THE OHIO STATE UNIVERSITY

Carbon Management and Sequestration Center

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Global Soil Week

The International Union of Soil Science (formerly International Society of Soil Science) was founded in 1924. Prof. Rattan Lal is the current President of IUSS (1/1/2017 to 12/31/2018). The IUSS is celebrating the International decade of Soil Science from 2015 to 2024, and will celebrate its centennial in Rome during 2024. During this decade, IUSS presents its annual Distinguished Science Medal to a policy maker who has promoted soil science by translating science into action. The 2017 recipient of the Distinguished Service Medal is Prof. Dr. Klaus Töpfer. He is the former Secretary of the Environment to the German Government, Director General of the United Nations Environment Program, and founding Executive Director of the Institute of Advance Sustainability Studies in Potsdam, Germany. The award was presented at the Concluding Session of the fourth Global Soil Week, held in Berlin on 24th May 2017. In the photo (above, left to right) are: Dr. Stefan Schmitz (Head, Rural Development and Global Security, BMZ), Dr. Takashi Kosaki (President Elect, IUSS), Prof. Dr. Klaus Töpfer (the medal recipient), Dr. Rainer Horn (Past President, IUSS), Prof. Rattan Lal, Dr. Margaret Thalwitz (Chair, Board of Trustees, ICARDA), Mr. Jochen Flasbarth (Secretary, Federal Ministry of the Environment, Germany), and Prof. Joachim Von Braun (Director, ZEF, University of Bonn, and former Director General of IFPRI, Washington, D.C.)

Find more information on the International Decade of Soils here

Dr. Jose Guzman
Assistant Professor
Department of Agronomy
South Dakota State Univ.
Pierre, South Dakota

PUBLICATIONS:

Guzman, J.G., R. Lal, S. Byrd, S.I. Apfelbaum and R.L. Thompson. 2016. Carbon life cycle assessment for prairie as a crop in reclaimed mine land. Land Degradation & Development 27(4): 1196-204.

Guzman, J.G., R. Lal. 2016. Mine soils: miscanthus plantations. In R. Lal (Ed) Encyclopedia of Soil Science 3rd Edition, Taylor and Francis, pp. 1458-1461

Guzman, J.G., and R. Lal. 2014. Miscanthus and switchgrass feedstock potential for bioenergy and carbon sequestration on minesoils. Biofuels 5(3): 313-329.

Guzman, Jose G., Lal, Rattan, Byrd, Shana, Apfelbaum, Steven I., Thompson, Ry. L. 2014. carbon life cycle assessment for prairie as a crop in reclaimed mine land. Land Degrad. Develop. DOI: 10.1002/ldr.2291

Jose Guzman Joins South Dakota State University

Dr. Jose Guzman has been appointed as an Assistant Professor at South Dakota State University, Department of Agronomy, Horticulture, and Plant Science. He is currently stationed at the Dakota Lakes Research Farm in Pierre South Dakota. As an agronomist, Jose's research interest are in soil and water management and carbon sequestration, and stresses the importance of sustainable agriculture practices. Specifically, sustainable agricultural systems that emphasize the need to mix complementary crops and animals at appropriate times and places, keeping the soil covered with growing crops and mulches, and using detailed knowledge of ecological relationships to reduce the use of purchased inputs, such as pesticides and fertilizers. Such approaches are an improvement from current practices that require intensive machinery and industrial chemicals to increase food, feed, and fiber production that, in many cases, have detrimental effects on the soil.

Jose would like to show his deep gratitude to everyone who has helped him at CMASC during his 4 years (2013-2016), which lead to his dream academic goal of becoming a soil science professor. Specifically, he would like to thank Dr. Lal for being such an inspirational soil scientist, great mentor, and still yet one of the kindest. Thank You All at CMASC

Photographed is Jose with Drs. Joao Carlos de Moraes Sá and Surrender Singh Yadav.

Exiting Visiting Scholar: Safdar Hussain

Safdar Hussain
Ph.D Scholar
Department of Agronomy,
University of Agriculture,
Faisalabad-Pakistan

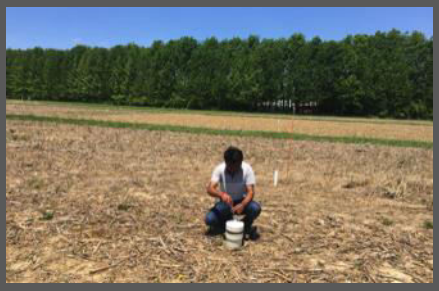
While at C-MASC, Safdar attended the Spring Open House Event at the OARDC campus in Wooster, OH, and visited no-tillage experimental plots which were established in 1962 (photographed above).

I am a Ph.D scholar from the Department of Agronomy, University of Agriculture, Faisalabad-Pakistan, and I received my BSc (Hons.) and MSc (Hons.) in Agronomy from the University of Agriculture Faisalabad-Pakistan. I was selected for the International Research Support initiative programme (IRSIP), by the Higher Education Commission of Pakistan (HEC) for a period of 6-months as a short-term research scholar. I joined C-MASC on 29th of December, 2016 to research themes of "Assessing the role of crop residues and N sources on C sequestration and mitigation of greenhouse gases emissions".

It was a wonderful experience to work with the world renowned soil scientists, visiting scholars and other members of C-MASC. Special thanks to Dr. Rattan Lal who guided me to think and work like a soil scientist, even though I am an Agronomist who always focused on crop production rather than paying full attention to soil management. I now understand the importance of soil management for better crop production and soil sustainability.

My research in Pakistan focuses on sustaining the soil health and productivity of rice-wheat cropping system (RWCS) using different crop residue mulches and nitrogen (N) sources, conservation agriculture and ecological management of weeds in RWCS of Punjab-Pakistan. I hope to further understand carbon and nitrogen dynamics in soil and conservation agriculture for soil productivity and sustainability.

I am highly thankful to Higher Education Commission (HEC) of Pakistan for providing me funds for the scholarship.



Photographed (above) is Dr. Patil taking measurements at an OARDC research plot, and (below) conducting soil analysis at C-MASC labs

Exiting Visiting Scholar: Dr. Somanagouda Patil

Dr. Patil is an Agronomist from the International Center for Agricultural Research in the Dry Areas (ICARDA), Rabat, Morocco, who joined C-MASC for a 3-months under the Norman E. Borlaug International Agricultural Science and Technology Fellowship Program, USDA. During his stay, Dr. Patil researched topics of carbon sequestration through climate-smart agriculture in dry areas.

Photographed above (left to right): Dr. Mark Erbaugh, Director, International Programs in Agriculture, Dr. Somanagouda Patil and Prof. Rattan Lal.

Dr. João Carlos de Moraes Sá Presents Seminar

Dr. João Carlos de Moraes Sá, a Visiting Scholar at C-MASC during 1999, 2008, 2012, and 2015, visited C-MASC on 28th June to present a seminar on "Potential and Challenges of World Conservation Agriculture to Mitigate Climate Change and Advance Food Security." Dr. Sá is an Associate Professor at the State University of Ponta Grossa, Brazil. He has been working on conservation agriculture since 1981 with emphasis on no-till.

C-MASC Visitors

Amartya Sen

Prof. Amartya Sen, Nobel Laureate in Economics (seated center) presented a seminar at the Mershon Center on 11th April 2017 entitled "What's Wrong with Inequality." The seminar was sponsored by the Ohio State University Center for Ethics and Human Values. The seminar was chaired by Prof. Donald C. Hubin, Director of OSU Center for Ethics and Human Values.

Photographed above (left to right): Prof. Rattan Lal, Prof. Hubin, Prof. Amartya Sen, Prof. Ellen Mosley-Thompson, and Prof. Lonnie Thompson.

Dannon Group

A group from Dannon, Inc. visited C-MASC on 7th June 2017. The 7-member team was lead by Eric Souberian, Dannone, Paris (front, 3rd from left) and Mr. Jean de Barrau (front 4th from right). The yogurt company has adopted the policy of emission neutrality by 2050.

Find more information on the Dannon Pledge here

FURTHER READING:

Vilmundardóttir, O.K., Gísladóttir, G., Lal, R. 2015. Soil carbon accretion along an age chronosequence formed by the retreat of the Skaftafellsjökull glacier, SE-Icleand. Geomorphology 228:124-133

Vilmundardóttir, O.K., R. Lal. 2015. Between ice and ocean; soil development along an age chronosequence formed by the retreating Breiðamerkurjökull glacier, SE-Iceland. Geoderma 259-260:310-320

Gisladottir, G., E. Erlendsson and R. Lal. 2011. Soil evidence for historical human-induced land degradation in West Iceland. Appl. Geochemistry. 26: S28-S31.

Gisladottir, G., E. Erlendsson, and R. Lal, and J. Bigham. 2010. Carbon budget over the last millennium in the soils of the Reykjanes peninsula, southwest-Iceland. Quaternary Research 73.1: 20(13).

Gisladottir, G., E. Erlendsson, R. Lal, and J. Bigham. 2010. Erosional effects on terrestrial resources over the last millennium in Reykjanes, Southwest Iceland. Quaternary Research, 72, 20-32. Doi:10.1016/j.yqres.2009.09.007.

Summer Research: Chloe Turner

Chloe Turner, M.Sc student in C-MASC, is conducting her thesis research in Iceland. She is working on evolution of soil properties on moraines exposed by retreating glaciers. The thesis research is conducted through cooperation with Prof. Gudrun Gisladóttir of the University of Iceland. Chloe is working in the laboratory of Prof. Gisladóttir in the Department of Geography. Chloe is cooperating with Dr. Olga Kolbrún Vilmundardóttir. Olga was a visiting scholar at C-MASC for one year (2010-211), and is now a postdoctoral researcher at the Institute of Life and Environmental Sciences of the University of Iceland. Chloe will return to OSU by mid-August 2017, and will complete her M.Sc program in SENR. The cooperation between the University of Iceland and OSU was established in 2007 and both universities have a duel degree program. Former President of Iceland (Dr. Ólafur Ragnar Grímsson) visited OSU campus in 2007 and also received an Honorary Degree from OSU in 2010.

C-MASC Spring 2017 Graduates

C-MASC congratulates Ellen Maas and Eric Stein on their graduations May 2017! Ellen completed her M.Sc and will continue her Ph.D program at OSU. Eric completed his MENR degree in SENR.

Summer Research at Waterman Farm:

Measuring GHG emissions in the field using a photoacoustic infrared spectroscopy multi-gas monitor.

Aerial view of maize crop canopy 3 weeks after germination

C-MASC Graduates: Eric Stein

Since March 2017 Eric has worked as a teacher at an afterschool program called the Oxford School of Dublin. He is currently implementing environmental education modules and lessons into the curriculum. One of his goals is to utilize outdoor experiential learning to help connect and/or reconnect children to nature. He believes leading interpretive nature walks and teaching hands-on exercises that utilize all of the senses can help cultivate a deeper understanding and appreciation of nature versus indoor classroom. Eric is also currently modifying and improving his Masters project for publication.

Summer Research: Nall Moonilall

Above: Nall measuring water infiltration in the field using a portable mini-disk infiltrometer.

Summer is upon us and that also means that the field season is underway! My research is focused on the evaluating the effects of topsoil depth and amendment application on soil health and agronomic productivity in Central Ohio. During the course of this summer, I will be collecting data on various agronomic parameters for my dissertation research including: germination percentage, crop height, canopy cover, and biomass and grain yields. In addition, I will be measuring emissions of greenhouse gases in my research plots. At the conclusion of the field season, I plan to do soil sampling and measure in-situ soil parameters such as bulk density, water infiltration, and penetration resistance.

The University of Lleida was founded in 1300 A.D., and was the first university in Catalonia. It is among the oldest universities in Europe. It was closed after the 1717 after the Spanish War of Succession, but was refounded in 1991. The University of Lleida is a leading institution in Spain for research and education in the fields of Agronomy, Food Technology and Forestry.

Universitat de Lleida

CONSOWA was a joint conference of the "International Soil Conservation Organization" (19th **ISCO** Conference), the "World Association for Soil and Water Conservation" (Conference on Soil and Water Conservation of **WASWAC**), the "European Society for Soil Conservation" (8th ESSC Congress), the "International Union of Soil Science (**IUSS**-Comnmissions 3.2, 3.6), the Soil and Water Conservation Society (**SWCS**), the "International Erosion Control Association" (**IECA**) and the "World Association for Sedimentation and Erosion Research" (**WASER**), in parallel with the VIII Simposio Nacional sobre Control de la Degradación y Restauración de Suelos (**SECS**).

Dr. Lal Awarded *Honoris causa* Degree from University of Lleida, Spain

Present in the photo taken just prior to the award ceremony on 13th June at 5:00PM (from left to right): Mr. Delfi Robinat Catalá (President del Consell Scoial), Prof. Ildefonso Pla Sentís (Prof. of Soil Science), Dr. Roberto Fernandez Diaz (Rector), Prof. Rattan Lal, and Dra M. Teresa Areces Piñol (Secretària General). Here is a link to an article about the event.

CONSOWA Meeting, Lleida, Spain

The 1st World Conference on Soil and Water Conservation Under Global Change (CONSOWA) was held in Lleida, Spain from 12-16 June, 2017. The objectives where to analyze the present and future prospects conservation of soil and water resources, and promote increased collaboration at a world-wide level through more integrated activities of the different organizations.

Prof. Ildefonso Pla Sentís, President of ISCO, organized the CONSOWA Conference, which was very well attended and represented by participants from more than 30 countries from around the world. Prof. Lal presented on the topic of "Soil and Water Conservation to Mitigate Climate Change and Advance Food and Nutritional Security." Here is a link to the event's homepage.

FURTHER READING:

Lal, R. 2016. Global food security and nexus thinking. Journal of Soil Water Conservation 71:85A-90A.

Lal, R. 2015. The soil-peace nexus: our common future. Soil Science and Plant Nutrition 61:566-578.

M. Kurian and R. Ardakanian (Eds) *Governing the Nexus*. Springer International Publishing, Switzerland.

WATER, SOIL AND WASTE
DRESDEN NEXUS CONFERENCE
DNC 2017 | SDGs & NEXUS APPROACH: Monitoring and Implementation

Find more information on the DNC 2017 here.

Dresden Nexus Conference

The UNU-FLORES, Dresden, Germany was the host and venue of the DNC 2017: Dresden Nexus Conference of 2017. It is a platform to advance the sustainable development agenda through adaption of the nexus approach. The strategy is to achieve the Sustainable Development Goals by using the nexus approach. The conference is held every two years at the UNU Institute for the Integrated Management of Material Fluxes and Resources (UNU-FLORES). The conference is organized in cooperation with the Technische Universität Dresden and the Leibniz Institute for Ecological, Urban and Rural Development.

The DNC 2017 hosted participants from 50 countries, and focused on the theme of "Sustainable Development Goals and the Nexus Approach: Monitoring and Implementation." Specific focus of the monitoring and implementation was related to multifunctional land use systems and resource management in resilient cities and urban areas as well as on crosscutting themes. In addition to 6 keynote speeches, there were 88 lectures, and 65 posters. Data on case studies were presented from China, Germany, Qatar, Tunisia, and Vietnam.

The photograph above is of a panel discussion on case studies from China, Vietnam, and Kenya. Present are (left to right) Nicola Fohrer (Institute for Natural Resource Conservation, Christian-Albrechts-Universität zu Kiel), Ngo Trung Hai (General Director, VIUP), Yanhui Wang (Chinese Academy of Forestry), Prof. Rattan Lal, Ania Grobicki (Former Deputy Secretary General Ramsar Convention), and John M. Gathenya (Jomo Kenyatta University).

Books Edited

- Sejian, V., R. Bhatta, J. Gaughan, P.K. Malik, S.M.K Naqvi, R. Lal (Eds). 2017. Sheep Production Adapting to Climate Change. Springer, Singapore, pp. 441

Referred Journal Articles

- Kemper, K., R. Lal. 2017. Pay dirt! Human health depends on soil health. Complementary Therapies in Medicine.
- Maas, E.D.v.L., R. Lal, K. Coleman, A. Montenegro, W.A. Dick. 2017. Modeling soil organic carbon in corn (Zea mays L.)-based systems in Ohio under climate change. Journal of Soil and Water Conservation 2017 72(3):191-204
- Olson, K.R., M. Al-Kaisi, R. Lal, L. Wright Morton. 2017. Soil ecosystem services and intensified cropping systems. Journal of Soil and Water Conservation 2017 72(3):64A-69A.
- Pathak, K., A.J. Nath, R. Lalm A.K. Das. 2017. Annual burning enhances biomass production and nutrient cycling in degraded Imperrata grasslands. Land Degradation and Development. DOI: 10.1002/ldr.2707
- Singh, A.K., Lakaria, B.L., Mandal, D., Sethy, D.K., Lal, R. 2015. Using credible soil loss tolerance value for conservation planning and managing diverse physiographic regions in Rajasthan. Agriculture Research 6(2):169-178
- Yadav, G.S., R. Lal, R.S. Meena, M. Datta, S. Babu, A. Das, J. Layek, P. Saha. 2017. Energy budget for designing sustainable and environmentally clean/safer cropping systems for rainfed rice fallow lands in India. Journal of Cleaner Production 158:29-37.

Chapters in Multi-Authored Books

- Al-Kaisi, M.M., R. Lal, K.R. Olson, B. Lowery. 2017. Fundamentals and functions of soil environment. In M.M. Al-Kaisi, B. Lowery (Eds.) Soil Health and Intensification of Agroecosystems. Elsevier Academic Press, London, pp. 1-20.
- Al-Kaisi, M.M., R. Lal. 2017. Conservation agriculture systems to mitigate climate variability effects on soil health. In M.M. Al-Kaisi, B. Lowery (Eds.) Soil Health and Intensification of Agroecosystems. Elsevier Academic Press, London, pp. 79-103.
- Gelaw, A.M., B.R. Singh, R. Lal. 2017. Soil quality indices for evaluating smallholder agricultural land uses in Northern Ethiopia. In: D.L. Karlen and C.W. Rice (Eds) Enhancing Soil Health to Mitigate Soil Degradation (Special Issue), Sustainability Journal (Reprint), pp. 29-40
- Lal, R. 2017. Soil conservation. Reference Module in Life Sciences, Elsevier, ISBN: 978-0-12-809633-8, 1-11 pp.

Invited Keynote Presentations

- Lal, R. 2017. Sustainability & Soil-Water-Waste Nexus. Global Soils Week, 22-24 May 2017 Berlin, Germany.
- Lal, R. 2017. Searching for the Nexus. Dresden Nexus Conference, 17-19 May, Dresden, Germany.
- Lal, R. 2017. Managing Tradeoffs. Dresden Nexus Conference, 17-19 May, Dresden, Germany.
- Lal, R. 2017. Managing Urban Soils for Food Security and Climate Change. SUITMA 9, 22-27 May 2017, Moscow, Russia
- Lal, R. 2017. Soil Conservation for Mitigating Climate Change. University of Lleida, 12-14 June 2017, Lleida, Spain.
- Lal, R. 2017. Sustainable Soil Management For Food and Climate. University of Lleida, 12-14 June 2017, Lleida, Spain.
- Lal, R. 2017. The Importance of Soil in Managing the Anthropocene. Global Soil Partnership/ Technical Panel on Soils (ITPS), 20-22 June 2017, Rome, Italy.

Do you have contributions for our next newsletter?
Please contact us!

Carbon Management and Sequestration Center (C-MASC)
210 Kottman Hall, 2021 Coffey Rd.
Columbus, OH 43210 email Conover.55@osu.edu