Spring 2012

THE OHIO STATE UNIVERSITY OARDC

CENTER CarbOn sequeStration

Quarterly Research Review March 27, 2012

The Carbon Management and Sequestration Center's (C-CMASC) quarterly research review held on March 27, 2012 focused on the research goals, hypothesis and deliverables to indentify and explore commonalities, and synergisms amongst the C-MASC staff, students, and visiting scholars.

From left to right, seated: Yanru Liang (Visiting Scholar (VS) China), Dr. Petra Sternberg (Post Doc), Dr. Catherine Bonin (Post Doc), Ryan Hottle (ESGP student); fist row standing: Dr. Juca Sa (VS, Brazil), Dr. Gerald Allen (Post Doc) Dr. Rattan Lal (Director), Dr. Vincent Obade (Post Doc), Basant Rimal (staff), Nick Stanich (SENR student), Dr. Antau Mukherjee (Post Doc), Dr. Florent Tivet (VS France), second row standing: Theresa Colson (staff), Dr. Mostafa Ibraham (Post Doc), Dr. Richard Liu (Post Doc), Dr. Sandeep Kumar (Research Scientist), and Dr. Toru Nakajima (Post Doc).

Inside:

Contact:

Carbon Management and Sequestration Center
2021 Coffey Rd.
210 Kottman Hall
Columbus, OH 43210 colson.6@osu.edu
(614) 292-9049

New to C-MASC

Post Docs

Dr. Vincent Obade

Post Doc
422d Kottman Hall, Obade.1@ osu.edu

Dr. Vincent Obade from Kenya is a post-doctoral researcher at the Carbon Management and Sequestration Center of the Ohio State University under the supervision of Dr. Rattan Lal. Dr Obade research is focused on developing operational models for monitoring soil quality over large areas. The products of these monitoring efforts are useful for setting up policies geared towards restoring degraded soils, agricultural sustainability, and improving environmental quality. Dr. Obade specialty is in remote sensing, and regional scale assessment of agricultural practices.

Dr. Obade taught at the United States International University in Africa (USIU-A) at the Nairobi campus, Kenya, and at the Jomo-Kenyatta University of Agriculture and Technology (Kenya). His courses included survey engineering, cartography, environmental sciences, sustainable resource management, field studies, and remote sensing. At South Dakota State University, Vincent was involved in teaching graduate remote sensing lab (GEOG-760 S01 Adv Meth Geo Mod: Land Cover Mapping). Dr. Obade has served in the public service as a survey engineer, both in Kenya and the Seychelles. He holds a Ph.D. in plant sciences (agronomy, remote sensing), from the South Dakota State university, USA, an MSc. in Physical Land Resources from Ghent University, Belgium, and a BSc. in Surveying from the University of Nairobi in Kenya.

Dr. Petra Sternberg

Post Doc
422d Kottman Hall, sternberg11@osu.edu

Petra is from Muester, Germany, and in 2003 received her "Diplom-Ingenieur" in horticulture from the University of Applied Science Osnabrueck, Germany. Eight years ago, in 2004, she came to the U.S. for a one-year internship in the Horticulture and Crops Science Department at The Ohio State University.

She stayed on in Columbus, and received her Masters degree in horticulture from OSU in 2007, she continued her graduate studies at OSU. Her PhD work focused on the morphological and physiological basis for differences in drought resistance and water use in Cercis. She began as a post-doc at CMASC in January 2012 under the supervision of Dr. Rattan Lal, and is currently working on the Large--scale Demonstration of Soil Carbon Sequestration in Reclaimed Mine Soil in Ohio project. She is focusing on the reforestation of reclaimed mine soils.

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New to C-MASC

Post Docs

Dr. Atanu Mukherjee

Post Doc
422d Kottman Hall
Mukherjee.70@osu.edu

Ananu is a Post Doctoral Researcher at Carbon Management and Sequestration Center (C-MACS) in the School of Environment and Natural Resources at The Ohio State University (OSU). He is currently working with Dr. Rattan Lal at C-MASC investigating application of different amendments in order to improve soil quality and sequester carbon in soil.

Atanu finished his BS from University of Calcutta in 1998 with Chemistry Honors and did his first M.Sc from same school in Agricultural Chemistry and Soil Science in 2000. He came to USA in 2003, enrolled and finished his second MS in Soil Science from University of Florida (UF) in 2005. After that he worked for the Soil Science Department from 2005 to 2006 as Laboratory Technician at Wetland Biogeochemistry Lab. He started his Ph.D in 2006 at School of Natural Resources and Environment (SNRE), UF and finished his doctoral degree in 2011. After that he joined OSU as a Post Doctoral Researcher in the year 2012.

During Atanu's graduate studies his research interest were mainly focused on soil and environmental chemistry. At University of Calcutta, he completed one year research project and a thesis entitled as "A Process for Purification of Kaolinite Crudes" was submitted. He worked under supervision and guidance of then Head, Prof. Kunal Ghosh, Agricultural Chemistry and Soil Science Department, University of Calcutta and Dr. Chandrika Varadachari, Raman Center for Applied and Interdisciplinary Sciences. At UF, Atanu worked two years as Graduate Research Assistant and completed Master's thesis entitled as "Evaluation of Soil Test Methods as Indicators of Releasable Phosphorus in Wetland Soils" under supervision of Dr. Vimala Nair. The focus of Atanu's MS research at UF was to establish numeric nutrient criteria on wetland soils. Various soil tests and P saturation ratios (PSR) were used to predict P release from wetland soils. The threshold values for various soil test methods were established on a wide range of wetland soils.

In addition to his expertise in environmental soil/wetland biogeochemistry and nutrient dynamics, he also has extensive experience in biochar/soil interaction technologies as he joined Dr. Andrew Zimmerman, Associate Professor, Geological Science Department, UF, as Graduate Research Assistant in his Ph.D, under Interdisciplinary Ecology program of SNRE from Fall 2006 onwards. Atanu's doctoral dissertation, chaired by Dr. Andrew Zimmerman, was entitled as "Characterization of the Physical and Chemical Properties of a Range of Laboratory-Produced Fresh and Aged Biochars". His research involved assessment of biochar produced from oak, pine and grasses under a range of combustion conditions and he investigated characterization of biochars pyrolyzed from various biomass species and potential of these biochars as soil amendment and carbon sequestration.

Visiting Scholars

New to C-MASC

Dr. Jennifer Dungait

April-October 2012

Rothamsted Centre for Soils and Ecosystem Function
North Wyke Research, Okehampton, Devon, UK
jennifer.dungait@rothamsted.ac.uk
dungait.1@osu.edu
414b Kottman Hall

Research Themes:

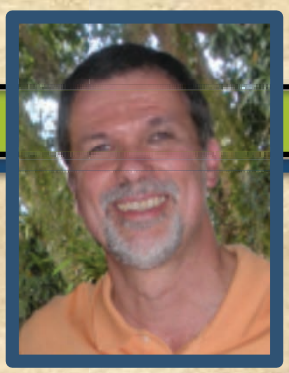
1. **Challenging concepts of recalcitrance in soils**
2. **Biomarker applications to explore soil C dynamics**
3. **Soil microbial biomass activity and decomposition**

'A fully quantitative understanding of carbon and nitrogen cycling at the molecular level is only possible using an isotopic approach, and is prerequisite to the development of strategies to manage and improve soil quality, to mitigate greenhouse gas emissions and improve environmentally benign agricultural productivity in a changing climate.'

Jennifer is from the UK, and will be spending 6 months as a Visiting Scholar OSU working on C dynamics during accelerated erosion events in arable soils.

She is a biogeochemist at Rothamsted Research and an Honorary Research Fellow at the University of Exeter, specialising in terrestrial carbon dynamics research. She manages the Biogeochemistry laboratory at the Rothamsted Research-North Wyke campus and supervises a group of PhD students and post-docs investigating hypotheses on organic matter dynamics in temperate, semi-arid and polar environments. She is a member of the Editorial Board of Biology and Fertility of Soils, an invited member of the DIPPI-C working group, a Council member of the British Soil Science Society and Regional Chair of the South West England Soils Discussion Group. Jennifer is an expert in the application of biomarker and stable ^{13}C isotope methodologies in agricultural and ecological research to distinguish between sources of organic matter via determination of the contribution of individual organic molecules to fluxes within and between pools of varying stability. She has contributed fundamental new insights into carbon dynamics in soils including the finding that lignin decomposition is surprisingly rapid, whilst presumed labile carbon pools can be stable; that groups of soil bacteria and fungi display variable responses to organic substrate addition; and, provided the first evidence of trophic niche differentiation by earthworm functional groups.

Visiting Scholars



Dr. João Carlos de Moraes Sá

January –June 2012

414b Kottman Hall
jcmoraessa@yahoo.com.br

Dr. Sa will be the keynote speaker for SENR's seminar series May 24th, Kottman 3:30 103 KH
Title: "Carbon footprint in no-till farming in southern Brazil"

Dr. Sa has been working on no-tillage since 1980 on soil fertility management, cropping systems, with emphasis in soil organic matter dynamics and carbon sequestration. Dr. Sa coordinates a team of 16 (Ph.Ds, MS students, Post Doctoral and Agronomy undergrad students). His team's research program is based on five topics: (1) Mechanisms of C-protection in the WSA and Particle size fractions, (2) Mechanisms of C-protection in the WSA and Particle size fractions; (3) C-saturation in response to C-input by NT cropping system intensification; (4) Carbon footprint in no-till farming (inventory and mapping scaling up); (5) Industrial Organic waste recycling. Currently, he is developing a research program with Dr. R. Lal about Carbon footprint in no-till farming using our research database to calculate no-till C off-set for large scale. Also, Dr. Sa is working with manuscripts about the contribution of the intensification of no-till cropping systems in C sequestration. Dr. Sa is currently a Professor of Department of Soil Science State University of Ponta Grossa in Ponta Grossa-Paraná, Brazil.

Dr. David W Hopkins

Professor and Head of School of Life Sciences
Heriot-Watt University; Edinburgh EH14 4AS
Scotland UK
david.hopkins@hw.ac.uk

April 11, 2012: Dr. Hopkins was an invited speaker for the C-MCASC weekly seminar series. Title: Decadal changes in soil carbon storage in long-term experimental grassland plots: Weighing the ship's cat

David Hopkins is a Professor and Head of the School of Life Sciences at Heriot-Watt University and has worked on different aspects of the microbiology and biochemistry of soil carbon and nitrogen transformations including research in temperate agricultural systems and polar regions. The research in this seminar will examine the changes over several decades in soil carbon in two long-term experiments in the UK. The experimental plots were established in the 19th century and because of systematic assessments of total carbon contents of the soils in the 1980s, with appropriate corrections for depth and density, a baseline for soil carbon could be established. Re-sampling the plots in later decades has allowed changes in soil carbon content (not just concentration) to be determined and interpreted in the context of changing environmental conditions. And that all sounds so simple, but is it?

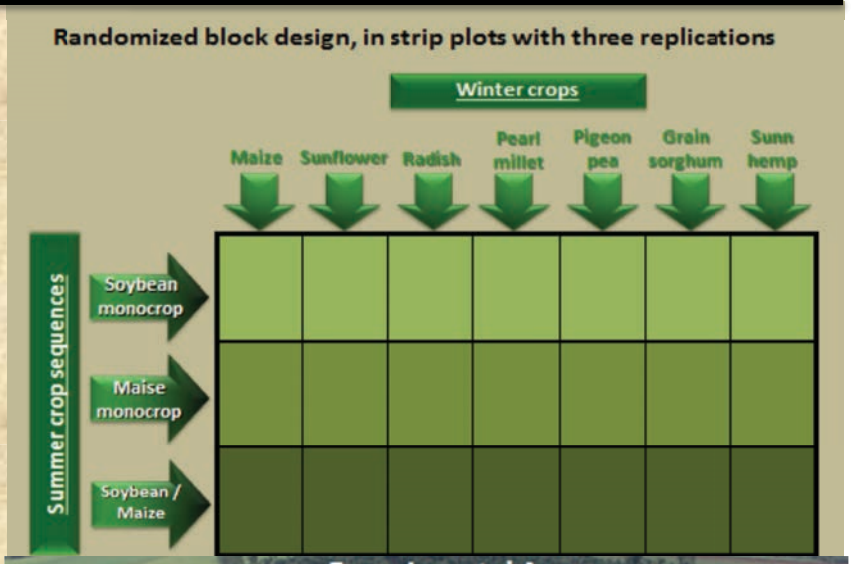
Visiting Scholars

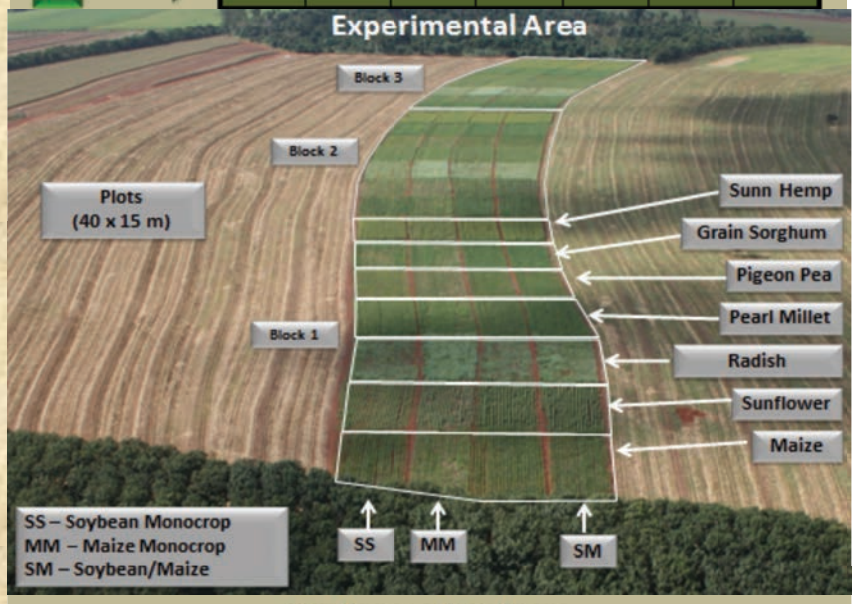
New to C-MASC

Mr. Getulio de Freitas Seben Junior

- Getulio is a visiting scholar from Brazil, and will study at OSU April 2012-March 2013
- Currently he is a PhD student, Sao Paulo State University 2010-2013
- MSc in Soil Science from Sao Paulo State University in 2010
- BS in Engineer Agronomist from Mato Grosso do Sul State University in 2008
- Technical Agricultural by Federal Agrotechinical School of Mato Grosso

- Getulio studies the effects of no-till farming systems, crop rotation and crop sequences, on physical properties of the soil
- He looking forward to a year of research and study with Dr. Rattan Lal and his team





Visiting Scholars

New to C-MASC

Mr. Eurico Lucas de Sousa Neto

Visiting Scholar April 2012-October, 2012

EDUCATION

2010 – Present: Doctorate in Agronomy
Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP, Sao Paulo, Brazil

2004 - 2006 Ms in Agronomy.
Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP, Sao Paulo, Brazil
Knowledge areas : Soil Physics, Handling and Conservation of the Soil

1999 - 2004 BS Agronomy
Universidade Estadual de Montes Claros, UNIMONTES, Montes Claros, Brazil

- Eurico is a visiting scholar from Brazil, and will study under the direction of Dr. Rattan Lal for one year in Columbus, Ohio. He is a agronomist, with a master degree in soil science, and teacher at Mato Grosso State University (UNEMAT), in Pontes and Lacerda City, Brazil.
- Currently, he is a PhD student at São Paulo State University (UNESP) where he is investigating research about soil physical quality in system integrate crop-livestock-forest.
- His studies are based in evaluation of soil physical quality in sustainable production system. The experiment is installed in a Oxisol, in Campo Grande, MS, Brazil, the treatments studied are the integration crop (soy) - livestock (*Urochloa*), crop (soy) -livestock (*Urochloa*) - forest (Eucalipto 227 pl. ha^{-1}) and crop (soy) – livestock (*Urochloa*) forest (Eucalipto 357 pl. ha^{-1}).
- Eurico is looking forward to learning from Dr. Rattan Lal, the other visiting scholars, and also my colleagues in the School of Environment and Natural Resources at OSU.

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New Grants for C-MASC

April 2012

Dr. Sandeep Kumar, PhD
Research Scientist
Carbon Management & Sequestration Center
School of Environment & Natural Resources
The Ohio State University
2021 Coffey Road, 414A Kottman Hall
Columbus, OH 43210-1085
Phone: 614.292.9074
Email: kumar.278@osu.edu

Dr. Kumar has been working with CMASC from January 2010 to March 2012 as a Postdoctoral Researcher, and currently was promoted to Research Scientist in April 2012. His major areas of expertise included Watershed Modeling (APEX and SWAT), SOC dynamics, GHG modeling, and up-scaling of SOC stock at regional scales. Recently Dr. Kumar has received a research grant along with Dr. Lal from USDA-NIFA entitled 'Quantifying the Spatial Location of Small-Scale Land Management Changes in Large Watersheds using Hydrological Modeling' for the amount of $482,000 USD for three year duration (April 15, 2012-April 14, 2015). Major goal of this grant is to simulate the best management practices (BMPs) for improving soil and water quality, and enhancing the crop yield. Historical water quality and hydrological dataset collected by the staff working at the North Appalachian Experimental Watershed (NAEW), Coshocton-Ohio, and Muskingum River Watersheds in Ohio will be used for this project. Further, this project will also be focused on quantifying the effects of different land uses on runoff, sediment and nutrient losses simulated with Agricultural Policy eXtender (APEX), a field scale model which runs on daily-time step. The APEX output will be used in Soil and Water Assessment Tool (SWAT) model to simulate the water quality parameters of the Muskingum River Watershed. Models outcome will be used to run long term scenarios involving BMPs which will be effective in reducing non-point source pollution (NPSP) and improving the soil and water quality of the watersheds associated with different land management. Congratulations Dr. Kumar in securing this notable award.

2012 Forthcoming Publications

C-MASC Staff

Dr. Catherine Bonin

1. Bonin, C. and R. Lal. 2012. Agronomic and ecological implications of biofuels. Adv. Agron. 117 (In Press).
2. Bonin, C., R. Lal, M. Schmitz and S. Wullschlagger. 2012.Soil physical and hydrological properties under three biofuel crops in Ohio. Acta Agric. Scandinavia (In Press).
3. Bonin, C. and R. Lal. 2012. Bioethanol potentials and lifecycle assessments of biofuel feedstocks. Crit. Rev. Plant Sci. 31 (In Press)

Dr. Sandeep Kumar

1. Kumar, S., A. Kadono, R. Lal, and W. Dick 2012. Long-term tillage and cropping system influences on mechanical properties of two contrasting soils of Ohio. Soil Sci. Soc. Am. J. (Under Review).
2. Kumar, S., R. Lal, and C.D. Lloyd. 2012. Assessing Spatial Variability in Soil Characteristics with Geographically Weighted Principal Components Analysis. Computational Geosciences (accepted for publication).
3. Kumar, S., and R. Lal. 2011. Mapping the organic carbon stocks of surface soils using local spatial interpolator. J. Environ. Monit.13(11): 3128 - 3135.
4. Kumar, S., S.H. Anderson, R.P. Udawatta, and R.L. Kallenbach. 2012. Water infiltration influenced by agroforestry and grass buffers for a grazed pasture system. Agroforestry Systems. (In Press)

Dr. Ibrahim Mostafa

1. Ibrahim, M. and R. Lal. 2012. Soil carbon pools in drained and undrained closed drainage toposequence in central Ohio, USA. Acta Agric. Scandinavia (In Press).
2. Ibrahim, M. and R. Lal. 2012. Climate change and hand use in the WANA region with a specific reference to Morocco. In R. Lal et al. (Eds.) “Adaptation to Climate Change and Food Security in West Africa North Asia”, Springer, Dordrecht, Holland (In Press).
3. Ibrahim, M. R. Lal, E.A. Bary, and A. Swelam. 2012. Water resources and agronomic productivity in West Africa and North Africa region. In R. Lal and B.A. Stewart (Eds.) “Soil Water and Agronomic Productivity”. Advances in Soil Sci. Taylor and Francis, Boca Raton, FL: 163-185.
4. Ibrahim, M., R. Lal, E.A. Bary, and A. Swelam 2012. Water resources and agronomic productivity in West Asia and North Africa Region. In R. Lal and B.A. Stewart (Eds) “Soil Water And Agronomic Productivity”. Advances in Soil Science, Taylor and Francis, Boca Raton, FL: 163-185.

Forthcoming 2012 Publications

1. Lal, R. and B.A. Stewart (Eds.) 2012. Soil Water Management and Agronomic Productivity. CRC/Taylor and Francis. Boca Raton, FL, 568 pp.
2. Lal, R., K. Lorenz, R. Huttle, B.U. Schnieder and J. Von Braun. (Eds) 2012. Recarbonization of the Biosphere. Springer Verlaag, Holland, 545 pp.
3. Srinivasarao, Ch., B. Venkateswarlu, R. Lal, A.K. Singh, K.P.R. Vittal, S. Kundu, S.R. Singh, and S.P. Singh. 2012. Long-term effects of soil fertility management on carbon sequestration in a rice-lentil cropping system of the Indo-Gangetic Plains. Soil Sci. Soc. Am. J. 76: 168-178.
4. Srinivasrao, Ch., A.N. Deshpande, B. Venkateswarlu, R. Lal, A.K. Singh, K.P.R. Vittal, P.K. Mishra, J.V.N.S. Prasad, U.K. Mandal and K.L. Sharma. 2012. Grain yield and carbon sequestration potential of post monsoon sorghum cultivation in Vertisols in semi-arid tropics of central India. Geoderma 175/176:90-97
5. Srinivasan, V.H.P. Mahewarappa and R. Lal. 2012. Long-term effects of topsoil depth and amendments on particulate and non-particulate carbon fractions in a Miamian soil of central Ohio. Soil and Tillage Res. 121:10-17.
6. Ortas, I. and R. Lal. 2012. Long-term phosphorus application impacts on aggregate-associated carbon and nitrogen sequestration in a Vertisol in the Mediterranean Turkey. Soil Sci. 177(40; 241-350. (doi: 10.1097/ss.ob013e318245d11c).
7. Lenka, N.K. and R. Lal. 2012. Soil related constraints to CO_2 fertilization effect. Crit. Rev. Plant. Sci. 31 (In Press).

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October, 2011

COP-10 UNCCD Congress, Changwan, South Korea

UNCCD United Nations Convention to Combat Desertification

The international community has long recognized that desertification is a major economic, social and environmental problem of concern to many countries in all regions of the world. In 1977, the United Nations Conference on Desertification (UNCOD) adopted a Plan of Action to Combat Desertification (PACD). Unfortunately, despite this and other efforts, the United Nations Environment Programme (UNEP) concluded in 1991 that the problem of land degradation in arid, semi-arid and dry sub-humid areas had intensified, although there were "local examples of success ".

As a result, the question of how to tackle desertification was still a major concern for the United Nations Conference on Environment and Development (UNCED), which was held in Rio de Janeiro in 1992. The Conference supported a new, integrated approach to the problem, emphasizing action to promote sustainable development at the community level. It also called on the United Nations General Assembly to establish an Intergovernmental Negotiating Committee (INCD) to prepare, by June 1994, a Convention to Combat Desertification, particularly in Africa. In December 1992, the General Assembly agreed and adopted resolution 47/188.

Working to a tight schedule, the Committee completed its negotiations in five sessions. The Convention was adopted in Paris on 17 June 1994 and opened for signature there on 14-15 October 1994. It entered into force on 26 December 1996, 90 days after the fiftieth ratification was received. 193 countries were Parties as at August 2009. The Conference of the Parties (COP), which is the Convention's supreme governing body, held its first session in October 1997 in Rome, Italy. The ninth session of the conference of the Parties was held in Buenos Aires, Argentina from 21 September to 2 October 2009. The 10th session was held October 2011. more information can be found at:

http://archive.unccd.int/cop/officialdocs/cop10/doclist.php#agenda

Among the attendees of the COP-10 were from left to right: Dr. Uriel Safriel, Dr. Jeff Herrick and Prof. Rattan Lal

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Past Conferences

Winter College February 17-18, 2012 Naples, FL

Answers Underfoot

Ratan Lal, PhD
College of Food, Agricultural, and Environmental Science

Did you know that carbon is one of the most indispensable elements to life? Increasing soil carbon, even incrementally, can boost food production, improve water quality, and amplify biodiversity. Join Ratan Lal, Distinguished University Professor in the School of Environment and Natural Resources and director of Ohio State's Carbon Management and Sequestration Center, for an elemental look at carbon and the answers underfoot.

February 17-18 at the Ritz-Carlton Resort of Naples (280 Vanderbilt Beach Road, Naples, Florida 34108), Winter College 2012 features 16 presenters from a range of Ohio State areas of expertise, including Prof. Rattan Lal. With the theme "Ohio State Matters: Working Local, Living Global" as their guide, faculty and administrators will speak on topics such as economic recovery, sports medicine, alternative fuel technology, and deep brain stimulation.

Dear Friends:

I very much hope that you will join us for Winter College 2012 at The Ritz-Carlton Beach Resort of Naples on February 17 and 18. Our remarkable presenters will be discussing topics ranging from the groundbreaking research taking place at our academic medical center to trends in the earth sciences and green technology field. More details are available in this registration packet, as well as at giveto.osu.edu/wintercollege2012.

Thank you, again, for being such committed and engaged members of our Ohio State family. I look forward to sharing with you the extraordinary work of our University faculty in Naples. In the meantime, know of my very best wishes.

Sincerely,

E. Gordon Gee
President
The Ohio State University

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Global Soil Forum (GFS) March 30, 2012 Potsdam, Germany

- The Steering Committee (SC) of the Global Soil Forum (GSF) met for the first time March 30, 2012 at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany. Aside the GSF team (Charlotte Beckh, Franziska Linz, Ivonne Lobos Alva, Klaus Lorenz, Thando Tilmann, Jes Weigelt), it was attended by SC Members Tewolde Egziabher (Ethiopian Environmental Protection Agency), Rattan Lal, Mansour N'Diaye (on behalf of Luc Gnacadja, UNCCD), Klaus Toepfer (IASS), and Stefan Schmitz (on behalf of Manfred Konukiewitz, Federal Ministry for Economic Cooperation and Development). Further attending were GSF partners Knut Ehlers and Jochen Flasbarth (both German Environmental Protection Agency), Luca Marmo (European Commission), Ronald Vargas (FAO), from the GSF National Support Group Franz Makeschin (National Academy of Science and Engineering), and as consultant Hans Herren (Biovision). Participants elaborated on their visions regarding the rationale, objectives and acitivities of GSF and touched upon also on its research program

- Focus of the meeting was the discussion of the draft program of the first Global Soil Week "Soils for Life" which will be held in November 2012 in Berlin. Objectives of the Global Soil Week are (i) to provide a platform to further elaborate on the soil- and land-related decisions taken during the Rio+20 conference, (ii) to provide a comprehensive assessment of soil-related challenges to sustainable development, (III) to advocate for sustainable soil management, and (iv) to identify areas of work jointly with stakeholders that will be implemented in 2013 and taken forward to the Global Soil Week 2013. Partners of the Global Soil Week are the European Commission, Food and Agriculture Organization of the United Nations, German Environmental Protection Agency and United Nations Convention to Combat Desertification. A National Support Group will assist in implementing the Global Soil Week. The Global Soil Week is the contribution of GSF to FAO's Global Soil Partnership. The next SC meeting will be held at Rio de Janeiro during the Rio+20 conference.

Kleist Villa
Potsdam, Germany
Home of IASS

Past Conferences

April 4, 2012

Nationwide Agribusiness Meeting

A group of national farm association leaders met with OSU and Nationwide Insurance representatives in the School of Environment and Natural Resources on the Columbus campus April 4, 2012 to discuss agri-business. Many researchers from C-MASC participated.

Above: Drs. Rattan Lal and Toru Nakajima (OSU) demonstrate emission of green house gases from soil

From left to right:
Dr. Florent Tivet (France),
Dr. Juca Sa (Brazil),
Dr. Rattan Lal (OSU),
Ms. Janice Welsheimer (Nationwide),
Dr. Toru Nakajima (OSU), and
Dr. Sandeep Kumar (OSU)

April 24, 2012 United Nations, New York, NY

UN Rio+20 Side Event – Responding to the Global Soil Crisis

From Left to Right: Hon'ble Robert Hill, Chancellor University of Adelaide, Australia, Hon'ble H.E. Mr. Gary Quinlan, Ambassador and Permanent Representative of Australia to the UN, Prof. Rattan Lal (OSU).

Global soil degradation is increasingly being recognized as a threat to food security, biodiversity and fresh water security. Scientists, alarmed that the rate of topsoil loss is now exceeding the rate of soil formation, are determining the environmental sustainability thresholds for soil erosion and calculating the timescales at which the world runs out of topsoil. At the same time, the fundamental role of soil in the delivery of ecosystem services including food and fibre production, fresh water regulation and support of biodiversity, has largely been ignored in international policy. Given projected increases in global population this issue now has critical significance.

To bring further attention to the issue of global soil degradation, and to build support for the issue to be addressed at Rio+20, the Australian Government hosted a side event to the informal negotiations for Rio+20 at the United Nations in New York on Tuesday 24th April. **The Hon Robert Hill**, Adjunct Professor of Sustainability at the United States Studies Centre and former Ambassador to the UN, chaired the event. Speakers included members of the US Studies Centre Soil Carbon Initiative international coalition of soil scientists, **Professor Rattan Lal** from Ohio State University, and **Professor Alex McBratney** from the University of Sydney. Dr Neil McKenzie, Chief of Land and Water with CSIRO represented the Australian Government. The UN Convention on the prevention of Desertification and Drought (UNCCD) was represented by Dr. Nandhini Iya Krishna, from the UNCCD New York Liaison Office.

More information can be found found at:
http://ussc.edu.au/events/past/UN-Rio20-Side-Event-Responding-to-the-Global-Soil-Crisis

Forthcoming Conferences

Aquatic Ecology Centre, May 29-31, 2012 Kathmandu, Nepal

Soil & Water for Life

Aquatic Ecology Centre
(AEC)

International Symposium on
Mountain Resource Management in a Changing Environment

- ***Key Note Speech on 'Soil organic matter management for sustainable production and climate change mitigation' by****: Prof. Dr. Rattan Lal, Director Global Carbon Management Program, School of Environment and Natural Resources, The Ohio State University, Columbus, USA*
- The Aquatic Ecology Centre, Kathmandu University, and Institute of Forestry, Tribhuvan University in collaboration with the Department of International Environment and Development Studies (Noragric), University of Life Sciences, Norway, invite papers and posters from scholars and researchers to be presented at the symposium on "Mountain Resource Management in a Changing Environment" to be held in Kathmandu, Nepal, during May 29-31, 2012. The Symposium represents the culmination of the second phase of the NUFU supported project "Education, Research and Training for Sustainable Management of Himalayan Watersheds" (HIMUNET), which has been a network project among four universities in the Himalaya and University of Life Sciences in Norway. Papers and posters are called for presentation under following thematic areas:
    - Forests, biodiversity and ecosystem carbon sequestration
    - Socioeconomic and interdisciplinary issues on environmental change
    - Soil physiochemical and biological quality and ecosystem health
    - Water resources and quality
    - Watershed rehabilitation, upstream/downstream linkages and payment for ecosystem services
    - River and lake physiochemical and bio-monitoring
    - Geoinformatics/remote sensing applications in natural resource management
    - Climate change impacts and adaptive/mitigative strategies
- **Symposium Secretariat: Aquatic Ecology Centre, School of Science, Kathmandu Univ.**
- GPO Box 6250, Kathmandu, Nepal; Fax: +977-11-661443 or E-mail: kuhimal@ku.edu.np
- **Organizing Institutions: Kathmandu University Dhulikhel**

For more information: http://www.ku.edu.np/aec/

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Forthcoming Conferences

Rio +20 June 20-22, 2012, Brazil

RIO+20
United Nations Conference on Sustainable Development

About the Rio+20 Conference

- At the Rio+20 Conference, world leaders, along with thousands of participants from governments, the private sector, NGOs and other groups, will come together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet to get to the future we want.
- The United Nations Conference on Sustainable Development (UNCSD) is being organized in pursuance of General Assembly Resolution 64/236 (A/RES/64/236), and will take place in Brazil on 20-22 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro, and the 10th anniversary of the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg.
- The Rio+20 Conference It is envisaged as a Conference at the highest possible level, including Heads of State and Government or other representatives. The Conference will result in a focused political document.

Themes of the Conference

- The Conference will focus on two themes:

  (a) a green economy in the context of sustainable development poverty eradication, and

  (b) the institutional framework for sustainable development

Seven priority areas

- The preparations for Rio+20 have highlighted sever areas which need priority attention; these include decent jobs, energy, sustainable cities, food security and sustainable.

What is sustainable development?

- Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Seen as the guiding principle for long-term global development, sustainable development consists of three pillars: economic development, social development and environmental protection.

The Focus on Soils at Rio +20

- Rio+20 provides a timely opportunity for nations and international agencies to respond to the threat of soil degradation, and to develop a mandate for an international effort to achieve soil security. This mandate requires policy, scientific and agricultural responses. It also requires the engagement of civil society. It is not just up to farmers and scientists to lead the way in securing soil, all members of society should appreciate the value of soil and its importance in issues of food security, biodiversity, climate change mitigation and ecosystem service delivery.

For more information: http://www.uncsd2012.org/rio20/index.html

Forthcoming Conferences

EuroScience Open Forum July 11-15, 2012 Dublin Ireland

Euroscience Open Forum (ESOF)

- The Euroscience Open Forum (ESOF) is Europe's largest, general science meeting and is held in a leading Europe city every two years.
- The first meeting was held in Stockholm in 2004, followed by Munich (2006), Barcelona (2008) and Turin (2010). Dublin was awarded the honour of hosting ESOF in 2012, following an open competition. Copenhagen will host then event in 2014.
- ESOF is an interdisciplinary, pan-European meeting, held under the auspices of Euroscience, which aims to:
  - Showcase the latest advances in science and technology;
  - Promote a dialogue on the role of science and technology in society and public policy;
  - Stimulate and provoke public interest, excitement and debate about science and technology.

Soil, Land and Food Security, The Challenges for Science, Economics and Policy

Friday July 13, 2012 10:45am - 12:15pm @ Room 6

- Food security depends to a considerable extent on the use of land, water, and soils. The risk for food security due to unsustainable land use and soils is under-researched and under-valued. Food security will remain a problem for the world, increasingly so due to the existing drivers of change on the demand and supply side: increasing world population with changing tastes, increasing demand for biofuel and an increasing purchasing power for resource-intensive food products on one side, decreasing growth in agricultural productivity and decreasing opportunities for further land conversion (to agriculture) on the other side. Climate change affects the complex and fragile relationships between drivers and adds further feedback effects, risks and volatility elements to them. The overall impact of these changes is an increasing competition for land. The role of soils in the process of climate change has been under-valued in comparison to other elements of the human-climate relationship, despite the large potential of soils as biological carbon sinks. Scientists, economists, and policy analysts must come together to achieve a comprehensive assessment of the costs of soil and land degradation at the global scale.

For more information: http://esof2012.org/

Forthcoming Conferences

Ecosummit, September 30-October 5, 2012 Columbus, OH

Hosted by

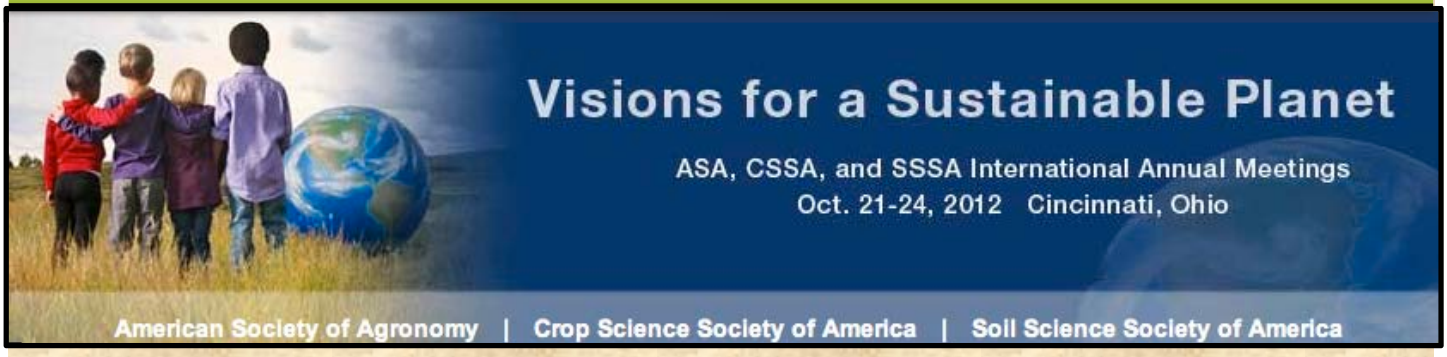
EcoSummit 2012 will bring together the world's most respected minds in ecological science to discuss restoring the planet's ecosystems. **Over 1950 abstracts from 100 countries** have been received by EcoSummit 2012 for presentations in 69 symposia, dozens of general sessions, and hundreds of poster presentations. More than a dozen professional workshops and forums with 200 additional participants will also be included in the Program.

The conference will cover a wide variety of ecological topics. Topics relating to soils are:

- estimating ecosystem services
- global change issues including climate change effects and the future of food security
- Plenary session and panel discussion to address the issue of global food security on Oct. 4th. Invited speakers include President Grimsson of Iceland, Mr. Lester Brown and Ambassador Kenneth Quinn.

For more information: http://www.ecosummit2012.org/index.htm

SSSA October 21-24, 2012 Cincinnati, OH



The American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America will host more than 4,000 scientists, professionals, educators, and students at the 2012 International Annual Meetings, "Visions for a Sustainable Planet," Oct. 21-24, 2012, Cincinnati, OH. Events take place primarily at the Duke Energy Center and the Hyatt Regency Cincinnati Hotel, Cincinnati, OH 2012.

For more information: https://www.acsmeetings.org/program