

# **2022 Joint Canadian Society of Soil Science (CSSS) Annual Meeting- Alberta Soil Science Workshop (ASSW)**

May 23-27, 2022

Lister Conference Centre  
11613 87 Ave NW  
University of Alberta Campus  
Edmonton, Alberta

## Registration

**Monday, May 23, 2022**

13:00-21:00, Hallway off the Maple Leaf room

## Reception

**Monday, May 23, 2022**

18:30-21:00, Reception, Maple Leaf room

## Oral Presentation Time Table

**Tuesday, May 24, 2022**

Time	Name	Title
8:15-8:30	Scott Chang & Symon Mezbahuddin	Opening Ceremony in Maple Leaf Room

Session I – Plenary. Room: Maple Leaf Chairs: Scott Chang and Symon Mezbahuddin		
08:30 - 09:20	Yong Sik Ok	Metal Contamination and Bioremediation of Agricultural Soils for Food Safety and Sustainability
9:20- 10:10	William Shotyk	Soil: The Key to Understanding Trace Elements in Air, Water, and Plants, from Source Assessment to Ecological Significance
10:10-10:30	Coffee break (sponsored by Canadian Natural Resources Limited (CNRL)) (Derek MacKenzie: Soil Health Leadership Meeting. Room: Dining Hall )	

Session 15 - Beyond Soil Test P: Phosphorus Biogeochemistry in Canadian Soils. Room: Maple Leaf Convenors: Aimé J. Messiga, Barbara Cade-Menun#, Noura Ziadi#		
10:30 – 10:45	Pablo Ragué*	Dynamic of organic phosphorus in ploughed soil layer of three contrasting long-term field experiments
10:45 – 11:00	Busayo Kodaolu*	Phosphorus accumulation and availability in a long-term field experiment treated with inorganic phosphorus fertilizer and organic fertilizers from different sources
11:00-11:15	Sylvia Nyamaizi*#	Starter phosphorus on silage corn biomass, root growth and soil phosphate changes in the Fraser Valley
11:15-11:30	Thidarat Rupngam*#	Phosphorus solubility and redox reactions in a soil under waterlogging conditions
11:30-11:45	Barbara J. Cade-	Phosphorus biogeochemistry differs in rhizosphere compared to bulk soils in long-

	Menun#	term wheat fertilization trials in Saskatchewan, Canada
11:45-12:00	Discussion	
12:00-13:00	Lunch (Pedology Committee AGM, Aurora Room)	

\*Student presentation competing for the best CSSS presentation awards

#Virtual presentation

¶Students who are affiliated to an institute in Alberta and competing for the best ASSW presentation awards

Session 21 - Soil Structure and Soil Health. Room: Maple Leaf Convenors: Richard Heck, Mary Thornbush#, Adam Gillespie, Olatunbosun Ayetan		
13:00-13:15	Jeff Battigelli	Assessing soil mesofauna communities using long-term soil quality monitoring plots in agricultural soils across Alberta
13:15-13:30	Yelena Gomez*	Drainage of a cultivated organic soil by biomass-filled drainage trench
13:30-13:45	Ekene Mark-Anthony Iheshiulo*¶	Do Diversified Crop Rotations Influence Soil Structure? A Global Meta-Analysis Examining Species Diversity and Management Practices
13:45-14:00	Mary Thornbush#	Computed Tomography Image Analysis used to Identify and Quantify Crusts in Agricultural Soils
14:00-14:30	Discussion	
14:30-15:00	Coffee break (sponsored by Canadian Natural Resources Limited (CNRL))	

Session 12 - Soil Fertility and Nutrient Management for Sustainable Crop Production. Room: Maple Leaf Convenors: Tom Jensen, Len Kryzanowski		
15:00-15:15	Jilene Sauvé	Monitoring of Soil Salinity and Sodicity for Wastewater Irrigation
15:15-15:30	Manushi Henagama Liyanage*	Agronomic response of spring wheat to struvite as affected by green manure crops in a crop rotation
15:30-15:45	Hiral Jariwala*	Are controlled release fertilizers (CRFs) ready for climate-smart agriculture?
15:45-16:00	Ibrahim Mohammed*	<sup>13</sup> C Solid-state NMR investigation of functional groups distribution and molecular structure of reactive soil organic matter fraction after long-term application of organic amendments
16:00-16:15	Kwame Ampong*¶	Applying humalite for enhancing wheat production and soil health
16:15-16:30	Leah Ritcey-Thorpe*	It's in the roots: nutrient acquisition strategies of field crops in response to seed inoculation and organic soil management
16:30-16:45	Tom Bruulsema	Furthering 4R Nutrient Stewardship for Future Farming
16:45-17:00	Discussion	

<b>Session 4 - Soil Taxonomy and Pedology. Room: Aurora</b> <b>Convenors: Daniel Saurette, Angela Bedard-Haughn</b> This session is dedicated to the memory of Dr Steve Pawluk, Pedologist, Teacher and Mentor, Professor Emeritus, University of Alberta		
10:30 – 11:00	A. Bedard-Haughn	Soils Are Dynamic: So Why Is The Canadian System Of Soil Classification Static?
11:00-11:15	Daniel Saurette	A Proposed Framework for Assigning Soil Drainage Classes to Non-Redoximorphic Soils in the Canadian System of Soil Classification
11:15-11:30	Miles Dyck	Gray Luvisols are Polygenetic
11:30-11:45	Jim Warren#	Proposed Leptosolic Order for The Canadian System of Soil Classification
11:45-12:00	Discussion	
12:00-13:00	Lunch (Pedology Committee AGM, Aurora Room)	

<b>Session 1 - General Soil Science. Room: Aurora</b> <b>Convenors: Tariq Siddique, Scott Chang</b>		
13:00-13:15	Wenjie Chi*	Verify and Characterize the Effects of New N <sub>2</sub> -fixing inoculant for Use with Wheat, Canola, and Soybean
13:15-13:30	Xinli Chen	Plant diversity differentially affects soil phosphorus in bulk and rhizosphere soils
13:30-13:45	Maria Luna*	Characterization of soil geochemical and colour properties across two contrasting land uses
13:45-14:00	Emmanuel Mapfumo	Impacts of management change on organic carbon under perennial and annual grass-legume mixtures on a Black Chernozemic soil
14:00-14:15	Erika H. Young*#	The impacts of rock pulverization on functional properties of boreal lands converted from forest to agricultural use
14:15-14:30	Discussion	
14:30-15:00	Coffee break (sponsored by Canadian Natural Resources Limited (CNRL))	

<b>Session 1 - General Soil Science. Room: Aurora</b> <b>Convenors: Tariq Siddique, Scott Chang</b>		
15:00-15:15	Emmanuel Mapfumo	Pre-1980 versus post-1980 climate trends at Breton Plots, Alberta: is there any evidence of local climate change?
15:15-15:30	Jawaria Johar*	Phyto-microbial Remediation of PAHs and HMs Contaminated Soils using Biochar and Bacterial strains and metagenomic studies for PAH degrading genes
15:30-15:45	Alsu Kuznetsova	Soils as environmental reservoir of chronic wasting disease prions
15:45-16:00	Jingyu Zhang*¶	Quantification and visualization of soil health under long-term fertilizer and

		rotation treatments in Alberta
16:00-16:15	Joseph G. Crudo	The Long-Term Effects of Compaction and Organic Matter Removal on Forest Soil
16:15-16:30	Upama Khatri-Chhetri*#¶	Adaptive multipaddock grazing reduces soil microbial complexity in Canadian prairie
16:30-16:45	Amana Jemal Kedir	Comparison of agri-environmental phosphorus tests for boreal agricultural and natural Podzols
16:45-17:00	Discussion	

Session 19 - Soil and Water Conservation in the Face of Climate Change. Room: Prairie Convenors: Henry Wai Chau, Asim Biswas, Bing Cheng Si		
10:30 – 10:45	Mengfan Cai*	The Effect of Conservation Measures and Climate Change on Water and Soil Erosion on the Hilly Loess Plateau
10:45 – 11:00	Charles Frenette-Vallières*#	Electrostatic charging of organic dust emission in south Quebec cultivated histosols
11:00-11:15	Pouya Khalili*¶	Evaluation of crop production in response to changes in blue and green water resources in Canadian Prairies
11:15-11:30	Anne Paquette*	Root Water Uptake of Spring Wheat in the Dark Brown and Black Soil Zones of Saskatchewan
11:30-12:00	Discussion	
12:00-13:00	Lunch (Pedology Committee AGM, Aurora Room)	

Session 16 - Greenhouse Gas Emissions from Agricultural Soils. Room: Prairie Convenors: David Pelster, Aaron Glenn#, Joann Whalen		
13:00-13:15	Bobbi Helgason	Higher than expected N <sub>2</sub> O emissions from canola residues: stable isotope tracing reveals soil organic matter as the dominant source of N <sub>2</sub> O-N
13:15-13:30	Kathryn Webb#	Effect of fall rye cover crop on CO <sub>2</sub> and N <sub>2</sub> O fluxes in the Red River Valley, Manitoba, Canada
13:30-13:45	Erin Daly*¶	Soil nitrous oxide emissions from novel perennial grain systems and their relationship to soil physical and hydraulic properties
13:45-14:00	Kira Borden	Optimizing the benefits of cover crops to reduce nitrous oxide emissions: the impact of freeze-thaw
14:00-14:15	Nicole Menheere*#	Mitigating nitrous oxide emission from corn using nitrification and urease inhibitors following cover crop use
14:15-14:30	Discussion	

14:30-15:00	Coffee break (sponsored by Canadian Natural Resources Limited (CNRL))	
Session 16 - Greenhouse Gas Emissions from Agricultural Soils. Room: Prairie Convenors: David Pelster, Aaron Glenn#, Joann Whalen		
15:00-15:15	Kody Oleson*	4R Options to Reduce N <sub>2</sub> O Emissions from Corn in Sandy Soils
15:15-15:30	Siyuan Wang#	Biochar mitigates N <sub>2</sub> O emissions from sandy soil by improving soil pore structure and increasing nosZ gene abundance
15:30-15:45	Waqar Ashiq*	Understanding the complex interconnections between topography and soil physical, chemical, and biological controls of N <sub>2</sub> O emissions
15:45-16:00	Emmanuel Badewa*#	Effects of biobased residues on greenhouse gas emissions during growing and non-growing seasons
16:00-16:15	Jiancan Liu*	Greenhouse gas emissions from beef cattle urine and dung patch as affected by the non-bloat legumes
16:15-16:30	Jayamini Rathnayake*#	Greenhouse gas emission during composting of different mixing combinations of natural resource by-products: Incubation study
16:15-16:30	Hannah Keenes*	Survey of Cow-calf Operations to Characterize Manure Management, Nutrient Composition, and Greenhouse Gas Emissions
16:30-16:45	Discussion	

Session 2 - Data Science, Modelling and AI in Soil Science. Room: Glacier		
Convenors: Symon Mezbahuddin, Kiah Leicht		
10:30 – 10:45	Roland Kröbel	Holos V4 release – updates and open source development
10:45 – 11:00	Jamin Achtymichuk*¶	Modelling soil organic matter dynamics at the University of Alberta’s Breton Plots using CQESTR
11:00-11:15	Camile Sothe#	Mapping Canada’s soil organic carbon from space
11:15-11:30	Gleb Kravchinsky*¶	Assessing the risk of deep percolation at a phosphogypsum reclamation site that has been phyto-capped
11:30-11:45	Chih-Yu Hung	Modelling shadow and cover effects on manure temperature
11:45-12:00	Discussion	
12:00-13:00	Lunch (Pedology Committee AGM, Aurora Room)	
Session 2 - Data Science, Modelling and AI in Soil Science. Room: Glacier		
Convenors: Symon Mezbahuddin, Kiah Leicht		
13:00-13:15	Adrienne Arbor*#	Improving the performance of equation based pedotransfer functions from literature using a non-linear least squares approach

13:15-13:30	Vanessa Caron	Using Artificial Intelligence and Earth Observation Technology to Identify Mineral Soil Pads in Peatlands
13:30-13:45	Symon Mezbahuddin	Alberta Farm Fertilizer Information and Recommendation Manager (AFFIRM) Version 3.0
13:45-14:00	Timm F. Döbert	Scenario-based modelling of soil organic carbon under avoided grassland conversion
14:00-14:15	Kate Kuntu-Blankson#	Process-based modelling of N2O emissions from cattle urine patches using ecosys
14:15-14:30	Discussion	
14:30-15:00	Coffee break (sponsored by Canadian Natural Resources Limited (CNRL))	
Session 2 - Data Science, Modelling and AI in Soil Science. Room: Glacier Convenors: Symon Mezbahuddin, Kiah Leicht		
15:00-15:15	Nikisha Muhandiram*	Modelling soil health indicators under an Intermediate Wheatgrass perennial forage grain system
15:15-15:30	Junye Wang	Machine learning applications to water quality analysis
15:30-15:45	Natalie Shelby-James	The Alberta Background Soil Quality System Project
15:45-16:00	Solmaz Fatholouloumi	A machine learning based approach for downscaling soil water index (SWI) derived from satellite imagery
16:00-16:15	Paul Fuellbrandt	Soil and Groundwater Remediation Guideline Calculator
16:15-16:30	Tegbaru B. Gobezie*	Harmonized Ontario Soil Data: the Basis for Ontario Soil Information System (OSIS)
16:30-16:45	Discussion	

## Tuesday, May 24, 2022

17:00-19:00	CSSS AGM
19:00-21:00	Student activities

## Wednesday, May 25, 2022

Session I – Plenary. Room: Maple Leaf Chairs: Asim Biswas, Len Kryzanowski		
08:30 - 09:20	Merritt Turetsky	The future of northern organic soils: threats and opportunities
9:20 - 10:10	Melissa Arcand	Reciprocity in soil science: knowledge sharing and co-creation for soil management on First Nations agricultural lands
10:10-10:30	Coffee break	

Session 9 - General Land Reclamation Session. Room: Maple Leaf Convenors: Sebastian Dietrich, Deo Heeraman, Gregory Hook, Mark Bateman This session is dedicated to the memory of Dr. Larry Turchenek, Pedologist and Soil Reclamation Scientist		
10:30 – 10:45	Clemence Muitire*#	Temporal changes in soil hydraulic properties of cropland soils following restoration of pipeline corridors on cropland
10:45 – 11:00	Maryam Firoozbakht*¶	Biodegradation of polycyclic aromatic hydrocarbons under different redox conditions
11:00-11:15	Takudzwa Nawu*#	Revegetation of oil wellsites reclaimed with suboptimal topsoil replacement depth and organic amendments in northeastern Alberta
11:15-11:30	Theresa Adesanya	Phosphorus release from municipal biosolids under simulated flooding during terrestrial phytoremediation
11:30-11:45	Iram Afzal*¶	Effect of Iron-oxide minerals on the biodegradation of mono-aromatic hydrocarbons
11:45-12:00	Discussion	
12:00-13:00	Lunch (Soil Education Committee AGM)	
13:00-14:30	Poster session	
14:30-14:45	Coffee break/Poster session	

Session 13 - Soil Fertility and Nutrient Management to Mitigate the Impact on Water Quality. Room: Maple Leaf Convenors: Don Flaten		
14:45-15:00	Sepideh Kheirkhah*¶	Effects of Ecological Farming on Soil and Water Quality of Agricultural Lands in Canadian Prairies
15:00-15:15	Madelynn Perry*	Long-term benefits of soil amendments in reducing phosphorus losses from soils during simulated snowmelt flooding
15:15-15:30	Haven Soto*	Quantifying the transport potential of antibiotics and their degradation products in spring-thaw snowmelt runoff from manure-amended cropland



15:30-15:45	Viranga Weerasinghe*	Phosphorus release from manured soils under simulated snowmelt conditions
15:45-16:00	Blake Weiseth*	Impact of fertilizer P source, rate, and placement strategy on wheat yield and P uptake across variable topographies in Saskatchewan
16:00-16:15	Jian Liu#	Targeting Soil Phosphorus Management for Improving Water Quality
16:15-16:30	Kokulan Vivekananthan#	Optimizing crop production while minimizing environmental phosphorus losses using struvite: A case study
16:30-16:45	Discussion	

**Session 18 - Fostering Soil Carbon Sequestration and Protection: Advances in Our Understanding and the Practical Implications. Room: Aurora**  
**Convenors: Cole D. Gross, Adam Gillespie**

10:30 – 10:45	Brian Wallace	Elevation Gradient Drives Distribution of Soil Carbon and Plant Communities in a Semiarid Grassland in British Columbia
10:45 – 11:00	Inderjot Chahal	Long-term effects of tillage and crop rotation on soil C and N storage in a temperate humid climate
11:00-11:15	Chantel Chizen*	Looking Deeper at Soil Organic Carbon Storage in Prairie Potholes
11:15-11:30	Jeewan Gamage*##	Molecular characterization of soil organic matter (SOM) under different land uses by DRIFT and <sup>13</sup> C DP-MAS NMR spectroscopy
11:30-11:45	Gazali Issah	Forage quality improvement and soil carbon and nitrogen dynamics in grazed pastures: the role of non-bloat legumes
11:45-12:00	Discussion	
12:00-13:00	Lunch (Soil Education Committee AGM)	
13:00-14:30	Poster session	
14:30-14:45	Coffee break/poster session	

**Session 18 - Fostering Soil Carbon Sequestration and Protection: Advances in Our Understanding and the Practical Implications. Room: Aurora**  
**Convenors: Cole D. Gross, Adam Gillespie**

14:45-15:00	Cole D. Gross*¶	Agroforestry Perennials Reduce Nitrous Oxide Emissions and Their Live and Dead Trees Increase Ecosystem Carbon Storage
15:00-15:15	Reza Khalidy*	Field demonstrations in Southern Ontario of silicate mineral amendment effect on soil carbon sequestration (inorganic and organic)
15:15-15:30	Thea Whitman#	Tracing pyrogenic organic matter stocks and fluxes using CO <sub>2</sub> flux tracing, three-part partitioning, and nanoSIMS

15:30-15:45	Zhengfeng An	Quantifying past, current, and future forest carbon stocks within agroforestry systems in central Alberta, Canada
15:45-15:55	Discussion	

**Session 9 - General Land Reclamation Session. Room: Aurora**

**Convenors: Sebastian Dietrich, Deo Heeraman, Gregory Hook, Mark Bateman**

**This session is dedicated to the memory of Dr. Larry Turchenek, Pedologist and Soil Reclamation Scientist**

16:00-16:15	Chrissie Smith	Reclamation Certification Achieved using Remote Sensing Technology
16:15-16:30	Henian Guo*†	Methanogenic Degradation of PAHs in Oil Sands Tailings
16:30-16:45	Laura Manchola-Rojas	Buried wood effects on nutrient supply and microbial activity in oil sands reclamation soils in northern Alberta
16:45-17:00	Akshit Puri	Investigating the role of tree microbiome in sustaining the growth of pioneering pines in an unreclaimed aggregate mining ecosystem
17:00-17:15	Discussion	

**Session 20 - Soil and Plant Microbiomes. Room: Prairie**

**Convenors: Derek MacKenzie, Monika Gorzelak, Luke Bainard#, Francois Teste**

10:30 – 10:45	Angelica M. Aguirre*†	Drivers of soil bacterial community composition and co-currence in agricultural systems of Alberta
10:45 – 11:00	Kris Guenette*†	Optimizing Nitrogen use-efficiency and Arbuscular Mycorrhizae Inoculation Potential in Canadian Cereal Crops
11:00-11:15	Jean-Thomas Cornelis	Soil controls on root exudate functions
11:15-11:30	Jacynthe Masse	No-till and variable P- and N-fertilization levels led to contrasting soil bacterial, fungal and nematodes communities in a 29-years long-term experimental site
11:30-11:45	Claudia Goyer#	Influence of Chemical Fumigation on Soil N and C Cycling, and the Soil Microbial Diversity
11:45-12:00	Discussion	
12:00-13:00	Lunch (Soil Education Committee AGM)	
13:00-14:30	Poster session	
14:30-14:45	Coffee break/Poster session	

**Session 20 - Soil and Plant Microbiomes. Room: Prairie**

**Convenors: Monika Gorzelak, Luke Bainard#, Francois Teste**

14:45-15:00	Patrick Neuberger#	Assessing soil storage strategies for microbial community characterization of long-term agricultural plots
15:00-15:15	Alan Lee*¶	Arbuscular mycorrhizal fungi in oat-pea intercropping
15:15-15:30	Nadir Erbilgin	Legacy effects of disturbances on above ground pine metabolites
15:30-15:45	Joann K. Whalen	A pull-pull model to describe nitrogen transformations in soil-plant systems
15:45-15:55	Discussion	

Session 22 - Special Graduate Student Session. Room: Prairie Convenors: Xinli Chen, Ali El-Naggar		
16:00-16:15	Abhijeet Pathy*¶	Activation Methods Increase Biochar's Potential for Heavy-Metal Adsorption: A Global Meta-Analysis
16:15-16:30	Keshav Parameshwaran*	Physical-based hydrological modelling to predict soil moisture in the vadose zone in a mesoscale catchment
16:30-16:45	Nageshwari Krishnamoorthy*¶	Electro-coagulation modified microalgal biochar for enhancing struvite crystallization
16:45-17:00	Deborah Cristina Crominski da Silva Medeiros*¶	Reclamation materials from an oil and gas industry as adsorbents of naphthenic acids from oil sands process water: preliminary experiments
17:00-17:15	Juan C. Santana*¶	The impact of reclamation and vegetation removal on compositional and functional attributes of soil microbial communities in the Athabasca Oil Sand Region
17:15-17:30	Discussion	

Session 5 - Advances in Predictive Digital Soil Mapping. Room: Glacier Convenors: Brandon Heung, Asim Biswas, Angela Bedard-Haughn, Daniel Saurette		
10:30 – 10:45	Daniel Saurette	Divergence metrics for Optimizing Sample Design in Digital Soil Mapping
10:45 – 11:00	William Bethel*	Use of LiDAR and machine-learning to predict soil attributes of managed forests in Eastern Nova Scotia
11:00-11:15	Raphaël Deragon*	Mapping maximum peat thickness of cultivated Organic soils in the southwest plain of Montreal
11:15-11:30	Christopher Blackford#	A comparison of predictive soil map uncertainty metrics and their methodologies
11:30-11:45	Jim Warren#	Application of Radiometric Data to Predictive Digital Soil Mapping in Ontario

11:45-12:00	Discussion	
12:00-13:00	Lunch (Soil Education Committee AGM)	
13:00-14:30	Poster session	
14:30-14:45	Coffee break/Poster session	
Session 5 - Advances in Predictive Digital Soil Mapping. Room: Glacier Convenors: Brandon Heung, Asim Biswas, Angela Bedard-Haughn, Daniel Saurette		
14:45-15:00	Babak Kasraei#	Predictive Digital Soil Mapping with Uncertainty Estimation for British Columbia
15:00-15:15	Preston Sorenson	Improved Parent Material Map Disaggregation Methods in the Saskatchewan Prairies Using Historical Bare Soil Composite Imagery
15:15-15:30	Tahmid Huq Easher*	Disaggregating Organic Matter Map of Agricultural Soils, Québec, Canada
15:30-15:40	Discussion	

<b>Session 6 - Digital Agriculture. Room: Glacier</b> <b>Convenors: Asim Biswas, Reem Zeitoun, Mervin St-Luce#, Viacheslav Adamchuk, Len Kryzanowski</b>		
15:45-16:00	Mervin St. Luce#	Introducing GLOBAL-LOCAL: A new approach to predict soil organic carbon at the local field scale from large soil spectral libraries
16:00-16:15	Farzad Shirzaditabar	Evaluation of topsoil Magnetic Susceptibility as a criteria for distinguishing soils in Ontario
16:15-16:30	Claudia Quilesfogel-Esparza*	Standardizing Optical Sensor Canopy Reflectance to Improve Grain Corn Yield Predictions
16:30-16:45	Clinton Mensah*	Multi-Frequency Electromagnetic Induction Soil Moisture Characterization Under Different Land Uses in Western Newfoundland
16:45-17:00	Louis-Étienne Lessard*	Deficit irrigation effect on almond yield and water consumption
17:00-17:15	Discussion	

## Wednesday, May 25, 2022

<b>Banquet</b>	
18:00-20:30	Banquet and CSSS awards

**Thursday, May 26, 2022**

Mid-conference field tour

## Friday, May 27, 2022

Session 12 - Soil Fertility and Nutrient Management for Sustainable Crop Production. Room: Maple Leaf Convenors: Don Flaten, Len Kryzanowski		
8:30-8:45	Tom Jensen	Assessing Acidification of Cultivated Soils in the Southern Prairies
8:45-9:00	Adebusoye O. Onanuga	Carbon emission, soil properties, intercropping of cucumber-tomato and carrot-cabbage crops performance affected by application of biochar, urea, and rock phosphate
9:00-9:15	Thierry Fonville	Nutrient availability of management practices to advance farm profitability and sustainability
9:15-9:30	Lina Du	Size fractionation of trace elements in soil solutions recovered from soils under contrasting long-term agricultural management
9:30-9:45	Judith Nyiraneza#	Soil nitrate, soil properties and potato yield responses to different preceding forage crops
9:45-10:00	Ahmed Lasisi#	Types and Diversity of Pulses for Wheat Nitrogen Utilization in Two 4-Year Pulse-Wheat Rotation Cycles
10:00-10:15	Discussion	
10:15-10:45	Coffee break	

Session 10 - The Good, the Bad, and the Ugly: Integrating Technology in the Field, Lab and/or Classroom. Room: Maple Leaf Convenors: Thomas Yates, Maja Krzic, Amanda Diochon		
10:45 – 11:00	Tom Yates	Introducing mobile technology in a field-based course – student and instructor perceptions
11:00-11:15	Maja Krzic	Question banks in teaching and learning basic soil science concepts
11:15-11:30	Sandra Brown	What students want versus what is effective: lessons learned for the post-COVID classroom
11:30-12:00	Tom Yates, Maja Krzic, Amanda Diochon	Using apps to support teaching of soils skills and knowledge – round table discussion
12:00-	Lunch (ASSW AGM)	

Session 17 - Canada's National Inventory Reporting of Greenhouse Gases: Meeting Target Reductions Rests on Sound Emission Estimates. Room: Aurora Convenors: Mario Tenuta, Rich Farrell		
8:30-8:45	Doug MacDonald	Revisions to GHG estimates from Canadian agricultural soils: Emission factor

		updates and alignment of carbon and nitrogen methods
8:45-9:00	Steve Del Grosso	National inventory reporting of nitrous oxide emissions from agricultural soils in the USA
9:00-9:15	Annette Freibauer	Nitrous oxide emission reductions reflected in the German greenhouse gas inventory
9:15-9:30	David Pelster	CongrUpdating non-growing season:annual N <sub>2</sub> O emission ratio from Canadian croplands
9:30-9:45	J. Y. Yang#	Changes in Reactive Nitrogen Losses from Canadian Agricultural Land over 36 years
9:45-10:00	Sisi Lin#	Changes in pulse type and frequency in rotations affect CO <sub>2</sub> and N <sub>2</sub> O emissions on the semi-arid Canadian prairies
10:00-10:15	Discussion	
10:15-10:45	Coffee break	

<b>Session 11 - Soil Properties in Nutrient and Water Transport in the Vadose Zone. Room: Aurora</b> <b>Convenors: Hida R Manns#, Yefang Jiang#</b>		
10:45 – 11:15	Bing Cheng Si	The Ecohydrology of deep soil water
11:15-11:45	Y. Jiang	Seasonal release of historical nitrate from vadose zone delays underlying groundwater quality response to BMPs
11:45-12:00	Hida Manns#	The contentious size range terminology of soil pores
12:00-	Lunch (ASSW AGM)	

<b>Session 3 - Soil Data Curation. Room: Prairie</b> <b>Convenors: Asim Biswas, Tegbaru B. Gobezie, Brandon Heung, Daniel Saurette, Kara Webster</b>		
8:30-8:45	Brandon Heung	Introducing the Canadian Soil Data Portal: The path towards renewing our digital soil information system
8:45-9:00	Daniel Saurette	Legacy Soil Survey Data Recovery in Ontario: cards to computers
9:00-9:15	Chuck Bulmer	Evaluating the reliability of soil pit locations within the BC Soil Information System
9:15-9:30	J. Zhang	Building an enhanced soil information database for British Columbia
9:30-9:45	Deepa Filatow	BC Soil Survey Data Curation – Challenges and Successes
9:45-10:15	Discussion	
10:15-10:45	Coffee break	

Session 8 - Advances in Material Synthesis for Soil Remediation. Room: Prairie Convenors: Christopher Nzediegwu, Deborah Cristina Crominski da Silva Medeiros		
10:45 – 11:00	Christopher Nzediegwu	Hydrothermal carbonization produces more recalcitrant soil conditioners from a given feedstock than pyrolysis
11:00-11:15	Mano Krishnapillai#	Effect of Combining Biostimulation using Compost and Rhizoremediation using Grass and Dandelion for Bioremediating an Oil-contaminated Soil
11:15-11:30	Ali El-Naggar	Biochar effectively remediates Cd contamination in acidic or coarse- and medium-textured soils: A global meta-analysis
11:30-11:45	Michael D. Preston	The feasibility of using municipal compost cover over Cu-Ni tailings as a growth medium for biofuel crops
11:45-12:00	Discussion	
12:00-	Lunch (ASSW AGM)	

## Friday, May 27, and Saturday, May 28, 2022

Workshops			
Workshop #	Organizers	Workshop title	Location/time
1	Daniel Saurette and Brandon Heung	Canadian Digital Soil Mapping Workshop	Aurora Room, May 27, 1:30-5:30 pm and May 28, 8:00 am-12:00 pm MDT
2	David Spiess	Alberta Soil Information Viewer Presentation and Workshop	Prairie Room, May 27, 1:30 - 3:30 pm MDT
3	Valerie Miller and various members of LRIGS (Land Reclamation International Graduate School)	Land Reclamation And Community Outreach - Educating Through Dungeons and Dragons	Maple Leaf Room, May 27, 3:00 - 5:00 pm MDT
4	Fiorella Barraza and William Shotyk	Trace Elements Analyses of Soil, Water, and Plants: Challenges and Strategies	SAB 150 (South Academic Building Room 150, U of A campus), May 27, 1:30 - 5:00 pm MDT
5	Roland Kroebel, Aaron McPherson and Sarah J. Pogue	HOLOS V4 Training	Glacier Room, May 27, 1:30 - 4:30 pm MDT

## Poster Presentation Time Table



## May 25 (Wednesday)

13:00-14:30, Wild Rose Room		
Poster Number	Poster Title	Corresponding Author
P011	The effectiveness of plant material-based amendment with differing particle sizes in acid soil reclamation	Syazwan Sulaiman*
P012	Mobility of arsenic, selenium and vanadium from manured and non-manured fields during snowmelt flooding after addition of soil amendments	Srimathie Indraratne
P013	Oxidative stress response of <i>Eisenia fetida</i> after exposure to copper in soil amended with residual fertilizing materials	Noura Alsarawi#
P014	Influence of Concentration and Speciation of Trace Elements in Soil Solution on Plant Uptake and Accumulation by <i>Hordeum Jubatum</i> L.	Dulani H. Kandage
P015	Impact of Burial Duration on Nutrient Supply to Plant Root Simulator (PRS <sup>2</sup> ) Probes	Eric Bremer
P021	Modelling Nitrogen Release Patterns To Determine If Environmentally Smart Nitrogen Can Increase Nitrogen Use Efficiency	Kiah Leicht*¶
P022	Machine Learning-Process Modelling Hybrid: A Novel Approach in Predicting Changes in Agricultural Soil Organic Carbon	Manjila Shahidi
P061	Improving the annual crops mapping accuracy using feature level based fusion of Surface biophysical properties	Solmaz Fatholouloumi
P081	Bioremediation of Hydrocarbon-contaminated soil using Various Organic Soil Amedments under Flooded Condition	Mano Krishnapillai#
P091	Development of soft tailings capping technology – first step towards creating stable and sustainable boreal landscapes	Kaitlyn Trepanier
P092	Spatial distribution of selected geochemical properties in anthropogenic soils on Aldermac site, Quebec, Canada	Jean-Benoit Mathieu#
P093	Amelioration of two acidic soils using chicken eggshell waste	Raghad Soufan*#
P094	Combined application of lime and organic amendment to ameliorate exposed soils for vegetation establishment	Chibuie Chigbo
P095	Management Practices For Creating A “Sun-Grown” Organic Amendments In Post-Mining Landscapes	M. Baah-Acheamfour
P111	A comparison of water evaporation rates from ponds, peatlands and soil pores	Hida Manns#
P121	Rebuilding the Fertility and Productivity of Eroded Knoll Soils in South-Central Saskatchewan: Second-Year Results	Ryan Hangs
P122	Larger root surface area increases plant nitrogen uptake in nitrogen-deficient soil	Yutong Jiang*
P123	Impact of Including Brassicaceae Oilseed Crops on The Performance of Pulse and Wheat-Based Cropping Systems in Canadian Prairies	Piumi Gallage*
P124	Fall Nitrification Inhibition of Anhydrous Ammonia in Manitoba	Muhammad Junaid Afzal*
P125	Variations in Crop Productivity across Western Canadian Wheat Classes and Fertilizer Formulations	Kris Guenette*¶
P126	Revising the Crop Nutrient Uptake and Removal Guidelines for Western Canada	Gazali Issah
P151	Effects of increasing soil pH to near-neutral using lime on phosphorus saturation index and water extractable phosphorus	Sylvia Nyamaizi*#
P161	Mulch application influences N <sub>2</sub> O flux from organic soils under lettuce production	Lucy Ross-Blevis*
P162	Effect of soil moisture status and non-bloat legume diet on greenhouse gas emissions from the manure patch	Jiancan Liu*
P171	Modelling beneficial management practices in agriculture to analyze effects on greenhouse gas emissions and environmental sustainability	Chloe Ducholke*¶
P181	Prediction of subsoil organic C stocks from measurements of topsoil organic C for carbon accounting in a soil in Southern Ontario	Nastaran Chalabianlou Vayjoyeh*
P182	Infrared spectra of soil organic matter (SOM) in a muck soil profile	Jeewan Gamage*#
P183	Clay Aggregates as the Nucleus of Root-Driven Soil Organic Carbon Priming	Cole D. Gross*¶

P184	Investigating the controls of forest conversion on deep soil carbon dynamics	Oliver Heath
P185	Does dissolved organic carbon increase biological hydrogen oxidation in agricultural soil?	Lijun Hou*
P186	Change in Soil Organic Carbon Storage as Influenced by Forestland and Grassland Conversion to Cropland in Canada	Chang Liang#
P187	Soil carbon sequestration does not increase under adaptive multi-paddock grazing	Jessica Mehre*
P188	Carbon Content of Buried A Horizons of Saskatchewan Croplands	Amanda Mitchell*
P189	Impacts of Short Rotation Canola on Soil Microbial Dynamics and Nutrient Cycling	Meagen Reed*
P191	Decomposition dynamic of bare and cultivated organic soils amended with straw and wood chips under greenhouse conditions	Karolane Bourdon*
P192	Soil Biochar Application for Drought Adaptation in Agriculture in British Columbia	Morgan Hamilton*
P201	Biochar and nitrification inhibitor changed soil microbial biomass and ecoenzymatic stoichiometry in a Gray Luvisol	Prem Pokharel*¶
P202	Do Cover Crops Impact Soil Microbial Communities in the Prairies?	Paige Kennedy*
P203	Response of microbial communities to long- and short-term coordinated nitrogen and sulfur fertilization	Laura Bony*¶
P204	Changes in soil microbial community structure and functional potential in response to grazing management practices in a semi-arid agroecosystem	Harini Aiyer*#
P205	Effect of drought stress on nodulation, plant growth, soil enzyme activities, soil nitrogen availability, and nitrogen fixation in alfalfa	Danielito Dollete*¶
P206	Bacteria's ambivalence to the herbicide clopyralid: a microcosm experiment	Caitlin Watt#
P207	Soil-Plant microbial assemblages associated with regenerating Pinaceae trees at an anthropogenically-disturbed gravel mining site	Akshit Puri
P208	Effects of soil carbon amendments on H <sub>2</sub> -oxidizing bacteria activity and diversity	Xavier Baril*#
P209	How soil microbial diversity with different land management conditions and be used as an indicator of soil health	Roya Faramarzi*¶
P211	Comparison of two methods for calculating soil loss due to wind erosion	Andrés Silva*
P212	Cropping System Impact on Physical Soil Health Properties in Semi-Arid Southern Alberta	Ekene Mark-Anthony Iheshiulo*¶
P213	Tensile strength of aggregates and spatial distribution of different rootstocks in Ultisol under citrus production	Pedro A. N. Benevenuto
P214	Does intensive organic farming influence earthworm population?	Stéphanie Lavergne*

\*Student presentation competing for the best presentation awards

Posters will be on display on May 24 and 25. Poster size: 4 x 6 ft.

Poster presenters to be present between 13:00 and 14:30 on Wednesday, May 25.