# NC-1178: Intensification of Agroecosystems and Soil Carbon Dynamics

**Minutes of the Annual Meetings**

**Location:** School of Environment & Natural Resources, Ohio State University, Columbus, OH

**Date:** June 23, 2015

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| **Chair**  Rattan Lal  Ohio State University  **Secretary**  Humberto Blanco  University of Nebraska-Lincoln  **Secretary Elect**  Francisco Arriaga  University of Wisconsin  **Members in Attendance**  Rattan Lal, OSU  Mohamad Golabi, Guam - UG  Kenneth Olson, UIL  Mahdi Al-Kaisi, ISU  DeAnn Presley, KSU  Humberto Blanco, UNL  Lisa Tiemann, MSU  Larry Cihacek, NDSU  Sandeep Kumar, SDSU  Tom Schumacher, SDSU (ex-officio)  Gary Pierzynski, KSU (Academic advisor)  **Members Absent**  Francisco Arriaga, UW  Vijaya Kakani, OSU (Oklahoma State Univ.)  Randy Miles, UMC  Garry Steinhardt, IND  **Guests**  Klaus Lorenz, OSU  Chris Eidson, OSU  Jose Guzman, OSU  Sandhu Saroop, SDSU |

**Welcome and Introductions**

Rattan Lal called the meeting to order at 9:05 am, June 23, 2015 in Kottman Hall of the Ohio State University campus in Columbus, OH. Each committee member introduced themselves to the group. Following the brief individual introductions, Dr. Jeff Sharp, Director of the School of Environment & Natural Resources of the Ohio State University, welcomed the attendees and provided some opening remarks. He stressed how important is developing initiatives among soil scientists to advance science and added that diverse groups and initiatives are needed to accomplish goals and solve complex problems such as climate change.

**Administrative Issues**

Gary Pierzynski, Administrative Advisor of the NC-1178 committee, reported that the new Multi-State Hatch project was approved for the following period: October 01, 2014 to September 30, 2019. The first half of the Multi-State Hatch project accomplishments will be reviewed in late 2016. He indicated that the NC-1178 group has always conducted high quality research and accomplished timely goals. As a result, no serious questions about the testament of the committee work are expected. Gary mentioned that despite the low budget allocations, AFRI is still providing funding to relevant projects. Gary applauded that no substantial budget cuts have occurred recently. He informed the group that USAID is working with Kansas State University through the Sustainable Intensification Innovation Lab to fund projects dealing with agricultural intensification in the following countries: Bangladesh, Cambodia, Burkina Faso, Senegal, Ethiopia, and Tanzania. Proposals addressing livestock, grazing loss, crop residue management, and forage production are some potential needs in the above countries. Rattan commented that returning crop residues to soil is not possible in countries in Asia, West Africa, and East Africa. Crop residues are worth a lot of money for farmers in developing countries. Rattan stated that, unless we compensate farmers for the real value of residues, farmers will continue removing crop residues and exposing soil to degradation.

**Publications**

While this item was not initially in the agenda, ideas about possible publications from the NC-1178 group were discussed. Rattan suggested that an article from the group be published to support the goals of the International Year of Soils. Gary supported and recommended the write-up of such article. Humberto further suggested that a book from the NC1178 group emphasizing the new approved project would be a worthy contribution. Rattan moved that publication of an article in 2015 and book in the near future should be our goals. Larry seconded the motion by Rattan. The article will be submitted to the Journal of Soil and Water Conservation, Section A (Features) and published later this year. Sandeep will coordinate the write-up of the article with all the members. The proposed book will be published in 2016 or 2017. Discussion of authorship followed. Should guests of the NC-1178 meeting in Ohio such as graduate students be included as co-authors in the upcoming publications? Mahdi motioned that the authorship should be limited to the official members of the committee. Larry and Ken seconded. Members in the feature article will be listed in an alphabetical order. The authors of this article will also include the retired members.

**Election of New Secretary**

Election of secretary followed administrator report. Francisco Arriaga from the University of Wisconsin was elected as the new secretary. He will serve as secretary in 2016 and then as chair in 2017. Larry moved that Francisco Arriaga be elected for next year as secretary and Sandeep Kumar will be next in line. Humberto seconded. The current chair will communicate with Francisco about his election as he was not present in this meeting.

**State Reports**

Presentations of state reports followed. Reports from Guam, Illinois, Iowa, Kanasa, Nebraska, Michigan, North Dakota, South Dakota, and Ohio were presented. The written reports are attached.

At the end of presentations, Rattan stressed that future research work should include livestock analysis and integrated crop-livestock production systems. He requested that this be recorded this in minutes. Looking at the whole life cycle analysis of livestock systems with inputs and outputs is a research need he added.

Lal asked the group and talked about discoveries in soil science. He listed all the discoveries named by the attendees including:

1. Cation exchange capacity (nutrient exchange and retention)
2. Solute movement in the soil
3. Factors of soil formation
4. Flood plains or degradation by inundation
5. By-pass flow or macropore flow (also called preferential flow).
6. Fertilizer use
7. Liebig’s Law
8. Darcy’s law (water flow)
9. Soil mapping
10. Biodiversity (soil biodiversity and biology)
11. Water and wind erosion models (development)
12. Soil water management technology (TDR, neutron probe, and other)
13. Salinity and sodicity
14. Soil carbon protection

Rattan requested that each member should write one page of his/her proposed discovery. This will be due at the end of July 2015. The article will be published in American Scientist or another appropriate journal. Next, Rattan and Ken talked about erosion in relation to soil C dynamics. Is erosion source or sink of C? Differing points of view exist in regards to this issue. Some consider erosion is a sink, but agronomists consider that erosion leads to soil C losses. Ken talked about his papers in preparation.

Meeting adjourned at 5:15 pm.

FIELD TOUR

Field Tour June 24

Departure at 8:00 am

DeAnn, Lisa, Larry, Mahdi, Mohammad and Thomas together with Chris Eidson and Klaus Lorenz left Columbus for a field trip to sites in northeastern Ohio. First site visited were the Triplett-Van Doren Long-term Tillage Plots in Wooster. Dr. Warren Dick ([dick.5@osu.edu](mailto:dick.5@osu.edu)) introduced the group to the research and summarized major results which was followed by intense discussion with the group. The tour continued through the Amish country side with a stop for lunch at Chalet in the Valley, Guggisberg Cheese in Millersburg. After the break, the tour continued to the recently closed USDA ARS North Appalachian Experimental Watershed research site at Fresno. James Buxton ([buxton.71@osu.edu](mailto:buxton.71@osu.edu)) gave an introduction to the research and explained the Coshocton Wheel at a watershed where data are collected for the USDA-NIFA CAP project. He gave also a short overview about the construction and functioning of the large Monolith Lysimeters which impressed the group. After a short visit to the guesthouse of the research station, the group returned to Columbus.

Return at 5:30 pm