering, classification, fertility, physics, chemistry, biochemistry, and in the engineering aspects of soils. Today this knowledge is applied to waste-related environmental problems including toxic waste cleanup and landfill sites.

The second edition of this textbook examines the recent advances in soil minerals. It replaces the first edition published in 1977. Chapters from the first edition have been rewritten and several new chapters have been added. The new edition is reorganized to better serve as a graduate text and as a reference for soil mineralogy.

The first five chapters provide general coverage of introductory mineralogy, surface chemistry, mineral equilibria, soil organic matter, and mineral occurrence. The remaining chapters are devoted to minerals in various chemical and structural groups. One of the new chapters addresses the surface chemistry of minerals in a modern analytical way. The chapter on organic matter is included because of the ubiquitous occurrence of this important soil component in association with minerals in surface horizons. Coverage of soil organic matter is more thorough and results from new methods of organic matter analyses are discussed. The chapter on mineral equilibria is more rigorous and detailed than in the previous edition. In addition, it includes new material on mineral equilibria in relation to radioactive elements in the soil environ-

ment. Mineralogy and soil taxonomy are interface in a rewritten chapter which serves as a valuable reference on mineral occurrence in soils of the world.

Other modifications include new chapters on pyrophyllite and talc, palygorskite and sepiolite, zeolites, and titanium and zirconium minerals. Each of the other chapters has been updated.

Price: US\$ 90.00, plus \$9.00 per book for postage on orders outside the U.S.A.

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

Review Papers of the 1988 Australian National Soils Conference. Australian Society of Soil Science Inc., 180 p.

This volume contains the invited review papers presented at the National Soils Conference of the Australian Society of Soil Science held in Canberra in May 1988.

Leading Australian soil scientists review a wide spectrum of topics including: the effects of 200 years of European settlement on Australian soils; recent advances in submicroscopy of soils; management of acidity and improvement of biological and chemical fertility in temperate Australian soils; tillage practices and soil hydraulic properties; management of semi-arid, subtropical and wet tropical Australian soils.

Price: \$A 20, including postage by surface mail. For a further \$A 10, a copy of the abstracts of all papers presented at the conference is available. All payments should be in \$A.

Orders to: Dr. W.J. Bond, CSIRO Division of Soils, GPO Box 639, Canberra, A.C.T. 2601, Australia.

Communications in Soils Science and Plant Analysis. Special Issue on Plant-Soil Interactions at Low pH. G.J. Taylor, editor. Vol. 19, numbers 7-12, 1988, sv + 638 p. Marcel Dekker, New York and Basel, 1988. ISSN 0010-3624.

This issue contains the proceedings of a symposium held in Grande Prairie, Alberta, Canada in July 1987, which was organized as a result of discussion among several plant and soil researchers from Alberta, who shared a common interest in the growth of plants on acid soils. The need for a symposium with a multidisciplinary plant/soil format was identified, other conferences had failed to provide a forum where soil scientists, agronomists, plant physiologists, plant breeders and others could meet to discuss this topic.

Of the 45 papers and 30 posters presented, 47 are published in this volume in the following sections: soil acidification (4 papers), soil chemistry (5 papers), soil microbiology (4 papers), plant growth (11 papers), physiology of aluminium toxicity (5 papers), physiology of aluminium tolerance (5 papers), problem solving - genetic approach (5 papers) and problem solving - soil approach (9 papers).

Price: US\$ 180.00 plus postage.

Orders to: Marcel Dekker, 270 Madison Avenue, New York, NY 10016, U.S.A.

Seventh International Congress on Soilless Culture. Flevohof 1988. Proceedings, International Society for Soilless Culture, Wageningen, 1989, 483 p. ISBN 90-70476-05-6 Casebound.

For the third time in succession, the congress was held in The Netherlands, since nowhere else in the world soilless culture has reached such an extension as there.

During the last few years more and more attention is given to the re-use and disinfection of the nutrient solution. This is mainly due to environmental problems. Also during the congress and during the excursion this was one of the most important issues discussed. The 39 contributions are alphabetically arranged in the proceedings.

Price: Dfl. 150.00 including postage. Prepayment required.

Orders to: ISOSC, P.O. Box 52, 6700 AB Wageningen, The Netherlands.

Fertilizer Management in Plantation Crops - A Guidebook. H.L.S. Tandon. Fertilizer Development and Consultation Organisation, New Delhi, 1988, viii + 83p. ISBN 81-85116-07-5.

Plantation crops are high-value commercial crops of great economic importance for individual growers as also for the economy of India. Their importance is far greater than their share of the agricultural area. They occupy less than 2 per cent of the cropland but they contribute three-fourth of the foreign exchange earnings from all agricultural commodities.

Productivity of plantation crops in India is low. Present yields are less than 10% of the maximum theoretical potential, showing the tremendous potential for improving the productivity. Fertilizer is a very important component of the improved technology for the production of plantation crops.

In this guidebook, the latest fertilizer recommendations for 14 plantation crops in different India states are given. Both major and micro nutrients have been covered. An overview chapter on plantation crops and another chapter on various aspects of fertilizer management has been provided.

Price: US\$ 18, incl. airmail postage.

Orders to: see below.

Sulphur Fertilizers for Indian Agriculture – A Guidebook. H.L.S. Tandon. Fertilizer Development and Consultation Organisation, New Delhi, 1989, 95p. ISBN 81-85116-09-1.

Sulphur deficiencies have been reported from several states of India and the importance of S application for increasing crop yields and quality is being increasingly recognised. Provision of subsidy to the use of gypsum and pyrites in oilseed production programmes by the government of India is a timely recognition of the vital role which S can play in increasing crop production in the country.

The objective of this guidebook is to present available information on the sulphur component of common fertilizers (*finished products as well as minerals such as pyrites and gypsum*) so that this valuable resource is utilised in a systematic manner for increasing agricultural production in areas which need S application. The guidebook is primarily meant for extension workers, agricultural officers, industry field staff, soil testing laboratories, and training centres so that they can understand the full potential of these fertilisers and be able to advise the farmers about how to get the best out of them.

Price: US\$ 18 plus \$ 2 when paid by check.

Orders to: FDCO, C110, Greater Kailash I, New Delhi 110 048, India.

Final Report of the International Workshop 'Long-term Ecological Research: A Global Perspective', Berchtesgaden, 18-22 September 1988. MAB Mitteilungen 31. German National Committee for the Unesco Programme 'Man and the Biosphere', Bonn, 1989, 441p. ISSN 0723-4112.

Long-term ecological research is a continual matter of concern to the German National Committee of the Unesco programme 'Man and the Biosphere'. Biosphere Reserves, which are one of the main instruments employed by MAB, are ideal sites in which to conduct research into ecosystems and ecologically-based environmental observation, since by their very nature as protected areas, they guarantee a long-term perspective for the work being carried out.

In the past, long-term ecological research was the 'Cinderella' of scientific ecological studies. Although in particular because of the inter- and intraspecific complexity of ecological questions to be dealt with, basically only long-term observations can provide answers which satisfy the needs of the scientific corps, management bodies and administrators.

While it has begun to be generally recognized that the natural sciences can provide the instruments which are necessary for a sustained management of natural resources, the use of such means however must take place within a social and economic context, if it is to have any chance of success. The MAB programme unites both these ideas since it makes man, as part of the biosphere, the basis of its activities. Thus scientific research is being set firmly within a social context. The participants of the Workshop studied the requirements of long-term ecological research within the framework of global cooperation.

In the first of three working parties, the experience of long-term research programmes into ecosystems was analyzed and the necessary prerequisites for their success discussed. In view of global environmental problems (global change) which respect neither geographical nor political borders, another working party noted the necessity of international cooperation and coordination of research projects. This group pointed out in particular that such research had to be carried out within the framework of a standardized or harmonized global representative network.

The effects of regional and global environmental changes are beginning to be seen at all levels of ecosystems. Thus the third working group classed the effect of climatically determined changes in land-use on ecosystems as one of the most important ecological questions to be given priority.

The present report gives an outline of the experts' speeches made and presents working reports on the results on the three working groups. It is available free of charge.

Requests to: MAB Secretariat, c/o Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Postfach 120629, D-5300 Bonn 1, Fed. Rep. of Germany.

The Chemistry of Soils. G. Sposito. Oxford University Press, New York, Oxford, 1989, xii + 277 p. ISBN 0-19-504615-3. Hardbound.

More than most of the branches of soil science, soil chemistry has reflected with an ever-decreasing lag time the conceptual breakthroughs and technological growth of its parent discipline, pure chemistry. This physical science, especially in the areas of precise spectroscopic instrumentation and computational technology, has experienced explosive changeover the past decade. Spectroscopic techniques, for example, have increased the sensitivity of routine analytical methods by three orders of magnitude, and small laboratory computers now manipulate chemical data or instrumentation with the speed and capacity once requiring a roomful of electronic processors. These kinds of innovation have helped to transform soil chemistry from a qualitative science, rife with inadequate methodology and theory, to a highly technical subdiscipline that has begun to develop its own agenda for the study of natural systems.

This book is intended for use on one-semester or one-quarter courses on modern soil chemistry. A background in elementary chemistry and mineralogy is assumed on the part of the student. An understanding of pure chemistry as presented in the usual two-year introductory sequence (general and organic chemistry) is also required. Exposure to the concepts of calculus is useful, but not necessary, since virtually all of the mathematics in this book involves only algebraic and numerical manipulations. Some familiarity with statistical methods will be helpful in the numerical aspects of the problem sets.

The general plan of the book is to introduce the principal chemical constituents of soils in the first four

chapters, then to describe and apply important soil chemical processes in the following six chapters. The last three chapters present detailed applications of soil chemistry to soil acidity, salinity, and fertility. These chapters are *not* intended to review these extensive fields of applied soil science, but instead to provide the soil chemistry foundation for further, specialized courses on soil-plant relationships, fertilizers, and soil management. An appendix on SI units and physical constants as used in soil chemistry is provided to summarize the scientific terminology found in the book. The 215 problems following the chapters in this book have been designed to reinforce or extend the main points discussed.

Orders to: Oxford University Press, Walton Street, Oxford, OX2 6DP, UK; *or:* Oxford University Press, 200 Madison Avenue, New York NY 10016, U.S.A.

Amazonian Rain Forests. Ecosystem Disturbance and Recovery. Ecological Studies 60. C.F. Jordan. Springer-Verlag, New York, Berlin, 1987, x + 133p. (reprint 1989). ISBN 0-387-96397-9 (U.S.) 3-540-96397-9 (F.R.G.). Hardbound.

This book focuses on the interaction between the Amazonian environment and the economic and social forces driving development. It also compares a range of development strategies and evaluates them in a conservation perspective. The disturbance and development as well as the environmental limitations of the Amazonian rain forests are illustrated by concise, interesting case studies. Summaries of nutrient dynamics and productivity data are interpreted in the context of current social and economic problems. Principles for sustainable management and for conservation are discussed in the summary chapter.

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

Abstracts on Sustainable Agriculture. Compiled by Jürgen Carls. Volume I, 1988. Deutsches Zentrum für Entwicklungstechnologien (GATE) and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), 1989, 294p.

This successor to the 'Abstracts on Intercropping', compiled by the same author, covers a somewhat broader field. The abstracts deviate from the usual type of annotated bibliography by extent as well as degree of detail, the idea being to supply sufficient information to use the main results without access to the original publication.

The abstracts are divided into different sections, e.g. integrated systems, agroecology, homegardens, soil fertility, water management etc. The subject index, based on key-word, the geographical indices as well as the index of authors help the reader to find abstracts on specific aspects of sustainable agriculture easily.

Price: free for scientists in developing countries; for others, about DM 30,-

Orders to: Vieweg Verlags GmbH, Postfach 300620, D-5090 Leverkusen 3, Fed. Rep. of Germany.

Agroforestry in Dryland Africa. ICRAF Science and Practice of Agroforestry 3. D. Rocheleau, F. Weber and A. Field-Juma, ICRAF, Nairobi, 1988, 311p. ISBN 92-9059-049-1.

This book is the third in a series published by ICRAF on the science and practice of agroforestry. The series is intended to include practical handbooks and manuals, descriptions of research methods, monographs on multipurpose tree species, analyses of specific agroforestry practices and systems, and review of special aspects of agroforestry.

The book presents one approach to developing agroforestry practices suitable for the subhumid and semi-arid regions of Africa. It provides a framework for working with community members to evaluate current land-use systems and to develop sustainable improvements using agroforestry techniques. The authors have attempted to provide the practical information needed in order to implement soil and water conservation measures which will also satisfy the numerous other needs of rural communities. They describe the management and multiple uses of tree species suited to the region and discuss the design, management and potential benefits of 15 agroforestry practices. This discussion includes issues of land and tree tenure, the distribution of benefits and participation of all community members.

This book is specifically designed to be used by agroforestry field workers in subhumid and semi-arid regions of the continent. This includes researchers working with grassroots organizations, community extension and development workers and development specialists in government agencies and national research institutes. It will also be useful to extension training officers and people engaged in liaison between extension and research on the use of natural resources. Its subject matter assures it of a wide readership in other parts of the world.

Price: US\$ 12.00

Orders to: ICRAF, P.O. Box 30677, Nairobi, Kenya

New Journals/Nouveaux Périodiques/Neue Zeitschriften

Agritrop. Tropical and Subtropical Analytical Bulletin in three Languages from Agricultural Literature in French. CIRAD, Montpellier. ISSN 0399-155.

This quarterly, already in its 14th volume, contains an annotated bibliography of books, articles and other material, originally published in French. It covers agriculture and rural development in tropical and subtropical regions. The bulletin is classified according to the AGRIS categorization plan and indexed with the Agrovoc thesaurus of FAO. The bulletin also includes short articles on current research.

Subscription price: Europe and Africa FF 400, *elsewhere:* FF 470.

Orders to: CIRAD-GERDAT, Service IST, Agritrop, B.P. 5035, F-34032 Montpellier Cedex 1, France.

Catena. Vol.16, n°4/5, August-October 1989. J. Poesen and F. Kwaad, editors. Catena Verlag, Cremlingen. ISSN 0341-8162.

This issue contains selected papers of the 4th Benelux Colloquium on Geomorphological Processes, held in Amsterdam and Leuven in April/May 1988. Traditionally, the Benelux Colloquia on Geomorphological Processes have concentrated on exposing the newest developments in ongoing research in the Benelux. The present meeting, however, has broadened this basis to cover work being done internationally. During this meeting, the most recent developments in process geomorphology with respect to the following themes were reviewed:

(1) modern methods of field monitoring, laboratory experimentation and measurement; (2) impact of climatic change on geomorphological processes; (3) soil erosion and degradation; (4) interactions between abiotic and biotic processes, and (5) soil erosion control.

The themes were dealt with in paper and poster sessions, small workshops and excursions to sites in the Netherlands, Belgium and Luxembourg. About 100 geomorphologists from all over the world attended this meeting. Forty-six papers have been submitted for publication in the proceedings of this colloquium. These will appear in three journals, i.e. **Catena**, **Earth Surface Processes and Landforms**, and **Soil Technology**. Eighteen contributions have been selected for publication in this special issue. They are grouped according to the following themes: (1) effects of climatic change on geomorphological processes (4 papers); (2) assessment of soil erosion and degradation (5 papers); and (3) interactions between abiotic and biotic processes (9 papers).

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Land Degradation & Rehabilitation. Quarterly. C.J. Barrow, managing editor. John Wiley & Sons, Chichester. ISSN 0898-5812.

This new journal is devoted to land degradation, land degradation avoidance, land degradation mitigation and the rehabilitation of degraded land. It seeks to promote rational study of the recognition, monitoring, control and rehabilitation of degradation in terrestrial environments. Identifying the processes and causes of degradation and knowing techniques for control and rehabilitation are vital, but are of limited value unless the problems can be managed. The journal will therefore, in addition to the aforementioned subjects publish papers on political, economic, social and historical aspects, forecasts of trends, case-studies and management of land degradation.

Land degradation may be defined as the loss of utility or potential utility through reduction of or damage to *physical, social or economic features, and/or reduction of ecosystem diversity*. There may be a single cause or, a complex mix of causes, some may be biogeophysical ('natural'), some socio-economic ('human') and it is quite possible that cause(s) will be difficult to identify.

Land degradation is a problem in rich and poor, capitalist and communist nations, rural and urban areas. It is a major threat to development and quite possibly to the survival of mankind and other organisms. A major challenge in the coming decades is to learn how interactions between development and environment can be better managed to increase prospects for ecologically and socially sustainable improvements to human well-being.

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- 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 Ås-NLH, Norway
- SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Bodenwasser-verschmutzung (Comm. II)**
Mr. A.J. Thomasson, Soil Survey and Land Research Centre, Silsoe, Bedford MK45 4DT, England

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