



Bulletin

of the International Society of Soil Science

Bulletin

de l'Association Internationale de la Science du Sol

Mitteilungsblatt

der Internationalen Bodenkundlichen Gesellschaft

Boletín

de la Sociedad Internacional de la Ciencia del Suelo

No. 80

1991/2

**INTERNATIONAL SOCIETY OF SOIL SCIENCE (ISSS)
ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL (AISS)
INTERNATIONALE BODENKUNDLICHE GESELLSCHAFT (IBG)**

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assoziiertes Mitglied der ICSU seit: 1972.

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GUEST-EDITORIAL

Professor Winfried Blum, our Secretary-General has decided to include a guest-editorial note in our bulletin and I thank him for inviting me to write the initial one.

The first thought that comes to my mind at the moment I start writing this is to express my gratitude to Professor Tanaka and to all the Japanese colleagues who made possible the celebration of the XIV ICSS, a success from every point of view. During the congress my friends from the Mexican Soil Science Society and myself had the opportunity to understand and appreciate the great efforts involved in the organization of such a large meeting. Their experiences, which were communicated to us in an open and friendly manner, are serving as the basis for the organization of our next meeting in Mexico, in 1994.

We also wish to recognize the many and valuable services offered to the Society by the former officers Dr. Sombroek, Prof. Szabolcs and Dr. Gabriels. Their contributions over many years of hard work led our organization on a path of useful achievements towards the fulfillment of the objectives of the ISSS. Their retirement from office leaves a void not easy to fill. Fortunately, our Society has many well prepared and talented professionals. Our new Secretary-General, Deputy Secretary-General and Treasurer have the confidence and moral support of the entire membership community. There is every reason to trust that they will successfully lead our association through a new period of exciting challenges and opportunities.

For the first time in the history of the Society a congress will be held in Latin America. The Organizing Committee has been established and the first announcement will be published in this bulletin (1991/2). The motto of the meeting has been defined as

Soil utilization in harmony with nature -
learning from the past to face the future

It comprises the main concerns: an optimum land use, soil conservation and environmental protection and calls on us to remember important lessons from the past which may be most useful to face the future. Science and technology involve, after all, accumulation and analysis of useful observations which constitute the basis for further achievements. We believe that the ancient cultures of the world developed important agricultural techniques, milieu friendly techniques, some of which could still indicate alternative solutions to modern problems. Furthermore, the knowledge of traditional agricultural practices from a given area, in many instances, determines the way new technologies can be introduced in the area and assimilated by local farmers.

Complementary to the main core of the congress devoted to analysis and discussion of the newest advances in soil science, some symposia will be designed to deal directly with the motto. In the first announcement information will be provided on the basic structure of the meeting including excursions, plenary lectures, poster sessions and symposia. Final decisions on the programme shall be taken at the intercongress meeting of the Executive Committee in November 1992, in Acapulco. Therefore, the possibility is still open to suggestions on the organization of the congress. The Organizing Committee is working on the basis of experiences gathered from previous meetings and on the new ideas advanced by many colleagues during the last months after the Kyoto meeting. I find, therefore, this to be a fine opportunity to invite all ISSS members to let us know their suggestions and wishes in order to plan for an event which will be both useful and pleasant.

Notwithstanding the importance of our international meetings every four years, it is always important to remember that the ISSS is not only an organization which periodically organizes a congress. The objectives of the Society are far more extensive and the congress itself should only be regarded as one of the means to reach our goals. As an example, one of the ideas which has repeatedly been raised among soil scientists is that the ISSS should promote a wider recognition of the soil as a fundamental component of the environment which should be carefully studied and protected and towards which far more attention and resources should be

devoted. This promotion must not be limited to scientific spheres but should also be designed to reach the public in general. In facing such a task we find ourselves somewhat unprepared and realize the importance of strengthening our Society. Initiatives such as the publication of the pamphlet "Do soils matter?", carried out over and over again by the ISSS and the National Societies might well help. Work directed towards the inclusion of basic soil science in elementary school programmes might also have some impact.

Though apparently simple and humble material, the soil is still vital for nature and human kind. It should be a motive of pride, renewed interest and endurance for soil scientist to work in benefit of its rational utilization and conservation.

A. Aguilar
President of ISSS

XVth INTERNATIONAL CONGRESS OF SOIL SCIENCE
July 10-16, 1994
Acapulco, Guerrero, Mexico

SOIL UTILIZATION IN HARMONY WITH NATURE
Learning from the past to face the future



The Earth's GODDESS

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

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

(Original picture in colour)

Codex Borgia

FIRST ANNOUNCEMENT
XV INTERNATIONAL CONGRESS OF SOIL SCIENCE
10-16 JULY, 1994
ACAPULCO, GUERRERO, MEXICO

GENERAL PROGRAM

The XV International Congress of Soil Science will take place in Acapulco, State of Guerrero, Mexico, on 10-16 July, 1994, with the support of the Mexican Society of Soil Science and several other national and international institutions.

The program will consist of plenary lectures, symposia, poster sessions, technical - cultural tours and exhibitions. Approximately 28 symposia will be organized, where invited papers will be presented orally (some voluntary papers may be included in the symposia). All other voluntary papers will be presented in the poster sessions. For operational purposes, authors are encouraged to present their papers in English. Simultaneous translation into French, German and Spanish will only be available during the opening and closing ceremonies. Computers will be available for a computer session. Commercial exhibitors are welcome. Special activities for accompanying persons will be programmed.

PLENARY LECTURES

One plenary lecture on the state-of-the-art will be presented by each ISSS (Sub-) Commission; eleven in total. Topics and speakers are being considered by the respective (Sub-) Commissions in consultation with the Organizing Committee.

SYMPOSIA

Two types of symposia will be held:

Symposia on most recent and relevant developments in soil science: two symposia from each commission, and one from each sub-Commission. Preliminary titles of these symposia will be defined by (Sub-)Commissions and published in the ISSS bulletin No. 81. Most presentations will be in charge of invited speakers, but some contributions may be selected from voluntary papers. Those who intend to submit a voluntary paper should fill and send the Notice-of-Intent form attached to this announcement, so that they will later receive a form for extended summary. Voluntary papers selected for presentation in the symposia will be chosen solely based on their fitness to the symposia themes as expressed in the extended summary. Authors of the selected papers will be further requested to contribute a full paper during the second half of 1993.

Special Symposia. In addition to the above described 18 symposia, approximately 10 special symposia (interdisciplinary, satellite) are planned. The tentative titles of these symposia will also appear in bulletin No. 81.

All definite symposia titles will appear in the ISSS bulletin No. 82, after the mid-term meeting of the Executive Committee of the ISSS, in Acapulco, in November 1992.

POSTERS

Most voluntary papers will be presented at the poster sessions and their extended summaries will

be published in the congress proceedings. Instructions for poster presentation will be published in the 2nd announcement.

TECHNICAL TOURS

Pre- and post-congress technical tours will be conducted in cooperation with colleagues from the Soil Science Society of America, the Soil Science Society of Canada and the Soil Science Society of Cuba.

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

The number of participants in the tours will be limited; therefore, they will be offered on a "first-come, first-served basis".

PRE-CONGRESS TOURS 1. GUADALAJARA-MEXICO CITY (5-6 days).

Central and western Mexico, visiting intensive production systems and rainfed agriculture in Guadalajara, Zamora, Uruapan (Vertisols, Luvisols); Patzcuaro, Morelia (Andosols, Acrisols); Celaya, Queretaro (Vertisols, Phaeozems); Tula (Xerosols), Teotihuacan; Mexico City (Solonchaks, Phaeozems). Transportation in plane from Mexico City to Acapulco or connection with tour 3.

PRE-CONGRESS TOUR 2. CANCUN-VILLA HERMOSA (6-7 days).

Southeast Mexico; tropical pastures and cattle raising; Cancun, Valladolid, Chichen-Itza (Cambisols, Rendzinas); Yaxcaba, Merida (Luvisols, Nitosols); Uxmal, Campeche (Solonchaks, Vertisols); Escarcega, Palenque (Arenosols, Acrisols); Teapa, Pichucalco (Gleysols, Cambisols). Transportation by plane from Villa Hermosa to Acapulco or to Mexico City and then connection with tour 3.

PRE-CONGRESS TOUR 3. MEXICO CITY-ACAPULCO (2 days).

From central to southwest Mexico. Horticultural and legume crops under intensive agriculture and experimental station. Mexico City (Solonchaks, Phaeozems), Cuernavaca (Andosols), Taxco (Histosols), Acapulco (Cambisols, Luvisols).

PRE-CONGRESS TOUR 4. LA HABANA-MATANZAS-VILLA CLARA- LA HABANA, CUBA (6-7 days).

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

PRE-CONGRESS TOUR 5. LA HABANA-GUANTANAMO-SANTIAGO-CIEGO DE AVILA-LA HABANA, CUBA (6-7 days).

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

**POST-CONGRESS TOUR 6. CENTRAL AND SOUTHERN CALIFORNIA (8 days)
SAN FRANCISCO-FRESNO-RIVERSIDE-EL CENTRO-SAN DIEGO.**

Landscapes, soils, land use, and sightseeing in the San Francisco Bay region; California's premium grape culture in Napa Valley; land use, agriculture, organic soils, and man-shaped terrace soils in upper San Joaquin Valley; forest soils and management on Sierra Nevada foothills; Yosemite National Park; soils, land use irrigated agriculture, and agribusiness in lower San Joaquin Valley; forest soils and management on Sierra Nevada foothills; Yosemite National Park; soils, land use, irrigated agriculture, and agribusiness in lower San Joaquin Valley (Fresno); plate tectonics, soils, landscapes, State Water Plan, and land use along the San Andreas earthquake fault areas of the Tehachapi Mountains; high desert soils and water management of the Mojave Desert; citrus and avocado management, USDA Salinity Laboratory, and sightseeing (Riverside); low desert soils and speciality crops of the Imperial Valley (El Centro).

**POST-CONGRESS TOUR 7. WEST TEXAS, NEW MEXICO, AND ARIZONA (6 days).
EL PASO-LAS CRUCES-FARMINGTON-FLAGSTAFF-PHOENIX**

Landscapes, soils, and land use in southern New Mexico; the Desert Project of the USDA-Soil Conservation Service, including a chronosequence of soils containing calcic and petrocalcic horizons (Las Cruces); visit Carlsbad Caverns in southeastern New Mexico; mined land reclamation areas in north western New Mexico (Farmington); Andisols and forest land use in northern Arizona (Flagstaff); visit Grand Canyon National Park and Petrified Forest National Park; tour the USDA Water Conservation Laboratory in Phoenix.

**POST-CONGRESS TOUR 8. SOUTH CENTRAL LOUISIANA, WESTERN MISSISSIPPI,
AND EAST TEXAS (6 days).**

NEW ORLEANS-BATON ROUGE -VICKBURG-LONGVIEW-DALLAS.

Landscapes and urban use on Histosols in New Orleans; sugar cane and rice research at research stations in south Louisiana; a Udult in a National Forest; cotton, soybeans, and livestock on a Vertisol at a research station in central Louisiana; vegetation changes with decreasing rainfall in east Texas; urban soil use and a Vertisol at an experiment station (Dallas).

**POST-CONGRESS TOUR 9. SOUTHERN ONTARIO, SOUTHERN MICHIGAN, AND
NORTHERN INDIANA (6 days).**

TORONTO-WINDSOR-DETROIT-CHICAGO.

Fruit, vegetable, and speciality crop production on Luvisols (Alfisols) and Gleysols (Aquepts, Aquolls); visit Niagara Falls; research on soil structure, plant nutrition, tillage and soil stewardship cropping systems on Luvisols and Brunisols (Alfisols, Inceptisols) at the Elora Research Station, and conventional tillage systems and conservation farming on paired watersheds in the Windsor area of southern Ontario; visit Henry Ford Museum and Greenfield Village and non-agricultural uses of Alfisols, Mollisols, and Inceptisols (Detroit); environmental and agricultural research on Alfisols and Inceptisols at the Kellogg Biological Station and Spodosols in southwest Michigan; soils and crop production methods on Mollisols and Alfisols in northwest Indiana representative of the Corn Belt in the Midwest.

POST-CONGRESS TOUR 10. MEXICO CITY-GUADALAJARA (5-6 days).

Same as tour 1 but in opposite direction.

POST-CONGRESS TOUR 11. MEXICO CITY-CANCUN (6-7 days).

Same as tour 2 but in opposite direction.

POST-CONGRESS TOUR 12. ACAPULCO-MEXICO CITY (2 days).

Same as tour 3 but in opposite direction.

POST-CONGRESS TOUR 13. LA HABANA-MATANZAS-VILLA CLARA-LA HABANA, CUBA (6-7 days).

Same as tour 4.

POST-CONGRESS TOUR 14. LA HABANA-GUANTANAMO-SANTIAGO-CIEGO DE AVILA- LA HABANA, CUBA (6-7 days).

Same as tour 5.

Additional one-day tours will be offered in Acapulco during the congress.

LOCATION OF THE TOURS



REMARKS.

Please fill out the form attached to this announcement, keep one copy for your files, and mail it to the address given on it, preferably, before DECEMBER 1992. Return of the notice-of-intent by December 1992 is kindly requested in order to provide information to the organizing committee on possible attendance and facilities required.

Final registration will be made on a special form that will be mailed to those who have completed the notice-of-intent form. The style-guide and the form for an extended summary will be enclosed with the final registration form. The second announcement will contain details on the program, technical tours, cultural events, transport, and accommodation.

ACAPULCO, GENERAL INFORMATION

The bay of Acapulco is located along the coast of the Pacific Ocean, 350 km south of Mexico City, accessible by expressway. The Acapulco International Airport receives direct flights from the major capitals of the world. Cruise ships from several points in California and Baja California put into the Port of Acapulco. By 1993 a modern toll four-lane highway will connect Mexico City and Acapulco with an estimated driving time of 3.5 hours.

Acapulco has 16,300 hotel rooms. Everything from de luxe Gran Turismo to one-star establishments. Most of the major hotels are right on the beach, and the rest are only a few minutes away. More than 160 restaurants with plenty of tropical decor and all kinds of exotic flavors, such as Mexican food, Japanese "sushi bars", vegetarian specialities, Chinese dishes, or Italian, Lebanese and French cuisine.

The weather is sunny and clear 360 days of the year, Acapulco's average annual temperature is 27°C. The humidity varies with approximately 960 mm of rain annually, tropical showers are short and usually fall at night.



ISSS-AISS-IBG

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

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

Surname First name Middle initial
Mailing Address:

Telephone No. _____ Fax No. _____

I expect to attend the XV ICSS Sure _____ probably _____

I expect to be accompanied by _____ persons

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

Tentative title: _____

My preference for technical tours are: (X)

Pre-congress tours: (1) (2) (3) (4) (5)

Post-congress tours: (6) (7) (8) (9) (10) (11) (12) (13) (14)

One day tours in Acapulco ()

My hotel preferences are:

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

Please, mail this form before December 1992 to:

XV ICSS Secretariat, Centro de Edafologia,

Colegio de Postgraduados, P.O. Box 45

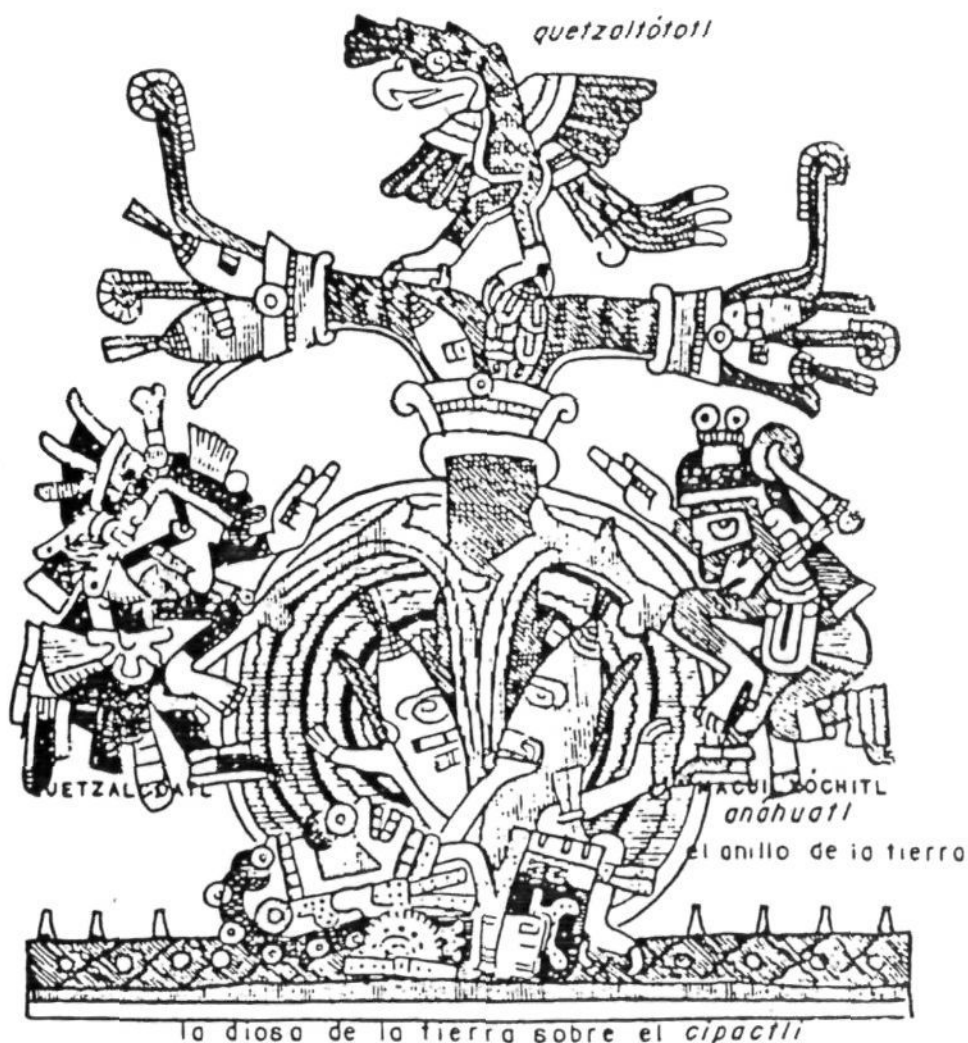
56230, Chapingo, México.

Fax +52 (595) 457-23

Keep a copy for your files.

XV CONGRES INTERNACIONAL DE LA CIENCIA DEL SOL
10-16 Juillet, 1994
Acapulco, Guerrero, Mexique

UTILISATION DU SOL EN EQUILIBRE AVEC LA NATURE
apprendre du passé pour faire face au futur



DEESSE DE LA TERRE

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

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

(Tableau original en couleurs)

Codice Borgia

PREMIERE ANNONCE
XV CONGRES INTERNATIONAL DE LA SCIENCE DU SOL
10-16 JUILLET, 1994
ACAPULCO, GUERRERO, MEXIQUE

PROGRAMME GENERAL

Le XV Congrès International de la Science du Sol aura lieu à Acapulco Guerrero, Mexique du 10 au 16 juillet 1994 avec le support de la Société Mexicaine de la Science du sol et d'institutions nationales et internationales.

Le programme général comportera des conférences, symposia, séances de posters, excursions techniques ainsi que des démonstrations commerciales. Il y aura environ 28 symposia où des communications orales seront présentées par des invités (quelques travaux libres feront partie des symposia). La plus part des communications libres seront présentées en session de posters. Pour des raisons logistiques les participants sont vivement encouragés à présenter leurs travaux exclusivement en Anglais. Il n'y aura des traductions simultanées en Français, Allemand et Espagnol que lors des cérémonies d'inauguration et de clôture. Une présentation de techniques informatiques est prévue. Les exposants commerciaux sont bienvenus. Une programme est préparé pour les accompagnatrices.

SEANCES PLENIERES

Une conférence plénière pour analyser "où on en est et où on va" sera présentée dans chaque commission et sous-commission de la AISS. Les sujets et les conférenciers seront choisis par les respectives (sous-) commissions en accord avec le comité organisateur.

SYMPOSIA

Deux sortes de symposia auront lieu:

Ceux où seront présentées les plus récents et les plus remarquables développements dans la science du sol. Deux symposia seront organisés par chaque commission et un symposium par chaque sous-commission. Les titres préliminaires de ces symposia seront publiés dans le bulletin no. 81 de l'AISS. La majorité des présentations seront à la charge des conférenciers invités cependant quelques travaux libres pourraient être sélectionnés pour les symposia. Les personnes désirant envoyer une communication libre doivent remplir la fiche de préregistre ci-jointe. Ils recevront en temps voulu le formulaire pour le résumé étendu. Les communications libres seront sélectionnées pour les symposia uniquement sur la base de leur affinité avec le sujet des symposia. Les auteurs des travaux sélectionnés devront envoyer un manuscrit complet durant le second semestre de 1993.

Une dizaine de symposia interdisciplinaires (satellite) seront réalisés en plus des symposia organisés par les (sous-)commissions. Les sujets préliminaires seront publiés dans le bulletin No. 81 de l'AISS. Les titres définitifs des symposia seront publiés dans le bulletin No. 82 après la réunion intercongrès du Comité Exécutif à Acapulco en novembre 1992.

POSTERS

La majorité des communications libres seront présentés dans la séance de posters et tous les résumés étendus seront publiés dans les actes du congrès. Les instructions pour la préparation des posters seront publiées dans la 2^{ème} annonce.

EXCURSIONS TECHNIQUES

Les excursions techniques avant et après le congrès se dérouleront avec la participation des collègues des sociétés Américaine, Canadienne et Cubaine de la Science du Sol. Les excursions

techniques ont été planifiées pour visiter différents types de sols, champs de production, stations de recherche agronomique et entreprises agricoles. En plus de cela, il a été prévu de visites des endroits d'intérêt culturel et archéologique.

Le nombre de places sera limité, donc celles-ci seront offertes en 'first come-first served-basis'.

TOUR PRE-CONGRES 1. GUADALAJARA-MEXICO (5-6 jours).

Régions ouest et centre du Mexique. Visite des systèmes de culture intensive et d'agriculture saisonnière à Guadalajara, Zamora, Uruapan, (Vertisols, Luvisols); Pátzcuaro, Morelia (Andosols, Acrisols); Celaya, Querétaro (Vertisols, Phaeozems); Tula (Xerosols), Teotihuacán, México (Solonchaks, Phaeozems). Transport aérien de México à Acapulco ou liaison avec le Tour 3.

TOUR PRE-CONGRES 2. CANCUN-VILLAHERMOSA (6-7 jours).

Région sud-est du Mexique. Agriculture et élevage tropical à partir de Cancun, Valladolid, Chichen Itza (Cambiosols, Rendzinas); Yaxcaba, Mérida (Luvisols, Nitosols); Uxmal, Campeche (Solonchaks, Vertisols); Escarcega, Palenque (Arenosols, Acrisols); Teapa, Pichucalco (Gleysols, Cambiosols). Transport aérien de Villa Hermosa à Acapulco ou à México et liaison avec le Tour 3.

TOUR PRE-CONGRES 3. MEXICO-ACAPULCO (2 jours).

Région centre et sud-ouest du Mexique. La production de plantes ornementales et potagères sous systèmes de culture intensive chez les paysans et en stations de recherche agronomique. México (Solonchaks, Phaeozems); Cuernavaca (Andosols, Vertisols); Taxco (Histosols); Acapulco (Cambisols, Luvisols).

TOUR PRE-CONGRES 4. LA HABANA-MATANZAS-VILLA CLARA-LA HABANA, CUBA (6-7 jours).

Utilisation des sols de forêt et problème d'érosion. La culture de café, du tabac et de plantes potagères. Les systèmes informatiques appliqués à l'utilisation de l'eau dans la culture intensive du riz. Récupération et utilisation des sols érodés sous production de forrage. Etude et Classification de sols sous production intensive de canne à sucre.

TOUR PRE-CONGRES 5. LA HABANA-GUANTANAMO-SANTIAGO-CIERO DE AVILA-LA HABANA, CUBA (6-7 jours).

Récupération des sols salins par systèmes de drainage.

Utilisation des sols salins sous culture intensive de canne à sucre. Utilisation des Vertisols sous monoculture de canne à sucre. Description de profils de sols dans la région de production de café et de bananier. Elevage sur terrains de faible fertilité. Culture intensive de citriques.

TOUR POST-CONGRES 6. REGION CENTRALE ET SUD DE LA CALIFORNIE-SAN FRANCISCO-FRESNO-RIVERSIDE-EL CENTRO-SAN DIEGO (8 jours).

Paysage, sols, utilisation de la terre et vue générale de la baie de San Francisco; Vignobles de la vallée de Napa; utilisation du sol, agriculture, sols organiques et terrasses dans le haut de la Vallée de San Joaquín; Sols de la forêt et utilisation de sols au pied de la Sierra Nevada; le parc national de Yosemite; Sols, utilisation de la terre, agriculture irriguée, entreprises agricoles dans le bas de la Vallée de San Joaquín (Fresno); Tectonique du plateau, sols, paysage, programme de l'eau de l'état et utilisation de la terre le long de la crevasse de San Andres dans les environs de la montagne Teha-Chapi; sols désertiques dans le haut désert du Mojave; cultures de citriques et d'avocat, laboratoire de l'USDA (Riverside); Sols de la partie basse du désert et cultures spéciales de l'Imperial Valley (El Centro).

TOUR POST-CONGRES 7. OUEST TEXAS, NOUVEAU MEXIQUE ET ARIZONA (6 jours).

EL PASO-LAS CRUCES-FERMINGTON-FLAGSTAF-POHENIX.

Paysage, sols et utilisation de la terre au sud du Nouveau Mexique; le projet du désert du Service de Conservation des Sols (USDA), chronoséquence des sols à horizons calciques et pétrocalciques; visite aux cavernes de Carsbad dans le sud-est du Nouveau Mexique; récupération des terrains des mines dans le nord-ouest du Nouveau Mexique (Fermington); les Andisols et les terrains de la forêt pétrifiée; visite du laboratoire de conservation de l'eau (USDA) à Phoenix.

TOUR POST-CONGRES 8. LA REGION SUD-CENTRE DE LA LOUISIANE, REGION OUEST DU MISSISSIPPI ET L'EST DU TEXAS (6 jours) NOUVELLE ORLEANS-BATON ROUGE-VICKSBURG-LONGVIEW-DALLAS

Paysage et utilisation urbaine sur Histisols dans la Nouvelle Orléans, recherche sur la canne à sucre et sur le riz dans le sud de la Louisiane; un Udult dans la forêt; les cultures de coton, du soja et l'élevage sur Vertisol dans la région centre de la Louisiane; le profil classique de loess (Vicksburg); un Fragiudalf développé sur loess dans le nord de la Louisiane; variations de la végétation en fonction de la diminution des précipitations dans l'est du Texas; utilisation urbaine du terrain et un Vertisol d'une station de recherche (Dallas).

TOUR POST-CONGRES 9. LE SUD D'ONTARIO, LE SUD DU MICHIGAN ET LE NORD D'INDIANA (6 jours)

TORONTO-WINDSOR-DETROIT-CHICAGO.

La production de fruits, de légumes et des cultures spéciales sur Luvisols (Alfisols) et Gleysols (Aquepts, Aquills); Visite aux chutes du Niagara; recherche sur la structure du sol, nutrition des plantes, labourage et un système de culture dans les Luvisols et Brunisols (Alfisols, Inceptisols) dans la station de recherche Eleonora, et les systèmes de conservation dans des bassins versants appareillés dans la région de Windsor, Sud-Ontario; visite au musée Ford et à la ville de Greenfield et l'utilisation non-agricole d'Alfisols, Mollisols et Inceptisols (Detroit); recherche sur l'agriculture et l'environnement sur Altisols et Inceptisols dans la Station biologique Kellogg et les spodosols dans le sud-ouest du Michigan; les sols et les méthodes de production des cultures sur Mollisols et Alfisols du nordouest du Indiana.

TOUR POST-CONGRES 10. MEXIQUE-GUADALAJARA (5-6 jours).

Identique au tour 1, mais en sens inverse

TOUR POST-CONGRES 11. MEXICO-CANCUN (6-7 jours).

Identique au tour 2, mais en sens inverse

TOUR POST-CONGRES 12. ACAPULCO-MEXICO (2 jours).

Identique au tour 3, mais en sens inverse

TOUR POST-CONGRES 13. LA HABANA-MATANZAS-VILLA CLARA-LA HABANA, CUBA (6-7 jours).

Identique au tour 4.

TOUR POST-CONGRES 14. LA HABANA-GUANTANAMO-SANTIAGO-CIERO DE AVILA-LA HABANA, CUBA (6-7 jours).

Identique au tour 5.

Quelques tours d'une journée auront lieu à Acapulco pendant le congrès.

EMPLACEMENT DES TOURS



REMARQUES

Vous êtes prié de renvoyer la fiche de préinscription ci-jointe à l'adresse indiquée avant décembre 1992 et de garder un exemplaire pour vos archives.

L'enregistrement définitif sera fait au moyen d'un formulaire que recevront tous ceux qui auront rempli la fiche de préinscription. Les instructions pour préparer le résumé étendu seront envoyées avec le formulaire d'enregistrement définitif. La deuxième annonce contiendra: information spécifique sur le programme, tours techniques, activités culturelles, transport et logement.

Le renvoi de la fiche de préinscription est vivement demandé à fin de fournir au comité organisateur l'information nécessaire.

INFORMATION GENERAL D'ACAPULCO

Acapulco est située sur la côte du Pacifique à 350 km au sud de la Ville de México. La nouvelle autoroute sera terminée à la fin de l'année 1992, le voyage ne durera que trois heures et demi. Acapulco est desservie par six lignes navales de croisières très prestigieuses. Par avion il y a environ 98 vols qui arrivent à Acapulco par semaine pendant la saison basse, en provenance des principales villes du monde, et à partir de décembre jusqu' à mars ce chiffre augmente considérablement.

Acapulco a 16.300 chambres d'hôtel, des plus luxueuses pour le grand tourisme, jusq'aux établissements d'une étoile. Presque tous les hôtels se trouvent à quelques minutes de la plage.

Dans plus de 160 restaurants au décor tropical, sont servis des plânts aux saveurs exotiques de toutes sortes. On a le choix entre la cuisine mexicaine, japonaise, chinoise, française, italienne, libanaise ou bien les steaks internationaux.

L'ensoleillement est de 360 jours par an, la temperature est en moyenne de 27°C et l'humidité variable. Les pluies tropicales d'environ 960 mm par an tombent généralement en soirée.



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FICHE DE PREREGISTRE
XV CONGRES INTERNATIONAL DE LA SCIENCE DU SOL
10-16 JUILLET, 1994, ACAPULCO, GUERRERO, MEXIQUE
(Dactylographier s'il vous plait)

Prof., Dr., Mr., Mme., Melle.

Nom de famille Pénom (s)

Adresse postale: _____

Téléphone _____ Télécopie _____

Je compte participer XV ICSS certain _____ probable _____

Je compte d'être accompagné _____ personnes

Je souhaite présenter un papier oui _____ non _____ (Sous-) commission

Titre probable: _____

Ma préférence pour les tours techniques est: (X)

TOURS PRE-CONGRES: (1) (2) (3) (4) (5)

TOURS POST-CONGRES: (6) (7) (8) (9) (10) (11) (12) (13) (14)

TOURS D'UNE JOURNEE A ACAPULCO ()

Ma préférence d'hôtel est:

	prix en dollar U.S.	
	Classe Individuelle	Double
A	() \$80 ou plus	() \$100 ou plus
B	() \$70 - 80	() \$ 90 - 100
C	() \$60 - 70	() \$ 80 - 90
D	() \$30 - 60	() \$ 40 - 80

Renovez cette fiche avant décembre 1992 à:

XV ICSS Secretariat, Centro de Edafologia,

Colegio de Postgraduados, P.O. Box 45

56230, Chapingo, México.

Fax +52 (595) 457-23

Gardez un exemplaire pour vos archives.

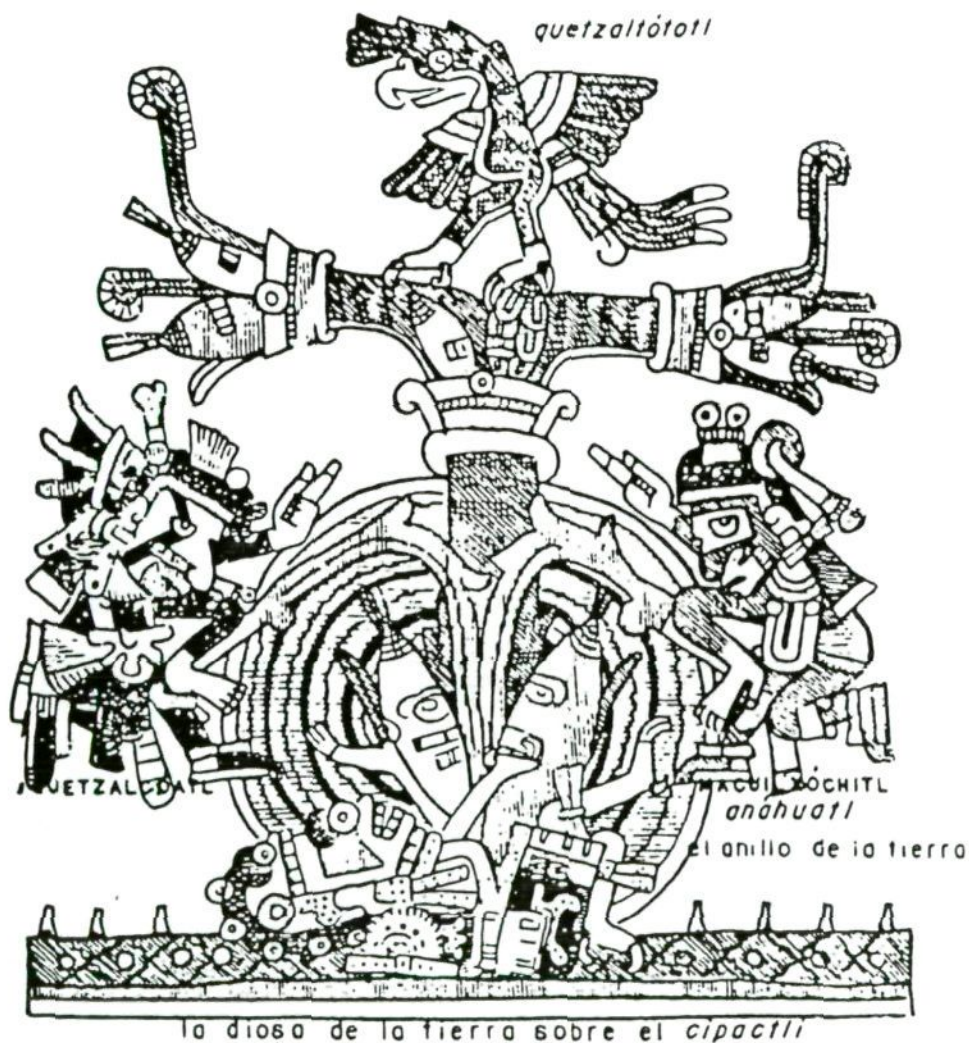
15. INTERNATIONALER BODENKUNDEKONGRESS

10.-16. Juli, 1994

Acapulco, Guerrero, Mexiko

BODENNUTZUNG IN EINKLANG MIT DER NATUR

Aus der Vergangenheit lernen, um die Zukunft zu bewältigen



GÖTTIN DER ERDE

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

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

(Originalbild in Farbe)

Kodex Borgia

ERSTE ANKÜNDIGUNG
XV. Internationaler Bodenkundekongreß
10.-16. Juli, 1994
Acapulco, Guerrero, Mexiko

ALLGEMEINES PROGRAMM

Der 15. Internationale Bodenkundekongreß wird in Acapulco im Staate Guerrero von Mexiko vom 10.-16. Juli, 1994, mit Unterstützung der Mexikanischen Bodenkundlichen Gesellschaft und verschiedenen weiteren nationalen und internationalen Einrichtungen, stattfinden.

Das Programm wird aus Plenarvorträgen, Symposien, Poster-Ausstellungen und fachlich-kulturellen Exkursionen sowie Ausstellungen bestehen. Es werden ungefähr 28 Symposien abgehalten, bei denen eingeladene Referenten vortragen werden. Einige freiwillige Beiträge können u.U. ebenfalls berücksichtigt werden.

Alle übrigen freiwilligen Beiträge werden in den Poster-Ausstellungen präsentiert. Aus operationalen Gründen werden die Autoren gebeten, ihre Beiträge in englisch zu präsentieren. Simultanübersetzungen in die französische, deutsche und spanische Sprache werden nur während der Eröffnungs- und der Schlußfeier verfügbar sein. Für computergestützte Beiträge werden Computer zur Verfügung stehen. Kommerzielle Aussteller sind willkommen. Spezielle Programme für Begleitpersonen sind vorgesehen.

PLENARVORTRÄGE

In jeder Kommission bzw. Subkommission (insgesamt 11) wird ein Plenarvortrag über den aktuellen Wissensstand ("state-of-the-art") gehalten. Themen und Vortragende werden von den entsprechenden Kommissionen bzw. Subkommissionen in Zusammenarbeit mit dem Organisationskomitee ermittelt.

SYMPOSIEN

Zwei Arten von Symposien werden abgehalten:

- Symposien über neueste und wichtige Entwicklungen in der Bodenkunde: jeweils 2 Symposien für jede Kommission und eines für jede Subkommission. Die vorläufigen Themen dieser Symposien werden durch die Kommissionen bzw. Subkommissionen bestimmt und in den IBG-Mitteilungen Nr. 81 veröffentlicht werden. Die meisten Vorträge werden von eingeladenen Referenten gehalten, jedoch ist vorgesehen, daß einzelne Vorträge auch aus den freiwilligen Beiträgen ausgewählt werden. Diejenigen, die einen freiwilligen Beitrag einreichen wollen, sollten das Voranmeldungsformular im Anhang dieser Ankündigung ausfüllen und einsenden, sodaß sie später das Formular für die "Ausführliche Zusammenfassung" zugesandt bekommen können. Einige freiwillige Beiträge werden auch für den mündlichen Vortrag in den Symposien ausgewählt werden, jedoch nur dann, wenn sie einen direkten Bezug zu den Themen dieser Symposien haben und dies aus der ausführlichen Zusammenfassung hervorgeht. Autoren derart ausgewählter Beiträge werden umgehend benachrichtigt und gebeten, einen Beitrag in vollem Wortlaut in der zweiten Jahreshälfte 1993 einzureichen.

- Spezielle Symposien: zusätzlich zu den oben beschriebenen 18 Symposien werden ca. 10 spezielle Symposien (interdisziplinär oder als Satelliten-Veranstaltung) abgehalten werden. Die vorläufigen Themen dieser Symposien werden ebenfalls in den IBG-Mitteilungen Nr. 81 erscheinen.

Die endgültigen Themen aller Symposien werden dann in den IBG-Mitteilungen Nr. 82 publiziert, nach dem Treffen des Exekutivkomitees der IBG in Acapulco, im November 1992.

POSTER-AUSSTELLUNG

Die meisten freiwilligen Beiträge werden in der Poster-Ausstellung präsentiert werden, und ihre "ausführliche Zusammenfassung" wird in den Kongreßbänden veröffentlicht. Hinweise für die Poster-Ausstellungen werden zusammen mit der 2. Ankündigung versandt.

FACHEXKURSIONEN

Vor- und Nachkongreß-Fachexkursionen werden in Zusammenarbeit mit Kollegen der Bodenkundlichen Gesellschaft der Vereinigten Staaten, von Kanada und von Kuba durchgeführt werden, vgl. Skizze der Exkursionsrouten.

Die Fachexkursionen dienen der Darstellung unterschiedlicher Bodentypen, Produktionsgebiete, Forschungseinrichtungen und landwirtschaftlicher Aktivitäten allgemein. Zusätzlich werden auch kulturelle und archäologische Themen miteinbezogen. Die Anzahl der Exkursionsteilnehmer wird begrenzt sein. Es wird daher nach dem Motto verfahren: "Wer zuerst kommt, wird auch zuerst berücksichtigt".

VOR-KONGRESS-EXKURSION 1: Guadalajara-Mexiko Stadt (5-6 Tage)

Zentral- und West-Mexiko, Besichtigung intensiver Produktionssysteme und von Regenfeldbau in Guadalajara, Zamora, Uruapan (Vertisole, Luvisole); Patzcuaro, Morelia (Andosole, Acrisole); Celaya, Queretaro (Vertisole, Phäeozeme); Tula (Xerosole), Teotihuacan; Mexiko Stadt (Solontschake, Phäeozeme). Der Transport von Mexiko Stadt nach Acapulco erfolgt im Flugzeug oder zusammen mit der Exkursion 3.

VOR-KONGRESS-EXKURSION 2: Cancun-Villa Hermosa (6-7 Tage)

Südost-Mexiko; Tropische Weidekulturen und Viehzucht; Cancun, Valladolid, Chichen-Itza (Cambisole, Rendzinen); Taxcaba, Merida (Luvisole, Nitosole); Uxmal, Campeche (Solontschake, Vertisole); Escarcega, Palenque (Arenosole, Acrisole); Teapa, Pichucalco (Gleysole, Cambisole). Die Reise von Villa Hermosa nach Acapulco oder nach Mexiko Stadt erfolgt mit Flugzeug und anschließend besteht eine Verbindung mit Exkursion 3.

VOR-KONGRESS-EXKURSION 3: Mexiko Stadt-Acapulco (2 Tage)

Von Zentral- nach Südwest-Mexiko, intensiver Garten- und Gemüsebau und experimentelle Forschungseinrichtungen. Mexiko Stadt (Solontschake, Phäeozeme), Cuernavaca (Andosole, Vertisole), Taxco (Histosole), Acapulco (Cambisole, Luvisole).

VOR-KONGRESS-EXKURSION 4: Havanna-Matanzas-Villa Clara-Havanna, Kuba (6-7 Tage)

Erosion und Bewirtschaftung von Forstböden, Kaffee, Tabak und Gartenkulturen. *Expertensysteme für Bewässerung in der intensiven Reisproduktion. Melioration und Bewirtschaftung von erodierten Böden unter intensiver Weidewirtschaft. Untersuchungen und Klassifikation von Böden unter intensivem Zuckerrohranbau.*

VOR-KONGRESS-EXKURSION 5: Havanna-Guantanamo-Santiago-Ciego de Avila-Havanna, Kuba (6-7 Tage)

Melioration von Salzböden durch Drainage, Bewirtschaftung von Salzböden unter intensivem Zuckerrohranbau. Bewirtschaftung von Vertisolen unter Monokultur von Zuckerrohr. Beschreibung von Bodenprofilen in Kaffee- und Bananenanbaugebieten. Milchproduktion auf Böden mit geringer Fruchtbarkeit. Intensive Landwirtschaft mit Zitrusanbau.

NACH-KONGRESS-EXKURSION 6: Zentral- und Süd-Kalifornien (8 Tage), San Francisco-Fresno-Riverside-El Centro-San Diego

Landschaften, Böden, Landnutzung und Besichtigungen im Gebiet der Bucht von San Francisco; Kaliforniens Weinreben-Anbaugebiete im Tal von Napa; Bodennutzung, Landwirtschaft, organische Böden und künstliche Terrassenböden im oberen San Joaquin-Tal; Forstböden und Landnutzung in der Vorgebirgszone der Sierra Nevada; Yosemite Nationalpark; Böden, Landnutzung, Bewässerungslandwirtschaft und agrarische Intensivnutzung im unteren San Joaquin-Tal (Fresno); Plattentektonik, Böden, Landschaften, Wasserhaushaltsplanung des Staates Kalifornien und Landnutzung entlang der St. Andreas Erdbebenzone der Tehachapi Berge; zentrale Wüstenböden und Wasserbewirtschaftung in der Mojave Wüste; Zitrus- und Avocado-Anbau, USDA Salinity Laboratorien und allgemeine Besichtigungen (Riverside); Randwüstenböden und Spezialkulturen im Imperial Tal (El Centro).

NACH-KONGRESS-EXKURSION 7: West-Texas, Neu-Mexiko und Arizona (6 Tage) - El Paso-Las Cruces-Farmington-Flagstaff-Phoenix

Landschaften, Böden und Landnutzung im südlichen Neu-Mexiko; das Wüstenprojekt des USDA-Soil Conservation Service, einschließlich einer Chronosequenz von Böden mit calcic und petrocalcic Horizonten (Las Cruces); Besichtigung der Karlsbad Höhlen im südöstlichen Neu-Mexiko; Wiederherstellung von Tagebaugebieten im Nordwesten von Neu-Mexiko (Farmington); Andisole und forstliche Bodennutzung im nördlichen Arizona (Flagstaff); Besichtigung des Grand Canyon Nationalparks und des Petrified Forest Nationalparks; Fahrt zum USDA Water Conservation Laboratory in Phoenix.

NACH-KONGRESS-EXKURSION 8: Süd- bis Zentral-Louisiana, Westliches Mississippigebiet und Ost-Texas (6 Tage) - New Orleans-Baton Rouge Vicksburg-Longview-Dallas

Landschaften und städtische Nutzung auf Histosolen in New Orleans; Zuckerrohr- und Reisforschung in Forschungsstationen im südlichen Louisiana; ein Udult in einem Nationalforst; Baumwoll-, Sojabohnen-Anbau und Viehzucht auf Vertisol in einer Forschungsstation im zentralen Louisiana; klassische Lößprofile (Vicksburg); ein Fragiudalf auf Löß in Nord-Louisiana; Änderungen in der Vegetationszusammensetzung mit abnehmendem Niederschlag in Ost-Texas; Bodennutzung im Stadtgebiet und ein Vertisol in einer Forschungsstation (Dallas).

NACH-KONGRESS-EXKURSION 9: Südliches Ontario, südliches Michigan und nördliches Indiana (6 Tage) - Toronto-Windsor-Detroit-Chicago

Obst- und Gemüsebau sowie Spezialkulturen auf Luvisols (Alfisols) und Gleysols (Aquepts, Aquolls); Besichtigung der Niagara-Fälle; Forschungen über Bodenstruktur, Pflanzenernährung, Bodenbearbeitung und spezielle Anbausysteme auf Luvisols und Brunisols (Alfisols, Inceptisols) auf der Elora Forschungsstation - konventionelle Bodenbearbeitungssysteme und konservierende Bodenbearbeitung in vergleichbaren Wassereinzugsgebieten in der Gegend von Windsor im südlichen Ontario; Besuch des Henry Ford Museums und des Greenfield Village sowie nicht-landwirtschaftlicher Nutzungen von Alfisols, Mollisols und Inceptisols (Detroit); umwelt- und landwirtschaftsbezogene Forschung auf Alfisols und Inceptisols in der Kellogg Biologischen Station sowie Spodosols im südwestlichen Michigan; Böden und Ackerbau auf Mollisols und Alfisols im nordwestlichen Indiana als typische Beispiele des "Corn Belt" des Mittelwestens.

NACH-KONGRESS-EXKURSION 10: Mexiko Stadt-Guadalajara (5-6 Tage) Wie Exkursion 1 aber in entgegengesetzter Richtung.

NACH-KONGRESS-EXKURSION 11: Mexiko Stadt-Cancun (6-7 Tage) Wie Exkursion 2 aber in entgegengesetzter Richtung.

NACH-KONGRESS-EXKURSION 12: Acapulco-Mexiko Stadt (2 Tage)

Wie Exkursion 3 aber in entgegengesetzter Richtung.

NACH-KONGRESS-EXKURSION 13: Havanna-Matanzas-Villa Clara-Havanna, Kuba (6-7 Tage)

Wie Exkursion 4

NACH-KONGRESS-EXKURSION 14: Havanna-Guantanamo-Santiago-Ciego de Avila-Havanna, Kuba (6-7 Tage)

Wie Exkursion 5

Während des Kongresses werden zusätzliche Ein-Tages-Exkursionen von Acapulco aus veranstaltet werden.

LAGEPLAN DER EXKURSIONEN



Bemerkungen

Bitte füllen Sie das im Anhang zu dieser Ankündigung befindliche Formular aus, behalten Sie einen Durchschlag für Ihre Unterlagen und senden Sie das ausgefüllte Formular noch vor Dezember 1992 an die angegebene Adresse. Bitte senden Sie die vorläufige Anmeldung vor

Dezember 1992 ab, um dem Organisationskomitee Informationen über zukünftige Teilnehmerzahlen und andere notwendige Daten zu ermöglichen.

Die endgültige Anmeldung wird auf einem speziellen Anmeldeformular erfolgen und an all diejenigen versandt werden, die sich vorläufig angemeldet haben. Genaue Anweisungen für die Erstellung der "ausführlichen Zusammenfassung" werden zusammen mit dem endgültigen Anmeldeformular versandt werden. Die zweite Ankündigung wird detaillierte Angaben über das Tagungsprogramm, die Exkursionen, kulturelle Veranstaltungen, Transport- und Reisemöglichkeiten sowie die Unterbringung enthalten.

Generelle Informationen über Acapulco

Die Bucht von Acapulco liegt an der Küste des Pazifischen Ozeans, 350 km südlich der Stadt Mexiko und ist über eine Schnellstraße erreichbar. Der Internationale Flughafen von Acapulco ist von den meisten größeren Städten der Welt über direkte Flugverbindungen erreichbar. Daneben gibt es direkte Kreuzfahrt-Schiffsverbindungen von mehreren Orten in Kalifornien und Niederkalifornien zum Hafen von Acapulco. Ab 1993 wird eine moderne vierspurige Autobahn Mexiko Stadt mit Acapulco verbinden (Fahrzeit ca. 3,5 Stunden).

Acapulco besitzt 16.300 Hotelzimmer, deren Standard von Luxus- bis 1-Sterne-Qualität reicht. Die meisten der großen Hotels liegen direkt am Strand und der Rest ist nur wenige Fußminuten davon entfernt. Mehr als 160 Speisegaststätten mit tropischer Innenausstattung bieten alle Arten von exotischen Speisen, u.a. mexikanische, japanische (Soushi-Bars), vegetarische Spezialitäten, chinesische, italienische, libanesische und französische Küche.

Das Wetter ist sonnig und klar während 360 Tagen im Jahr. Die Durchschnittstemperatur liegt bei 27 Grad Celsius. Es regnet ca. 960 mm im Jahresdurchschnitt, wobei die tropischen Regen von kurzer Dauer sind und normalerweise in den Abend- und Nachtstunden fallen.



ISSS-AISS-IBG

VORLÄUIGES ANMELDEFORMULAR
XV INTERNATIONALER BODENKUNDEKONGRESS
10-16 JULI, 1994, ACAPULCO, GUERRERO, MEXICO
(Bitte mit Schreibmaschine oder in Druckbuchstaben ausfüllen)

Prof., Dr., Hr., Fr., Frl.

Familiename

Vorname / n

Postadresse:

Tel. Nr. _____ Fax Nr. _____

Ich beabsichtige am 15. IBK teilzunehmen sicher _____
wahrscheinlich _____

Ich werde voraussichtlich begleitet von _____ Personen

Ich beabsichtige, ja _____ oder nein _____ einen freiwilligen

Beitrag für die Kommission bzw. Subkommission _____

Vorläufiger Titel: _____

Ich beabsichtige an folgender Exkursion teilzunehmen: (X)

Vor-Kongress Exkursion: (1) (2) (3) (4) (5)

Nach-Kongress Exkursion: (6) (7) (8) (9) (10) (11) (12) (13) (14)

Ein-Tages-Exkursion in Acapulco ()

Ich bevorzuge ein Hotel der Kategorie (in U.S. Währung):

Kategorie	Einzelzimmer	Doppelzimmer
A	() \$80 oder darüber	() \$100 oder darüber
B	() \$70 - 80	() \$ 90 - 100
C	() \$60 - 70	() \$ 80 - 90
D	() \$30 - 60	() \$ 40 - 80

Achtung: Bitte senden Sie dieses vorläufige Anmeldeformular vor Dezember 1992 an:

XV ICSS Secretariat, Centro de Edafologia,

Colegio de Postgraduados, P.O. Box 45

56230, Chapingo, México.

Fax +52 (595) 457-23

Bitte bewahren Sie einen Durchschlag für Ihre eigenen Unterlagen auf.

INAUGURATION OF THE NEW SECRETARIAT FOR THE ORGANIZING COMMITTEE OF THE XVTH INTERNATIONAL CONGRESS OF SOIL SCIENCE (ICSS) 1994

On the 18th of October 1991 a new secretariat for the Organizing Committee of the XVth International Congress of Soil Science was inaugurated in one of the main buildings of the Colegio de Postgraduados, Montecillo, State of Mexico/Mexico (see photo 1).

The new secretariat was opened during a ceremony in the presence of the President of ISSS, Prof.Dr. A. Aguilar Santelises, the Vice-President of ISSS and Chairman of the Technical Committee, Prof.Dr. R. Nuñez Escobar, the Secretary-General of ISSS, Prof.Dr. Winfried E.H. Blum, the Secretary-General of the Colegio de Postgraduados, Dr. Rafael Rodriguez Montessoro, the Academic Director-General of the Universidad Autonoma de Chapingo, M.Sc. Omar E. Arana Muñoz, the Chairman of the Organizing Committee, Prof.Dr. Gabriel Alcantar Gonzalez, the Chairman of the Local Coordination Committee, M.Sc. Jorge L. Tovar Salinas, members of the Organizing Committee as well as national and international guests (see photos 2 and 3).

At the same time a session of the Organizing Committee took place in order to discuss possible themes of the ICSS and organizational questions. Most of the members of the Organizing Committee can be seen on photo 4.

The International Society of Soil Science expresses its deep thanks to the Directory of the Colegio de Postgraduados for the outstanding support in the installation of this new secretariat, which has several rooms with phone and fax facilities.

W.E.H. Blum



Photo 1: General view on the Colegio de Postgraduados, Moñtécillo, Mexico and the building of the secretariat in the center



Photo 2: Prof.Dr. Aguilar, President of ISSS (center) inaugurates the secretariat, accompanied by the Academic Director-General of the Universidad Autonoma de Chapingo, M.Sc. Arana Muñoz (right) and Prof.Dr. W.E.H. Blum, Secretary-General of ISSS (left).



Photo 3: Prof. Dr. Nuñez, Vice-President of ISSS (right) speaks to the auditorium at the inauguration of the new secretariat. Dr. Montessoro, Secretary-General of the Colegio de Postgraduados and M.Sc. Tovar, Chairman of the Committee of Local Organization at the left.



Photo 4: Members of the Organizing Committee in front of the building with the new secretariat of ICSS.



ISSS-AISS-IBG

COMITEE ON EDUCATION IN SOIL SCIENCE

ANNOUNCEMENT

At the 14th International Congress of Soil Science in Kyoto/Japan the new Standing Committee on Education in Soil Science was established.

For the promotion of activities within this committee we propose the following procedure:

- Interested commissions and subcommissions propose representatives for the committee, with due regard to geographic distribution.
- Members of ISSS, which are interested in Education in Soil Science should indicate their interests and experience, sending informations or documents, such as books, films, audiovisuals, educative games etc. to the chairman of this committee.
- According to the answers and documents received, the chairman will write a report with proposals for future activities of the committee at an international level.
- If there is sufficient interest, it would be possible to organize a small international meeting for the exchange of ideas and for the programmation of further activities in this matter. This meeting could be organized in Montpellier (France) in January 1993.

Please send your comments, proposals, documents and others to:

Prof.Dr.Alain Ruellan
CNEARC
1101, Avenue Agropolis
B.P.5098
F-34033 Montpellier, Cedex 01
France

Alain Ruellan
Chairman of the Committee on Education in Soil Science



ISSS-AISS-IBG

ANNOUNCEMENT
INTERNATIONAL CONFERENCE ON CRYOPEDOLOGY
Cryogenic Soils: Genesis, Evolution and Use
Pushchino, Moscow Region, USSR
November 10-14, 1992

The USSR Academy of Sciences, the Institute of Soil Science and Photosynthesis, the Scientific Council for Earth Cryology, the All Union Society of Soil Science, The International Society of Soil Science and the Institute of Agricultural Biotechnology are organizing an International Conference on Cryopedology, which will be held in Pushchino, Moscow Region, USSR, November 10-14, 1992.

The main topics are:

- Genesis, geographic, evolution and classification of cryogenic soils;
- Physico-chemical processes in cryogenic soils (experiment and modelling);
- Microflora and biochemical processes in cryogenic soils;
- Ecological functions of cryogenic soils in the biosphere.

The conference languages will be Russian and English.

Conference-fee: 200 US\$, accompanying members: 100 US\$.

INTERNATIONAL CONFERENCE ON CRYOPEDOLOGY
Pushchino, Nov. 10-14, 1992

Preliminary Registration Form

Surname.....
First name.....
Prof./Dr./Mr./Mrs./Miss.....
Affiliation.....
.....
Full mailing address.....
.....
Accompanying person/s.....
.....
Title of paper (oral or poster presentation).....
Signature..... Date.....

Please mail to
Secretariat of the International Conference on Cryopedology, Institute of Soil Science and
Photosynthesis, USSR Academy of Sciences, Pushchino, Moscow Region, 142292, RUSSIA;
Tel.: 923-35-58, Telex: 205128 SOIL SU



ISSS-AISS-IBG

ANNOUNCEMENT

INTERNATIONAL CONFERENCE OF COMMISSION IV OF ISSS ON "IMPROVING SOIL MANAGEMENT FOR INTENSIVE CROPPING IN THE TROPICS AND SUBTROPICS", 01-03 DECEMBER, 1992, DHAKA, BANGLADESH

The Conference will be sponsored jointly by the Soil Science Society of Bangladesh and Bangladesh Agricultural Research Council to focuss on fundamental research on macro-and micro-elements in soil fertility and plant nutrition; soil testing for farmers' advisory services; applied research on fertilizer use efficiency based on cropping pattern/systems; maximum yield research and potash research in the tropics and sub-tropics; management of problem soils; integrated management of nutrients and organic matter recycling; water management in relation to fertilizer use efficiency; tillage practices in relation to crop management and effect of fertilizers on environments. Language of the conference will be English.

Registration fees: US \$ 150,00 per person.

Notice of Intent

"Intercongress Conference on Improving Soil Management for Intensive Cropping in the Tropics and Sub-Tropics", 01-03 December, 1992, Dhaka, Bangladesh.

Surname:.....

First name:.....

Affiliation:.....

Mailing address:.....

.....

I intend to participate

I intend to present a paper/poster, entitled:

.....

.....

I register for participation

I will be accompanied by persons

I need single room nights

double room nights

Date:

Signature:

Please return to:

Dr.S.M. Imamui Huo, Department of Soil Science, Dhaka University,

Dhaka - 1000, Bangladesh.

Telex: 642892 AST DK BJ

Fax: 880-2-883516



ISSS-AISS-IBG

First Announcement
FOURTH INTERNATIONAL CONFERENCE ON DESERT DEVELOPMENT
Sustainable Development for Our Common Future
Mexico City, July 25-30, 1993

This conference is organized by the International Desert Development Commission in collaboration with the International Society of Soil Science and the Government of Mexico. Host will be the Graduate College, Montecillo, Edo. de Mexico, 56230, Mexico.

SELECTED TOPICS: 1) Soil and water conservation; 2) Irrigation and water management; 3) Watershed management; 4) Plants tolerant to salinity conditions; 5) Alternative energy sources; 6) Socioeconomical aspects in arid zones; 7) Ecology; 8) Forestry, Agroforestry; 9) Animal production; 10) Crops; 11) Agrochemical and pollution control; 12) Conservation of natural resources, recycling.

LANGUAGES: English and Spanish.

ACCOMMODATION: Hotel Maria Isabel Sheraton, and other hotels in the neighborhood of "Paseo de la Reforma", in Mexico City.

PAPERS: Papers are invited on the above described selected topics. Final date to receive abstracts: September 1st, 1992. Announcement of accepted papers: December 1st, 1992 (Technical Sessions of Posters).

FINAL DATE FOR RECEIVING PAPER MANUSCRIPTS: July 25th, 1993. Papers should be submitted in English.

REGISTRATION FEE: (Including conference materials and proceedings which will be published by Harwood Academic Publishers): 250-300 US\$.

TECHNICAL TOUR: A post conference technical tour of 5 days to the Northwest of Mexico (Sonora and Baja California Sur).

INFORMATION: For further information related to registration, details of the programme, costs and accommodation, please contact: Dr. Manuel Anaya Garduño, Executive Secretary Scientific Committee IV ICDD, Colegio de Postgraduados, Montecillo, Edo. de Mexico, 56230, Mexico;
Tel.: ++(52) 696-45701, Fax: ++(52) 696-46723, or P.O. Box 91, Chapingo, Edo. de Mexico, 56230, Mexico.

NOTICE OF INTENT
FOURTH INTERNATIONAL CONFERENCE ON DESERT DEVELOPMENT
Sustainable Development for Our Common Future
Mexico City, July 25-30, 1993

Name:.....
Organization:.....
Mailing address:.....
Country:.....
Telephone:..... Fax:..... Telex:.....
Proposed title of paper for presentation:.....
.....
Date:..... Signature:.....



ISSS-AISS-IBG

XII CONGRESO LATINOAMERICANO DE LA CIENCIA DEL SUELO

Salamanca/Sevilla; 23 al 26 Septiembre 1993

Informacion General

- * Las secciones del Congreso seran:
I: Física del Suelo, II: Química del Suelo, III: Biología del Suelo, IV: Fertilidad del Suelo, V: Génesis, Classification y Cartografía de Suelos, VI: Uso, Evaluacion y Tecnología de Suelos, VII: Mineralogía de Suelos, VIII: Ecología del Suelo.
- * Existira una excursion pre-Congreso que se iniciara en Sevilla el día 18 de Septiembre.
- * Existira una excursion post-Congreso en Salamanca el día 25 de Septiembre.
- * Pueden existir excursiones turísticas que se iniciarían en Salamanca el día 26 y terminarían en Madrid, con diversas opciones.
- * Las Residencias Universitarias son una alternativa mas economica que los hoteles.

Mas información: Secretaría Organizacion XII C.L.C.S., I.E.T./CSIC Aptdo 257, Salamanca 37080 (España)

XII CONGRESO LATINOAMERICANO DE LA CIENCIA DEL SUELO

Salamanca/Sevilla; 23 al 26 Septiembre 1993

Ficha de pre-inscripcion

Apellidos _____ Nombre _____

Direccion Postal _____

Ciudad _____ C.P. _____ País _____

Telex _____ Fax _____ Teléfono _____

Actividad Profesional _____ Institucion _____

Titulacion: Doctor Ingeniero Licenciado Estudiante

Tiene previsto asistir? Dudoso Probable Presentara comunicacion? Sí No Oral Cartel Seguro

Seccion comunicacion _____ De que sociedad es miembro? _____

Giras: Ninguna Ninguna
* Científicas Pre-Congreso (Sevilla) * Turísticas Post-Congreso
 Post-Congreso (Salamanca) (hacia Madrid)

Alojamiento deseado: Ninguno Residencia Universitaria
Hotel Categoría: _____ estrellas

Numero de Acompañantes: _____
Lugar y fecha: _____ Firma: _____

N.B.: Cortar y enviar a:
Juan GALLARDO LANCHO, I.E.T./CSIC, Apdo 257, Salamanca 37080 (España)



ISSS-AISS-IBG

First Announcement

SECOND INTERNATIONAL CONFERENCE ON THE BIOGEOCHEMISTRY OF TRACE ELEMENTS

(Formerly Metals in Soils, Waters, Plants and Animals)

Taipei, Taiwan, Republic of China, September 5-10, 1993

Objectives:

- To provide a forum for discussion and dissemination of knowledge on the sources, fate and effects of trace elements in ecosystem components;
- To focus on both naturally- and anthropogenically-related trace elements issues in the environment and how they can affect biological processes and functions in agriculture and ecosystems;
- To examine how elements behave in the food chain and to discuss their potential effects to consumers, including animals and humans;
- To publish proceedings, including papers and poster papers, as a special issue of *Advances in Trace Substances Research*, an international journal.

Programme: Oral presentations, posters, keynote speakers, and special symposia will focus on the following themes:

- | | |
|--|--|
| 1. Biogeochemistry of metals in wetlands | 8. Analytical techniques |
| 2. Ecotoxicology of metals | 9. Metals in global changes |
| 3. Metal-organic compound interactions | 10. Speciation and modelling applications |
| 4. Food chain transfer | 11. Transformation and cycling |
| 5. Metals in interfaces | 12. Regulatory criteria and guidelines |
| 6. Metals in environmental health | 13. Risk and health assessment |
| 7. Metal-waste management | 14. Special Theme: Metals in flooded soils |

Special Symposia:

1. Biogeochemistry of trace elements in the soil-plant system
2. Environmental photochemistry
3. Metal contamination in rice paddy culture
4. Environmental toxicology of metals
5. Metals from recycling hazardous wastes

Language: Conference language will be English. Abstracts of papers to be presented at the conference will be made available to all attendees in a book form upon registration.

Call for papers: Papers and Posters are welcome in all topics mentioned in the programme.

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

Dr. Domy C. Adriano, University of Georgia, Savannah River Ecology Laboratory, Drawer E, Aiken, SC 29802, USA;

Tel.: 803-725-2472, Fax: 803-725-3309.

NOTICE OF INTENT

SECOND INTERNATIONAL CONFERENCE ON THE BIOGEOCHEMISTRY OF TRACE ELEMENTS

September 5-10, 1993

Surname:.....

First name:.....

Affiliation:.....

Mailing address:.....

I would like to receive further information

Yes 0

No 0

I intend to participate:

Yes 0

No 0

Perhaps 0

I wish to submit a paper/poster

Yes 0

No 0

Date: Signature:



Notice of Intent/Registration Form
Note d'Intérêt/Fiche d'Inscription
ISSS-AISS-IBG Absichtserklärung/Anmeldeformular

To: Organizing Committee of

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

From: Name and title

.....

full address:

.....
.....

telephone:

fax:

Dear Madam, Sir,

I intend to participate in the conference, meeting, seminar, workshop* mentioned above.
Please send me detailed information.

I intend to present a paper/poster*, entitled:

.....

Comments:

I register for participation in the conference, meeting, seminar, workshop*, mentioned above.

Comments:

Date:

Signature:

* please delete if not applicable

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

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

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

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

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

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

Secretary: N.N.

SUBCOMMISSION D:

Chairman: Dr.M.B.Bouché, CEPE-CNRS, B.P. 5051, F-34033 Montpellier, France.

1st Vice Chairman: Dr.H.Watanabe, Nishi 2-123, Edogawadai, Nagareyama-shi, Chiba 270-01, Japan.

2nd Vice Chairman: Prof.Dr.V.Huhta, Univ. of Jyväskylä, Bio.I., Vapaudenkatu 4, SF-40100 Jyväskylä 10, Finland.

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Secretary: Dr.José Guadalupe Palacios, Mexico.

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WORKING GROUP DM:

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

WORKING GROUP FS:

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

WORKING GROUP FT:

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

WORKING GROUP HP:

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

WORKING GROUP LI:

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

WORKING GROUP MO:

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

WORKING GROUP MV:

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

WORKING GROUP PM:

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

WORKING GROUP PP:

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

WORKING GROUP PS:

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

WORKING GROUP PT:

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

WORKING GROUP RS:

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

WORKING GROUP RZ:

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

WORKING GROUP SG:

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

WORKING GROUP SP:

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

STANDING COMMITTEE ON STATUTE AND STRUCTURE (CSS):

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

STANDING COMMITTEE ON INTERNATIONAL PROGRAMMES (CIP):

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

STANDING COMMITTEE ON STANDARDIZATION (CST):

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

STANDING COMMITTEE ON BUDGET AND FINANCES (CBF):

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

STANDING COMMITTEE ON EDUCATION IN SOIL SCIENCE (CES):

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

ISSS-Committees and Representatives

Committee on Statute and Structure (CSS), to ensure correct application of Statutes and Bylaws of ISSS, and to propose changes in the organizational structure as required.

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

Members: Prof.Dr. W.E.H. Blum (Austria), Dr. S. El-Swaify (USA-Hawaii), Dr. N.N. Goswami (India), Prof.Dr. K.H. Hartge (Germany), Prof. Dr. K. Kyuma (Japan), Dr. F.N. Muchena (Kenya), Prof.Dr. I. Pla-Sentis (Venezuela), Prof.Dr. B.G. Rozanov (USSR), Dr. W.G. Sombroek (The Netherlands) and Dr. G. Varallyay (Hungary).

Committee on International Programmes (CIP), to liaise with international organizations and to promote joint programmes.

Chairman: Prof.Dr. H.W. Scharpenseel, c/o Institut f. Bodenkunde, Univ. Hamburg, Allende-Platz 2, D-2000 Hamburg 13, Germany.

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Committee on Standardization (CST), to liaise with the International Standardization Organization (ISO, Geneva-Switzerland) and its Technical Committee on Soil Quality (ISO/TC 190, NNI, Delft, The Netherlands).

Chairman: Prof.Dr. H.P. Blume (Comm.V) c/o Inst. f. Pflanzenernährung und Bodenkunde, Olshausenstrasse 40, D-2300 Kiel 1, Germany.

Members: Dr. C. Dirksen (The Netherlands, Comm.I), Dr. P. Arnold (UK, Comm.II), vacancy (Comm.III), Dr. S.A. Barber (USA, Comm.IV), vacancy (Comm.VI), Prof.Dr. A. Herbillon (France, Comm.VII), vacancy (Subcomm.A), Prof.Dr. G. Stoops (Belgium, Subcomm.B), Dr. M. Romkens (USA, Subcomm.C) and Dr. M.B. Bouché (France, Subcomm.D). Technical Secretariat of ISRIC-Wageningen (Dr. J. Gerits).

Committee on Budget and Finances (CBF), instead of ad-hoc committees at Congresses.

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

Members: Prof.Dr. W.E.H. Blum (Austria), Dr. D. Gabriels (Belgium), Dr. P.U. Luescher (Switzerland), Dr. W.G. Sombroek (The Netherlands) and one representative of the regional Society of Africa, East/Southeast Asia and Latin America.

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

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

Members: to be defined

ISSS Representatives in Committees/Commissions of International Organizations:

ICSU-SCOPE Scientific Committee on Problems of the Environment: Dr. F. Fournier (France).

ICSU-CASAFA Inter-Union Commission on the Application of Science to Agriculture, Forestry and Aquaculture: Prof.Dr. W.E.H. Blum (Austria).

ICSU-IBN International Biosciences Networks: Prof.Dr. P.A. Sanchez (U.S.A.).

ICSU-IGBP International Geosphere-Biosphere Programme: Prof.Dr. H.W. Scharpenseel (Germany).

ICSU-COSPAR Committee on Space Research: Dr. Karale (India).

ICSU-CODATA Committee on Data for Science and Technology: Prof.Dr. M.F. Baumgardner (U.S.A.).

IUBS-UNESCO-TSBF Tropical Soil Biology and Fertility: Prof. Dr. H.W. Scharpenseel (Germany).

NEW ISSS-GTZ TRAVEL FUND

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (German Agency for Technical Cooperation (GTZ) Ltd) donated 92.000 Deutsche Mark for a new ISSS-GTZ Travel Fund.

For this a contract between ISSS Secretariat-General and GTZ was established, see opposite page, defining the exact rules under which funds for travel costs can be made available to young soil scientists from developing countries for participation in international seminars, workshops and conferences organized by ISSS in developing countries of tropical and subtropical regions.



Secretary-General of ISSS, Prof. Blum (left) receives the donation certificate from Dipl.-Ing. Hans Peter Merz, Director-General of GTZ (photo F. Jelich).



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Die Geschäftsführung der Deutschen Gesellschaft
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für die Teilnahme junger Wissenschaftler aus
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Bodennutzung in tropischen und subtropischen
Regionen zuzusagen.

Die Einzelheiten sind in der Durchführungs-
vereinbarung vom gleichen Tag geregelt.

Dr. Elshorst

Merz

Eschborn, den 09.09.1991



**Activities of the Commissions and Working Groups
Activités des Commissions et Groupes de Travail
Aus der Tätigkeit von Kommissionen und Arbeitsgruppen**

**Call for Proposals
for a
Paleopedology Symposium
to examine
Problems in Paleopedological Research
and
Applications of Paleopedology to other disciplines**

Goals: To examine State-of-the-Art positions, methods and applications; and to identify and propose solutions to fundamental problems.

Rationale: It has been 21 years since the PP Symposium in Amsterdam that led to Paleopedology, edited by D.H. Yaalon, which drew together State-of-the-Art issues. Has there been any progress?

The theme of the 1970 Symposium was on Age of Parent Materials and Soils, but actually exposed essentially all of the important issues of the times. This time we want to emphasize Problems, Solutions, and Applications. Problems are the barriers to progress; solutions and applications are the meaningful goals. An emphasis on problems in the context of modern-style research is needed because critical analyses of problems are often avoided in many studies so that full "explanations" can be made or the "story" can be told. Our objective is more than to explain but to understand!

Differences and errors in primary assumptions (etc.) are sources of misunderstandings and even inhibit solutions. Projects that look for something that does not exist cannot succeed. So we believe that the time has come to focus on fundamental problems, examine popular assumptions, and consider the application of PP to other disciplines and problems.

We also want to identify all qualified participants for this symposium. We want your participation and your help in finding the "rising stars" in PP. The goals of the symposium are elastic and the recommendations so far include:

(1) examine the strengths and weaknesses of the philosophical and conceptual underpinnings of pedology; (2) identify definition problems, (3) examine Quaternary and pre-Quaternary soils in relation to biologic and atmospheric evolution, (4) identify the practical and socially significant aspects of paleopedology, including global climate change impact on soils, (5) evaluate trends in paleopedological research and recommend initiatives for future research direction, and (6) examine the ways paleopedological information is/should be applied in other disciplines.

Logistics: We plan to convene at Allerton Park, a rustic, charmingly elegant country estate owned by the University of Illinois, which can provide ideal meeting space for about 100 people including room and board for about \$ 60/day/person, for four days. One day will be a local field trip to see the Farmdale and Sangamon Geosols. An optional 6-day excursion to Nebraska to see paleosols (Brady, Yarmouth, pre-Quaternary and others) in loess, till, shale, and other materials can be pre- or post-symposium.

Costs: The full rate will be about \$ 240 for room and board, \$ 200 for registration fees, including the one-day excursion, and \$300 for an optional 6-day excursion to Nebraska. Grants are being sought to reduce registration fees and to cover some or all travel costs for invited participants. Commitments from you are needed to help justify requests for grants.

Action: Please submit an outline on what you think are important problems and possible solutions and applications. This will help identify a consensus on important issues. Please submit references to work completed or in progress that relate to Symposium goals. What subject would you present or could lead for the Symposium? Contributions to the Symposium can be made if you are unable to attend. For the vitality of PP, please seek out others especially any "new thinkers", who can make a significant contribution to the paleopedology community and this symposium, then let us know about them.

To expedite PP business, please complete the following questionnaire and return to us. Invitations will be sent when we receive your requests with explanation of your contribution and circumstances.

Date: It is now planned to hold the Symposium in August 1993, before the International Geomorphology Conference in Ontario, Canada. Address your comments or questions to:

D.L. Johnson
Department of Geography
University of Illinois
Urbana, IL 61801

L.R. Follner
Illinois State Geological Survey
615 East Peabody Drive
Champaign, IL 61820

Report of the Working Group on "World Soils and Terrain Digital Database (DM)"

Background

This Working Group under Commission V on Soil Genesis, Classification and Cartography was officially elevated from its provisional status during the Soils Congress in Hamburg in 1986. Prior to the Hamburg Congress the provisional Working Group prepared a proposal to develop a world soils and terrain digital database at a scale of 1:1M. The proposed project, now known as the SOTER Project, was endorsed by the ISSS Executive Committee, and during this quadrennium (1986-1990), the SOTER Project and related activities have been the major emphasis of the Working Group.

The SOTER Project

Because of their strong support of activities in global databases for environmental sciences, officials of the United Nations Environment Programme (UNEP) expressed an interest in SOTER, especially if the Project could make a significant contribution to the assessment of degradation of global soils and terrain resources.

Fifteen soil scientists representing the Working Group were invited by UNEP to an Expert Group Meeting on the Feasibility and Methodology of Soil Degradation Assessment. This meeting was held at UNEP Headquarters in Nairobi, Kenya, in May 1987. As a result of this meeting a UNEP Project Document entitled "Global Assessment of Soil Degradation" (GLASOD) was prepared, and in September 1987 a contract was awarded by UNEP for Phase 1 of the SOTER Project.

There were two primary tasks under the UNEP contract. The first was to produce a general soil degradation map of the world at a scale of 1:15M. The second was to develop a soils and terrain digital database at a scale of 1:1M for an area of approximately 250,000 km² which includes portions of Argentina, Brazil and Uruguay.

The first task of the UNEP contract was accomplished by choosing specific soil scientists in different parts of the world and contracting them to produce soil degradation maps of specific regions, countries or continents according to the SOTER procedures manual on soil degradation assessment. By early 1990 all regional soil degradation status maps with their attribute databases were received from cooperators around the world. These maps were correlated and combined to produce the final world map on status of soil degradation. The final map was printed in color in three separate sheets—the Americas, Africa and Europe, and Asia and Australia.

Long Range Objective of SOTER

The long range objective of the SOTER Project is to produce a world soils and terrain digital database containing digitized map unit boundaries and their attribute (descriptive) data. The database has the following characteristics:

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

A Universal Legend for the SOTER Database

One of the major tasks of the Working Group has been that of developing procedures which will assure acceptable uniformity and compatibility when assembling a SOTER Database from a great diversity of data sources. An international committee of soil scientists was appointed in January 1986 to develop a universal legend for soils and terrain data to be entered into the SOTER Database. A draft version was distributed in March 1988, revised in January 1989 and again in April 1990. The manual entitled "SOTER Procedures Manual for Small Scale Map and Database Compilation" describes procedures for compiling and coding the data for entry into the SOTER Database. The Manual also presents coding forms on which to enter all the attribute file data which have been translated into the universal legend from whatever soil classification system that was used in the mapping of soils of a particular area or country.

Base Map for the SOTER Database

Responding to the recommendations of a joint Working Group of the International Geographical Union and the International Cartographic Association, the ISSS WG DM selected the Operational Navigation Chart (ONC) series produced by the US Defense Mapping Agency to be the 1:1M base map for input into world databases for registration and overlay of soils and terrain and other natural resource data.

Progress Report on the SOTER Project

LASOTER (Latin American SOTER) Pilot Area. Scheduled for completion in 1990, database development for the Latin American Pilot Area is on schedule. In March 1988 a regional workshop was held in Montevideo to develop an implementation plan and to train soil scientists from Argentina, Brazil and Uruguay to use the universal SOTER legend and procedures manual for correlating soil maps of different classification system to a uniform systems for description and attribute data entry into the Database.

This workshop was followed by two separate correlation field trips by participants of the three countries and an external soil correlator into the pilot areas of each country. By mid-December 1988 acquisition of all map and attribute data from each of the three countries for the Pilot Area was complete. All attribute data were then coded and entered into the SOTER attribute files. Entry of polygon or map data into the SOTER Database is pending acquisition of a spacial database (hardware/software) system at the International Soil Reference and Information Centre, Wageningen, the Netherlands, where the management/coordination of the Project is located.

NASOTER (North American SOTER) Pilot Area. Work was begun on a US-Canadian Pilot Area following a workshop and implementation planning meeting in Ottawa in March 1989. This Pilot Area extends 1 degree north and south of the Canada-US border in Montana USA and Alberta and Saskatchewan, Canada. A cooperative effort by the US Soil Conservation Service and the Land Resource Research Centre of Agriculture Canada, the SOTER Database for this Pilot Area is scheduled for completion before the end of 1990.

CESOTER (Central Europe SOTER). A joint proposal from Austria, Czechoslovakia, Hungary, Poland and Yugoslavia has been drafted, and support is being solicited for a SOTER effort in these five countries. Essentially all map and attribute data are available in these countries for correlation and translation according to the SOTER procedures and for entry into the SOTER Database.

WASOTER (West Africa SOTER). Discussion have been in progress for more than a year with representatives of six West African countries for beginning a SOTER effort in that region. It is anticipated that within a year support will be available to proceed with a contract to implement SOTER Database activities in West Africa.

In formulating Working Group activities for the next quadrennium, 1990-1994, the WG proposes that contracts be initiated and negotiated to extend the SOTER Database to include soils and terrain data from the following regions of the world:

Central America, Middle East, northern South America, India, Southeast Asia and Western Europe. Efforts will also be made to provide encouragement and support where necessary to continue the expansion of the SOTER Database into the remaining areas of the countries involved in LASOTER and NASOTER.

Expected Results of the SOTER Project

In general, the overriding objective of the SOTER Project is a) to improve the capability to deliver accurate, timely useful information about soils and terrain resources to decision-makers and policy makers and b) to overlay these data onto and integrate them with other resource data (topography, vegetation, geology, hydrology, land use, climate) in a global geographic information management system.

In the attempt at the global scale to quantify the role of soils, both as a source and sink, in fluxes of greenhouse gases and the resultant effects on global change, a World Soils and Terrain Digital Database will provide an important tool for accomplishing this task. Other expected results are as follows:

- a) Orderly arrangement of global soils and terrain resource information;
- b) Incorporation of high quality, standardized soils and terrain database into a global geographic information system;
- c) Improvement in standardization and compatibility of reporting soils and terrain data/information;
- d) Improvement in accessibility of soils and terrain and related resource information;
- e) Dynamic resource information system with updating and purgine capabilities;
- f) Information service for national resource planning in developing countries;
and
- g). System model for technology transfer.

M. F. Baumgardner
Chairman of WGDM

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Reports of Meetings
Compte-rendus de Réunions
Tagungsberichte

**Report of the International Workshop on Soil Water Balance in the
Sudano-Sahelian Zone**
Niamey, Niger, February 1991

The Sudano-Sahelian zone of West Africa is one of the harshest climatic regions of the world, with low and highly variable rainfall, high soil and air temperatures, high evaporative demand, and poor soils. Water availability is a major constraint limiting food production, which over the past two decades has lagged behind the population growth rates in this region. Development of management options for sustainable production in the Sudano-Sahelian region needs systematic studies of soil water balance which are of interest to many disciplines eg., soil science, agrometeorology, agronomy, agroforestry, hydrology and plant physiology. Hence an International Workshop on Soil Water Balance in the Sudano-Sahelian zone was organized in Niamey, Niger from 18-23 February 1991, with the major objective of bringing together scientists from different disciplines to share their experience and to contribute to discussions towards evolving an effective synthesis of the state of soil water balance research in the Sudano-Sahelian zone. Over 130 scientists from 29 countries attended this workshop hosted by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in collaboration with the UK Institute of Hydrology, the World Meteorological Organization, the British Overseas Development Administration and the International Association of Hydrological Sciences (IAHS).

In order to facilitate the discussions during the workshop, all the papers were published by IAHS in a volume (Sivakumar et al., 1991a) which was circulated to all the participants before the workshop. This volume contains 52 papers which provide a state-of-the-art review of the relevant problems, methodologies, and results from soil water balance research in the Sudano-Sahelian zone. The workshop was organized under five major themes: Current Research and Future Implications; State of the Art of Soil Water Balance Research; Soils of the Sudano-Sahelian Zone; Soil Water Balance Studies in the Sudano-Sahelian Zone; and Operational Applications of Soil Water Balance Monitoring and Prediction. A planning meeting on the final day considered the future research and information needs.

In the opening session on Current Research and Future Implications, three keynote papers elaborated on the major constraints to improved soil water use and brought out several important issues. Overall, it was concluded that research information on climatic parameters, water balance and soil hydrological characteristics for the region was currently highly inadequate. In the first technical session on The State of the Art of Soil Water Balance Research, nine papers reviewed some of the recent advances in soil water balance research and their application to the problems of water management in the Sudano-Sahelian Zone. Four new methods described in this session are of particular interest: use of cold cloud statistics for the estimation of rainfall by satellite, measurement of evaporation using eddy correlation devices, estimation of evaporation using microwave remote sensing and evaluation of evaporation by simulation of isotopic profiles. The workshop recommended that standardization of terminologies used requires urgent consideration.

In the technical session on Soils of the Sudano-Sahelian Zone, the eleven papers presented can be divided into three groups: details of soils and their physical characteristics; description of methods which might be used to determine soil physical characteristics more readily; and how such methods are beginning to be used in several countries. The workshop agreed that it would

be useful if all the available soil physical data were assembled in one data base. Data available and the methods used often related only to the sandy soils, and not to the more clayey, structured soils with larger numbers of macropores. The technical session on Soil Water Balance Studies contained 18 papers and showed considerable diversity covering agricultural systems to semi-natural vegetation. The key quantity of interest in the agronomic studies was the rate of evapotranspiration, which was often estimated as the residual in the soil water balance equation. Difficulties with the quantification of other water balance components introduced uncertainties into the calculation of water use that limited the interpretations of observed plant growth. Lack of knowledge of root distribution was recognized as a major constraint. The main innovations in determining particular components were in the area of evaporation and transpiration. The application of two new thermal techniques for measuring transpiration produced promising data for trees and woody shrubs.

The 17 papers in the technical session Operational Applications of Soil Water Balance Monitoring and Prediction dealt with water balance models and in particular their application to operational systems. It was stated and generally agreed in discussion that simulation models must be completely calibrated and validated using data obtained in the region where the model is to be applied. Discussions also centered on the means to improve links between the different disciplines involved and the exchange of information and data between research organizations and the national and regional programs.

In the planning meeting on the final day, the participants discussed the future issues for soil water balance research in three working groups: soil characteristics and data bases for soil water balance studies; water balance studies; and operational applications and modelling. A range of topics were discussed which can be arranged under (i) Systems and sites, (ii) Measurements, (iii) Analysis, (iv) Modelling, (v) Technology transfer and (vi) Management. A number of recommendations were made and some salient points could be highlighted. It was recommended that future water balance studies should be extended to include other land uses including agroforestry, forestry and rangelands. It was proposed that there is a need to improve the meteorological networks and that remote sensing techniques should be fully exploited to obtain the average water balance data for large areas. Studies on the size and functioning of root systems should receive increased attention. There is a need to determine the average/bulk surface resistance parameters for the principal crop types in the Sudano-Sahelian zone. It is important to standardize some models and simplify others. The need to develop strong model relations between water use and yield was also identified. Training and better instruction manuals are required for modelling. Links should be strengthened between agrometeorological groups and the national agricultural services.

The volume of papers for the workshop (Sivakumar et al. 1991a) can be purchased from the IAHS office at the Institute of Hydrology in Wallingford, Oxfordshire OX10 8BB, U.K. Summary proceedings of the workshop (Sivakumar et al. 1991b) are published by ICRISAT and are available on request from the Information Services, ICRISAT, Patancheru P.O. 502324 AP, India.

M.V.K. Sivakumar, J.S. Wallace and C. Renard

4th INTERNATIONAL RANGELAND CONGRESS Montpellier, France, April 22-26, 1991

Some 820 specialists from 68 countries took part in the 4th International Rangeland Congress. The congress programme was organized around six principal themes, dealing with the ecological bases of range science, range resources, animal resources, pastoral production systems, and education and training. There were almost 300 papers, 320 posters, 13 videos, 41 slide shows, and 11 computer software presentations. There were no readings of individual papers, which are summarized in abstracts and made available to participants in separate English and French versions. Instead, syntheses were presented in the reports of the 16 thematic symposia, thus allowing a fair amount of time for discussion. Three volumes of proceedings are under preparation, with a view to publication in late 1991-early 1992. For more information, contact the

Chairman of the Organizing Committee: Dr. Henri N. Le Houérou, CNEARC, B.P. 5095, 34033 Montpellier Cédex, France. Fax: +33 67.41.02.32.

GUIDELINES FOR ECOTONE STUDIES Toulouse, France, April 23-25, 1991

A workshop was organized at the CNRS Centre for the Ecology of Renewable Resources in Toulouse, aimed at examining and refining methodological guidelines for field studies on land/inland water ecotones. Issues addressed included the integration of riparian zones in models of river system dynamics, isotopic methods and ecotone studies, approaches to modelling water and mass fluxes as influenced by ecotones, multi-scale and multi-criteria approaches to vegetation studies in circum-lacustrine ecotones, a survey of some statistical techniques for ecotone detection, simulation models for assessing the importance of channel and riparian nutrient retention processes. A methodological guidelines document is being prepared for publication in late 1991-early 1992. Enquiries to J. Lauga, Centre d'Ecologie des Ressources Renouvelables, 29 rue Jeanne Marvig, 31055 Toulouse Cedex, France. Fax: +33 61.55.61.96.

TSBF VI MEETING Martinique, June 27-July 5, 1991

Diamond on the southern coast of the French Caribbean island of Martinique provided the venue for the sixth Interregional Meeting of the IUBS-MAB collaborative programme on Tropical Soil Biology and Fertility (TSBF). The French Institute for Scientific Research for Development in Cooperation (ORSTOM) was the local host for the meeting. Some fifty specialists took part in the meeting, which had the principal aims of producing a substantive synthesis on the findings and accomplishments of TSBF since its launching in the mid-1980s and to consider the options for the future development of the programme. The meeting had three main parts.

An open seminar provided for presentation and discussions of draft synthesis chapters, for an overview of results and research design of TSBF studies in Martinique, and for indications of interest from possible new collaborators in TSBF from such countries as Brazil, Mexico and Venezuela as well as from international agronomic research institutes. A field visit was made to the experimental agricultural station for irrigated pastures (SECI) at Sainte Anne in the vertisol zone of southern Martinique, where the results of field observations and experiments were demonstrated and discussed. Issues taken up included morpho-structural aspects of vertisols, phosphorus dynamics, macrofaunal activities, root and microbiological activities under pastures, dynamics of water and solids in the A and B horizons of vertisols and the effects

thereon of biological activity and organic matter. Among the field demonstrations was one of sampling of earthworms at an irrigated pasture site which holds the "world record" of earthworm biomass (3.6 t ha⁻¹).

The second part was an examination and elaboration of draft synthesis chapters dealing with such topics as biological underpinnings of sustainable agriculture, importance and management of soil organic matter in the tropics, synchronization of nutrient mineralization and plant nutrient demand, physical aspects of soil biology and fertility, relationships between soil fauna and tropical soil fertility, and the integration of soil biological processes and fertility.

The agenda items of the Third Meeting included the TSBF training programme, development of the TSBF Indian network, and research activities during the period 1991-1993. Also examined were options for the future development and institutional status of TSBF after termination of the programme in its present form, with the ending of IUBS's Decade of the Tropics in 1993. Further information, including a summary report of the Martinique meeting, is available from TSBF, c/o UNESCO-ROSTA, P.O.Box 30552, Nairobi, Kenya.

XXIII CONGRESS OF THE BRAZILIAN SOIL SCIENCE SOCIETY Porto Alegre, Rio Grande do Sul, 21 to 27 July 1991

"Production without degradation" was the central theme of this Congress, organized by the Soil Science Department of the Federal University of Rio Grande do Sul and held at the Central Campus of the University, with the presence of 880 participants.

The daily activities of the event began with a conference related to the central theme: Production without degradation, by Prof. Ziller Marcus; Soil surveys as basis for production without degradation by Dr. Raimundo Costa Lemos; Production without degradation - an economic view, by Dr. Claudio F. Accurso; Importance of soil fertility to agricultural production and the environment, by Prof. John T. Murdock; Laboratory and field research opportunities and sustaining agricultural productivity, by Dr. Donald R. Nielsen; and Crop productivity and environment preservation through the use of agricultural residues, by Dr. Ely Nahas. These conferences will be printed in a special publication. Moreover, the program included round tables on "The Brazilian system of soil classification", "The Normalization of soil surveys", "Legislation related to fertilizers and soil amendments", "The teaching of Soil Science", "The management and marketing of research institutions", and "The soil as mean to discharge residues".

In nineteen plenary sessions and four poster sessions 86% of the 443 voluntary papers were presented. In the "Soil physics" section, the 38 presented papers, discussed the variability of physical properties related to agricultural management and water retention. In the "Soil chemistry and mineralogy" section, the 37 papers focused on organic carbon and its mineralization, redox processes in lowland soils, methods of analysis of macro and micro elements, electrochemical soil properties and soil minerals. The 43 papers presented in the "Soil biology" section, concentrated on nitrogen fixation and selection of *Rhizobium* strains and other species, characterization of soil humus and occurrence of fungus, micorrhyza and other microorganisms in soils. In the "Soil fertility and plant nutrition section, the 99 papers discussed methods of element extraction, and their retention and availability in soils, crop response and residual effect of fertilizers and lime, use of gypsum in tropic soils, plant analysis as a criteria for plant nutrition and fertilizer recommendation. The 54 papers presented in the "Soil genesis and classification" section focused on soil surveys, soil weathering, soil characterization and classification, and spatial variability of soils. Moreover, nine presentations were made in the section "Teaching of soil science"; fourteen in the "Fertilizers and soil amendments" section and one contribution was made in the section "Pollution and quality of the environment".

Simultaneously to the Congress, a "Symposium of Lowland Soils", with five conferences and three round tables and, a Brazilian Meeting of the Laboratories for Soil and Plant Analysis, was held. The level of the technical presentations, the dialogue between the attending students, researchers, lecturers and extensionists created a highly productive atmosphere, despite the difficult economical and social situation of the country.

Three post congress excursions took also place: one to visit a soil management and conservation project in a watershed at Marau County; another for discussion of the classification criteria for integrate soil classes, derived from volcanic rocks in the northeastern slopes; and, the third one to the coastal plain, which gave a view of the lowland soils occurring in southern Brazil.

In the final plenary session, Goiania, capital of Goiás State, was chosen to host the XXIV Congress of the Brazilian Soil Science Society, in 1993.

Egon Klamt, Porto Alegre, Brazil

INTERNATIONAL SYMPOSIUM ON SOIL TESTING AND PLANT ANALYSIS IN THE GLOBAL COMMUNITY Orlando, Florida, USA, August 22-27, 1991

Approximately 165 delegates attended the International Symposium on Soil Testing and Plant Analysis in the Global Community held in Orlando, Florida. About 35 countries were represented. There were 11 delegates from Canada. Approximately 50% of the attendees were from the U.S. The purpose of the symposium was to bring together scientists for an exchange of research findings in soil testing and plant analysis in the developed and developing countries.

The program included plenary and poster papers, training sessions, and tours. Twelve invited papers were presented in the plenary sessions; six of them dealt with soil testing and plant analysis activity in North America (J. Benton Jones, Jr. and Y.P. Kalra), Central and South America (Hugh Poole), North Africa (J.L. Pleysier), Western Europe (V.J.G. Houba), Eastern Europe (Gyorgy Varallyay) and the Middle East (Abdallah Matar). The above speakers were on the panel of a special session on the establishment and maintenance of analytical laboratories in the developing world. The other plenary presentations were: A new S soil test for crops and pastures (Graeme Blair), The role of soil testing and plant analysis in sustainable agriculture (Mike Brusko), Soil fertility and the environment (John M. Baker), Legislative activity and soil fertility issues (Terry L. Nipp), Soil testing and water quality (Frederick Magdoff) and Nitrate quality assurance program (Jacques Franco and Marty Link). Peter Unger provided details on the American Association for Laboratory Accreditation. All voluntary papers were presented in three poster sessions.

In-depth instructions were provided in eight training sessions: DRIS interpretation method (Instructor: Reuben Beverly); Quality control and assurance (Instructor: G. Geoffery Vining); Plant and soil standards (Instructor: V.J.G. Houba); Soil fertility assessment, computers (Instructor: Gordon Johnson); Plant analysis-preparation and analysis (minerals, Kjeldahl, sulfur, etc.) (Instructor: J. Benton Jones, Jr.); Soil and plant analysis interpretation (Instructor: Ben Wolf); Methods of metal extraction from soils (Instructor: J.L. Pleysier); Microwave digestion techniques (Instructor: Robert O. Miller). The courses were arranged in such a way that it was possible for each attendee to take any two of the above sessions.

Several professional and family tours were offered. The professional tours included the Everglades Agriculture Area, phosphate mining and reclamation operations, citrus production

and research in Florida, land pavilion (EPCOT, Disney World), CONSERV II facility (citrus production with treated waste water operations), commercial container media preparation and foliage nursery, Central Florida Research and Education Center, vegetable transplants and leatherleaf fern production, Custom Laboratories and commercial woody ornamental nursery.

The J. Benton Jones, Jr. Award was presented to V.J.G. Houba, Department of Soil Science and Plant Nutrition, Wageningen Agricultural University, Wageningen, The Netherlands for his outstanding contribution to soil and plant analysis.

The symposium was organized by the Council on Soil Testing and Plant Analysis and sponsored by several U.S. government and non-government agencies. The Organizing Committee is to be complimented for an excellent symposium. It provided an opportunity to share new ideas and information, discuss topics of mutual interest and make contacts with scientists from around the world. Full papers will be published in the Communications in Soil Science and Plant Analysis. The next two symposia are tentatively scheduled for 1993 in the U.S. and 1995 at Wageningen, The Netherlands.

Further information on the Council can be obtained from:

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INTERNATIONAL SYMPOSIUM ON THE GENESIS AND CONTROL OF FERTILITY OF SALT-AFFECTED SOILS Volgograd, USSR, 9-15 September, 1991

The Dokuchaev Soil Institute, the All-Union Soil Science Society of the USSR and the Subcommittee on Salt-Affected Soils of the International Society of Soil Science organized an International Symposium on "Genesis and control of fertility of salt-affected soils" in Volgograd at the House of the Trade Unions between 9 and 15 September, 1991. The symposium was attended by over 100 participants representing seven countries /Austria, China, Hungary, Romania, the Soviet Union, Thailand, USA/. The Secretary-General of ISSS also attended the meeting.

After the registration of participants and a business meeting of Subcommittee A of the ISSS held on the 9th September, the opening ceremony took place on the 10th September, chaired by Mrs. Dr. M. Rédy, Vice-Chairman of the Subcommittee. E. Seredintsev, Chief of the Agricultural Service of the Volgograd region, B.A. Zimovets, the Chairman of the Subcommittee of Salt-Affected Soils of the All-Union Soil Science Society and Vice-Chairman of the Organizing Committee, and W.E.H. Blum, Secretary-General of the ISSS, addressed the Symposium, and greetings of Zhao Qui-Guo, Chairman of the Subcommittee, J. Breburda, Vice-Chairman of the Subcommittee and V.A. Kovda were delivered.

At the Plenary Session three key-note papers were presented on general problems of the genesis and management, on technological aspects and on contemporary problems of genesis, melioration and use of salt-affected soils. On the afternoon of 10th September a professional excursion took place to the Volgograd region, where solonetzic complexes of the Caspian Lowland and their changes as affected by irrigation on the territory of a large state farm were demonstrated.

On the morning sessions on 11th, 13th and 14th September altogether 29 papers were presented on the following problems:

- Genesis, diagnostics and investigation methods of saline and alkali soils;
 - The use, reclamation and agrogenic evolution of saline and alkali soils under different environmental conditions;
- Preventive control of the secondary salinization and alkalization in soils under irrigation.

Concurrently, 19 posters were exhibited. The papers which were published in the Proceedings of the Symposium /85 articles on 376 pages/ were distributed among the participants before the Symposium.

On the 11th September, afternoon, an excursion with the demonstration of the stationary experiments on the virgin solonetz of the Low Volga light chestnut subzone after long-term reclamation, was organized.

On 12th September, during a full-day professional excursion, soil profiles of the solonetzic complexes of the Yergeny upland and methods of their amelioration were demonstrated. The participants visited the "Abganerovsky" Collective Farm.

On 13th September, afternoon, an unforgettable boat excursion took place on the Volga River, with the demonstration of barrage and entrance of the Volga-Don Channel.

On 14th September, at the Closing Session, the participants evaluated and appreciated the results of the Symposium and underlined the great importance of further development of research and collaboration in the field of soil salinity and alkalinity. The participants expressed their sincere thanks to the organizers of the Symposium, particularly to the Dokuchaev Soil Institute, the All-Union Soil Science Society of the USSR, the Organizing Committee headed by L. Shishov, the Vice Chairpersons of the Organizing Committee B.A. Zimovets and I.N. Lyubimova as well as to the directors and staff of the institutions taking part in the work of the symposium, which remains a long-lasting memory for all the participants.

I. Szabolcs, Budapest, Hungary .



Discussion and examination of a solonetz in a ditch near Volgograd

REPORT OF THE INTERNATIONAL WORKSHOP ON EVALUATION FOR SUSTAINABLE LAND MANAGEMENT IN THE DEVELOPING WORLD

Chiang Rai, Thailand, September 15-21, 1991

The Workshop on Sustainable Land Management was organized by the International Board for Soil Research and Management (IBSRAM) and the Department of Land Development, Thailand, in collaboration with the International Society of Soil Science and the Food and Agricultural Organization (FAO) of Rome. Several donor agencies financially supported the Workshop partly as a result of which, more than 230 participants from 43 countries attended the Workshop. The objectives of the Workshop were:

1. To develop the concepts and principles which are necessary for the evaluation of sustainable land management.
2. To formulate some approaches towards evolving a framework for sustainable land management.
3. To recommend follow-up activities leading to the development, testing, and validation of the framework for sustainable land management.

The workshop was informed that to meet the needs of an expanding population, global production in the next 50 years will need to exceed all that was produced in the past 12,000 years. At the same time there is evidence that approximately one hectare of land is lost to production from all forms of degradation every about 6 seconds; that 20 million hectares become uneconomic for farming each year and that an additional 6 million hectares are degraded annually beyond the point of reclamation. The resource base is subject to an insidious process of depletion, caused by degradation which has intensified in recent history. Consequently, global agriculture is at a water-shed since for the first time in history most of the additional production will have to be achieved through agricultural intensification rather than land expansion. This is in contrast to the broad based and well adapted genetic resource and biologically diverse production systems which were the essential components in the historic evolution of persistent and stable sedentary agricultural systems. This imperceptible and gradual depletion of the global stock of arable land, coupled with declines in bio-diversity and quality of the environment is demanding new approaches to land use and management of natural resources. Also impending global climate change adds several degrees of uncertainty and emphasis to the urgency of seeking more sustainable forms of agriculture.

The current situation and prospects for action were presented to the participants in two Keynote and 27 lead and supporting papers, grouped in relation to six main sections of the Workshop, namely, economics, stewardship, and methodology/quantification. These presentations served to underline the breadth and complexity of the issues which bear upon the development of sustainable land management. Country and site specific information which added to the quality of the Workshop came from the forty poster-sessions. In addition the two field-trips, to well selected sites in Northern Thailand, added the practical dimension to the questions at hand.

With this background information, the participants in their respective working group discussions debated on the more important issues and developed action and approach statements. These statements became the foundation for the framework for sustainable land management. Although the time available to the working groups was limited, they were able to identify ways forward in the development of the framework and to identify actual approaches and associated actions, the lowest levels of the framework, in their respective areas of expertise.

A Leading Journal in its Field . . .

Biology and Fertility of Soils

Cooperating journal of the
International Society of Soil Science

Biology and Fertility of Soils covers fundamental and applied aspects of biology and productivity of soils. A hallmark is its reports on techniques and methods that evaluate processes, biogeochemical interactions and ecological stresses.

Biology and Fertility of Soils issues special numbers on relevant subjects calling for comprehensive reviews and reappraisals of concepts. Environmental threats, such as acid rain and heavy metals, underscore the necessity for a forum aimed at broadening the understanding of biological functions, processes, and interactions in soils.

Biological and Fertility of Soils is particularly useful for soil, plant, and environmental scientists concerned with the effects of agriculture, deforestation, and industrialization on soil productivity.

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The organizers of the Workshop considered that a Framework for Sustainable Land Management (FSLM) is needed to synthesize the concepts and provide the context to evaluate land. FSLM will have significant applications in all aspects of agricultural research and development and also in environmental assessment. It provides the scientific basis for evaluating the environmental impact of proposed land use changes. It has the potential to be used for evaluating the consequences of projected global climate change. When coupled to recent computer technology such as simulation modelling, geographic information systems, and expert systems, it has the potential to emerge as one of the most powerful tools for the sustainable management of land.

A framework for SLM is a long-term endeavor requiring the cooperation of a range of disciplines and the experience of scientists and land users from around the world. Developing the FSLM is the challenge of the next few years and international organizations such as IBSRAM, ISSS and FAO have already made a commitment towards this. A series of consultations, working meetings, and symposia, are planned for the next few years. It is anticipated that the task will involve several thousand person-hours of work and persons and institutions with a wide spectrum of specialization and experience. The preliminary support from several donors is an indication of the usefulness of this task; the dedicated contribution of the scientific community is shown in this workshop is a sign of the commitment, and these coupled to the urgency of the matter as evidenced from the global political support, collectively assures a valuable product in a short period of time.

The participants passed several recommendations and the technical ones are as follows:

Recognizing that Sustainable Land Management is a relatively new concept requiring innovative approaches to research and development and that there is an urgent need to develop the scientific basis, the participants recommend that:

1. Critical sets of land and environment attributes be prepared according to internationally accepted standards and methods, and with due attention to scale and variations in space and time. These data would be used to develop indices to evaluate the sustainability of land management systems and for the quantification of sustainability.
2. A network of long-term, multi-locational research trials be established in selected agroenvironments to monitor and evaluate sustainable systems and to validate the techniques needed to research sustainability.
3. Enhanced emphasis be given to social, cultural, and anthropological issues, and to the role of women, in the design and implementation of sustainable land management initiatives.
4. Improved methods of environmental accounting including valuation of the resource base be developed as an important component of sustainable land management and in the context of stewardship.
5. An international working group be established to:
 - a. review and evaluate proposed methodologies, standards and guidelines for sustainable land management, with a view to developing a prototype Framework.
 - b. establish and maintain scientific liaison among all national and international institutions interested in such work.

A report of the Workshop is being prepared by IBSRAM and is expected to be ready by November 1991. The proceedings will be published by the middle of next year. Interested persons can get a copy of the report and purchase the Proceedings from The Director, IBSRAM, P.O. Box 9-109, Bangkok, Bangkok, 10900, Thailand (Fax: 662-561-1230).

Hari Eswaran
Chairman, Commission V

Second International Symposium on Environmental Geochemistry Uppsala, Sweden, 16-19 September 1991

The Second International Symposium on Environmental Geochemistry (ISEG) was organized by the Geological Survey of Sweden (Division of Geochemistry) and the Swedish University of Agricultural Sciences (Department of Forest Soils) in collaboration with the International Association of Geochemistry and Cosmochemistry (IAGC) and the Society for Environmental Geochemistry and Health (SEGH). Presentations and discussions focused on current research associated with natural and man-made environmental effects on soils, vegetation, waters and health. Accepted abstracts for oral presentations and posters were compiled in a volume which was distributed at the meeting. The symposium included an excursion relating to "nutrient circulation in forest ecosystems and heavy metal aspects in mining areas". The symposium, which was chaired by Prof. Dr. Mats Olsson of the Swedish University of Agricultural Sciences at Ultuna, was well attended and proved a very fruitful meeting ground for the interdisciplinary exchange of views and ideas between participants from mainly Europe, the USA and Canada, as well as Africa and Asia.

The symposium was preceded by workshops on "Environmental Geochemistry and the International Geochemical Mapping Project IGCP 259" and "Chemical Time Bombs in Cold Climate Countries". Chemical time bombs are the expression of problems caused by the delayed effects of pollution, with particular attention to the relation between toxification and environmental changes.

The proceedings of the symposium will be published in a special supplement to Applied Geochemistry.

N.H. Batjes, Wageningen, The Netherlands

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

AFRICAN SOIL SCIENCE SOCIETY - ASSS

The ASSS 2nd Conference was held in Cairo, Egypt from November 4-10, 1991 with the adopted theme, "Soil and Water Management for Sustainable Productivity in Africa". The Conference was opened by H.E. Prof. Y. Walley, Dep. Prime Minister and Minister for Agriculture and Honorary Chairman of the Organizing Committee. Nearly 100 papers or posters were presented at the technical sessions by soil scientists not only from Africa but some from international centers outside Africa. The sessions and field tours provided a stimulating forum for discussions and understanding of the improved techniques in soil, water and land use management for sustainable productivity applicable to the diverse countries of Africa. The detours during the field excursions to the several historical sites, museums, palaces, pyramids and others provided added incentives to the interest of the participants.

The ASSS President Prof. A.M. Elgala also presented a brief report on the activities, the scientific and organizational goals and teething problems of the Society since the election of the Committee at the General Meeting in Kampala in December 1988.

The Proceedings of the Cairo Conference are expected to be published towards the later part of 1992.

ASSS - New Office Bearers

At the 2nd General Meeting held during the Cairo Conference on November 7, 1991, Nigeria was selected as the country to host the ASSS 3rd Conference with the election of the following ASSS Office Bearers:

EXECUTIVE COMMITTEE

President:	Prof. A. Agboola - University of Ibadan, Nigeria.
Immediate Past President:	Prof. A.M. Elgala - A.S.U., Dokki, Cairo, Egypt.
Vice-Presidents:	(i) Prof. A.M. Rasheed - NRC, Cairo, Egypt. (ii) Dr. L. Thiombiano - B.NdesSols, Quafadanpou, Burkina Faso. (iii) Dr. F. Muchena - KARI, Nariobi, KENYA. (iv) Dr. S.K. Mughogho - Bunda, C.A., Malawi.
Secretary General:	Prof. V.P. DaCosta - Univ. of Nairobi, Kenya.
Asst. Sec. General:	Dr. T.A. Taha - A.S.U., Dokki, Cairo, Egypt.
Treasurer:	Prof. Farida Rabie - A.S.U., Dokki, Cairo, Egypt.
Members:	(i) Dr. V. Chinene - U.O.Z., Lusaka, Zambia. (ii) Dr. J.E. Oppong - O.O.L., Lagon, Ghana. (iii) Mr. D.N. Kimaro - N.S.S., Tanga, Tanzania.

ASSS COUNCIL

- (a) All Members of the Executive Committee.
- (b) Members:
- (i) Dr. B. Bababe - U.O. Maiduguri, Nigeria.
 - (ii) Dr. P. Hennebert - U.O. Bujumbura, Burundi.
 - (iii) Dr. C.O. Kayode - OSADP, Akure, Nigeria.
 - (iv) Dr. I.M. Ishag - ARC. Wad M., Sudan.
 - (v) Mr. H.M. Fadul - ARC, Wad M., Sudan.

Address of Secretariat: Prof. V.P. DaCosta, Soil Science Dept.
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PRIV. FAX (NBI) 339806.
Telegram: VARSITY, NAIROBI.

ALBANIAN SOCIETY OF SOIL SCIENCE (ASSS)

On October 3, 1991 the Albanian Soil Science Society was established in Tirana, the Capital of Albania.

The composition of the first Executive Committee reads as follows:

President: Mr. Albert Dubali,
Institute of Soil Studies, Tirana.
Vice-President: Mr. Nike Qafoku,
Agricultural University of Tirana.
General Secretary: Mr. Pandi Zdruli,
Institute of Soil Studies, Tirana.
Treasurer: Mr. Spiro Lamani,
Institute of Soil Studies, Tirana.
Members: Mr. Aquif Dabulla
Mr. Lefter Veshi
Mr. Dhimitër Papa, Station of Agricultura, Lushnja.
Mr. Zef Rakacelli.

Address: General Secretary Mr. Pandi Zdruli, Instituti i Studimit të Tirana, Albania.

ASSOCIATION OUEST ET CENTRE AFRICAINE DE LA SCIENCE DU SOL (AOCASS) - Nouvelles des associations nationales et des membres

- L'AOCASS s'agrandit. - Le 20 Avril 1991, a eu lieu l'assemblée générale constitutive de l'Association de la Science du Sol du Burkina (ASSOB); cette assemblée a été honorée de la participation du président de l'AOCASS, Dr. Mamadou Ouattara; de même a pris part à cette réunion notre collègue Nigérien membre de l'Association, Issaka Mahamane. Le bureau exécutif élu est constitué comme suit:

Président: Dr. François Pallo
1er Vice-Président: Dr. Prosper Zombre
2eme Vice-P.: Dr. Noumbie Sourabie
Secrétaire général: Ing. Badiori Ouattara
Secrétaire général adj.: Dr. Lamourdia Thiombiano
Trésorier général: Ing. Etienne Barro
Trésorier gen. adj.: Ing. Moussa Sawadogo

BRAZILIAN SOIL SCIENCE SOCIETY

At the XXIII National Congress of the Brazilian Soil Science Society from 21-27 August 1991 in Porto Alegre/RS the following new officers for the period of July 1991-July 1993 were elected:

President:	Prof. Egon Klamt, UFRGS/Porto Alegre, RS
1st Vice-President:	Prof. Luiz Carlos Valadares Borges, UFGO,GO
2nd Vice-President:	Dr. Antonio Carlos Moniz, IAC/Campinas/SP
Secretary:	Dr. Otávio A. Camargo, IAC/Campinas/SP
Treasurer:	Dr. Ronaldo S. Berton, IAC/Campinas/SP

SOIL SCIENCE SOCIETY OF CHINA

Seventh National Congress and 1991 Annual Academic Meeting

From October 21-25, 1991, the Soil Science Society of China solemnly held its Seventh National Congress and the 1991 Annual Academic Meeting in Changsha, Hunan Province with over 700 delegates taking part.

By taking the form of plenary presentation, monographic discussion, special report, poster and exhibition of scientific results, this congress lasted for 4 days addressing the topic "Soils, facing a new challenge of sustaining 1.1 billion people", with two-volume proceedings published and citations of various kind presented.

The Seventh Council of the Soil Science Society of China, comprising 87 members, was elected with Prof. Zhao Qiguo as President of the society, Prof. Mao Daru and Prof. Shen Shanmin as Vice Presidents and Prof. Xie Jianchang as Secretary-General.

Soil Science Society of China:

President:	Prof. Zhao Qiguo, Nanjing Inst. of Soil Science, Academia Sinica
Vice-Presidents:	Mao Daru, Agricultural Academy of China, Prof. Shen Shanmin, Inst. of Applied Ecology, Academia Sinica, Shenyang
Secretary-General:	Prof. Xie Jianchang, Nanjing Inst. of Soil Science, Academia Sinica

SOCIEDAD VENEZOLANA DE LA CIENCIA DEL SUELO

As new officers of the Soil Science Society of Venezuela for the period 1991-1993 were elected:

President:	Pedro R. Solórzano P.
Vice-President:	Eduardo Casanova O.
Secretary:	Antonio Sánchez
Vice-Secretary:	Francisco Ovalles
Treasurer:	Alfredo López Pérez
Vice-Treasurer:	Andrés Jácome
Council members:	Belinda Morillo Evelyn Bisbal

The new address of the Society:

Sociedad Venezolana de la Ciencia del Suelo,
Apartado Postal 312, Maracay - Estado Aragua,
Venezuela.

INTERNATIONAL RELATION RELATIONS INTERNATIONALES INTERNATIONALE BEZIEHUNGEN

Unesco Environment and Development Briefs

Mid-1991 saw the launching of the Unesco Environment and Development Brief Series. The aim is to improve the communication to decision makers of scientific information about environment and development, as a basis for action. The series is addressed primarily to decisionmakers in government and business who need a quick, authoritative, and readable overview of global environment and development issues, presented in a policy perspective and including possible strategies for action.

Each brief focuses on a single environment and development issue of global importance. The first brief, published in July 1991, deals with Debt-for-Nature Exchanges. Topics to be addressed in up-coming titles include education as the foundation for sustainable development, observing the oceans, reconciling conflicting uses of resources in coastal areas, water management in urban areas, mitigating natural hazards, advanced technologies for environmental management, sustaining tropical soil fertility.

An A4 size, 16-page, full colour format has been adopted for the series. Each brief will be written in clear, non-technical language. Innovative, high-quality graphics reinforce key information. Useful addresses and references are listed to enable readers to acquire further information. A minimum of 5,000 copies of each brief will be printed and distributed gratis, most in several languages (English, French and Spanish). Collaborating institutions may produce other language versions.

The Unesco Environment and Development Brief Series has been launched within the framework of a new intersectoral project on Environmental Information and Education, under the aegis of the Coordinator for Environment Programmes, Francesco di Castri, who is Project Director for the Environment and Development Brief Series. Jeanne Damlamian is Managing Editor of the Series, with Karen Simpson as Assistant Editor.

Copies of briefs and further information on the series can be obtained from: Bureau for Coordination of Environment Programmes, UNESCO, 7 place de Fontenoy, 75700 Paris, France. Tel: (33-1) 45.68.10.00, Fax: (33-1) 45.66.90.96.

The Sustainable Biosphere Initiative: An Ecological Research Agenda.

A new initiative has been proposed by the Ecological Society of America (ESA) which seeks to mobilize the international ecological research community in addressing issues related to the wise management of the Earth's resources and the maintenance of the planet's life support systems. The proposal has been prepared to develop the outlines for a blueprint for ecological research in the next decade. The proposal was distributed in 1990, and published in 1991 [The Sustainable Biosphere Initiative. An Ecological Research Agenda. A Report from the Ecological Society of America. *Ecology* 72(2) (April 1991):371-412]. It addresses such issues as intellectual frontiers in ecology, ecological knowledge required for a sustainable biosphere (in terms of global change, biological diversity, sustainable ecological systems) priorities and key topics, research recommendations and steps to implementation.

Recognizing that these issues and priorities are important worldwide, the ESA has called for leading ecologists from all regions of the world to evaluate the proposals. This process was initiated by a meeting held in Cuernavaca (Mexico) in May 1991, which recommended that the concept be put on an international footing, under the title "International Sustainable Biosphere Initiative (ISBI)". An interim steering committee has been set up to further the elaboration and development of ISBI. The committee comprises B. Huntley (Convener), E. Fuentes, W. Haber, J. Lubchenko, V. Neronov, I. Noble and P.S. Ramakrishan. For further contacts: Prof. B. Huntley, National Botanical Institute, Private Bag X7, Claremont 7735, South Africa.

About IOUTN

The International Organization for Unification of Terminological Neologisms (World Bank of International Terms) is affiliated to the United Nations as a non-governmental organization since 1987. The IOUTN affiliates philologists, linguists and specialists in various fields of science who are interested in problems of transnationalization and dissemination of specialistic terminology.

It has about 200 individual members, mostly high level specialists in 40 countries, many national and international institutional members, and six IOUTN national committees. The Polish Branch of the World Bank of International Terms operates under the auspices of the Polish National Commission for Unesco.

The main tasks and aims of the IOUTN are:

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For more details about IOUTN, please contact: Zygmunt Stoberski, President IOUTN, ul. Filtrowa 54/58 p.1, 02-057 Warszawa, Poland.

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*edited by H.W. Scharpenseel, M. Schomaker and
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**APPOINTMENTS, HONOURS
NOMINATIONS, DISTINCTIONS
ERNENNUNGEN, AUSZEICHNUNGEN**

Dr. M. Vikram Reddy, reader in Zoology (environmental biology) at Kakatiya University, India and a life-member of International Society of Soil Science, has been awarded a Rockefeller Foundation Environmental Research Fellowship in International Agriculture to study soil management and soil fauna in Semi-arid tropical agro-ecosystems at ICRISAT (Hyderabad, India).

Dr. Keith Northcote of the SA Branch has recently been honoured with the award of a Fellowship of the Australian Institute of Agricultural Science. Most will be familiar with Keith's achievements, but his activities associated with the "Atlas of Australian Soils" and "Description of Australian Soils" were particularly mentioned. Keith has been retired from Division of Soils, CSIRO, for several years and was made Honourary Member for Life of the ASSS in 1989 and is a regular attendant at SA Branch meetings.

The J.A. Prescott Medal of Soil Science has been awarded to Associate Professor **Bob Gilkes** for his outstanding contributions to Soil Science. Bob received his B.Sc in theoretical physics and his PhD in geology and mineralogy from Southampton University, UK. He then began his Australian career in the CSIRO Division of Soils in Adelaide and Brisbane, before moving to the University of Western Australia in 1969 as a Lecturer in Soil Science.

He is well known for his research in soil mineralogy and is presently Chairman of Commission VII (Soil Mineralogy) of ISSS.

Dr. M. S. Swaminathan, IRRI director general from 1982 to 1987, received the 1991 Tyler Prize for Environmental Achievement on 5 April in Los Angeles. Swaminathan was cited for his 40 years of work as a pioneer in economic ecology and sustainable agricultural development, and for his contributions to the conservation of germplasm. He shares the Prize with C. Everett Koop, former U.S. surgeon general.

The Tyler Prize was established in 1973 by John and Alica Tyler to foster the growth of environmental knowledge to enable humanity to restore and preserve the environment.

Biauwan Tjwan Kang, a soil scientist with IITA, was one of two recipients named for the 1990 IDEA (Innovations for Development Association) Award in Farming. He was cited for his "agroforestry work in Nigeria, the Philippines, and his native Indonesia", which has "resulted in a successfully implemented system of alley cropping." IDEA is sponsored jointly by the Swedish International Development Authority, the Sven and Dagmar Salen Foundation, and the Royal Swedish Academy of Engineering Sciences.

Nteranya Sanginga soil microbiologist with IITA, was awarded the 1990 Sven Brohult Award of the International Foundation for Science (IFS), Stockholm, Sweden, for his research on biological nitrogen fixation in trees.

Dr. Morris Schnitzer retired January 30, 1991 from Agriculture Canada in Ottawa after 35 years of service as a principal research scientist in Agriculture Canada since 1973. He is a Fellow of the American Society of Agronomy, the Soil Science Society of America and the Canadian Society of Soil Science. In 1984 he was awarded the Soil Science Research Award of the Soil Science Society of America and was named Honorary Member of the International Humic Substances Society.

He is a founding member of the International Humic Substances Society and of the International Society of Biogeochemistry. He was chairman of Commission II (Soil Chemistry) of the International Society of Soil Science and served on the editorial boards of several scientific journals. He has been a prolific writer, authoring over 300 publications, including books, book chapters, and scientific papers.

We wish him many years of happy and healthy retirement.

The ISSS Cooperating Journal **Geoderma** of Elsevier attained its 50th volume in 1991; the journal **Soil Science**, published by William & Wilkins, was founded in 1916 and celebrated its 75th anniversary in 1991.

IN MEMORIAM

Dr. K. Apostolakis (1926-1991)

Dr. K. Apostolakis President of the Hellenic Society of Soil Science since 1984 died December 7, 1991, in Athens, Greece.

Born in Piraeus, 1926, he attended the Varvakios Standard High School, and later on, after a years study at the Agricultural University of Athens, he was awarded a scholarship by the International Bureau of Education and the Rotary International in order to study at the University of Georgia, Athens USA. In 1950 he received the degree of B.Sc. in Agriculture. Due to his excellent records, he was offered a teaching assistantship by the Michigan State University, Department of Soil Science, East Lansing, USA. In 1955 he was awarded the degree of Ph.D. after submitting a Thesis on "The Cobalt of Michigan Soils". During his graduate studies, he specialized in the use of nuclear techniques in agriculture with emphasis on soils.

Upon his return to Greece, at the beginning he accepted a position at the Institute of agriculture and chemistry "N. KANELLOPOULOS", where he worked in the study of physical and chemical properties of soils, and on sampling techniques, till 1960. He was then appointed by the Ministry of Coordination as research staff member of the Nuclear Research Center "DEMOKRITOS". In 1972 the Greek State appreciating his contribution as a soil scientist, and his excellent professional status, appointed him as associate professor of soils at the Department of Soil Science, Aristotelian University of Thessaloniki, where he taught ungraduate and graduate courses in soil fertility and soils in general. In 1974 he was transferred to his former position at DEMOKRITOS, and he served there-after, as deputy director and research staff member, till his death.

Dr. Apostolakis worked in the early stages of his career on soil mapping and classification, and contributed to the preparation of a series, of soil maps of the Peloponnese District, as well as of various other areas of Greece. However, he dedicated most of his time in the use and application of isotope techniques, in the study of soil fertility and plant nutrition problems. Thus, most of his published contributions are related to the efficiency of nutrient uptake by plants, especially of N and P, through the use of N¹⁵ and P³². He also studied the effect of time, method of application, and kind of fertilizer on plant growth. He furthermore worked on such problems as the effect of irrigation management and of split application of N fertilizers on N fixation and utilization by grain crops, behaviour of P in soils, the chemistry of micronutrients in soil, salt affected soils and their problems, soil pollution with radionuclides and the determination of transfer coefficient to various crops, and other related subjects.

He has not excelled only in soil research as an experimentalist, but also as a capable administrator as well. His contribution to the advancement of soil research in Greece has indeed been significant. Dr. APOSTOLAKIS in his capacity as a member of various committees and as a scientific collaborator, he offered invaluable services to science and development of the country. Thus he served as a member of the following Committees and working groups: European Committee for the classification of soils of Europe, National Committee on fertilizer policy, National Committee for the agricultural research in Greece, Committee of natural soil resources, Committee on soil mapping and classification, Representative of Greece in the coordinated programme on the use of nuclear techniques in fertilization studies of wheat, Representative in the coordinated programme on the use of isotopes in fertilizer efficiency studies on grain legumes, Committee of environmental protection of the Ministry of Northern Greece, Secretary of the national programme for science and technology of the Ministry of Coordination, Committee for the management of natural water resources, Scientific collabora-

tor of the Service for regional development of Peloponnese and many other Committees.

Dr. Apostolakis has also been member of many scientific Societies such as: Hellenic Society of Nuclear scientists, the Sigma Xi Society, American Society of Agronomy, American Society of Soil Science, International Society of Soil Science, Hellenic Society of Soil Science and Hellenic Archaeometric Society. His sudden death has not only deprived the scientific community of an excellent and competent scientist, but of a pleasant and kind personality whose *memory will be unforgettable by all those who were his collaborators or friends.*

P.H. Koukoulakis
Secretary-General of the
Hellenic Society of Soil Science

Dr. Ramón Fernández Gonzalez (1931-1991)



The community of Soil Scientists, especially the Mexican Society of Soil Science suffered a grievous loss on August 10, 1991, when Dr. Ramón Fernández González died.

Dr. Fernández González was born on August 31, 1931, in México City. He graduated as an Agronomist specialized in Irrigation from the National School of Agriculture on 1954 and obtained his M.Sc. and Ph.D. degrees in the University of California, Davis, on 1957 and 1965 respectively. His interest for the advancement of Soil Science in his country motivated him to participate in the commission that gave birth to the Mexican Society of Soil Science in 1962, society of which he was *President for two periods and to which he was permanently associated, receiving in 1987 the title of Distinguished Member.*

Dr. Fernández González was a Professor of Water-Soil-Plant Relations in The National School of Agriculture, now Autonomous University of Chapingo, and of the Post-graduate College. He was a member of the agricultural research staff of the Rockefeller Foundation Mission in México and the Mexican Fertilizer Company. His professional experience was disseminated in the classrooms, scientific meetings and throughout more than 200 technical and scientific papers on crop irrigation, soil physics, salinity, irrigation-water quality and hydroponics.

In his last assignments he was acting as third Vice-Chairman of Commission VI: Soil Technology, of the International Society of Soil Science and as President of the agronomic Division of the Mexican Academy of Engineering.

He is survived by his wife, three daughters and two sons to whom we express our deepest sympathy.

Dr. Roberto Nunez Escobar
Vice-President of ISSS, Montecillo, México

Prof.Dr. W. Koinow (1912-1991)

Nach schmerzvollen Leiden verstarb am 13.08.1991 der namhafte Förderer der bulgarischen bodenkundlichen Wissenschaft und Korrespondierendes Mitglied der Bulgarischen Akademie der Wissenschaften Prof.Dr. W. Koinow.

Der Verstorbene ist am 17.12.1912 in Assenowgrad geboren. Er hat die älteste landwirtschaftliche Schule in Sadowo (Bulgarien) absolviert. Seine Hochschulausbildung erhielt er an der landwirtschaftlichen Fakultät der Universität in Sofia. Als langjähriger Pädagoge, Inhaber des Lehrstuhls für Bodenkunde bei der Landwirtschaftsakademie in Sofia und beim landwirtschaftlichen Institut in Plowdiw, sowie als Leiter der Abteilung für Genese und Klassifikation der Böden beim Institut für Bodenkunde der Bulgarischen Akademie der Wissenschaften sowie beim Institut für Bodenkunde "N.Puschkarow" der Landwirtschaftsakademie hat er entscheidend zur Ausbildung zahlreicher Landwirte und Bodenkundler beigetragen. Seine wissenschaftliche Tätigkeit ist mit der Erforschung, Kartierung und Klassifizierung der Böden Bulgariens eng verbunden, was eine enorme Entwicklung der Bodenkunde in Bulgarien bewirkt hat. Aus seiner Feder sind über 200 wissenschaftliche Werke erschienen (Monographien, Lehrbücher, Bodenkarten, Beiträge usw.). Seine hervorragenden wissenschaftlichen Leistungen und seine aktive Tätigkeit als Gelehrter führten zu seiner Wahl als Korrespondierendes Mitglied der Akademie der Wissenschaften, sowie zur Verleihung des Ehrentitels "Verdienter Wissenschaftler".

Prof.Dr. Koinow wurde mehrmals mit hohen Orden und Auszeichnungen geehrt. Seine wissenschaftliche Tätigkeit ist nicht nur mit der bulgarischen Bodenkunde verknüpft. Er ist einer der ersten bulgarischen Bodenkundler, der seine Kräfte dem Anliegen der internationalen Zusammenarbeit auf dem Gebiet der Bodenkunde gewidmet hat. Sein Name ist in Westeuropa, in der UdSSR und in den USA bekannt. Er beteiligte sich aktiv an der wissenschaftlichen Durchführung vieler Projekte der FAO und UNEP, sowie an zahlreichen wissenschaftlichen, nationalen und internationalen Kongressen, Symposien und Tagungen, was ihm nicht nur große Popularität, sondern auch die entsprechende Anerkennung verschaffte. Er war Ehrenmitglied der Bodenkundlichen Gesellschaft der UdSSR und Korrespondierendes Mitglied der Deutschen Bodenkundlichen Gesellschaft.

Mit dem Ableben von Prof.Dr. Koinow erleidet die bulgarische landwirtschaftliche und bodenkundliche Wissenschaft den Verlust eines großen Gelehrten, Pädagogen und Menschen. Wir verneigen uns tief zu seinem Gedenken.

Dr. Iwan KABATSCHIEW
Puschkarow-Institut für Bodenkunde, Sofia

Prof. Dr. Victor A. Kovda (1904-1991)



It is with much sadness that we announce the death on 23 October 1991 of Professor Victor Kovda, Honorary Member of the Society.

Professor V.A. Kovda was born on 29 December 1904. After graduation in 1927 he presented his postgraduate paper in 1930, received a diploma in soil science in 1927, a Ph.D. in 1934, and D.Sc. in 1939. In 1953 he became Corresponding Member of the USSR Academy of Sciences.

From 1930 to 1958 Dr. Kovda headed a laboratory in the Institute of *Soil Science in Leningrad*, combining this work with a professorship at the Department of Soil Science of Moscow State University (1935-1958). After being Director of the Department of Natural and Exact Sciences, Unesco, Paris (1958-1965), he became Head of the Pedological Department of Moscow State University.

His scientific work concentrated on the development of soil research, particularly studies of geography, genesis and amelioration of saline and alkaline soils; studies of the biological cycling of substances in soils of individual regions and the landscape as a whole; the development of new soil-based techniques for prospecting mineral resources; and mapping of world soils. He elaborated the theory of joint development of soils and landscapes, formulated original concepts of hydromorphism in soils on the great plains and the types of soil geochemical balances.

Prof. Kovda published over 600 scientific papers and books, among them over 30 monographs. The following may be mentioned: *Solonchaks and Solonets* (1937); *The Origin and Regime of Saline Soils* (two volumes, 1946-1947); *Geochemistry of the Deserts in the USSR* (1954); *Principles of Pedology* (two volumes, 1973); *Problems of Soil Cover Protection and Biosphere of Planets* (1989); and *Ecological Policy* (1991).

He also compiled a large number of soil maps, among them from the Black Sea Coast of Western Georgia (1932); Caspian Sea lowlands (1934-1951); Iran (1941-1945); China (1955 and 1958); Asia (1960 and 1971); a schematic map of world soil and geochemical formation (1969); and *Soil Map of the World* (1965 and 1974).

His expertise was frequently in demand by national and international organisations and he took part and headed numerous studies in soil science *sensu largo*.

Internationally, Professor Kovda has played a significant role. He was Chairman of Commission V of the ISSS, and President of the Society from 1970-1974. From 1973-1975 he was President of the SCOPE (ISCU) and from 1971-1989 President of the Soviet Soil Science Society.

Soil and other scientists in the USSR and in many other countries all over the world have benefitted from his extensive knowledge, in no small measure because of his command of some western languages.

In the last few years Prof. Kovda formulated a new concept on the role of the soil cover as a biosphere component and he published theoretical papers on the global role of the soil cover as the main factor controlling the existence of the biosphere.

Prof. Kovda was recipient of many prizes, awards and honours. He was Doctor Honoris Causa of a number of universities and member of the Editorial Board of several scientific journals.

Prof. V.A. Kovda will be remembered with respect and affection by all who came into contact with him.

Prof.Dr. G.V. Dobrovolsky
President, Russian Soil Science Society

Prof.Dr. V.I. Kefeli
Vice-President, Russian Soil Science Society

Grigore Obrejanu (1911-1992)

Born on January 10, 1911, in a small village on the borders of the Dniestr river, in what is now the Republic of Moldavia, Grigore Obrejanu passed away in Bucarest, on January 27, 1992, after a long illness. Grigore Obrejanu graduated from the University of Agricultural Sciences in Cluj, and got his Ph.D. in Agronomy from the same University in 1942. He taught soil science and range management in Cluj, at the same time carrying research at the nearby Cîmpia Turzii Experiment Station, until in 1949 he moved to Bucarest. He was here Professor of Soil Science at the Agronomical University, and concurrently held at different times various positions as: Associate Director of the Institute of Agronomic Research, Head of the newly founded Department of Soil Science of the same institute, and Vice-President of the Academy of Agricultural and Forestry Sciences. His main concern was in developing applied soil science as related to general agronomy and to land reclamation. Research was done on saline soils, secondary salinization, recently reclaimed alluvial soils of the Danube bottomland, podzolic soils, and other problem soils, including methods of increasing their productivity and preventing degradation processes. Grigore Obrejanu played an important role in the organization of the 8th International Soil Science Congress, which took place in Bucarest in 1964, and was the Vice-President of the International Soil Science Society in the 1960-1964 period. He also was, for many years, President of the Romanian Society of Soil Science.

Dr. A. Canarache
Bucarest, Romania

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REUNIONS, CONFERENCES, SYMPOSIA
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1992

European International Space Year Conference, Munich, Germany, 30 March-4 April 1992.
Information: INTERPLAN, Convention & Visitor Service, Anton Kössl, Sophienstr. 1, W 8000 München 2, Germany (Tel.: +49(0)89/594492; Fax: +49(0)89/591610; Telex: 523 183 iplan.

International Symposium to highlight Future of Sulphur Markets, Washington, D.C., USA, April 1-3, 1992.

Information: The Sulphur Institute, 1140 Connecticut Avenue NW, Suite 612, Washington, D.C. 20036, USA (Tel.: 202-331-9660; Fax: 202-293-2940).

Tropical Soil Biology and Fertility: Inaugural TSBF-India Workshop, New Delhi, India, 1-5 April 1992.

Information: P.S. Ramakrishnan, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi 110067, India.

Global Warming - A Call for International Coordination, Third International Conference on the Scientific and Policy Issues Facing All Governments, Chicago, USA, April 6-9, 1992.

Information: SUPCON International, One Heritage Plaza, P.O.Box 5275, Woodridge IL 60517-0275 USA (Tel.: 708/910-1551; Fax: 708/910-1561).

ESSC First International Congress, Conserving our Soil Resource, Bedford, U.K., April 6th-10th, 1992.

Information: Miss R.J. Rickson, Secretary, ESSC Congress, Silsoe College, Silsoe, Bedfordshire MK45 4DT, U.K.

European Geophysical Society XVII General Assembly, Edinburgh, U.K., 6-10 April 1992.

Information: EGS Office, Postfach 49, Max-Planck-Str. 1, W-3411 Kallenburg-Lindau, Federal Republic of Germany (Tel.: (49)-5556-1440; Fax: (49)-5556-4709; Telex: 965 515 cop d).

4th National Soils Conference of the Australian Society of Soil Science on "Soil Protection and Productivity", Adelaide, South Australia, April 19-23, 1992.

Information: Mr. Richard Merry, ASSSI Conference Committee, CSIRO, Div. of Soils, PMB 2, P.O. Glen Osmond, South Australia 5064 (Tel.: (08) 274 9224).

UNESCO-UNAMAZ-UNU International Symposium on the Pro-Amazonia Project, Belém, Brazil, 25-30 April 1992.

Information: MAB Secretariat or J.S. Lourenco, Association of Amazonian Universities, C.P. 558, Belém, Pará, Brazil.

XII International Congress on Plastics in Agriculture, Granada, Spain, May 3-8, 1992.

Information: Congresos Gestac, Gran Capitán, 12, 18002 Granada, Spain (Tel.: 58-28 71 51; Fax: 58-29 51 08).

Alexandria International Conference "Sustainability of Egyptian Agriculture in the 1990s and beyond: Meeting the Challenges of a Changing World", Alexandria, Egypt, May 15-19, 1992.

Information: Secretariat, Alexandria International Conference, Macdonald Campus, c/o CEMARP Office, 21, 111 Lakeshore Road, P.O.Box 185, Ste-Anne-de-Bellevue, Quebec, Canada, H9X 1C0 (Tel.: (514)398-7772; Fax: (514)457-4030).

Symposium on Chemical Climatology and Geomedical Problems, Norwegian Academy of Science and Letters, Oslo, Norway, 21-22 May 1992.

Information: Prof. Dr. J. Lag, Dept. of Soil Sciences, Agricultural University, P.O. Box, N-1432 Aas-NLH, Norway.

ECO-URBS'92: First International Seminar on the Environmental Problems of Large Urban Centers/FOREST'92: Second International Symposium on Environmental Studies of Tropical Rainforests, Rio de Janeiro, Brazil, May 24-29, 1992.

Information: Organizing Committee, P.O.Box 3591, 20001-Rio de Janeiro-RJ-Brazil (Tel.: (+5521)2206913 and 2665008; Fax: (+5521)2261345; Telex: (+5521)37984-FBCN-BR).

International Symposium "Farm Lands Erosion in Temperate Plains Environments and Hills", Saint-Cloud, Paris, France, 25-29 May 1992.

Information: Centre de Biogéographie - Ecologie, M.S. Wicherek/Mme M.O. Boissier, Ecole Normale Supérieure de Fontenay - Saint-Cloud, Avenue de la Grille d'Honneur - Le Parc, 92211 Saint-Cloud, France (Tel.: (1) 47 71 91 11; Fax: (1) 46 02 39 11).

International Geoscience and Remote Sensing Symposium (IGARSS'92), Houston, TX, USA, 26-29 May.

Information: Dr. Andrew J. Blanchard, Director, Space Technology and Research Center, Houston Advanced Research Center, 4800 Research Forest Drive, The Woodlands, TX 77381, USA (Fax: (1-713)3637923).

International Conference on Climate Impacts and Sustainable Development, Government of the Northeastern Ceara State/State Federation of Industries/Federal University of Ceara/Esquel Brazil Foundation, Fortaleza, Brazil, late May 1992.

Information: General Coordinator, Conference on Climate Impacts and Sustainable Development, SQS 315-BIA, Ap 104, 70384 Brasilia DF, Brazil (Tel.: (5561)245-1081; Fax: 223-2902).

International Conference on Agricultural Engineering, Uppsala, Sweden, 1-4 June, 1992.

Information: Mr. Olle Norén, Swedish Institute of Agricultural Engineering, P.O. Box 7033, S-75007 Uppsala, Sweden (Tel.: +46 18 30 33 00; Fax: +46 18 30 09 56).

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UN Conference on Environment and Development, Earth Summit, Rio de Janeiro, Brazil, 1-12 June 1992.

Information: UNCED Secretariat, 4 Chemin de Conches, P.O. Box 80, 1213 Conches, Switzerland (Tel.: (41-22) 789 16 76; Fax: 789 35 36).

WORLDBLINK Foundation: Global Youth Summit (GYS), Rio de Janeiro, Brazil, 2-8 June 1992.

Information: WORLDBLINK Foundation, 8755 W. Colgate Ave., Los Angeles, CA 90048, USA (Tel.: (213) 273-2636; Fax: 273-7408).

International Workshop on Implementing National Irrigation Programs, Utah State University, Logan, Utah, USA, June 7-24, 1992.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, USA (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Conference on Soil Compaction and Soil Management, Tallinn, Estonia, June 8-12, 1992.

Information: Dr. Tech.Sci. E.J. Nugis, Conference Chairman, Nature Conservation Engineering Centre, Laari 5, 200031 Tallinn, Estonia.

International Conference on Global Climate Change, Impacts on Terrestrial Ecosystems, Bad Dürkheim, Germany, 14th-18th June 1992.

Information: Kay Russell, Elsevier Science Publishers, Conference Department, Mayfield House, 256 Banbury Road, Oxford OX2 7DH, UK (Tel.: +44 (0)865 512242; Fax: +44 (0)865 310981).

IPC 9th International Peat Congress, Uppsala, Sweden, 22-27 June 1992.

Information: Mr. Reidar Pettersson, Uppsala Tourist & Congress, Box 216, S-75104 Uppsala, Sweden (Tel.: (+46) 18 27 48 07; Fax: (+46) 18 69 24 77).

9th Royal Show International Symposium "Towards Sustainable Crop Production Systems Emerging Technologies", St. John's College, The University of Cambridge, The University of Warwick, Coventry, The Royal International Agricultural Exhibition, National Agricultural Centre, Stoneleigh Park, Warwickshire, England, 1st to 7th July, 1992.

Information: Miss Katherine Fort, Symposium Administrator, Royal Agricultural Society of England, National Agricultural Centre, Stoneleigh Park, Warwickshire, England CV8 2LZ (Tel.: +44 203 696969; Fax: 0203 696900; Telex: 31697 RASE).

International Symposium on Erosion, Debris Flows and Environment in Mountain Regions, Chengdu, China, July 5-9, 1992.

Information: Dr. Shang Xiangchao, Institute of Mountain Disasters & Environment, Chinese Academy of Sciences, Chengdu P.O. Box 417, Sichuan 610015, PR of China (Tel.: 581260-562; Fax: +86 28-582846; Telex: 600321 sied cn).

IFA Regional Fertilizer Conference for Latin America and the Caribbean, Port of Spain, Trinidad, 8-10 July 1992.

Information: L.M. Maene, Secretary General IFA, 28 rue Marbeuf, 75008 Paris, France (Tel.: (33)1-42252707; Fax: (33)1-42252408).

Eighth International Soil Management Workshop - Utilization of Soil Survey Information for Sustainable Land Use, Oregon, California, and Nevada, USA, July 11, 1992 through July 24, 1992.

Information: Dr. M. Dewayne Mays, National Soil Survey Center, Soil Conservation Service, Federal Building & Courthouse, 100 Centennial Mall North, Room 152, Lincoln, Nebraska 68508-3866, USA (Tel.: (402)437-5423; Fax: (402)437-5336).

*** International Working Meeting on Soil Micromorphology**, Townsville, Queensland, Australia, July 12-18, 1992.

Information: Dr. Colin Chartres (IWMSM), CSIRO Division of Soils, GPO Box 639, Canberra, ACT 2601, Australia (Tel.: +61 6 246 5953; Fax: +61 6 246 5965).

ICSC International Crop Science Congress, Ames, Iowa, USA, July 14-22, 1992.

Information: Dr. Kenneth J. Frey, Chair Organizing Committee International Crop Science Congress, Department of Agronomy, Iowa State University, Ames, IA 50011-1010 U.S.A. (Tel.: (515)-294-7607; Fax: (515)-294-3163; Telex: 283359 IASU UR).

*** 1992 Conference of Working Group MV of the International Society of Soil Science, Operational Methods to characterize Soil Behavior in Space and Time**, Ithaca, New York, USA, July 26-29, 1992.

Information: Dr. R.J. Wagenet, Dept. of Soil, Crop and Atmospheric Sciences, 235 Emerson Hall, Cornell University, Ithaca, NY 14853, USA (Fax: USA 607-255-2644); Dr. J. Bouma, Dept. of Soil Science and Geology, Agricultural University, P.O. Box 37, 6700 AA Wageningen, The Netherlands (Fax: 31-837082419).

*** 2nd International Symposium on Forest Soils**, (hosted by CVG-EDELLCA), Guri-Ciudad Guayana, Venezuela, July 29-August 3, 1992.

Information: 2nd ISFS, Comité Organizador, Instituto de Silvicultura, Fac. Ciencias Forestales, Universidad de los Andes, Mérida 5101-Venezuela.

ISPRS Congress, Washington, DC, USA, 2-14 August 1992.

Information: 17th ISPRS Congress Secretariat, PO Box 7147, Reston, Virginia 22091-7147, U.S.A. (Tel.: (1703) 648 5110; Fax: (1703) 648 5565; Telex: 150443 usgs ut).

Environmental Soil Science, University of Alberta, Edmonton, Alberta, Canada, August 8-15, 1992.

Information: Mr. Yash Kalra (Tel.: (403) 435-7210; Fax: (403) 435-7359).

27th International Geographical Congress, Washington, DC, USA, 9-14 August 1992.

Information: Dr. Anthony R. de Souza, Secretary General, 27th International Geographical Congress, 1145 17th Street N.W., Washington, D.C. 20036, U.S.A. (Tel.: (202) 828-6688; Fax: (202) 775-6141; Telex: 64194).

*** 11th International Colloquium on Soil Zoology (ISSS Subcommission D)**, Jyväskylä, Finland, August 10-14, 1992.

Information: Jyväskylä Congresses, Seminaarinkatu 15, SF-40100 Jyväskylä, Finland (Fax: +358 41 603621).

*** 1st meeting of the Working Group MO, "The Impact of Interactions of Inorganic and Microbiological Soil Components on Environmental Quality"**, Edmonton, Alberta, Canada, August 12-15, 1992.

Information: Prof. Dr. P.M. Huang, Chairman WG/MO, Department of Soil Science, University of Saskatchewan, Saskatoon, SK, Canada S7N 0W0 (Tel.: (306) 966-6838; Fax: (306) 966-6881).

8th International Colloquium on Apterygota, Helsinki, Finland, August 17-20, 1992.

Information: Pekka Vilkanmaa, Museum of Zoology, University of Helsinki, P.-Rautatiekatu 13, SF-00100 Helsinki, Finland.

2nd Congress of the European Society of Agronomy, Coventry, UK, 23-28th August 1992.

Information: Dr. A. Scaife, ESA Congress Office, Horticulture Research International, Wellesbourne CV35 9EF UK.

International Symposium on Erosion and Sediment Transport Monitoring Programmes in River Basins, Oslo, Norway, August 24-28, 1992.

Information: Symposium Secretariat, Hydrology Dept., Norwegian Water Resources and Energy Administration, P.O. Box 5091, Majorstua, N-0301 Oslo 3, Norway (Fax: +47 2959 000; Telex: 79 397 nveo n).

29th International Geological Congress, Kyoto, Japan, August 24-September 3, 1992.

Information: Dr. T. Sato, Inst. of Geoscience, The University of Tsukuba, Ibaraki 305, Japan.

History of Sampling, Data Collection and Remote Sensing for Resource Inventory and Monitoring and Outlook on the Future, Berlin, Germany, 31 August - 5 September, 1992.

Information: Giovanni Preto, Co-Chairman S4.02-02, Istituto Sperimentale per la Selvicoltura, Via delle Cascine 1, 50144 Firenze, Italy (Tel.: 55/36-0061).

IUFRO Centennial Meeting: 1892-1992, Berlin-Eberswalde, 31 August-6 September 1992.

Information: Forschungsanstalt für Forst- und Holzwirtschaft, Organizing Committee, Alfred-Möller-Straße, D-0 1300 Eberswalde-Finow.

1st Conference of the Working Group on Pedometrics of the International Society of Soil Science, Pedometrics-92: Developments in Spatial Statistics for Soil Science, Wageningen, The Netherlands, 1-3 September, 1992.

Information: Dr. Ir. J.J. de Gruijter, Winand Staring Centre, P.O.Box 125, 6700 AC Wageningen, The Netherlands (Tel.: +31-8370-74260; Fax: +31-8370-24812; Telex: 75230 visi nl).

*** National Conference of the Romanian Society of Soil Science, on the theme "The Ecological Management of the Danube Delta"**, Bucuresti, Romania, September 1992.

Information: Dr. C.I. Rauta, President of the Romanian Society of Soil Science, RISSAC, Bd. Marasti 61, 71331 Bucuresti, Romania.

VIII International Colloquium for the Optimization of Plant Nutrition, Lisbon, Portugal, 1-8 September 1992.

Information: Secretariado VIII Colóquio AIONP, LQARS Apartado 3228, 1306 Lisboa Codex Portugal (Fax: 351-1-363 64 60).

Workshop on "Sustainable Land Use Planning, Wageningen, The Netherlands, Sept. 2-4, 1992.

Information: Department of Physical Planning and Rural Development "De Hucht", Gen. Foulkesweg 13, 6703 BJ Wageningen, The Netherlands (Tel.: +31-(0)8370 82050; Fax: +31-(0)8370 82166; Telex: NL 45015).

CHEMRAWN VII Conference, Chemistry and Sustainable Development - Towards a Clean Environment, Zero Waste and Highest Energy Efficiency, Moscow, USSR, September 6-9, 1992.

Information: Prof. V. Koptuyug's Office, USSR Academy of Sciences, 14 Leninsky Ave., 117901 Moscow V-71, USSR (Fax: 007(095)230 20 43, 007(095)230 26 30; Telex: 411964 ANS SU).

ISME-6 6th International Symposium on Microbial Ecology, Barcelona, Spain, 6-11 September '92.

Information: Prof. Ricardo Guerrero, ISME-6, Apartado 16009, E-08080 Barcelona, Spain (Tel.: 343-334 0583; Fax: 343-334 1079).

*** EUROSOL European Conference on Integrated Research for Soil and Sediment Protection, MECC, Maastricht, The Netherlands, 6-12 September 1992.**

Information: International Agricultural Centre, Section Organization Courses & Conferences, IAC-SOCC, P.O.Box 88, 6700 AB Wageningen, The Netherlands (Tel.: 31 8370 90111; Fax: 31 8370 18552; Telex: 45888 intas nl).

Second International Conference on Modelling of Global Climate Change and Variability, Max-Planck-Institut für Meteorologie, Hamburg (FRG), Germany, 7-11 September 1992.

Information: Dr. Lydia Dümenil, Chairperson, Local Organizing Committee, Max-Planck-Institut für Meteorologie, Bundesstrasse 55, D-2000 Hamburg 13, Germany (Tel.: +49-40-41173-310; Fax: +49-40-41173-366).

6th European Ecological Congress, Marseille, France, September 7th to 11th, 1992.

Information: Dr. G. Bonin, Biosystematique et Ecologie Mediterranenne, Universite de Provence, Centre de St. Jerome, rue Escadrille Normandie-Nieman, 13397, Marseille, France (Fax: 33-91-04-16-35).

4th International IMPHOS (World Phosphate Institute) Conference "Phosphorus Life and Environment from Research to Application", Gent, Belgium, 8-11 September 1992.

Information: Mr. M. Debbi, World Phosphate Institute, 19, Rue Hamelin, 75016 Paris, France (Tel.: 33 (1) 47 23 72 53).

INTECOL'S IV International Wetlands Conference, Columbus, Ohio, USA, 13-17 September 1992.

Information: William J. Mitsch, Chair Columbus '92-IV INTECOL Wetlands Conference, School of Natural Resources, The Ohio State University, 2021 Coffey Road, Columbus, Ohio 43210 USA (Tel.: 614-292-9773; Fax: 614-292-7162).

International Conference on "Advances in Planning, Design and Management of Irrigation Systems as related to Sustainable Land Use", Leuven, Belgium, 14-17 September 1992.

Information: Mrs. G. Camps, CIE-Conference Secretariat, Kardinaal Mercierlaan 92, 3001 Leuven (Heverlee), Belgium (Tel.: +32-16-22 09 31, Ext. 1550; Fax: +32-16-205032; Telex: 25491 elekul b).

International Conference on Organic Substances in Soil and Water, Lancaster, UK, 14-17th September, 1992.

Information: Conference Secretary, Miss C. Martin, Centre for Research on Environmental Systems, Institute of Environmental and Biological Sciences, University of Lancaster, Bailrigg, Lancaster, LA1 4YQ, UK (Tel.: 0524 65201).

International Symposium on Paddy Soils, Nanjing, People's Republic of China, September 15-19, 1992.

Information: Dr. Cao Zhihong, Secretary General of Organizing Committee, c/o Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing, 210008 China (Tel.: 712572; Fax: (0086) (025) 712663; Telex: 34025 ISSAS CN).

International Symposium on "Integrated Land Use Management for Tropical Agriculture", Brisbane, Queensland, Australia, 15-25 September 1992.

Information: Mr. Stuart Macnish, Symposium Director, Agribusiness Services, Queensland Department of Primary Industries, GPO Box 46, Brisbane, Queensland, Australia 4001 (Tel.: (61 7)239 3243; Fax: (61 7)221 3896; Telex: AA142149).

2nd International Symposium on Erosion "The Challenges of Soil Erosion Control in the Tropical Environment", Federal University of Technology, Owerri, Imo State, Nigeria, September 20-25, 1992.

Information: The Secretary, LOC, 2nd International Symposium on Erosion, Erosion Research Centre, Federal University of Technology, P.M.B. 1526, Owerri, Nigeria.

6th International Meeting of the International Humic Substances Society (IHSS) "Humic Substances in the Global Environment and Implications in Human Health", Monopoli (Bari), Italy, 20-25 September, 1992.

Information: Prof. Nicola Senesi, Chairman Organizing Committee 6th IHSS Int. Meeting, Istituto di Chimica Agraria, Università di Bari, Via Amendola, 165/A, 70126-Bari, Italy (Tel.: +39-80-242853; Fax: +39-80-242813).

III Congreso Nacional de la Ciencia del Suelo, Pamplona, Spain, 21-24 of September, 1992.

Information: Ignacio Sanchez Carpintero, Secretaria del III Congreso Nacional de la Ciencia del Suelo, Dept. Edafología, Universidad de Navarra, 31080 Pamplona, Spain.

7th International Soil Conservation Conference, Sydney NSW, Australia, 28th-30th September 1992.

Information: Inez Tommerup, CSIRO, Division of Forestry and Forest Products, Private Bag, Wembley, Western Australia 6014.

International Symposium on Management of Mycorrhizas in Agriculture, Horticulture and Forestry, Perth, Western Australia, 28 September-2 October 1992.

Information: Inez Tommerup, CSIRO, Division of Forestry and Forest Products, Private Bag, Wembley, Western Australia 6014.

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

Information: Prof. I. Szaboles, Chairman of the Organizing Committee, Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, H-1022 Budapest, Herman O. út 15, Hungary (Tel.: (36-1)155-8829; Fax: (36-1)155-8839; Telex 22-7223 AGROK-H).

ISOSC 8th International Congress on Soilless Culture, Rustenburg, South Africa, 2-9 October 1992.

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

International Congress on Agro-Ecosystem Modelling, Braunschweig, Germany, 5-9 October 1992.

Information: Institute of Geography and Geoecology, Technical University of Braunschweig, Langer Kamp 19c, W-3300 Braunschweig, Germany

*** International Workshop on Modelling Strength and Stress Distribution in Unsaturated Structured Soils**, Kiel, FRG, 5-9 October 1992.

Information: Prof. Dr. Rainer Horn, Institute of Plant Nutrition and Soil Science, Olshausenstr. 40, 2300 Kiel 1, FRG (Tel.: 0431 880 3190; Fax: 0431 880 2940).

International Conference "Physical Chemistry and Mass-Exchange Processes in Soils", Pushchino, Moscow Region, Russia, 12-16 October 1992.

Information: Dr. A.A. Ponizovsky, Institute of Soil Science and Photosynthesis, Academy of Sciences of Russia, Pushchino 142292, Moscow Region, Russia (Telex: 205128 SOIL SU)

Symposium sobre la Raña, Madrid, España, 26-30 de octubre de 1992.

Information: Dra. Ascensión Pinilla, Centro de Ciencias Medioambientales, C/Serrano, 115 - dpldo., 28006-Madrid, España (Tel.: 91/262 50 20; Fax: 91/564 08 00).

Annual Meeting of the Soil Science Society of America (together with the American Society of Agronomy and the Crop Science Society of America), Minneapolis, Minnesota, 1-6 November 1992.

Toward Sustainable Environmental and Resource Management Futures for Sub-Saharan Africa, Accra, Ghana, 2-6 November 1992.

Information: Prof. Walther Manshard, Schwarzwaldstr. 24, D-7812 Bad Krozingen, Germany (Tel.: (49)76333488).

*** International Conference on Cryopedology**, Pushchino, Moscow Region, USSR, November 10-14, 1992.

Information: Secretariat of the International Conference on Cryopedology, Institute of Soil Science and Photosynthesis, USSR Academy of Sciences, Pushchino, Moscow Region, 142292, Russia (Telex: 205128 SOIL SU).

Joint Russian-American Seminar on Cryopedology and Global Changes, Pushchino, Moscow Region, Russia, 15-16 November 1992 (immediately after the 1st Intern. Conference on Cryopedology).

Information: Prof. Dr. D.A. Gilichinsky, Institute of Soil Science and Photosynthesis, Academy of Sciences of Russia, Pushchino 142292, Moscow Region, Russia (Telex: 205128 SOIL SU).

VIII Seminario Científico del Instituto Nacional de Ciencias Agrícolas (INCA), La Habana, Cuba, 18, 19 y 20 de Noviembre de 1992.

Information: Ing. Rodolfo Plana Llerena, C.Dr., Secretario Ejecutivo, VIII Seminario Científico, Instituto Nacional de Ciencias Agrícolas, Gaveta Postal No. 1, San José de las Lajas, La Habana, Cuba (Tel.: 6 3773; Telex: 056 115 INCA CU).

Colloque International: Préservation des Eaux et des sols dans des bassins versant de roches marneux en milieu semi-aride, Sidi M'Hamed Ben Aouda - Relizane/Algérie, 29 novembre à 3 décembre 1992.

Information: H. Paschen, GTZ, Bureau d'Administration des Projets, B47 Patrimoine Algérois, 16050 Kouba/Alger - Algérie.

6th IFA/FADINAP Regional Fertilizer Conference for Asia and the Pacific, Bali, Indonesia, 30 November - 2 December 1992.

Information: L.M. Maene, Secretary General IFA, 28 rue Marbeuf, 75008 Paris, France (Tel.: (33)1-42252707; Fax: (33)1-42252408).

*** International Conference of Commission IV on Improving Soil Management for Intensive Cropping in the Tropics and Sub-Tropics**, Dhaka, Bangladesh, early December 1992.

Information: President of the Soil Science Society of Bangladesh Dr. A.K.M. Habibullah, 6/10, Lalmatia, Satmasjid Road, Dhaka-1207 Bangladesh (Tel.:325166-70).

International Symposium on Land Reclamation: Advances in Research & Technology, Nashville, Tennessee, USA, December 14-15, 1992.

Information: Dr. William F. Ritter, Chair, Program Committee, Agricultural Engineering Department, University of Delaware, Newark, DE 19717-1303, USA (Tel.: (302) 451-2468; Fax: (302) 292-3651).

1993

ASTM Symposium on Hydraulic Conductivity and Waste Contaminant Transport, San Antonio, Texas, January 21-22, 1993 in conjunction with the January 17-22, 1993 standards development meetings of Committee D-18.

Information: David E. Daniels, University of Texas-Austin, Civil Engineering Dept., Austin, TX 78712-1076 (Tel.: 512/471-4730) or Robert Morgan, ASTM, 1916 Race St., Philadelphia, PA 19103 (Tel.: 215/299-5505).

XVII International Grassland Congress, Palmerston, New Zealand, 8-23 February 1993.

Information: Executive Secretary, XVII Grasslands Congress Organizing Committee, C/ Agronomy Department, Massey University, Palmerston North, New Zealand (Tel.: (06)356-9099; Fax: (06)350-5614).

Beyond the Biomass - Compositional and Functional Analysis of Soil Microbial Communities, Kent, UK, 22-24 March 1993.

Information: Dr. Karl Ritz, Soil Plant Dynamics Group, Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA, U.K. (Tel: 0382-562731; Fax: 0382-562426).

*** International Conference on Pedo-Geomorphic Relationships in the Tropics and Sub-Tropics**, International Society of Soil Science, Commission V (Soil Genesis, Classification and Cartography), South Africa, 16-30 April, 1993.

Information: Mr. T.E. Dohse, Organizing Secretary, P.O. Box 30030, Sunnyside 0132, South Africa (Fax: 0027 12 323 1157).

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

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

International Symposium on Hydrological, Chemical and Biological Processes of Transformation and Transport of Contaminants in Aquatic Environments, Rostov-on-Don, USSR, 24-29 May 1993.

Information: Hydrochemistry 1993, Hydrochemical Institute, 198 Stachki pr., Rostov-on-Don 344104, USSR (Tel.: +7 863 22 4470; Telex: 123240 WODA SU).

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

Information: Javier Abadía, Aula Dei Experimental Station, CSIC, Apdo 202, 50080 Zaragoza, Spain (Fax: (+34)-76-575620).

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

Information: Local Office of IAMAP-IAHS '93, c/o Sankei Convention, Sankei Bldg. 10F, 1-7-2 Otemachi, Chiyoda-ku, Tokyo 100, Japan (Tel.: (+81)-3-3273-2084; Fax: (+81)-3-3279-6287; Telex: 2228342 SKBJPN).

*** 10th International Clay Conference (ISSS Commission VII), Adelaide, Australia, July 18-25, 1993.**

Information: R.W. Fitzpatrick, CSIRO, Division of Soils, Private Bag No.2, Glen Osmond, SA 5064, Australia.

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

Information: Dr. Manuel Anaya Garduño, Executive Secretary Scientific Committee IV ICDD, Colegio de Postgraduados, Montecillo, Edo. de Mexico, 56230, Mexico (Tel.: ++(52)696-45701; Fax: ++(52)692-46723; P.O. Box 91, Chapingo, 56230 Mexico).

*** International Workshop on Classification and Management of Desert Soils, Wulumuqi, China, August 8-20, 1993.**

Information: Dr. Gong Zitong, Institute of Soil Science, Academia Sinica, P.O. Box 821, Nanjing 210008, PR of China (Fax: +86 25-712663; Telex: 34025 issas cn).

Conference on "The Future of the Land: Mobilizing and Integrating Knowledge for Land Use Options", Wageningen, The Netherlands, August 23-26, 1993.

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

3rd International Conference on Geomorphology, Hamilton, Canada, August 23-29, 1993.

Information: 3rd International Conference on Geomorphology, McMaster University, Hamilton, Ontario, Canada L8S 4K1 (Fax: +1 416 546-0463; Telex: 061 8347).

15th Congress and Exhibition "Water Management in the next Century", The Hague, The Netherlands, 30 August-12 September 1993.

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

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

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

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

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

3rd International Symposium on Plant-Soil Interactions at Low pH, Brisbane, Queensland, Australia, 12-16 September, 1993.

Information: Low pH Symposium, Australian Convention and Travel Services Pty Ltd, GPO Box 2200, Canberra A.C.T. 2601 Australia (Tel.: +61-6-2573299; Fax: +61-6-2573256).

*** 12th International Plant Nutrition Colloquium, Perth, Australia, September 21-26, 1993.**

Information: Plant Nutrition Secretariat, The Conference Office, The University of Western Australia, Nedlands WA 6009, Australia (Fax: +61 9-382-2029).

XII Congreso Latinoamericano de la Ciencia del Suelo, Salamanca, España, 23 al 26 setiembre 1993.

Information: I.E.T. / CSIC, Apartado 257, 37071 Salamanca, España (Fax: (9) 23-219609).

XI International Symposium on Environmental Biogeochemistry, Salamanca, España, 27 al 30 setiembre 1993.

Information: I.E.T. / CSIC, Apartado 257, 37071 Salamanca, España (Fax: (9) 23-219609).

IUFRO S1.02.06 Technical Meeting on "Site Classification and Evaluation", Clermont-Ferrand, France, October 19-22, 1993.

Information: Alain Franc, CEMAGREF, Division Techniques Forestières, Domaine de Lалуas, F-63 200 RIOM, France (Tel.: (33) 73382052; Fax: (33) 73387641).

1994

13. ISTRO Conference Soil Tillage for Crop Production and Protection of Environment, Aalborg, Denmark, July 24-July 29 1994.

Information: ISTRO Conference 1994, Aalborg Convention Bureau, Osteraa 8, DK-9000 Aalborg, Denmark (Tel.: +45 98 12 63 55; Fax: +45 98 16 69 22).

IGU Regional Conference on Environment and Quality of Life in Central Europe, Prague, Czechoslovakia, 22-26 August 1994.

Information: Dr. L.A. Kosinski, Secretary General IGU, Dept. of Geography, University of Alberta, Edmonton, Alberta, Canada T6G 244.

1995

1996

28th International Geographical Congress, The Hague, The Netherlands, 4-10 August 1996.

**INTERNATIONAL TRAINING COURSES
COURS INTERNATIONAUX DE FORMATION
INTERNATIONALE FORTBILDUNGSKURSE**

Course on Applied Microcomputer Use in Irrigation and Drainage, Logan, Utah, January 5-February 15, 1992 and January 3-February 13, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

A Series of Graduate Courses in: Theoretical and Experimental Aspects of Desert Ecology, Israel, February 22-April 10, 1992.

Information: Prof. J. Gale, Director, Blaustein International Center for Desert Studies, Midreshet Sede Boker, 84990, Israel (Tel.: 972-57-565749; Fax: 972-57-555058).

Course on Waterlogging, Drainage and Salinity Control, Logan, Utah; Grand Junction, Colorado; Yuma, Arizona; Imperial Valley of California; USA, March 22-May 2, 1992.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

FAO/IAEA Regional Training Course on "The Use of Isotopes and Radiation Techniques in Studies of Soil/plant Productivity", Santiago, Chile, 30 March-30 April 1992.

Information: Head, Soil Fertility, Irrigation and Crop Production Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, P.O.Box 100, Wagramerstrasse 5, A-1400 Vienna, Austria.

Course on Waterlogging and Salinity Technical Study Tour of U.S. Western States, Logan, Utah; Grand Junction, Colorado; Yuma, Arizona; Imperial Valley of California, USA, April 8-May 2, 1992 and April 7-May 1, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Course on On-Farm Irrigation Design, Evaluation and Scheduling, Logan, Utah, USA, May 3-June 13, 1992 and May 2-June 12, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Training Course on Agroforestry Research for Development: Concepts, Technologies, Practices and Methods, Nairobi, Kenya, 4-22 May 1992.

Information: ICRAF/DSO Course Coordinator, P.O.Box 30677, Nairobi, Kenya (Tel.: 254-2-521450; Fax: 521001; Telex: 22048).

International Postgraduate Course "Soil Pollution and Soil Protection", Gent, Belgium, 11-16 May 1992.

Information: International Training Centre (PHLO), Wageningen Agricultural University, P.O.Box 8130, 6700 EW Wageningen, The Netherlands (Tel.: 31-8370-84092/3; Fax: 31-8370-84763).

FAO/IAEA Interregional Training Course on "The Use of Isotope and Radiation Techniques to Enhance Biological Nitrogen Fixation", Seibersdorf and Vienna, Austria, 1 June-3 July 1992.

Information: Head, Soil Fertility, Irrigation and Crop Production Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, P.O.Box 100, Wagramerstrasse 5, A-1400 Vienna, Austria.

Workshop on Implementing National Irrigation Programs, Logan, Utah; San Joaquin and Sacramento Valleys of California, USA, June 7-24, 1992.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

Course on On-Farm Water Management, Logan and Delta, Utah and Grand Junction, Colorado, USA, June 28-August 8, 1992 and June 27-August 7, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

Short Courses on:

Applied Ecology, 23.06.1992

Senior Advanced Course on Appropriate Modernization and Management of Irrigation Systems, Sept. 1992;

Senior Advanced Course on Lowland Development, Sept. 15-Oct. 2, 1992;

Seminar on Coastal Zone Management, 08.09.1992;

Applied Modelling of Ground Water Pollution, Oct. 1992;

Applied Modelling of Ground Water Chemistry, Nov. 1992; at the International Institute for Hydraulic and Environmental Engineering (IHE), Delft, the Netherlands.

Information: International Institute for Hydraulic and Environmental Engineering, Oude Delft 95, P.O. Box 3015, 2601 DA Delft, The Netherlands (Tel.: +31-15-78 80 21; Fax: +31-15-12 29 21; Telex: 38099 ihe nl).

Forthcoming Course on "Environmental Management in Developing Countries", Norwich, UK, July-September 1992.

Information: Overseas Development Group, The Course Director, University of East Anglia, Norwich NR4 7TJ, UK (Tel.: (0603) 57880; Fax: (0603) 505262; Telex: 975197 UEACPC G for ODG).

Agricultural and Rural Technology Research and Development; Arid Lands and Pastoral Development, Norwich, UK, 13th July to 4th September 1992.

Information: The Course Coordinator, Overseas Development Group, University of East Anglia, Norwich NR4 7TJ, UK (Tel.: (0603) 57880; Fax: (0603) 505262; Telex: 975197 UEA CPC G for ODG).

Short Course on Soil Science for Alumni from South-East Asia, Gadjah Mada University, Yogyakarta, Indonesia, August 2-12, 1993.

Information: Prof. Dr. G. Stoops, ITC-Ghent, Krijgslaan 281/S8, B-9000 Gent, Belgium (Fax: 32-91-644997).

Irrigation Water Management Study Tour of U.S. Western States, Utah, Colorado; Arizona and California, USA, August 9-29, 1992 and August 8-28, 1993.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

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International Course on Soil and Water Conservation and Management, Logan, Utah, USA, August 16-September 19, 1992.

Information: International Irrigation Center, Utah State University, Logan, Utah 84322-4150, U.S.A. (Tel.: (801) 750-2800; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATE LOGN).

International Course on Land Drainage, ILRI, Wageningen, The Netherlands, 17 August-27 November 1992.

Information: *The Director, IAC, P.O. Box 88, 6700 AB Wageningen, The Netherlands.*

Second International Intensive Course on Soil Micromorphology, Wageningen Agricultural University, The Netherlands, October 5-October 30, 1992.

Information: Wageningen Agricultural University, Department of Soil science and Geology, P.O. Box 37, 6700 AA Wageningen, The Netherlands (Fax: +31 8370 82419).

Cursos de Magister en Ciencias Agrícolas (Suelos y Producción Vegetal) y Doctorado en Agronomía de aproximadamente 2 y 4 años de duración en la Universidad Nacional del Sur (UNS) Bahía Blanca, Argentina. Idioma: Español. Frecuencia: permanente.

Informes: Prof.Dr. R.A. Rosell, Agronomía, UNS, 8000 BAHIA BLANCA, ARGENTINA (Tel.: 54-91-30024/26533; Fax: 54-91-27876; Telex: 81712 DUJOR AR).

ICRAF Training Materials for Agroforestry, Nairobi, Kenya.

Information: International Council for Research in Agroforestry, P.O.Box 30677, Nairobi, Kenya (Tel.: 254-2-521450; Fax: 521001; Telex: 22048).

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

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

Courses in Soil Conservation, Adelaide, Australia.

Information: The Chairman, Department of Soil Science, Waite Agricultural Research Institute, P.M.B. 1, Glen Osmond 5064, South Australia (Tel.: 08 372 2210; Fax: 08 338 1757; Telex: UNIVAD AA 89141).

2-Year Master Programme and 1-Year Diploma Programme in Irrigation Engineering.

Information: Center for Irrigation Engineering, Programme coordinator, K.U.Leuven, Kardinaal Mercierlaan 92, 3001 Leuven (Heverlee), Belgium.

M.Sc. Programmes at the Department of Agricultural Engineering, University of Nairobi, Kenya, 1991/1993.

Information: University of Nairobi, Dept. of Agricultural Engineering, P.O. Box 30197, Nairobi, Kenya.

Postgraduate Diploma Courses, M.Sc. and Ph.D. Programmes, Hydraulic Engineering, Hydrology, Sanitary Engineering, Water Quality Management, Environmental Science and Technology, Delft, The Netherlands, 1991-1992.

Information: International Institute for Hydraulic and Environmental Engineering, Oude Delft 95, P.O. Box 3015, 2601 DA Delft, The Netherlands (Tel.: +31-15-78 80 21; Fax: +31-15-12 29 21; Telex: 38099 ihe nl).

Post-Graduate Diploma Course in Forestry for Rural Development, Enschede, The Netherlands.

Information: The International Institute for Aerospace Survey and Earth Sciences (ITC), 350 Boulevard 1945, P.O. Box 6, 7500 AA Enschede, The Netherlands (Tel.: (31) 53 874 444; Fax: (31) 53 874 400; Telex 44525 ITC NL).

Post-Graduate Diploma and M.Sc. Degree Courses in: Soil Survey; Forest Survey; Rural and Land Ecology Survey; Survey Integration for Resources Development, Enschede, The Netherlands.

Information: The International Institute for Aerospace Survey and Earth Sciences (ITC), 350 Boulevard 1945, P.O. Box 6, 7500 AA Enschede, The Netherlands (Tel.: (31) 53 874 444; Fax: (31) 53 874 400; Telex 44525 ITC NL).

M.Sc. Courses in "Irrigation Engineering" and "Soil Conservation and Land Reclamation".

Information: Information: The Course Administrator, Effective Irrigation Management Short Course, Institute of Irrigation Studies, The University, Southampton SO9 5NH, UK (Tel.: (0703) 593728; Fax: (0703) 593017; Telex: 47661 (a/b sotonu g).

Course in "Soil Science, Plant Nutrition and Fodder Crops", Technical College of Tropical Agriculture Basel.

Information: Swiss Tropical Institute, Socinstrasse 57, 4051 Basel, Switzerland (Tel.: (061) 23 38 96); Technikum für tropische Landwirtschaft, Andreas Heusler-Strasse 41, 4052 Basel, Switzerland (Tel.: (061) 50 80 10).

Graduate Study and Training in Development, School of Development Studies, Norwich, UK.

Information: Senior Administration Assistant, School of Development Studies, University of East Anglia, Norwich, NR4 7TJ, U.K. (Tel.: (0603) 56161; Fax: (0603) 58553; Telex: 995801 *GLOTLX-G*).

Irrigation Engineering Principles, a videotape course, Logan, Utah, USA.

Information: Utah State University Foundation, Logan, Utah, 84322-9300, U.S.A. (Tel.: (801) 750-2603; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATEU).

Applied Hydraulics, a videotape course and textbook, Logan, Utah, USA.

Information: Utah State University Foundation, Logan, Utah, 84322-9300, U.S.A. (Tel.: (801) 750-2603; Fax: (801) 750-1248; Telex: 3789426 UTAHSTATEU).

Soil and Water Management Research and Training, African Academy of Sciences, Nairobi, Kenya.

Information: Head of Programmes, African Academy of Sciences, P.O. Box 14798, Nairobi, Kenya (Tel.: 802182/3, 802176; Fax: (02) 802185; Telex: 25446 AFACS KE).

M.Sc. Course in Soil Science and Water Management, Wageningen, The Netherlands.

Information: Director of Studies of MSc-Courses, P.O. Box 453, 6700 AL Wageningen, the Netherlands.

MSc Programmes: Agricultural Engineering, Animal Science and Aquaculture, Biotechnology, Crop Science, Ecological Agriculture, Geographic Information Systems, Management of Agricultural Knowledge Systems, Soil and Water, Tropical Forestry, Wageningen, The Netherlands.

Information: Wageningen Agricultural University, Dean's Office for Foreign Students, P.O. Box 453, 6700 AL Wageningen, The Netherlands (Tel.: (08370)82680; Fax: (08370)84464; Telex: 45854 LUWAG).

Post-graduate Training Course in Soil Science, Agricultural University, Aas, Norway.

Information: Dr. B.R. Singh, Coordinator International Post-graduate Program in Soil Science, Box 28, 1432 Aas-NLH, Norway.

International Post-Graduate Course in Soil Science, Ghent, Belgium.

Information: The International Training Centre for Post-Graduate Soil Scientists, State University of Ghent, Krijgslaan 281, B-9000 Ghent, Belgium.

Cours de 3e cycle en Protection de l'Environnement, EPFL, Lausanne, Suisse.

Information: Prof. L.Y. Maystre, Inst. de génie de l'environnement, EPFL-Ecublens, CH-1015 Lausanne, Suisse (tél: (21) 693.27.15).

Sponsored Training Courses on Use of Isotope Techniques in Soil Research and Plant Nutrition, International Atomic Energy Agency, Seibersdorf, Austria.

Information: IAEA Headquarters, Joint FAO/IAEA Division, Vienna International Center, Wagramerstr. 5, P.O. Box 100, A-1400 Vienna, Austria.

M.Sc. in Conservation of Soil Fertility, Canterbury, England.

Information: Dr. R.G. Burns, Biological Laboratory, University of Kent, Canterbury, Kent CT2 7NJ, U.K.

M.Sc. and Post-graduate Diploma courses in : Agricultural Engineering, Land and Water Management, Rural Engineering, Applied Remote Sensing, Rural Land Use, Agricultural Water Management, Silsoe College, Cranfield Institute of Technology, England.

Information: The Student Recruitment Executive Silsoe College, Silsoe, Bedford MK45 4DT, UK (Tel.: (0525)60428; Fax: (0525)61527).

Post-graduate Training Courses in Soil Science and Plant Biology, Granada/ Sevilla, Spain.

Information: Dr. M.L. Garrido, Estacion Experimental del Zaidin, Avenida de Cervantes, Apdo. 419, Granada, Spain.

Interuniversity Post-graduate Programme in Hydrology, Free University of Brussels, Belgium.

Information: Prof.Dr.Ir. A. van der Beken, Director of the Hydrology Programme, Laboratory of Hydrology, Vrije Universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium.

Farming Systems Approaches to Upland Conservation and Watershed Management in the Tropics, University of Hawaii.

Information: S.A. El-Swaify, Chairman, Dept. of Agronomy and Soil Science, College of Tropical Agriculture and Human Resources, University of Hawaii, Honolulu, Hawaii 96822.

Programme for Ph.D. in Environmental Chemistry and Technology, Lublin, Poland.

Information: Prof. Lucjan Pawlowski, Dept. of Water and Wastewater Technology, the Technical University of Lublin, 40 Nadbystrzycka Str., 20-618 Lublin, Poland.

Advances in Biological Nitrogen Fixation, Puerto Rico, USA.

Information: Dr. E.C. Schroder, Dept. of Agronomy and Soils, College of Agricultural Sciences, University of Puerto Rico, Mayaguez, Puerto Rico 00709-5000, USA.

Post-graduate Courses in Soil Science, Univ. of Reading, Dept. of Soil Science, U.K.

Information: The Secretary, Department of Soil Science, University of Reading, London Road, Reading RG1 5AQ, England.

Post-graduate Course in Soil Science, Maracay, Venezuela.

Information: Universidad Central de Venezuela, Facultad de Agronomía, Comisión de Estudios de Postgrado, Curso de Postgrado en Ciencia del Suelo, Avda. Principal el Limón, Apartado Postal 4579, Maracay, Estado Aragua, Venezuela, S.A.

International Post-graduate Training Course in Eremology, (Desert Science), Ghent, Belgium.

Information: The International Center for Eremology, University of Ghent, Coupure Links 653, B-9000 Ghent, Belgium (Tel.: ++32-91-646036; Fax: ++32-91-646247).

M.Sc. Course in Resource Assessment for Development Planning, University of East Anglia, Norwich, England.

Information: Dr. David Dent, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, England.

Cursos de Postgrado en Desarrollo de los Recursos de Aguas y Tierras, Merida, Venezuela.

Information: CIDIAT, Apartado 219, Merida, Venezuela.

Training Course in Soil and Plant Analysis, at the Royal Tropical Institute, Amsterdam, The Netherlands.

Information: The Course Coordinator, Soil and Plant Analysis, Royal Tropical Institute (KIT), 63 Mauritskade, 1092 AD Amsterdam, The Netherlands.

Centro Internacional de Altos Estudios Agronomicos Mediterraneo, Zaragoza, Spain.

Curso superior de diez meses sobre Ordenación Rural en función del Medio Ambiente.

Información: Instituto Agronómico Mediterráneo de Zaragoza, Apartado 202, 50080 Zaragoza, España.

Cours de Formation Spécialisée sur les Aménagements de Terrain, Le Havre, France.

Information: ISTOM, CHCI Quai George V, 76600 Le Havre, France.

International Course on Soil Reference Collections, ISRIC, Wageningen, The Netherlands.

Information: the Director, ISRIC, P.O. Box 353, 6700 AJ Wageningen, The Netherlands.

College of Soil Physics, Trieste, Italy.

Information: International Centre for Theoretical Physics, College on Soil Physics, P.O. Box 586, I-34100 Trieste, Italy.

International Fertilizer Development Center, USA.

Information: International Fertilizer Development Centre, P.O. Box 2040, Muscle Shoals, Alabama 35662, USA.

Courses in Agricultural and Rural Development by the USDA and US Universities.

Information: Ralph Otto, Acting Director, International Training Division, USDA/OICD, Washington, D.C. 20250-4300, U.S.A.

Courses in Project Planning and Management, Bradford, England.

Information: The Director, Development and Project Planning Centre, University of Bradford, Bradford, West Yorkshire BD7 1DP, England.

Courses in Soil and Plant Analysis, University of Reading, England.

Information: Dr. A.A. Jones, Department of Soil Science, University of Reading, London Road, Reading, RG1 5AG, England.

Arid Lands Resource Sciences Ph.D. Program, The University of Arizona, Tucson, Arizona.

Information: Graduate College, University of Arizona, Tucson, Arizona 85721, USA (Tel.: (602)621-3132; Fax: (602)621-7112).

NEW PUBLICATIONS
NOUVELLES PUBLICATIONS
NEUE VERÖFFENTLICHUNGEN

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

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

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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 oficina del vicesecretario general de la SICS en el Centro Internacional de Referencia e Información de Suelos en Wageningen, Holanda.

Mise en Valeur de l'Ecosystème Forestier Guyanais. Opération ECEREX. J.M. Sarrailh, coordinateur. INRA, Paris, 1990, 273p. ISBN 2-7380-0191-2. Cartonné.

Cet ouvrage constitue la somme des résultats fondamentaux et appliqués obtenus par les équipes appartenant au CTFT, à l'INRA, au Muséum national d'Histoire naturelle et à l'ORSTOM et ayant participé à une recherche pluridisciplinaire incitée par la DGRST dès 1976.

La volonté de développer la Guyane française en s'appuyant sur l'exploitation de la forêt dense humide naturelle à des fins papetières a permis de mettre en place l'opération ECEREX, avec pour but: 1) l'évaluation des risques écologiques que présente cette exploitation passant par une déforestation totale: érosion, modifications des régimes hydrologiques, baisse de productivité, dégradations biologiques; 2) la proposition de modèles d'aménagement et la définition des techniques nécessaires à l'implantation d'écosystèmes simplifiés, après l'exploitation papetière.

L'opération ECEREX a obtenu l'un des 12 labels MAB (Comité français) de l'UNESCO au cours de la première décennie de fonctionnement de cet organisme.

Cet ouvrage montre que l'opération ECEREX supporte fort bien la comparaison avec de grands projets européens menés dans des conditions plus confortables et qu'il était indispensable de fonder l'analyse sur la base pluridisciplinaire la plus large. Il s'adresse autant aux chercheurs qu'aux ingénieurs agronomes et forestier chargés d'aménagements en zone forestière tropicale humide.

Prix: FF 245

Commandes à: voir ci-dessous.

La Structure du Sol et son Evolution: conséquences agronomiques, maîtrise par l'agriculteur. J. Boiffin et A. Marin-Lafèche, éditeurs. INRA, Paris, 1990, 216p. ISBN 2-7380-0262-5. Cartoné.

La recherche en Agronomie et Science du Sol a apporté, au cours de la période récente, de nombreux éléments nouveaux qui pourraient contribuer à rationaliser les règles de décision en matière de travail du sol: (1) progrès dans les méthodes de caractérisation de l'état physique du sol à différentes échelles (concept de systèmes de porosité, systématisation de la description du profil cultural); (2) meilleure compréhension des mécanismes d'évolution de la structure du sol et de leur contrôle par les techniques de travail du sol; et (3) meilleure connaissance de l'influence de l'état structural sur le fonctionnement des peuplements végétaux (travaux sur les systèmes racinaires, l'alimentation minérale, l'implantation des cultures).

Mais les acquis ainsi obtenus dans les 10 à 15 dernières années sont restés relativement épars et n'ont fait l'objet d'aucune publication synthétique permettant aux ingénieurs et techniciens d'appréhender et de valoriser ces avancées. Le but de cette publication est de contribuer à combler cette lacune. Elle réunit les exposés prononcés à l'occasion d'un colloque organisé conjointement par l'INRA et la Station Agronomique de l'Aisne à l'occasion de son centenaire, par des spécialistes français de ces questions. Elle s'adresse à un public d'ingénieurs, techniciens, chercheurs, enseignants et élèves de l'enseignement agricole supérieur.

Prix: FF 110

Commandes à: INRA Editions, Route de Saint-Cyr, F-78026 Versailles Cedex, France

Crops as Enhancers of Nutrient Use. V.C. Baligar and R.R. Duncan, editors. Academic Press, San Diego, 1990, xiv + 574 p. ISBN 0-12-077125-X. Hardbound.

Genetics and physiological components of plants have profound effects on the plant's ability to absorb and utilize nutrients under various environmental and ecological conditions. In this book, the authors examine the various plant and soil factors that contribute to nutrient use efficiency of plants. Plant-soil interactions are emphasized, particularly those nutritional interactions involving the rhizosphere, microbes, and stress (moisture, low pH, and high pH on the root system). This book deals with plants and how they respond genetically and physiologically to nutrients (1) at the cellular level, (2) on a whole-plant basis, and (3) when subjected to stress.

Chapters 4 and 6 give a comprehensive coverage of genetics and breeding of cereals and legumes as related to nutrient use efficiency, while Chapter 2 deals extensively with the cellular mechanisms involved in the acquisition and utilization of inorganic nutrients. Chapter 3 covers the variations in function and metabolism of roots, root-shoot ratios, and N and P use efficiency on the whole-plant level. The role of root morphology and root actions on efficiency of nutrient use in various types of plant species is given in Chapter 11. Chapters 5 and 7 review the effects of plant physiological factors on nutrient efficiency in cereal and legume plant species, respectively. The role of leaves in the uptake of nutrients is dealt with in Chapter 8. Chapter 12 considers various aspects of soil moisture stress and its effect on plant nutrition. Fertility, nutrient relations, and plant performances in acid and alkaline soils are covered in Chapters 13 and 14. Chapter 10 treats on root and microbial interaction and rhizosphere nutrient dynamics. This is a timely book in view of the discussion on Low Input Sustainable Agriculture (LISA), conservation-oriented cropping systems and reductions in environmental contaminants.

Price: £ 65

Orders to: Academic Press Ltd., 24-28 Oval Road, London NW1 7DX, England

TITLES FROM WILEY

Ecosystem Experiments

SCOPE 45

Edited by H.A. MOONEY, Stanford University, California, USA, E. MEDINA, IVIC, Centro de Ecología y Ciencias Ambientales, Caracas, Venezuela, D.W. SCHINDLER, University of Alberta, Canada, E.-D. SCHULZE, Universität Bayreuth, Germany and B.H. WALKER, CSIRO, Division of Wildlife and Rangelands Research, Lyneham, Australia

The objective of this volume is to explore the potential of ecosystem experimentation as a tool to understanding and predicting more precisely the consequences of our changing biosphere. A broad view is taken of the problem by first examining what has been learnt from "natural" experiments as well as large-scale inadvertent ecosystem perturbations induced by human action. The book reviews past work as well as proposing priorities for future research for the study of both terrestrial and aquatic ecosystems utilizing experimental approaches.

Series: Scientific Committee on Problems of the Environment
0471929263 296pp September 1991 \$60.00/\$127.65

Long-Term Ecological Research

An International Perspective SCOPE 47

Edited by P.G. RISSER, University of New Mexico, Albuquerque, USA

Reviews important long-term ecological research programmes in several countries throughout the world and identifies problems associated with changing global environments. The chapters both describe and analyse successful research programmes in various ecosystems, including temperate forests, temperate and tropical grasslands, arid steppes, deserts and aquatic systems from countries such as Australia, Canada, England, Germany, France, Kenya, Scotland and the United States.

Series: Scientific Committee on Problems of the Environment (SCOPE)
0471930059 308pp August 1991 \$69.00/\$146.80

Soil Erosion on Agricultural Land

Edited by J. BOARDMAN, Brighton Polytechnic, J. DEARING and I. FOSTER, Coventry Polytechnic, UK
The first state-of-the-art review of erosion research, this book includes a series of major review papers covering substantial areas of this wide field. Management, policy and economic issues are covered, together with the physical processes of erosion. The temporal range spans from Iron Age erosion, through the recording of current rates, to the prediction of future rates.

0471926027 706pp March 1990 \$70.00/\$161.25

Humic Substances II

In Search of Structure

Edited by M.H.B. HAYES, University of Birmingham, UK, P. MACCARTHY, Colorado School of Mines, Colorado, USA, R.L. MALCOLM, USGS, Water Resources Division, Colorado, USA, and R.S. SWIFT, University of Canterbury, New Zealand

This book looks at a variety of techniques and their applications in studies of the composition, structures and properties of humic substances from soils, fresh-water and coals. There is emphasis on the mechanisms of degradative reactions and on the principles involved in the modern and advanced spectroscopic and physicochemical procedures described. This book follows on from the previous book on humic substances which dealt with the geochemistry, isolation and characterization of such substances.

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Sharing Innovation. Global perspectives on food, agriculture and rural development. Papers and Proceedings of a Colloquium on Food and Agriculture. N.G. Kotler, editor. Smithsonian Institution, Washington, London, and IRRI, Manila, 1990, xv + 265 p. ISBN 0-87474-874-7 (Smithsonian) 971-104-221-5 (IRRI). Paperback.

The nations of the world face the challenge of expanding the global food supply, slowing the rate of population growth, and raising rural-sector income and employment as a means of absorbing increasing numbers of workers and spurring economic growth. Developments in Africa, Asia and Latin America will determine the quantity and availability of food in the world in the coming years. This volume examines agricultural strategies and food and nutrition policies in the developing nations, the pivotal role of research and technology, and successful innovations that promise advances in global food and agricultural production.

Based on an international meeting convened at the Smithsonian Institution in October 1989, the volume assembles the views of leading scientists, agricultural economists and food policy leaders. Topics in this volume include water conservation technologies in India for raising productivity on the earth's drylands, the growth of fruit and vegetable trade-export industries in Chile, the discovery of new plant varieties that led to rice self-sufficiency in Indonesia, and market-oriented agricultural reforms in China.

Orders to: Smithsonian Institution Press, 470 L'enfant Plaza, Suite 7100, Washington Dc 20560, U.S.A.

Remote Sensing and Geographical Information Systems for Resource Management in Developing Countries. A.S. Belward and C.R. Valenzuela, editors. For the Commission of the European Communities, Euro Courses Remote Sensing Vol.1. Published by Kluwer Academic Publishers, Dordrecht, Boston, 1991, xii + 506p. ISBN 0-7923-1268-6. Hardbound.

Remote sensing and geographical information systems are increasingly used in the management of the earth's resources. Indeed in many cases these technologies represent the only realistic way in which to gather and process data concerning our environment. This book combines a review of the theory and applications of both these key technologies. The applications, mainly concerned with the management of renewable resources in developing countries, cover subjects such as agricultural production forecasting, hydrology and operational rainfall estimation, alongside major global environmental issues such as monitoring tropical deforestation. However, many of the concepts introduced in these case studies equally apply to resource management and environmental monitoring in regions other than the developing world. Combined with an extensive and up-to-date bibliography this makes the book valuable to graduate and post-graduate students, and governmental and non-governmental planners and environmental scientists alike.

Price: Dfl 245; US\$ 145; £ 84

Orders to: In U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.

Elsewhere: Kluwer Academic Publ. Group, P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Soil Biology and the Conservation of the Biosphere. Proceedings of the 10th International Symposium on Soil Biology. J. Szegi, A. Anton and K. Szende (guest editors). *Agrokémia és Talajtan* No.39 (3-4). Budapest, 1990.

This volume contains the Proceedings of the 10th International Symposium on Soil Biology, entitled "Soil Biology and the Conservation of the Biosphere", held in Keszthely between 27 and 31 August 1989. These Proceedings contains all the papers and opening addresses which were submitted by the speakers and participants at the Symposium.

Soil biology and the conservation of the biosphere are in the focus of interest as harmful anthropogenic effects causing soil pollution are becoming more wide-spread. Soil pollution not only adversely affects soil fertility but also damages the quality of agricultural products. Besides the plenary papers, the papers submitted are divided in 6 sections on the following subjects: (1) Biological nitrogen fixation; (2) The effect of fertilization on soil biological processes; (3)

Dynamics of biological populations in the soil; (4) Interaction between pesticides and soil microorganisms; (5) The role of soil organisms in the transformation of soil organic matter; and (6) The role of animals in soil biological processes.

Orders to: Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, Herman Ottó út 15, 1022 Budapest II, Hungary.

Subsistence Agriculture Improvement. Manual for the Humid Tropics. Wau Ecology Institute Handbook No.10. Tropical Agroecology No.4. F. Goeltenboth, editor. Wau Ecology Institute, Wau, and Margraf Scientific Publishers, Weikersheim, 1990, xv + 232p. ISBN 9980-73-001-3 (Papua New Guinea edition); 3-8236-1157-7 (German edition). Paperback.

All over Papua New Guinea forests are moving further away up the sides of mountains. The shifting cultivation practices need more and more land. The semi-nomadic subsistence agriculture techniques of "slash and burn" are ill-adapted to meet the needs of Papua New Guinea's rapidly expanding agrarian societies. The "slash and burn" system destroys the forests and as a result the soil washes away.

Therefore the Subsistence Agriculture Project of the Wau Ecology Institute developed appropriate techniques for the training of all peoples concerned in an improved subsistence agriculture program showing how to grow quantitatively and qualitatively better food in a site-stable garden. All the methods used are put together in this manual hopefully making it a resource for all those concerned with the improvement of the life situation of the subsistence farmers.

Orders to: Wau Ecology Institute, P.O.Box 77, Wau, Papua New

Guinea or: Margraf Scientific Publishers, Mühlstrasse 9, P.O. Box 105, W-6992 Weikersheim, Germany.

The Rhizosphere and Plant Growth. Beltsville Symposia in Agricultural Research 14. D.L. Keister and P.B. Cregan, editors. Kluwer Academic Publishers, Dordrecht, Boston, 1991, xv + 386 p. ISBN 0-7923-1032-2. Hard cover.

Plant growth and development are controlled largely by the soil environment in the root region or rhizosphere. This is a very complex environment in which the effects of the plant on soil microorganisms and the effects of microorganisms on the plant are interacting, interdependent and immensely complex. Plant root exudates and breakdown products, derived from solar energy utilization, feed the microbes and the microbes in turn often benefit the plant or induce *disease harmful to the plant*.

Improved crop management and crop protection systems are required in order to promote sustainable agriculture and improve the quality of the environment. Cost-effective systems such as biological control and symbiotic nitrogen fixation, that would lessen the need for agricultural chemicals and decrease energy inputs, also would lessen environmental contamination and increase cost effectiveness. To design such systems the manipulation of soil microbes, both indigenous and introduced, is increasingly being advocated. Advances in plant and microbial molecular biology is offering possibilities for designing specific plant-microbe associations. Thus this symposium was conceived to explore the present state of rhizosphere research, emphasize current problems, explore potential solutions, and describe the potential for modern biotechnology applications to these problems. The present publication contains papers presented at a symposium held at Beltsville, USA, in May 1989.

The papers are arranged in 4 sections: Progress in rhizosphere research; The rhizobium-legume symbiosis; Rhizosphere interactions and plant rest control; and Rhizosphere interactions and plant growth promotion. The symposium brought together scientists working on problems in biocontrol of plant diseases, microbiology and ecology of the soil, symbiotic nitrogen fixation, plant-microbe interactions and plant growth promotion.

Price: Dfl 300; US\$ 196; £ 103

Orders to: In U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.

Elsewhere: Kluwer Academic Publ. Group, P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Soil and Water Conservation in Kenya. D.B. Thomas, E.K. Biamah, A.M. Kilewe, L. Lundgren and B.O. Mochoge, editors. University of Nairobi, Nairobi, and SIDA, Nairobi, 1989. x + 579 p.

The conservation of soil and water are among the top priorities of those concerned with agricultural production and rural development in Kenya. Faced with a rapidly expanding population and rising expectations there is an urgent need to increase output from the land on a sustainable basis. The proper utilization of soil and water resources is basic to this endeavour and the promotion of knowledge and understanding of what is being done, and what can be done, is part of this exercise.

This publication contains the proceedings of a workshop on soil and water conservation that was held at the University of Nairobi from 16 to 19 September 1986. The objectives of the workshop were: (1) to bring together researchers, teachers, extension workers and others who are concerned with soil and water conservation; (2) to exchange information and ideas and to discuss ways of assessing needs and of planning, implementing and evaluating conservation systems; (3) to identify priorities for future conservation work and to seek ways of increasing the effectiveness and relevance of research, teaching and extension.

The papers presented are arranged in 6 sections: Soil properties and climate; Erosion and sediment control; Conservation on cropland and agroforestry; Conservation of rangelands and grazing management; Water, irrigation, run-off and roads; and Policy, planning and socio-economic aspects.

Orders to: Dept. of Agricultural Engineering, Kabete Campus, University of Nairobi, P.O. Box 30197, Nairobi, Kenya.

Waldböden. Entwicklung, Eigenschaften und Nutzung. 2. Auflage. Pareys Studentexte Nr. 29. K.E. Rehfuess. Verlag Paul Parey, Hamburg und Berlin, 1990, 294 S. ISBN 3-490-06716-9. Kartoniert.

Das Buch stellt die Entwicklung, die Eigenschaften und die Nutzung der wichtigsten Waldböden Mitteleuropas in ihrer breiten Vielfalt aus ganzheitlicher Sicht vor.

Einführend werden die Waldböden als Teile von Waldökosystemen definiert und daraus die Aufgaben der Waldbodenforschung abgeleitet. Am Beispiel von Modelllandschaften mit vorgegebenem Gesteinsaufbau beschreibt der Leitfaden danach repräsentative Bodengesellschaften mitteleuropäischer Waldgebiete unter besonderer Berücksichtigung ihrer ökologisch wichtigen Merkmale. Hinweise zur Baumartenwahl vervollständigen diese bodenkundlichen Grundlagen der Standortserkundung.

Im dritten Hauptteil werden die Auswirkungen von Bewirtschaftungseingriffen wie Kahlhieb, Vollbaum- und Streunutzung, Fichten-Reinanbau, Düngung und Melioration erörtert. Im Vergleich zur 1. Auflage sind neue Kapitel über die durch Maschineneinsatz ausgelösten Bodenschäden und den Einfluß von Erlenbeständen hinzugekommen. Im Brennpunkt des Interesses stehen dabei die anthropogenen Veränderungen der Böden und ihre Rolle im Stoffhaushalt von Waldökosystemen, aber auch die Reaktionen anderer Systemkomponenten wie Baumbestand, Bodenvegetation, Sickerwasser und Gebietsabfluß. Der völlig neue vierte Abschnitt ist den Auswirkungen der Stoffdeposition aus der Atmosphäre, von Auftausalzen und des Deponierens von Siedlungsabfällen gewidmet. Zu allen angeschnittenen Fragen werden nach neuestem Forschungsstand Empfehlungen für das praktische waldbauliche Vorgehen und den Schutz der Wälder und ihrer Böden gegeben.

Preis: DM 44

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Physico-Chemical Aspects of Soil and Related Materials. STP 1095. K.B. Hoddinott and R.O. Lamb, editors. ASTM, Philadelphia, 1990, 201p. ISBN 0-8031-1396-X. Flexicover.

In today's changing world, the properties of the environment are interconnected. Changes which occur or are brought to occur in one property can result in vast modifications or transformations in other properties. Some of these secondary effects are known and can be predicted, others cannot. In the field of soil mechanics, these linked reactions can have devastating results. With drastic potential results, discovering and quantifying these changes is an important concern of professionals who work in this field.

Discovery of these interconnected relationships is the responsibility of the researchers. However, being able to predict the outcome of these relationships reproducibly requires standardization of the testing procedures for these soil properties. To this end The American Society for Testing and Materials (ASTM), through its Committee D-18 on Soil and Rock, sponsored a symposium on the Physico-Chemical aspects of Soil, Rock and Related Materials in St. Louis, June 1989. Physico-chemical properties are those attributes that are affected by changes in other properties.

In this STP, papers were selected in the following categories: (1) Lime and lime-like materials; (2) Bentonite/natural clays; and (3) General soil tests. The papers included herein provide state-of-the-art information on physico-chemical interactions and their test methods and will be useful to those undertaking projects which involve such testing.

Price: £ 42

Orders to: see below.

Geosynthetics: Microstructure and Performance. STP 1076. I.D. Peggs, editor. ASTM, Philadelphia, 1990, 169p.
ISBN 0-8031-1298-X. Flexicover.

This ASTM symposium was initiated as the result of a desire and apparent need to institute a rational technical base for an understanding of the performance and durability of geosynthetics. It was possibly the first meeting approaching the question of geosynthetics durability from the materials/polymer science and engineering aspect.

The term microstructure was originally intended by the symposium organizers to signify factors such as: (1) the chemical structure of the basic polymer, (2) the physical structure of crystalline and amorphous regions, and (3) additives for oxidation and ultraviolet light resistance. But it became apparent as abstracts were received that too many of those working with geosynthetics, microstructure meant the porous structure, fiber/fiber interaction, and service environment/fiber interactions that could occur. Consequently, the papers presented represent an equal proportion of the behaviour of the fundamental building blocks from which geosynthetics are fabricated and the interaction of the building blocks with themselves and the environment.

Price: £ 26

Orders to: America Technical Publications, 27-29 Knoll Piece, Wilbury Way, Hitchin, Herts SG4 0SX, England; or: ASTM, 1916 Race Street, Philadelphia, PA 19103, U.S.A.

Fizica Solurilor Agricole (Physics of Agricultural Soils). A. Canarache. Ed. Ceres, Bucharest, 1990, 268p.

This is the first textbook on soil physics published in Romanian. The text consists of 15 chapters, covering most of the soil physical properties and processes: texture, structure, porosity, compactness, water retention and flow, air, heat, penetrability, resistance to ploughing, etc. Both basic and applied components of soil physics are treated. The soil as a physical system is discussed as part of the more general concept of soil as a natural body, the soil profile being considered as a whole. The role of soil physical properties and processes in crop growth is discussed, including simulation modelling. Physical characterization of Romanian soils is of interest, an approach being used which could be followed in many other areas of the world.

Throughout the book, results published in Romanian literature and in neighbouring countries are frequently presented. It has 72 tables and 124 figures.

Orders to: Prof. A. Canarache, Inst. de Certari Pentru, Pedologie si Agrochimie, Bd. Marasti 61, 71331 Bucharest, Romania.

Climate Dynamics of the Tropics. S. Hastenrath. Kluwer Academic Publishers, Dordrecht, Boston, London, 1991, xx + 488p. ISBN 0-7923-1213-9. Hardbound.

This book is an updated edition from *Climate and Circulation of the Tropics* (1985) and incorporates the rapid progress in tropical climate research to 1990. Tropical atmosphere and ocean are receiving increased attention in relation to the functioning of the global climate system, the remarkable climatic variability in low latitudes, and the associated manifold environmental and societal consequences. The volume is directed to the dynamics of tropical climate in particular. The discussion begins with the diurnal forcing and local circulations which are so strongly developed in the low latitudes and which interact significantly with the large-scale flow. The planetary scale circulation of atmosphere and ocean and the heat and water budgets of the global atmosphere-hydrosphere system are discussed as a background for subsequent topics with regional focus.

A climatology of tropical weather systems is presented with emphasis on their structure, large-scale environmental setting, regional distribution, seasonal characteristics, and their role in the regional climates and interannual climate variability. Glacier and climate variations are documented in varying detail from 500,000 years ago to the present. The closing chapter combines vegetation, lake, glacier evidence, deep-sea core analysis, and modelling, to produce a preliminary synopsis of climate and circulation changes in the tropics during the past 30,000 years. Highlighting the gaps in our knowledge and an appraisal of recent research results on tropical circulation and climate are the objectives of this book.

Price: Dfl 235, US\$ 129, UK£ 79

Orders to: In U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.

Elsewhere: Kluwer Academic Publ. Group, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

Introduction to Remote Sensing. A.P. Cracknell and L.W.B. Hayes. Taylor & Francis, London, Bristol, 1991, x + 293p. ISBN 0-85066-409-8 (Hardbound) 0-85066-335-0 (Paperback).

This new text provides an introduction for scientists needing to know and understand the scope, potential and limitations of remote sensing. The intention is that readers, equipped with a broad background of physical science, will be led to understand and apply remote sensing techniques. The key features are: (1) Comprehensive overview of the basic principles behind remote sensing physics, techniques and technology; (2) Concise presentation of data acquisition, interpretation and analysis; (3) Detailed treatment of atmospheric corrections, essential to quantitative remote sensing of land and water; (4) Illustrated with examples of photographic and non-photographic imagery, including full-colour photographs from satellites and aircraft; (5) Applications drawn from across the earth, environmental and atmospheric sciences; (6) Bibliography, data sources and abbreviations/ acronyms; and (7) SI units used throughout.

Price: UK£ 39 (Hardbound) UK£ 16 (Paperback).

Orders to: Taylor & Francis Ltd., 4 John St., London WC1N 2ET, U.K. or: Taylor & Francis Inc., 1900 Frost Road, Suite 101, Bristol PA 19007, U.S.A.

Plant Breeding and Sustainable Agriculture: Considerations for Objectives and Methods. CSSA Special Publication N°18. D.A. Sleper, T.C. Barker and P.J. Bramel-Cox, editors. CSSA and ASA, Madison, 1991, xvii + 93p. ISBN 0-89118-532-1. Paperback.

Sustainable agriculture goals are increasing in prominence due to a rising concern about the environment and profitability. Plant breeders will play an important role in achieving these goals. Biologically and economically sustainable systems of the future will require, to the fullest

extent possible, exploitation of available germplasm and application of the vast array of new biological research tools. This book offers the opportunity for discussion of the important topics related to the contributions of plant breeding under alternative production systems and under selection criteria in which sustainability of the system is paramount. This publication is the result of a symposium, held in Las Vegas in October 1989, designed to address sustainable agriculture issues that affect plant breeding.

The authors address plant breeding objectives and methods that will contribute to sustainability and productivity of agriculture. Plant breeders, agronomists, policy-makers, farmers, and others interested in sustainable agriculture will find the publication of interest. *Price:* US\$ 14. Advance payment and 10% per book for postage is required on all orders outside the U.S.A.

Orders to: see below.

Managing Nitrogen for Groundwater Quality and Farm Profitability. R.F. Follet, D.R. Keeney and R.M. Cruse, editors. Soil Science Society of America, Madison, 1991, xix + 357p. ISBN 0-89118-796-0. Includes one diskette. Paperback.

The objective of this publication, which is the proceedings of a symposium held at Anaheim in 1988, is to present current information and its application to assist managers, producers, agricultural advisers, and others in making appropriate nitrogen management decisions. Guidelines and management principles to minimize nitrate nitrogen leaching while optimizing farm profitability with respect to fertilizer, water, and cropping-system-management alternatives are provided.

The book also contains procedures to screen for the potential for nitrate nitrogen leaching that are incorporated into a computer software package, NLEAP (Nitrate Leaching and Economic Analysis Package). It is designed to provide rapid, site-specific estimates of potential for leaching of nitrate nitrogen under agricultural crops along with its potential impacts on groundwater resources. This package is designed for personal computers and includes optional national soil and climate databases for model input.

This book and the accompanying software are unique tools especially designed for use by farm advisers and farmers. These will assist agricultural producers to economically and environmentally evaluate various aspects of nitrogen management strategies for individual farms.

Price: US\$ 36. Advance payment and 10% per book for postage is required on all orders outside the U.S.A.

Orders to: see below.

Modelling Plant and Soil Systems. Agronomy Monograph N°31. J.T. Ritchie and R.J. Hanks, editors. ASA, CSSA, and SSSA, Madison, 1991, xix + 545p. ISBN 0-89118-106-7. Hardbound.

Over the past few decades agronomic research has focused on food and feed production. Lately, environmental quality has become a major issue facing crop and soil scientists. Today, researchers are looking for management strategies that promote high yield yet recognize the need for a protected environment. Such research needs to include simulation of all or part of the soil-plant-atmosphere system.

This book focuses on the use of computer simulation to evaluate agronomic systems. Improved accuracy in simulating crop and soil systems continues to convince researchers and technologists of the importance of being able to predict outcomes needed in agricultural decision-making. Combining the soil, plant, and climate system into quantitative terms that lead to accurate predictions of outcomes is needed as agronomists enter the information age.

Low funding for agricultural research and extension makes the use of simulation models even more of a necessity as a tool for assisting decision-making in sustainable agricultural systems. Such models mean progress can come quicker and with a less expensive price tag than compared to depending solely on experimental research. However, key simulated results must still be evaluated with actual field experiments.

The monograph's contents provides examples of models of component processes necessary to simulate the dynamics of crop and soil systems. Generally, the chapters cover the plant processes first followed by the soil processes. Examples of how simulation models can be applied to problem-solving situations are also offered.

Price: US\$ 30. Advance payment and 10% per book for postage is required on all orders outside the U.S.A.

Orders to: ASA, CSSA, SSSA Headquarters Office; attn. Book Order Dept., 677 South Segoe Road, Madison WI 53711-1086, U.S.A.

The Potential Effects of Climate Change in the United Kingdom. M.L. Parry et al., editors. Department of the Environment, London, 1991, xvi + 124p. ISBN 0-11-752359-3. Paperback.

This report considers the potential impacts of climate change in a wide variety of environmental and socio-economic areas. There are major uncertainties concerning possible greenhouse gas-induced climate change and its associated impacts. This report should be considered to be a preliminary assessment. As more information becomes available the assessment of potential impacts will inevitably be revised and improved.

The areas highlighted are the following: Future changes in climate and sea level; Soils; Flora, fauna and landscape; Agriculture, horticulture, aquaculture and forestry; Coastal regions; Water industry; Energy; Minerals extraction; Manufacturing; Construction; Transport; Financial sector; Recreation and tourism.

Price: UK£ 8.50

Orders to: HMSO Publications Centre, P.O. Box 276, London SW8 5DT, U.K.

Soil Management for Sustainability. R. Lal and F.J. Pierce, editors. Soil and Water Conservation Society, Ankeny, 1991, xii + 189p. ISBN 0-935734-23-6. Paperback.

This book consists of 14 manuscripts in all, 12 of which were presented at a workshop, held in Edmonton, Canada, in August 1989. Introductory and concluding chapters were subsequently added to provide continuity and coherence. Topics discussed in the book can be conveniently divided into three parts: basic processes, management options, and policy issues and priorities. Important themes covered among basic processes include soil structure, soil compaction, and predicting soil erosion and its effects on crop productivity. Management options include conservation tillage, utilization of organic wastes, farming by soils, and agricultural sustainability. The final section deals with resource assessment policy and researchable priorities.

Price: US\$ 15

Orders to: Soil and Water Conservation Society, 7515 Northeast Ankeny Road, Ankeny, IO 500021-9764, U.S.A.

World Geomorphology. E.M. Bridges. Cambridge University Press, Cambridge, 1990, x + 260p. ISBN 0-521-38343-9 (hardback) 0-521-28965-3 (paperback).

This publication deals with the large-scale relief features of the earth and shows how these are related to the major segments of the earth's crust known as lithospheric plates. The aim of the book is to convey an understanding of the earth's major relief features and to present a subdivision of the earth's surface into provinces which have had a similar geological or geomorphological history.

The book starts by presenting the reader with the basic geological column and the means of subdividing the landscape into areas with a common origin and development history, and gives an explanation of the basic principles of plate tectonics. The continental and oceanic areas of each lithospheric plate are then described: successive chapters deal with the African, American, Antarctic, Asian, European and Pacific plates, indicating the regional geomorphological features after a brief geological introduction.

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

Fundamentals of Continuum Mechanics of Soils. Y. Klausner. Springer Verlag, Berlin, New York, 1991, xxxiii + 607p. ISBN 3-540-19546-7 (German edition) 0-387-19546-7 (US edition). Hardbound.

This book provides a long-needed general scheme for the study of the important yet problematic material of soil. It closes the gap between two disciplines, soil mechanics and continuum mechanics, showing that the familiar concepts of soil mechanics evolve directly from continuum mechanics. It confirms concepts such as pore pressures, cohesion and dependence of the shear stress on consolidation, and rejects the view that continuum mechanics cannot be applied to a material such as soil.

The general concepts of continuum mechanics, field equations and constitutive equations are discussed. It is shown how the theory of mixtures evolves from these equations and how, along with energetics and irreversible thermodynamics, it can be applied to soils. The discussion also sheds light on some aspects of mechanics of materials, especially compressible materials. Examples are the introduction of the Hencky measure of strain, the requirement of dual constitutive equations, and the dependence of the spent internal energy on the stored internal energy. Researchers in engineering mechanics and material sciences may find that the results of experiments on soils can be generalized and extended to other materials.

The book is a reference text for students familiar with the fundamentals of mechanics, for *scholars of soil engineering, and for soil scientists. It is also suitable as an advanced undergraduate course in soil mechanics.*

Price: DM 294.

Orders to: In U.S.A. and Canada: Springer-Verlag, 175 Fifth Avenue, New York NY 10010, U.S.A.

Elsewhere: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Fed.Rep. of Germany.

Drought Spells and Drought Frequencies in West Africa/Durée et Fréquence des Périodes Sèches en Afrique de l'Ouest. Research Bulletin N°13/Bulletin de Recherche N°13. M.V.K. Sivakumar. ICRISAT, Patancheru, 1991, 181p. ISBN 92-9066-182-8.

Recurring droughts and decreased agricultural productivity during the last two decades in West Africa point to the need for a clearer understanding of the length of dry spells, their frequencies and probabilities. A comprehensive review of various definitions of droughts has been presented to develop the basis for analysis of droughts. Using the specific definition of onset of rains in each year as the sowing date, the length of dry spells were calculated from the historical rainfall data for 150 stations located in Burkina Faso, Mali, Niger and Senegal. Probability distribution of time to the next wet day and the percentage frequencies of dry spells were computed for successive days after sowing (DAS) a crop. Dry spell analysis showed a pronounced drop in the drought risk for cereal crops from the panicle initiation phase (20 DAS) to the flowering phase (60 DAS). The relationships between mean annual rainfall and average frequency of dry spells for the selected locations in West Africa showed distinct patterns and permit the prediction of the frequency of dry spells from annual rainfall totals. Applications of the dry spell analysis for the choice of a crop/variety, supplemental irrigation and crop water requirements have been described with examples.

La répétition d'événements de sécheresse et la diminution de la production agricole durant ces deux dernières décades en Afrique de l'Ouest justifient le besoin d'une meilleure compréhension de la durée des sécheresses, de leur fréquence et de leur probabilité. On présente une revue des diverses définitions de la sécheresse comme support pour cette analyse. En définissant spécifiquement le début des pluies chaque année comme étant la date de semis, on a calculé la longueur des périodes sèches à partir des données historiques de pluviométrie pour 150 stations au Burkina Faso, au Mali, au Niger et au Sénégal. La distribution de probabilité du temps s'écoulant jusqu'aux prochaines pluies et les fréquences exprimées en pourcentage des sécheresses ont été calculées pour des jours successifs après les semis (JAS) d'une culture. L'analyse des sécheresses a montré une chute très prononcée du risque de sécheresse pour les céréales depuis la phase d'initiation du panicule (20 JAS) jusqu'à la phase de floraison (60 JAS).

Les relations entre la pluviométrie moyenne annuelle et la fréquence moyenne des sécheresses pour les localités sélectionnées en Afrique de l'Ouest ont montré des modes distincts et permettent de prédire la fréquence des sécheresses à partir des totaux de pluviométrie annuelle. Des applications de l'analyse de la durée des périodes de sécheresse pour le choix d'une culture, d'une variété, d'une irrigation supplémentaire et pour les besoins en eau d'une culture ont été décrits à l'aide d'exemples.

Orders to/Commandes à: ICRISAT, Patancheru, Andhra Pradesh 502 324, India.

The State of the Environment. Organisation for Economic Co-operation and Development (OECD), Paris, 1991, 299p. ISBN 92-64-13442-5. Paperback. (Also available in French).

This third report review the progress achieved in OECD countries in attaining environmental objectives over the past two decades-the lifetime of most environmental policies and institutions. The report also examines the agenda for the 1990s: global atmospheric issues, air, inland waters, the marine environment, land, forests, wildlife, solid waste and noise. While focused on the relationships between the state of the environment, economic growth and structural change in OECD countries, the report places its analysis in the context of world ecological and economic interdependence and the need for sustainable development.

A booklet on "Environmental Indicators, a preliminary set" completes this publication.

Orders to: OECD Publications Service, 2 rue André-Pascal, 75775 Paris Cedex 16, France. or: National OECD Distributor.

GIS Applications in Natural Resources. M. Heit, and A. Shortreid, editors. GIS World, Fort Collins, 1991, x + 381p. Hardcover.

This book is a collection of the presented in 5 conferences held in Canada from 1987 to 1991 on the use of Geographical Information Systems (GIS). The purpose is to give both the student and professional practical insights into this wonderful technological tool. The papers are arranged among four sections: Perspectives; Humanware; Hardware; and Software and applications.

This volume presents an overview of the organizational and decision-making milieu in which GIS is housed. It expands the horizons of the manager and the technocrats who feed and feed off of GIS. The real beauty of GIS is the expansion of the geographer's soul-spatial integration. It moves us from the univariable accountant-like spreadsheet to something which closer approaches the real world with all its spatial, interactive, fuzzy logic nuances. The biology scientists, land managers and geographers discover each other. It is hoped that this volume will span the interest of academics, geographers, regional planners, foresters, wildlife managers, ecologists and GIS service industry representatives who converge to solve resource problems.

Orders to: GIS World Inc., P.O.Box 8090, Fort Collins, CO 80526, U.S.A

Sciences Géologiques, Mémoires 85 to 89 (1990). Proceedings of the 9th International Clay Conference, Strasbourg, 1989. V.C. Farmer and Y. Tardy, editors. Institut de Géologie, Strasbourg, 1990. 5 volumes ISSN 0302-2684.

Ninety of the 150 papers presented at the 9th International Clay Conference are published in these proceedings. Each volume includes two chapters, arranged as follows: Volume 1: Clay-organic interactions; Clay minerals in soils. Volume 2: Surface chemistry; Structure and mixed layering of clays. Volume 3: Geochemistry of clays; Nuclear waste disposal. Volume 4: Clays in sediments; Diagenesis and hydrothermalism. Volume 5: Industrial applications of clays; Analytical techniques, teaching of clay mineralogy.

Price: FF 600 (all 5 volumes); or Vol.1 FF 180; Vol.2. FF 130; Vol.3 FF 130; Vol.4 FF 150; Vol.5 FF 170.

Orders to: Régisseur Bibliothèque, Institut de Géologie, 1 rue Blessig, 67084 Strasbourg Cedex, France.

Soil Physics. 5th edition. W.A. Jury, W.R. Gardner and W.H. Gardner. John Wiley & Sons, New York, Chichester, 1991, xv + 328p. ISBN 0-471-83108-5. Hardbound.

This edition has been altered significantly to reflect the changes in the discipline. It focuses heavily on transport processes and problem solving, teaching the reader to simplify the general theory for specific applications. This approach is developed systematically using physical principles rather than empirical laws and is illustrated throughout the text with over 70 examples that provide the reader with a model for using the theory in a practical manner.

Chapter 1 describes the important physical and chemical properties of the soil solid phase. Chapter 2 characterizes water in soil, first describing the molecular and fluid properties of water and then developing the thermodynamic description of water potential energy. Chapters 3 and 4 introduce the theory of water transport through saturated and unsaturated soil and provide approximate models of water flow. Chapters 5 to 7 deal with the transport of heat, gases, and dissolved solutes in soil, with emphasis on practical problems encountered in the field. Chapter 7, covering solute movements, offers a general treatment of dispersion not tied to any single set of assumptions and provides many examples of environmental pollution calculations. Chapter 8 deals with methods of assessing the properties of spatially variable soil, including a description of the most modern methods.

This book should be suitable as an advanced undergraduate or graduate level instruction text in soil physics as well as a reference text for professional scientists.

Price: UK£ 39.10

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

Agroforestry in Africa. A survey of project experience. P. Kerckhof. Edited by G. Foley and G. Barnard. The Panos Institute, London, 1990, viii + 216p. ISBN 1-870670-16-7. Paperback.

Agroforestry is seen as an important new hope for Third World farmers. By integrating tree growing with crop and livestock production, it offers a way of tackling the combined problems of poor agricultural production, worsening wood shortages and environmental degradation.

Hundreds of agroforestry projects are now under way. But they face a difficult task; there are few examples to follow and no simple guaranteed techniques.

Much has been written about the theory of agroforestry. This study presents a first-hand report on what is happening in practice. It describes the experience of 21 projects throughout Africa, showing what has worked, and what has failed. It looks at the problems and dilemmas that project staff have had to face, and the lessons they have learned - often the hard way.

The projects cover a wide range of ecological conditions and agroforestry approaches - from intercropping in the moist highlands of Rwanda, to promotion of natural regeneration in the dry Sahel. Their combined experience provides an important insight into the potential for agroforestry, and vital clues as to how projects can better be designed in future.

Price: UK£ 20

Orders to: Panos Publications Ltd, Angel House, 9 White Lion Street, London N1 9PD, U.K.

Research Needs and Applications to Reduce Erosion and Sedimentation in Tropical Steeplands. R.R. Ziemer, C.L. O'Loughlin and L.S. Hamilton, editors. IAHS Publication No. 192. IAHS, Wallingford, 1990, vii + 396p. ISBN 0-947571-52-3. Paperback.

For the past decade, scientists around the Pacific Rim have periodically met to discuss the state of erosion and sedimentation research related to steeplands. This landscape is often unstable, and natural erosion and sediment disasters are common. The influence of land-use practices on the frequency and magnitude of such disasters is often a matter of great legal and technical controversy. Although the Pacific Rim includes areas in all climatic zones, most of the research and experience related to erosion and sedimentation in steepland areas is concentrated in the temperate regions of the world. World-wide interest has recently been focused on tropical

deforestation. Over 5 million hectares of tropical forests are cleared every year.

Price: US\$ 50

Orders to: IAHS Press, Institute of Hydrology, Wallingford, Oxfordshire OX10 8BB, U.K. or: Office of the Treasurer IAHS, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.

Basic Procedures for Agroeconomic Research. Revised edition. International Rice Research Institute, Manila, 1991, viii + 230p. ISBN 971-22-0007-8. Paperback.

Between 1975 and 1981, Network economists developed analytical procedures and accumulated them in loose leaf binder form known as the Handbook for Economic Analysis of Cropping Systems. The present volume is the culmination of these efforts, and is intended for interested agroeconomic researchers. It contains parts of the earlier work, but comprises also new perspectives on basic procedures for economic analysis by field-level researchers.

Price: US\$ 17, US\$ 5 in developing countries; plus postage

Orders to: IRRI, P.O. Box 933, 1099 Manila, Philippines.

The Prospects for Agroforestry in the Tropics. P.K.R. Nair. World Bank Technical Paper No. 131. The World Bank, Washington, 1990, xi + 77p. ISBN 0-8213-1702-4. Paperback.

Agroforestry has come of age remarkably during the past 10 to 15 years. However, the lack of a synthesized 'package' of technical and socio-economic information on agroforestry is a serious drawback in channelling development assistance to agroforestry projects. The objective of this report is to fill this gap. By reviewing the scientific information currently available, the report seeks to establish the scientific basis and principles of agroforestry and to evaluate field research on agroforestry practices; it also discusses the economic and socio-cultural aspects of agroforestry, as seen by a 'non-expert'. A bibliography is appended to the report.

The emphasis in this report is on Africa, but extensive use is also made of experiences from other parts of the developing world to ensure that the report is applicable to all tropical regions. It is addressed primarily to agroforestry practitioners -both foresters and agriculturalists- of development-support agencies.

Price: US\$ 6.95

Orders to: Publications Sales Unit, The World Bank, 1818 H Street, NW, Washington, DC 20433, U.S.A. or: Publications, The World Bank, Avenue d'Iéna, F-75116 Paris, France.

Methodenhandbuch Bodenmikrobiologie. Aktivitäten, Biomasse, Differenzierung. K. Alef. Ecomed Verlagsgesellschaft, Landsberg/Lech, 1991, 284S. ISBN 3-609-65960-2.

Mikroorganismen leisten einen wesentlichen Beitrag zur Erhaltung des Gleichgewichts der Stoffumsätze in der Natur. Die Bedeutung einer funktionierenden Bodenmikroflora zum Schutz des Bodens ist unbestritten; geeignete Methoden zur Erkennung potentieller Gefahren für die Bodenmikroorganismen sind daher eine Notwendigkeit.

Dieses Buch beschreibt mit 60 Arbeitsvorschriften 35 moderne Labor- und Feldmethoden zur Aufklärung des Einflusses von Umweltchemikalien und Kulturmaßnahmen auf die Mikroorganismen im Boden.

Ausführliche Versuchsbeschreibungen umfassen Methoden zur Messung mikrobieller Aktivitäten und zur Differenzierung mikrobieller Populationen und Analyse ihrer Biomasse. In einem eigenen Kapitel werden auch Methoden zur Bestimmung anaerober Aktivitäten vorgestellt. Außerdem werden Verfahren zur Anreicherung, Isolierung und Zählung von Mikroorganismen beschrieben.

In einem Anhang werden in tabellarischer Form Hinweise für den sicheren Umgang mit den genannten Laborchemikalien gegeben. Der Autor wendet sich mit seinem Handbuch an Ökologen, Bodenkundler, Mikrobiologen, Land- und Forstwirtschaftler, Biologen, Chemiker, Phytopathologen, Hydrologen/Limnologen und an Studenten dieser Fachrichtungen.

Preis: DM 98

Bestellungen an: Ecomed Verlagsgesellschaft, Justus-von-Liebig-Str. 1, W-8910 Landsberg a. Lech, Bundesrepublik Deutschland.

Tropical Home Gardens. K. Landauer and M. Brazil, editors. United Nations University, Tokyo, 1990, xv + 257p. ISBN 92-808-0732-3. Paperback.

Home gardens refer to gardens established near living quarters to serve primarily household consumption needs. The value of the tropical home garden in particular lies in its potential as an ecologically sound land management scheme and as a cheap source of food, fuel, medicine, feed, and building materials. Tropical home gardens also serve important social, aesthetic, and cultural functions. The present volume begins with a review of information and research results on home gardens in South and South-East Asia, Latin America, Africa and the tropical Pacific Islands.

In addition to the general situation for each of these four major regions, the authors focus on particular aspects of home garden research-ecology, social, economic, and nutritional factors-and the development and management of home garden programmes. Also included is a complete listing of herbaceous and woody plant species grown in home gardens world-wide, giving the plant use, countries where it is found, and scientific and common names.

Orders to: United Nations University Press, Toho Seimei Building, 15-1 Shibuya 2-chome, Shibuya-ku, Tokyo 150, Japan.

Clay Liners for Waste Management Facilities. Design, Construction and Evaluation. Pollution Technology Review 178. L.G. Goldman, L.I. Greenfield, A.S. Damle, G.L. Kingsbury, C.M. Northeim and R.S. Truesdale. Noyes Data Corporation, Park Ridge, 1990, xvii + 524p. Hardcover.

This Technical Resource Document is a compilation of all available information on the design, construction, and evaluation of clay liners for waste landfills, surface impoundments, and wastepiles. The information was obtained from interviews with design and construction engineers and other knowledgeable individuals in both the private and government sectors, as well as from the literature. As a consequence, some information is presented for the first time in this document.

The broad topics covered are: clays, with emphasis on the composition, fabric, and hydraulic conductivity; geotechnical test methods and soil properties including index properties, soil classification, and hydraulic conductivity testing; clay compatibility, including a discussion of the mechanisms of interaction and a comprehensive compilation of existing test data from the literature and private sources; construction and quality assurance; clay liner failure mechanisms; the performance of existing clay liners based on the case studies of 17 sites; and clay liner transit time prediction methods featuring an discussion of many available techniques and models.

The book is intended as an aid for compliance with portions of the regulations of Subtitle C of the Resource Conservation and Recovery Act (RCRA) of the U.S.A., which established a hazardous waste management program to ensure the safe handling of wastes from generation to disposition.

Price: US\$ 56 (cloth)

Orders to: Noyes Data Corporation, Mill Road at Grand Avenue, Park Ridge, NJ 07656, U.S.A.

The Challenge of Development. World Development Report 1991. The World Bank, Washington, 1991, xii + 290p. ISBN 0-19-520868-4 (paperback) 0-19-520869-2 (clothbound). (Also available in French, German, Spanish, Arabic, Chinese, Japanese, Portuguese).

This report synthesizes and interprets the lessons of more than forty years of development experience. One of the most valuable lesson relates to the interaction between the state and the market in fostering development. Experience shows that success in promoting economic growth and poverty reduction is most likely when governments complement markets; dramatic failures result when they conflict. The Report describes a market-friendly approach in which governments allow markets to function well, and in which governments concentrate their interventions on areas in which markets prove inadequate.

This volume looks at four main aspects of the relationship between governments and

markets. First, investing in people requires an efficient public role. Second, essential for enterprises to flourish is an enabling climate -one that includes competition, adequate infrastructure, and institutions. Third, successful economic development requires the integration of countries with the global economy. Fourth, a stable macroeconomic foundation is essential to sustained progress.

Price: US\$ 16.95 (paperback all languages), US\$ 32.95 (clothbound English).

Orders to: World Bank Publications, Box 7247-8619, Philadelphia PA 19170-8619, U.S.A.

Soil Erosion in the Tropics. Principles & Management. R. Lal. McGraw-Hill, London, New York, 1990, x + 580p. ISBN 0-07-036087-1. Hardbound.

Soil erosion has rendered unproductive vast areas of the tropical arable land of South America, Asia, Australia, and Africa. Drawing on the latest research from these devastated areas, this book is an up-to-date reference on the problem of erosion, its causes and consequences, and methods to control it. It explains different types of erosion by water and wind; how to measure and predict soil erosion hazards in the tropics; plus, the various principles and applications of erosion prevention and control measures, including the advantages and disadvantages of each technique.

Important processes are carefully examined and examples from different ecological regions are provided. The book also gives new insights into: agroforestry in the tropics; crop management and agronomic techniques; land use to control erosion; conservation tillage in the tropics; and watershed erosion assessment and control. This well-written book has many graphs, tables and photographs. This volume is meant for all professionals working in soil science, tropical agriculture, agricultural engineering, geography, and geology.

Price: UK£ 85

Orders to: McGraw-Hill Book Company Ltd., Shoppenhangers Road, Maidenhead, Berkshire SL6 2QL, England or: McGraw-Hill Publishing Company, 1221 Avenue of the Americas, New York NY 10020, U.S.A.

Scaling in Soil Physics: Principles and Applications. D. Hillel and D.E. Elrick, editors. SSSA Special Publication No.25. Soil Science Society of America, Madison, 1990, xxi + 122p. ISBN 0-89118-792-8. Paperback.

The theory of similitude and the technique of scaling have long been used in applied physics to facilitate the analysis of varied problems. The principle is to formulate the relevant equations with the smallest number of variables, by clustering the variables and casting them into dimensionless form. The equations are thereby generalized and made applicable to any set of actual cases, provided the systems described are essentially similar.

In 1955 the brothers Ed and Bob Miller introduced the concepts of scaling and similitude into soil physics. They formulated the basic theory and defined the appropriate criteria for its application to surface tension-viscous flow phenomena in unsaturated porous media. Their seminal analysis provided new insights into the physical behavior of soil-water systems and has been applied ever since to the solution of many otherwise vexing problems, notably including the characterization of spatial variability, hysteretic and unstable flow phenomena, and mechanical stress distribution in unsaturated granular soils.

This volume reviews subsequent developments in the area of similitude and scaling of soil systems. The contents of this publication should make this concept much more accessible to soil scientists, earth scientists, and engineers.

Price: US\$ 24. Advance payment and 10% per book for postage is required on all orders outside the U.S.A.

Orders to: ASA, CSSA, SSSA Headquarters Office; attn. Book Order Dept., 677 South Segoe Road, Madison, WI 53711-1086, U.S.A.

Agroforestry for Sustainable Production. Economic Implications. R.T. Prinsley, editor. Commonwealth Science Council, London, 1990, iv + 417p. ISBN 0-85092-342-5. Paperback.

Agroforestry, a sustainable land use suited to resource poor farmers, is being promoted as a contributory solution to the problems of land degradation. Economics has a crucial role to play in decision-making in households, communities, institutions and governments. Economic development in most developing countries relies on the sustainability of natural systems.

This book discusses how economic and financial analysis can be used to assess the net benefits of agroforestry enterprises for peasant households, institutions and society. Economic, financial, social and technical issues are examined. Special attention is paid to: (1) incentives for agroforestry and analysis of peasant economic decisions; (2) the use of cost benefit analysis as a method for assessment of agroforestry enterprises; (3) the quantification and valuation of the perceived benefits of agroforestry -soil conservation, multiple products and efficient resource use; (4) economics for sustainable production; (5) the use of a spreadsheet model for economic analysis of agroforestry.

This volume represents the collection of papers presented at the Commonwealth Science Council's meeting on 'Agroforestry for Sustainable Development' in Swaziland in 1989.

Price: UK£ 6.50

Orders to: Commonwealth Secretariat Publications, Marlborough House, London SW1Y 5HX, England.

Labor, Employment and Agricultural Development in West Asia and North Africa. D. Tully, editor. ICARDA, Aleppo; published in cooperation with Kluwer Academic Publishers, 1990, xiv + 214p. ISBN 0-7923-0817-4 (Paperback) 0-7923-0816-6 (Hardbound).

A correct strategy for agricultural development with respect to labor and employment has proved to be very complicated in West Asia and North Africa, due to the variety of opportunities for off-farm work and migration that farmers have, the nature of the division of labor between sexes and generations, the unequal distribution of capital and farmland, and often surprising policy impacts. To rank these factors and their interactions requires concrete study of actual changes in technology and labor markets and their effects on rural populations. This volume compiles the results of eight original case studies of dryland agricultural labor issues at the village or district level. Studies from Morocco, Tunisia, Algeria, Jordan, and Turkey show a broad range of problems but also many common features which support a regional approach to this problem.

Price: Hfl 110 (Hardbound)

Orders to: see below.

Labor and Rainfed Agriculture in West Asia and North Africa. D. Tully, editor. ICARDA, Aleppo; published in cooperation with Kluwer Academic Publishers, 1990, ix + 299p. ISBN 0-7923-0688-0 (Paperback) 0-7923-0687-2 (Hardbound).

Rainfed agricultural systems are characterized by high seasonal variability in labor demand, and often by low productivity. As off-farm employment opportunities have grown, farm families often combine agriculture with other activities, even living away from the farm in some cases. This poses important challenges for researchers trying to develop new, more productive agricultural technology. Will labor of appropriate skill levels be available to implement new technology? What if new technology replaces labor? This volume describes the current state of farm labor in West Asia and North Africa and its relevance to technological change.

Price: Hfl 130 (Hardbound).

Orders to: In U.S.A. and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, U.S.A.

Elsewhere: Kluwer Academic Publ. Group, P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

Ecofarming in Agricultural Development. J. Kotschi, A. Waters-Bayer, R. Adelhelm, U. Hoesle. GTZ Tropical Agroecology No.2, GTZ, Eschborn, Verlag Josef Margraf, Weikersheim, 1990, xi + 132p. ISBN 3-8236-1163-1, ISSN 0935-9109. Paperback.

The present study is a contribution to the discussion of the principles and methods of sustainable agricultural development. In Chapter 1, ecofarming is defined and its importance for the development of smallholder agriculture in the tropics and subtropics is discussed. Chapter 2 contains an outline of the major ecofarming techniques, the major results of a survey of ecofarming development activities, and a commentary on the state-of-the-art of ecofarming development within Technical Cooperation.

Chapter 3 takes a closer look at indigenous agricultural knowledge and ecofarming practices in the tropics and possibilities of collaboration between local farmers and agricultural scientists in developing site-appropriate techniques of sustainable agriculture. Chapter 4 considers the implications of this approach for project and advisory work, professional training, research emphasis, and planning and organization of Technical Cooperation.

Price: DM 32

Orders to: see below.

Ecofarming Practices for Tropical Smallholdings. J. Kotschi, editor. GTZ Tropical Agroecology No.5, GTZ, Eschborn, Verlag Josef Margraf, Weikersheim, 1990, xi + 185p. ISBN 3-8236-1184-4, ISSN 0935-9109. Paperback.

Smallholders in tropical countries constitute by far the majority of the rural population. Most of them face problems of land scarcity, low soil fertility status and limited availability of external inputs (e.g. mineral fertilizers), and are often obliged to produce their food, energy and income from increasingly less land.

Since recently, several movements have been promoting the concepts of "ecologically sound agriculture", "biological husbandry", "organic farming", "ecofarming", etc. The aim is to maintain or establish a high and lasting level of soil productivity by applying methods which require a minimum of external inputs.

In view of the wide range of tropical farming systems which exist in greatly differing agroecological and socio-economic settings, there can be no single answer to the problem of environmental degradation. This reader concentrates on ecofarming under rainfed conditions.

After a general overview about the role of agroforestry in soil fertility maintenance, results from small-scale experimental programmes in Benin, Rwanda and Tanzania are presented and discussed. The work in Burkina Faso, although it involves the same type of research, covers a different aspect: soil and water conservation by erosion control measures. Finally, the book presents methods of farmer-scientist collaboration in ecofarming research and the extent to which the experimental programmes combined scientists' and farmers' knowledge to generate improved techniques for the existing farming systems.

Price: DM 32

Orders to: Verlag Josef Margraf, Postfach 105, W-6992 Weikersheim, F.R. Germany.

Boden Agrarpedologie. Eigenschaften, Entstehung, Verbreitung, Klassierung, Kartierung des Bodens und Nutzung im Pflanzenbau. 2., vollständig überarbeitete Auflage. E. Frei und K. Peyer. Haupt, Bern, 1991, 190 S. ISBN 3-258-04467-8. Kartonniert.

Das Buch ist eine kurz gefasste, aber doch umfassende Darstellung sämtlicher Teilgebiete der Bodenkunde soweit sie im Pflanzenbau, in der Ökologie und in der Geographie Anwendung und Interesse finden. Auch ohne pedologische Vorkenntnisse ist es möglich, diesem Grundkurs in Bodenkunde mit zahlreichen Illustrationen zu folgen. Vorausgesetzt werden jedoch allgemeine Kenntnisse auf chemischem, physikalischem, biologischem und mineralogischem Gebiet.

Anschließend an die Darlegung der allgemeinen Grundlagen der Bodenkunde, werden die Prozesse der Bodenbildung und der Bodenentwicklung besprochen. Ökologische Zusammenhänge sind an konkreten Beispielen erläutert. Die Einführung in die praktische Feldbodenkunde, in die Bodenklassifikation und Kartierung sowie in die Anwendung der Bodenkunde im Pflanzenbau

und im Bodenschutz spricht auch den Praktiker an. In erster Linie wird die schweizerische Pedosphäre behandelt; um einen Gesamtüberblick zu gewährleisten, werden jedoch auch aussereuropäische pedologische Phänomene besprochen.

Dieses Buch richtet sich an Studenten und auch an Lehrer; sie will Grundlagen und Anregungen bieten. Interdisziplinär interessierte Wissenschaftler auf den Gebieten der Agronomie, der Forstkunde, der Botanik, der Biologie, der Ökologie, der Mineralogie, Geologie, Geographie und der Chemie sowie auch Ingenieure, Agrarpolitiker, Volkswirtschaftler und Entwicklungshelfer können darin Informationen suchen.

Preis: SFr 34, DM 41

Bestellungen an: Paul Haupt AG, Falkenplatz 14, P.O. Box 343, 3012 Bern, Switzerland.

Financing Irrigation Services: A Literature Review and Selected Case Studies from Asia. L.E. Small, M.S. Adriano, E.D. Martin, R. Bhatia, Young Kun Shim and P. Pradhan. International Irrigation Management Institute, 1989, ix + 287p. ISBN 92-9090-107-7. Paperback.

This book results from a two years' intensive research into a hitherto unexplored area of irrigation management: the aspect of financing irrigation in some Asian countries. The authors have analyzed the relationships between investment costs, level of irrigation fees, cropping intensity, type of crop, and secondary income. The studies conclude that the quality of irrigation system operations and maintenance is affected not only by the amount of resources made available to operate and maintain systems, but also by the institutional arrangements under which they are provided.

Orders to: see below.

Social Science Perspectives on Managing Agricultural Technology. D. Groenfeldt and J. Lewinger Moock, editors. International Irrigation Management Institute, 1989, xv + 224p. ISBN 92-9090-103-5. Paperback.

The Rockefeller Foundation, under its social science research fellowship program, arranges and finances a small number of visiting scientist positions each year at the International Agricultural Research Centers. As a group, the Fellows have helped shift the international agricultural research agenda towards a greater concern for social development and the long-term management implications of higher-yielding production technologies.

This book presents the experiences of 15 fellows who recount their roles in particular research projects at their Centers. In addition to highlighting the contributions social scientists can make in the field of agricultural research, their papers offer a candid look at the kinds of work in which the Centers are currently engaged. The basic agenda at the Centers is to develop production technologies that fit the needs of particular target areas of client groups.

Better management of existing technologies and developing sustainable technologies for the future present major challenges to the agricultural research community. This book points to the important roles social scientists can play in this multidisciplinary international effort.

Orders to: see below.

Professional Management in Irrigation Systems: A case study of performance control in Sri Lanka. IIMI Country Paper Sri Lanka No.1. N. Raby and D.J. Merrey. International Irrigation Management Institute, 1989, xx + 95p. ISBN 92-9090-119-5. Paperback.

This book presents a descriptive study on decision making in irrigation management. The authors have selected an irrigation management agency in Sri Lanka and have examined the goals, alternatives, the formal and informal dimensions of the managerial process within the agency, and the outcome of this process. Though the study focuses on Sri Lanka, its findings are applicable to irrigation management worldwide. This study will be of value to professional irrigation managers in particular, and, more generally, to the broader professional and academic community working on irrigation management problems.

Orders to: International Irrigation Management Institute, P.O. Box 2075, Colombo 1, Sri Lanka.

Proceedings of the Symposium on the Sustainability of Agricultural Production Systems in Sub-Saharan Africa. Noragric Occasional Papers Series C. Noragric, 1990, 325p. ISSN 0802-0957. Paperback.

This book is the Proceedings of a Symposium held at the Agricultural University of Norway in September 1989. The aims of this symposium were the following: (1) to review the progress and experience in production systems research in terms of sustainability criteria, the infrastructural conditions needed for their adoption, the economics of the production at the farm level, and their potentials to increase food security; (2) to examine the program with reference to research policy, research institution-building in the region, and the role of international research institutions; and (3) to promote a dialogue between researchers of developing countries, as well as between these researchers and their Norwegian and European counterparts in order to better orient Norwegian and European researchers to the current problems and technologies being developed in the region by both international and national research institutions.

Requests to: NORAGRIC, P.O. Box 2, N-1432 Aas-NLH, Norway.

Pirang. Ecological investigations in a forest island in the Gambia. H. Ellenberg, A. Galat-Luong, H.J. von Maydell, M. Mühlenberg, K.F. Panzer, R. Schmidt-Lorenz, M. Sunser and T.W. Szolnoki. Stiftung Walderhaltung in Afrika and Bundesforschungsanstalt für Forst- und Holzwirtschaft, 1988, 324p. ISBN 3-9801591-1-6. Paperback.

Like in many parts of the tropical world, forests in The Gambia are being destroyed, degraded or altered at alarming rates. Some of the degraded lands will return to forest or savanna vegetation, others will turn to marginality and finally increase the ever-present threat of spreading desertification. Only few areas are likely to be reforested because of the high costs involved and the prevailing shortage of agriculture lands. However, if plant or animal species disappear, or if their genetic variation is depleted, the loss may be permanent.

This book tries to inform on the components, the structure, and the mutual feedbacks within a specific isolated forest. The Pirang forest, situated in a transition zone between river, mangrove-marshland, croplands, pasture and villages, was chosen for a case-study. The research was carried out by interdisciplinary teams and with the participation not only of the Gambian Forest Service but also of the local people.

Orders to: Stiftung Walderhaltung in Afrika, Rote Brücke 6-15, W-2000 Hamburg 74, F.R. of Germany.

Experience with Available Conservation Technologies. E. Baum, P. Wolff, M.A. Zöbisch, editors. Topics in Applied Resource Management in the Tropics Vol.2. DISTL, Witzenhausen, 174p. ISBN 3-9801686-2-X. ISSN 0933-4513. Paperback.

During the last decades, concern has grown about the widespread depletion of natural resources for agricultural production. In spite of numerous efforts in terms of research and development projects, an effective answer to relevant problems has not been found yet. The damage being caused by erosion and inadequate water conservation has led governments to introduce conservation programmes, the results of which, however, are generally uncertain.

The objective of this volume is to discuss and assess conservation technologies in different environmental and socio-economic conditions. The contributions report on programmes and measures implemented in 7 countries of the tropics, and aim at a better understanding of conditions governing the applicability of available technologies in the respective countries.

Price: DM 28 (incl. postage)

Orders to: Deutsches Institut für tropische und subtropische Landwirtschaft GmbH, Postfach 1652, W-3430 Witzenhausen, F.R. Germany.

Agriculture. Methods and socio-economic criteria for the analysis and the prevision of land use and land evaluation. J. Brossier, editor. Commission of the European Communities, Brussels, 1990, xiv + 289p. ISBN 92-826-0985-5. Paperback.

The present document is the outcome of a request by the EC Land Use Committee to define

social and economic criteria in land evaluation. It gathers materials of a seminar on land use and land evolution, held in Brussels, March 1989. The overall objective of the seminar was to move towards a greater understanding of the relationships between land use patterns and the physical, economic, and social factors of the environment, and in particular to throw light upon the changes in land use, and the social effects of these changes, which are taking place as a result of EEC decisions and programmes in the agricultural sector, and other factors currently affecting world agriculture. The three objectives of this seminar were (1) to gather teams working at the meso-economic level to confront problematic issues, mainly methodology and criteria. Several experiences could be presented and discussed; (2) to propose some methodological basic conditions to obtain good socio-economical criteria to foresee land use and land evaluation; and (3) to make a project proposal to support and finance a network of European teams with a minimum of coordination in methods, criteria and design a program of research, oriented on future land use in Europe.

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Landnutzung in den Feuchten Tropen. E. Veelbehr, redaktion. Deutsche Stiftung für internationale Entwicklung, 1990, 187 S. Paperback.

Dieses Buch ist der Bericht der Tagung veranstaltet im Mai 1990 in Feldafing. Der Tagung wurde veranstaltet vor dem Hintergrund, daß trotz der Tatsache, daß die Problematik einer umweltschonenden und damit nachhaltigen Landbewirtschaftung in den feuchten Tropen inzwischen allgemein bekannt ist, dort dennoch brisante ökologische Entwicklungen stattfinden, aus denen dringender politischer Handlungsbedarf resultiert. Im Mittelpunkt der öffentlichen, z.T. sehr kontrovers geführten Diskussionen steht die Zerstörung des tropischen Regenwaldes. Berechtigterweise besteht große Sorge um die Erhaltung dieses fragilen Ökosystems.

Dieser Tagungsbericht möchte dazu anregen, sich mit der Problematik einer standortgerechten und nachhaltigen Land- und Waldbewirtschaftung in den feuchten Tropen zu befassen, um im Bewußtsein der Verantwortung für die Menschen in den feuchten Tropen und für die Erhaltung der Lebensgrundlage dieser Menschen geeignete Maßnahmen und Aktivitäten zu konzipieren und einzuleiten.

Bestellungen an: Deutsche Stiftung für internationale Entwicklung (DSE), Zentralstelle für Ernährung und Landwirtschaft, Wielinger Str. 52, W-8133 Feldafing, B.R. Deutschland.

Remote Sensing of the Sahelian Environment. A review of the current status and future prospects. S.D. Prince, C.O. Justice and S.O. Los. Commission of the European Communities, 1990, 128p. ISBN 92-908-1072-6. Paperback.

The purpose of this review is to provide a position paper on remote sensing of the Sahelian environment, in particular to provide the basis for decision-making on how to allocate resources for research and development for the application of remote sensing in the Sahel.

There are eight sections: (1) Remote sensing applications to Sahelian problems; (2) Priorities for research and development; (3) Satellite data availability and data processing for the Sahel; (4) The potential of future remote sensing systems for Sahelian applications; (5) Current and planned international remote sensing activities in the Sahel; (6) Regional coordination of remote sensing applications in the Sahel; (7) Approaches to technology transfer; and (8) Conclusions. The appendices contain tables of data and a bibliography.

The authors hope that this review will provide a timely and comprehensive statement of current applications of remote sensing in the Sahel and the potential for future contributions to assist both those concerned with the allocation of resources and those new to the field of remote sensing.

Orders to: Office for Official Publications of the European Communities, L-2985 Luxembourg, Luxembourg.

Climate and Food Security. Papers presented at the International Symposium on Climate Variability and Food Security in Developing Countries, February 1989, New Delhi. International Rice Research Institute, Manila, 1989, 602p. ISBN 971-104-210-X. Paperback.

The convenors of this Symposium recognized three critical world problems: that several billion people often lack the most basic human need - food security; that population growth and the need to improve living standards are putting severe pressure on the soil and water resources that sustain all food production; and that unfavourable weather and climate remain the most frequent causes of crop failure - sometimes leading to widespread distress and even famine. They also recognized a new factor: the growing scientific consensus that the build-up of greenhouse gases in the atmosphere is likely to cause a global climate change - an environmental change on a scale unprecedented in human history - with the potential for great impacts, both beneficial and harmful, on food security.

The climatologists, agronomists, experts in irrigation and water-use efficiency, agricultural economists and development planners who attended this symposium discussed how climatological information can be used to help reduce fluctuations in agricultural output, as well as how to apply scientific understanding to the practical problems faced by farmers. The overriding concern was: how can scientists help farmers exploit favourable agroclimatic patterns and adapt to or protect against unfavourable climatic trends?

The papers presented dealt with food supply and demand; climatic variability and crop yields; climatic vulnerability of major food crops such as rice, maize, wheat, oilseeds, and pulses; the impact of climatic variability on factors of production such as soils, stress, diseases and insects, and postharvest losses; the role of modelling; social and economic implications including droughts and famine; and strategies for coping and adapting.

Orders to: see below.

Phosphorus Requirements for Sustainable Agriculture in Asia and Oceania. Proceedings of a Symposium held in Los Baños, Philippines, March 1989. International Rice Research Institute, Manila, 1990, xvi + 478p. ISBN 971-22-0002-7. Paperback

Phosphorus occupies a key place among the major nutrients because of its relative scarcity among the light elements and its essential role in energy transformations in all life forms. Human use of P reserves has produced both desirable and undesirable effects on the environment.

Scientific information is increasingly needed to guide the use of P to obtain maximum benefits without producing undesirable impacts on the environment. To this end, information on the P cycle needs to be summarized and then integrated with knowledge of other nutrient elements and their interactions. The Scientific Committee on Problems of the Environment (SCOPE) launched a major study aimed at better understanding the nature, sources, and fluxes of P in terrestrial and aquatic ecosystems, and at explaining the global environmental effects of P through interactions with cycles of other elements.

The primary focus of this project is to integrate and synthesize information on P in diverse environments, with emphasis on its flows among terrestrial systems, groundwater, rivers, lakes, estuaries, and oceans. Both natural and anthropogenic fluxes in the P cycle will be assessed in a study of the biogeochemical processes. Particular attention will be paid to P interactions with other elements (C, N, S, and metals).

The project comprises three levels of activity: (1) organization of regional workshops in Africa, Asia, Europe, and South America; these workshops will synthesize data on the P cycle in major ecosystems of each area; (2) development of conceptual and simulation models of P cycling in major ecosystems of the world; (3) integration of the information from the four regional workshops and presentation of the results at a final international workshop.

This information is required to develop management strategies and policies for an important and potentially limiting resource. In addition, it will provide understanding of the interrelationship of nutrient elements in a changing world environment. It will develop insights into the mechanisms and processes involved in P cycling, in addition to addressing major agricultural and environmental issues. It is anticipated that the project will stimulate further

investigations by the United Nations Environment Programme, SCOPE, and other scientific organizations.

The present publication contains the papers presented at the second workshop, which concentrated mainly on the P requirements to optimize food and fiber production in the main rice-growing areas of the world using Asia and Oceanic data in a regional case study.

Price: UK£ 36

Orders to: International Rice Research Institute, P.O. Box 933, 1099 Manila, The Philippines.

Management Information for National Agricultural Research Systems in Asia. ISNAR, The Hague, 1991, vii + 119p. Paperback.

These proceedings are the result of two workshops, with participants spending more than half their time using Management Information System and Program Budget System (MIS/PBS) and microcomputers to analyze data from National Agricultural Research Systems (NARS). Based on evaluation and on participant suggestions during the workshops, the name MIS/PBS was changed to INFORM (Information for agricultural Research Managers). Guidelines for INFORM were revised and training manuals were improved. It is hoped that INFORM will prove to be an invaluable tool for improved agricultural research management in the NARS.

Price: free of charge

Orders to: ISNAR, P.O. Box 93375, 2509 AJ The Hague, The Netherlands.

Organic Matter Management and Tillage in Humid and Subhumid Africa. IBSRAM Proceedings No.10. E. Pushparajah and M. Latham, editors. IBSRAM, Bangkok, 1990, viii + 457p. ISBN 974-7087-00-6. Paperback.

In view of the current food shortages in tropical Africa, the question most often asked is how soil productivity in tropical environments can be sustained. An optimum resource-utilization plan should be based on scientific data obtained through well-designed and adequately equipped long-term experiments. To develop practical methods of resource use, additional research information is needed to evaluate appropriate tillage techniques and soil organic matter management practices. The Third Regional Workshop of the AFRICALAND Programme, held at Antananarivo, Madagascar, in January 1990, brought together scientists to share experience and devise methods of research appropriate for these needs. This volume is the proceedings of this workshop.

The specific objectives of the workshop were to review the existing IBSRAM/AFRICALAND networks, to review the FAO approach on tillage and organic matter management, to develop complementary programmes on tillage and organic matter management, and to enhance cooperation between these two programmes. The papers presented at the workshop are arranged through the five sections of this book: (1) FAO, IBSRAM, and TSBF programmes in Africa; (2) Tillage and residue management in Africa; (3) Soil organic matter and its management; (4) Tillage and soil conservation; and (5) Individual factors and case studies.

Price: US\$ 25.00 plus US\$ 3 for surface mail.

Orders to: IBSRAM, P.O. Box 9-109, Bangkok, Bangkok 10900, Thailand.

Theoretical Production Ecology: reflections and prospects. Simulation Monographs 34. R. Rabbinge, J. Goudriaan, H. van Keulen, F.W.T. Penning de Vries and H.H. van Laar (editors). Pudoc, Wageningen, 1990, xv + 301p. ISBN 90-220-1004-X, ISSN 0924-8439. Hardbound.

This book gives an impression of the field of Theoretical Production Ecology, its development and its position as an interdisciplinary subject. Revised versions of the papers presented at the symposium "Theoretical Production Ecology: hindsight and perspectives" organized on the occasion of the retirement of Professor C.T. de Wit from Wageningen Agricultural University, are presented. Professor de Wit's valedictory address is included.

The contributors are either former students of Professor de Wit or academics from overseas who have collaborated with De Wit.

The papers have been arranged according to the four scientific themes covered by the

Department of Theoretical Production Ecology: soil and climate; plant growth and development; pests, diseases and weeds; and agricultural production systems. During his scientific career of more than 40 years, Professor de Wit made substantial innovative contributions in each of these four areas. Together the papers give an overview of the major developments during De Wit's inspiring involvement in production ecology and indicate the directions in which it may proceed in the years to come.

Price: Hfl 137,80

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

Mapping of Soil and Terrain Vulnerability to Specific Chemical Compounds in Europe at a scale of 1:5M. Proceedings of a International Workshop held at Wageningen, March 1991. N.H. Batjes and E.M. Bridges, editors. International Soil Reference and Information Centre, Wageningen, 1991, v + 177p. ISBN 90-6672-043-3. Paperback.

These proceedings contain the papers of an international workshop on the feasibility and desirability of initiating a project on the mapping of soil and terrain vulnerability to specified of chemical compounds in Europe (SOVEUR) at a scale of 1:5 M.

The first Section (Chapters 1-4) reviews the problems of soil contamination and soil vulnerability in a European context. Chapter 1 provides a background on the Chemical Time Bombs project and the place of the SOVEUR workshop within this programme. The following two chapters mainly contain methodological considerations on soil vulnerability mapping with reference to experience from the Netherlands (Chapter 2) and Switzerland (Chapter 3). The fourth Chapter presents the findings of a 1:5 M mapping exercise on the sensitivity of soils and ecosystems to acidic deposition in Europe.

The second Section (Chapters 5-25) includes the national and regional presentations. Country papers for Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, the eastern section of Germany, Hungary, Italy, Poland, Romania, Andalusia/Spain, Sweden, the United Kingdom, the USSR, and Yugoslavia are presented (Chapters 5-23). A discussion on computer graphics for land use mapping in Slovakia is presented in Chapter 24, and Chapter 25 is an extended abstract on geochemical mapping in Sweden.

Section 3 contains the executive summary of the SOVEUR workshop.

It is believed that the present proceedings will be of interest to all scientists and policy makers who are concerned with the problems of soil and environmental pollution either at the national, European or global level.

Price: Hfl 50,- including surface mailing

Orders to: ISRIC, P.O.Box 353, 6700 AJ Wageningen, The Netherlands.

Soil Productivity and Pollution. Proceedings of a Royal Society Discussion Meeting, March 1990. D.J. Greenwood, P.H. Nye and A. Walker, editors. The Royal Society, London, 1990, 117p. ISBN 0-85403-421-8. Hardback

Agronomists have brought about spectacular benefits by improving cultural, fertilizer and pesticide practices, but there is still much uncertainty in forecasting the best practices for any given field, and indeed of predicting the fate of added chemicals in different situations. New approaches to the problem based on the development and application of quantitative theories and computer models were discussed at this Royal Society Discussion meeting.

This book, which is a report of the meeting, includes case histories of some of the internationally important models that have been used for predicting productivity and deterioration of soils, and the biodegradation and persistence of unwanted chemicals and their movement into drainage water. There is also much discussion of relevant biological, physical and chemical processes.

The papers are written by experts from the U.S.A., France, the Netherlands and the U.K. They should prove invaluable to those interested in crop production, pollution and environment.

Price: £ 37.50 in U.K., £ 40.00 elsewhere (including packing and postage)

Orders to: The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, U.K.

Booker Tropical Soil Manual. J.R. Landon, editor. Booker Tate Limited, Thame, 1991, xiv + 474p. Published by Longman Scientific & Technical, Harlow, ISBN 0-582-00557-4, and co-published in the U.S. with John Wiley & Sons, New York, ISBN 0-470-21713-8. Paperback.

This new paperback edition represents a more portable version of the original text of 1984, with revision and updating of key items.

This book is a practical manual on soil and land evaluation techniques, and covers a wide range of topics involved in project planning, costing and implementation, concentrating on those aspects of multi-disciplinary investigations handled by soil scientists and land use planners. As such, it is aimed at two major groups of users. For the specialist soil scientist in the field it forms an authoritative compilation of methods and a practical sourcebook, with the emphasis on quantitative approaches. For members of other disciplines - including geography, agriculture, planning and development studies - it is a valuable, and above all an accessible, guide to soil and related studies. Students of applied pedology and land resource management will find it a useful reference. It is especially designed for purposes such as proposal compilation, project planning, survey implementation and practical interpretation of soil and land suitability information.

Price: £ 14.99

Orders to: Longman Group UK Ltd, Fourth Avenue, Harlow, Essex CM19 5AA, UK.

Agricultural Technology in Sub-Saharan Africa. A workshop on research issues. World Bank Discussion Papers N°126. S. Gnaegy and J.R. Anderson, editors. The World Bank, Washington, 1991, x + 142p. ISBN 0-8213-1866-7, ISSN 0259-210X.

The intended purpose of the workshop, held in November 1989 on the subject of African agricultural technology, was to discuss the issues with the intention of articulating further research directions at the World Bank. To this end, studies were commissioned to provide background for discussion as well as to define specific areas that warrant further research. The studies reported in this document are those which were presented to the workshop participants as a foundation for further discussion.

The first chapter provides a context for discussion of changes that might be made in the Bank's agricultural and technology research program. Chapter 2 offers a synthesis of the Francophone-country experience in Africa. It presents arguments concerning Africa's current state of development with regard to technological innovation in agriculture, and tries to identify the factors that have contributed to its stagnant growth. The next two chapters are meant to open to discussion the considerable African experiences of CIRAD and Winrock Institute. The final chapter is a synthesis of not only the above mentioned studies and overview, but other studies relevant to the discussion. It provides an articulation of several hypotheses that in various ways recur through these studies, and a discussion of the contribution the studies have made to the accumulation of knowledge on the subjects.

Orders to: The International Bank for Reconstruction and Development, The World Bank, 1818 H Street, N.W., Washington D.C. 20433, U.S.A.

Dung Beetle Ecology. I. Hanski and Y. Cambefort, editors. Princeton University Press, Princeton, 1991, xiii + 481p. ISBN 0-691-08739-3. Hardbound.

In many ecosystems dung beetles play a crucial role-both ecologically and economically-in the decomposition of large herbivore dung. Their activities provide scientists with an excellent opportunity to explore biological community dynamics. This collection of essays offers a concise account of the population and community ecology of dung beetles worldwide, with an emphasis on comparisons between temperate and tropical species assemblages. Useful insights arise from relating the differences in species' life histories to their population and community-level consequences. The authors also discuss changes in dung beetle faunas due to human-caused habitat alteration and examine the possible effects of introducing dung beetles to cattle-breeding areas that lack efficient native species. These essays cover the topics of

evolution and taxonomy, and ecology and population biology, including dung beetle assemblages worldwide.

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Publisher: Catena Verlag, W-3302 Cremlingen 4, Germany.

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

(C) Commissions/Commissions/Kommissionen

- 0 I Soil Physics/Physique du Sol/Bodenphysik
- 0 II Soil Chemistry/Chimie du Sol/Bodenchemie
- 0 III Soil Biology/Biologie du Sol/Bodenbiologie
- 0 IV Soil Fertility and Plant Nutrition/Fertilité du Sol et Nutrition des Plantes/Bodenfruchtbarkeit und Pflanzenernährung
- 0 V Soil Genesis, Classification and Cartography/Genèse du Sol, Classification et Cartographie/Bodengenetik, Klassifikation und Kartographie
- 0 VI Soil Technology/Technologie du Sol/Bodentechnologie
- 0 VII Soil Mineralogy/Minéralogie du Sol/Bodenmineralogie

Subcommissions/Sous-commissions/Subkommissionen

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

Preferred language/Langue préférée/Gewünschte Sprache

- 0 English
- 0 Français
- 0 Deutsch
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Subcommissions/Sous-Commissions/Subkommissionen - Chairmen/Présidents/Vorsitzende:

- A. Salt Affected Soils/Sols Salins/Salzböden**
Prof. Dr. Zhao Qi-guo, Inst. of Soil Science, Academia Sinica, P.O.Box 821,
Nanjing, 21008, PR of China
- B. Soil Micromorphology/Micromorphologie du Sol/Bodenmikromorphologie**
Prof. Dr. L.P. Wilding, Dept. of Soil & Crop Science, Texas A&M Univ.,
College Station TX 77843, USA
- C. Soil Conservation and Environment/Conservation du Sol et Environnement / Bodenerhaltung und Umwelt**
Prof. Dr. I. Pla-Sentis, Las Acacias, Apartado 1131, Maracay, Venezuela
- D. Soil Zoology/Zoologie du Sol/Bodenzoologie (with/avec/mit IUBS)**
Dr. M.B. Bouché, CEPE-CNRS, B.P. 5051, F-34033 Montpellier, France.

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

- AS Acid Sulphate Soils/Sols Sulphatés Acides/Saure Sulfatböden**
Dr. S. Sadio, ISRA/ORSTOM, B.P. 1386, Dakar, Senegal
- DM World Soils and Terrain Digital Data Base/Carte Internationale Numérique des Sols et des Terrains/Digitalisierte Internationale Boden- und Land- karte (SOTER)**
Prof. Dr. M.F. Baumgardner, Dept. of Agronomy, Purdue University, West Lafayette IN 47907, USA
- FS Forest-Soil Relationships/Relations Sol-Forêt/Beziehungen Wald-Boden**
Dr. P.K. Khanna, CSIRO, Div. of Forest Research, P.O. Box 4008, Canberra ACT 2600, Australia
- FT Soil Fertility Trials/Essais de Fertilité des Sols/Bodenfruchtbarkeitsversuche**
Dr. S.K. De Datta, IRRI, P.O. Box 933, Manila, Philippines
- HP History, Philosophy and Sociology of Soil Science/Histoire, Philosophie et Sociologie de la Science du Sol/ Geschichte, Philosophie und Soziologie der Bodenkunde**
Prof. Dr. D.H. Yaalon, Dept. of Geology, Hebrew University, Jerusalem 91000, Israel
- LI Land Evaluation Information Systems/Informatique de l'Evaluation des Terres Informations-systeme zur Landbewertung**
Dr. J. Dumanski, Land Resources Research Institute, Agric. Canada, Ottawa, Ontario, Canada K1A 0C6
- MO Interactions of Soil Minerals with Organic Components and Microorganisms/Interactions entre les Minéraux du Sol, les Composés Organiques et les Microbes/Wechselwirkungen zwischen Bodenmineralen, organischen Substanzen und Mikroorganismen**
Prof. Dr. P.M. Huang, Univ. of Saskatchewan, Dept. of Soil Science, Saskatoon, Sask., Canada S7N 0W0
- MV Soil and Moisture Variability in Time and Space/Variabilité du Sol et de l'Humidité dans le Temps et l'Espace/ Boden- und Feuchtigkeitsvariabilität in Raum und Zeit**
Prof. Dr. J. Bouma, Dept. of Soil Science and Geology, Agric. University, P.O. Box 37, 6700 AA Wageningen, The Netherlands
- PM Pedometrics/Pédométrie/Pedometrik**
Prof. Dr. D.E. Myers, Dept. of Mathematics, Univ. of Arizona, Tucson AZ 85721, USA
- PP Paleopedology/Paléopédologie/Palaopedologie**
Prof. Dr. J.A. Catt, Rothamsted Exp. Station, Soil Science Department, Harpenden, Herts, AL5 2JQ, United Kingdom
- PS Paddy Soils Fertility/Fertilité des Sols Rizicoles Irrigués/Fruchtbarkeit von Reisböden**
Prof. Dr. Zhu-Zhaoliang, Inst. of Soil Science, Academia Sinica, P.O.Box 821, Nanjing, 21008, PR of China
- PT Pedotechnique/Pédotechnique/Pedotechnik**
Prof. Dr. R. Horn, Inst. für Pflanzenernährung und Bodenkunde, Olshausenstrasse 40-60, D-2300 Kiel 1, Germany
- RS Remote Sensing for Soil Survey/Pédologie et Télédétection/Fernerkundung für Bodenkartographie**
Dr. Karale, Remote Sensing Service Centre, NBSS & LUP Campus, Amravati Road, Nagpur 440010, India
- RZ Rhizosphere/Rhizosphère/Rhizosphäre**
Prof. Dr. A. Jungk, Inst. f. Agrikulturchemie, Von Sieboldstrasse 6, D-3400 Göttingen, Germany
- SG Soils and Geomedicine/Sols et Géomédecine/Boden und Geomedizin**
Prof. Dr. J. Låg, Dept. of Soil Science - AUN, P.O.Box 28, 1432 Ås-NLH, Norway
- SP Soil and Groundwater Pollution/Pollution du Sol et des Eaux Souterraines/Boden- und Grundwasserverschmutzung**
Prof. Dr. P.J. Wieringa, Univ. of Arizona, Soil & Water Science, Tucson AZ 85721, USA

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

- CSS Committee on Statute and Structure/Comité sur Statuts et Structures/Komitee für Statuten und Struktur**
Prof. Dr. P.B. Tinker, NERC, Polaris House, North Star Avenue, Swindon SN2 1EU, England.
- CIP Committee on International Programmes/Comité sur les Programmes Internationaux/Komitee für Internationale Programme**
Prof. Dr. H. Scharpenseel, Inst. für Bodenkunde, Allende-Platz 2, D-2000 Hamburg 13, Germany
- CST Committee on Standardization/Comité sur la Standardisation/Standardisierungskomitee**
Prof. Dr. H-P. Blume, Inst. für Pflanzenern. u. Bodenkunde, Olshausenstr. 40-60, D-2300 Kiel 1, Germany
- CBF Committee on Budget and Finances/Comité sur Budget et Finances/Budget- und Finanzkomitee**
Prof. Dr. W.R. Gardner, USA, College of Natural Resources, Univ. of California, Berkeley, Calif. 94720, USA.
- CES Committee on Education in Soil Science/Comité pour l'Enseignement de la Pédologie/Komitee für Bodenkundausbildung**
Prof. Dr. A. Ruellan, 2, Bd. Berthelot, F-34000 Montpellier, France

Cooperating Journals/Journaux Coopérants/Kooperierende Zeitschriften

ARID SOIL RESEARCH AND REHABILITATION; BIOLOGY & FERTILITY OF SOILS;
CATENA; GEODERMA; SOIL BIOLOGY & BIOCHEMISTRY; SOIL TECHNOLOGY;

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