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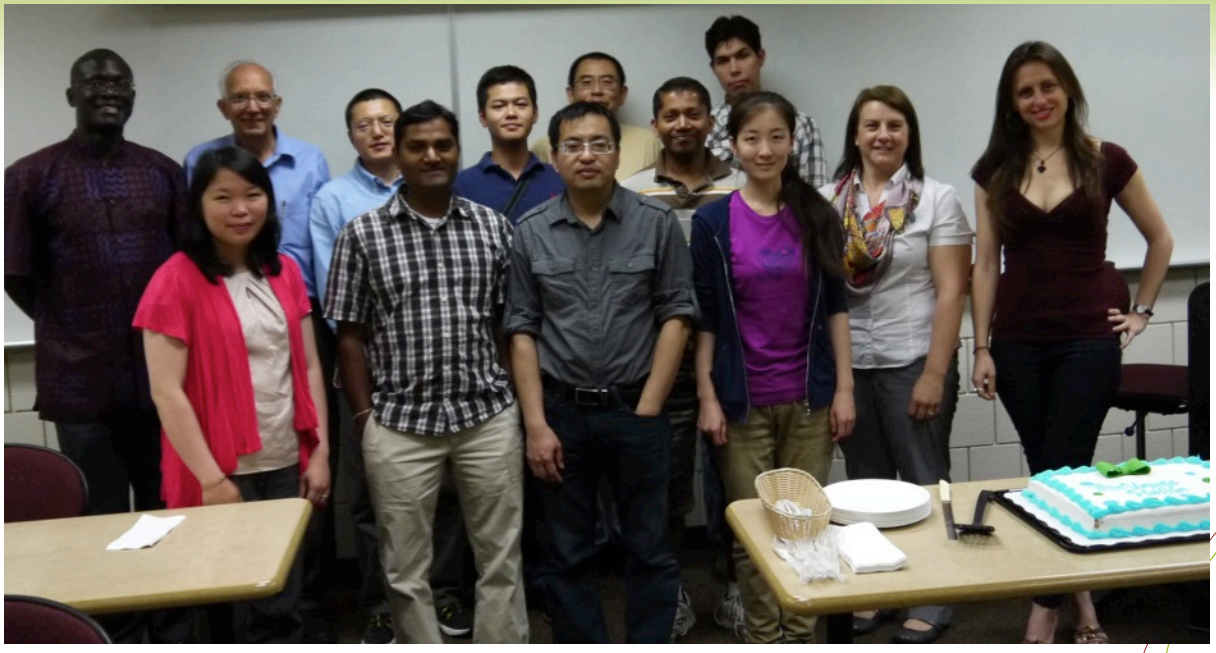
Issue 3:2013



C-MASC hosted a farewell potluck for our visiting scholar, Dr. Hailin Zhang, who returned to China mid-June. For more info on Dr. Zhang, please see page 5.
Front row from left to right: Yina Xie (Graduate Researcher), Dr. Upender Somireddy (Post Doc), Dr. Hailin Zhang (VS - China), Yanru Liang (VS - China), Jennifer Donovan (staff), and Marla Alessandra de Araujo (VS - Brazil). Back row from left to right: Dr. Vincent de Paul Obade (Post Doc), Dr. Rattan Lal (Director), Dr. Shiguo Jiang (Post Doc), Dr. Toru Nakajima (Post Doc), Dr. Richard Liu (Post Doc),
Dr. Atanu Mukherjee (Post Doc), and Dr. Jose Guzman (Post Doc).

Welcome 2013 Students!

Patrick Bell	Ph.D
Hasnain Farooq	Ph.D
Kyle Baldosser	M.Sc
Chris Eidson	M.Sc
Nall Moonilall	M.Sc
Claire Sutton	M.Sc
Yiming Zhao	M.Sc

What's Inside...

Dr. Lal's Travels And Presentations

Dr. Klaus Lorenz (IASS, Potsdam, Germany), Dr. Andres Arnalds (SCS, Iceland) and Dr. Lal in front of the snow-covered volcano, Mt. Hekla (one of Iceland's most active volcanoes).

International Conference on Soil Carbon Sequestration: Climate, Food Security and Ecosystem Service
Soil Conservation Service of Iceland and the Agricultural University of Iceland
24-31 May 2013

http://scs2013.land.is/
http://www.land.is/english/

Dr. Lal presents at Caux Dialogue on Land and Security in Geneva.

Dr. Lal with Rajmohan Gandhi, the grandson of Mahatma Gandhi, who also attended Caux Dialogue on Land and Security in Geneva.

CAUX-Initiatives of Change
Caux Dialogue on Land and Security
Geneva, Switzerland 7 – 11 July 2013
www.caux.ch
http://www.caux.iofc.org/en/let%E2%80%99s-add-ethics-economics **(Full article on page 3.)**

http://www.caux.iofc.org/en/let%E2%80%99s-add-ethics-economics

Let's Add Ethics to Economics!

8 July 2013 By Naike Bochatay

Luc Gnacadja and Martin Frick, opening session of CDLS 2013: (Photo: James Nikitine)

The Caux Dialogue on Land and Security has just started, and crucial issues have already been addressed in the first plenary session, held on July 7th. Luc Gnacadja, Martin Frick, Rattan Lal, Ian Johnson and Bianca Jagger have explained the importance of this conference among the Caux 2013 Initiatives for Human Security.

Luc Gnacadja expressed his gratitude in having a conference that focuses on both natural resources and human security. He was followed by Rattan Lal, professor of Soil Science and Director of the Carbon Management and Sequestration Center at the Ohio State University (USA). The latter made a detailed exposé of the current situation and future perspectives of our resources. He called for sustainable soil management, reminding the audience that all cultures consider nature as a source of life.

The Secretary General of the Club of Rome, Ian Johnson, adopted an economic approach to land and security. According to him, our economic model has to be changed completely. Step by step, he deconstructed the growth spiral as it currently works in Western countries – creating waste, social disparities and debt. A new model should therefore be discussed, one which would be more efficient while considering values and human beings, instead of focusing on economics alone.

Bianca Jagger (Founder and Chair of the Bianca Jagger Human Rights Foundation; IUCN Plant a Pledge Ambassador, and member of the Executive Director's Leadership Council at Amnesty International USA) closed the session. Referring to studies and personal experiences, she highlighted the importance of empowering women with regard to soil management. To her, land security is at the heart of our future, and moral questions will have to be addressed for development to be sustainable.

This first session has provided the audience with examples of how land security and human beings are related. At a time of population growth, of rapid urbanization, of food insecurity, of increased desertification, of conflict and of global warming, the speakers have expressed the urgency of adding ethics and values to decision-making processes dealing with soil management.

SANREM Review

Haiti

28 April – 3 May 2013

The EET had discussions with farmers.

A farmer preparing the land in Haiti.

Dr. Lal visiting a banana farm in Haiti.

Ghana

15-22 May 2013

Farmers building mounds with a hoe.

A hand operated water pump in northern Ghana.

Termite hills are common in northern Ghana.

Cambodia

15-23 June 2013

Dr. Stephane Boulakia, Dr. Susana Lastarria-Cornhiel, Mr. Rada (working with Dr. Boulakia), Dr. Bob Stewart, Dr. Rattan Lal and Dr. Anita Spring

The EET and EEC for SANREM visited University of Battambang. Dr. Touch Visalsok, to the right of Dr. Lal, is the President of Battambang University.

An experimental plot of no-till upland rice.

SANREM Review

Dr. Lal served as a Team Leader of the External Evaluation Team (EET) of SANREM Innovation Lab funded by USAID. The evaluation involved travel of the EET to Haiti (4/28-5/3), Ghana (5/15-5/22) and Cambodia (6/15-6/23). Other members of EET consisted of Dr. Anita Spring (UF, Gainesville), and Dr. Ross Welch (USDA-Cornell). While in Cambodia, members of review panel of SANREM (Dr. B.A. Stewart, WTAMU; and Dr. Susana Lastarria-Cornhiel, UW) also joined EET and both groups were shown the field program by Dr. Stephane Boulakia (CIRAD, France) and Dr. Manuel Reyes (NCAT&T State University). Both teams also visited the University of Battambang and held discussions with President of the University, Prof. Touch Visalsok. Dr. Lal presented a seminar in Phnom Penh on 6/21/2013. The seminar was entitled: Conservation Agriculture in the Tropics". A summary of the seminar was published in The Phnom Penh Post on 6/22/2013 (See below).

http://www.phnompenhpost.com/2013062466434/Business/in-carbon-gains-for-agriculture.html

The Phnom Penh Post

In Carbon, Gains for Agriculture

24 June 2013 By Daniel de Carteret

Paying Cambodian farmers to capture carbon by not removing mulch during planting and harvesting would help support climate change mitigation, reduce soil deterioration and return higher yields in the long term, say leading agriculture experts.

Speaking at a conference in Phnom Penh last Friday, Professor Rattan Lal of the School of Environment and Natural Resources at Ohio State University, said soil erosion, leading to poorer yields over time, can be prevented by leaving biomass – foliage from crops that serves as mulch – on the ground aiding the fertility of the soil.

Biomass also forms an important part of the carbon capture process, reducing the amount of carbon in the atmosphere.

The challenge for farmers, Lal says, is balancing priorities when they can realise more immediate gains for the biomass such as feeding livestock.

"We have to develop a system whereby farmers are encouraged to leave as much biomass on the ground as possible," he said.

Dr. Toru Nakajima works with a photoacoustic gas chamber in Logan County, Ohio.

Summer = Research

Summer = Research at C-MASC. Our researchers are busy working on collecting samples and following ongoing experiments as well as testing in the lab.

Dr. Atanu Mukherjee collecting soil core samples from Logan County, Ohio.

Brazilian visiting scholar Marla Alessandra de Araujo does texture analysis in the soil physics lab at C-MASC.

Sample of muck (organic) soil.

Dr. Richard Liu and Dr. Gerald Allen getting ready for infiltration at The WILDS in Guernsey County, Ohio.

Muck soil vs. mineral soil field.

Dr. Hailin Zhang

Dr. Hailin Zhang was a visiting scholar at C-MASC from August 2012 to June 2013. He is an associate professor at the College of Agronomy and Biotechnology, China Agricultural University (CAU) and can be reached at hailin@cau.edu.cn.

While at C-MASC, Dr. Zhang's studies focused on conservation agriculture and its impact on the agroecosystem. With Dr. Lal's help, Dr. Zhang completed manuscripts about conservation agriculture and carbon sequestration in China. In view of the characteristics and demands of China's agriculture, Dr. Zhang was able to identify some researchable priorities, 1) establish and improve CA systems, taking into consideration diverse soils, climates, crops and cropping systems. 2) identify suitable equipment for the small land holders and diverse cropping systems. 3) establish CA research networks and links involving multi-disciplinary teams, and 4) link food security with environmental protection, sustainable soil management, SOC sequestration and climate change. This research will be beneficial in the development of conservation agriculture in China.

During his visit in C-MASC, Dr. Zhang attended the 4th International Eco-summit and 2012 ASA, CSSA and SSSA International Annual Meetings. He also took part in the weekly group seminars and participated in courses taught by Dr. Lal. The experiences at C-MASC improved his skills at research and academic writing, which will be helpful for his future studies. In the future, Dr. Zhang would like to invite Dr. Lal as a distinguish international scientist to teach in CAU. Dr. Zhang hopes to continue the deep cooperation between C-MASC and CAU with Dr. Lal's help.

Completed papers during his visit in C-MASC

Zhang, H.L., Lal, R., Zhao, X., Xue, J.F., Chen F. 2013. Opportunities and challenges of soil carbon sequestration by conservation agriculture in China. Advances in Agronomy

Wei,Y.H., Zhao, X, Zhai, Y.L., Chen, F., Lal, R., Zhang, H.L. Seasonal changes in soil organic carbon and fractions by tillage systems under wheat-maize cropping system in the North China Plain. (under review)

Cui, S.Y., Xue, J.F., Chen, Z.D., Chen, F., Tang, W.G., Zhang, H.L., Tillage effects on nitrogen leaching and N2O emission from double-cropped paddy fields. (Under review)

Dikgwatlhe, S.B., Kong F.L., Chen Z.D., Lal, R., Zhang, H.L., Chen, F. Tillage and residue management effects on temporal changes in soil organic carbon and fractions in the North China Plain (Under review)

Zhang, H.L., Chen, F., Lal, R. Crop residue management and soil carbon sequestration in China. The 4th International Symposium for Farming System Design.

Award Winning

Dr. Shiguo Jiang won the first place ($1,000) in the 2013 Honors Competition for Student Papers on Geographic Information Science (GIS) at the Annual meeting of Association of American Geographers (AAG). http://www.aag.org/annualmeeting . The paper Shiguo presented is part of his dissertation.

The competition is sponsored by The Geographic Information Science and Systems Specialty Group (GISS-SG) of AAG http://geography.sdsu.edu/aaggis/ . The purpose of this competition is to promote scholarship, written and oral presentation. First, five finalists were selected based on the quality of extended abstracts (about 1,000 words). Second, each finalist submitted a written paper of about 7,500 words, expanding on the material in the extended abstract. Third, four qualified finalists were placed in a special session for oral presentation this year.

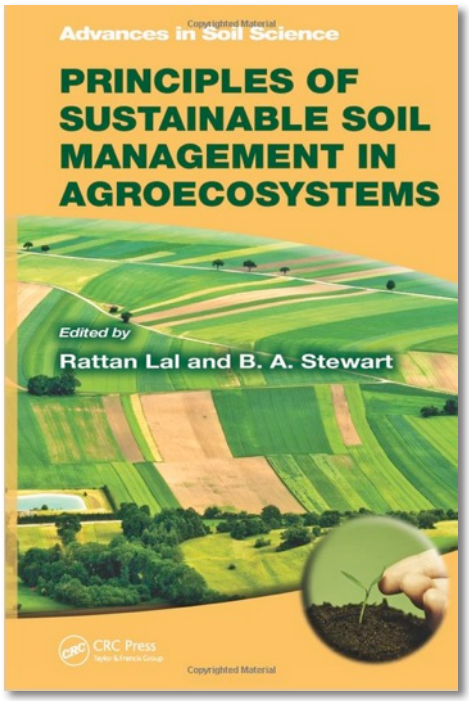
The extended abstracts and written papers are judged by the GISS-SG Awards Committee on several criteria: potential contribution to the field of GIS, originality, appropriate use of methodology, scholarship, organization, and written composition. The oral presentation of papers is judged on professional delivery, organization, clarity, and appropriate use of graphics. Judging takes into account the academic level of the applicants. Paper and presentation each count 50% toward the final score. Congratulations Dr. Jiang!

The paper "Net Greenhouse Gas Fluxes In Brazilian Ethanol Production Systems", by Marcelo Valadares Galdos, Carlos Clemente Cerri, Rattan Lal, Martial Bernoux, Brigitte Feigl and Carlos Eduardo P. Cerri published in GLOBAL CHANGE BIOLOGY BIOENERGY 2:37-44 published in 2010 won the prestigious TOP Ethanol Prize, receiving third place (out of 111) in the Papers in Academic Journals category. The TOP Ethanol Award recognizes work on the theme bioenergy and environment, as well as personalities from the academic, technical, business and politics, which have contributed significantly to the industry. The award ceremony will be at the Grand Hyatt Hotel in São Paulo, June 27, during the Ethanol Summit 2013. Congratulations to all of the contributing authors!

http://www.projetoagora.com.br/premiotopetanol/
http://www.ethanolsummit.com.br/noticias-conteudo.php?id=92&idioma=1

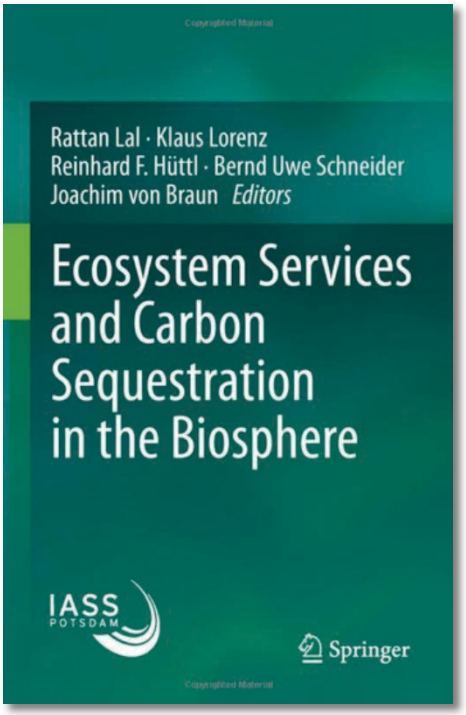
Latest Books Published

Principles of Sustainable Soil Management in Agroecosystems (Advances in Soil Science), edited by Rattan Lal and Bobby A. Stewart Publication Date June 10, 2013. Hard cover: 568 pages



With the use of high-level soil management technology, Africa could feed several billion people, yet food production has generally stagnated since the 1960s. No matter how powerful the seed technology, the seedling emerging from it can flourish only in a healthy soil. Accordingly, crop yields in Africa, South Asia, and the Caribbean could be doubled or tripled through adoption of technologies based on laws of sustainable soil management. Principles of Sustainable Soil Management in Agroecosystems describes the application of these laws to enhance ecosystem services while restoring degraded soils and promoting sustainable use.

With chapters contributed by world-class soil scientists, ecologists, and social scientists, this book outlines critical changes in management of agricultural soils necessary to achieve food security and meet the food demands of the present and projected future population. These changes include conversion to no-till and conservation agriculture; adoption of strategies of integrated nutrient management, water harvesting, and use of drip sub-irrigation; complex cropping/farming systems such as cover cropping and agroforestry; and use of nano-enhanced fertilizers.



Ecosystem Services and Carbon Sequestration in the Biosphere, edited by by Rattan Lal, Klaus Lorenz, Reinhard F. Hüttl, Bernd Uwe Schneider and Joachim von Braun. Publication Date: June 30, 2013. Hard cover: 464 pages

Ecological functions and human wellbeing depend on ecosystem services. Among the ecosystem services are provisional (food, feed, fuel, fiber), regulating (carbon sequestration, waste recycling, water cleansing), cultural (aesthetic, recreational, spiritual), and supporting services (soil formation, photosynthesis, nutrient cycling). Many relationships of various degree exist among ecosystem services. Thus, land use and soil management to enhance biospheric carbon sinks for carbon sequestration requires a comprehensive understanding on the effects on ecosystem services. Payments for ecosystem services including carbon pricing must address the relationship between carbon sequestration and ecosystem services to minimize risks of overshoot, and promote sustainable use of land-based carbon sinks for human wellbeing.

Upcoming C-MASC Publications

Araujo, M.A., Andrade, A.B., Zinn, Y.L., Lal, R., Bigham, J.M. 2013. Mineralogy and magnetic susceptibility related to the BET-N_2, specific surface area of soils in Southern Minas Gerais, Brazil . XXXIV Congresso Brasileiro de Ciência Do Solo, 28 July – 2 August 2013. (Abstract)

Mukherjee, A., and Lal, R. 2013. Biochar impacts on soil physical properties and greenhouse gas emissions. Agronomy. 3: 313-339.

Mukherjee, A., and Lal, R. 2013. The biochar dilemma. Nature. (Submitted)

Mukherjee, A., Lal, R., and Zimmerman, A. 2013. Biochar impacts on stability of soil-carbon and nitrogen. Chemosphere. (Submitted)

Mukherjee, A., Lal, R., and Zimmerman, A. 2013. Biochar impacts on physical properties and gaseous emissions from a degraded soil. Agriculture, Ecosystem and Environment. (Submitted)

Obade, Vincent de Paul, Rattan Lal, and Jiquan Chen. 2013. Remote Sensing of Soil and Water Quality in Agroecosystems**.** Water, Air, & Soil Pollution. (Accepted)

Ruiqiang Liu and Rattan Lal. 2013. A Laboratory Study on Amending Mine Soil Quality. Water, Air, & Soil Pollution. (Accepted)

Ruiqiang Liu and Rattan Lal. 2013. Improving quality of coal-mining soil for re-vegetation using amendments Ecological Engineering. (Submitted)

Wainwright, J., Jiang, S. and Liu, D. 2013. Deforestation and the world-as-representation: the Maya forest of southern Belize. In Brannstrom, C. and Vadjunec, J. (Eds.) Land Change Science, Political Ecology and Sustainability: Synergies and Divergences. New York: Routledg. (In Press)

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