

Issue: December 2012

Blair McKenzie

As 2012 draws to a close it is worth reflecting on how ISTRO works and what as an organisation we are endeavouring to achieve. In 2009 we held the 18th Triennial conference in Turkey. Having a meeting in Izmir provided an easy opportunity for ISTRO members from North Africa, the middle-east and western Asia to attend, present their science and to engage with colleagues from around the world. None of us knew at the time all the changes and turmoil that would happen (and are still happening) in these regions over the subsequent three years.

Timing and location of conferences can never please everyone, but ISTRO has continued to engage with issues of agricultural practice, crop production, soil management, food security etc wherever they are found. This year we returned to the southern hemisphere and the 19th ISTRO conference was held in Montevideo.



As the picture above of then President Oswaldo Ernst shows people from different regions can have very different perspectives on the world. The caption is "... the south, our north" attributed to Torres Garcia 1946. I am not an historian but there is no doubt much of South America has undergone tremendous change in the last 20 years. This is true both in terms of the changes to government structures and also for changes to agricultural systems. The switch to democratic governments has coincided with zero tillage and the increased importance of soybean production. So it was great that ISTRO provided the opportunity to expose

members from elsewhere to some of the dynamic that has become South American agriculture (and to allow us to see some of the Uruguayan entertainment dynamics - below).



China is of increasing global importance for food production and security and the science and engineering underpinning this is also becoming obvious. A quick scan of our journal, Soil & Tillage Research, shows that we are seeing increased scientific output from Chinese colleagues. So it is timely that in addition to the 20th triennial ISTRO conference being planned for 2015 there will be an ISTRO sponsored meeting on soil structure in Nanjing next September. Details of this are in the working group section of this issue and can also be found on the ISTRO website (www.istro.org).

If you are not one of the more than 100 people who have looked at the ISTRO website in the last 2 weeks you will not have seen that our website is now deploying Clustrmaps (sic). This is a commercial product to help gather information about usage (numbers and location) of the ISTRO website. The information is simply a general locality of the person accessing the website and this is summarised into country totals. The information is overtly public. Being commercial software it has associated advertising. It should be made clear that ISTRO does not endorse any of the products or services that are advertised.

Working Group News

⌘ Working Group A – Soil Structure

As many of you know Working Group A Soil Structure has not been active for some time. Consideration was being given to wind up the group, however it is now receiving a major injection of enthusiasm. The group at the Institute of Soil Sciences, CAS (where the next triennial conference will be held) are keen to revive the activities of Working Group A. To encourage others to be involved in the reactivation of this group President Xinhua and colleagues are proposing a workshop to be held in Nanjing in September 2013 just prior to the mid-term ISTRO board meeting. Below is the background and details of the proposed workshop.

⌘ Workshop on Soil Structure and its functions on ecosystems.

Nanjing 8-10th September 2013

Abbreviated Background: Soil structure is a fundamental property of soil fertility, it controls the ability to transport water, nutrients and gas, and the habitat provided for microorganisms and fauna. Aggregated soil structure can improve agronomic productivity and increase the resistance to soil erosion. The formation of soil structure (or aggregates) is the result of biotic (i.e., microorganisms, fauna, roots) and abiotic (i.e., tillage, wetting and drying, freezing and thawing, clay, ion concentrations) factors and their interaction. The relation between soil structure and biotic agents may be the key mechanism to sequester C in soil. Although aggregate formation and stability have been investigated in numerous studies, aggregation is not a surrogate of soil structure. With new technology (i.e., micro CT, NEXAFS), it may be possible to characterise the natural heterogeneity of the soil as a three-dimensional porous system to provide us with a chance to fully understand soil structure formation, stability and its functions on C sequestration, water transport, and soil erosion.

Organizing Committee

Chinese Academy of Sciences,
Natural Science Foundation of China
Institute of Soil Science, CAS
State Key Lab of Soil and Sustainable Agriculture

International Soil Tillage Research Organization

Scientific program:

Session 1. Quantification of Soil Structure and modeling

Session 2. Formation and Stabilization of Soil Structure: Biotic and Abiotic factors

Session 3. Dynamics of Soil Structure and modeling

Session 4. Soil Structure and its Function on C sequestration

Session 5. Soil Structure and its Function on Hydrological Process and Fertility

Session 6. Soil Structure Stability and its Function on Soil Erosion

Important dates

Abstract submission is open until **April 30th**

Early bird registration is active until **May 31st** For international participants the early registration fee is US\$250 and for accompanying persons US\$80.

Registration fee includes:

- Two days of conference presentations, poster sessions and discussions.
- Program CD and abstract book.
- Coffee break, lunch, and dinner of 9-10th September 2013

Payment method

Bank transfer in US dollars payable to:

Bank: Industrial and Commercial Bank of China, Jiangsu Xuanwu Branch.

Bank address: No. 139 North Hongwu Road, Nanjing, Jiangsu

Swift: ICBKCNBJNJG

Account number: 4301015909914100587

Account Name: Institute of Soil Science, Chinese Academy of Sciences

The bank transfer must indicate the name of the participant and the title of the congress 'Soil Structure2013'. The sender must pay all bank charges. Copy of the bank transfer must be sent by fax (+86-25-8688 1000) or email (soil2013@issas.ac.cn) soon after the registration, otherwise the form cannot be accepted.

More information, abstract submission, accommodation details

See the link on the front page of our website

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Working Group B – Subsoil Compaction

Working Group B is also going through a revival with Thomas Keller and Mathieu Lamande now chair and secretary respectively. A meeting of the group and all interested was held at the conference in Montevideo. The aim of the meeting was to mark the beginning of a new active period for the group. We had good discussions together with the many participants on the future of (sub)soil compaction research, as well as on dissemination issues. Thomas and Mathieu are now planning and up-coming activities of the group will be announced in the next issue of ISTROINFO.

Working Group F – Visual Soil Examination and Evaluation

Following the group meeting in Montevideo the group considered the need to explore using the different Visual Soil Examination in a wider range of environments, particularly in tropical and sub-tropical soils. Rachel Guimaraes (who will take over as chair of the group in September 2013) has started the planning for a workshop in 2014 in Brazil. The central theme will be the deployment of both topsoil and subsoil methods of visual assessment in tropical soils. Rachel is still considering options with colleagues from the working group as to the timing of the workshop. It seems that Brazil is also hosting a football tournament in 2014 (the world cup) and there is a need to ensure that flights and accommodation are all available. Also keep your eyes open to the VSEE special issue of Soil & Tillage Research – now available.

Working Group K – Controlled Traffic Farming

The CTF held a very successful meeting in Sweden earlier this year. Full details are available in a previous issue of ISTROINFO. Tim Chamen as Chair of the group has circulated information about a CTF meeting in Toowoomba, Queensland, Australia in February 2013. While not an ISTRO organised meeting details can be found at www.actfa.net and the topics will be of interest to members of the CTF working group and others.

20th Triennial Conference in Nanjing, 2015

As an initial way to get us thinking about attending the 20th conference in Nanjing Xinhua has provided some information. As Beijing was the northern capital of China – so Nanjing was the southern capital. Hence it has long been a major economic and cultural centre. The host organisation for the conference will be the Institute of Soil Science, Chinese Academy of Sciences, Nanjing – pictured below.



The Institute of Soil Science has around 280 staff of which 41 are Professors; and around 280 postgraduate students. There are 5 Departments, 1 State Key laboratory, 3 Ecological Stations and 1 FACE base.

Some major sponsors have already been confirmed



Note the suggested date for the 2015 conference is **14-18 September 2015**. The date has been chosen

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to avoid the extreme heat of summer, the cold of winter and provide a time of intense agricultural activity. By announcing these dates early the organising team are hoping that ISTRO members will have time to plan activities.

Practical matters

Travel: There are numerous direct flights into Nanjing e.g. from Frankfurt, Seoul, Tokyo, Hong Kong with more routes opening each year. Connections to and from Beijing are frequent. There are also high speed trains from the Shanghai to Nanjing.

Accommodation: Nanjing has a wide range of international standard hotels with over 40 rated at 5-star and over 60 rated at 4-star. Many of these are located close to the Institute.

Planning for tours either a pre or post conference tour and a mid-week tour is underway. So, put the dates in your diaries, i-pads, tablets etc

14-18 September 2015

Reading List

While I will spend most of the holiday period relaxing with family, I anticipate there will be an opportunity to catch up with some reading. The following in the latest issue of Soil & Tillage Research Volume 126 January 2013 might be a place to start for others looking for holiday reading.

Measuring erosion in long-term tillage plots using ground-based lidar. A.D. Meijer, J.L. Heitman, J.G. White, R.E. Austin p1-10

Effect of organic fertilizers and reduced-tillage on soil properties, crop nitrogen response and crop yield: Results of a 12-year experiment in Changins, Switzerland. Alexandra Maltas, Raphaël Charles, Bernard Jeangros, Sokrat Sinaj p11-18

Effect of hand-hoe based conservation agriculture on soil fertility and maize yield in selected smallholder areas in Zimbabwe. Justice Nyamangara, Esther Nyaradzo Masvaya, Ronald Tirivavi, Kudzai Nyengerai p19-25

Impact of three and seven years of no-tillage on the soil water storage, in the plant root zone, under a dry subhumid Tunisian climate. Imene Jemai,

Nadhira Ben Aissa, Saida Ben Guirat, Moncef Ben-Hammouda, Tahar Gallali p26-33

A discrete element model for soil-sweep interaction in three different soils. Ying Chen, Lars J. Munkholm, Tavs Nyord p34-41

Changes in soil aggregate carbon dynamics under no-tillage with respect to earthworm biomass revealed by radiocarbon analysis. Miwa Arai, Ichiro Tayasu, Masakazu Komatsuzaki, Masao Uchida, Yasuyuki Shibata, Nobuhiro Kaneko p 42-49

Improving bud sprouting, growth and yield of winter initiated sugarcane ratoon through tillage cum organic mediated rhizospheric modulation in Udic ustochrept under subtropical Indian condition. S.K. Shukla, Menhi Lal, Santosh Kumar Singh p 50-59

Management-induced organic carbon accumulation in paddy soils: The role of organo-mineral associations. Livia Wissing, Angelika Kölbl, Werner Häusler, Peter Schad, Zhi-Hong Cao, Ingrid Kögel-Knabner p 60-71

Effects of various no-till seeders and stubble conditions on sowing performance and seed emergence of common vetch. Sefa Altikat, Ahmet Celik, Zinnur Gozubuyuk p 72-77

Soil aggregation and greenhouse gas flux after 15 years of wheat straw and fertilizer management in a no-till system. Narendra Kumar Lenka, Rattan Lal p 78-89

Temporal dynamics of soil organic matter composition and aggregate distribution in permanent grassland after a single tillage event in a temperate climate. Deborah Linsler, Daniel Geisseler, Ralf Loges, Friedhelm Taube, Bernard Ludwig p 90-99

Spatial analyses of field traffic intensity and modeling of changes in wheel load and ground contact pressure in individual fields during a silage maize harvest. Rainer Duttmann, Joachim Brunotte, Michaela Bach p 100-111

Development of biological soil quality indicator system for subtropical China. Ping Li, Taolin Zhang, Xingxiang Wang, Dongsheng Yu p 112-118

Influence of the management regime and phenological state of the vines on the physicochemical properties and the seasonal fluctuations of the microorganisms in a vineyard

soil under semi-arid conditions. A. López-Piñeiro, A. Muñoz, E. Zamora, M. Ramírez p 119-126

Phosphorus and potassium budget in the soil-plant system in crop rotations under no-till. C.A. Rosolem, J.C. Calonego p 127-133

Effects of stability, transport distance and two hydraulic parameters on aggregate abrasion of Ultisols in overland flow. Jun-Guang Wang, Zhao-Xia Li, Chong-Fa Cai, Wei Yang, Ren-Ming Ma, Guo-Biao Zhang p 134-142

Under no-tillage and stubble retention, soil water content and crop growth are poorly related to soil water repellency. M.M. Roper, P.R. Ward, A.F. Keulen, J.R. Hill p 143-150

Twenty two years of tillage and mulching impacts on soil physical characteristics and carbon sequestration in Central Ohio. Meharban Singh Kahlon, Rattan Lal, Merrie Ann-Varughese p 151-158

Evaluating the effects of tillage techniques on soil hydro-physical properties in Guinea Savanna of Nigeria. S.T. Abu, I.U. Abubakar p159-168

Ammonia volatilization in gemmiparous and early seedling stages from direct seeding rice fields with different nitrogen management strategies: A pots experiment. Junzeng Xu, Linxian Liao, Junyi Tan, Xiaohou Shao p 169-176

Soil organic matter pools and carbon fractions in soil under different land uses. Daniele Vieira Guimarães, Maria Isidória Silva Gonzaga, Tácio Oliveira da Silva, Thiago Lima da Silva, Nildo da Silva Dias, Maria Iraildes Silva Matias p 177-182

Winter sorghum (*Sorghum bicolor*) productivity as influenced by tillage practices and nitrogen management in Vertisols of SAT, India. S.L. Patil p 183-192

Zeolite-amended cattle manure effects on sunflower yield, seed quality, water use efficiency and nutrient leaching. Majid Gholamhoseini, Amir Ghalavand, Aydin Khodaei-Joghan, Aria Dolatabadian, Hamed Zakikhani, Elyas Farmanbar p 193-202

Aggregate C depletion by plowing and its restoration by diverse biomass-C inputs under no-till in sub-tropical and tropical regions of Brazil. Florent Tivet, João Carlos de Moraes Sá, Rattan Lal, Clever Briedis, Paulo Rogério Borszowskei, Josiane Bürkner dos Santos, Anderson Farias, Guilherme Eurich, Daiani da Cruz Hartman, Mario Nadolny Junior, Serge Bouzinac, Lucien Séguy p 203-218

Calibration of an on-line sensor for measurement of topsoil bulk density in all soil textures. Mohammed Z. Quraishi, Abdul M. Mouazen p 219-228

Development of a methodology for in situ assessment of topsoil dry bulk density. Mohammed Z. Quraishi, Abdul M. Mouazen p 229-237

Chemical and biological properties as affected by no-tillage and conventional tillage systems in an irrigated Haploxeroll of Central Chile. Eduardo Martínez, Juan-Pablo Fuentes, Vanessa Pino, Paola Silva, Edmundo Acevedo p 238-245

Conservation agriculture in eastern and southern provinces of Zambia: Long-term effects on soil quality and maize productivity. Christian Thierfelder, Mulundu Mwila, Leonard Rusinamhodzi p 246-258

Working depth in non-inversion tillage—Effects on soil physical properties and crop yield in Swedish field experiments. Johan Arvidsson, Aron Westlin, Fredrik Sörensson p 259-266

Fluxes of dissolved organic carbon and nitrogen in cropland and adjacent forests in a clay-rich Ultisol of Thailand and a sandy Ultisol of Indonesia. Kazumichi Fujii, Shinya Funakawa, Chie Hayakawa, Sukartiningsih, Takashi Kosaki p 267-275

Effects of cover crop systems on soil physical properties and carbon/nitrogen relationships in the coastal plain of southeastern USA. Robert K. Hubbard, Timothy C. Strickland, Sharad Phatak p 276-283

Upcoming conferences

European Geoscience Union

7-12 April 2013 Vienna, Austria

<http://www.egu.eu/>

Sessions include:

SSS0.2

Your best lecture on soil

Convener: Nikolaus J. Kuhn

Soils are vital to food production and a range of other environmental services, e.g. water quality and net greenhouse gas emissions. Unlike water and air, they are also much more sensitive to misuse, especially when considering the recovery time required for soils to achieve a level of productivity they had before degradation, which can be on the order of thousands of years. Unlike most singular major natural disasters, soil degradation can lead to a non-recoverable, permanent damage to the economy of a society. In the light of this relevance of soils, their standing in many school and university curricula is rather low and they are often considered to be boring. This session therefore aims at exchanging ideas on how to teach on soils at university and school level, but also to the wider public and decision makers. We invite everybody teaching on soils and land use to submit an abstract outlining a successful lecture on these topics and share the approaches that generated interest and positive reception with their audiences.

SSS0.3

Soils in Africa: challenges and opportunities

Convener: Nikolaus J. Kuhn

Africa is seen by many as the continent with the greatest potential for agricultural growth, including large companies like Syngenta, but also growing economies like China. In addition, land degradation and environmental change threaten the African soil resource much more severely than in many other regions of the planet. Finally, the well-being of poor African small-scale farmers as well as entire national economies rely heavily on the protection and regeneration of their soils. This session aims at giving an overview of the current research and

state of knowledge on soils in Africa, identifying the risks to the environmental services they provide to Africa and the world, as well as examples of sustainable land use and the research needs to restore, develop and maintain these services. Contributions from all areas of soil science, agronomy, ecology, hydrology and geography are invited to contribute to this session. The session is also officially supported by the IUSS division 3.2, Soil & Water Conservation.

International Union of Soil Sciences

IUSS Global Soil Carbon Conference

3-6 June 2013 Madison, Wisconsin, USA

Submission deadline: 1 February 2013

<http://iuss-c-conference.org/>



The First International Conference on **Global Food Security**, organized by Elsevier, from September 29 to October 2nd, 2013 in the Netherlands. The conference aims to deliver state-of-the-art analysis, inspiring visions and innovative research methods arising from interdisciplinary research with the view to ensure that the best science is garnered to support the emergence of the Sustainable Development Goals. The call for abstracts is open until May 10th, 2013.

Website:

<http://globalfoodsecurityconference.com/index.html>

Latin America Soil Science Congress, Cuzco Peru 9-15 November 2014 www.slsc.org.mx

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Final comments

2012 has been a good year for ISTRO with a successful triennial conference, to which we supported the attendance of 4 young members. There is an energetic board and as importantly there are many members offering to serve ISTRO in a range of capacities. Soil & Tillage Research, the journal which was established by ISTRO and which still financially supports ISTRO with annual contributions, is amongst the top journals in our discipline. The Aims and Scope of Soil & Tillage Research make it clear that any area of research consistent with ISTRO's aims is appropriate for publication.

The working groups run by members, for members are active and organising activities. If, as and when appropriate new working groups can form - either for fixed or indefinite times. As President-elect Jean Roger-Estrade reported in Montevideo, several of the branches are very active and planning activities before 2015. Others are less active - but there may be possibilities to strengthen these groups by moving to regional rather than national units.

The ISTRO website (www.istro.org) is well run and information is frequently updated by our webmaster. ISTRO members wanting relevant information placed onto the website are welcome to contact the Assistant Secretary General.

I thank all the members who have helped me through this year - by contributing to directly to ISTROINFO or simply by their friendship. I hope all members have a peaceful festive season, a productive new year and I look forward to communicating with you through 2013.

ISTRO INFO is the newsletter of the **International Soil Tillage Research Organisation**. (www.istro.org).

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