



Canadian Society of Soil Science

Société Canadienne de la Science du Sol

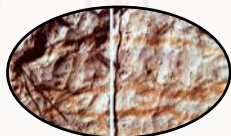
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President's Message



Amanda Diochon
President, CSSS

Welcome summer! It certainly has been a hot start. The record temperatures across the country have really made me reflect on managing soils to maintain and enhance soil organic matter to maximize all the benefits it provides to the system, especially in our changing climate. This year's annual meeting was a special one for me as I returned "home". The very first meeting I attended was in Halifax just a few months after welcoming my oldest son to the world. He graduated from high school this year! It was wonderful to see so many friends and colleagues and so many new faces. I think there was a record number of student presentations this year and their contributions did not disappoint. It was refreshing to see the diversity of projects and faces with representation across the country. A special thank you to Rich Farrell for organizing the judging and chairing the awards committee. It is no small feat. Thank you, as well, to all the judges! Finally, a huge thank you to the organizing committee of this year's meeting. It was great to return to a fully in-person event and the Truro campus was an intimate venue with memorable talks, thoughtful keynotes, great food, and friendship. It was great to be home.

Soil Education

The soil education committee held its annual meeting over the lunch hour on Tuesday, June 27th. The meeting was chaired by Tom Yates and there were 30 members in attendance. There were several updates to share and productive discussion around future projects. The French translation of the textbook is in the final stages of preparation and should be available for the Fall semester. A survey for feedback on the book is still outstanding. Hida Manns gave an overview of a student lead creation of a textbook for organic agriculture that was funded through the University of Guelph. There was a professional editor to help the students create a living textbook that is available online and is open access. The meeting also included discussion around a field school focusing on pedology, hands-on training and the status of labs in courses led by Konstantine Dlusskiy and Richard Heck. This led into ideas about a national curriculum in soil science and the potential creation of a national repository for resources led by Adrian Unc. Other ideas for future projects included a survey of expectations and perceptions from employers, students and faculty and how these may have shifted over time and how UN sustainability goals are being integrated into curriculum. Professional development for early career researchers and recent graduates and the possibility of workshops were also identified as potential needs. If members are interested in contributing to these or other projects please reach out!

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Student Photo Contest

Are you a student interested in visually projecting your research? Do you have interesting and memorable research photos you would like to share? Then look no further as the CSSS is accepting submissions for the Canadian Journal of Soil Science (CJSS) student photo contest.



The CJSS is a quarterly journal and one photo will be selected for each issue. Deadlines for a submission are July 25, and October 25.

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.
- Cell phone photographs are acceptable as long as they meet the above criteria.
- No collages; one single image only.
- Image in focus and not blurry.
- Image must not include people.
- No manipulation or heavy editing of image required.
- Acceptable image formats are jpg, png, or tif.

Students may submit more than one image per competition and may enter more than one competition.

All entries should be sent to: M. Anne Naeth (anaeth@ualberta.ca) and Blake Weiseth (blake.weiseth@gmail.com).

The next deadline for submission is July 25, 2023.

The top submission will receive a \$125 cash prize and the winning photograph will be featured on the cover of the Canadian Journal of Soil Science and on the CSSS website.

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.

Dr. Karl C. Ivarson Soil Science Scholarship



Jeff Daniel Steeven Nze Memiaghe

This year, Dr. Karl C. Ivarson Soil Science Scholarship was awarded to Jeff Daniel Steeven Nze Memiaghe, recognizing his research results related to Spatial Variability of Soil Phosphorus (P) and its Agri-environmental Implications in Precision Agriculture.

Jeff Daniel Steeven Nze Memiaghe is PhD candidate in Soil and Environmental Sciences from Laval University, Quebec City (Canada). His research activities focussed on spatial variability of soil phosphorus (P) and its agri-environmental implications in Eastern Canadian soils in Precision Agriculture. He's Soil and Environmental Scientist, with a Bachelor Degree in Agronomy, options Soils and Environmental sciences from Laval University. After completing his Master Degree in Environmental Engineering from École de Technologie Supérieure (University of Quebec), Jeff Daniel worked as Soil scientist for different environmental companies in Canada.

Jeff Daniel's PhD project aims to generate scientific knowledge on understanding spatial variability of soil P and its agri-environmental implications using statistics, geostatistics, geospatial, and geographic information system tools. His research activities aim to assess impacts of contrasting cropping systems i.e., grassland systems, soil tillage, soil sampling density, and management zones on spatial variability of soil P in Eastern Canadian soils. Among strong candidates, Jeff Daniel was awarded of many scholarships and awards, including Yvon Levesque Award from Quebec Institute of

Agrologists (2023), and Outstanding Graduate Student Awards from the International Society of Precision Agriculture in Minnesota, USA (2022-2024).

Jeff Daniel is a CSSS member. He's interested in scientific projects on soil and environment issues aiming to reach Sustainable Development Goals in agriculture and environment. This year, he will end his PhD program in Soil and Environmental Sciences. Later, Jeff Daniel is interested in starting a post-doctoral program in Soil and Environmental Sciences. He may be contacted at:

Graduation News



L-R
Dr. Maren Oelbermann and Dr. Emmanuel Badewa

Emmanuel Badewa graduated on June 13, 2023 with a PhD from the School of Environment, Resources and Sustainability (Faculty of Environment) at the University of Waterloo. His research focused on evaluating soil health and greenhouse gas emissions, including non-growing season emissions, in soil amended with biosolids, compost and anaerobic digestate at the Elora Research Station. He is currently working as a post doctoral fellow with Nathan



IFA Science Awards 2023

Nominations for the 2023 IFA Science Awards are now open at:
<https://www.fertilizer.org/ifa-science-awards/>

The International Fertilization Association (IFA) is inviting individual scientists to apply for two awards that recognize excellence in plant nutrition science, innovation and extension for sustainable development:

- The IFA Norman Borlaug Plant Nutrition Award, which recognizes a large portfolio of research achievements, demonstrating that the individual candidate has made significant contributions to knowledge as well as concrete solutions.
- The IFA Emerging Scholar Award, which recognizes early-career researchers for innovative science that may make significant contributions in the future.

Qualified researchers are encouraged to apply by **15 September 2023**.

Transfer of CFFAE Ivarson Trusts and Scholarships to CSSS

The Canadian Foundation for Food and Agricultural Education (CFFAE) is the trustee of a legacy donation from Dr. Karl Ivarson that supports the Ivarson Agricultural Scholarships and the Ivarson Soil Science Scholarship. This Spring the CFFAE identified the CSSS as a potential successor trustee to take over the management of the funds and administration of the annual scholarships. The CSSS submitted the requested information to express our interest and ability to manage and administer the Ivarson Soil Science Scholarship alone. We were recently notified that the CSSS was identified as the most suitable successor for the Ivarson Soil Science Scholarship. We thank the CFFAE for the opportunity to manage and administer Dr. Ivarson's legacy donation to support future soil scientists. We have begun the process of transferring the management and administration to the CSSS and look forward to receiving and reviewing applications for this well-established award.

Grounded in Soils

The CSSS [Grounded in Soils](#) blog has a section 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!

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

1. When did you first learn about soil science?
2. What interests you most about soil?
3. What was your path to becoming a soil scientist?
4. What is your favorite thing about soil?

Life as a Soil Science Professional



**Derek Lynch PhD, PAg
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www.dal.ca/faculty/agriculture.html

ResearchGate: https://www.researchgate.net/profile/Derek_Lynch

When did you first learn about soil science?

In my late teens my older sister had a friend who was studying soil science and plant science at the University of Reading in England. I would discuss her studies with her at times. Later, and after moving to Canada, I first had a chance to study soils once I commenced my B.Sc. (Agr.) degree.

What interests you most about soil?

The complex and critical interaction of the soil's biotic and abiotic components with both growing plants and decaying plant residues.

What was your path to becoming a soil scientist?

When I was young I hiked in Irish landscapes dominated by farmed soils, peat bogs or the karst of County Clare. The differences in, and dominant influence of, the 'soil' in those landscapes impressed me. That and my experience growing vegetables in the urban soil of my parent's backyard convinced me of the importance of learning more about soils and agriculture. My first degree was in Plant Science followed by an M.Sc. which focused on the interaction of symbiotic soil microbes (bradyrhizobia) and soybeans in cold soils. I then worked as a consultant providing soil testing and advisory services to farmers, before returning to do a PhD on soil organic matter dynamics. In my faculty position at Dalhousie faculty of agriculture soil science is central to my teaching and research.

What is your favorite thing about soil?

Natural soils are fascinatingly diverse in character, composition and attributes, reflect the ecosystem and history of their locale, and are often so amazingly resilient to abiotic and biotic stresses (including those imposed by us).



**Les Henry
Professor Emeritus, Soil
Science Department**
University of Saskatchewan

In 1964 I graduated with a BSA majoring in Soil Science. Les Hutcheon, Soil Science Head, offered me a job on Soil Survey and lab instructing with time off to complete an MSc. The first of many opportunities.

During the MSc, soil survey work took me to all parts of SK. The Cumberland Delta by helicopter and northern First Nations were highlights. In the process I was introduced to soil fertility experiments which became a major part of the life work.

Shortly after the MSc was obtained a Professor job came along. Don Rennie and Harold Baker hired me to be the first Joint Appointment in Soil Science Department and the Extension Division. It was 50% extension and 50% teaching and research. Another incredible opportunity.

The Joint Appointment allowed great flexibility and freedom, many challenges, some failures but many rewarding experiences. Thanks to colleague Ed Halstead, Director of the Saskatchewan Soil Testing lab I was part of the first experiment to show serious potash deficiency in Carrot River soils. Ed also started us on the experiments to determine fertilizer requirements of irrigated crops at the new Outlook irrigation project. One big thrill was bringing answers to frustrated Outlook farmers who needed to know how to get beyond "just add water".

The highlight in research was the Soil Salinity work in the 1980s and 1990s. We stumbled at first but with the aid of private consultants in Geology and Hydrogeology we were able to bring an entirely different focus to the problem. The interdisciplinary approach was essential. As Soil Scientists we thought the world ended about a meter down but now know that hydrogeology at great depth has much to do with what happens at the soil surface.

The research and extension were immediately blended- in the large soil salinity project we wall papered many town halls with geologic cross sections to explain soil salinity. The thrill of bringing answers to a mysterious problem was without equal.

Teaching was also tied to the research. At the first year level the principles change slowly- but the examples to explain the principles were generated by each summer's research.

The years rolled on and in 1996 I took early retirement but a connection to the Soil Science Department remains an important part of what I do. The opportunities and FREEDOM at the U of S make it the grand institution it remains.

At this and most universities there is always uncertainty about priorities between research and teaching. A university without research would become a trade school in a few years. The challenge is how to blend the two.

And do not forget about extension. The people of Saskatchewan are our major benefactor and we must see that they get some direct benefit from the knowledge generated by our research.

In Memoriam



Dr. Donald Acton

Dr. Don Acton passed away peacefully in Saskatoon on April 29, 2023 at the age of 88. He served as Associate Editor of the Canadian Journal of Soil Science in 1986-87 and as president of the Canadian Society of Soil Science in 1988-89. In recognition of his outstanding contribution to soil science in Canada, he was elected a fellow of the Society in 1992.

Don was born on the Acton homestead June 16, 1934 in the heart of the dirty thirties. He attended elementary and high school in nearby Lemberg and then went on to the University of Saskatchewan (U of S) where in 1957 he earned a Bachelor of Science in Agriculture (BSA) specializing in soil science, followed by a Masters degree (M.Sc.) in 1961, and ultimately by a PhD in soil science at the University of Illinois in 1971.

Dr. Acton spent almost his entire career with Agriculture Canada's soil survey unit in Saskatchewan, which together with the Dept of Soil Science at the U of S and the provincial soil survey comprised the Saskatchewan Institute of Pedology (SIP). In the early years he directed the survey in the Saskatoon Map area, and after becoming head of the federal survey unit in 1967 and Associate

Director of the SIP he played a leadership role in the soil survey program culminating in the completion of the resurvey of the entire agricultural region of the Province, a project initiated in the 1950's and covering over 40 million acres or nearly half of the farmland in the country.

Don was involved in several national scale projects including the development of the national soil classification system in Canada, and later as the director of the National Soil Quality Evaluation Program. Over his career he also contributed to several publications including a book on the grasslands of the world, the Encyclopedia of Canada, and the Ecoregions of Saskatchewan. After his retirement from the Federal service in 1995, he became actively involved in the Canadian International Development Agency's (CIDA) erosion remediation project in Vietnam, including the supervision of several Vietnamese soil science graduate students at the U of S.

Job Opportunities

M.Sc. and Ph.D. Graduate Student Opportunities in Sustainable Agriculture, Trent School of the Environment

The Borden lab at Trent University is seeking MSc and PhD students to lead research on biophysical and biogeochemical processes occurring at the soil-plant-atmosphere interface within agroecosystems that feature increased plant diversity (agroforestry, cover crops, intercrops). The successful applicants will develop novel methods to characterize plant root-soil interactions, such as with imaging and precision sampling of the rhizosphere, coupled with new applications of using state-of-the-art technologies for measuring gas exchange. Prospective graduate students with academic training and/or experience in agroecology, soil science, biogeochemistry, plant science, environmental sciences, and other relevant fields are encouraged to visit the lab website (kiraborden.com) for more information and reach out to Dr. Kira Borden to express interest (kiraborden@trentu.ca).

Postdoctoral Research Associate: Soil Nitrogen Biogeochemistry, University of Maryland, Department of Environmental Science and Technology

The *Nutrient Management and Water Quality* group (<https://go.umd.edu/Toor>) housed in the Department of Environmental Science and Technology at the University of Maryland seeks candidates for a postdoctoral researcher position to optimize nitrogen use efficiency (NUE) and develop a new N recommendation system for corn. The initial appointment will be for one year, with a possible extension based on performance and funding availability.

For more information click the link below.

[Postdoctoral Research Associate](#)

Job Opportunities (Con't.)

Graduate student position announcement at University of Guelph, Ridgetown Campus

One graduate student (MSc) position is available to start in Fall 2023 at the University of Guelph, Ridgetown Campus, Ontario, Canada. The student will work on the project entitled "Soil carbon response to above and below-ground biomass inputs from cover crops in diverse soil types and agricultural production systems". Specifically, the student will assess the long-term impact of sustainable soil management practices on soil health indicators such as soil organic C, microbial biomass C, soil C mineralization, and active C. The findings of this study will improve our understanding of the possible mechanisms through which cover crops increase soil health in the long-term. The research project will also provide improved recommendations related to cover crop adoption and increasing soil health for growers in Ontario and similar climatic conditions. The successful candidate will be primarily responsible for conducting soil (upto 0-15 cm depth) and plant sampling from two long-term experiments at Ridgetown, processing soil and crop samples in the lab, data analysis, and preparing reports and manuscripts. To be considered for this position, the candidate will have excellent written and oral communication skills in English, and must have completed a 4-yr equivalent B.Sc degree in soil science, environmental science, plant science, agronomy, or a related discipline.

To apply, please email a resume, a cover letter (of 500 words max.) highlighting your interest in the research project, past experience, and how you are an ideal fit for this position, academic transcripts, and two reference letters to Dr. Laura Van Eerd at lvaneerd@uoguelph.ca

Graduate Students and Postdoctoral Researcher in Microbiomes for Environmental Health, Ontario Agricultural College, School of Environmental Sciences,

Welcome applicants to apply to work in The Environmental Microbiology Laboratory at the University of Guelph, Ontario, Canada (<https://dunfield.uoguelph.ca>). We seek qualified candidates for PhD and Postdoctoral level research.

Our lab works at the intersection of microbiology, ecology, and soil science, to investigate the microbial communities and microbial processes driving the global processes that help support life on Earth. The successful candidate will work at the forefront of an intensely dynamic field of research, studying the microbiome in the environment and its function.

We are seeking candidates in multiple areas where we have on-going funded research programs with industrial or government partnerships:

- 1. Climate Smart Agriculture- Greenhouse Gas Mitigation:** Linking to ecosystem level greenhouse gas fluxes with abundance and activity of microbial communities.
- 2. Soil biodiversity and Soil health:** Using multi-omics approaches to identify key microbial taxa in agricultural soils.
- 3. Ecosystem remediation and environmental monitoring:** Microbiome based methods such as enhanced natural attenuation and phytoremediation to clean up polluted soils and groundwater.

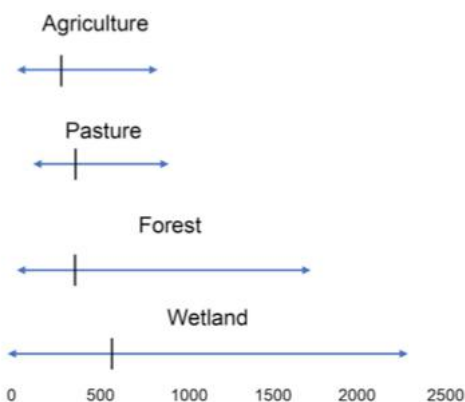
For more information click the link below.

[Graduate Students and Postdoctoral Researcher in Microbiomes for Environmental Health](#)



What is Soil Respiration?

Ranges and medians of respiration for different land uses in the Atlantic Canada (mg CO²-C Kg⁻¹ soil 72 hr⁻¹)



Data from Vallotton et al., 2023, and from "Soil Respiration Across Land Uses in Atlantic Canada" presentation at 2023 CSSS Annual meeting, Truro NS

Degradation of organic matter by microorganisms causes disintegration of (mainly) photosynthetically produced organic carbon compounds. This degradation of organic matter, known as respiration, is the key mechanism by which carbon is returned to the atmosphere, thus key in ensuring biogeochemical functioning of earth systems. Soil respiration is thus a measure of soil condition that indicates overall biological activity driven by the presence of carbon in soil and roots. Respiration reflects the stability of the soil food web, as all organisms respire, and it governs the pathways and speed of the transformation of carbonaceous matter along

trophic nodes. Soil respiration is a vital tool currently utilized as an integral part of soil quality and health indices by many labs, and while there is no universal method applicable for separation of autotrophic and heterotrophic respiration, yet a number of different indirect methods are available for researchers. They can be applied in situ with no disturbance, or ex-situ with evaluation of possible bias caused by measurements, including portable IRGA/laser spectroscopy, isotopic, basal, burst, and substrate-induced respiration. Because respiration represents the confluence of abiotic factors (climate, nutrients, pH, soil morphology, etc.) and microbial activity, it is a very important response variable connecting soil management to the reality of soil life. By referencing a

Because respiration represents the confluence of abiotic factors (climate, nutrients, pH, soil morphology, etc.) and microbial activity, it is a very important response variable connecting soil management to the reality of soil life.

soil to other soils in different climates and locations, specific land management practices can be assessed for their effect on soil respiration dynamics and thus soil health or quality. Respiration can be used as a proxy for biological activity and C availability, and generally, higher soil respiration values indicate better soil conditions, but in some cases high respiration may represent unsustainable, stress driven losses of soil C. Therefore, interpretation and contextualization of respiration

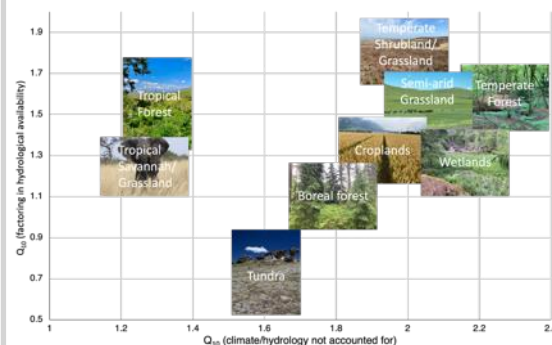
data is vital to make indices a useful tool, both by comparing to other locations of a similar type (e.g., agricultural to agricultural, not forest, within same climatic zone) and by measuring other important soil health features (e.g., soil aggregation or labile C). Climate change itself can act to accelerate soil respiration, especially when temperature-limited (e.g., boreal regions) or from shifting precipitation patterns. The greatest risk is that erratic cycles of temperature and moisture could cause much of the ecosystem to be increasingly exposed to wet-dry cycles, which could increase naturally occurring 'burst' respiration events, and thus frequent flushes of maximum respiration from soils. Soil respiration thus remains a tool that can illuminate our understanding of terrestrial carbon cycling as seen through the prism of microbial activity and in the context of abiotic factors.

Factors Affecting Soil Respiration

Jeremiah Vallotton
PhD candidate
Memorial University

Soil respiration is often increased by rising soil temperature, but temperature sensitivity of soil respiration is also affected by changes in the availability of soil organic carbon, nutrients, and soil water potential. Hence, when hydrology is factored in, respiration in areas that are considered very susceptible to climate change (e.g., boreal forests, wetlands) may be less at risk than previously thought (Fig. 2). Soil microbial respiration depends on the availability and accessibility of carbon-based substrate; labile and exposed carbon is an immediate source for soil microbes, while complex or mineral-protected organic substances (celluloses, chitin, lignin) are less available to microorganisms. If carbon sources are easily available, soil microbes deal with environmental stresses through accelerating carbon utilization/metabolism, leading to more C respired as CO₂. Respiration in agricultural soils often does

not match natural soils of the same climate or topography, as the transition from natural carbon-rich systems to highly-managed agricultural systems can render the soils more homogenous in nutrients, carbon, and water content compared to natural systems. Often, the relatively carbon-starved nature of modern farming means that these systems have lower stable reserves and inputs of carbon, less diverse microbial populations, and therefore far smaller respiration rates than natural systems, though the proportion of C respired versus the total is often higher (more lost) than in natural systems, where higher respiration is outstripped by higher inputs.



The magnitude by which soil respiration increases for each 10 °C increase in temperature (Q₁₀) may be more dependent on hydrology than on temperature than is usually thought (from Vallotton et al., 2023, <https://doi.org/10.1016/j.iscr.2023.100264>, modified after Fan et al., 2022, <https://doi.org/10.1038/s41561-022-01074-2>

CSSS Annual Meeting | June 25-29, 2023

Truro, Nova Scotia



The annual meeting of the Canadian Society of Soil Science was held from June 25th to 29th at the Dalhousie Agriculture Campus in Truro, Nova Scotia. The conference was attended by 257 registrants (137 regular registrants and 120 students) with 16 single day registrants. The conference featured 157 oral presentations, 67 poster presentations, 3 workshops and 2 tours.

The conference opened with a plenary presentation on the Senate of Canada's Agriculture and Forestry Standing Committee's examination of Soil Health by Senator Rob Black. A keynote presentation on soil spectroscopy was provided by Rich Ferguson an analytical chemist with the USDA NRCS Soil and Plant Science Division. Conference included sessions on soil health, digital soil mapping, soil spectroscopy, soil organic matter characterization, precision soil management, greenhouse gas mitigation, and amendments in agricultural management among others. A special session considered the next generations of Canadian field soil scientists.



Meetings of the Pedology Committee, Education Committee, and the Society's Annual General Meeting were held. The International Union of Soil Scientists hosted a breakfast.

A Gala Awards event, held in an Acadian Roundbarn, honoured two new CSSS Fellows, a CSSS Early Career Scientist Award, CSSS Travel Awards and the presentation of Bentley and President's Awards for oral and poster presentations.

The Local Organizing Committee would like to thank all of those who attended and participated in our meeting and our sponsors: the University of Saskatchewan, Dalhousie's Centre for Sustainable Soil Management, the Weston Family Foundation, Farmers for Climate Solutions, Hoskin Scientific, Eosense, Dalhousie University's Faculty of Agriculture, the Soil Conservation Council of Canada, and SoilOptix.

CSSS Annual Meeting | Special Sessions

CSSS 2023: Supporting growth of soil sciences and education in Canada.

Sustainability of global ecosystems, sustainability and resilience of food systems are under the unmistakable effects of climate change and pressures from unprecedented demographic changes. Soils, dynamic natural systems, intermediate matter and energy fluxes at the interface between lithosphere, atmosphere, hydrosphere and biosphere. Soils knowledge and soils education are thus critical steppingstones for evidence driven future global sustainability. Canadian agriculture and forestry offer a critical scope for mitigating negative impacts while retaining a central role in the global food security and ecosystems sustainability.

At this year's annual meeting of CSSS several special sessions addressed options and opportunities for the development of Canadian soil science, and training of the new generation of Canadian Soil Scientists.

"Preparing the Next Generation of Canadian Field Soil Scientists" (Richard J. Heck, P.Ag., University of Guelph; *David Lobb, University of Manitoba): This session was organized considering that over recent decades there have been substantial changes in soil science programs at post-secondary institutions in Canada, in the needs and challenges associated with our soils, as well as in our science and practice. Through invited presentations, the session highlighted the situation and trends at our universities and colleges, the evolving nature of pedology in Canada, as well as the needs of our private and public sectors. It also explored the question of accreditation of soil scientists, our participation in International Soil Judging Contests, as well as opportunities that will emerge from our hosting of the 24th World Congress of Soil Science in 2030. The session concluded with a discussion on relevant directions and strategies that the CSSS may take to ensure our readiness to effectively respond to future sectoral needs.

'Not your grandparents' soil survey: Pedology in the 21st century' (*Angela Bedard-Haughn, University of Saskatchewan; Brandon Heung, Dalhousie University; Daniel Saurette, Ontario Ministry of Agriculture and Rural Affairs): This presentation provided a high-level overview of some of the approaches increasingly incorporated into the pedologists' toolkit. It identified some of the challenges associated with field-based training as well as the opportunities associated with digital tools, including predictive mapping and proximal and remote sensing. It also highlighted some of the risks associated with the burgeoning digital space and how the next generation can be better trained to evaluate technology and mitigate these risks.



'Comments and Updates on Trends in Soil Science Education in Canada' (Maja Krzic, University of British Columbia; Amanda Diochon, Lakehead University; *Tom Yates, University of Saskatchewan): This presentation reviewed the results of three surveys conducted by the Soils Education Committee of the CSSS and published 2016 to 2019. At that time, soil science education across Canada was profiled in terms of academic units, introductory courses, and the knowledge gap between what our graduates have and the needs of industry. Updates were given and comments were made on soil science education in Canada post-pandemic.

'Practicing Pedology in Canada from a Consulting and Government Perspective' (*Konstantin Dlusskiy, Paragon Soil & Environmental Consulting; C. James Warren, Ontario Ministry of Agriculture and Rural Affairs): This presentation elaborated on two fundamental issues that universally affect the availability of pedologists for employment: 1) Most universities in Canada traditionally offering a soil science curriculum no longer do so; concern was expressed that recent university graduates do not have the field experience required to practice as pedologists. 2) The new generation of university graduates does not expect and does not want to work extensively in field programs looking for office-based positions after 2-3 years of periodical fieldwork, and many of these become on-the-job trainers for newer employees, perpetuating the problem.

'Certified Professional Soil Scientists Program' (*Dawn Gibas, Director of Certifications, ASA-CSSA-SSSA, participated virtually): A brief history of the Soil Science Certification and Licensing Programs under the Soil Science Society of American was provided, along with an overview of the current exam program. The presentation also included the progression of the certification program in keeping with advances in testing as well as soil science education and the profession. Challenges with soil science being a somewhat

CSSS Annual Meeting | Special Sessions (Con't.)

'Soil Judging Contests as Training for Canadian Soil Scientists' (*John Galbraith, Virginia Tech): This presentation elaborated on the international soil judging contests, conducted since 2014, involving about a dozen countries and hundreds of participants. It described the contest week preparation, involving teaching of soil description principles and interpretation of soil behavior in the host country. The shared meals, travel, discussion, training, and social events encourage camaraderie among participants and colleagues, who return home afterwards with enhanced skills and understanding to share in their home countries.

'Certified Professional Soil Scientists Program' (*Dawn Gibas, Director of Certifications, ASA-CSSA-SSSA, participated virtually): A brief history of the Soil Science Certification and Licensing Programs under the Soil Science Society of American was provided, along with an overview of the current exam program. The presentation also included the progression of the certification program in keeping with advances in testing as well as soil science education and the profession. Challenges with soil science being a somewhat small profession in the U.S. and Australia and the implications for the certification program were also raised.



'Leveraging the 24th WCSS for Enhancing Field Soil Science Training in Canada' (*Richard J Heck, University of Guelph; Jacynthe Masse, Agriculture and Agrifood Canada; David Lobb, University of Manitoba, Daniel Saurette, Ontario Ministry of Agriculture and Rural Affairs): This presentation referred to the 24th World Congress of Soil Science, which will be hosted in Toronto in July of 2030. As part of this Congress, various pre-congress, in-congress and post-congress soil tours will be organized. During the pre-congress week, an International Soil Judging Contest will also be organized. These activities offer opportunities to enhance our national capacity to deliver field training for the next generation of Canadian soil scientists and practitioners.

'Implementing Research on Farms' A well-attended session was held on June 28th discussing how researchers can implement research on farms. The session was convened by Rosalie Gillis-Madden and Caitlin McCavour of Perennia Food and Agriculture and Carolyn Marshall from the Nova Scotia Federation of Agriculture. Jordon Grigg from Wellington County, Ontario started us off with a great talk of a pilot project in that municipality to encourage sustainable agricultural practices that generated a lot of great questions from the audience. Stephanie Lavergne followed with a talk about collaboration between researchers, producers, and stakeholders in Abitibi-Temiscamingue in Quebec to create mentor networks to grow the organic sector. Two Living Lab talks came next: Judith Nyiraneza from AAFC gave an update from Living Lab Atlantic on PEI about how shallow tillage impacts potato yield and soil. Michael Preston from UNBC talked about their Living Lab activity on forage management that is getting underway this year. Not letting a last-minute issue prevent him from speaking, Sheng Li sent a recorded talk about controlled traffic farming in potato production in New Brunswick and its impacts on soil hydrological properties. Finally, Sirajum Munira rounded out our session with an interesting look at the consequences of misinformation and disinformation in agriculture. Rosalie Gillis-Madden then led the crowd in an animated discussion on how to relay research results to farmers to drive the adoption of beneficial management practices on farms.

Cropping Systems Tour

The Cropping Systems Tour chased on the heels of the excitement of three intensive days of sessions, taking place on Thursday, June 29th, 2023. Perennia Food and Agriculture and the Nova Scotia Federation of Agriculture (NSFA) toured representatives from every province to Nova Scotia Living Lab sites, to On-Farm Climate Action Fund demonstration sites, and to sites showcasing the efforts of Perennia's Agriculture Extension Team. The group of 37 scientists, agronomists, and students toured dairy rotations with discussions led by Caitlin McCavour, Perennia's Soils Specialist; Caitlin Congdon, Perennia's Field Crop Specialist; and Rosalie Gillis-Madden, Perennia's On-Farm Climate Action Fund Technical Project Manager and time-keeper-in-chief. Topics covered were cover crops, managing nitrogen in a (very) wet climate, soil variability in Nova Scotia, the challenges and rewards of Nova Scotia's naturally acidic soils and more.



The group also visited a wild blueberry field where we were joined by three wild blueberry growers and Perennia's Wild Blueberry Specialist Hugh Lyu introduced the cropping intricacies of this unique, biennial system, discussed erosion management, tissue testing, and fine-tuning nitrogen management. Further education was also administered on the local tick population. Carolyn Marshall, Environment and Climate Change Manager for NSFA led the discussion around shelterbelts, one of Nova Scotia's four Living Lab projects that is of particular interest to the wild blueberry sector to promote pollination, along with opportunities in carbon sequestration and greenhouse gas emission reduction.

A tour of Sugar Moon Farm and a cabane à sucre lunch with local maple syrup and blueberries (provided from the site the we had just visited) sweetened everyone's mood after hearing about the devastation wrecked by Hurricane Fiona on the Nova Scotia maple industry in the fall of 2022. Further discussions were had around the other three Nova Scotia Living Lab projects which centre around laneway management in perennial crops (tree fruit and grapes), cover crops in annual systems and how farmers might manage them for maximum benefit, and a novel approach to introducing rotationally grazed pastures to a high-intensity horticulture rotation.

Other highlights from the trip included viewings of Nova Scotia dykelands, the highest tides in the world and the mysteries of a Tidal Bore, local coffee (because we all needed something to power us through that last day), and a stop at halfway between the North Pole and the Equator at Mastodon Ridge (mastodons! Who knew?) where a hearty few imbibed in some of the local innovations. Cheers to a great tour and a great conference, it was right some good!



2023 CSSS Awards

On behalf of the Awards Committee, we would like to congratulate all the award recipients! Selection of the student presentation awards was especially difficult given the excellent quality of the presentations and the large number of students who competed in both the oral (81 students) and poster (52 students) presentation competitions.

2023 C.F. Bentley Award for Oral Presentation

This award was initiated in 1983 to encourage and recognize excellence in oral presentations by students at the CSSS Annual Meetings. It honours Dr. Fred Bentley who was CSSS President in 1956-57 and inducted as a CSSS Fellow in 1973. The award winner receives \$500, the first runner-up \$300, and the second runner-up \$200.

1st Place: Laura Carruthers (University of Saskatchewan)
2nd Place: Daniel Colcuc (University of Guelph)
3rd Place: Amanda Mitchell (University of Saskatchewan)

2023 CSSS Student Book Award Recipients

This award recognizes undergraduates at Canadian universities who demonstrate excellence in Soil Science. Candidates are nominated by their academic department. Each student receives a print copy of Digging Into Canadian Soils: An Introduction to Soil Science.

Mary Anne Arnoldo (University of Toronto)
Dominique Claire-Anne Letourneau (University of Alberta)
Alex Matthys (Laval University)
Niomi Pantel (University of Manitoba)
Jamie Quinn (University of Northern British Columbia)
Matt Robertson (University of Saskatchewan)
Michael Valiquette (University of Guelph)
Amy Wells (University of British Columbia)

2023 President's Award for Poster Presentation

This award was established in 1992 to foster excellence in student poster presentations as a means of disseminating research results at the CSSS Annual Meetings. The President's Award is: \$500 for the winner, \$300 for the first runner-up and \$200 for the second runner-up.

1st Place: Alexis de Laronde (University of Guelph)
2nd Place: Leah MacIntyre (Dalhousie University)
3rd Place: Sashini Pathirana (Memorial University of Newfoundland)
3rd Place: Samantha Bennett (St. Mary's University)

2023 CSSS Student Travel Awards

This award was established in 1991 to promote student attendance at the CSSS Annual Meetings and is available to any graduate student who is a CSSS member. The award is \$700 and a maximum of 12 travel grants are awarded. Recipients of this year's award are:

Gbenga Adejumo	(University of Saskatchewan)
Chantel Chizen	(University of Saskatchewan)
Kennedy Choo-Foo	(University of Saskatchewan)
Grace Gowera	(University of Saskatchewan)
Morgan Hamilton	(University of British Columbia)
Jessica Mehre	(University of Guelph)
Amanda Mitchell	(University of Saskatchewan)
Clemence Muitire	(University of Manitoba)
Sashini Pathirana	(Memorial University of Newfoundland)
Yvonne Uwituze.	(Université Laval)
Priscillar Wenyika	(University of Alberta)
Erika Young.	(Memorial University of Newfoundland)

We would also like to thank all the judges who participated in the competition:

Adam Gillespie - University of Guelph
Adrian Unc - Memorial University of NL
Amana Kedir - Memorial University of NL
Amanada Diochon - Lakehead University
Andy Hammermeister - Dalhousie University
Angela Bedard-Haughn - University of Saskatchewan
Barbara Cade-Menun - AAFC - Swift Current
Caroline Halde - Université Laval
Catlan Dallaire - Clifton Assoc.
Charlotte Norris - NRCAN
Chih-Yu Hung - AAFC - Ottawa

Lee-Ann Bauman - CSSS
Louis-Pierre Comeau - AAFC - Fredericton
Maren Oelbermann - University of Waterloo
Mervin St. Luce - AAFC - Swift Current
Michael Preston - University of Northern British Columbia
Pedro Ferrari Machado - AAFC - Swift Current
Sirajum Munira - University of Saskatchewan
Sukhwinder Singh - University of Alberta
Tandra Fraser - AAFC - Charlottetown
Tom Bruulsema - Plant Nutrition Canada
Tom Yates - University of Saskatchewan
Vicky Lévesque - AAFC - Kentville
Xiaopeng Gao - University of Manitoba

Children's Book on Soil Biodiversity

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