

53rd Annual Manitoba Soil Science Society Meeting
February 4th and 5th, 2010
Holiday Inn South
1330 Pembina Highway, Winnipeg, MB

Thursday, February 4th, 2010

CCA CEU Credits:

3.5 Crop Management; 1.5 Nutrient Management; 1.0 Pest Management

MIA CPD Credits: 4.0

*denotes student presentation

8:00 a.m. **Registration and Continental Breakfast – Heritage III Ballroom**

8:55 a.m. **Conference Commences – Heritage III Ballroom**
 Opening Remarks: Brian Amiro, MSSS President

Symposium – The Value of Long-Term Soil Experiments – Heritage III Ballroom

Chairperson: Kim Brown-Livingston and Brian Amiro

9:00 a.m. **Long-term Sites: Seeing the Future Through the Past**
 Henry Janzen
Agriculture and Agri-Food Canada – Lethbridge, AB

9:30 a.m. **Soil and Crop Management Effects in Long-term Experiments in Saskatchewan**
 Con Campbell
Agriculture and Agri-Food Canada - Emeritus

10:15 a.m. **Nutrition Break and Poster Session**

10:45 a.m. **National Centre for Livestock and the Environment (NCLE)**
Glenlea Long Term Manure and Crop Management Field Laboratory
 Don Flaten
University of Manitoba

11:05 a.m. **The Carberry Potato Rotation Study, 1997 – 2009**
 Ramona Mohr
Agriculture and Agri-Food Canada - Brandon, MB

11:25 a.m. **2,4-D Sorption Variations**
 Annemieke Farenhorst¹, Ross McQueen¹, Ibrahim Saiyed², Peter McQueen¹, David Lobb¹, Paul Messing¹, Tee Boon Goh¹, Sheng Li¹, Tom Schumacher³ and Sharon Papiernik⁴
¹*Department of Soil Science, University of Manitoba*
²*SAARC Agriculture Centre, BARC Complex, Farmgate, Dhaka-1215, Bangladesh*
³*South Dakota State University, Department of Plant Science, 247 SNP, Brookings, SD*
⁴*North Central Soil Conservation Research Laboratory, U.S. Department of Agricultural Service, Morris, MN*

11:45 a.m. **The Glenlea Organic vs Conventional Plots: The First 18 Years**

Martin Entz, Shauna Mellish, Yuying Shen, Jeff Hoepfner, Mario Tenuta, Cathy Welsh, Li Ru and Keith Bamford
University of Manitoba

12:05 p.m. **Lunch and Poster Session – Hallway outside of Heritage III Ballroom**

Session – Nutrient Management – Heritage III Ballroom

Chairperson: Inoka Amarakoon and David Whetter

- 1:45 p.m. **Phosphate Sorption Capacity of Some Tropical Soils on Basement Complex of South Western Nigeria**
 O.O. Olatunji*², G.O. Oyediran², G.O. Kolawole², D.V. Ige¹ and O.O. Akinremi¹
¹*Department of Soil Science, University of Manitoba*
²*Agronomy Department, Ladoké Akintola University of Technology, Ogbomoso, Nigeria*
- 2:00 p.m. **Comparison of colorimetric and inductively coupled plasma spectroscopic methods of phosphorus determination in soil extracts**
 Dupe Ige, T. Lesne, and O.O. Akinremi
Department of Soil Science, University of Manitoba
- 2:15 p.m. **Effect of Ca:Mg ratio on precipitated P species identified using ³¹P solid state NMR**
 Mihiri Manimel Wadu*¹, O.O. Akinremi¹, V.K. Michaelis², S. Kroeker²
¹*Department of Soil Science, University of Manitoba*
²*Department of Chemistry, University of Manitoba*
- 2:30 p.m. **Nitrogen Dynamics in Beef and Swine Manure-treated Soils during the Growing Season**
 Folashade Gesinde, O.O. Akinremi, D. Flaten, M. Bammeké and D. Ige
Department of Soil Science, University of Manitoba
- 2:45 p.m. **Kelsey Conservation District Soil Fertility Trials: Copper Test Strips and Nitrogen Ramp Calibration Strips**
 Gwendolyn Donohoe*¹ and John Heard²
¹*Kelsey Conservation District, The Pas, MB*
²*Manitoba Agriculture, Food and Rural Initiatives, Carman, MB*
- 3:00 p.m. **Residual Effects of Five Years of N-demand based Swine Manure Application on Available Nutrients and Chloride in a Coarse-textured Pasture**
 Luca Coppi*¹, Mario Tenuta¹, Don Flaten¹, Denis Tremorin² and Kim Ominski³
¹*Department of Soil Science, University of Manitoba*
²*HYTEK Ltd., La Broquerie, MB*
³*Department of Animal Science, University of Manitoba*
- 3:15 p.m. **Nutrition Break and Poster Session**

Session – Pesticide and Estrogens in the Environment – Heritage III Ballroom

Chairperson: Baljeet Singh and Taryn Dickson

3:45 p.m. **Mineralization of 17 β -estradiol in Alberta Soils**

Emmanuelle Caron*¹, Annemieke Farenhorst¹, Jeanette Gaultier², Claudia Sheedy³ and Tom Goddard⁴

¹*Department of Soil Science, University of Manitoba*

²*Crops Knowledge Centre, Manitoba Agriculture, Food and Rural Initiatives, Carman, MB*

³*Agriculture and Agri-Food Canada, Lethbridge, AB*

⁴*Alberta Agriculture and Rural Development, Edmonton, AB*

4:00 p.m. **Atmospheric Concentrations of Currently Used Pesticides in Relation to Wetland Water Quality in Manitoba, Canada**

Paul Messing*¹, Annemieke Farenhorst¹, Don Waite², David Humphries³, Laura Thompson¹ and Lindsay Coulthard⁴

¹*Department of Soil Science, University of Manitoba*

²*Environment Canada - Retired, 2365 Albert St., Regina, SK*

³*Alberta Research Council, Vegreville, AB*

⁴*Manitoba Zero Tillage Research Association, Brandon, MB*

4:15 p.m. **Effects of Liquid Swine Manure on Sorption of 17 β -Estradiol to Soil**

Kim Zitnick*¹, T.M. DeSutter¹, H. Hakk², F.X.M. Casey¹, N.W. Shappell² and E. Khan³

¹*Soil Science, North Dakota State University, Fargo, ND*

²*Animal Metabolite and Agricultural Chemical Unit of the Bioscience Research Lab, USDA-ARS, Fargo, ND*

³*Civil Engineering, North Dakota State University, Fargo, ND*

Session – Crop Production – Heritage III Ballroom

Chairperson: Rotimi Ojo and Siobhan Stewart

4:30 p.m. **Meteorological Impacts of the 2008 Growing Season on Canola Quality (*Brassica napus*) in Western Canada**

Taryn Dickson*¹, P.R. Bullock¹ and V.J. Barthelet²

¹*Department of Soil Science, University of Manitoba*

²*Canadian Grain Commission, 600-303 Main Street, Winnipeg*

4:45 p.m. **Strip Tillage for Corn and Soybean Production in the U.S. Red River Valley of North Dakota and Minnesota**

Laura Overstreet, Norman Cattanaach, and David Franzen

North Dakota State University, Fargo, ND

5:15 p.m. **Banquet Reception and Posters with Cash Bar**

6:00 p.m. **Banquet**

Guest Speaker: Dr. Con Campbell, AAFC – Emeritus

Advice for Young Researchers

Friday, February 5, 2010

CCA CEU Credits: 1.0 Nutrient Management; 2.5 Soil and Water Management;

MIA CPD Credits: 4.0

8:00 a.m. **Registration and Continental Breakfast – Heritage III Ballroom**

8:40 a.m. **Conference Commences – Heritage III Ballroom**
Opening Remarks: Brian Amiro, MSSS President

Session – Remediation and Reclamation – Heritage III Ballroom

Chairperson: Rajkamal Mann and Michelle Erb

8:45 a.m. **Brine-Contaminated Soil Remediation Processes for Crop Production**
Jennifer Nielsen*, Tee Boon Goh, and Robert Eilers
Department of Soil Science, University of Manitoba

9:00 a.m. **Comparison of Soil Enzyme Activities under Reclaimed Roads and Adjacent Prairie in the Little Missouri National Grasslands, North Dakota**
Eric Viall*, Laura Overstreet, David Hopkins
North Dakota State University, Fargo, ND

Session – Soil Resource Inventory for Soil Management – Heritage III Ballroom

Chairperson: Mihiri Manimel Wadu and Jeff Thiele

9:15 a.m. **Soil Survey is Essential for Agricultural Drainage**
Yi Zhang
Agri-Environment Knowledge Centre, Manitoba Agriculture, Food and Rural Initiatives

9:30 a.m. **Applications of Detailed Soil Survey in Manitoba**
Sheila Meyer
Agri-Environment Knowledge Centre, Manitoba Agriculture, Food and Rural Initiatives

9:45 a.m. **Soil Management in the Rural Municipality of Turtle Mountain, Killarney, MB**
Ronggui Wu, Yi Zhang and Sheila Meyer
Agri-Environment Knowledge Centre, Manitoba Agriculture, Food and Rural Initiatives

10:00 a.m. **Planning for Agriculture and the NEW Provincial Land Use Policies**
Sheri Grift
Land Use Planning Knowledge Centre, MAFRI, Selkirk, MB

10:15 a.m. **Nutrition Break and Poster Session**

10:45 a.m. **Annual General Meeting – Heritage III Ballroom**

12:00 p.m. **Lunch – Antelope, Elk and Caribou Boardrooms**

Session – Greenhouse Gas Emissions – Heritage III Ballroom

Chairperson: Colleen Wilson and Jenna Rapai

1:15 p.m. **Carbon Dioxide Fluxes Following Conversion of Pasture to Annual Crops**
Trevor Fraser* and Brian Amiro
Department of Soil Science, University of Manitoba

1:30 p.m. **CH₄ and CO₂ Flux Measurements for a Eutrophic Subarctic Fen at Churchill, MB**

Krista Hanis*¹, Mario Tenuta¹, Brian Amiro¹, Tim Papakyriakou² and Jenna Rapai¹
¹*Department of Soil Science, University of Manitoba*
²*Department of Environment and Geography, University of Manitoba*

- 1:45 p.m. **Nitrogen Loss by Denitrification in a Cultivated Soil in the Red River Valley**
 Lindsey Andronak* and Mario Tenuta
Department of Soil Science, University of Manitoba
- 2:00 p.m. **Environmental Impacts of Grazing Cattle on Frozen Ground: Soil GHG Emissions and Soil Nutrient Relationships**
 Gwendolyn Donohoe*¹, Mario Tenuta¹, Don Flaten and Kim Ominski²
¹*Department of Soil Science, University of Manitoba*
²*Department of Animal Science, University of Manitoba*
- 2:15 p.m. **Nitrous Oxide Emission from Chernozemic Soils Amended with Anaerobically Digested Beef Cattle-Feedlot Manure**
 Waraidzo Chiyoka*^{1,2}, Francis Zvomuya¹, Xiying Hao² and Xiaomei Li³
¹*Department of Soil Science, University of Manitoba*
²*Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB*
³*Highmark Renewables Research, Agri-Food Discovery Place, Edmonton Research Station, Edmonton, AB*
- 2:30 p.m. **Does Including Alfalfa in a Crop Rotation Reduce Soil Greenhouse Gas Emissions?**
 Siobhan Stewart*, Aaron Glenn, Mario Tenuta, and Brian Amiro
Department of Soil Science, University of Manitoba
- 2:45 p.m. **Nutrition Break and Poster Session**
- 3:15 p.m. **Estimating Differences in Soil Nitrous Oxide Emissions due to Timing of N Fertilizer Application Using a Modified National Inventory Report Approach**
 Matthew Wiens
Agri-Environment Knowledge Centre, Manitoba Agriculture, Food and Rural Initiatives
- 3:30 p.m. **Carbon Inventory of Poplar River First Nation Traditional Territory**
 Diane Malley¹, Paul Cooley², and Ray Rabliauskas³
¹*PDK Projects, Inc., Nanaimo BC and Winnipeg, MB*
²*North/South Consultants, Winnipeg, MB*
³*Poplar River First Nation, Poplar River MB*
- 3:45 p.m. **Greenhouse Gas Emissions from Manure Applied Soil can be Reduced by Animal Diet Manipulation**
 Haben Asgedom¹, M. Tenuta³, G. Donohoe³, B. Sparling³ and E. Kebreab²
¹*Department of Animal Science, University of Manitoba*
²*Department of Animal Science, University of California, Davis, CA*
³*Department of Soil Science, University of Manitoba*
- 4:00 p.m. **Student Awards, Passing of the Shovel, Closing Remarks**
 Brian Amiro, MSSS President

Poster Presentations

1. **Soils Training for Grade-Schoolers in the Carman Area**
John Heard¹, Kim Brown-Livingston¹, A. Iverson², Mitchell Timmerman¹
¹ *Manitoba Agriculture, Food and Rural Initiatives*
² *Department of Plant Science, University of Manitoba*
2. **“Plants Need to Eat Too!!” Soils Meet Agriculture in the Classroom**
John Heard, Kim Brown-Livingston, Mitchell Timmerman
Manitoba Agriculture, Food and Rural Initiatives
3. **Do Manitoba Growers Need to Apply Manganese to Soybeans?**
Brent Reid, J. Schmidt, Bruce Brolley, Brian Jack, John Heard
Manitoba Agriculture, Food and Rural Initiatives
4. **Development of Competitive ELISAs for the Determination of Estrogen Concentrations**
Emmanuelle Caron*¹, Claudia Sheedy², Annemieke Farenhorst¹
¹ *Department of Soil Science, University of Manitoba*
² *Agriculture and Agri-Food Canada, Lethbridge, AB*
5. **Electrical Conductivity as an Indicator of Wetland Hydrology**
Alison Murata*¹, S. Meyer¹, D.A. Lobb¹, D.J Pennock², S. Li¹ and A. Farenhorst¹
¹ *Department of Soil Science, University of Manitoba*
² *Department of Agriculture and Bioresources, University of Saskatchewan*
6. **Field Calibration of a Frequency Domain Reflectometry Soil Moisture Probe**
Emmanuel Rotimi Ojo*, P.R. Bullock and O.O. Akinremi
Department of Soil Science, University of Manitoba, Winnipeg, MB
7. **Water Table Monitoring and Salinity Investigation Activities at CMCDC-Winkler**
Steve Sager¹ and Curtis Cavers²
¹ *Agri-Environment Services Branch (AESB)*
² *Canada-Manitoba Crop Diversification Centre (CMCDC)*
8. **Study of Soil Water Content Redistribution at Fine Spatial Resolution within Potato Rootzone using TDR Miniprobos**
S. Satchithanantham*¹, M. R. C. Cordeiro¹, R. Sri Ranjan¹ and S. Sager²
¹ *Department of Biosystems Engineering, University of Manitoba*
² *Agri-Environment Services Branch (AAFC), Morden, Manitoba*
9. **The Value of Natural Capital**
Colleen Wilson and Esther Salvano
Manitoba Agriculture, Food and Rural Initiatives
10. **Is Soil in a Red River Valley Cropping System a Source of Methane Gas?**
Jolene Rutter*, Marina Blanc, Siobhan Stewart and Mario Tenuta
Department of Soil Science, University of Manitoba
11. **Pesticide Root Zone Modeling (PRZM) at Soil Profiles of the Manitoba Zero Tillage Research Association (MZTRA) Research Farm**

Baljeet Singh* and Annemieke Farenhorst
Department of Soil Science, University of Manitoba

12. **Real-Time Irrigation Management in Southern Manitoba**
 Steve Sager¹, Bruce Shewfelt¹ and Gerry Guy²
¹*Agri-Environment Services Branch, Morden, MB*
²*Agri-Environment Services Branch, Calgary, AB*

13. **Investigation of the Water Redistribution Pattern in the Rootzone of Corn using Time Domain Reflectometry**
 M.R.C. Cordeiro*¹, S. Satchithanatham¹, R. Sri Ranjan¹, S. Sager²
¹*Department of Biosystems Engineering, University of Manitoba*
²*Agri-Environment Services Branch (AAFC), Morden, MB*

14. **The Impact of Eight Herbicides at Environmentally Relevant Concentrations in Prairie Pothole Wetlands on Aquatic Invertebrates**
 Paul Messing*¹, Annemieke Farenhorst¹, Lisette Ross², Laura Thompson¹ and Lindsay Coulthard³
¹*Department of Soil Science, University of Manitoba*
²*Ducks Unlimited Canada, Oak Hammock Marsh, Stonewall, MB*
³*Manitoba Zero Tillage Research Association, Brandon, MB*

15. **Determining Optimum Nitrogen Fertilizer Rates in the Kelsey Conservation District**
 Gwendolyn Donohoe^{1,3}, John Heard², Shawn Sexsmith¹, Don Flaten³, and Clay Sawka³
¹*Kelsey Conservation District, The Pas, MB*
²*Manitoba Agriculture, Food and Rural Initiatives, Carman, MB,*
³*Department of Soil Science, University of Manitoba*

16. **Relation of Cattle Excreta Nutrient Concentrations to Diet Supplementation and Cold Weather Acclimatization: Implications for Soil Greenhouse Gas Emissions and Soil Nutrient Availability**
 Gwendolyn Donohoe¹, Mario Tenuta¹, Don Flaten¹, and Kim Ominski²
¹*Department of Soil Science, University of Manitoba*
²*Department of Animal Science, University of Manitoba*

17. **Nitrogen and Phosphorus Uptake by Wheat from Different Sources of Manure and Fertilizer**
 A.F. Gesinde, O.O. Akinremi, D. Flaten, M. Bammeke and D. Ige
¹*Department of Soil Science, University of Manitoba*