

## Monday June 7 - All times in Atlantic Daylight Time

11:45 AST

Opening address and instructions

### Keynote

12-1:00	Thea	Whitman		Burning questions: Investigating the effects of fire on soil microbes
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### Concurrent session 1 - Belowground biological responses to disturbances in soils

1:15-1:20 Session introduction by chair

1:20-1:35	Tandra	Fraser	1A	Multi-trophic diversity in soils across Prince Edward Island, Canada
1:35-1:50	Justine	Lejoly	1B	Spreading the worm: invasive earthworms decrease soil carbon persistence in boreal forests
1:50-2:05	Navid	Bazghaleh	1C	Fungal dynamics, interactions, and contributions to the performance of <i>Brassica napus</i>
2:05-2:20	Anibal	Castillo	1D	Soil bacterial, fungal and invertebrate biodiversity in an agroecosystem: a metabarcoding approach
2:20-2:35	Jenacy	Samways	1E	Investigating the global drivers of earthworm species diversity on islands
2:35-2:50	Juliana	Vantellingen	1F	Skid trails and landings can act as methane hotspots in a managed temperate forest
2:50-3:05	Louise	Sennett	1G	The effects of chemical fumigation and biofumigation on soil N cycling, the abundance of soil N microorganisms, and the soil bacterial diversity
3:05-3:20	Jane	Lucas	1H	Antibiotics and temperature interact to disrupt soil communities and their function

### Concurrent session 2 - Progress in predictive digital mapping and proximal soil sensing

1:15-1:20 Session introduction by chair

1:20-1:35	Babak	Kasraei	2A	Exploring the novel use of LiDAR-derived terrain information in soil mapping to support forest management
1:35-1:50	Jin	Zhang	2B	Building an enhanced provincial database of soil information and analytical data in BC: a call for collaboration and contribution
1:50-2:05	Jeremy	Kiss	2C	Useful terrain attributes for predictive soil mapping in the prairie landscapes of Saskatchewan
2:05-2:20	Preston	Sorenson	2D	Predictive soil mapping using historic bare soil composite imagery and legacy soil survey data
2:20-2:35	Daniel	Saurette	2E	cLHS-size: a technique to quickly determine minimum sample size for the cLHS algorithm
2:35-2:50	Tahmid Huq	Easher	2F	Developing soil property (soil organic carbon) map from the disaggregated map of the legacy soil maps of Middlesex County, ON
2:50-3:05	Farzad	Shirzaditabar	2G	Combining EMI measurements of electrical conductivity and magnetic susceptibility to better characterize soil drainage
3:05-3:20	Siddhartho	Paul	2H	Modeling total and active organic carbon dynamics using digital soil mapping

### Concurrent session 3 - Soil science studies beyond conventional agricultural systems

1:15-1:20 Session introduction by chair

1:20-1:35	Newton	Lupwayi	3A	Ivermectin in cow dung affects soil microarthropods, microbial biomass and enzyme activity in grasslands
1:35-1:50	Patricia	Hanuszak	3B	Can the Denitrification-Decomposition model help with determination of optimal duration of grassland set-asides in Delta, BC?
1:50-2:05	Clemence	Muitire	3C	Soil health dynamics following restoration of pipeline corridors on agricultural land
2:05-2:20	Lea	Farrier	3D	Cultivation of Switchgrass and Reed Canarygrass on a Soil Contaminated with Trace Metal Elements.
2:20-2:35	Takudzwa	Nawu	3E	Soil and vegetation properties following wellsite reclamation with suboptimal topsoil replacement depth and organic amendments
2:35-2:50	Yihan	Zhao	3F	Remediation of Heavy Metals Using Carbon Based Materials
2:50-3:05	J.M.	Kranabetter	3G	Post-disturbance conifer tree-ring $\delta^{15}\text{N}$ reflects openness of the nitrogen cycle across temperate coastal rainforests
3:05-3:20	Anne	Paquette	3H	The Effects of Decadal Climate Change on Recharge Rates in Semi-arid Environments

## Tuesday, June 8

### Concurrent session 1 - Soil taxonomy and advances in pedology

12:00-12:05 Session introduction by chair

12:05-12:20	Angela	Bedard-Haugh	4A	Prairie Problems: When diagnostic features don't tell the whole story
12:20-12:35	Jim	Warren	4B	Re-examination of drainage classes in coarse-textured non-hydromorphic soils
12:35-12:50	Richard	Heck	4C	Rationalizing gleying and mottling of Canadian soils
12:50-1:05	Jim	Warren	4D	Elevation of shallow soils within the taxa of the Canadian system of soil classification
1:05-1:20	Jim	Miller	4E	Surface Organic Horizons for Chernozemic Soils Don't Get No Respect
1:20-1:35	Daniel	Saurette	4F	Better recognition of limnic materials and proposed modifications to the Organic Soil Order of the Canadian System of Soil Classification
1:35-1:50	Jim	Warren	4G	Proposed changes to the soil family taxa within the Canadian system of soil classification
1:50-2:05	Raphaël	Deragon	4H	Southwest of Montreal organic soils: Forming soil conservation management groups

### Concurrent session 2 - Nitrogen efficiency and environmental impacts

12:00-12:05 Session introduction by chair

12:05-12:20	Dave	Burton	5A	Measurement-based tools to quantify soil nitrogen supply and verify right rate recommendations
12:20-12:35	Eric	Bremer	5B	Use of low fertilizer $^{15}\text{N}$ enrichment for quantifying nitrogen competition and fertilizer use efficiency in intercrops
12:35-12:50	Olivia	Otchere	5C	The Impact of Cover Cropping on Soil Nitrogen Availability, Nitrous Oxide Emissions, and Crop Nitrogen Use in an Irrigated Prairie Cropping System
12:50-1:05	Sodeh	Farzadfar	5D	Rye cover crop improves vegetable crop nitrogen use efficiency and yield in a short-season growing region

1:05-1:20	Jingyi	Yang	5E	Developing a CANB - Reactive N model to simulate nitrogen gas emissions and leaching losses in Canadian agricultural system
1:20-1:35	Bangwei	Zhang	5F	Influence of soil aggregates on soil nitrogen mineralization and denitrification
1:35-1:50	Zheya	Lin	5G	Evaluation of seasonal dynamics of soil macro-nutrients and corn nutrient uptake in fields amended with three types of municipal biosolids
1:50-2:05				

### Concurrent session 3 - Soil organic matter changes across ecosystems and time

12:00-12:05 Session introduction by chair

12:05-12:20	Myrna	Simpson	6A	Long-term shifts in litter deposition alters the molecular biogeochemistry of soil organic matter in temperate forests
12:20-12:35	Cynthia	Kallenbach	6B	Clay type selects for distinct fungal communities with consequences for soil organic matter
12:35-12:50	Kirsten	Hannam	6C	Orchards and vineyards as soil carbon 'hotspots' in the Okanagan Valley, BC
12:50-1:05	Andreas Felipe	Silva Dimate	6D	Quantification of soil losses due to wind erosion in Montérégie-Ouest (Québec)
1:05-1:20	Alex	Kramer	6E	Distribution of Chernozemic great groups and carbon content across an elevation gradient of a semiarid grassland
1:20-1:35	Jean	Caron	6F	Restoring cultivated organic soils through organic amendments.
1:35-1:50	Tim	Philpott	6G	Testing manganese limitations as the basis for enhanced forest soil carbon sequestration
1:50-2:05	David	Bysouth	6H	Agriculture in the boreal forest: understanding the impact of land use change on soil organic carbon for developing sustainable community food systems

### Afternoon

#### Concurrent session 1 - Soil science education in a COVID-19 world

3:30-3:35 Session introduction by chair

3:35-3:50	Konstantin	Dlusskiy	7A	Alberta's Approach for Teaching Pedology Outside University Programs
3:50-4:05	Tom	Yates	7B	An On-line Oral Laboratory Final in Identification of Saskatchewan Plants and Soils
4:05-4:20	Cameron	Ogilvie	7C	Mobilizing soil science research knowledge with the SOILS AT GUELPH initiative
4:20-4:35	Lewis	Fausak	7D	3D Soil Monoliths for Virtual Classrooms
4:35-4:50	Sandra	Brown	7E	Lessons Learned Teaching a Large Online Introductory Soil Science Course during the COVID-19 Pandemic: Instructor Perspectives
4:50-5:05	Joe Franco	Crudo Lopez	7F	Teaching Assistant Perspectives on Student Engagement in Online Labs of an Introductory Soil Science Course
5:05-5:20	Discussion		7G	
5:20-5:35				

## Concurrent session 2 - Promotion of soil health and water quality with sustainable agroecosystem management

3:30-3:35 Session introduction by chair

3:35-3:50	Paul	Smith	8A	Power of Soil: An Agenda for Change to Benefit Canada's Farmers and Climate Resilience
3:50-4:05	Keith	Reid	8B	Phosphorus losses from Canadian agricultural land over three decades: Results from the updated Indicator of Risk of Water Contamination by Phosphorus (IROWC-P)
4:05-4:20	Judith	Nyiraneza	8C	Critical phosphorus dilution curve and the phosphorus-nitrogen relationship in potato
4:20-4:35	Tiequan	Zhang	8D	An 11-Year Agronomic, Economic, and Phosphorus Loss Potential Evaluation of Legacy Phosphorus Utilization in a Clay Loam Soil of the Lake Erie Basin
4:35-4:50	Amy	Norgaard	8E	Trade-offs in organic nutrient management strategies across mixed vegetable farms in southwest British Columbia
4:50-5:05	Deborah	Ayanwale	8F	Precision Cattle Manure Management: Impacts on Surface Soil and Run-Off Water Quality
5:05-5:20	Robin	Bradley	8G	Effect of long-term rotation and cover crops on organic matter quality revealed by physical fractionation and soil health measurements.
5:20-5:35	Maren	Oelbermann	8H	Riparian zones: greenhouse gas emissions from the aquatic component

## Concurrent session 3 - Soil-derived greenhouse gases: Measurements and mitigation I

3:30-3:35 Session introduction by chair

3:35-3:50	Paul	Murphy	9A	Mitigating nitrous oxide emissions from agricultural soils: an Irish perspective
3:50-4:05			9C	Nitrogen functional gene abundance as potential indicators for nitrogen cycling under forage legume-grass pasture soils
4:05-4:20	Tram	Thai	9D	Field scale soil freezing variability alters nitrogen cycling functional gene abundance and expression throughout freeze-thaw cycles
4:20-4:35	Lindsay	Van Koppen	9E	Tracking nitrous oxide production throughout a freeze-thaw cycle after fertilization with vs without a nitrification inhibitor
4:35-4:50	Trang	Phan	9F	CH <sub>4</sub> , CO and H <sub>2</sub> Inputs Trigger Community-level Physiological Responses in Soil
4:50-5:05	Anne	de le Porte	9G	Quantifying greenhouse gas emissions from beef cattle grazed pastures sod-seeded with non-bloat legumes
5:05-5:20	Jiancan	Liu	9H	Achieving greenhouse gas emissions reductions through precision manure management
5:20-5:35	Rich	Farrell		

## Wednesday, June 9

### Keynote

12-1:00	Raj	Khosla	Future of Farming: Big Data, Analytics and Precision Agriculture
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### Concurrent session 1 - Biochar - its impact on soil and crop in Canadian agriculture

1:10-1:15 Session introduction by chair

1:15-1:30	Joann	Whalen	10A	Slow pyrolysis pine wood-derived biochar reduces nitrous oxide production from surface but not subsurface soil
1:30-1:45	Christopher	Nzediegwu	10B	Hydrochar and liquid phase properties
1:45-2:00	Ogbuagu	Chinonso	10C	Capacity of biochar to adsorb Pb
2:00-2:15	Carlos M.	Romero	10D	Feeding biochar to beef cattle: nutrients & GHG
2:15-2:30	Tien	Weber	10E	Biochar and manure and C mineralization
2:30-2:45	Qianhan	Le	10F	Shifts in nitrogen fractions in biosolids as affected by different treatment processes

### Concurrent session 2 - Agroecology and soil health I

1:10-1:15 Session introduction by chair

1:15-1:30	Roland C.	Wilhelm	11A	Predicting measures of soil health using the microbiome and supervised machine learning
1:30-1:45	Qianyi	Wu	11B	A soil health test for arable cropping systems in Saskatchewan Canada
1:45-2:00	Erika Helen	Young	11C	Atlantic Canada Biodiversity Project: an early look at the free-living nematodes of New Brunswick, Canada
2:00-2:15	Melanie	Reid	11D	Mixed row and alternate row intercropping of chickpea-flax and pea-mustard combinations to enhance yield and nutrient availability
2:15-2:30	E. A.	Badewa	11E	Effect of biobased residues on the soil physio-chemical properties of two temperate agricultural soils
2:30-2:45	Jessica	Nicksy	11F	Circular nutrient sources supply phosphorus and improve yields in organically managed systems

### Concurrent session 3 - Soil-derived greenhouse gases: Measurements and mitigation II

1:10-1:15 Session introduction by chair

1:15-1:30	Maren	Oelbermann	12A	The role of riparian land-use systems in mitigating greenhouse gas emissions
1:30-1:45	Holly	Wilts	12B	Cultivating salix in agricultural-riparian transition areas to mitigate agriculturally derived N <sub>2</sub> O emissions from potato cropping systems on Prince Edward Island
1:45-2:00	Waqar	Ashiq	12C	Comparing Greenhouse Gas Emissions from Agricultural Crops and In-Field Seasonal Wetlands
2:00-2:15	Paula	Porto	12D	Effect of drainage system on soil greenhouse gas emissions from highbush blueberry fields in British Columbia
2:15-2:30	Cole	Gross	12E	Enhancing soil organic carbon storage through forested buffers and biochar application in agricultural lands
2:30-2:45	Autumn	Wiebe	12F	Assessment of a two timestamp vs. a four timestamp chamber sampling method for calculating soil greenhouse gas fluxes

## Afternoon

### Concurrent session 1 - The soil-water nexus

3:15-3:20 Session introduction by chair

3:20-3:35	Gary	Parkin	13A	Time to Ponding and Soil Sorptivity: An Historical Perspective with Climate-Change Implications
3:35-3:50			13C	Enhancing soil drainage estimation by coupled soil and groundwater flow modeling
3:50-4:05	Yefang	Jiang	13D	Characterizing carbon complexity across the land-water interface in agricultural landscapes
4:05-4:20	Lauren	Weller	13E	Deep soil water uptake of pinus banksiana in the Boreal Plain Ecozone of Saskatchewan
4:20-4:35	Eric	Neil	13F	Do overwinter plastic tarps provide better nutrient and water retention than cover crops?

### Concurrent session 2 - Agroecology and soil health II

3:15-3:20 Session introduction by chair

3:20-3:35	Carolyn B.	Marshall	14A	Cover crops can, but do not necessarily, improve soil health in horticultural rotations
3:35-3:50	Cancelled			
3:50-4:05	Stephanie	Lavergne	14C	Using pea-based cover crop mixtures for nitrogen supply in Quebec organic grain crop production
4:05-4:20	Insaf	Chida	14D	Intercropping legumes in annual crops affect above and belowground biomass production and surface soil properties
4:20-4:35	Gazali	Issah	14E	How do introduced non-bloat legumes impact carbon and nitrogen amounts and fractions in legume-grass pasture systems four years after sod-seeding?
4:35-4:50	Jacob F.	Evans	14F	Improved understanding of carbon dioxide net ecosystem exchange induced by crop diversification and the use of cover crops.

### Concurrent session 3 - Modelling carbon sequestration in Canadian landscapes to identify 'negative emission' opportunities to help realize Canada's emission reduction pledge

3:15-3:20 Session introduction by chair

3:20-3:35	Fardausi (Shathi)	Akhter	15A	Natural climate solution for Canada – Highlighting shelterbelts, agroforestry, wetlands and their potential to store carbon
3:35-3:50	Chantel	Chizen	15B	Soil carbon storage in prairie pothole wetlands
3:50-4:05	Reza	Khalidy	15C	Accumulation and transport of pedogenic carbonates in wollastonite-amended agricultural soils: a microplot for long-term geochemical modeling verification
4:05-4:20	David	Emde	15D	Stable soil carbon deficits beneath woody perennial crops of the Okanagan: a regional study
4:20-4:35	Francis	Durnin-Vermette	15E	Improving Ontario's modelling estimations of soil organic carbon sequestration in manure-amended croplands
4:35-4:50	Sarah J.	Pogue	15F	Modelling soil carbon dynamics in annual and perennial agricultural systems using the Introductory Carbon Balance Model

# Thursday, Jun 10

## Keynote

12:00-1:00	Sieglinde	Snapp	Linking science to local knowledge systems: A soil science revolution
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## Concurrent session 1 - What long-term agricultural studies have taught us in terms of best management practices for soil health and crop production

1:15-1:20 Session introduction by chair

1:20-1:35	Cristine	Morgan	16A	The North American Project to Evaluate Soil Health Measurements
1:35-1:50				
1:50-2:05	Barbara	Cade-Menun	16C	Acidification from nitrogen fertilization has altered phosphorus forms and cycling in long-term wheat plots in Swift Current, Saskatchewan
2:05-2:20	Sarah	Wilcott	16D	The Glenlea long-term rotation study
2:20-2:35	Gordon	Price	16E	Effect on microbial networks in soils from short- and long-term applications of biosolids
2:35-2:50	Miles	Dyck	16F	90 years of agriculture on a Grey Luvisol: Management effects on soil health
2:50-3:05	Nicole	Rabe	16G	Towards understanding soil health in Ontario Part I: Experimental design and land management data
3:05-3:20	Christopher	Blackford	16H	Towards understanding soil health in Ontario Part II: Initial findings and future work

## Concurrent session 2 - Connecting soil processes to 4R nutrient practices

1:15-1:20 Session introduction by chair

1:20-1:35	Claudia	Wagner-Riddle	17A	4R Practices for Nitrous Oxide Emission and Carbon Footprint Reduction of Crop Production
1:35-1:50				
1:50-2:05	Doug	Macdonald	17C	4R nitrogen management in the Canadian Greenhouse Gas Inventory
2:05-2:20	Stephen	Ogle	17D	Incorporation of 4R Practices in Greenhouse Gas Inventories
2:20-2:35	Joshua	Nasielski	17E	Impact of nitrogen fertilizer rate on soil carbon and soil nitrogen: evidence from a 10-year trial in continuous corn
2:35-2:50	Tony	Vyn	17F	4R Management for Optimum Corn Yields and N Recovery Efficiencies Can Lower N <sub>2</sub> O Emissions
2:50-3:05	Konrad	Krogstad	17G	The Effect of Freeze-Thaw Cycles on Nitrification Inhibitor Efficacy in Agricultural Soil
3:05-3:20	Tom	Bruulsema	17H	The Fertility of Canadian Agricultural Soils as a Metric of 4R Practice