

IUSS Bulletin

Bulletin of the International Union of Soil Sciences (IUSS) | December 2012



121



International Union of Soil Sciences (IUSS)

The IUSS Bulletin is the official Newsletter of the International Union of Soil Sciences.
It is freely distributed through the IUSS website.
All contributions are welcome and should be send to the editor.

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ISSN	0374-0447	
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Graphic Design: Daniël Loos, www.bureaucontrapunt.nl



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Letter from the IUSS President Elect Rainer Horn

Dear colleagues, dear soil scientists, ladies and gentlemen,

As the President elect of IUSS (2014) I like to introduce myself in order to also get into contact with as many of you as possible, which is from my personal point of view of great importance in order to promote together IUSS and the knowledge about soils, their properties, sensitivity and limitation of land use. We certainly have not only to discuss these topics amongst us but we have to discuss and advise politicians, the population as well as decision makers or land owners amongst others. We have to define and to decide also for and to develop management strategies for a more sustainable land- and soil use.

A few words about my academic background

Based on the very broad and additionally very detailed training programs in soil science during my education in horticulture, followed by the PHD program and the Habilitation studies in Hannover and Berlin, I became extremely interested in the soil structure formation and ecological functionings under various land use systems and climatic conditions. Thus based on the detailed analyses during my PHD and Habilitation research I focused initially my own research in soil science with special interests in soil physics and agricultural soil mechanics on the processes of aggregate formation and consequences on internal soil and aggregate strength, stress strain effects in structured soils, as well as the consequences for hydraulic, physicochemical and thermal processes in structured soils as well as single aggregates. The effects of stress and/or strain induced changes in soil properties and functions including the alterations in strength and rigidity of pore systems also in dependence of soil tillage or forest harvesting effects are also included in the long lasting research aspects. The application of soil hydraulic flux processes for the long term




impermeable design of waste deposit capping systems was further developed and also successfully tested under in situ conditions, including the saturated and unsaturated 3 dim. flow and transport processes in layered systems. Long term measurements of

changes in matric potential over depth under various fertilization treatments in acid rain, in waste deposit capping, and in subsoil nutrient uptake experiment projects are the basis for further developments of a more complete and better understanding of soil functioning and its resilience. A further research interest can be defined as linkage of mechanical or hydraulic properties from the micro- to the meso- and macroscale by combining zeta potential, rheological, and xray CT analyses with corresponding strength measurements on the aggregate, undisturbed sample and soil monolith scale.

What are my preliminary goals during my presidency

The international Union of Soil Sciences as a worldwide operating organisation has more than 60000 members in more than 130 countries. Its main goal is not only to support the scientific world by providing, distributing scientific materials and by educating soil scientists during meetings, conferences and workshops. The recognition of the IUSS by national governments, national and international scientific organizations and international communities and assemblies is still to be improved because the knowledge about the multifunctionality of soils, their vulnerability and even the threat that soils will be irreversibly degraded due to non site specific land use and



inappropriate soil management has still not reached the appropriate worldwide recognition and acceptance. The expected alterations of soil properties and functions due to climate change within the next decades require an intense redefinition of soil functions and their boundary conditions also with respect to modelling attempts which must be discussed and analysed in great detail within the next decade within the society but also in cooperation with other organizations. The outstanding scientific knowledge and experiences of soil scientists all over the world, their creativity to develop new approaches to react on changing soil properties and functions under various external impacts are the basis to persuade legislation and international associations, governmental institutions.

The education of the next generations even in the Kindergarten and schools by showing the beauties of soils but also their vulnerability must become a main focus of IUSS in order to improve and to protect the limited soil resource worldwide.

The national and international contacts between scientists within the soil science community but also with neighbouring societies and associations must be also enhanced and the accessibility of presentations and documents improved. The recognition of IUSS by other societies, the more intense link between the national soil science societies would help to improve the scientific exchange and the spontaneous reaction to questions posed to the IUSS and scientific organizations. The definition of main scientific topics besides subjects debated within divisions, commissions and working groups can help to make IUSS more visible and recognized within the various organisations. The presence e.g. in the International Council of Scientific Unions (ICSU) as the peak association for scientific research worldwide can help to discuss our scientific standpoints and solutions for given questions.

Dear colleagues, I hope that we can work together and promote soil science knowledge and its acceptance worldwide. I look forward to hearing from you and in case you like to get further information do not hesitate to contact me and/or to also visit my homepage under:
www.soils.uni-kiel.de

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Draft Minutes of the IUSS Council Meeting

4t June and 6th June 2012 ICC Jeju, Korea

Present

Nicola Senesi, Winfried Blum, Reinhold Jahn, Daniela Sauer, Richard MacEwan, Chuck Rice, Don Sparks, Mary Beth Kirkham, Paul Bertsch, Kathryn Allton, Helaina Black, Yuan Shen, Fangjie Zhao, Martin Gerzabek, SungChul Kim, John Kim, Alfred Hartemink, Alex McBratney, Jim Gauld, Stephen Nortcliff, Roger Swift, Takashi Kosaki, Kazuyuki Inubushi, Toru Matoh, Ryusuke Hatano, Teruo Higashi, Dominique Arrouays, Karl Stahl, Josef Kozak, Victor Chude, Martti Esala, Renfang Shen, Xin Jiang, Mengfang Chen, Ian Pepper, Ho Ando, Flavio Camargo, Reinaldo Cantarutti
Apologies: Rainer Horn.

Welcome by Jae Yang and John Kim. Fewer than half the member countries are represented, so we do not have a quorum. Each country has been given one voting card.

Minutes approved for meetings in Brisbane and San Antonio.

Report from the President Jae Yang and Vice President John Kim

The IUSS President Spent last two years learning about structure of IUSS. He and the Vice President travelled to many meetings to represent the IUSS and had to cover travel expenses by getting funds from Korean sponsors.

There are three key components: venue, accommodations, and finance. A hotel with 280 rooms is being built next to the Convention Center in Jeju. Financial sources of funds come from: Registration, Exhibitors, Central government, Jeju provincial government, Private companies, and Fund raising. For funds from central government, we need to provide a business model with nationwide programs. There are platinum, gold, silver, and bronze donors. So far, there has been US\$20,000 given, and US\$10,000 has come from Jae Yang.

There are several pillars: Stimulating programs; symposia with IUSS divisions and Working Groups and symposia unique to ESAFS and third world countries' soils; plenary programs with eminent scientists and scientists from developing countries as speakers and chairs; cooperation with neighboring countries—meeting with China and Japan.

Symposia development: The symposia form has been sent to all countries. We have received 55 proposals: Inter-divisional symposia: 3; Division 1: 11 symposia; Division 2: 24 symposia; Division 3: 8 symposia; Division 4: 3 symposia; Working Groups: 6 proposals; We have 46 from the divisions. We need more proposals from Division 4. The first deadline was May 1, 2012. The deadline was extended to a second deadline, May 15, 2012. The third deadline is July 31, 2012. Afterwards, there will be four divisional chairs and two vice-chairs from Korea. The suggestion was made that organizers develop symposia, especially invited ones, and that they include younger speakers.

There will be Pre- and mid-congress tours: Seoul, Jeju Island, Japan, China, and Taiwan. At the gala there will be a talent show of culture showing tradition and life of each country. There will be technical tours showing soils of Jeju—the dark brown non-volcanic soils in the north and the black volcanic soils in the east and the very brown volcanic soils (?) in the south. There will be travel awards for students and young faculty. Scholars from developing countries will be invited. There is the potential for strong attendance at the programs.

The situation between North and South Korea is the worst in 10 years. There is going to be an election for a new president. It is hoped the new president will work toward better relations between North and South Korea.

With at least 2000 participants, there may be a registration fee of \$500. The fee depends on corporate sponsors and support from regional and central government.

Report from the Secretary General

He moved from the Netherlands to the USA in September 2011. ISSS (International Soil Science Society) information from 1909 to 1952 has been scanned and made available on the IUSS website. All the bulletins are now on the Web, 120 of them. Proceedings also are available on the Web. Most of the archives are on the Web. Bulletin

receives few contributions and the last Bulletin had fewer than 40 pages whereas it used to be 80 pages. Alerts and websites are used to advertise conferences, but reports of meetings are rarely received.

Electronic voting was explained and discussed. The system has been tested and worked well. It will be used for both the election of the President (July-August) and the new division commission officers that has the following timeline: Jan.-May, 2013 obtaining candidates; May-June 2013, set up and test election; July-Sept. 2013, election open; first week of October, 2013, provide Excel spreadsheet of voting results. System is one vote per one person and this will be the first global election ever.

The need for a professional and permanent IUSS secretariat was discussed. Several national societies have such secretariat and this would be supportive to the new structure.

Report of the Deputy Secretary General

Started as Deputy Secretary General in January 2011, 1.5 years ago and took over from Alfred Hartemink. A strategic plan was initiated and developed (see elsewhere in this Bulletin) following discussions in San Antonio. Comments and further additions were to be received. A highly successful Digital soil mapping Working Group was organized in Sydney in April 2012. A meeting was attended at the U.N. in New York City on April 14, 2012 to assure the word “soil” in Rio + 20 document.

A discussion was followed on whether we need a standing commission or external affairs. Meetings are attended ad hoc and the question was raised whether we need some special commissions to formalize external activities. With change in presidency, a two-year appointment—major reason to change that person to be spokesperson for IUSS—new president will spend time on leadership and have maximum involvement.

Global Soil Partnership: 2 meetings were held in Rome, FAO Headquarters, Sept., 2011 and March 2012 in Nanjing. The mission is to support joint efforts toward sustainable management of soil resources for food security and climate change adaptation and mitigation. Five names have been suggested for the executive board. No response yet. It was commonly agreed that the IUSS should support all global efforts.

The IUSS website is developed and maintained by Budiman Minasny from The University of Sydney. Enhanced social media communication through LinkedIn, Twitter, Facebook page has been setup.

These social media may eventually replace the Bulletin.

The DSG proposes that the IUSS start its own online and open access journal. He is prepared to edit it, write papers and pay for it. It could yield revenue for the IUSS. More and more soil science is being published and is being diverted to other journals. Another soil science journal might compromise the journals from national societies.

The IUSS president asks the DSG to revise the strategic plan based on the comments.

Division 1 Karl Stahr: Soils in Space and Time

He introduces his co-chairs: S-Y Hong (Korea) and K-R Kim (Korea). There are five Working Groups in Division 1. The division is organizing a conference next year, and 100 people are expected to attend. The Guy Smith medal has been presented to Rudi Dudal and in June the medal will be given to Hari Eswaran at a meeting of soil classification in Lincoln, Nebraska, USA. The Division Chair attended the Philippine society meeting, but they are not members of IUSS. The benefits of the IUSS have been emphasized including differences in membership fees. There are two issues—ability to pay and value proposition. The value proposition needs to be developed. The value of the union has to be clear. The whole is bigger than the sum of its parts. It needs to be articulated. Also regional representatives (Asia, L America, Europe, Africa) need to be further involved. We can do things that national societies cannot—represent bigger groups.

Division 2 Martin Gerzabek: Soil Properties and Processes

A book was edited “The Challenge of Sustaining Soils: Natural and Social Ramifications of Biomass Production in a Changing World” and published by the Austrian Academy of Sciences. Reports from all commissions have been received – this as opposed to some other divisions.

Commission 2.1 (Soil Physics) is headed by Dani Or (Switzerland) and Bin Zhang (China). Or and Zhang have established a new technical committee on Soil Systems and Critical Zone Processes at the AGU (American Geophysical Union). They are organizing an international conference on Soil Systems and Critical Zone Processes—Integrating Life Support Functions across Disciplines, to be held 14-18 April 2013 in Monte Verità, Switzerland. Dani Or says there is no soil group in the AGU. He is trying

to feed in soil. Commission 2.2 (Soil Chemistry) is headed by Jon Chorover and Teodoro Miano. They are contributing to EUROSIL 2012. Commission 2.3 (Soil Biology) is headed by Kazuyuki Inubushi, who is here. They are cooperating with IUSS journals. Commission 2.4 (Soil Mineralogy) is headed by Dean Hesterberg. They have developed a special issue of the journal *Applied Clay Science*. It will have papers from the 2010 World Congress of Soil Science in Brisbane. The Guest Editors are Jock Churchman (past Chair of Commission 2.4), Balwant Singh (vice-Chair), and Dean Hesterberg (Chair). Commission 2.5 (Soil Interfacial Reactions) is headed by S. Staunton. They are organizing the 6th ISMOM (Interactions of Soil Minerals with Organic Components and Microorganisms). They also are developing two special issues of SBB (*Soil Biology and Biochemistry*) and EJSS (*European Journal of Soil Science*). The commission is also going to participate in EUROSIL 2012.

Division 4 Chuck Rice: The Role of Soils in Sustaining Society and the Environment

The Division is going to do a global world soil poster. There is a large opportunity to tie soils to human health, and for example, antibiotics in the soil need to be known. They will talk about role of soils in the urban environment—gardening, storm water, composting. Chuck has started this group in the Soil Science Society of America (SSSA).

Report of the Treasurer – Jim Gauld

There are two people in charge of finances—Jim Gauld, the Treasurer, and Stephen Nortcliff, the Chair of the Budget and Finance Committee. Jim Gauld provides the IUSS Presidents' Committee with audited annual accounts. All money is held in the Bank of Scotland (Glasgow branch) as U.S. dollars. A small amount of capital is in British pounds. Income comes from several sources. Subscriptions: \$7.75, \$4.65, and \$1.55 are the 2012 rates for the 3 groups of countries. \$6.25, \$3.75, \$1.25 were the rates before 2012. Not all countries pay dues.

The interest rates have been falling. In July, 2006, they were 4.63%; in February, 2008, 2.80%; in 2010 and 2011, 0.8%. Now they are 0.7%. There are funds from advertisements in the Alert. It costs 750 Euros for an advertisement with a maximum of 100 words. It costs 2000 Euros for advertisements of vacancies (job openings). Books and pictures of their covers are advertised for free.

At the meeting in San Antonio, Texas, in October,

2011, the financial advisor of the Soil Science Society of America, Wes Meixelsperger, talked to the IUSS. Jim Gauld was charged to look into the matter of incorporating. There are not 50% of the members here, which are needed to pass a motion of incorporation. Jim Gauld said that the investment needs to be held for 10-15 years to balance good years with bad years. We can pull capital out any time. The 6-7% return on investments is based on a 10-year average. The working capital will be kept in the UK. The meeting in San Antonio noted that SSSA investments were returning in excess of 7% annually. In planning an investment policy for IUSS funds it had been thought that it might be possible to 'piggy back' on to SSSA. This was not possible for legal reasons. The alternative was for IUSS to become incorporated in the USA and then 'piggy back' on SSSA investment portfolio. The option most likely to be practical was for IUSS to seek incorporation and invest independently. The treasurer has taken legal and financial advice on this matter. The treasurer first reviewed the actual investment and savings and then made a series of proposals. Current - Investment in the Bank Account of say \$200k to \$225k. This is the current practice but the interest rates are very low and likely to remain so. The bank pays interest gross which is \$1k to \$1.25k per annum. Money is safe, no long term commitment. Proposed - Investment with Morgan Stanley Smith Barney Investment of \$225k. Rates will fluctuate but there is an anticipated income average 6.5% over a 10-15 year cycle. We need to pay 1% of invested fund per annum as a commission, and there is no tax liability in the USA when the IUSS is incorporated which costs about \$1035. We will then apply to IRS to gain tax free status (Form 1023) – a one off \$1500. There is a requirement for a tax identification number of \$100, and here is an annual fee for a tax exempt status Form (900) at a cost of \$1000. The overall result is an increased income of about \$10k per year to IUSS.

It was asked whether the costs associated with incorporation and reporting are not underestimated. It was noted these were the figures provided by advisers who had a considerable amount of information about IUSS, so it seemed unlikely there would be major errors. The discussion of incorporation had general agreement amongst the EC, in addition it was noted that IUSS should acquire some form of insurance policy for the Officers in relation to their liabilities as officers. It was suggested that ratio between equities and bonds

should be about 30:70 which is a conservative approach. There would be an annual adjustment to maintain this balance.

The treasurer stated that the key question: 'Do we wish to change from investment without risk, rather than invest with risk?' The EC considered that it should change its current investment policy to produce greater returns, in the long run, as this would have no impact on the working capital.

The EC has proposed to become incorporated in the USA reduce the liability and exposure to its officers and be in a position to invest in USA. IUSS invest \$225,000 in Equities and Bonds through Morgan Stanley Smith Barney. The initial investment will be 30% Equities and 70% Bonds and the Committee on Budget and Finance will review this annually.

The following will be proposed to the council for electronic voting: The IUSS Executive Committee considered that it should change its current investment policy to produce greater returns provided this would have no impact on the cash flow and working capital. The current investments of the IUSS are at very low interest rates (<1%). It is proposed to invest with Morgan Stanley Smith Barney Investment for \$225k. Rates will fluctuate but there is an anticipated income of about 6.5% over a 10-15 year cycle which will considerably increase the IUSS income. In order to make this investment, it is necessary that the IUSS becomes incorporated in the USA which also reduces the liability and exposure to its officers. It was proposed that: IUSS invest \$225,000 in Equities and Bonds through Morgan Stanley Smith Barney. To become incorporated in the USA reduce the liability and exposure to its officers and be in a position to invest in USA. The initial investment will be 30% Equities and 70% Bonds and the Committee on Budget and Finance will review this annually. Please let us know before 30th August 2012 whether you agree or do not agree with this new investment structure.

Report of the Budget and Finance Committee Stephen Nortcliff

There are three groups defined by the GDP in the statutes. The USA pays \$55,000, which comes from the NSF (National Science Foundation). The arrangement was made by Don Sparks. This amount is now reduced. Japan last paid 6000 pounds and this is now 5200 pounds. The IUSS relies on countries to report membership, and countries are not always honest in reporting. Sweden is not a member. Group 2 countries include Nigeria, which is a new member as of 2011. China used to be a

Group 3 country, but is now a Group 2 country. Bangladesh, Georgia, India, Sri Lanka, and Sudan are new members in 2012. Bank charges for Sri Lanka and Sudan were more than the fees they paid. Stephen pays Cuba's membership fee and could see an East African Soil Science Society membership—not individual countries—there is an East African Soil Science Society.

The NSF has reduced from \$55,000 to \$45,000 the amount it pays in dues. That does not mean that the USA membership is decreasing. Each year \$4,500 is paid to ICSU. A large part of membership is in Group 2 and 3 countries. Last year, the funds of the Union were affected by the Australian conference. It ran a surplus. There are a few speculative items. Don Sparks introduced \$20,000 in outreach. This hasn't been spent. Most of the budget is known. The budget is extremely conservative. Once we incorporate, we could receive other income, for example from charity.

Report of the Committee on Awards and Prizes Mary Beth Kirkham

The International Union of Soil Science has the Dokuchaev Award and the Liebig Award. Currently, the awards are given based on the following criteria: Dokuchaev award: for basic research in soil sciences

Liebig award: for applied research in soil sciences. There is confusion over the criteria for the two awards—i.e., the difference between basic and applied research. The Secretary General and the Chair of the Committee on Awards and Prizes will discuss the criteria, based on suggestions made by council on how to re-word the awards, and suggest wording at the council meeting in Jeju, 2014, for future awards. The awards given in 2014 will be based on the current wording and criteria.

Report of the Committee on Statutes and Byelaws Don Sparks

The current Statutes and Byelaws were handed out at the council meeting. Don Sparks detailed changes that will be made:

- 5.1.d Didn't meet May 1 deadline
- 5.2.a Voting done 6 months before Congress
- 5.3.a Ballots distributed 1 year before Congress
- 6.2 Standing committees--Roger Swift chairs the Committee on Presidential Elections. President Elect becomes President at end of Jeju Congress and serves 2.5 years. Then it reverts to a normal 2-year cycle. Committee for Presidential Elections is abbreviated CEP. We don't have a quorum of

council to vote. President takes office January 1 following Congress.

Item 6

6.2 Standing committees—Under Budget and Finance Committee—initially division between equities and bonds is 30-70%. \$225,000 put in an investment account to generate more income.

Section K—change to make consistent with the byelaws.

Section L.1—responsibility of the President's Committee—decisions concerning investment of funds done by the President's Committee.

Changes to Statutes and Byelaws will be presented to the council by the SG for electronic voting – deadline 30th August 2012.

Report of the Committee on Presidential Elections Roger Swift

The new structure has been discussed during previous meetings. There will be a president and two vice presidents. The president will be relieved from running a Congress and will fit into the strategic plan be present at ICSU, global soil partnership and other global meetings. The president is the senior officer in the Union working with the President's Committee. He/she be expected to implement strategic direction. The new president is not a super Secretary General. He should do other things—represent our union—be involved in international business. The president should not just help the Secretary General. The president represents the Union in various organizations and the duties have been well defined. All requirements for the president were placed on the web in October 2011 and were distributed to 12,000 people. Requirements were also placed in the Alert and on the web site. There were significant delays in getting candidates, dealing with the conditions, and getting documentation together and it couldn't be completed before this council meeting. The vote could have taken place today if we had had a quorum. The quorum of council is 50% plus one. Number of council members is now 66. We are close to having a half here now. The vote will be done electronic.

The recommendation is to go to an electronic vote so all council members are represented. All should have been advised that Professor Paul Bertsch of the University of Kentucky and Professor Rainer Horn of the University of Kiel are the candidates. Both made a video and cv and they will be accessible on the IUSS website. Two motions. The two motions were passed by the Executive Committee. We

recommend 1) the short list of candidates and 2) that voting be done electronically.

A discussion followed: Council must approve the electronic vote before we have one. The Executive Committee can vote and council members can vote. The electronic vote is written in the statutes, so we don't need to vote again. Swift moves motions and is seconded. Passed unanimously (29 for; 0 against).

Paul Bertsch makes his presentation. Roger Swift will make the statement on behalf of Rainer Horn.

Role of commission chairs

The role of commission chairs was discussed. Are they expected to attend meetings? They have no vote on the council and don't received the agenda or documents. It is not attractive for commission chairs to attend the council. Commission chairs' duties are well described and commission chairs may need to be part of Council and the chairs are the front lines of IUSS. They organize most activities of IUSS.

Honorary members

Honorary members need to be living at the time of nomination. The number nominated at one time cannot exceed 15. The members are printed on the last page of the Bulletin. We have had 87 since 1924. So in about 90 years we have had only 87 members. An Honorary member must have made substantial contributions to the discipline and to the Union. In 2010 in Brisbane, Feller, Kumazawa, Kyuma, Ryan, Stewart, Targulian, Varallyay, and Yadav became Honorary members. Yadav passed away before the Congress. Nine people became Honorary members in Philadelphia (2006); 11 in Bangkok (2002); 9 in Montpellier (1998); 6 in Kyoto (1990); 4 in Hamburg (1986); 6 in Moscow (1974); and 1 in Bucharest, Romania (1964). The initial congress was in 1924 when the six people became Honorary members. The list of Honorary members is a Hall of Fame of our soil scientists. Each nominee had two pages of information submitted plus supporting letters. Only 10 have been nominated. Honorary membership is determined by the merit of the candidates.

Candidates have to have two things: outstanding contributions to soil science and a high level of service to the Union. Candidates have been proposed by national societies. We can make comments without being dismissive or condescending. Nomination organization has something to do with merits—for example, a Russian scientist can



The IUSS Council in a Melanudands at Jeju Island.

be famous for publications. But how is he or she judged on scientific merits? There can be non-native English speakers who do not publish in English. They can have published tremendously good works in Poland or Russia. For them, we have to be fair. Candidates should be proposed by the national organizations. The other requirement—a person needs to have contributions to IUSS. For 20 years our language has been English. Candidates should know English. Great distinction in soil science also means chairing or co-chairing in IUSS. A voting form was distributed. There were 29 voting people and 6 new Honorary members were elected: J. Kim, J. Kimble, A. Mermut, N. Senesi, D. Sparks, R. White.

Soil judging contest

In the USA, there is a soil judging competition in two national leagues. It is a very successful competition. Judging soils in the landscape interests young people. The spirit of competition draws them. Stephen Cattle (Chair committee 4.4.) has attended the soil judging contest in Oregon will do organize one in Australia this year. This can increase our skills and knowledge in international activities. A global competition is proposed. Stephen Cattle will get the competition going for 2014.


The European Commission is also sponsoring summer schools to allow students to dig in soils and to provide a bridge between science and the young.

World Congress of Soil Science Rio 2018 Flavio Camargo

Flavio Camargo is the past president of the Brazilian Soil Science Society. The web address of the Congress is www.21wcsc.org and the World Congress is August 12-17 2018, in Rio de Janeiro - the cultural capital of Brazil. It has 23,000 hotel rooms and 500 travel agents. A new hotel with 350 rooms is being built within 300 meters of the convention center. The first information about the Congress is already on the web page.

International Cooperation

The IUSS has ties and links to ICSU, global soil partnership, UN, etc. The Global Soil Forum was initiated by a former UNEP director. There have been other initiatives in the past. There was the International Year of Earth in 2007. In the past, we have responded ad hoc. Rio+20 is a sustainability meeting. Can anyone represent the IUSS there? In many cases, we have a reactive approach. We should be proactive. We have had a long time relation with ICSU. A keynote speaker at Brisbane talked of ICSU. IUSS is now a full member. ICSU is the World Council of Science and includes most science academies (about 120) and scientific unions (about 30). Science academies must be made aware of IUSS. Jae attended a general assembly in Rome in 2011. Stephen attended the Geo-Unions meeting in Istanbul. There was a meeting in Paris and a meeting in New Zealand. Geo-Unions began as an informal group, but now it is formalized in ICSU. The grouping was informal in 2002. They felt there was too much emphasis on biology, and we need to emphasize “geo”. They have just written a



white paper to maximize earth scientific activities. IUSS, IUGG, URSI, AIU [astronomers], IGU, INQUA, ISRRS. ICSU initiatives.

1. Future Earth: It is a new global platform. It will be launched in Rio (Rio meets June, 2012) to find early warning signs of change—a 10-year initiative for research on global environmental change for sustainability. It is an interdisciplinary approach to investigate early warning signs of risk.
2. International Year of Deltas: 2013-2014 www.iyds-2013.org
3. ENHANS project: www.enhans.org Extreme natural hazards and societal implications (ENHANS). It aims to strength international cooperation. We need to collaborate with social scientists.

Bids for the 2022 World Congress of Soil Science

Presentations for the congress in 2022 were made from China and the Scotland, and Italy.

A discussion followed. In the byelaws we have no information on the countries to host a Congress and what is needed for a bid. This will be further discussed at the Executive Committee meeting.



IUSS Strategic Plan

Soil is undoubtedly back on the global research and policy agenda. IUSS wishes to make sure it is positioned for its role in this upcoming increased phase of activity. Therefore IUSS President, Professor Jae Yang asked me to lead a Strategic Planning process that attempts to enhance and optimize our activities over the next decade or so. The plan which you find below has been considered by the Executive Committee and by Council (and I thank those who have offered their comments). We are now seeking feedback on the plan from the wider membership. So please peruse the plan and send your ideas, suggestions and emendations to me by email at Alex. mcBratney@sydney.edu.au by December 15, 2012. We are hoping to endorse the plan in 2013 for implementation in 2014.

Alex. McBratney
Deputy Secretary General

Soil science 2020 & beyond...

Realising the value of soil & valuing those who study it

The International Union of Soil Sciences (IUSS) is the global union of soil scientists. It has participation from some 130 countries involving some 50 000 soil scientists.

IUSS Mission

- To promote the scientific and life-sustaining importance of soil to humankind.
- To support and enhance the discipline of soil science globally

IUSS Vision

We aim to be recognized as the leading world organization for the facilitation, collection and dissemination of soil science

We strive to support and value the global community of scientists who generate soil knowledge and increase understanding of soil

We provide opportunities for all soil scientists to meet, present their work and exchange views in global and regional fora.

Overarching strategies

1 Branding soil

The value of soil to humanity and the functioning of Earth systems must be known to everyone. Soil is a well-recognised word and concept in all cultures. However the breadth of its functions and importance to society and its sustainability is less well perceived by humanity as a whole. There is a need to brand soil and make everyone on the planet aware of its virtues. The IUSS will seek to engage

with global governmental and non-governmental agencies, (e.g., UN bodies, WHO, WWF), to achieve this. By 2020 the IUSS will have made four strategic alliances with major global agencies specifically to brand and promulgate the virtues and vitality of soil.

2 Branding soil science

For over 150 years there has been a well defined and coordinated scientific study of soil. Soil is once again an important topic but the ongoing achievements of soil science are not as widely known as warranted. The IUSS will attempt to better brand soil science by:

- Producing a publication on soil science's top ten scientific achievements and promoting this widely through a media campaign.
- Appointing a global panel of soil scientists to highlight all urgent scientific matters relating to soil.
- Encouraging all IUSS members to comment on soil studies done by members of other non-soil scientific communities.
- Enhancing interactions and collaborations with other international unions and learned societies
- Developing universal soil science curricula that can be used and adopted at universities and training centres across the world
- Engaging the public in dialogues about the critical importance of soil science in sustaining life and serving as an engine for economic development and global sustainability.

3 Increasing participation (membership)

The International Union of Soil Sciences and its predecessor the International Society of Soil Science (ISSS) have a long history. The union is the only global organization of soil scientists and is a full and active member of the ICSU family. The IUSS is also well known in the soil science community through its World Congresses of Soil Science and many smaller conferences, meetings and seminars. The participation of individual members in the activities of IUSS is limited. An educated estimate of average activity is around 0.1 activities per member per annum. Currently, about 150 people are active in the IUSS whereas indirectly through meetings and conferences thousands of soil and other scientists participate in IUSS activities. In order to brand soil science and the IUSS, we should like to increase the overall participation, and particularly in less developed nations by providing service and support. Strategies hereto include:

- Providing an increased service to our members with enhanced interaction and possibilities for information exchange

- Besides the quadrennial World Congresses of Soil Science (WCSS) we should recognize and organize IUSS Thematic Conferences, Divisional Conferences and the larger regional conferences (e.g., EuroSoil, East and South Asia Federation of Soil Science etc.).
- Increasing the number of meetings in developing countries to 20 per year by 2020.
- Establishing a specific IUSS endowment for the participation of developing countries in World Congresses and the seeking of donations from Foundations.
- Achieving of 500 000 member hits per annum on our website by 2020. Making the IUSS website the prime focal point for information exchange with our members and the general public in addition to other social media (Facebook, Twitter etc).

4 Increasing our resource base

Our current resource base is approximately \$4 per national member. This is very small in comparison with some of our national societies, yet the expectation is that we provide resources and activities approximately similar to those of our national societies. We need to increase the average income per notional member to an inflation-adjusted \$10 by 2020 by a number of strategies:

- Increasing the number of participating countries and members per country
- Altering the fees according to a schedule, e.g., such as Indicative Payment per Member 1 or Indicative Payment per Member 2 in Appendix 1). Appendix 1 also suggests indicative membership for a large number of countries with which we are not interacting.
- Establishing an online soil science journal by co-investment with some of our member societies and one of the major publishers (our more successful national societies are supported by a successful journal)
- Achieving philanthropic support for our activities (e.g., ~\$0.5M) by 2020.

5 Improving the member experience

The service we give to our membership is dictated by our resource base and in particular by the fact that we have no permanent secretariat. The principal strategy should be the establishment of a permanent

secretariat by 2016 (our more successful national societies have a permanent administrative staff funded by member subscriptions). This secretariat would maintain the website and all communications to members, national societies, other scientific unions and the general public. Inter alia, this would facilitate easier management of IUSS elections by the national societies, and access to a free online soil science journal by all members. We need to ensure pro-actively that members of affiliated national societies are also members of IUSS. It has been recognized that Commission and Working Group Chairs are not members of Council, however they have a strong governance role. A committee comprising outgoing and incoming Commission and Working Group Chairs, Divisional Chairs and chaired by the President-Elect will meet at the beginning of each Congress to make recommendations to Council.

6 Improving our interaction with national societies

Our key stakeholders are the national societies. We strive to improve our interaction with them. We aim to

- Visit and participate in national society meetings as required once in a four-year period as requested.
- Organise 6-monthly teleconferences between national society presidents and the Executive Committee.

7 Improving external stakeholder engagement

Soil science and soil scientists serve humanity as a whole. Our principal external stakeholders are 1) the scientific community, 2) government and non-government organisations interested in soil security and policy, 3) land managers, and 4) the general public at large. We wish to target each of these groups as follows

1. Hold joint meetings with at least three related disciplines in the period up to 2020
2. Develop by 2016 a formal working group on soil policy with representatives from external governmental and non-governmental organisations
3. Produce by 2015 a booklet and web page on recent key soil science findings for land management

4. Produce by 2015 an annual statement of three key new soil science findings for dissemination to the public

8 Strengthening linkages with international scientific organisations

IUSS is a member of the International Council of Scientific Unions (ICSU). ICSU is one of the premier bodies for scientific research in the world, incorporating most scientific disciplines. In 1993 at the ICSU General Assembly held in Santiago de Chile IISS was accepted as a Full Member of ICSU and has taken a full and very active role, helping develop a stronger environmental awareness amongst the global scientific community. IUSS has been an active member of a small group of GeoUnions within ICSU. This group comprising Geologists, Geophysicists, Meteorologists, Astronomers, Geographers and scientists involved in remote sensing has met prior to formal and ICSU meetings as well as outside the normal cycle of meetings to ensure that the views of Earth Scientists are heard effectively within ICSU. In addition to collaborating to ensuring ICSU gives appropriate attention to matters within our scientific remit, the group have collaborated in developing policies and programs to ensure that education in the Earth Sciences is part of national educational programs across the globe. We wish to strengthen our linkages with ICSU and related organisations.

9 Committee of soil science academicians

The IUSS will set up by 2016 a Committee of Soil Science Academicians (comprising *ex officio* those soil scientists who have been recognized by membership of their respective national academies of science) to further the cause of soil science internationally through joint efforts by national academies of science.

10 Promoting global soil instruments

Many of our cognate disciplines deal with objects which are covered by international and global treaties and conventions, e.g., water, biodiversity,

food, the sea etc. Soil is not covered by any such conventions. The IUSS seeks to support international and global soil policy instruments that promote soil security. We would aim to see at least one global soil instrument in place by 2020. To help achieve this IUSS supports the activity of soil scientists in global activities such as Global Soil Partnership, Global Soil Forum, GlobalSoilMap and the Global Soil Biodiversity Initiative. In the longer term, such instruments would be served well if they were backed by a Global Soil Science Institute.

11 Education

The vibrance and future of soil science largely depends on our ability to deliver a new generation of well trained soil scientists. The discipline is rapidly evolving and there is an universal need to develop new soil science curricula that entails the basics of soil science as all as the new demands that come from society and the other scientific disciplines. Education of students about soil is a key priority and this should be done at primary and

secondary schools but also in higher education.

1. We need to develop a current primary and secondary school soil curriculum and engage students
2. Develop and publish good quality photographs and landscape photos for teachers to download.
3. Create teaching resources for primary and secondary schools.
4. Create an educational website for schools
5. Explore links with national societies so that soil scientists can visit schools and give talks on soils and the landscape, creating projects linking soils with mathematics, physics, biology, chemistry, and geography.

In higher education (universities, polytechnics) we will develop global soil science curricula that can be adopted and adjusted to local and national needs and preferences. We shall also bring some of the national activities on education (e.g. soil judging) to the global level and leverage other national and regional soil science educational activities.

Global noble challenges

There are a great many research challenges in soil science. Here we focus on questions that affect society as a whole; and because we believe strongly that solutions to these issues are of great benefit to humanity and the environment we deem them *Noble Challenges*.

1 Soil security

Tactical (5 years)

Soil security is an overarching concept: maintenance or improvement of the soil system globally to meet global challenges. Development of the concept

Knowledge gap

Relationship to other multi-attribute soil evaluation concepts, e.g., soil function, soil quality etc.

Strategic (10 years)

Acceptance and dissemination of the concept with policy implications.

Knowledge gap

Recognition, measurement and interpretation of key soil attributes locally, regionally, and globally

Long-term (20 years)

Sustainable soil systems globally

Knowledge gap

Sustainability criteria for local and regional soil systems for the whole gamut of uses.

2 Food, feed, fibre and fuel security

Tactical (5 years)

Increase efficiency of biomass use

Knowledge gap

Further explore the potentials with respect to the soil resources required

Strategic (10 years)

Implement the concept of bioconversion of renewables, using starch for feed and food and the rest for materials and energy

Knowledge gap

Development of a cascade type of biomass use; explore the medium to long-term impact on soil. This relates also to Challenges 3 and 5 below.

Long-term (20years)

Implement methods of gene technology into the bioconversion of renewables

Knowledge gap

Impact assessment on soil systems

3 Climate change and adaptation

Tactical (5 years)

Addition of exogenous chars has the capacity to increase soil carbon sequestration.

Knowledge gap

There is a need to discover the mechanisms, co-benefits and economics of char addition, as well as the pitfalls. On all timescales we need research on climate change impacts on soils and the impact of soils on climate change.

Strategic (10 years)

Cryosols are thawing due to global warming, resulting in significant emissions of greenhouse gases, most notably methane. We should add "methanosols" – on brownfields and waste deposits.

Knowledge gap

We need to determine the mechanisms controlling greenhouse gas emissions from organic soil, particularly those in very cold climates, and identify methods to control those emissions. See above

Long-term (20 years)

World agriculture contributes x% of annual greenhouse gas emissions. Managed ecosystems (crops, pastures and forests) have the capacity to be net sinks if appropriately treated.

Knowledge gap

We need to identify key biogeochemical soil processes controlling soil carbon storage and

emission of pedogenic greenhouse gases (CO₂, CH₄ and N₂O) from managed ecosystems in order to develop appropriate management practices to reduce emissions and increase carbon capture.

4 Global soil information

Tactical (5 years)

Global information system of world's key soil resources at moderate spatial resolution (100 m).

Knowledge gap

Extent of global legacy soil data. Methods for data rescue and updating.

Strategic (10 years)

Updating global soil information to a common datum (2020)

Knowledge gap

Design of appropriate sampling schemes and methodologies for filling information gaps and harmonization to a common datum

Long-term (20 years)

Continuous integrated global monitoring of soil at high spatial and temporal resolution

Knowledge gap

Keysoil properties, design of network, measurement and sensing technologies

5 Further global noble challenges

In addition IUSS will through its Divisions develop plans for the following:- Human nutrition and health, Water security, Ecosystem health and Biodiversity conservation.

	GDP per capita (\$)¹	Indicative payment per member 1²	Indicative payment per member 2³	Indicative number of members⁴
Afghanistan	998	2	2	150
Albania	7,381	2	2	35
Algeria	7,103	2	2	300
Angola	6,412	2	2	250
Antigua and Barbuda	16,566	4	4	5
Argentina	15,603	4	4	300
Armenia	5,178	2	2	30
Australia	39,692	9	11	600
Austria	39,454	9	11	150
Azerbaijan	9,953	2	2	100
Bahamas, The	25,884	6	7	15
Bahrain	26,807	6	8	1
Bangladesh	1,565	2	2	150
Barbados	22,296	5	6	5
Belarus	13,864	3	4	150
Belgium	36,274	8	10	150
Belize	7,894	2	2	5
Benin	1,453	2	2	50
Bhutan	5,533	2	2	15
Bolivia	4,584	2	2	200
Bosnia and Herzegovina	7,751	2	2	50
Botswana	15,449	4	4	150
Brazil	11,289	3	3	1500
Brunei	47,200	11	14	10
Bulgaria	12,052	3	3	100
Burkina Faso	1,341	2	2	60
Burma	1,246	2	2	200
Burundi	410	2	2	10
Cambodia	2,086	2	2	90
Cameroon	2,165	2	2	150
Canada	39,033	9	11	1100
Cape Verde	3,562	2	2	1
Central African Republic	764	2	2	60
Chad	1,653	2	2	150
Chile	14,982	3	4	250
China, People's Republic of	7,518	2	2	5500
Colombia	9,445	2	2	300
Comoros	1,176	2	2	5
Congo, Democratic Republic of the	340	2	2	200
Congo, Republic of the	4,487	2	2	100
Costa Rica	10,732	2	3	70
Côte d'Ivoire	1,686	2	2	150
Croatia	17,608	4	5	90

¹ 2010

² Based on a ratio of GDP per capita to that of Qatar times \$25, rounded and with a minimum of \$2

³ Based on 0.03% of GDP per capita, rounded and with a minimum of \$2

⁴ Based on a formal relationship between no of members and GDP per capita, population, land area and production. This is to give an indication for many countries for which we have no or little data. The ratio of the actual no of members to indicative number may be seen as a measure of the degree of development of the respective national society. This may be an underestimate, it estimates the total no of members to be 40 000 worldwide.

	GDP per capita (\$)¹	Indicative payment per member 1²	Indicative payment per member 2³	Indicative number of members⁴
Cyprus	28,045	6	8	20
Czech Republic	24,987	6	7	150
Denmark	36,764	8	11	100
Djibouti	2,553	2	2	5
Dominica	10,456	2	3	5
Dominican Republic	8,647	2	2	80
Ecuador	7,951	2	2	150
Egypt	6,367	2	2	300
El Salvador	7,442	2	2	45
Equatorial Guinea	18,387	4	5	25
Eritrea	676	2	2	30
Estonia	18,274	4	5	45
Ethiopia	1,018	2	2	200
Fiji	4,450	2	2	10
Finland	34,401	8	10	200
France	34,092	8	10	300
Gabon	14,865	3	4	100
Gambia, The	1,972	2	2	5
Georgia	5,057	2	2	60
Germany	35,930	8	10	300
Ghana	1,609	2	2	100
Greece	28,833	7	8	200
Grenada	10,881	2	3	10
Guatemala	4,871	2	2	100
Guinea	1,056	2	2	70
Guinea-Bissau	1,082	2	2	10
Guyana	6,893	2	2	50
Haiti	1,121	2	2	25
Honduras	4,404	2	2	80
Hong Kong	45,277	10	13	25
Hungary	18,815	4	5	150
Iceland	36,681	8	11	50
India	3,290	2	2	1000
Indonesia	4,380	2	2	300
Iran	11,024	2	3	300
Iraq	3,599	2	2	200
Ireland	38,685	9	11	150
Israel	29,404	7	8	90
Italy	29,418	7	8	300
Jamaica	8,811	2	2	20
Japan	33,828	8	10	300
Jordan	5,658	2	2	80
Kazakhstan	12,401	3	3	300
Kenya	1,784	2	2	200
Kiribati	6,181	2	2	5
Korea, South	29,791	7	8	250
Kuwait	38,293	9	11	60
Kyrgyzstan	2,162	2	2	70

	GDP per capita (\$) ¹	Indicative payment per member 1 ²	Indicative payment per member 2 ³	Indicative number of members ⁴
Laos	2,435	2	2	80
Latvia	14,330	3	4	60
Lebanon	15,331	3	4	40
Lesotho	1,266	2	2	10
Liberia	396	2	2	20
Libya	14,878	3	4	250
Lithuania	16,997	4	5	80
Luxembourg	80,304	18	24	10
Macedonia, Republic of	9,350	2	2	30
Madagascar	910	2	2	100
Malawi	908	2	2	60
Malaysia	14,603	3	4	250
Maldives	5,483	2	2	5
Mali	1,206	2	2	150
Malta	24,081	5	7	1
Mauritania	2,099	2	2	100
Mauritius	13,214	3	3	5
Mexico	14,266	3	4	350
Moldova	2,959	2	2	25
Mongolia	3,727	2	2	150
Montenegro	10,432	2	3	10
Morocco	4,773	2	2	200
Mozambique	982	2	2	150
Namibia	6,945	2	2	150
Nepal	1,250	2	2	100
Netherlands	40,777	9	12	150
New Zealand	27,460	6	8	150
Nicaragua	2,969	2	2	70
Niger	720	2	2	150
Nigeria	2,398	2	2	300
Norway	52,238	12	15	200
Oman	26,197	6	7	150
Pakistan	2,789	2	2	300
Panama	12,397	3	3	80
Papua New Guinea	2,302	2	2	100
Paraguay	4,915	2	2	150
Peru	9,281	2	2	300
Philippines	3,725	2	2	250
Poland	18,837	4	5	250
Portugal	23,113	5	6	150
Qatar	88,232	20	26	60
Republic of China (Taiwan)	34,743	8	10	150
Romania	11,766	3	3	200
Russia	15,807	4	4	3000
Rwanda	1,202	2	2	25
Saint Kitts & Nevis	12,976	3	3	10
Saint Lucia	10,227	2	3	5
Saint Vincent & the Grenadines	10,261	2	3	5
Samoa	5,731	2	2	1

	GDP per capita (\$)¹	Indicative payment per member 1²	Indicative payment per member 2³	Indicative number of members⁴
São Tomé and Príncipe	1,879	2	2	10
Saudi Arabia	23,742	5	7	300
Senegal	1,814	2	2	90
Serbia	10,808	2	3	100
Seychelles	24,837	6	7	5
Sierra Leone	803	2	2	25
Singapore	57,238	13	17	20
Slovakia	22,267	5	6	100
Slovenia	27,899	6	8	50
Solomon Islands	2,974	2	2	5
South Africa	10,505	2	3	300
Spain	29,651	7	8	300
Sri Lanka	5,103	2	2	100
Sudan	2,466	2	2	300
Surinam	8,955	2	2	40
Swaziland	5,884	2	2	15
Sweden	37,775	9	11	250
Switzerland	41,765	9	12	150
Syria	5,108	2	2	150
Tajikistan	1,907	2	2	60
Tanzania	1,497	2	2	200
Thailand	8,643	2	2	300
Timoe Leste	2,663	2	2	5
Togo	847	2	2	25
Tonga	7,134	2	2	5
Trinidad and Tobago	20,137	5	6	15
Tunisia	9,488	2	2	150
Turkey	13,392	3	4	300
Turkmenistan	6,597	2	2	150
Uganda	1,245	2	2	100
Ukraine	6,665	2	2	250
United Arab Emirates	36,973	8	11	150
United Kingdom	35,053	8	10	300
United States	47,123	11	14	6500
Uruguay	14,342	3	4	100
Uzbekistan	3,022	2	2	200
Vanuatu	4,807	2	2	1
Venezuela	11,889	3	3	300
Vietnam	3,123	2	2	200
Yemen	2,595	2	2	150
Zambia	1,625	2	2	150
Zimbabwe	395	2	2	60

IUSS Alerts June - November 2012

International Union of Soil Sciences



Information for and from the global soil science community

IUSS Alerts are e-mailed to more than 12,000 people in over 100 countries. If you have information to share please send it Hartemink@wisc.edu Below are the still relevant contributions that appeared in the IUSS Alerts between June and November 2012.

Newsletter Soil Morphology and Micromorphology

The newsletter contains a In Memoriam for Prof. Dr. Ulrich Babel (U. Hohenheim, Bonn 1931-Heilbronn 2011), one of the pioneers of soil micromorphology, particularly on micromorphology of soil organic matter, written by Prof. Georges Stoops. Among the forthcoming conferences and meetings dealing with soil morphology and micromorphology you can find information about Goldschmidt 2012 (Montréal, June 24-29, 2012), Eurosoil 2012 (Bari, July 2-6, 2012), 14th International Working Meeting on Soil Micromorphology (Lleida, July 8-14, 2012), Geomorphic Processes and Geoarchaeology (Moscow-Smolensk, August 20-24, 2012), IUSS Divisional Conference: Soils in Space and Time (Ulm/Donau, 30th September – 4th October 2013). The II Latin-American Course of Soil Micromorphology and Complementary techniques, to be held in Bogotá in 2014 is announced. Finally, six short research notes and abstracts dealing with soil micromorphology and archaeology show the good health and the activity of the Commission. The complete newsletter can be read at: <http://loess.umcs.lublin.pl/micro> and on the IUSS website.

Newsletter IUSS Commission 1.1: Soil Morphology and Micromorphology

This newsletter contains the report on the 14th IWM Soil Micromorphology held in Lleida (Catalonia) in July 2012, where the Young Micromorphologist's Publication Award was given to Ximena Suárez Villagran and Dominique Todisco (ex-aequo

Award), and Nattaporn Prakongkep (Honorable Mention). Among the forthcoming meetings, the XIIth International Symposium and Field Workshop on Paleopedology (Russia), the Divisional Meeting Soils in Space and Time (Germany), and the proposed symposia by Commission 1.1. for the 20th Congress Soil Science –Jeju (Korea) are announced. Several publications and research notes on soil science and archaeology using soil micromorphology are presented. The news from the Archaeological Soil Micromorphology Working Group are also included, with several course and workshop announcements. Particularly important is the call for nominations for the Kubiëna Medal, to be awarded in the next Congress of Soil Science in Korea. Nominations are needed by end January 2013. The complete newsletter can be read at the Commission web page: http://www.loess.umcs.lublin.pl/newsletter_october%202012.pdf

Newsletter IUSS Commission 1.4: Soil Classification

The IUSS Commission 1.4 Soil Classification has published their 3rd Newsletter with the following topics: 1) Greetings From the New Chair; 2) Report on the 4th IUSS Conference for Soil Classification, Lincoln, Nebraska, USA; June 12, 2012; 3) Abstracts presented at the Conference, 4) Guy Smith Medal: Hari Eswaran Presented Second Guy Smith Medal, with an introductory slideshow and films by Amy, Chris, and Arthur Smith (granddaughter, grandson, and son of Guy Smith); 5) A review of "On the history of soil classification: Vladimir Fridland and Russian Soil Classification" (by Prof. Maria Gerasimova). The Newsletter is available on www.iuss.org under the tab <IUSS Newsletters>

Newsletter IUSS Commission 3.6: Salt-affected Soils Conference

Utilization and protection of halophytes and salt-affected landscapes”, 4-6. September 2013, Kecskemét, Hungary. The IUSS Commission 3.6 Conference will be an open international conference focusing on utilization, improvement, mapping and protection of halophytes and salt-affected soils, fields and landscapes. The sessions will cover topics as ecology of salt-affected landscapes; new results on salt-affected soils including spatiotemporal changes, mapping and relationship with groundwater properties; furthermore research related to sustainable agriculture on these types of soil; and sustainable use of halophyte plants. Besides plenary sessions, poster presentation session and field trip introducing the typical saline/sodic natural and agricultural landscapes are also included in the program. The conference will foster continued discussion among researchers all over the world who investigate issues of salt-affected soils and saline/sodic landscapes (lagoons, lakes, marshlands, grasslands, etc.) by 20 minute long presentations. More information is available at <http://members.iif.hu/tot3700/salinityconference-hungary2013.html>

New Pedometron

The new Pedometron is out, and available at the IUSS and pedometrics website. A-Xing Zhu, the new Chair of the Commission writes his first “From the Chair Message”. Two delegates to Pedometrics 2011 record their impressions. Jaap de Gruijter, the 2010 Webster Medal winner, describes how he first became engaged with the interface of soil science and statistics; and there is photographic evidence of the pride that Jaap’s grandson takes in the fact that his grandfather now is also a medal-winner. There is a report from the Global Soil Partnership meeting that took place in Rome earlier this year, and from the 5th Global Digital Soil Mapping workshop which was held in Sydney. There are three articles on technical matters from Tom, Dick and Budi. Tom Orton and colleagues discuss an approach to geostatistical analysis of censored data (such as data on variables with a detection limit). Dick Brus describes a strategy for sampling and estimating a regional trend in soil monitoring. Budiman Minasny discusses trends in geostatistical modelling from Matheronian geostatistics through

to the world of Markov Chain Monte Carlo. Finally, there are three Pedomathemagica problems; Alf and Bert the soil surveyors are back in number-land, and one problem promises a bottle of champagne for the first successful solver.

Conferences

12th International Conference on the Biogeochemistry of Trace Elements

The 2013 ICOBTE conference themes include: Establishing the Frontiers of trace Element Research and Sustainable Remediation and Management of Contaminated Sites. The Conference will be held at the University of Georgia’s Conference Center & Hotel (<http://www.georgiacenter.uga.edu/>) in Athens, GA from June 16-20, 2013. The call for on-line abstract submissions will tentatively open in July, 2012, with a deadline for abstract submission of November 30, 2012. The official conference language is English. Reduced registration fees are available to deserving participants from lesser developed countries. For additional information, please check the ICOBTE 2013 website or contact organizers directly: John Seaman, Chair (seaman@srel.edu), Jason Unrine, Vice Chair (jason.unrine@uky.edu), and H. Magdi Selim, International Organizing Committee Chair (hselim@lsu.edu) <http://icobte2013.org/>

Third Global Workshop on Proximal Soil Sensing

The increasing awareness of soil as a limited and degrading resource, the threats on soil and the challenge to increase soil productivity makes it evident that there is a need to better understand soil variability in space and time. Proximal soil sensing provides one answer to this need with the development of new methods to measure and quantify soils. Proximal soil sensing is a quickly evolving new discipline, which has been acknowledged with the establishment of a working group within the International Union of Soil Sciences under the Commission of Pedometrics and Soil Physics. Together with local organisers, the working group on proximal soil sensing (WG-PSS) is preparing for the Third Global Workshop on Proximal Soil Sensing in 2013. As with the previous workshops (held in Sydney and Montreal) this workshop will bring together researchers from various disciplines, including soil science, agricultural engineering, geophysics, spectroscopy,

agronomy, spatial statistics, as well as commercial entities involved in the development and use of proximal sensors. The focus of the meeting will be on multi-sensor systems, sensor data fusion and new application of proximal soil sensing data. It will be held on May 26th to 29th 2013 in Potsdam, Germany. For more information see the WG-PSS website www.proximalsoilsensing.org and the specific workshop website www.atb-potsdam.de/gwps2013. For more information contact Robbing Gebbers rgebbers@atb-potsdam.de or Raphael Viscarra Rossel raphael.viscarra-rossel@csiro.au

The 22nd edition of the international symposium Soil Forming Factors and Processes from the Temperate Zone

20-22 September, 2013, Iași, Romania.

The theme of this year's edition is Terroirs, vineyards and wines, and the symposium will include a two days field application related to the relations between soils, vineyards and the specificity of wines, in the eastern part of Romania and the Republic of Moldova (passport needed). All the information concerning accommodation and costs will be made available in the second circular, and on the site of our journal: www.soilscience.ro
More Information: Ionut VASILINIUC,
e-mail: vasiliniucionut@yahoo.com.

ESAFS

The 11th International Conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS) will be held in IPB International Conference Center (IPB-ICC), Bogor - West Java, Indonesia on 21 - 24th October 2013. The conference theme is: Land for Sustaining Food and Energy Security. Session themes include: Land Productivity and Food Production, Land Degradation and Remediation, Plant Nutrition, Biological Cycling and Soil Quality, Sustainable Lowland and Peatland Management, Hydrology and Water Management, Land Use and Climate Change, Soil Database and Digital Soil Mapping. The meeting is also a joint meeting of IAARD and the IUSS Commission 3.5 Land degradation and remediation. For more information see the website www.esafs11ina.org

International Symposium on Soil and Plant Analysis

The 13th International Symposium on Soil and Plant Analysis will be held in Queenstown, New Zealand 8-12 April 2013. The Symposium theme is:

New Opportunities for Soil and Plant Testing.

Soil and Plant analysts are confronted with new, exciting challenges. Feeding a rapidly expanding world population requires greater efficiency of production. The environmental impact of such intensification is also a growing concern in many countries. Soil and plant analyses are key tools to address both of these challenges. New analytical technologies are being applied to routine soil and plant testing (e.g. Infra-red spectroscopy, LIBS, XRF, NMR, chemometrics), providing further insight into the health and status of soils and plants. Soil and plant analysts must continue to develop faster and more informative technologies to meet these global challenges. The emphasis of the 13th International Symposium on Soil and Plant Analysis will be on new methodologies and emerging techniques that will enable soil and plant analysts to make an even greater contribution to finding solutions to these challenges. Further information see www.isspa2013.com

International Conference Four Decades of Progress in Monitoring and Modeling of Processes in the Soil-Plant-Atmosphere System

International Conference Four Decades of Progress in Monitoring and Modeling of Processes in the Soil-Plant-Atmosphere System: Applications and Challenges to be held in Napoli (Italy) on 19-20 June 2013. The main purpose of this event is to bring together researchers from different backgrounds to discuss the important achievements obtained thus far over the last decades, but also and perhaps especially to outline potential future directions for research being of benefit and interest to the younger generation. For registration and additional information, we invite you to visit the conference webpage at: www.spa-conference-naples2013.org

Predatory Open-access Journals

Do you regularly get emails asking for article submission in open-access journals? Jeffrey Beall, an academic librarian from University of Colorado at Denver, has catalogued a list of what he called predatory, open-access publishers: <http://scholarlyoa.com/publishers/> Predatory open-access journals exploit the author-pays model of open-access publishing for their own profit. These journals prey on young researchers with a promise of rapid articles publishing in exchange for a publishing fee. They usually have no transparency in the process with little or even no peer-review

process. There are several soil science titles, e.g. Transnational Journal of Agriculture and Soil Sciences, Journal of Soil Science and Environmental Management (by Academic Journals). Soil scientists may wish to scrutinise this list <http://scholarlyoa.com/publishers/>, and think hard whether to submit their work to these journals.

Kubiëna Medal 2014: Call for nominations

The Kubiëna Medal was introduced by Subcommission B - Soil Micromorphology of the IUSS to commemorate the memory of Walter L Kubiëna for his distinguished contribution to soil micromorphology. It is the only medal awarded by the IUSS and is given for outstanding and sustained performance in the discipline of soil micromorphology and to date there have been eight awards: E. Yarılova, R. Brewer, H.J. Altemüller, G. Stoops, E.A. FitzPatrick, L. Wilding, H. Mucher and N. Fedoroff. It is presented at the IUSS Congress. The selection committee is formed by all past awardees + IUSS Commission chair and past-chair. The next medal will be presented at the IUSS World Congress in Jeju (Korea). Guidelines for nominations: 1. Statement of key achievements and career highlights of the nominee (1 page) 2. Curriculum vitae detailing career history and publication record of the nominee 3. Name of proposer and seconder for the nominee 4. Any other relevant information in support of the nominee 5. Full address and contact details for the nominee. Nominations are due January 2013. Please send to: rosa.poch@macs.udl.cat

The Australian Prime Minister talks about soil...

On October 23rd Julia Gillard, Prime Minister of Australia gave a speech to the Australian National Farmers Federation (for the full speech, see: <http://resources.news.com.au/files/2012/10/23/1226501/277361-aus-na-file-gillard-speech.pdf>). Here are the key points: "Australia should be a supplier of choice for agricultural solutions like technologies to increase yields, reduce water use and lessen environmental degradation; soil management systems; and improving feed sustainability for marine aquaculture. In the Asian Century, our production and exports will expand, but our soil and water resources remain finite. As Prime

Minister, I recognise you as frontline caretakers of our greatest assets – our soils, our water, and our biodiversity. Soil is the very basis of our survival. Clean air and water; food and fibre; and our unique biodiversity all rely on protecting our soil. This valuable asset is threatened by climate change, land degradation and competing land uses. So I seek a deeper partnership in trying to increase our soil health, our water quality, our biodiversity and vegetative cover. Through innovation, research and improving on-farm practices, we can reduce our impact and increase our output. Late last year we established a Working Group on Water, Soil and Food in recognition that the condition of our soils must be a national priority."

We have been recognised, let us take up the challenge with renewed vigour.

Like us on Facebook

This month the Facebook page for Nature.com has reached 101,000 'Likes'. It seems to be a great news that scientists are using Social Media. But how about Soil Science Facebook pages? IUSS so far has 349 likes (created Dec 2011); Soil Science Society of America: 1884 likes (created 2009); British Society of Soil Science: 361 likes (created Dec 2010); New Zealand Society of Soil Science: 116 Likes (created Feb 2010); Soil Science Australia 'group' has 229 members; Soil Science Society of South Africa 129 Likes (Created March 2011); Well it doesn't look that great really, compared it to a musical band called 'Soilwork' which has 236,227 likes. So Soil Science Societies need to do more work. Probably few reasons why soil science societies won't have that many followers in Facebook. Some scientists may not have Facebook account and even if they have it, they would probably never used it much. And for the younger generation, probably they don't care about the societies' page. In general social media for science has never been a success (http://www.labspaces.net/blog/481/THE_FaceBook_for_science_is_dead__What_s_next_)

The author of that article argued that the culture of scientific fields are different. Scientists don't like to share their data and can be secretive, one of the reasons maybe they are afraid that their ideas may got ripped off. Anyway, we shouldn't take Social media seriously, and certainly not a successful way to promote soil science. In the meantime please like us: <http://www.facebook.com/unionsoilsciences>



Activities of the Working Group on Soil Monitoring

The Working Group (WG) on Soil Monitoring was formally established during the last World Congress of Soil Science in 2010. It is a WG of Commission 1.5 Pedometrics of the IUSS Division 1. The aims of the group are to encourage inter and intra disciplinary collaborations into the design, implementation and interpretation of soil monitoring networks. An article describing the key issues to be addressed by the group has been published in *Pedosphere* (Arrouays et al., 2012).

The first activity arranged by the group was a special session at the 2011 Pedometrics meeting in Trest, Czech Republic. The session concentrated upon mathematical and statistical issues of soil monitoring and consisted of seven research talks and a keynote reviewing the outstanding research challenges. The research talks illustrated how diverse threats to soil quality such as compaction and contamination could be monitored.

A symposium addressing more general issues in soil monitoring was arranged at the Eurosoils 2012 meeting in Bari. This tackled fundamental problems such as the design of soil monitoring networks and the requirements and challenges of monitoring key soil parameters such as soil carbon and bulk density. Contributions from this symposium and the accompanying poster session will be included in a special issue of the *European Journal of Soil Science* which is currently in preparation.

Further sessions have been arranged for the 2013 IUSS Division 1 Congress in Ulm Germany and the 2014 World Congress in Jeju, South Korea. The Ulm symposium is concerned with the interdisciplinary challenges of soil monitoring whereas the Jeju meeting will explore how soil monitoring can benefit mankind and the environment. An additional soil monitoring session is anticipated at the 2013 Pedometrics meeting in Nairobi, Kenya.

In March 2014 an international workshop entitled 'Soil Change Matters' will be organized by the IUSS WGs on Soil Monitoring and Global Soil Change,

Soil Science Australia and the Victorian Department of Primary Industries (VDPI). The meeting will be hosted by VDPI in Bendigo, Australia. It will explore the extent to which soil change can be quantified and explained through monitoring and modelling. The meeting will bring together policy makers and scientists to discuss policy needs, the limitations of our current understanding and the implications for future research.

Further details on all of these forthcoming events can be obtained from the WG secretary.

Contacts

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Reference

Arrouays, D. et al. (2012) *Generic Issues on Broad-Scale Soil Monitoring Schemes: A Review*. *Pedosphere*, 22, 456-469.

5 questions to a soil scientist

5 questions to Cynthia A. Stiles



Position: Assistant State Soil Scientist,
Hawaii and East Pacific Islands Area

Age: 54

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1. When did you decide to study soil science?

I was raised on a university research farm, my father was an agricultural engineer who worked hard to preserve soil and water resources, and I always knew I wanted to be in a Natural Resources career. I began my studies in Soil Science in earnest when I began working for an environmental testing company, after I had finished a degree in Agronomy. I pursued my MS in soils and PhD in Geology, although my dissertation project was focused on soils.

2. Who has been your most influential teacher?

There are so many to choose from, it is hard to decide! I have learned from the best, through my career. Aside from my father, who was a priceless life-lesson instructor, I must say that my most influential mentor has been Dr. Chien-Lu Ping. Dr. Ping has instilled a deep love of the pure science

and fostered curiosity and exploration everywhere we have gone. He continues to work with me, to develop my skills and to encourage my evolution as a soil scientist.

3. What do you find most exciting about soil science?

It's hard to decide if the people I work with or the places I get to visit in the field are more exciting. I love being able to visit almost any place on the continents of the planet and explore the soils beneath my feet. I also deeply enjoy sharing knowledge and questions with people where I visit, to see their interest bloom and the understanding expand as we discuss the soils where we are, to hear their stories and expand my own understanding of the soil resource.

4. How would you stimulate teenagers and young graduates to study soil science?

Getting students interested in soils is critical – and there is no better way to do it than to get into the field and show them what soils look like. It's great to dig pits in urban settings, to show the layers of fill and development, then take the students out to a productive field to show the contrast, then on to a wetland to show the different colors. Talking about soils in the classroom is just not enough – students need to see and feel the soil to get a better grasp of concepts.

5. How do you see the future of soil science?

We are in a world that is less and less in touch with nature, but putting greater pressure on our natural resources. We know much about the fundamentals of soil, now we should use that knowledge to recommend judicious use of soil and water resources, taking our wisdom of the land and sharing it with as many people as we can. We are evolving from a science tied closely with agriculture to a more universal platform and we should work diligently to represent the legacy of our science on this expanding stage.

5 questions to Jim Thompson



Position: Associate Professor (since 2004)

Age: 44

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1. *When did you decide to study soil science?*

In high school, I was interested in science, particularly chemistry. During a presentation by a college recruiter from Penn State University who was visiting our high school, the recruiter began listing fields of study that we might consider. One subject on the list was agronomy—the study of soil management and crop production. Thinking that this might be a way for me to combine my interest in science with my interest in the environment, I began to seek out additional information about agronomy. As Google had not been invented yet, I consulted our encyclopedia. After being accepted to Penn State (as a chemistry major), I made an appointment with a faculty advisor from the College of Agriculture, and I soon changed my major to agronomy.

2. *Who has been your most influential teacher?*

There have been several high school and college teachers who were influential in developing and encouraging my interest in science, particularly soil science, and especially pedology. Among them, the teacher whose influence I see most clearly in my own teaching is Dr. Ed Ciolkosz. While “encouraging” may not be the best way to describe his approach, his comprehensive treatment of soil genesis and morphology along with his attention to detail and his high expectations forced me to work harder and build knowledge, not just accumulate facts. I also appreciate Dr. Gary Petersen for fostering an appreciation for soils and landscapes and the inherent spatial component of soil science.

3. *What do you find most exciting about soil science?*

The soil is like a puzzle. When viewing a soil profile, we identify horizons and describe their characteristics. This provides us with important information about the soil, the site, and the conditions under which that soil developed. Adding observations about the landscape in which that soil is found helps relate even more about the environmental conditions that produced that soil, as well as a further indication as to how that soil will respond to land use and management practices. What is most exciting is that we can assemble this puzzle at local, regional, or global scales to reveal the patterns that allow us to effectively communicate our knowledge of soils to those who can use it to make informed decisions.

4. *How would you stimulate teenagers and young graduates to study soil science?*

To motivate students to study soil science, it is necessary to give them opportunities to interact with soils. Take them out to the field and show them soil profiles, and then demonstrate how to interpret the story that is written in the soil morphology and the surrounding landscape. Having the ability to unlock these secrets can be illuminating and inspiring.

5. *How do you see the future of soil science?*

I am confident that the perceived importance of soils and soil science will continue to grow, although I am less certain that those of us who actively practice soil science as a profession will be viewed as equally important. There is an interconnectedness between soils and land use, between soils and ecology, between soils and human welfare. Similarly, there is an interconnectedness between soil science and other disciplines (geography, geology, hydrology, ecology, etc.). Within the scientific community, soil scientists need to increase interaction with these other disciplines while maintaining an identity for soil science as a distinct—and critically important—field of study. Beyond that, we need better marketing and public relations.

5 questions to Zbigniew Zagorski



Position: University Professor
Vice Chair Commission 1.3.
Soil Genesis (since 2010)
President of Polish Soil Science Society
(since 2011)

Age: 59

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1. When did you decide to study soil science?

During my studies at the Department of Geology at the University of Warsaw, one of the many items was pedology. Lectures on the soil were very interesting for me - I met an unusual point of view on the layer on which I trampled down. In 1981, I started working in the Department of Soil Science at Warsaw University of Life Sciences - SGGW. A group of friendly people I have met and good facilities in this department enabled me to develop my interests involving soils. In 1988, I defended my PhD thesis on identification litho- and pedologic processes in soils derived from glacial deposits. For many years I conducted research of soils derived from limestones (rendzinas).

2. Who has been your most influential teacher?

The most influential teacher for me has been Professor Krystyna Konecka-Betley, an expert in paleopedology and soil genesis. She introduced me in problems concerning paleosoils developed within aeolian sediments (loess and sandy dunes). In 1985, we participated in the Congress of INQUA

where I presented my research results for the first time. To some extent, R. Brewer was the person who influenced me greatly even though we never met. His book "Fabric and Mineral Analysis of Soils", gave me the basis for my scientific activity in soil science.

3. What do you find most exciting about soil science?

In my opinion, the most exciting are issues from the borderland of geology and soil science. For example, the transformation of minerals and rocks in the soil substrate as a result of weathering processes has not been sufficiently understood yet. Also the influence of soil-forming processes on the spatial distribution of soil components is not fully clear.

Nowadays, wide access to modern research tools allows us to solve these problems. That's why I'm interested in the genesis of the soils and especially in soil mineralogy and soil micromorphology as tools for resolving problems concerning soil genesis.

4. How would you stimulate teenagers and young graduates to study soil science?

I think the most effective way to stimulate teenagers is a discussion in the field. Outdoor meetings are the best to explain the relationship between landscape, soil and geological background

5. How do you see the future of soil science?

In my opinion, the soil science still has great prospects. However, we must increase our efforts to promote knowledge involving soils at each level of education. The only way to protect the soil cover is the education of people about the role of soil in the environment and human economy.

5 questions to Ingrid Kögel-Knabner



Position: Professor of Soil Science (since 1995)

Age: 53

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Technische Universität München

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1. When did you decide to study soil science?

I first was intrigued by soils at the age of 18, when I had to choose a topic for a term paper. I choose to write about the restoration of soils after open cast brown coal mining in Germany, and got the best mark possible.

When I had to decide later in my geocology studies between a major in soil science or hydrology, I was sure that soil science was my choice. I liked soil science because one can view, smell and touch soils, and I also liked the colours of soils. I have never regretted this choice.

2. Who has been your most influential teacher?

I had several inspiring teachers. Wolfgang Zech was an excellent teacher for soil science in general and even more so in the field. He was able to stimulate a desire to work with soils in each of his lectures. From Pat Hatcher I learned to use ^{13}C NMR spectroscopy to investigate soil organic matter. He invited me to his lab (at this time one of the two labs world-wide doing ^{13}C NMR spectroscopy of soil organic matter), inspired and taught me to work with this (at that time) emerging technique. Konrad Haider and J. Malcolm Oades were my guides as a postdoc when I started to work on more diversified fields of soil organic matter research. When arriving at Weihenstephan I had the chance for close interaction with Udo Schwertmann and

learned more about soil minerals and specifically iron oxides. Thus I feel confident to work on organic and mineral materials and their interactions in soils.

3. What do you find most exciting about soil science?

It is fascinating to work with such a complex organo-mineral material. In soil science you can work with organic or mineral materials, or microbes or animals, or you can try to understand the complete system. Many many options for differently interested scientists.

4. How would you stimulate teenagers and young graduates to study soil science?

I asked my teenage daughter. Her answer is: You have to give the impression to be cool and easy. I guess that we already know this. So in my experience it is generally difficult to stimulate teenagers.

For my students I try to show my own enthusiasm for soils. I tell them what I find exciting in my work with soils. I tell them that choosing a career in science, and specifically soils science can provide for many good and rewarding moments in your life.

5. How do you see the future of soil science?

Bright! There are emerging new techniques to investigate soils in most of the soil disciplines. This refers to soil chemistry with the new analytical techniques at the nano or even atomic scale. With the imaging methods in soil physics we are able to understand the soil structure. All the new methods in soil biology allow to describe the microbial community structure and their functional traits. There are new methods operative at different scales from the nano-scale to the pedon and landscape scale. They span from elucidating the soils structure at submicron scales to digital soil mapping. This will bring our understanding of soils to a new level.



Favorite soil science books

Favourite soil science books of Pandi Zdruli

Any time Alfred Hartemink distributes his IUSS Alerts I notice at the section “Publications” that the number of new books dealing with soil science is still increasing. It shows that our discipline is healthy and hopefully thriving, despite concerns that some Universities around the world are re-orienting or even closing Soil Departments since they receive less students than before. The good news is that soil science books perhaps are becoming useful also for non-soil scientists!

Selecting my three most favorites ones wasn't easy and not surprisingly I haven't chosen any of the most recent ones. Next, I thought to use some kind of criteria in making this decision. The first was “*inclusive*”, second “*the one I used most frequently*” and the third “*support for the future of soil science*” and the work of my fellow pedologists.

In the first category I include “Fundamentals of Soil Science” 8th edition by Henry Foth of Michigan State University, published by Wiley & Sons in 1990. It is a comprehensive book that provides the basic soil knowledge for students at all levels and those that teach soils. *Fundamentals* start with a description of soil as a medium for plant growth, deeps in soil physical, chemical, mineralogical properties, focuses on soil fertility and plant nutrition topics, genesis and Soil Taxonomy and finish up with important remarks on the role of soils in world food supply. For more about the book I would like to quote the author: “*This book is a STORY about the soil. The story reflects my love of the soil and my devotion to promoting the learning and understanding of soils for more than 40 years. I hope that all who read this book will find it interesting as well as informative*”.

For the second category I include “Soil Classification: A global desk reference” published in 2003 by CRC Press and edited by Hari Eswaran, Thomas Rice, Robert Ahrens and Bobby A. Stewart. It is a real global desk reference written by very well known worldwide names in soil classification addressing issues of complexity and difficulties in harmonizing

soil classification systems with concrete examples from Australia, China, Brazil, France, New Zealand, Russia, South Africa and the tropics. I think this book may have contributed towards what we call now Universal Soil Classification System.

The third choice is “Soil Survey Manual” of the USDA Soil Survey Division Staff, Handbook No. 18, published in 1993 along with the USDA's Field Book for Describing and Sampling Soils (version 3.0. 2011). They both are very useful for all soil scientists but most importantly for those that have to go down the pit and survey soils. Unfortunately nowadays this category of pedologists is in the *phase of extinction* as more people are relying on existing soil information or on remote sensing and GIS to describe what soils are.

Favourite soil science books of Christian Feller

This is a very difficult question to answer for someone who simultaneously has a passion for both soil science and books. I therefore decided to formulate it a bit differently as: which soil science books have been important enough to still be considered as such nowadays and in the future ? Here is my choice.

1. Müller P.E., 1889 (French edition). *Recherches sur les formes naturelles de l'humus et leur influence sur la végétation et le sol.*

Berger-Levrault et Cie, Paris-Nancy, 351 p.

Original [Danish edition](#) in two volumes:

* Müller, P.E., 1878. *Studier over Skovjord, som Bidrag til Skovdyrkningens Theori. I. Om bøgemuld og Bøgemor på Sand og Ler.* Tidsskrift for Skovbrug, 3: 1-124.

* Müller, P.E. 1884. *Studier over Skovjord, som Bidrag til Skovdyrkningens Theori. II. Om Muld og Mor i Egeskove og paa Heder.* Tidsskrift for Skovbrug, 7: 1-232.

German edition

* Müller P.E., 1887. *Studien über die natürlichen Humusformen und deren Einwirkung auf Vegetation und Boden.* Berlin.

As a forerunner addressing for the first time the detailed analysis of the formation processes and properties of temperate soils, Müller's Humus is probably the most important book in soil science. It includes a description of numerous profiles and an assessment of the role of vegetation, humus, and soil biota in field situations. Even today reading this book still remains pleasant and highly instructive so that one can't avoid asking "How does it happen that Müller has not become as famous as Dokuchaev ?", or "Why is not Müller considered as THE founder or at least the co-founder of pedology along with Dokuchaev ?" I personally consider his contribution to have as much basic scientific importance as Dokuchaev's thesis on Chernozem.

2. Jenny H., 1941. *Factors of soil formation. A system of quantitative pedology.*

McGraw-Hill Book Company, New York London, 281 p.

The importance of Jenny's treatise does not need to be commented upon to any extent. Everyone knows that it has turned out to be absolutely

revolutionary, especially through its systematic reference to mathematical modeling in the analysis of the processes involved in the dynamics of soils.

3. Brady N.C., Weil R.R., 2008 (and previous editions since 1922). *The nature and properties of soils.*

Pearson Education Inc., Upper Saddle River, New Jersey, USA, 14th ed., 992 p.

The first edition with the same title was published in 1922 with T. Littleton Lyon and H.O. Buckman as authors. During subsequent decades, Buckman became the first author. Nyle C. Brady became co-author in 1952. Nyle C. Brady was the sole author from 1974 to 1990. In 1996, Ray R Weil joined him as co-author. Since 2002, Ray Weil has made the revisions, but with both Weil and Brady listed as authors.

The T. Littleton Lyon and successors' books represent a marvelous history since about one hundred years, fourteen editions of this textbook updated every 6 years or so were read by several thousand students and scientists all over the world.

Every new edition is modern giving the latest advances and addressing new concepts and approaches corresponding to current agricultural or environmental questions concerning soils. The 15th edition is expected to be published in 2014.

Favourite soil science books of Artemi Cerdà

I selected the three main soil science books following the ones that were relevant in my research, and that influenced in the way I do science.

My first book in soil science was the “Précis de Pédologie”. The contribution of professor Duchaufour (1970) with his worldwide known handbook was definitive to understand the complex soil system as part of the Earth. The view of Philippe Duchaufour contributes to a new generation of soil scientists. This is the main reason why the Medal to the best Soil Scientist at the European Geosciences Union is the Duchaufour Medal. I am one of those that decided to be a soil scientist following the “Précis de Pédologie”.

The second book open my mind to understand that soil science should be open to study the soil at different scales and approaches. The processes that take place at slope scale interact with the soil development and the soil degradation and erosion of the skin of the earth: the soil. The human impact on the soil system can be only understood if we understand the men’s impact on slope forms and processes. This is true also for Geomorphologist, which should know the impact of humankind on soil properties and processes. Then, to understand the soil processes we need to understand the slope processes and this was shown by professors Carson and Kirkby (1972) in a masterpiece of science. This publication influenced me to develop my research in the frontier between the traditional Soil Science and Geomorphology, and still is a source of inspiration and the understanding of the soil and slope processes. When reprinted, in 2009, no one word was changed.

Both books, the one from Duchaufour and the one from Carson and Kirkby are still useful for future generation of soil scientist. Please, young scientists read them and look for your way to develop the best science. I did, and now I can recognize that the influence of the Duchaufour handbook on my career as scientist is completed with the handbook of professor Carson and Kirkby (1972).

And the last one is a book developed as a Ph D. by Merche Bodí (2012). She developed a review and interesting research on the impact of ash from forest fires. This contribution is an example that Duchaufour and Carson and Kirkby book’s still are

key contribution to the development of Soil Science. The contribution of Merche Bodí is a fruitful collaboration with the ideas of Stefan Helmut Doerr on the importance of Water Repellency in the Soil System, and the view of Jorge Mataix-Solera on the Soils as a key component of the Mediterranean ecosystem. This book show a new approach to see the fire and his effect on the soil system.

The three best books by Artemi Cerdà
Bodí, M.B. (2012). *Ash and water repellency effects on soil hydrology in fire-affected Mediterranean ecosystems*. University of Valencia, Ph D. Dissertation, Valencia, 84 pp.
Carson, M.A. y Kirkby, M.J. (1972). *Hillslope Form and Process*. Cambridge, University Press, 475 pp.
Duchaufour, P. (1970). *Précis de Pédologie*, Masson & Cia, París, 481 pp.

Awards and Prizes

2012 World Food Prize: Dr. Daniel Hillel



The 2012 World Food Prize was awarded to Dr. Daniel Hillel for conceiving and implementing a radically new mode of bringing water to crops in arid and dry land regions - known as “micro-irrigation.”

Dr. Hillel’s pioneering scientific work in Israel revolutionized food production, first in the Middle East, and then in other regions around the world over the past five decades. His work laid the foundation for maximizing efficient water usage in agriculture, increasing crop yields, and minimizing environmental degradation.

First drawn to this critical need during his years of living in a small settlement in the highlands of the Negev Desert, the new approach Dr. Hillel developed provided for a low-volume, high-frequency, calibrated water supply to plants. As such, his research led to a dramatic shift from the prevailing method of irrigation used in the first half of the twentieth century: applying water in

brief periodic episodes of flooding to saturate the soil, followed by longer periods of drying out the soil. The new innovative method developed and disseminated by Dr. Hillel applied water in small but continuous amounts directly to the plant roots, with dramatic results in plant production and water conservation.

Dr. Hillel’s development and promotion of better land and water management clearly demonstrated that farmers no longer needed to depend on the soil’s ability to store water, as was the case when using the previous method of high volume, low frequency irrigation. The technology he advanced, including drip, trickle and continuous-feed irrigation, has improved the quality of life and livelihoods throughout the Middle East and around the world.

Dr. Hillel proved that plants grown in continuously moist soil, achieved through micro-irrigation, produced higher yields than plants grown under



the old flooding or sprinkler irrigation methods. Using less water in agriculture per unit of land not only conserves a scarce resource in arid and semi-arid regions, but also results in significantly “more crop per drop,” with the successful cultivation of field crops and fruit trees -- even in coarse sands and gravel.

By integrating complex scientific principles, designing practical applications, and achieving wide outreach to farmers, communities, researchers, and agricultural policymakers in more than 30 countries, Daniel Hillel has impacted the lives of millions.

Dr. Hillel’s water management concepts—promoted by the U.N. Food and Agriculture Organization as HELPFUL (High- frequency, Efficient, Low-volume, Partial-area, Farm-unit, Low-cost)—have spread from Israel to the Middle East, Asia, Africa, Australia, and the Americas. HELPFUL irrigation technology is now used to produce high-yielding, nutritious food on more than six million hectares worldwide.


Dr. Hillel also helped devise a range of other adaptable, sustainable water management techniques for arid regions. Specifically, harvesting rainwater by inducing and collecting runoff from sloping ground can allow farmers to grow crops on previously barren lands.

His innovative approaches to enhancing infiltration and reducing evaporation through soil surface treatments have enhanced agricultural productivity. He has defined ways to control the leaching of solutes, the water-logging of root zones, and the erosion of topsoil by precisely determining the supply of water required with only small increments of percolation and drainage needed to prevent salt accumulation.

Daniel Hillel was born the youngest of five children in Los Angeles, California at the beginning of the Great Depression. His father died in 1931 when Daniel was one year old, and shortly thereafter his mother moved the family to live with her parents in Palestine, a part of which eventually became the State of Israel in 1948.

At the age of nine, Daniel was sent to live in the countryside on a kibbutz. His experience in this agrarian setting inspired his lifelong appreciation of the land and the need to protect its resources, leading him to pursue an academic and professional career in agriculture.

In 1946, Daniel returned to the United States to attend high school in Charleston, South Carolina, the former hometown of his maternal grandparents. He earned a Bachelor of Science degree in agronomy from the University of Georgia (1950), and a Master of Science degree in earth



sciences from Rutgers University (1951). Later, he earned a Ph.D. in soil physics and ecology at Hebrew University of Jerusalem (1957), and did post-doctoral work at the University of California in soil physics and hydrology (1959-61).

Daniel Hillel's first posting upon returning to the nascent state of Israel in 1951 was with the Israeli Ministry of Agriculture, where he took part in the first mapping of the country's soil and irrigation resources.

He soon left the Ministry to join a group of idealistic settlers dedicated to creating a viable agricultural community in the Negev Desert highlands by nurturing the region's meager but vital resources. In 1952, he took part in establishing the Negev settlement of Sde Boker. When the country's first Prime Minister, David Ben-Gurion, toured the area with his wife a year later, he was so impressed by that venture that he resigned from the government and became a member of Sde Boker. Ben-Gurion and Hillel became close friends as they worked together on the kibbutz. Recognizing the young scientist's exceptional capabilities, Ben Gurion sent him on goodwill missions to promote sustainable agricultural techniques in developing countries. In 1956, Hillel was sent to Burma on his first assignment to help develop the country's frontier. In the following years—and into the present decade—Dr. Hillel participated in similar missions around the world, working for and with international agencies and organizations such as the World Bank, the U.N. Food and Agriculture Organization, and the U.S. Agency for International Development, to promote water-use efficiency in dozens of countries in the Middle East, Africa, Asia, and South America.

Of particular note is Dr. Hillel's work on the ground in countries in the Middle East, such as Egypt and Jordan, as well as in Palestinian communities. In carrying out these endeavors, his ability to speak Arabic aided him in building strong personal working relationships across political and ethnic boundaries. His efforts to bring micro-irrigation technology to Jordan were particularly fruitful in that they were done in conjunction with the programs under the direction of the then Crown Prince. He also worked extensively in Turkey, Pakistan, the Sudan, and many other countries. It is of special significance that Dr. Hillel's nomination for the World Food Prize contained letters of endorsement from individuals and organizations in Egypt, Jordan, and the United Arab Emirates.

He has also worked with the International Food Policy Research Institute and the International Development Research Center of Canada. He is currently a Senior Research Scientist at the Center for Climate Systems Research, part of the Earth Institute of Columbia University, and is working on the adaptation of agriculture to climate change in association with NASA/Goddard Institute for Space Studies.

Along with his international field and development work, Dr. Hillel embarked on a career in academia as a researcher and professor at the Hebrew University in Jerusalem, the University of Massachusetts, Columbia University and other major research centers worldwide. He has written or edited over 20 books on soil and water science; his seminal textbooks have been translated into 12 languages. He has published more than 300 scientific papers, research reports, and practical manuals, and authored books for the general public on the vital role of soil and water in healthy agro-ecosystems.

Dr. Hillel has demonstrated the synergistic linkages across food production, water management, and soil science. His achievements have been and will continue to be essential to extending the Green Revolution and confronting the many global challenges in fighting hunger and poverty into the next century.

The World Food Prize was created by Dr. Norman E. Borlaug, recipient of the 1970 Nobel Peace Prize. Since 1986, The World Food Prize has honored outstanding individuals who have made vital contributions to improving the quality, quantity, or availability of food throughout the world. In 1990, when the original sponsor withdrew, Des Moines businessman and philanthropist John Ruan assumed sponsorship of The Prize and relocated The World Food Prize Foundation to Des Moines, Iowa, USA.

Previous Laureates have been recognized from Bangladesh, Brazil, China, Cuba, Denmark, Ethiopia, India, Mexico, Sierra Leone, Switzerland, the United Kingdom, the United Nations, and the United States.

www.worldfoodprize.org

Awards and Prizes

Dokuchaev Gold Medal: Prof. Victor Targulian

Dokuchaev Gold Medal of Russian Academy Of Sciences for Basic Soil Science Research of Prof. Victor Targulian, Russia

Prof. V.O. Targulian is an outstanding representative of the Dokuchaev soil science school and a follower of the mainstream of famous Russian pedologists K.Glinka, A.Rhode, and I.Gerasimov. His is both a great leader among pedologists and at the same time an ambassador of Russian soil science, enriching Russian and international soil science by up-to-date world experience. He maintained this international function also during very difficult times of “cold war” and demonstrated with this that the passion of his life always was and still is international science.


He received his Doctor of Geographical Sciences in 1968, at the Institute of Geography of the USSR Academy of Sciences for his distinguished work “Pedogenesis and Weathering in Cold Humid Areas”, a publication which revolutionized the understanding of soil genesis and geography in cold climates. With this he generated a concept

that allowed for elucidating and systemizing the giant number of soil data that had been acquired so far, and created a clear concept for the Russian classification system. His studies of northern soils were highly evaluated not only in Russia but also by many pedologists in arctic soils of the North America (J.Tedrow, F.Ugolini).

The worldwide recognition came to V.Targulian in 1974 during the X International Congress of Soil Science in Moscow. He carried out the most detailed study of Albeluvisols ever been in worldwide practice and prepared the brilliant field excursion. Two books ‘Arrangement, composition and genesis of sod-pale-podzolic soil’ published in both English and Russian made him known as a deep and very skillful specialist in soil genesis.

Victor Targulian is also widely known for his theoretical papers on the pedology: soil behavior in time, soil memory, characteristic times in soils and many other basic points. It was reflected in the book “Global Soil Change” (1990) which was published as an IIASA paper. He developed an





original concept of the exogenic mantles formed in situ from rocks and regoliths of all known terrestrial planets and called them “sitons” (from Lat. sitos, in situ). This concept allows comparing the biospheric sitons of the Earth (soils) with abiotic sitons of the other terrestrial planets.

He is still actively working in the field and teaching in Moscow State University. Last years he published (with co-authors) four books “Cutans in Albeluvisols” (2005), “Soil Memory” (2008), “Soils of Kamchatka” (2009) and “Late Permian Paleosols: Features, Processes an Environment” (2010).

From 1972 to 1993 he has been Head of the Laboratory of Soil Geography and Evolution at the Institute of Geography of the Russian Academy of Sciences, and now he is working there as Leading Researcher. Since 1988 he is Professor of Soil Science at Moscow State University. He was visiting professor at universities in many countries of Asia, North America and Europe. Since 1990 he is Vice President of the Dokuchaev’s Soil Science Society. He has taken part in eight World Soil Science Congresses and in many international scientific programs, (MAB–UNESCO, IGBP). He was Chairman of the IUSS Commission “Soil Genesis, Classification and Cartography (1994 – 1998) and Chairman of the Commission “Soil Genesis” (2002 2006). In 2010 he was elected as Honorary Member of IUSS and also received the IUSS Dokuchaev Award in 2006 at the 18th World Congress in Philadelphia

Awards and Prizes

Dr. Pedro Sanchez elected into National Academy of Sciences

Dr. Pedro Sanchez, Director of the Tropical Agriculture & Rural Environment Program at the Earth Institute, Columbia University and a World Food Prize laureate has been elected into the National Academy of Sciences, a highly prestigious honor recognizing individuals for their excellence in science.

“I have been working on committees and boards of the National Academy since 1972—it’s home to me in Washington,” said Sanchez. “Needless to say, it’s a great honor to be elected a member, especially being one of the few soil scientists on board and most probably one of the few Cuban-Americans so honored.”

For more than 50 years, Sanchez has worked on agriculture and hunger issues throughout the developing world. From 1968 to 1971 he led a research team in Peru that helped the nation achieve self-sufficiency in rice, placing the country among the highest rice producers in the world. In 1972, Sanchez worked with the Brazilian government to develop the Cerrado region, turning 30 million hectares of tropical land into a food-producer and radically changing how people approached farming tropical soils.

Since 2005, Sanchez has helped to establish and direct the Millennium Villages Project to promote policies to bring a green revolution to Africa and achieve the Millennium Development Goals by 2015.

For complete bio:

Pedro Sanchez is the Director of the Tropical Agriculture & Rural Environment Program and Senior Research Scholar of the Earth Institute at Columbia University. He also directs AfSIS, the African Soils Project, developing the digital soils map of the world and related information systems.

A native of Cuba, Sanchez received his BS, MS and PhD degrees in soil science from Cornell University. His professional career has been dedicated to help



eliminate world hunger and absolute rural poverty while protecting and enhancing the tropical environment. He is the author of “Properties and Management of Soils of the Tropics” (rated among the top 10 best-selling books in soil science worldwide), co-author of “Halving Hunger: It can be done” and of over 300 scientific publications. Sanchez was Director General of the World Agroforestry Center (ICRAF) headquartered in Nairobi, Kenya from 1991-2001, and served as Co-chair of the UN Millennium Project Hunger Task Force. He is also Professor Emeritus of Soil Science and Forestry at North Carolina State University. He is a Fellow of the American Academy of Arts and Sciences, American Society of Agronomy, Soil Science Society of America, and the American Association for the Advancement of Science. Sanchez has received honorary Doctor of Science degrees from the Catholic University of Leuven, Belgium, the University of Guelph, Canada and The Ohio State University, USA. He has received decorations from the governments of Colombia and Peru and was anointed Luo Elder with the name of Odera Akang’o by the Luo community of Western Kenya. Sanchez is the 2002 World Food Prize laureate and 2004 MacArthur Fellow.

In memoriam Alain Ruellan

1931-2012

President IUSS 1994 - 1998

IUSS Honorary member 2002



Pr. Alain Ruellan was born on 7th August 1931 in Bourg La Reine (Hauts-de-Seine, France) and passed away on 14th June 2012 in Nice (Alpes-Maritimes, France), at the age of 80.


Agronomist, he graduated in 1954 from the National School of Agriculture from Rennes (Brittany, France) and produced in 1957 his first pedological studies on soils with calcareous accumulations in Morocco, for the "Office de la recherche scientifique et technique outre-mer" (ORSTOM). After ten years in Morocco, he moved to Dakar (Senegal) where he worked as research officer on tropical and Mediterranean soils. He was awarded in 1970 a Doctorate in Natural Sciences from the University of Strasbourg (France) for his thesis entitled: *Contribution to the knowledge of the soils from the Mediterranean regions: soils with differentiated calcareous profiles from the plains of lower Moulouya (Morocco)*.

In 1972, he was appointed Professor at the National

School of Agriculture in Rennes where he developed soil science teaching with strong emphasis on soil morphology and field work. He founded the INRA Soil Science Laboratory from Rennes by recruiting a multidisciplinary team (soil science, geochemistry, hydrology, agronomy). A multidisciplinary approach of the soil was indeed the mark of his teaching and research themes. During this period, he returned to Brazil (thirty years after leaving his father's country of adoption), taught there soil morphology and invested in popular education for farmers.

In 1982, he was appointed General Director of ORSTOM (now Research Institute for Development, IRD) he will lead until 1987. His tenure completely transformed this institution employing 2600 persons (800 researchers), first by changing its status into a public research institute and by creating multidisciplinary departments, while ORSTOM was previously organized into disciplines. Through ORSTOM-IRD, Alain Ruellan fully developed his philosophy for research in favor of countries of the South: in his view, research should help these countries to gain their independence (food, health, energy) from the countries of the North. He has thus driven crucial reforms that have reinvigorated IRD and today still guide its activity.

He was offered from 1989 to 1996 the direction of the National Centre of Agronomic Studies in Warm Regions (CNEARC) based in Montpellier. At the same time, from 1990 to 1994, Alain Ruellan was also acting as director of environmental research at CNRS and implemented a program of interdisciplinary research in biological sciences and social sciences. During all this period with heavy responsibilities, he never reduced his investment in favor of education in Soil Science: from 1989, he progressively developed a complete set of educational tools (books, films, exhibitions, CD, DVD, flyers ...) devoted to soil education. And



his interest for Brazil became scientifically and politically even stronger as from 1988 he was fascinated by the Amazonia and he contributed in particular to a program of sustainable development intended for the Amapá state.

In addition to this managerial and research leading work, Alain Ruellan served from 1986 to 1992 as vice-president and then President of the French Association of Soil Science (AFES), and from 1994 to 1998 as President of the International Soil Science Society (ISSS). In this function, he was extremely active since he organized in Montpellier (France) the 16th World Congress of Soil Science (on the theme of the relationship between soil and human societies, between the soil and the social systems), Congress which remains engraved in all memories of soil scientists; he transformed also the ISSS into the present International Union of soil Science (IUSS) with a widely multidisciplinary organization. From 2002, he became honorary member of the IUSS.

In recent years, Alain Ruellan continued to work extensively for soil science, with, among others, a booklet coedited with R. Poss and distributed at more than 35.000 copies to teachers of secondary education in France and the publication in 2010 (IRD Editions) of a last book on « *soils and men: a threatened link* ». For Alain Ruellan, soil and men were intimately related.

Its humanitarian action, outside the scientific context, was also significant through its very active involvement in several associations devoted to international solidarity and sustainable development, such as the Centre for Research and Information for Development (CRID), or the Centre for Development and International Solidarity (CRIDDEV), which he founded. He was also president from 1983 to 1988 of the CIMADE which is a large ecumenical network aimed to welcome, guide and protect asylum seekers and refugees.

Shortly before his death, he had made a last visit to his Brazilian friends, in this country, Brazil, who was like a second homeland for him.

Alain Ruellan has, throughout his career, contributed to a very large number of publications concerning the soil, the support to developing countries, and political action for research.

The French and international scientific community are really losing an exceptional man.

AFES (The French Association for Soil Science)

In Memoriam

Fernando J. Ortega Sastriques

1943-2012



Fernando J. Ortega Sastriques died on October 7, 2012. At the time of his death he was an Honorary Member of the Cuban Society of Soil Science (CSSS) and Consultant Professor of the Agrarian University of Havana.

Born in Havana (Cuba) on September 23, 1943, he graduated as Agrochemical Pedologist at the University of Leningrad in 1969. That year he received a Master's Degree in Biological Sciences in the same university. He furthered his training through extensive field trips and collaborating with prominent soil scientists: I.P. Guerasimov, S.V. Zonn, P. Segalen, J. Boulaine, G. Tatevosian and Cuban Pedro Cabrer Mestre. He worked in different regions throughout the Cuban national territory and in countries in Central Asia (Hunger Steppe, Tian Shan mountains), Caucasus (Armenia, Abjaria, Abjasia), Ukraine (Chernozem zone and gray forest soils), Russia (podzolic zone), France (Rhône Valley), paleosoils in Mexico (Cuernavaca, Teotihuacan) and Bolivia (Valle Grande). He defended his doctoral thesis in 1987, with the results of his research on the Cuban soil humus.

From 1973 to 1979, he served as Scientific Secretary of the Cuban Academy of Sciences for Agricultural Sciences, a position which allowed him to further the organization and development of Soil Science in the country.

He was also a senior researcher in various Cuban institutions such as the Institute of Soils (1969-1989), the Anthropology Center (1989-2002), and the National Center for Hydrology and Water Quality (2002-2005), where he addressed different topics of national importance, Cuban climate evolution during the Quaternary, geographical regionalization of soils, the problem of secondary salinization of soils in the valleys in the eastern region of Cuba, physical and hydraulic properties of vertisols, hydrological regionalization of soils, soil organic carbon (SOC) stocks and other agronomic and archaeological issues. At the moment of his demise, he was part of the Group of Experts of the National Science and Technology Program on Global Change.

Pioneer in various fields, he paved the way for other researchers who later would follow. For example, the application of mathematics and computer science as early as 1976, the recognition patterns and the numeric classification of soil profiles. When in 1981 he launched the hypothesis on glacial-aridity coincidence in Cuba, his theories on the past climate had a special connotation, developed on a pedological basis, which represented a milestone in the understanding of Quaternary geology and the formation of soils in the region. Thus, he became one of the initiators of a new discipline in soil science: Paleopedology.

During 1996 and 1997, he formed part of an international team entrusted with the search for the remains of Ernesto Guevara de la Serna (Che) and the rest of the guerrillas who died in Bolivia and were later scattered in clandestine graves. He developed an original prospective strategy, based on the geology and the genesis of the soils with

fragile properties of the region of Valle Grande in that Andean nation, which significantly contributed to the location of the burial grounds shortly after. He was also member of the Council of the CMEA (Council for Mutual Economic Assistance) for the preservation of plant genetic resources (1973-1978), coordinator for Central America of the INQUA Carbon Commission (1995-1999), member of the Scientific Advisory Board of the IAI (Inter American Institute on Climate Change Research; 1996-2000), liaison in Cuba of the IGBP PAGES PROGRAM (2003-2007) and head of the Committee on carbon sequestration of the Ibero-American Wetlands Network of the CyTED (2005-2009).

He worked as a teacher throughout his career. In addition to his work as a consultant Professor at the Faculty of Agronomy of the Agrarian University of Havana, he taught in several Master Degree Programs on Archaeology, Urban Agriculture, Pedagogical Science and Soil Sciences. He was considered one of the main pillars in this last one. He tutored five doctoral theses and offered numerous master lectures in national and international events held both in Cuba and abroad (Moscow, Alma Ata, Prague, Mexico, Merida-Venezuela, Costa Rica and Florida-USA).

From his position as a member of the Editorial Board of the *Revista de Agricultura* (1974-1977) and, later, as an editor of the journal *Ciencias de la Agricultura* – a position he held for 12 years (1977-1988) –, editor of the journal *Agricultura Orgánica* (2002-2003), and editorial board member of it since 2002, Ortega Sastriques influenced the scientific training of several generations of researchers: He was also advisor to the Scientific-Technical Publishing House of the Cuban Book Institute, and a member of the IAI Newsletter Editorial Board (1998-2000).

His command of the Russian language (as well as English, French and Italian) allowed Spanish speaking researchers and specialists to access the works by the classics of Russian and East European soil studies, such as Dokuchaev, Neustruev, Gerasimov, Ivanova, Udovenko, Nikonova, Redly, and Szabolcs, through translations of their texts on subjects such as the genesis of soils, soil organic matter and salinity.

He was one of Cuba's most prolific authors. Internationally well known, he was an advocate

of the idea that the scientific dissemination of third world countries should be made available to their communities, through a successful editorial policy that would benefit scientific technical development.

In recent years, his contributions to the *Bulletin of the Cuban Society of Soil Science* were considered indispensable, ranking from informational articles to historical notes on the development of Soviet-Russian and Cuban Soil Science. His most recent works dealt with the negative effects of partisanship on science and on voluntarism.

An indefatigable worker, his approach, oftentimes controversial, responded to a more legitimate interest for the true development of his country and of science, always adhering to transparency and scientific truth, enriched with an optic in favor of preserving nature and the human species. As a result of his extensive work as a researcher and professor, at the moment of his demise, Fernando Ortega Sastriques had been honored with the Order Carlos J. Finlay, granted by the Council of State of the Republic of Cuba (1998), recognitions by the Ministry of Science, Technology and the Environment (1999) and the Academy of Sciences of Cuba (2007) and the German Planas Masot Award accorded by the CSSS for his lifetime achievements (2008).

This review of the work of Fernando Ortega Sastriques would not be complete without highlighting his generous spirit that accompanied his fertile intellect. With his example, he taught his students to work with a true vocation of service and scientific humility. He was the paradigm of a scientist, a follower of the genuine traditions of eminent personalities in the history of science in Cuba, an example of an ethics and humanism derived from those who forged the Cuban nation, with profound knowledge of their history and work.

Havana, November 5, 2012

Prof. Daniel Ponce de León, PhD.
Editor of the CSSS Bulletin
Agrarian University of Havana
E-mail: dponcel@isch.edu.cu

In Memoriam

Benno P. Warkentin

1929-2012



Shortly after his 83rd birthday, Prof. Benno P. Warkentin passed with his family present, on 21 July, in Corvallis, Oregon. Benno was born in Ninga, Manitoba, Canada, and grew up on his family farm; most certainly his relationship to soil and agriculture were founded in his earliest of days. His early education began in a one-room schoolhouse, which set him on his way to earning a noted scholarship to attend the University of British Columbia, where he earned his Bachelor of Science degree. He went on to earn an M.S. degree at Washington State University, Pullman, a Ph.D. at Cornell University, and had post-doctoral study at Oxford University.

Benno was an extraordinary scholar. He was involved in foundational events in soil science, making important contributions in thinking about soils and how they interacted with our world. He was among the pioneers in exploring soils in relation to environmental science and ecology and to water resources. He began his professorial career in 1957


at the MacDonald College of McGill University, Canada. After two decades he took on the position as Head of the Department of Soil Science for more than a decade. Benno was Director of the Oregon Water Resources Institute for several years.

Benno was well-respected by his peers and recognized the benefit of service to his profession. Over his career, he served as a member, chair or elected officer of more than 40 committees, boards, panels or organizations including the presidencies of the Canadian Society of Soil Science and the Oregon Society of the Soil Scientists; vice-chair two times of the International Society of Soil Science; member and chair of the Soil Science Society of America Budget and Finance Committee; Editor of the Canadian Journal of Soil Science and Associate Editor for the Soil Science Society of America Journal. He also served on numerous panels and boards in Oregon and the Pacific Northwest.

Benno had a strong sense of history and understood that you need to know where you have come from to make best decisions on where you are going. His love of history and soil science is embodied in the book of which he was the editor – *Footprints in the Soil – People and Ideas in Soil History*. This Elsevier book published in 2006 has 18 chapters and 27 authors. It leads the reader from Roman through modern times in a conversation about understandings and approaches to soil science around the world. Benno recognized the contributions of others to common goals and good, no matter their role in our world.

To support Benno's love of learning, a Warkentin Seminar has been held the last several years and will be continued into the future. In this seminar, OSU Soil Science graduate students decide whom they would like to hear from on the national scene and that person is invited to interact with students and faculty.

Benno was truly a gentleman. He was warm, kind, understanding, insightful, a person with whom it



was a joy to work. He saw all people as equals and to the best of his ability tried to help everyone reach their full potential. Benno Warkentin, the gentleman and scholar has left footprints for us all to follow in science and in being a gracious, thankful person who looks toward benefiting all of human kind. We appreciate Benno for these footprints.

*prepared by Profs. Russell Karow and Jay Noller
Department of Crop and Soil Science, Oregon State
University*



Reports of meetings

Recommendations of the international scientific conference

Soil as World Heritage

held in Balti, Republic of Moldova,
22-23 May 2012

Participants from Belarus, Czech Republic, European Commission, France, Germany, Italy, Moldova, Netherlands, Romania, Russia, Ukraine, United Kingdom and USA considered the many parts played by agriculture in our habitat, economy and society. Our focus was the conservation and improvement of soil as a world heritage and the need to monitor the effects of management on its productivity and the provision of environmental services. We analysed the results of long-term field experiments worldwide and inspected the *Typical chernozem* and long-term field experiments at the proposed World Heritage Site at the Selectia Research Institute for Field Crops on the Balti steppe. Such experiments are a perennial spring of fundamental data, expertise, and surprises that challenge our assumptions.

1. A World Heritage Site for Soil

Soils are truly wonderful. They sustain all life, including human life and well being. They are anchorage for roots and hold all the water and nutrients accessible to plants; they are home to myriad micro-organisms that accomplish biochemical transformations from fixing atmospheric nitrogen to recycling wastes, and to armies of microscopic animals as well as the familiar earthworms, ants and termites that create the soil's architecture – most of the world's biodiversity is in the soil, not above ground; amongst many environmental services, soils regulate water supply, water quality, and climate. Neglect of soil as a living system is degrading these functions and the soil itself. *Therefore, we are pleased to respond to the request of the President of the Republic of Moldova to support the proposal to UNESCO for listing the Typical chernozem of the Balti Steppe*

under the Selectia long-term field experiments as the first World Heritage Site for soils and soil science. Quite simply, this is the best arable soil in the world.

2. Soil Resolution

Our analysis of the state of agriculture in Moldova supports the EU strategy for re-structuring and reorienting farming systems. The all-pervading, extractive agricultural system is bankrupt. It depends on non-renewable energy and agro-chemicals; it is sending the soil helter-skelter down river – a loss that cannot be repaired on the human time scale; and handing the consequences to future generations. We should heed the words of Ionescu Sisesti: 'The land is eternal. If land disappears, eternity disappears.'

There is an alternative: an ecological approach respecting crop rotation, with lesser demands for non-renewable inputs and enhanced protection of soil and soil functions. But policy must change dramatically to support the necessary changes in outlook and farm practices. *Therefore, we have adopted nem. con. a resolution that may serve as a basis for legislation. On the one hand, it proposes concrete actions to support more-sustainable agricultural systems and more-secure rural livelihoods. On the other hand, it identifies new directions for research to underpin the new agriculture.*

2.1 Principles for policies to make the best use of existing knowledge

- Good soil is fundamental to the sustainability of agriculture and society; its conservation is just as important as crop production; present knowledge enables us to do both through an ecological approach that is productive, economically viable and environmentally friendly. Self-sufficiency of energy may be attained by conservative use of biomass, e.g. by on-farm generation and use of methane that not only promotes sustainable farming but mitigates climate change.
- *Soil health* may be measured by indices of soil fertility like clay content and mineralogy, bulk

density, electrical conductivity, organic carbon and nitrogen (particularly in the labile fraction of soil organic matter), earthworm population and microbial biomass. The impact of the farming system can be evaluated by calculating budgets for various elements; energy self-sufficiency by the energy budget of the farming system. *Progress towards sustainability* may be demonstrated by models applicable to farms and whole landscapes simulating biophysical processes. Results obtained by different methods need to be collated and maintained in a secure and accessible bank of data.

- Regeneration of soil fertility and maintenance of environmental services is possible only if the exigencies of the market are in harmony with agronomic and ecological laws, which may be achievable through lesser dependence on costly, non-renewable inputs. Building on these principles, initiatives to promote more sustainable agriculture and more secure rural livelihoods might include:
 - *A national program for food and water security and safety including support for or creation of markets for required production and services such as water management and carbon fixation*
 - *A soil law to secure the services provided by the soil to society and the environment. This should be the basis for allocation incentives needed to achieve the required level of protection.*
 - *Revitalization of state services, working in partnership with farmers, to elaborate farm and community plans for rational land use; to provide on-farm support for the adoption of best practice; and to monitor the state of soil and water resources*
 - *Support for cooperation between farmers for purchasing inputs, marketing produce and services, soil and water conservation, and exchange of know-how; and support for contractors serving cooperatives, e.g. for new equipment for conservation farming*
 - *Locally based production and distribution of high-quality seeds and livestock semen*
 - *Support for interdisciplinary research including long-term field experiments. Unquestionably, they are cost-effective; whether we like it or not, soils and ecosystems operate and change over longer time scales than political imperatives.*
 - *Education of specialists and a career structure for them to practise their skills*

2.2 New research thrusts

It is hard to increase productivity, maintain environmental services and provide secure rural livelihoods in the face of perceived contradictions between economic development and sustainability. Our knowledge is fragmented and applied mainly to an industrial model of production that does not meet our needs. Research on more-sustainable systems should consider:

- *Deepening inter-disciplinary research on the efficient use of land, water and inputs, lessening nutrient leaching and fixation, alternative technologies like allelopathy and mycorrhiza, and traceability at national and European levels to identify processes of production and final products that may be a risk to health*
- *Energy self-sufficiency, both direct consumption and indirect consumption as fertilizer. Priorities include returning legumes and livestock into farming systems, and the use of biomass energy.*
- *Recognition of the error of burning crop residues. Removal of crop residues means a loss of soil function through a loss of soil organic matter; short-term advantages of burning crop residues are much less than the medium-term losses.*
- *Extending modelling and simulation as decision-support tools*
- *Elaboration of incentives for farmers who practise certified, sustainable management. This requires measurable criteria for certification and realistic financial incentives like Green water credits for practices that increase infiltration and cut damaging overland flow, and prevent contamination of groundwater; and Carbon credits for accumulating soil organic matter.*

The 10th International Conference of Egyptian Soil Science Society (ESSS)

The meeting held on November 5 – 8, 2012 in the international center for agriculture in Ameria, Alexandria, Egypt. The 10th International Conference of Egyptian Soil Science Society (ESSS) “*Towards Optimal Utilization of Soil and Water Technologies*” and 4th International Conference of Water Requirements & Field Irrigation Department “*On-Farm Irrigation and Agroclimatology*” were held in conjunction with FAO, IFAD, Government of South Australia, Rural Solutions SA Global food & Agriculture Systems.

Nearly 400 people attended the ESSS Meeting from Australia, Germany, Hungary, Iraq, India, Egypt, Saudi Arabia and Tunisia. More than 150 papers were presented. The presented papers were divided into the following sessions:



Overview on the International Center for Agriculture.

- Soil Physics and Water Relations
- Climate Change and Modeling
- Pedology, GIS and Remote Sensing
- Plant Nutrition, Soil Fertility and Fertilizers
- Soil Chemistry, Pollution and Remediation

The 7th International Acid Sulfate Soil Conference in Finland 2012

The 7th International Acid Sulfate Soil Conference (IASSC) was held in Vaasa, Finland (26.8.-1.9.2012). The conference consisted of three days of scientific sessions with oral and poster presentations, a mid-conference whole-day field tour and a two-day post-conference excursion in the Vaasa region. The Conference was attended by 111 registered delegates from 10 countries and in total by 200 persons. The 7th IASSC was jointly organized by the Geological Survey of Finland (GTK) and the Working Group of Acid Sulfate Soils of the International Union of Soil Sciences (ASS WG).

Acid sulfate soils (ASS), also referred to as the “nastiest soils in the world”, are soils that contain or have contained metal sulfides that oxidize under aerobic conditions and, subsequently, typically produce very severe acidity and metal pollution. Acid sulfate soils cover extensive areas particularly in coastal areas of South-East Asia, the USA, the Caribbean, Western Africa, and Australia and around the Baltic Sea. These soils are heavily exploited for a wide variety of purposes in different parts of the world, often causing serious environmental damage and much still remains to be done in order to find management solutions for sustainable land-use. The presentations in the 7th IASSC, reflects the broad scope of issues that are related to ASS, including



Prof. Rinklebe and Prof. Fari beside Sphinx and Pyramids.



Audience of the Meeting.

biogeochemical soil processes, soil mapping, classification and characterization, environmental effects and management issues in a changing climate. The Conference proceedings, reviewed by the Conference Scientific Committee, covering these issues have been published by GTK (Geological Survey of Finland Guide 56) and can be found at on the Conference pages, www.7iassc.fi together with oral presentations, the excursion guidebooks, some photos and videos.

Finding suitable management solutions in ASS areas requires close cooperation and communication between land owners, environmental officials, land planners and politicians. Thus, two sessions that were open to the public were devoted to the “Stakeholders View” and most notably included presentations by the awarded “role model farmer” Robert Quirk from Australia and Mats Nylund from Finland who is both a member of the Finnish Parliament and a farmer with ASS. The Conference also got good media coverage on the national television, radio and newspapers. The theme of the Conference was “Towards Harmony between Land Use and the Environment”.

This was the first International Conference on ASS in the Boreal zone. The area is profoundly different from other known ASS areas in the world due to the glaciated terrain with rapid post-glacial land uplift. Sulfide bearing soil materials along the Finnish and Swedish coastline were deposited in the former brackish Baltic Sea from where they have been raised up to c. 90 m above the current sea level since the last ice age. Prior to the Conference, a tour was arranged to the UNESCO World Heritage Site (Kvarken Archipelago) in the nearby archipelago. The area, which received its status on geological grounds, gave international participants an opportunity to see the rough glaciated terrain, including some of the best preserved DeGeer moraines in the world that very recently have raised from the sea. The mid-conference excursion, which had over 100 participants, was held on farmlands near the sea level close to Vaasa. This field excursion included demonstrations about: (1) trials on how sulfide oxidation on ASS may be minimized by subsurface drainage, subsurface irrigation, by-pass flow prevention as well as with chemical oxidation inhibitors, (2) field methods for mapping acid



Five nationalities (Poland, Finland, Netherlands, Australia and Malaysia) in an ASS pit. Professor Markku Yli-Halla, in front (with brown cap), is demonstrating the well structured ASS with an underlying black monosulfidic layer. Professor Leigh Sullivan, in the middle (with the highest cap), is the Vice-Chair of the IUSS ASS WG. Photo: Vincent Westberg.

sulfate soils, (3) description of an ASS, (4) water and greenhouse gas monitoring at a test site. The two-day post-conference excursion covered a larger area within 100 km from Vaasa and was attended by 30 persons. Sites visited included both young and old ASS farmlands, subaqueous ASS materials, road construction works on ASS, peat and forest underlain by ASS as well as sites along main water courses in the area.

A Working Group meeting with 26 participants was held at the end of the conference. Main topics discussed were the proposed ASS symposium at the 20th World Congress of Soil Science in Korea 2014 and proposals for the 8th International Acid Sulfate Conference, scheduled to be held in 2016.

The Conference was acknowledged for being well organized and there are many people participating in the different Conference Committees and financiers to thank for that. Most notably, Doctor Peter Edén (Chair of the Executive Committee) and his colleagues at GTK did the great bulk of necessary work. Land planner Rainer Rosendahl and Professor Markku Yli-Halla from Helsinki University were part of the Executive Committee and are to thank for administration of the splendid conference excursions. Other important contributors helping with the arrangements include Esa Koskenniemi and his colleagues at the local Environmental Centre (EPO ELY), Sten Engblom and Pekka Sten with colleagues from the local universities of Applied Sciences (Novia and VAMK). Moreover, the ASS WG vice Chair Professor Leigh Sullivan from Southern Cross University, Australia, gave valuable advice throughout the process.

Peter Österholm, Chair of the IUSS ASS WG

WRB Field Workshop in Poland (30 August - 3 September 2011)

The Polish Society of Soil Science and the Wrocław University of Environmental and Life Sciences invited the IUSS Working Group World Reference Base for Soil Resources (WRB) to a field workshop in Poland. The Working Group is very thankful to Prof. Cezary Kabala and his colleagues for the excellent organization. The workshop was attended by around 30 soil scientists.

The first two days were dedicated to the hills and lowlands North of Wrocław: Luvisols were the dominant soils in the loess and Albeluvisols on the stratified glacial materials. The third day, we travelled from Wrocław through the Sudety Foreland and passing by Mount Slezka to the Karkonosze Mountains. The soils of that day were Alisols, an Albeluvisol and an intensively discussed Endostagnic Chernozem. At the fourth day we went by lift to the main ridge of Karkonosze Mountains and walked down along an interesting catena with a Folic Cambisol and several Podzols.

All profiles have been classified twice: once according to the second edition of WRB (2006, 1st update 2007, published at the WRB's homepage at FAO: <http://www.fao.org/nr/land/soils/soil/en/>) and once according to the "Guidelines for constructing small-scale map legends using the WRB" (2010, <http://www.fao.org/nr/land/soils/soil/wrb-documents/en/>).

In the 2007 edition, the qualifiers for every RSG have a required sequence (Prefix and Suffix Qualifiers) but no ranking of importance, and for a correct classification every applying qualifier has to be added. Without changing definitions, the Guidelines from 2010 subdivide for every RSG the qualifiers into Main Qualifiers (ranked) and Optional Qualifiers (not ranked). This allows the number of qualifiers used for the soils of a map unit to depend on the map scale. During the excursion we proved that the Guidelines for constructing map legends are also suitable for classifying pedons and that their different qualifiers sequences often lead to more practical soil names.

The fifth day, we had our WRB Business Meeting to see what we have learned for the 3rd edition of WRB to be published in 2014. It was concluded that it was a positive experience to use the Guidelines for constructing map legends (2010) also for classifying individual soils. Also positive was the test of the rules for soils buried under new material (see figure 1). Besides that, we had intensive discussions, especially on the following topics:

- definitions of argic horizon and albeluvisol tonguing and the relationship between Stagnosols, Planosols and Albeluvisols
- mountain Podzols affected by subsurface water flow with or without stagnation
- colluvic material

We made some steps to an agreement on controversial topics.



Figure 1: WRB Classification according to the Guidelines 2010: *Eutric Cambisol (Colluvic, Silty) over Haplic Luvisol (Cutanic, Hypereutric, Lamellic, Silty)*.



Figure 2: WRB Classification according to the Guidelines 2010: *Folic Albic Podzol (Oxyaquic, Ruptic, Skeletic)*.

Upcoming activities:

Australia: Our next field workshops lead us to Australia. From 27 - 29 November 2012, we will study sodium texture-contrast soils in Victoria. Our aim is a better accommodation of these soils in the 3rd edition of WRB (2014). The tour is organized by David Rees and Ben Harms. Afterwards we join an excursion through Tasmania which is the Pre-Conference Tour of the Annual Meeting of the Soil Science Societies of Australia and New Zealand.

Russia: Prof. Sergey Goryachkin invites us to study ultracontinental cold soils in the Sakha (Yakutia) area from 17 - 23 August 2013. The tour will be announced soon. It is scheduled in that way that it directly follows the meeting of the Paleosoil Working Group in Kursk.

Peter Schad
 Chair of IUSS Working Group WRB



New Publications

The challenge of sustaining soils: Natural and social ramifications of biomass production in a changing world.

Verena Winiwarter and Martin H. Gerzabek (Eds., 22 Co-authors): *Interdisciplinary Perspectives No. 1* (2012) (Series Editors: Viktor Bruckman, Ernst Bruckmüller, Martin H. Gerzabek, Gerhard Glatzel, Marianne Popp & Verena Winiwarter); 195 pages, € 38.30, ISBN: 987-3-7001-7212-3, orders: Austrian Academy of Sciences, <http://verlag.oeaw.ac.at/>

Soils perform a variety of functions. Soils are the basis of food and other biomass products; they provide crucial resources; and they store, filter, and transform materials (such as water) that are vital for life. Soils are a physical and cultural environment for humankind, a natural habitat, and they sustain the largest gene pool in the biosphere. Pressures on soils are increasing dramatically. Soils need to become central to global change discussions in order to advise policy makers in their understanding of the potentials, limits, and vulnerabilities of soils. In particular, strategies for sustainable management of soils in a rapidly changing world require a better understanding of soil-human interactions. Human impacts on soils are complex and site specific; resulting in pressures on biodiversity, water availability and quality, and the atmosphere. Our rapidly increasing needs for food and energy place growing and conflicting demands on soil. Development issues, food security, nature conservation, our dependence on fossil fuels, social inequality, and armed conflict all have a bearing on soils. This volume is a truly interdisciplinary attempt to offer an overview of the natural and the social side of the challenge of sustaining soils. 21 world-renowned experts from a wide range of backgrounds review the existing knowledge from which an integrated assessment of the challenges ahead emerges. Soils and societies are linked in a historically and geographically wide-ranging overview that allows readers to understand how deeply-rooted current problems are, but also offers a perspective on potentially sustainable solutions. The links of soils and atmosphere are described with respect to biomass production and global climate change, which are considered together. How the agrofuel option has been transformed into EU policy and how this policy

in turn transformed and continues to transform European and African land is another topic, which is discussed in depth. In this book, soils are put centre stage in the debate about global climate change and biomass production, which influences considerably the evaluation of sustainable options for the future.

Agro-ecological Land Evaluation for Sustainable Rural Development, e-book edition

(Evaluación Agro-ecológica de Suelos para un Desarrollo Rural Sostenible, in Spanish). D. De la Rosa. Paraninfo Ed., Madrid, 2012, 404 p. and the content of attached CD-ROM. ISBN: 978-84-8476-361-1 (Printed version).

The main focus of this book is that using soil type information in decision making is at the heart for sustainable use and management of agricultural lands. Following an innovator framework rooted in the land evaluation and the agro-ecological zoning disciplines, and as interface between land resources survey and land use planning, the major features are: the basic information from soil survey, soil inventory and soil monitoring; the additional information referred to climate and farming factors; the agro-ecological land evaluation analysis through soil interpretation, pedotransfer functions, land capability, crop and forest suitability, soil productivity, soil erosion risk, soil contamination risk and soil compaction risks; the soil impacts evaluation due to climate change; and the integrated land evaluation systems by using harmonization database management systems (ex. the *SDBmPlus* soil profile database), biophysical modeling through different artificial Intelligence based techniques (ex. the expert system/neural network *ImpelERO* soil erosion model), and results spatialization by geographical information technology (*GIS*), in order to approximate to real decision support systems (*DSS*). As a case study applying the agro-ecological decision support system *MicroLEIS DSS* to Sevilla Province (Spain), soil specific strategies to maximize land productivity and to prevent land degradation are predicted within two major topics: the strategies related to land use planning, at a regional scale; and the strategies related to soil management planning, at a farm level. Toward

a new agro-edaphological paradigm is the last topic of the book, showing the need to continue to identify and share the scientific information and practical knowledge that support successful and sustainable agriculture systems in the future. The book is extensively referenced and includes tables and figures to explain data. Also, the main software components of *MicroLEIS DSS* can be installed and applied from the attached CD-ROM. A foreword by Prof. Winfried Blum advocates the launching of innovated predictive strategies for sustainable land use and soil protection in agriculture. E-book price: 47.20 euros. Orders to: Ediciones Paraninfo S.A., Avda. Filipinas 50, 28003 Madrid (Spain).

E-mail: clientes@paraninfo.es
Internet: www.paraninfo.es

Soil Hydrology, Land Use and Agriculture: Measurement and Modelling.

M K Shukla (Ed.). CABI. ISBN: 9781845937973. Hardcover, 448 pages. Price \$180.00.

Agriculture is strongly affected by changes in soil hydrology as well as by changes in land use and management practices and the complex interactions between them. This book aims to expand our knowledge and understanding of these interactions on a watershed scale, using soil hydrology models, and to address the consequences of land use and management changes on agriculture from a research perspective. Case studies illustrate the impact of land use and management practices on various soil hydrological parameters under different climates and ecosystems.

Laboratory Guide for Conducting Soil Tests and Plant Analysis.

By J. Benton Jones, Jr. Taylor and Francis. ISBN: 978-0-8493-0206-0. Paperback, 384 pages. Price \$107.95.

With the help of this guide, you can use obtained test results to evaluate the fertility status of soils and the nutrient element status of plants for crop production purposes. It serves as an instructional manual on the techniques used to perform chemical and physical characteristic tests on soils. *Laboratory Guide for Conducting Soil Tests and Plant Analysis* describes the basis and procedures for each test in detail, including analytical instrumentation procedures and laboratory quality assurance requirements.

Hula Valley: Ecology, Hydrology, Agriculture, Nutrient Dynamics, Tourism and Nature Conservation.

Series: Environmental Science and Engineering. Subseries: Environmental Science. Gophen, Moshe. 2012, 2012. Springer. ISBN: 978-3-540-88249-7. Hardcover, approximately 300 pages. Price \$129.00.

The book subject is a comprehensive ecological insight into a natural ecosystem that was strongly modified by human intervention and its management has a significant impact on water, agricultural, natural and touristic resources. The anthropogenic and natural impacts on the ecosystem are crucial for the sustainability of the regional economy and national water supply. The chapters are giving a scientific-descriptive information on long term natural and anthropogenic processes. The presented information is a thorough guideline of long term human experience of intervention in natural ecosystem structure with indications for predicted sustainability. The book chapters cover topics of hydrology and eco-hydrology, limnology, geochemistry, underground waters, peat soil chemistry and degradation, natural resources of plants and animal (emphasizing birds) agricultural developments and the introduction of eco-tourism into the management design.

Soils of the World

Original German edition published by Spektrum Akademischer Verlag GmbH Heidelberg. Zech, Wolfgang, Hintermaier-Erhard, Gert. 2012, 2012. Springer. ISBN: 978-3-540-30460-9. Hardcover, 180 pages. Price \$99.00.

This book describes and comprehensively illustrates all earth soils in accordance with the prevailing worldwide WRB classification. However, it goes far beyond description and definition, by presenting the soils in the context of the natural habitats in which they occur. The book is structured in line with ecological zones. Initially their location, the climate and the vegetation as well as the factors influencing the constitution of the soil are briefly presented. All soils representative of the corresponding ecological zone are then defined and described in detail: definition, diagnostic features, physical, chemical and biological characteristics, occurrence and distribution, use and endangering, processes influencing soil formation, distribution maps, diagrams showing profile characteristics and soil formation processes, photographs of soil profiles, photographs of soil-scapes and soil

catenas. All these factors contribute to producing an impression of their characteristics as well as their natural surroundings. The very instructive photographs and graphs combine to make the publication an excellent reference book about the earth's soils and their distribution.

Toxicity of Heavy Metals to Legumes and Bioremediation

Zaidi, Almas; Wani, Parvaze Ahmad; Khan, Mohammad Saghir (Eds.). 2012, 2012, XII. Springer. ISBN: 978-3-7091-0729-4. Hardcover, 248 pages. Price \$189.00.

This title discusses various effects of heavy metal exposure to legumes as well as the bioremediation potential of rhizosphere microbes. Availability of heavy metals, their uptake and the effects of metals on germination and various physiological functions of plants including legumes are presented. Furthermore, the effects of heavy metals to nitrogen fixing microorganisms and how microsymbionts can overcome metal stress is presented in detail. The influence of glutathione on the tolerance of *Rhizobium leguminosarum* to cadmium is discussed. The role of nitrogen fixers in decontamination of heavy metal toxicity, mycoremediation of metal contaminated soils, microbially mediated transformation of heavy metals and action of plant growth promoting rhizobacteria and nitrogen fixers together in detoxifying heavy metals are broadly explained. This volume is a useful tool for scientists, policy makers and progressive legume growers intending to develop safe and healthy legumes for future generations.

Plants and Heavy Metals

Series: SpringerBriefs in Molecular Science. Subseries: SpringerBriefs in Biometals. Furini, Antonella (Ed.). 2012, 2012, XIV. Springer. ISBN: 978-94-007-4440-0. Softcover, 86 pages. Price \$49.95.

This title focuses on the many aspects of the interaction between plants and heavy metals. Not only it describes the effects of heavy metal toxicity on the plant cell and its organs but it also examines the mechanisms that plants adopt to scavenge heavy metals at cellular, physiological, and metabolic level. Plants and Heavy Metals also analyses Hyperaccumulator plants and shows their potential role in phytoremediation technologies in light of the recent research results.

Advances in Citrus Nutrition

Srivastava, Anoop Kumar (Ed.). 2012, 2012, XIV. Springer. ISBN: 978-94-007-4170-6. Hardcover, 477 pages. Price \$239.00.

Citrus nutrition has been the subject of worldwide research to not only soil scientists, but to researchers covering various other disciplines as well. Despite many breakthroughs in diagnosis and management of nutrient constraints, citrus nutritionists are still baffled by the complex processes associated with precise field diagnosis of different nutrient constraints. Hence, currently available diagnostic tools are more applicable to next season's crop, instead of addressing the constraints in the current standing crop. In this regard, there has been some distinctive developments. For example, the application of geospatial tools including non-destructive proximal sensing, metalloenzymes through increasing involvement of genomics and metabolomics (e.g., expressed tag analysis), exploiting the dynamic relationship between soil enzymes and fertility variations, etc. Studying the partitioning of nutrients across critical growth stages has, not only improved our understanding on nutritional physiology, but enabled researchers to modulate nutrient requirement according to nutrient demand of growing leaves and fruits according to source-sink relationship. This is where nutrient use efficiency intervenes best to unravel many of the mysteries associated with nutrient requirement at various phenophases of crops. The major abiotic constraints in the form of calcium carbonate (induced iron chlorosis on alkaline soils and Al-toxicity; induced nutrient transformations on acid soils) have taken the understanding of citrus nutrition to another level of excellence, highlighting their significance in cutting down the efficiency of nutrient use. These developments have undoubtedly added a new dimension to diagnosis of nutrient constraints. As many as 30 chapters from 72 eminent researchers spread over 19 countries have made this maiden book on Citrus Nutrition more special both in terms of quality as well as attracting a global readership.

Radioactivity Transfer in Environment and Food.

Series: Environmental Science and Engineering. By Vosniakos, Fokion K. 2012, 2012, XVI. Springer. ISBN: 978-3-642-28740-4. Hardcover, 148 pages. Price \$129.00. The book deals with various consequences of major nuclear accidents, such as

in 1986 in Chernobyl and in 2011 in Fukushima. The public is extremely interested in learning more about the movements and risks posed by radiation in the environment related to food supply and food safety. Radionuclides are found in air, water, soil and even in us not only after nuclear accidents because they occur also in nature. Every day, we ingest and inhale radionuclides in our air and food and the water. This book provides a solid underpinning of the basic physical-chemistry and biogeochemistry of naturally occurring and anthrop radioactivity. The mechanisms of radioactive element transfer in the atmosphere, tropospheric and stratospheric diffusion of radioactivity, environmental contamination from accidents and the impact of atmospheric pollution on the food chain, soil and plants, are analyzed and the analytical methods are illustrated. The question of natural radioactivity concentration in building materials is addressed too. While the book contains many case studies and data for Greece, it is of general value. It contributes to the development of international environmentally safe standards and economically reasonable standard regulations based on justified radiological, social and economical legislation concepts.

Major Soil Groups of the World: Ecology, Genesis, Properties and Classification

By Jean-Paul Legros. June 2012. Science Publishers. ISBN: 978-1-57808-783-9. Hardcover, 470 pages. Price \$139.95.

This profusely illustrated book gives an exhaustive account of the principal types of soils of our planet. The “progressive descent of weathering fronts” model, recognized and used by eminent international scientists is the guiding principle of choice to link the observations and to give the reader a synthetic and coherent view of the differentiation of soils. In each case, the introductory reminders summarize the physicochemical and mineralogical principles necessary for understanding the text. The nomenclatures rely systematically and simultaneously on the two most commonly used classifications: *Soil Taxonomy* and *World Reference Base*. This reference manual is aimed at students of the undergraduate and graduate courses, but is also intended for workers and scientists in this subject area (geologists, pedologists, agronomists, land-use planners, foresters, etc.) as well as for all those concerned with or interested in protection of the environment.

The Fertile Triangle: The Interrelationship of Air, Water, and Nutrients in Maximizing Soil Productivity

By Benjamin Wolf. June 2012. CRC Press. ISBN: 978-1-46-653543-5. eBook, 484 pages.

The critical growing information provided in *The Fertile Triangle: The Interrelationship of Air, Water, and Nutrients in Maximizing Soil Productivity* will allow you to reap the benefits of a successful crop. You will gain an in-depth understanding of the three major components (air, water, and nutrients) that determine crop yields, helping you become a better grower and/or advisor. Dr. Benjamin Wolf has made a valuable contribution to growers and students alike with this comprehensive book written as a result of 50 years of experience consulting growers of numerous crops. You will discover many farm practices and other media (such as soil preparation, use of machinery, and correction of pH and salt levels) that affect the three growing components. Soil fertility and crop production students, farmers, farm managers, consultants, extension personnel, and those who sell various agricultural chemicals used in soil supplements can profit from *The Fertile Triangle's* complete coverage of air, water, and nutrients in the production of crops and how these items are interrelated. Your new understanding of their importance, their close relationships, and how they are affected by various farm practices will allow you to utilize soil inputs to your full advantage with minimal harmful effects on crops, soils, or the environment.

Water and Agronomic Productivity

Series: *Advances in Soil Science*. Rattan Lal, B.A. Stewart (Eds.). June 19th 2012. Published by CRC Press. Taylor and Francis. ISBN: 978-1-43-985079-4. Hardcover, pages 594. Price \$139.95.

Crop water use can be increased by management of surface runoff, groundwater, irrigation, and soil water. Technological innovations to enhance availability of water for agricultural crops depend on soil and site-specific conditions. Devoted to the principles and practices of enhancing water use efficiency, *Soil Water and Agronomic Productivity* addresses current problems associated with water supplies required for agricultural purposes and food production. Written for professionals and students in agricultural fields, the book focuses on innovative technologies for improving soil water availability, enhancing water use efficiency, and using productive irrigation systems. It also presents techniques to conserve water in the root

zone as well as remote sensing techniques to assess soil water regime and predict drought on a regional scale. Soil water management is crucial to reducing the vulnerability to agronomic drought. There are numerous examples of aquifers that have been severely depleted by misuse and mismanagement. *Soil Water and Agronomic Productivity* explains the factors and causes of the mismanagement of soil water and proposes options for sustainable and efficient use of scarce water resources. Meeting the global food demand will require careful worldwide management of soil and water resources, and this can only be done by sharing information and knowledge.

Soils and Human Health. Eric Charles Brevik, Lynn C. Burgess (Eds.)

CRC Press. Taylor and Francis, 2012. ISBN: 978-1-43-984454-0. Hardcover, 496 pages. Price \$119.95.

The first reference to focus on human health from a soils perspective, this book discusses human health as a product of soil health. Authors discuss how soils influence human health in a variety of ways, including the supply of nutrients; presence of toxic materials and pathogens; and other factors such as medicines and heavy metals. Chapters cover soil elements and human health; soil chemistry-crop interactions and human health; geophagy; organic pollutants in soil; toxic materials in fertilizers; pathogens in soil; airborne dust; radioactive elements/issues in soil; soil degradation; soil-based public health recommendations; heavy metals in soil; food security; and climate change.

Invasive Plant Ecology and Management: Linking Processes to Practice

CABI Invasives Series. T.A. Monaco, USDA-ARS, Forage and Range Research Laboratory, Utah State University, USA, and R.L. Sheley, USDA-ARS, Eastern Oregon Agricultural Research Center, USA (Eds.). CABI, 2012. ISBN: 9781845938116. Hardcover, 216 pages. Price £75.00 / \$145.00 / €100.00.

Bringing together ecology and management of invasive plants within natural and agricultural ecosystems, this book bridges the knowledge gap between the processes operating within ecosystems and the practices used to prevent, contain, control and eradicate invasive plant species. The book targets key processes that can be managed, the impact of invasive plants on these ecosystem processes and illustrates how adopting ecologically based principles can influence the ecosystem and lead to effective land management.

Digital Soil Assessments and Beyond

Proceedings of the 5th Global Workshop on Digital Soil Mapping 2012, Sydney, Australia. **Budiman Minasny, Brendan P. Malone, Alex B. McBratney (Eds.)**. CRC Press, Taylor and Francis, 2012. ISBN: 978-0-415-62155-7. Hardcover and CD, 482 pages. Price \$169.95. *Digital Soil Assessments and Beyond* contains papers presented at the 5th Global Workshop on Digital Soil Mapping, held 10-13 April 2012 at the University of Sydney, Australia. The contributions demonstrate the latest developments in digital soil mapping as a discipline with a special focus on the use of map products to drive policy decisions particularly on climate change and food, water and soil security. The workshop and now this resulting publication have better united formerly disparate subdisciplines in soil science: pedology (study of the formation, distribution and potential use of soils) and pedometrics (quantitative and statistical analysis of soil variation in space and time). This book compiles papers covering a range of topics: digital soil assessment, digital soil modelling, operational soil mapping, soil and environmental covariates, soil sampling and monitoring and soil information modelling, artificial intelligence and cyber-infrastructure, and GlobalSoilMap. *Digital Soil Assessments and Beyond* aims to encourage new mapping incentives and stimulate new ideas to make digital soil mapping practicable from local to national and ultimately global scales.

Competitive Sorption and Transport of Heavy Metals in Soils and Geological Media

H. Magdi Selim (Ed.). *To Be Published August 31st 2012* by CRC Press. Taylor and Francis. ISBN: 978-1-43-988014-2. Hardcover, pages 426. Price \$129.95.

Bringing new understanding to heavy metals sorption and transport in soils and aquifers, this book explores sorption and mobility of single versus multiple heavy metals species in the vadose zone. It relates transport mechanisms with processes which govern sorption mechanisms that dominate in a competitive system of multiple heavy metal species. Based on knowledge presented in this book, one can identify competitive transport processes of heavy metals which can be subsequently used as a predictive tool.

Desertification, Land Degradation and Sustainability

Anton Imeson 2012 Wiley Blackwell ISBN 978-0-470-71448-5 Hardcover pages 326 price Euro 108, Paper ISBN 978-0-470-7-71449-2 pages 326. Price Euro 42 EBook ISBN 978-1-1199-7978-4 90 Euro.

The holistic treatment covers both historic and present day desertification and considers both geology and culture. The theme is Man's impact on the earth from the perspective of the soil and its functions. Paradigms that enable scale, change and integration across disciplines are illustrated. Relevant principles from soil science, hydrology and ecology, soil conservation and the social sciences, ethics and law are treated and discussed in the context of land degradation caused by fire, farming, economic investments, grazing. European, and UNCCD actions and strategies are discussed and a global soil conservation policy seen as the way ahead.

Plant Salt Tolerance: Methods and Protocols

Series: Methods in Molecular Biology, Vol. 913. Shabala, Sergey; Cuin, Tracey Ann (Eds.). *To Be Published August 31, 2012 2012, 2012, XIV.* Springer. ISBN: 978-1-61779-985-3. Hardcover, 432 pages. Price \$159.00.

Soil salinity is destroying several hectares of arable land every minute. Because remedial land management cannot completely solve the problem, salt tolerant crops or plant species able to remove excessive salt from the soil could contribute significantly to managing the salinity problem. The key to engineering crops for salt tolerance lies in a thorough understanding of the physiological mechanisms underlying the adaptive responses of plants to salinity. *Plant Salt Tolerance: Methods and Protocols* describes recent advances and techniques employed by researchers to understand the molecular and ionic basis of salinity tolerance and to investigate the mechanisms of salt stress perception and signalling in plants. With chapters written by leading international scientists, this book covers nearly 30 different methods, such as microelectrode and molecular methods, imaging techniques, as well as various biochemical assays. Written in the highly successful *Methods in Molecular Biology™* series format, chapters contain introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and notes on troubleshooting and avoiding known pitfalls. Authoritative and easily accessible, *Plant*

Salt Tolerance: Methods and Protocols serves as an essential read for every student or researcher tackling various aspects of the salinity problem.

Phytoremediation and Biofortification: Two Sides of One Coin

Series: SpringerBriefs in Molecular Science. Subseries: SpringerBriefs in Green Chemistry for Sustainability. Yin, Xuebin; Yuan, Linxi (Eds.). *To Be Published August 31, 2012, 2012, IX.* Springer. ISBN: 978-94-007-1438-0. Softcover, 126 pages. Price \$49.95.

Phytoremediation consists of using plants and their associated microbes for environmental cleanup. Over the past 10 years, this treatment has gained recognition as a cost-effective, non-invasive, alternative or complimentary technology to engineering-based remediation methods. Biofortification, on the other hand, is an agricultural process that increases the uptake and accumulation of mineral nutrients in agricultural products through plant breeding, genetic engineering, or manipulation of agricultural practices. This book shows how, despite having different goals, both phytoremediation and biofortification technologies can be closely connected as they are both based on the phytoextraction process that involves plant uptake, accumulation, and transformation of nutrient elements from soil. More specifically, this brief offers a comprehensive introduction to Phytoremediation and Biofortification of selenium (Se), zinc (Zn), iron (Fe), cadmium (Cd) and copper (Cu), and illustrates the emerging integration of these two bio-technologies. *Phytoremediation and Biofortification: Two Sides of One Coin* is a valuable resource to students, technicians, and academics who are interested in the treatment of environmental problems (bioremediation) through the use of plants, and in the field of biofortification.

Hydropedology: Synergistic Integration of Soil Science and Hydrology

Henry Lin (Ed.). 2012. Elsevier B.V. ISBN: 978-0-12-386941-8. Downloadable forward and index, 800 pages. Price \$31.50. Downloadable color plates, 44 pages. Price \$31.50.

Part I of the book examines fundamental hydrological aspects of the soil's architecture, biophysical functioning, and geochemical processes. These chapters have a strong emphasis on measurement-derived knowledge at the pore and pedon scale. The chapters of Part II upscale

this measurement emphasis to the landscape through a series of case studies. A concluding chapter in Part II details how this knowledge can be incorporated into environmental policies and regulations. The chapters of the final Part III focus on the spatiotemporal modeling of the link between pedology and hydrology and show how these interactions may be mapped across the landscape so that we can better understand and manage the natural capital stocks of our soils and waters – for today and for our future generations.

Soil-Subsurface Change: Chemical Pollutant Impacts

Yaron, Bruno, Dror, Ishai, Berkowitz, Brian. 2012, 2012, XIV. Springer. ISBN: 978-3-642-24386-8. Hardcover, 366 pages. Price \$209.00.

This book combines soil science, earth science, and environmental geochemistry, providing comprehensive background information for specialists interested in chemical-induced changes in the soil-subsurface system. Readers are introduced to the chemistry of contaminants that often disturb the natural soil-subsurface equilibrium as a result of human activity. While the soil-subsurface system has in many cases been affected by human impact, the effects of chemical contaminants on the actual matrix and properties have been largely neglected. The major focus of the book is on changes to the soil-subsurface matrix and properties caused by chemical pollution. By integrating results available in the literature, we observe that chemical pollutants may lead to the irreversible formation of a new soil-subsurface regime characterized by a matrix and properties different than those of the natural regime. In contrast to the geological time scales dictating natural changes to the matrix and properties of the soil-subsurface system, the time scale associated with chemical pollutant-induced changes is far shorter and extends over a “human lifetime scale.” The numerous examples presented in the book confirm that chemical contamination should be considered as an additional factor in the formation of a contemporary soil-subsurface regime that is different than that of the pristine system.

Evapotranspiration in the Soil-Plant-Atmosphere System

Series: Progress in Soil Science. Novák, Viliam. 2012, 2012, XVI. Springer. Hardcover, 253 pages. ISBN: 978-94-007-3839-3. Price \$129.00.

Evapotranspiration and its components (evaporation

and transpiration) as a process is one of the basic terms of Earth’s water balance; its importance is accentuated by the fact that transpiration is the vital element of the biomass production process. The second important property of evapotranspiration is its extreme consumption of solar energy, thus controlling the temperature of the atmosphere and creating favourable conditions for life. Evapotranspiration as an energy consuming process is also the connection between the energy and mass cycles of the Earth. Evapotranspiration is a process performing in the Soil-Plant -Atmosphere System (SPAS); therefore this book is presenting and quantifying it as a catenary process, describing transport of water in the soil, including root extraction patterns and methods of its evaluation. Transport of water through the plant and from the canopy to the atmosphere is also described and quantified. A variety of evapotranspiration (and its components evaporation and transpiration) calculation methods are described, starting from empirical methods up to the most sophisticated ones based on the solution of the transport equations of water and energy in the SPAS. The most important (and widely used) calculation method - modified Penman-Monteith method is described in details, ready to be used with data in the book only. Water balance method of evapotranspiration estimation as well as sap flow method description can be found in the book as well. The book can be used by hydrologists, biologists, meteorologists and other specialists as well as by ecology students.

Modelling Water Flow in Unsaturated Porous Media. Accounting for Nonlinear Permeability and Material Heterogeneity

Series: GeoPlanet: Earth and Planetary Sciences. By Szymkiewicz, Adam. 2013, 2013, XXI. Springer. ISBN: ISBN 978-3-642-23558-0. Hardcover, 237 pages. Price \$129.00.

The book focuses on two issues related to mathematical and numerical modelling of flow in unsaturated porous media. In the first part numerical solution of the governing equations is discussed, with particular emphasis on the spatial discretization of highly nonlinear permeability coefficient. The second part deals with large scale flow in heterogeneous porous media of binary structure. Upscaled models are developed and it is shown that the presence of material heterogeneities may give rise to additional non-equilibrium terms in the governing equations or to hysteresis in the averaged constitutive relationships.

Heavy Metals in Soils. Trace Metals and Metalloids in Soils and their Bioavailability

Series: Environmental Pollution, Vol. 22. Alloway, Brian J. (Ed.). 3rd ed. 2013, 2013, XVIII. Springer. ISBN: 978-94-007-4469-1. Hardcover, 613 pages. Price \$229.00.

This book covers the general principles of the occurrence, analysis, soil chemical behaviour and soil-plant-animal aspects of heavy metals and metalloids, followed by more detailed coverage of 21 elements: antimony, arsenic, barium, cadmium, chromium, cobalt, copper, gold, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, tin, tungsten, uranium, vanadium and zinc. This third edition of the book has been completely rewritten by mainly new authors and is now divided into three sections: 1: Basic Principles. 2: Key Heavy Metals and Metalloids. 3: Other Heavy Metals and Metalloids of Potential Environmental Significance. The scope has been widened with four new chapters in Section 1 dealing with toxicity in soil organisms, soil-plant relationships, heavy metals and metalloids as micronutrients for plants and/or animals, and the modelling of critical loads of heavy metals for use in risk assessment and environmental legislation. This book will be of great value to advanced undergraduate and postgraduate students, research scientists and professionals in environmental science, soil science, geochemistry, agronomy, environmental health and environmental engineering, including specialists responsible for the management and clean-up of contaminated land.

Historical Agriculture and Soil Erosion in the Upper Mississippi Valley Hill Country

By Stanley W. Trimble. 2012. CRC Press. ISBN: 978-1-46-655574-7. Hardcover, 290 pages. Price \$89.95.

This thought-provoking book demonstrates how processes of landscape transformation, usually illustrated only in simplified or idealized form, play out over time in real, complex landscapes. Trimble illustrates how a simple landscape disturbance, generated in this case by agriculture, can spread an astonishing variety of altered hydrologic and sedimentation processes throughout a drainage basin. The changes have spatial and temporal patterns forced on them by the distinctive topographic structure of drainage basins. Through painstaking field surveys, comparative photographic records, careful dating, a skillful eye for subtle landscape features, and a

geographer's interdisciplinary understanding of landscape processes, the author leads the reader through the arc of an instructive and encouraging story. Farmers—whose unfamiliarity with new environmental conditions led initially to landscape destruction, impoverishment, and instability—eventually adapted their land use and settlement practices and, supported by government institutions, recovered and enriched the same working landscape.

Ecorestoration of the coalmine degraded lands


By Maiti, Subodh Kumar. 2013, Springer. ISBN: 978-81-322-0850-1. Hardcover, 457 pages. Price \$179.00.: 978-81-322-0850-1. Hardcover, 457 pages. Price \$179.00.

The book adopts an application-oriented approach for ecorestoration of coalmine degraded. The theoretical aspects of ecorestoration, and steps involved in ecorestoration process and experimental aspects of thorough analytical procedures have been discussed in detail. It emphasizes on the types of mining, land degradation, and biodiversity conservation while giving details of technical and biological steps, topsoil management, selection of plant species, seeding, nursery practices; adoption of innovative approaches like mulching, biofertilizer application, hydroseeding, superabsorbent; use of grass-legume mix; monitoring and aftercare of reclaimed sites; the indicators of sustainable ecorestoration; and Rules and Acts implemented and followed across the world.

Developments in Soil Classification, Land Use Planning and Policy Implications. Innovative Thinking of Soil Inventory for Land Use Planning and Management of Land Resources.

Shahid, Shabbir A.; Taha, Faisal K.; Abdelfattah, Mahmoud A. (Eds.). 2013, Springer, ISBN: 978-94-007-5331-0. Hardcover, 766 pages. Price \$229.00.

This important addition to the technical literature of ecology is a storehouse of information on soil that includes inventories, material on databases, and details of policy developments. Soil may be just brown dirt to most people, but its sustained health is vital to the world's ecosystems, and it is under threat as never before from contamination, degradation and salinization, among other issues. Yet soil is a precious resource: it is the essence of life, the location of innumerable chemical reactions, a filtration and nutritive system for water itself, and a versatile, if vulnerable, growing medium. Care is needed in looking after soil, since it renews itself



only slowly. As the world's population continues to expand, maintaining and indeed increasing agricultural productivity is more important than ever, though it is also more difficult than ever in the face of changing weather patterns that in some cases are leading to aridity and desertification. The absence of scientific soil inventories, especially in arid areas, leads to mistaken decisions about soil use that, in the end, reduce a region's capacity to feed its population, or to guarantee a clean water supply. Greater efficiency in soil use is possible when these resources are properly classified using international standards. Focusing on arid regions, this volume details soil classification from many countries. It is only once this information is properly assimilated by policymakers it becomes a foundation for informed decisions in land use planning for rational and sustainable uses.

Functions of Natural Organic Matter in Changing Environment

Xu, Jianming; Wu, Jianjun; He, Yan (Eds.). 2013, Springer. Jointly published with Zhejiang University Press. ISBN: 978-94-007-5633-5. Hardcover, 853 pages. Price \$399.00.

Functions of Natural Organic Matter in Changing Environment presents contributions from the 16th Meeting of the International Humic Substances Society (IHSS 16) held in Hangzhou, China on September 9-14, 2012. It provides a comprehensive and updated research advance in the field of characterization, function, application of humic substances (HS) and natural organic matter (NOM) in environment, agriculture, and industry. A broad range of topics are covered: i) formation, structure and characteristics of HS and NOM; ii) HS/NOM and carbon sequestration; iii) HS/NOM and biogeochemical cycling of nutrients; iv) HS/NOM and the environmental processes of toxic elements and anthropogenic organics; v) HS/NOM, naturally occurring and engineered nanoparticles; vi) HS/NOM, biodiversity and ecosystem health; vii) HS/NOM in water and water treatment; viii) characterization and function of biochar in the environment; and ix) industrial products and application of HS. The book will be an invaluable reference for chemists, biologists, environmental scientists, ecologists, soil scientists, water scientists, agronomists, global change researchers and policy makers.

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