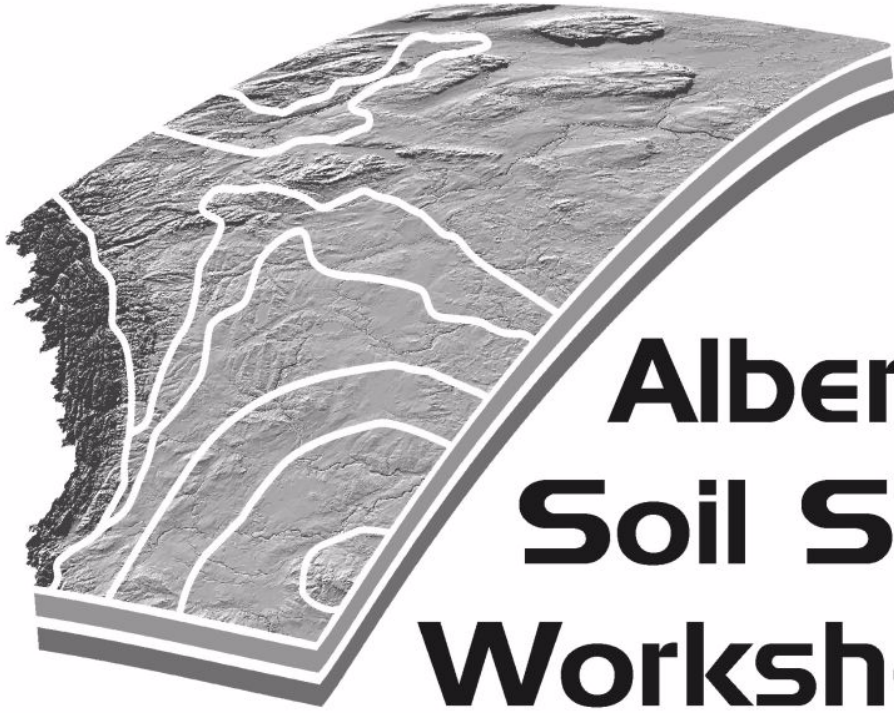


Program for the 53rd Annual



Alberta Soil Science Workshop

Workshop Theme:
**Challenges and Opportunities in the
Management of Northern Soils**

February 16 to 18, 2016

Pomeroy Hotel and Conference Centre
Grande Prairie, Alberta

www.soilsworkshop.ab.ca

About the Alberta Soil Science Workshop

Background

The Alberta Soil Science Workshop is held to facilitate regional interaction among professionals in soil science. Typically 100 to 150 participants gather for a 1½ to 2 day program that comprises 40 to 60 oral and poster presentations. These include: keynote papers focussed on the workshop theme, technical papers within four distinct fields, and volunteer papers. Currently the four technical groups are: Land Use, Soil Fertility, Land Reclamation, and Forest, Riparian and Wetland Soils.

Workshop participants include a diversity of professionals from private industry (e.g. consultants in agronomy, pedology, reclamation, remediation, and environmental services; chemists from commercial analytical laboratories), government (federal, provincial, municipal) and academia (universities and colleges). The Workshop is graduate student-friendly, providing an excellent opportunity to enhance presentation skills in a supportive setting (travel bursaries are available for out-of-town students; awards are made for the best student presentations).

Organizing Committee for the 2016 Alberta Soil Science Workshop

Past Chair	Derek MacKenzie Department of Renewable Resources, University of Alberta, Edmonton AB
Chair	Amanda Schoonmaker Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Treasurer	Derek MacKenzie Department of Renewable Resources, University of Alberta, Edmonton AB
Sponsorship	Preston Sorenson Department of Renewable Resources, University of Alberta, Edmonton AB
Secretary	Dani Degenhardt Alberta Innovates Technology Futures, Edmonton AB

Technical Session Chairs

Soil Fertility	Len Kryzanowski Alberta Agriculture and Rural Development, Edmonton AB
Land Use	John Zylstra Alberta Agriculture and Rural Development, Edmonton AB
Land Reclamation	Deo Heeraman AMEC-Foster Wheeler, Calgary AB
Forest, Riparian and Wetland Soils	Bin Xu Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Pedogenesis & Soil Inventory	Konstantin Dlusskiy Paragon Soil and Environmental Consulting, Edmonton AB

Program - 2016 Alberta Soil Science Workshop

Tuesday, February 16, 2016

- 2:30 – 5:00 PM** Pre-workshop on Peatland Criteria
7:00 – 9:00 PM Evening Reception and Registration

Wednesday, February 17, 2016

- 7:00 AM – 5:30 PM** Registration
7:00 – 8:00 AM Breakfast
8:00 – 12:00 PM Plenary Session
10:00 – 10:30 AM Coffee and Refreshments
12:00 – 1:00 PM Lunch
1:00 – 2:20 PM Concurrent Technical Sessions
2:20 – 2:50 PM Coffee and Refreshments
2:50 – 3:30 PM Concurrent Technical Sessions
3:45 – 5:30 PM Poster Session
4:30 – 9:00 PM Cash Bar
6:00 – 10:00 PM Banquet and Entertainment

Thursday, February 18, 2016

- 7:00 – 8:00 AM** Breakfast
8:00 – 9:20 AM Concurrent Technical Sessions
9:20 – 9:50 AM Coffee and Refreshments
9:50 – 11:30 AM Concurrent Technical Sessions
11:30 – 1:00 PM Lunch and ASSW Business Meeting

Summary of Workshop Presentations and Posters

Plenary Session Presentations		
Determining and restoring key ecosystem functions in northern plant-soil systems	Katherine Stewart	University of Saskatchewan
The Challenge of Peatland Management in the Oil/Gas Arena: Can We Save Our Organic Soils?	Dale Vitt	Southern Illinois University
Forest Soil Conservation: Evaluating Success	Richard Kabzems	BC Ministry of Forests
Cold soils on a warmer climate	James Bockheim	University of Wisconsin
Technical Session Presentations		
<i>Forest and Wetland Soils</i>		
Influence of Organic Amendment, Compaction, and Time on Nutrient and Metal Availability in a Saturated Riparian Soil	Jim Miller ¹ , Tony Curtis ¹ & Eric Bremer ²	¹ Agriculture and Agri-Food Canada, Lethbridge AB & ² Western Ag Innovations, Lethbridge AB
Modelling the influence of well pads on toluene biogenesis in peatlands	Mark Béasse, Stephanie Comparelli & Michelle Cotton	Solstice Canada Corp., Edmonton AB
"One size fits all" - the 'enzymatic latch' in both northern peatlands and mangrove	Saraswati Saraswati	Department of Geography and Environmental Management, University of Waterloo, Waterloo ON
In-situ Well Pad Peatland Restoration: Lessons Learned After Three Years	Bin Xu, Melanie Bird & Bhupesh Khadka	Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Long-term N and S Depositions affected soil bacteria composition in a boreal forest in northern Alberta	Stephanie M.C. Ibsen, Bin Ma & Scott X. Chang	Land Reclamation International Graduate School, University of Alberta, Edmonton AB
<i>Land Use</i>		
Fractal Dimension of Soil Aggregation in Different Crop Rotations and Various Nutrient Managements	Mina Kiani ¹ , Guillermo Hernandez Ramirez ¹ , Sylvie Quideau ¹ , Elwin Smith ² , Henry Janzen ² , Francis Larney ² & Dick Puvreen ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Agriculture and Agri-Food Canada, Lethbridge AB
Limitations to Agricultural Expansion in Alberta	David Hildebrand & Jason Cathcart	Alberta Agriculture and Forestry, Edmonton AB
Irrigation Potential in the North Peace Region (Land Use)	John Zylstra	Alberta Agriculture and Rural Development, Edmonton & Lethbridge AB
An Overview of Provincial and Regional Agricultural Land Use Related Monitoring, Policy Support, and Extension Activities	Karen Raven, David Spiess, David Hildebrand, Longin Pawlowski, Deb Werk & Gerald Stark	Alberta Agriculture and Forestry, Edmonton & Lethbridge AB
<i>Pedogenesis and Soil Inventory</i>		
Using the Forest Floor as an Indicator of Forest Ecosystem Recovery	Cindy Shaw, Darrell Hoffman, Stephen Kull & Mihai Voicu	Canadian Forest Service, Edmonton AB
Soil Cover and Subsistence Agriculture in BOSAWÁS National Park, Nicaragua	Konstantin Dlusskiy, Steve Murchison & Blair Angelstad	Paragon Soil and Environmental Consulting Inc., Edmonton AB
Digital Soil Mapping of the Boreal Forest in Northern Alberta	Preston Sorenson ¹ & Ian Basford ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Solstice Canada Corp., Edmonton AB
<i>Land Reclamation</i>		
Spatial analysis and visualization of soil resistance before and after soil adjustment on a reclaimed site	Trevor Floreani & Amanda Schoonmaker	Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Exploring Post-Reclamation Land Capability Equivalency with Synthetic Data	Ivan R. Whitson	Edmonton AB
Exponential fertilization promotes the growth of trembling aspen seedlings by increasing N retranslocation in reclaimed soils	Prem Pokharel & Scott X. Chang	Department of Renewable Resources, University of Alberta, Edmonton AB
Rhizospheric microbial community composition and function varied with capping strategies in reconstructed soils for oil sands reclamation	Bin Ma ¹ , Yike Shen ¹ , Xiaopeng Li ¹ , Scott X. Chang ¹ & Bonnie Drozdowski ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Alberta Innovates - Technology Futures, Edmonton AB
Admixing of Subsoil and Amendment of Peat Biochar Improves Productivity of Peat as a Substrate for Oil Sands Reclamation	Sebastian Thomas Dietrich & Derek MacKenzie	Department of Renewable Resources, University of Alberta, Edmonton AB
Germination and short-term establishment potential of agronomic and native plants on two processed MFT	Amanda Schoonmaker ¹ , Jasmeen Kaur ¹ & Dani Degenhardt ²	¹ Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB & ² Alberta Innovates - Technology Futures, Edmonton AB
Survivability and Growth of Winter-Planted Black Spruce (Picea mariana [Mill.] B.S.P.) Seedlings in Northern Alberta Peatmoss Wetland	Weixing Tan ¹ , Tim Vinge ² , Doug Kulba ² & Jeremy Reid ³	¹ Grande Prairie Regional College, Grande Prairie AB, ² Alberta Environment and Sustainable Resource Development, Edmonton & Grande Prairie AB & ³ Devon Canada Corp., Calgary AB
<i>Soil Fertility</i>		
Influence of Harvest Intensity and N Fertilization on C and N Cycling	Benjamin Ellert, Henry Janzen, Elwin Smith & Newton Lupwayi	Agriculture and Agri-Food Canada, Lethbridge AB
Incorporating N mineralization in estimating crop n fertilizer requirements in Alberta	Symon Mezbahuddin ¹ , Len Kryzanowski ¹ , Ross H. McKenzie ¹ , Adil Akbar ¹ , Craig Sprout ¹ , Germar Lohstraeter ¹ , Leigh-Anne Powers ¹ & John O'Donovan ²	¹ Alberta Agriculture and Forestry, Edmonton AB & ² Agriculture and Agri-Food Canada, Lacombe AB
The Bow Island Long-Term Rotation Study: Lessons from the first 24 years	Eric Bremer ¹ , Doon Pauly ² , Allan Middleton ² & Ross McKenzie ²	¹ Western Ag Innovations, Lethbridge AB & ² Alberta Agriculture and Forestry, Lethbridge AB
Soil CO ₂ , CH ₄ , and N ₂ O fluxes in response to cattle stocking rates on a rough fescue grassland	Xinlei Gao ¹ , Xiying Hao ¹ , Ben W. Thomas ¹ , Ryan Beck ¹ , Don Thompson ¹ , Walter D. Willms ¹ & Mengli Zhao ²	¹ Agriculture and Agri-Food Canada, Lethbridge AB & ² College of Ecology and Environmental Science, Inner Mongolia Agricultural University, Hohhot China
Manure management to reduce greenhouse gas and ammonia emissions	Len Kryzanowski ¹ , Trevor Wallace ¹ , Geoff Montgomery ¹ , Craig Sprout ¹ , Germar Lohstraeter ¹ , Leigh-Anne Powers ¹ & Claudia Wagner-Riddle ²	¹ Alberta Agriculture and Forestry, Edmonton AB & ² School of Environmental Sciences, University of Guelph, Guelph ON

Technical Session Presentations cont'd		
Volunteer		
Using Two Years of Data to Evaluate the Long Term Influence of Manure Type and Bedding Material of Soil Mesofauna	Jeff Battigelli ¹ , Jim Miller ² & Bruce Beasley ²	¹ Alberta Innovates - Technology Futures, Edmonton AB & ² Agriculture & Agri-Food Canada, Lethbridge AB
Sub-soiling and tillage effects on crop production and soil properties	Kabal S. Gill & Khalil Ahmed	Smoky Applied Research & Demonstration Association, Falher AB
Sorption of phosphorus in saline aqueous solutions by wheat straw, wood pinchip and willow biochars	Abdelhafid Dugdug ¹ , Yong Sik Ok ² , Anushka U. Rajapaksha ² , Anthony Anyia ³ & Scott X. Chang ¹	¹ Department of Renewable Resources, University of Alberta, Edmonton AB, ² Korea Biochar Research Center and Department of Biological Environment, Kangwon National University, Chuncheon Korea & ³ Alberta Innovates - Technology Futures, Edmonton AB
Biomonitoring and Assessment of Hydrogen Fluoride on Perennial Rye Grass from a Fertilizer Production	Yihan Zhao ¹ , M. Anne Naeth ¹ & Connie Nichol ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Agrium, Fort Saskatchewan AB
Importance of topographical features for the establishment of forest understory plants from the soil propagule bank	Kate Melnik ¹ , Simon M. Landäusser ¹ & Kevin Devito ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Department of Biological Sciences, University of Alberta, Edmonton AB
Poster Session Presentations		
Effects of Humic Substances on Bio-Remediation of Diesel-Contaminated Soil	O.O. Adesanwo ¹ , B.T. Fasina ¹ & F.M. Adebisi ²	¹ Department of Soil Science and Land Resources Management, Obafemi Awolowo University, Ile-Ife Nigeria & ² Department of Chemistry, Obafemi Awolowo University, Ile-Ife Nigeria
Initial plant community development and tree establishment on different reclamation soil types	Leah deBortoli ¹ , Derek MacKenzie ¹ , Brad Pinno ² , Edith Li ² & Ruth Errington ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Canadian Forest Service, Edmonton AB
Concentrations of Chlortetracycline, Sulfamethazine, and Tylosin in Simulated Rainfall-Runoff from Manure Composting Windrows	Srinivas Sura ¹ , Dani Degenhardt ² , Allan J. Cessna ³ , Francis J. Larney ¹ & Tim A. McAllister ¹	¹ Agriculture and Agri-Food Canada, Lethbridge AB, ² Alberta Innovates - Technology Futures, Edmonton AB & ³ Agriculture and Agri-Food Canada, Saskatoon SK
Trade-offs in reclamation soil-handling practices: improving soil surface organics or reducing vegetation competition to enhance forest establishment	Jeremy Dostie & Amanda Schoonmaker	Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Comparative evaluation of surface soil adjustment approaches on a newly reclaimed airstrip	Trevor Floreani & Amanda Schoonmaker	Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Evaluating Foliar Nutrients as an Indicator of Ecosystem Function in Natural and Reclaimed Soils in the Alberta Oil Sands Region	Jeff Hogberg ¹ , Derek MacKenzie ¹ & Brad Pinno ²	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Canadian Forest Service, Edmonton AB
Using Nested PCR to Detect Earthworm DNA in Soil Samples	Mason Jackson, Cindy Shaw, Tod Ramsfield & Colin Myrholm	Canadian Forest Service, Edmonton AB
Hitchhiker planting: evaluation of mixed-species container stock in field conditions	Adam Mathison ¹ , Amanda Schoonmaker ² & Derek MacKenzie ¹	¹ Department of Renewable Resources, University of Alberta, Edmonton AB & ² Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB
Oribatid mites as an index of soil development in a post-mining chronosequence	Brittany McAdams ¹ , Sylvie Quideau ¹ , Lisa Lumley ² & Mathew Swallow ³	¹ Department of Renewable Resources, University of Alberta, Edmonton AB, ² Royal Alberta Museum, Edmonton AB & ³ Department of Environmental Science, Mount Royal University, Calgary AB
Recovery of Functional Diversity in Disturbed Soils	Cassandra McKenzie & Sylvie Quideau	Department of Renewable Resources, University of Alberta, Edmonton AB
Vegetation and topographic influences on Carbon Storage in Boreal Forest Soils	Paul D. Sewell, Sylvie Quideau & Miles Dyck	Department of Renewable Resources, University of Alberta, Edmonton AB
Salinity Tolerance of Boreal Plant Species and Soil Amendment Potential for Restoration	Jean-Marie Sobze ¹ , Amanda Schoonmaker ¹ & Dani Degenhardt ²	¹ Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB & ² Alberta Innovates - Technology Futures, Edmonton AB
Water-extractable organic C, ammonium and nitrate dynamics over two non-growing seasons in response to cover crop species and fertilizer source	Jessica Stoeckli ¹ , Ben W. Thomas ¹ , Xiyang Hao ¹ , Francis J. Larney ¹ , Martin H. Chantigny ² & Claudia Goyer ³	¹ Agriculture and Agri-Food Canada, Lethbridge AB, ² Agriculture and Agri-Food Canada, Quebec QC & ³ Agriculture and Agri-Food Canada, Fredericton NB
Road-induced greenhouse gas emissions from boreal peatlands and potential for mitigation	Maria Strack ¹ , Saraswati Saraswati ¹ , Bin Xu ² , Mir Mustafizur Rahman ³ & Greg McDermid ³	¹ Department of Geography and Environmental Management, University of Waterloo, Waterloo ON, ² Boreal Research Institute, Northern Alberta Institute of Technology, Peace River AB & ³ Department of Geography, University of Calgary, Calgary AB
Long-term N and S Depositions Affect Leaf Litter Decomposition in a Mixedwood Boreal Forest in Northern Alberta, Canada	Qi Wang & Scott X. Chang	Department of Renewable Resources, University of Alberta, Edmonton AB