Canadian Society of Soil Science
Société Canadienne de la Science du Sol

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CSSS Newsletter

Amanda Diochon
President, CSSS

With World Soil Day just around the corner, I paused to reflect on the key messages being communicated by the FAO, and their emphasis on soil health. The messaging drives home the important role that soils play in sustaining life on Earth and that soil management plays in regulating climate, erosion, biodiversity, and the overall quality of the environment. While we, as members, recognize the value and importance of soil and how critical it is for life, the public may not. As World Soil Day approaches, I challenge you to share the wonder that inspired your wisdom and passion for soil with someone who might underappreciate this valuable resource. Raising awareness might occur through art, music, a game, video, activity, fun facts, website (i.e., Soil4Youth) or sharing the link to our very own textbook, which is now available in French! A special thank you to Maxime Paré for his dedication to making this happen.

This time of the year also invites reflection on our activities and accomplishments. In addition to the French version of the textbook, this year saw the establishment of the Soil Health Committee and the attendance of Senator Rob Black to our annual meeting in Truro. At the recent SSSA meeting in St Louis, Maja Krzic shared preliminary results of a study investigating soil health in post-secondary education in Canada and she was recognized as a Fellow of the SSSA. At the awards ceremony, Scott Chang received the Soil Science Applied Research Award and Diane Knight received the TriSociety Mentoring Award for mentoring women in science, highlighting their important contributions to training and research. The Pedology Committee is working diligently on the 4th edition of the Canadian System of Soil Classification, and copyright for the 3rd edition was successfully transferred from CSP to the CSSS. We are finalizing the transfer of the Ivarson Soil Science Scholarship Trust to the CSSS, and plans are well underway for the establishment of the Steve Pawluk Scholarship, which honours the late Dr. Pawluk. We also contributed a brief history of the CSSS that will become part of the IUSS Genealogy document to mark the Centennial of the IUSS in 2024. Pulling this document together put me in touch with some long-standing members and celebrated soil scientists in Canada. It also made me recognize how many contributions our members have made to the discipline.

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Presidents Message (Con't.)

I would like to continue compiling our history and the many accomplishments of our members. If you have a story to share or would like to bring a particular individual to my attention, please reach out.

As this message draws to a close, I would like to acknowledge our outgoing Past-President, Asim Biswas, and treasurer, Diane Knight for their service over the last several years and welcome Richard Heck as President-Elect and Preston Sorenson as our new treasurer. Thank you to Nancy in the business office, Susan for managing our social media accounts, and Shirley for her help with the website. As always, thank you to members for your continued support and dedication to what I feel is the best society in the world! It has been an honour to serve as your President.

Wishing you a healthy and happy holiday season and best wishes for the New Year!

Soil Health Committee Announcement

The newly established Soil Health Committee of the CSSS is looking for volunteers to serve on this committee to help guide its development over the next year and into the future. Current activities include developing an information tab for the website and organizing a session for UBC 2024. Future activities need to be determined, but one import activity on the horizon is looking at how the CSSS can help implement the recommendations that will be made by the Standing Senate Committee on Agriculture and Forestry's report on the status of soil health in Canada. The committee meets quarterly, with the next meeting set for January 25th, 2024 at 2pm (MST). Please email Derek MacKenzie at mdm7@ualberta.ca if you are interested in participating.

Development of a Code of Conduct for Membership of CSSS

In late Fall of 2021, the anti-racism task group conducted a survey on racism and barriers faced by members of the CSSS. These results are now posted to the society's website. One suggestion from this work was the development of a code of conduct for CSSS members. If you are interested in participating in the development of a code of conduct, please contact Nathan Basiliko (nbasilik@lakeheadu.ca). A draft code of conduct will come before membership for review and final approval.

Life as a Soil Science Professional

Special request: participate in our Life as a Soil Scientist profiles!

Our Life as a Soil Scientist section of the blog is meant to encourage students to pursue a career in soil science. We need your help to let them know what it's like to be a professional! Be like Maren Oelberman, Grace Gowera, Amanda Diochon, Michael Seome Swafo, Timi Ojo, and Daniel Saurette - and follow the instructions below. View Timi's profile here: https://groundedinsoils.wordpress.com/2023/07/01/timi-ojo-life-as-a-soil-scientist/

Here are the questions to answer, about 50 words each, please:

- When did you first learn about soil science?
- What interests you most about soil?
- What was your path to becoming a soil scientist?
- What is your favorite thing about soil?

In addition, please send at least two photos of you in "action" shots. These can be in the field or lab. Please provide the photographer's name and your Twitter handle. Email csss.soils@gmail.com for more information!

Thesis Defence

Maryse Bourgault, University of Saskatchewan and Warren Paul McAuley

Warren Paul McAuley successfully defended his M.Sc. project at the University of Saskatchewan on May 18th 2023. His thesis was entitled: Effect of Intercropping with Faba bean on and Equivalency Ratio and Soil Health in Saskatchewan.

Announcing the CSSS Treasurer

Dr. Preston Sorenson
CSSS Treasurer

Preston Sorenson is currently a Research Associate at the University of Saskatchewan, where he has been conducting research related to predictive soil mapping in the Canadian Prairies since January 2020. Preston has a B.Sc. in Land Use and Environmental Studies from the University of Saskatchewan, a M.Sc. in Soil Science from the University of Alberta, and a Ph.D. in Soil Science from the University of Alberta. His Ph.D. work focused on this use of reflectance and imaging spectroscopy to rapidly determine soil organic carbon and nitrogen concentrations in soil, along with characterizing the spatial distribution of those properties throughout the soil profile. Preston specializes in the use of machine learning and geostatistics to solve complex soil and environmental data analysis challenges. He is a registered member of the Saskatchewan Institute of Agrologists.

Announcing the CSSS President-Elect

Dr. Richard J Heck, P.Ag.
2024 CSSS President-Elect

Richard, a 35+-year member of the CSSS, is currently a Professor of Soils and Landscape Processes in the School of Environmental Sciences, of the Ontario Agricultural College, at the University of Guelph. He grew up on a mixed farm in Saskatchewan, to which he still retreats annually to reconnect with its 'Asquith/ Weyburn' soils. Richard received his B.S.A. (in Agronomy), as well as his M.Sc. and Ph.D. (both in Soil Science) degrees from the University of Saskatchewan. During his post-doctoral appointment, within a CIDA-sponsored project, he was stationed at the Universidade Federal Rural de Pernambuco in Brazil. This eventually led to a four-year term as Visiting Professor of Soil Physical Chemistry, at the same university, where his research and graduate student supervision concentrated on soil salinization. Since 2000, Richard's research at the UofG has focused mainly on the quantification of soil structure. Having established one of the first x-ray CT facilities for the study of soils, he has introduced numerous students and researchers to the concepts and techniques for the application of high-resolution digital imaging, with associated image processing and analysis. As a Special Visiting Researcher, Richard was also instrumental in establishing a CT facility at the Universidade Federal de Pernambuco in Brazil, as well as in providing local training and guidance for the development of their research programs. In 2022, he co-edited a Springer book entitled X-ray Imaging of the Soil Porous Architecture. Currently, he is developing a multispectral macroscopic imaging system for digitizing petrographic thin sections, including those of the Canadian Soil Thin Section Collection, which he curates. At the landscape level, Richard has been working on the characterization of soil redoximorphism by electromagnetic induction sensing. During his 30+ years as an instructor, initially at the diploma, then at the undergraduate and graduate degree levels, Richard has taught a range of courses, including introductory soils, soil chemistry, soil physical chemistry, land evaluation, land utilization, soil genesis and classification, quantitative pedology, instrumental analysis techniques, as well as remote sensing. He is passionate about taking students into the field, running an annual undergraduate field camp since his arrival in Guelph, and introducing a graduate field course about a decade ago. He has also led several course-based excursions through Brazil, for Canadian students to study tropical soilscapes. Nominated by the CSSS, Richard was an elected member of the Board of the Agricultural Institute of Canada from 2011 to 2018, eventually serving as its Vice-Chair. Between 2014 and 2022, he served two terms as Vice-Chair of Commission 1.1 (Soil Morphology & Micromorphology) of the International Union of Soil Sciences. In 2015, Richard was made a Corresponding Member of the Brazilian Academy of Agricultural Sciences. First elected to the Board of the Ontario Institute of Agrologists in 2021, Richard has served two terms as its President. In 2022, he was elected to a four-year mandate as Chair of the IUSS Division 1 (Soils in Space & Time) and a member of the IUSS Executive Committee. Having led the successful bid of the CSSS to host the 24th World Congress of Soil Science in Canada, Richard continues to Chair the 24WCSS Committee, in preparation for this 2030 event…"The years leading up to the 24th WCSS will bring substantial opportunities for the CSSS, and its members, to further evolve their profile and impact, both nationally and internationally, as well as to leverage associated activities to enhance our capacity to educate and advocate, as well as to research, innovate and implement solutions for the future challenges of soil science in Canada."

Student Photo Contest

If you are a student interested in visually projecting your research and have interesting and memorable research photos you would like to share, consider entering the CSSS photo contest!

The top submission will receive a $125 cash prize from CSSS and will be featured on the cover of the Canadian Journal of Soil Science (CJSS).

Select photos may be used as covers for special collections organized by the CJSS. Students whose photos are used for this purpose will receive a $75 cash prize from CSSS.

All photos selected by the CJSS will be acknowledged on the CSSS website and in the CSSS newsletter, and at the CSSS Annual meeting.

The deadline for submissions is August 31 of each year.

All submissions must meet the following specifications:

- Image should focus on some aspect of soil science to reflect CJSS content.
- Image size and resolution must be at least 8.5″ x 11″ at 300 dpi or higher.
- No collages; one single image only.
- Image must be well focused and not blurry.
- Image must not include people.
- Image should not be manipulated or heavily edited.
- Acceptable image formats are jpg, png, or tif.

Students may submit more than one image per competition.

Send all entries to the CJSS Editor-in-Chief: Dr. M. Anne Naeth (anaeth@ualberta.ca).

CJSS Photo Submissions

If you are interested in submitting photos for consideration by the CJSS as an issue cover or as advertising material but not as part of the student photo contest please send directly to M. Anne Naeth (anaeth@ualberta.ca). Any interested party can submit images provided that the images meet the criteria outlined for the student competition.

Canadian Journal of Soil Science Photo Contest Winner

The winner for the 2024 cover is Saba Daeichin, a PhD student in soil and environment at Laval University.

Organic soil of Montérégie region in southern Quebec. Due to the structure and texture of this type of soil and its water retention capacity, when the air temperature decreases in winter, the surface water in the soil forms crystals.

Organic Soil: Water holding capacity and winter water crystallization.

Saba Daeichin
PhD candidate, Laval University

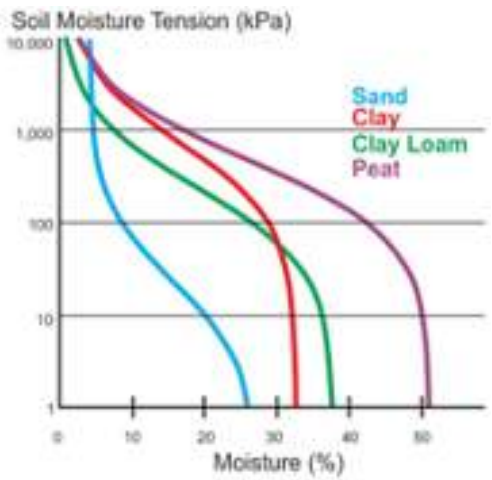
The peatlands of Montérégie, in south-western Quebec, are home to the most productive soils in the province. Covering an area of 12,000 hectares (4% of the southern territory), these organic soils are of great importance for high-value crops. They contribute significantly to the agricultural sector and play a vital role in maintaining the agricultural economy of Quebec and Canada.

Their high organic matter content, often surpassing 20%, lends them special characteristics that set them apart from typical mineral soils. These soils obtain their dark black color from the decomposition of plant and animal residues, resulting in the formation of humic substances. With a spongy texture, organic soils have a high water-holding capacity which can lead to drainage and water saturation problems, particularly in low-lying areas. Their low bulk density, attributed to the lightweight nature of organic material, contributes to their poor structural stability. Despite their richness in organic matter, these soils may have low nutrient availability due to the organic material's tendency to immobilize nutrients. Additionally, their acidic nature, a consequence of organic acids formed during decomposition, can impact nutrient availability and plant growth. Organic soils have high microbial activity fostering decomposition. The complex interplay of these features defines the functions of organic soils.

One special feature of these soils is their exceptional capacity to effectively retain water, which ensures a stable supply of moisture to plants. This unique ability varies with soil composition, texture, and organic content. These elements work in harmony to create an environment where water is not only retained but also distributed in a manner conducive to plant vitality. During winter, as the air temperature decreases, the organic soil undergoes a captivating transformation: water molecules start to move upwards, defying gravity, to form complex crystal prisms.

Organic Soil: Water holding capacity and winter water crystallization. (Con't.)

This phenomenon occurs because the soil's composition allows water molecules to bond and create these beautiful crystalline structures. However, this captivating process has its challenges. The formation of these crystals may render the soil more susceptible to erosion. The rigid crystalline structures can alter the soil's cohesion, making it easier to be washed away by water or blown away by the wind. Moreover, these crystals could lead to soil compaction, hindering root penetration, reducing air spaces, and limiting the movement of water and nutrients within the soil.



Organic soils also pose other challenges. Once subjected to drainage for agricultural purposes, these soils undergo continual changes marked by subsidence, oxidation, and erosion, dependent on their initial carbon content and land use. Understanding these dynamics is crucial for sustainable agricultural practices, ensuring the preservation of these valuable organic soils and the continued success of Quebec's agricultural sector.

Conferences | Events | Meetings

CSSS Annual Conference

Le Sol - Fondement de la Vie
Soil - Foundation of Life
Canadian Society of Soil Science
Société Canadienne de la Science du Sol

Save the date for the CSSS 2024 Annual Conference
June 9-13, 2024
Soil Functions for Future Generations
University of British Columbia, Vancouver
Registration will open in January 2024
Website: https://csss2024.landfood.ubc.ca

Conferences | Events | Meetings (Con't.)

The 6th annual Phosphorus Forum, hosted by the Sustainable Phosphorus Alliance and the NSF-funded STEPS Center, is coming up on February 21 and 22 in Tempe, Arizona!

Registration is available here: https://specialevents.asu.edu/pforum24

The Forum will address critical issues in phosphorus sustainability. While a complete agenda can be found online, some talks and sessions include:

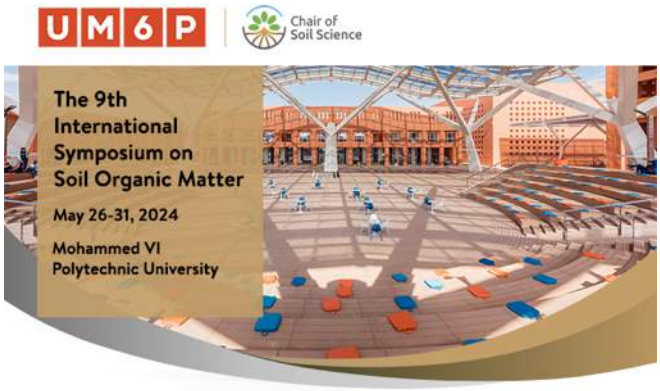
- The phosphorus cascade: Navigating from sources to solutions, a keynote talk from Jana Compton, Ecologist and Biogeochemist with US EPA.
- Aligning Regenerative Agriculture with Sustainable Phosphorus Management, a keynote talk from Nathan Nelson, Professor at Kansas State University.
- Recovery of Phosphorus from Wastewater. Hear from researchers and users of phosphorus recovery technologies about the role of speciation in recovery and work to address performance issues. Speakers include Jim Wallace (Sustain RNG), Brooke Mayer (Marquette), Muriel Steele (Charlotte Water), and Doug Call (NCSU).
- Improving Precision Fertilization: Learn about obstacles to precision fertilization adoption and how new technologies and economic and agronomic models can adapt to widen its reach with experts John Fulton (ISPA and Ohio State), Steve Phillips (APNI and Oklahoma State), Scott Shearer (Ohio State), and Josh McGrath (OCP NA).
- Industry Efforts in Sustainable Phosphorus Production: Join industry leaders OCP, Nutrien, Mosaic, and Ostara as they discuss their innovative solutions for making phosphates production more sustainable.
- Modeling, Monitoring, and Measuring P Management Impacts: Learn about how farmland nutrient management is being valorized and the knowledge gaps in evaluating the impacts of management practice from Rebecca Muenich (U. Arkansas), Justin Baker (NCSU), Eric Coronel (Field to Market) and Chris Smallwood (Ecosystem Services Market Consortium).

Develop your knowledge, network with like-minded professionals, uncover funding opportunities, and enjoy the beautiful Tempe weather, with an average high of 71°F in February!

The Phosphorus Forum will be exclusively held on-site. Visit https://specialevents.asu.edu/pforum24 to register.

Conferences | Events | Meetings (Con't.)

We are delighted to invite you to **The 9th International Symposium on Soil Organic Matter- SOM 2024.** This event is set to take place from Sunday, May 26 to May 31, 2024, at the Mohammed VI Polytechnic University (UM6P) in Ben Guerir, Morocco, Africa.



SOM 2024 marks an exciting milestone as this will be the first time the symposium is hosted in Africa. This conference represents a unique opportunity for you to showcase your research and network with colleagues from across the globe.

Please join us as we delve into cutting-edge technologies to advance our understanding of topics around the theme of "Soil organic matter for global soil health and decarbonization".

For more information, including abstract submission and registration details, please visit our conference website (som2024.um6p.ma).

We encourage you to share this announcement with your friends and colleagues who share your passion for soil organic matter and its global impacts.

Summary of Event Details:
Date: May 26-May 31, 2024
Location: Mohammed VI Polytechnic University (UM6P) in Ben Guerir, Morocco, Africa
Theme: "Soil Organic Matter for Global Soil Health and Decarbonization"
Please feel free to reach out if you have any questions or need further information.

Welcome to SOM 2024!

Joann Whalen & Ngonidzashe Chirinda
Co-chairs, SOM 2024
som2024@um6p.ma

The 24th International Conference on Environmental Indicators will be held on June 9-12, 2024 in St. Louis, USA.

This post-pandemic conference will create an interdisciplinary atmosphere that connects researchers, environmental managers and policy makers representing the interdisciplinary nature of environmental indicators throughout the world and expands our multi-faceted perspectives on environmental indicator research, education and application.

Conference Webpage: www.environmentalindicators.org

Continued on next page…

Conferences | Events | Meetings (Con't.)

24th International Conference on Environmental Indicators (Con't.)

Conference Venue: The conference will be held at the Conference Center of Southern Illinois University in Edwardsville (SIUE), Illinois, United States. SIUE is located in the St. Louis Metropolitan Area, about 25-minute driving to the St. Louis International Airport and the Gateway Arch in downtown St. Louis. There are many tourist attractions in St. Louis and the surrounding areas in the American bottom, such as the iconic Gateway Arch tower, Missouri Botanical Garden, and Cathedral Basilica of St. Louis.

Conference Program: The conference welcomes presentations on any topics of Environmental Indicators. The program includes, but is not limited to, the following areas: Physical and chemical indicators, bioindicators/biomarkers, emerging contamination, pollution control and remediation, environmental risk assessment, human and animal health, application of environmental indicators for environmental management, regulation policy development, and environmental resilience and sustainability. The conference will include invited plenary lectures, oral and poster presentations.

Abstract: A one-page abstract for oral or poster presentation needs to be submitted to 2024-ICEI@siue.edu before April 1, 2024. The abstract template will become available at the conference webpage. All abstracts will be peer-reviewed, and accepted abstracts will be included in the conference proceedings.

Registration: The conference registration deadline is May 1, 2024. The registration rate for regular participants is $500 (USD), $350 for students. The late/on-site registration rate for all categories is $600. Society members (both regular and student members) will receive a $50 discount. The registration and payment information will become available soon at the conference webpage.

International Advisory Committee:
Dr. Robert Armon, Israel Institute of Technology, Israel
Dr. Harrison Atagana, University of South Africa, South Africa
Dr. Nancy D. Denslow, University of Florida, USA
Dr. Juan Antonio Campos Gallego, University of Castilla-La Mancha, Spain
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Dr. Tiequan Zhang, Agriculture and Agri-Food Canada, Canada

Local Organizing Committee:
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Dr. Zhi-Qing Lin, Department of Biological Sciences, SIUE
Dr. Kevin Tucker, Department of Chemistry, SIUE
Dr. Kyong Sup Yoon, Department of Environmental Sciences, SIUE
Dr. Jim J. Zhou, Department of Civil Engineering, SIUE

Important Deadlines:
Abstract Submission: April 1, 2024
Notice of abstract acceptance: April 15, 2024
Conference Registration: May 1, 2024

Conference Secretariat Contact: 2024-ICEI@siue.edu

Conferences | Events | Meetings (Con't.)

Dear Colleagues,

On behalf of the Organizing Committee of the **European Geosciences Union (EGU) 2024 General Assembly**, I am pleased to invite you to participate in **Session BG3.15** titled "**Linkages Between Soil Fauna and Biogeochemical Cycles**". We, the conveners, encourage submissions from all aspects of research dealing with the effects of soil fauna on ecosystem functioning, such as (1) the regulation of soil organic matter decomposition, (2) nutrient cycling and soil fertility, (3) soil carbon storage, (4) greenhouse gas emissions, (5) soil hydrology and nutrient leaching, (6) trophic interactions and energy fluxes, (etc.). We welcome both oral and poster presentations. In keeping with the EGU's commitment to diversity and inclusion, we are promoting diversity among presenters with respect to career stage, gender, geographical origin, and scientific approaches.

The EGU General Assembly will be held at the **Austria Center Vienna, on 14–19 April 2024**. Although we would love to see you in person, you may also attend online if you are unable to travel on those dates. For those requiring financial aid to help cover travel expenses, we invite you to consult the EGU 2024 web page for information on financial support and waivers. The deadline for submitting an abstract is Wednesday, 10 January 2024, 13:00 CET.

We hope you will join us next April.

On behalf of all conveners:

- **Gerrit Angst** (Institute of Soil Biology and Biochemistry, Czech Academy of Sciences, Czechia)
- **Robert Bradley** (University of Sherbrooke, Canada)
- **Ingrid Lubbers** (Wageningen University and Research Centre, The Netherlands)
- **Jan Willem Van Groenigen** (Wageningen University and Research Centre, The Netherlands)

**** IMPORTANT LINKS ****
EGU 2024 Webpage: https://www.egu24.eu/
Abstract submission: https://www.egu24.eu/programme/how_to_submit.html
EGU Financial Aid: https://egu24.eu/guidelines/supports_and_waivers.html
Austria Centre Vienna: https://www.acv.at/en/

2024 Alberta Soil Science Workshop (ASSW)

February 20-22, 2024 | Lethbridge, AB

"Soil Response to Extreme Events"

Fire. Drought. Glaciers. Asteroids.

These are just a few of the topics being addressed at the 60th ASSW being held at Lethbridge, AB, from Feruary 20-22, 2024.

Submit an abstract and plan to attend!

See soilsworkshop.ab.ca for more information.

Conferences | Events | Meetings (Con't.)

Centennial Celebration and Congress of the International Union of Soil Sciences

May 19-21, 2024
Florence, Italy

(centennialiuss2024.org/)

- The call for Abstracts is now open until January 15th 2024 (centennialiuss2024.org/call-for-abstracts/).
- The call for applications for Grants is also open until January 15th 2024 (centennialiuss2024.org/call-for-grants/).
- Registration is also now open (https://centennialiuss2024.org/registration/), with early bird fee payment available from December 5th 2022 to Mar 25th 2024.
- The opportunity to register for pre-congress or post-congress tours/activities is also now open, noting that there are limits on the number of participants for certain items (https://centennialiuss2024.org/activities-tours/)

Conferences | Events | Meetings (Con't.)

10th Native Prairie Restoration/ Reclamation Workshop

Prairie Conservation Action Plan (PCAP) is hosting the 10th Native Prairie Restoration/Reclamation Workshop, back in-person for the first time since the pandemic.

Event Theme: "Building Bridges to Tomorrow: Restoration and Reclamation for the Future"
Date: February 7th to 8th, 2024
Venue: Saskatoon Inn, Saskatoon, SK

The Call for Poster Abstracts is NOW OPENED!
Deadline: December 1st at 5:00pm

The webpage (and link for abstract submission form) can be found here: https://www.pcap-sk.org/upcoming-events/native-prairie-restorationreclamation-workshop-2024

Topics include (but are not limited to):
- Bridging the gap between stakeholders (to plan restoration/reclamation projects or other situations)
- Species at risk and wildlife habitat
- Biosecurity and invasive species (management, prevention, etc)
- Soil, biocrusts
- Industrial restoration or reclamation
- Tools (apps, data exchange or sharing)
- Prescribed fire
- Urban projects
- Seeds (procurement, banks, etc)
- Policy and process

If you are unsure if your topic would fit, please just reach out and ask!

We are expecting 250-300 participants from various backgrounds, including government, First Nations groups, industry and environmental consultants, not-for-profit organizations, ranchers and landholders and educational institutions and researchers. The aim of this workshop is to bring all of these stakeholders together to exchange knowledge, share experiences and address challenges in native prairie restoration/ reclamation with the goal of restoring and reclaiming native prairies for the future.

Job Opportunities

Tenure-track Position in Boreal Ecosystem Sciences

School of Science and the Environment - Grenfell Campus - Memorial

The School of Science and the Environment at Grenfell Campus, Memorial University of Newfoundland seeks applications for a Tenure-track position at the rank of Assistant Professor in the area of boreal ecosystems, focused on plants or plant-soil interactions in natural or managed systems commencing on August 1, 2024. The successful candidate will contribute to teaching within the Environmental Science (ENVS) and the Boreal Ecosystems and Agricultural Sciences (BEAS) programs and to the broader Grenfell Campus community. The successful candidate will also have opportunities to supervise graduate students and to contribute to graduate programs at Masters and PhD levels.

We encourage applications from candidates with demonstrated potential for teaching and research excellence in Plant and Soil Ecology, Soil Health, and/or cognate disciplines (e.g., Agriculture, Environmental Science, Physical Geography). A completed PhD or advanced stages of a PhD program is required.

For more information click the link below:
https://mcusercontent.com/ca7fd4410b9dab34e3ef8b381/files/778d3fcd-d02f-e603-8402-b1198c326f81/Job_Ad_ENVS_Plant_Science_Tenure_track_Nov_15_2023_FINAL.pdf

Resilience of Cropping Systems and Soil Health in Western Canada

2 PhD Graduate Student Positions Available

Timeline for applications: until filled.

Desirable timelines for beginning the program: January 2024 or May 2024

Overall research summary: A large collaborative cropping system research project was established in 2018 to evaluate crop rotation philosophies for resiliency and soil health through a systems approach. This is a collaboration between Agriculture and Agri-Food Canada (AAFC), the University of Alberta, University of Saskatchewan, and seven experimental sites in Alberta, Saskatchewan, and Manitoba. This research is funded through Integrated Crop Agronomy Cluster phase II (2023-2028) as part of the Canadian Agricultural Partnership program. This 10-yr crop rotation study is a continuation of the ongoing crop rotations, including diversified, canola or pulse crop intensified, high risk, market driven, and soil health enhanced cropping systems, in addition to a control cropping system. Successful candidates will have the great opportunity to work with a diverse group of researchers across scientific disciplines at several prestigious institutions.

Research projects: Two PhD research projects are available to investigate contrasting cropping systems across major Canadian Prairie ecosites to determine impacts on agroecosystem resiliency and soil health. The overarching objective of these projects is to determine the best (more productive, sustainable, resilient, regenerative) cropping systems in each of the ecozones within the Canadian Prairie using a wide array of system indicators.

For more information click the iink below:
https://mcusercontent.com/ca7fd4410b9dab34e3ef8b381/files/97aeb00b-b306-919c-2a81-44259f8c3418/PhD_student_opportunities_1_.pdf

Agricultural innovations in the age of climate change

Reprinted from The University of Waterloo Website - https://uwaterloo.ca/news/environment/agricultural-innovations-age-climate-change

Waterloo researchers test what it takes to convert forests to productive farmland and explore how to make that transition equitable

By Chantal Vallis
Faculty of Environment

The soil in the south doesn't show the same horizons, layers, as seen in the north, which is very acidic.

It's predicted that where we grow our food will have to shift north as increasing temperatures due to climate change make it too hot for crops to thrive near the equator. But moving our crops north, specifically into the Boreal Forest, is not as simple as it sounds.

The problem is that the soil is not as fertile. Plus, one loses a lot of historically stored carbon that goes back into the atmosphere — carbon that is essential for the soil's health. With these challenges in mind, researchers from the University of Waterloo, in partnership with Memorial University, are testing what it takes to sustainably convert the land and explore what the biggest return in crop productivity is for the least amount of greenhouse gas emissions.

"The goal of the project is to test land management systems and locally available materials that can improve the soil for agricultural use," says Maren Oelbermann, professor in the Faculty of Environment and the project co-lead. "The soil that is converted from forest to agriculture is acidic (low pH), so we are experimenting with treatments like biochar, fish and shrimp waste, and lime to correct the imbalance and optimize the production of crops like oats and peas."

The researchers added to the experiment land converted last year at the Taiga Valley Farm.

Peas and oats, and a combination of both, were planted to varying success depending on the soil correction treatment.

Continued on next page…

Agricultural innovations in the age of climate change (Con't.)

The project, *BioSoil North: Local solutions for soil health resilience and mitigation of greenhouse gases*, was launched in April 2023 and includes three sites in Happy Valley-Goose Bay in Labrador — a subarctic region where the impact of climate change has already occurred, making it an ideal candidate for testing farming in the north.

"If you were to study agriculture in Southern Ontario or the Canadian Prairies, you are studying slight variations of things that have been done for over 100 years," says Aman Dhindsa, a graduate student completing his research with Dr. Oelbermann. "When you are doing agriculture in the subarctic – everything is novel. It's exciting because it's brand new," he continues. Dhindsa was a technician on the farms this summer and oversaw the farming experiments from set up to harvesting and took part in the newest farm's conversion.

Left to right: Ethan Garnier, Memorial University graduate student; Prof. Adrian Unc, Memorial University project co-lead; Jason Choi, University of Waterloo technician; Aman Dhindsa, University of Waterloo graduate student; Max Locke, Memorial University graduate student; Dr. Amana Kedir, Memorial University, project manager

While this project may be the first of its kind in North America, the researchers are quick to point out that they aren't the first people to farm the north. There were generations of colonial settlers that attempted to do the same across the north from Labrador to Alaska.

"We can't approach the project from just a scientific perspective," says Dhindsa. "We have to keep in mind how this work interacts with capitalism, the history of colonialism and food security. There is a lot of thought put into how this project can and should tackle systemic and deeply interconnected issues, and ensure that what is created is fair, inclusive and solves community problems together."

For decades, the Happy-Valley Goose Bay region, home to Innu of northern Labrador like the Sheshatshiu community, has experienced food security issues because of unreliable imports and a lack of farming infrastructure. Farming will become a significant tool in delivering food security and, most critically, food sovereignty to the north. The research farms involved in the project are owned by Innu, Innuit and settler farmers. The crops produced on the farms supply the local market as well as the communities in Nunatsiavut along the northern shore of Labrador. The hope is that this project will improve not only access to food but also contribute to some of the infrastructure development to enhance the overall economy.

Moving into the winter, the researchers will gear up to analyze the data and prepare for the next farming cycle. When they are back in the field next spring, they will start measuring greenhouse gas emissions in addition to soil fertility, to examine how that relates to crop productivity.

While this project is just one piece of the northern food security puzzle, it is also a model site for integrating food and climate change solutions relevant across the global north.

BioSoil North: Local solutions for soil health resilience and mitigation of greenhouse gases is funded by NSERC alliance.

Introductory Soil Science e-Book

Notre livre d'enseignement est maintenant disponible en français !

Chers(ères) collègues,

Vos éditeurs du livre « Introduction à la science du sol : de la théorie à la pratique en sols Canadiens » aimeraient partager une bonne nouvelle avec les membres de la SCSS. En effet, une version française de notre livre d'enseignement est maintenant disponible gratuitement, en mode accès libre, à l'adresse ci-dessous.

Version française : https://openpress.usask.ca/soilsciencefrench/

Version anglaise : https://openpress.usask.ca/soilscience/

Notez que nous continuons à mettre à jour le contenu du livre, dont notamment le glossaire. Néanmoins, cette version vous permettra d'utiliser le livre et son contenu durant les prochains trimestres. N'hésitez-pas à nous contacter si vous avez des questions, des commentaires ou des suggestions, à l'adresse suivante : maxime.pare@uqac.ca

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Nous espérons que vous saurez apprécier ce nouveau livre et que cet ouvrage sera intégré à la formation universitaire et collégiale de plusieurs disciplines telles que l'agronomie, la biologie, les sciences de l'environnement, la géographie et les sciences de la terre.

Nous vous souhaitons de Joyeuses Fêtes et surtout, une excellente journée internationale des sols.

Votre comité de rédaction,

- Maxime Paré, Professeur, Université du Québec à Chicoutimi
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- Amanda Diochon, Professeure, Lakehead University

English on next page…

Introductory Soil Science e-Book

Our education book is now available in French

Dear Colleagues,

Your editors of the book "Digging into Canadian Soils: An introduction to soil science" would like to share some good news with CSSS members. Indeed, a French version of our teaching book is now available, free of charge, at the address below.

French version: https://openpress.usask.ca/soilsciencefrench/

English version: https://openpress.usask.ca/soilscience/

Please note that we continue to update the book's content, including the glossary. Nevertheless, this version will allow you to use the book and its contents for the upcoming semesters. Please do not hesitate to contact us if you have any questions, comments or suggestions, at the following address: maxime.pare@uqac.ca

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We hope that you will enjoy this new book and that it will be integrated into university and college training in several disciplines such as agronomy, biology, environmental sciences, geography and earth sciences.

We wish you a happy holiday and an excellent World Soil Day!

Your editorial board,

- Maxime Paré, Professor, Université du Québec à Chicoutimi
- Maja Krzic, Professor, UBC
- Rich Farrell, Professor, University of Saskatchewan
- Fran Walley, Retired Professor, University of Saskatchewan
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