



PRESIDENT'S MESSAGE

Dear members,

Another successful CSSS meeting has just gone! It is a pleasure to report that the CSSS meeting in Niagara Falls, with the CGU, CSSS, CIG, ES-SSA and CSAFM, was a real success. Approximately 500 participants including 125 CSSS members and a large number of students met to learn, discuss and discover. A large number of excellent talks, events (social and scientific) and tours were well organized throughout almost a week. Overall quality of student presentations was exceptional, and more details regarding the awards appear later in this newsletter.

On behalf of the executive and the Society, I would like to extend our gratitude to the Local and Scientific Programming Committees including Joann Whalen and Keith Reid who served as the CSSS representatives.

A number of important items were brought forward at our AGM and I encourage all of you to read details through the web site of the Society. However, I would like to report some of these items to members in this newsletter. Briefly, I would like to welcome Nancy Zubriski our new office manager and to congratulate David Lobb the new Canadian Representative on the Intergovernmental Technical Panel on Soils. His appointment was approved during the Global Soil Partnership plenary assembly in June in Rome. The executive decided that unused Student Travel Award funds (\$20,000) will be allocated to student and post doc to attend the North American Soil Science Societies (Soil Science Society of America, Canadian Society of Soil Science and the Mexican Society of Soil Science: SSSA/CSSS/MSS) joint meeting next January. I really encourage students and post-doc to apply!

Our upcoming meeting in 2019 will be held in Saskatoon in conjunction with the 100th anniversary of the Department of Soil Science at the University of Saskatchewan, July 10-12, 2019. In addition, the joint conference of SSSA/CSSS/MSS will held in January 6-9, 2019; San Diego, CA. and the planning is going very well. Barbara Cade-Menu (since 2015) and Joann Whalen (since 2017) are on the organizing committee and serve as the CSSS representatives. I would like to remind participants from Canada who are not Canadian citizens (thinking mostly about students) may need a visa to attend the meeting, and they can get a letter from the SSSA to obtain a visa. The link for the participation request is: <https://www.sacmeetings.org/travel/participation-letter>.

Finally, I would like to inform you that the bid to host the 23rd WCSS in 2026 has been submitted on July 5th on behalf of the CSSS, Business Events Toronto and the Metro Toronto Convention Centre. A formal presentation to support the bid will be given by Dr. Ricard Heck, who led the bid development committee, at the upcoming WCSS 2018 in Rio.

Thank you for reading and enjoy the rest of the summer!

Noura Ziadi
CSSS President



CSSS Council

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2017 CSSS Awards

CSSS Undergraduate Student Book Awards

This award recognizes undergraduates at Canadian universities who demonstrate excellence in Soil Science. Candidates are nominated by their academic department.

- Chantel Chizen, University of British Columbia
- Kyle Statechuk, University of Alberta
- Warren McAuley, University of Saskatchewan
- Keaton Bachalo, University of Manitoba
- Cyril Melikov, McGill University
- Luke Greco, University of Toronto
- Hannah Arsenaault, Dalhousie University

CSSS Student Travel Awards

- Olayinka Adamolekun, University of Manitoba
(Did NOT attend)
- Theresa Adesanya, University of Manitoba
- Leanne Ejack, McGill University
- Carolyn Marshall, Dalhousie University
- Kiran Preet Padda, University of British Columbia
- Meiling Man, University of Toronto, Scarborough
- Akshit Puri, University of British Columbia
- Ahmed Lasisi, University of Manitoba
- Inderjot Chahal, University of Guelph
- Yeukai Katanda, Trent University
- Mayowa Adekun, University of Manitoba (Did NOT attend)

CSSS-CJSS Student Travel Awards for International Soil Science Meetings

- Tian Tian, McGill University
- Ashkit Puri, University of British Columbia

CSSS Pedology Travel Award

- Dr. Louis-Pierre Comeau

C.F. Bentley Award for Best CSSS Student Oral Presentation

- 2nd runner up - Inderjot Chahal, University of Guelph
- 1st runner up - Jeremy Kiss, University of Saskatchewan
- 1st Alexia Bertholon, McGill University

President's Award for Best CSSS Student Poster

- 2nd runner up - Akshit Puri, UBC
- 1st runner up - Akeen Shorunke, University of Saskatchewan
- 1st - Kiran Preet Padda, UBC

2017 CSSS Awards (Continued)



CSSS Fellow Award
Dr. Scott Chang

2018 Field tour during CSSS annual meeting

By Carolyn Marshall, Dalhousie University

We had beautiful weather again this year for the CSSS Soil Tour organized by the great folks at OMAFRA. Our first stop was an Orthic Humic Gleysol on George Vineyards on the shore of Lake Ontario. We then stopped at the Cherry Avenue Research Station to look at a Gleyed Gray Brown Luvisol. Next Larry Hipple showed us around his farm that his family established in 1812 and we checked out a Gleyed Brunisolic Gray Brown Luvisol. Our lunch stop at the Vineland Research and Innovation Centre had some of us enjoying a wine tasting at The Foreign Affair Winery, located conveniently behind the station. At Featherstone Winery Dave Johnson treated us to a tasting of his Black Sheep wine, called that because the vines are trimmed by sheep every year (one of which is always black). A perfect combination - a soil tour and a wine tour! Unfortunately, we were a week early to catch the arrival of the sheep. The pit on his farm turned out to be an old ditch but still provided us with an interesting lesson in geology and anthropogenic changes to soil. The last stop was a little different than the earlier stops, which had all been vineyards and orchards. The Dyck Family Farm is working for full soil cover in their corn, soybean, and wheat rotation by incorporating cover crops. The Gleyed Melanic Brunisol showed some signs of compaction but hopefully Larry Dyck's efforts with cover crops lead to some improvements. Our discussion of the soil pits was enhanced by geologist Abigail Burt who gave us the geological history of the region and helped us decipher the soil pits. Each of the hosts received a mini monolith created by the hardworking OMAFRA employees for letting us on their land to check out the soil pits. OMAFRA has really set the bar high by offering fantastic soil tours over the past two annual meetings.

2018 Field tour during CSSS annual meeting (Continued)



Gleyed Regosol from the Chingaucousy series at Featherstone winery, courtesy Dr. Louis Pierre Comeau



Gleyed Gray Brown Luvisol from the Trafalgar series at Cherry Avenue Research Site, courtesy Dr. Louis Pierre Comeau



Wine testing at Featherstone winery, courtesy Carolyn Marshall



Orthic humic Gleysol from the Jeddo series at George winery, courtesy Dr. Louis Pierre Comeau



Cover crop/soil erosion demo at the Dyck Family Farm courtesy Carolyn Marshall



Brandon Heung working on his soil monolith, courtesy Carolyn Marshall

Mini workshop on monolith making during 2018 CSSS annual Meeting

By Deanna Nemeth, OMAFRA

As part of the 2018 CSSS conference in Niagara Falls, a mini-monolith workshop was held for 34 conference participants. The workshop goals were to promote how to use monoliths for educational resources, and to demonstrate how to prepare soil monolith.

A presentation by Dr. Maja Krzic, Associate Professor at the University of British Columbia (UBC) highlighted the SoilWeb tool (<http://monoliths.soilweb.ca/>). This tool includes high resolution pictures of the historical UBC soil monolith collection, and is used to enhance undergraduate and graduate teaching by linking course content to interactive web-based learning.

Mini workshop on monolith making during 2018 CSSS annual Meeting *(Continued)*

Each workshop attendee was given a mini-monolith to complete. The soil options were a sandy Vineland series from a local tender fruit orchard or a Trafalgar series from a cider apple field at the Vineland Research Innovation Centre research station. Staff and summer students from the Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) demonstrated the steps to make a mini soil monolith.



1. Extract a mini soil profile using a metal frame and soil knife
2. Glue cheese cloth to the back and sides of a wooden display box
3. Place mini soil profile in display box, trim excess cloth from the sides
4. Saturate with solution of 10:1 white latex glue and water
5. Pick surface of mini monolith with a dental pick to expose the natural structure
6. Allow to air dry before displaying

Prepared by OMAFRA students: Brennan Guse, Robin Bradley, Mitchell Brown, Terra MacMillan, Laura McFarlan. Photo credits: University of Saskatoon, Nicholas Kinar and OMAFRA Veronika Wright

CSSS Student Travel Awards for the 2018-2019 joint meeting of the North American Soil Science Societies “Soils Across Latitudes”.

The Canadian Society of Soil Science (CSSS) is pleased to sponsor up to 11 travel awards, to a maximum of \$2,000 Cdn each, to provide travel funds for student and post doc members of the CSSS to attend the joint meeting of North American Soil Science Societies (Soil Science Society of America, Canadian Society of Soil Science, and the Mexican Society of Soil Science) 2018-19 International Soils Meeting, "Soils Across Latitudes", to be held Jan. 6-9, 2019, in San Diego, California.

Who is eligible for the award:

1. Award applicants must be registered at a Canadian University or College and a student or a post doc member of CSSS in good standing at the time of application.
2. Students or post docs must be the presenting author of an oral or a poster presentation describing their thesis/dissertation or current research.
3. The award amount is not fixed and depends on the total reimbursement cost of attending the meeting, to a maximum of \$2,000 Cdn per student.
4. Funds will be awarded to cover costs for registration, travel, accommodation and meals (at the per diem rate of the applicant's institution) and associated fees (e.g., visa, travel insurance). Please note that the amount of the award will be based on the actual cost of attending the meeting; i.e., receipts will be required for registration, accommodation and travel (per diem on actual days travelled and in attendance).

Application:

5. Eligible applicants must submit a one-page letter describing their reasons for attending the meeting and how the meeting will contribute to their growth as a soil scientist. The application must include a budget estimate, containing as much documentation as possible to show the basis for this estimate (e.g. registration fees, accommodation, airfare, etc.) and a copy of the submitted abstract.
6. The applicant's primary supervisor must send a short (one-page) letter in support of the student's application.
7. Applications should be submitted electronically to the Chair of the Awards Committee (see address below).
8. Application deadline is August 15, 2018. Awards will be decided by the CSSS Awards Committee, with final approval by the CSSS Council. Applicants will be notified as to their success no later than September 12, 2018.

Send a completed application (MS Word Document) by August 15, 2018 to:

Fran Walley

President-Elect, Canadian Society of Soil Science

Chair, CSSS Awards Committee

E-Mail: fran.walley(at)usask.ca [please replace (at) with @ – this is to prevent spam.]

Canadian Journal of Soil Science

Statistics for 2017

Drs. Newton Lupwayi and M. Anne Naeth

Journal Impact Factor

The 2-year impact factor dropped to 1.085 in 2017, from 1.590 in 2016, 1.210 in 2015, 1.382 in 2014 and 1.000 in 2013. However, the 5-year impact factor rose to 1.934 in 2017, from 1.930 in 2016, 1.427 in 2015, 1.337 in 2014 and 1.269 in 2013. This factor has been increasing since 2013. The rank (based on 5-year impact factor) among soil science journals (20 of 34 in 2017) has not changed much over the years, ranging from 20 of 34 in 2016 and 2017 to 22 of 33 in 2013.

Special Issues and Sections

Two Special Issues were published in 2017:

Greenhouse Gas Emissions: Sources and Sinks in Canadian Agro-Ecosystems. Guest Editors: Drs. Scott Chang and Joann K. Whalen.

Precision Agriculture and Soil-Water Management in Cranberry Production. Guest Editors: Drs. S.J. Gumière, S. Pepin, J. Caron and W. Bland.

Journal Statistics 2017

There were 140 submissions to CJSS in 2017, including 109 regular articles, 1 review, 12 short communications and 11 special issue manuscripts. There was one retraction due to authorship dispute. Papers published consisted of 64% (42 of 66) regular articles, 15% special issue papers and 12% short communications; the rest were 3% or less. The distribution of published papers by journal section shows that the majority (24%, 16 of 66) were in management for agricultural, forestry and urban uses. Only one paper was published in genesis, landscape processes and relationships.

A total of 156 editorial decisions were delivered, of which 66 (42%) were accepted and 90 (58%) were rejected. Of the 156 manuscripts, 69 were from Canada, 49 from China, 6 from Egypt, 3 from the United States, and 29 from 13 other countries. China is the major contributor of manuscripts submitted from outside Canada, but only 25% of those manuscripts were accepted in 2017. In 2016, 26% of the manuscripts from China were accepted, so there has been no change. By comparison, 74% and 76% of the manuscripts from Canada were accepted in 2017 and 2016, respectively.

No manuscript was accepted from 13 other countries. Many of them were rejected by Editors without review, mainly because there were flaws in the experimental design, or the presented data were insufficient to support conclusions. Of the papers sent for review, the main reasons for rejection by Associate Editors were lack of novelty or insufficient improvement of a manuscript based on peer-review comments.

Associate Editors (regular and guests for the special issues) handled between 1 and 11 manuscripts each in 2017, with an average of 5 manuscripts. The average number of days Associate Editors took from manuscript submission to first decision has improved to 55 days and 57.4 days in 2017 and 2016, respectively, from 72.8 and 73.2 days in 2015 and 2014, respectively.

CSSS Website Update

Plans are underway to redesign the CSSS website as it has been quite a few years since this was last done. As we begin this process, we would like your input regarding what you like and/or dislike about the current site, which parts of the website you visit most and least often, are there elements of the site that you find distracting, and what you would like to see in a new website (e.g., visual look and feel of the site, navigability, new types of content, etc...).

The Society's website is intended to help our members remain informed and encourage participation in the profession, so please let us hear Please send your comments and suggestions to the Western Councilor (Rich Farrell) at r.farrell_at_usask.ca.

CSSS Council Will Need a New Graduate Student Representative

Announcement will be sent out during the normal elections later in fall

What is Going on in the Lab/Field

Biochar: a promising avenue for sustainable agriculture

During the past few years, greenhouse tomato and sweet pepper production have grown rapidly within the total fresh vegetable industry in the world (1). Consequently, the use of water and chemical fertilizers increased rapidly for these horticultural crops (2), resulting in environmental burdens and high costs for producers, making it a challenge to maintain optimum growth and high sustainable yield.

Biochar, charcoal produced by pyrolysis and used as an amendment, has several advantages and is a promising avenue for sustainable agriculture (3). However, the production methods, the pyrolysis conditions and the biomass types produce biochars with variable properties which have different effects on soil productivity and crop yields (4, 5).

Dr Vicky Lévesque developed expertise on the use biochars as amendment during her PhD program at *Université Laval* (Quebec) and Agriculture and Agri-Food Canada. Dr Lévesque characterized various types of biochar using different biomass origins and pyrolysis processes, and then selected the most promising ones from an agronomic performance. The purpose of the PhD project of Dr Lévesque was to understand how the physicochemical properties of biochar affect its ability to: (i) mitigate greenhouse gas (GHG) emissions; (ii) improve growth of greenhouse tomato and pepper; (iii) improve fertilizer and water use efficiency; and (iv) modify the structure and the diversity of bacterial communities in a growing medium and a mineral soil. Five biochars were produced and evaluated: maple bark pyrolyzed at 400°C, 550°C and 700°C, pine chips pyrolyzed at 700°C, and willow chips pyrolyzed at 400°C.

The results demonstrated that some physicochemical properties are key drivers of the ability of biochars to efficiently mitigate N₂O emissions, to reduce fertilizer inputs and to improve water use efficiency while promoting plant growth.

Moreover, the results show that biochar amendment can stimulate specific bacterial groups involved in carbon and nitrogen cycles and possibly those involved in plant development.

What is Going on in the Lab/Field (continued)

Dr Lévesque has clearly shown that the use of biochars as part of the growing media improves the sustainability of greenhouse crops by reducing their GHG emissions, water and fertilizer use, and by improving plant growth and yield.

References

- (1) Hickman GW (2016) International greenhouse vegetable production-statistics. A review of currently available data on the international production of vegetables in greenhouses. Cuesta roble greenhouse consultants. Mariposa, California
- (2) Wang X, Xing Y (2017) Evaluation of the effects of irrigation and fertilization on tomato fruit yield and quality: a principal component analysis. *Sci Rep* 7: 350. doi:10.1038/s41598-017-00373-8
- (3) Nemati MR, Simard F, Fortin J-P, Beaudoin J (2014) Potential use of biochar in growing media. *Vadose Zone J.* doi: 10.2136/vzj2014.06.0074
- (4) Brewer CE, Unger R, Schmidt-Rohr K, Brown RC (2011) Criteria to select biochars for field studies based on biochar chemical properties. *BioEnergy Res* 4:312–323
- (5) Lehmann J, Joseph S (2009) *Biochar for Environmental Management: Science and Technology*. Earthscan, London, Sterling, VA.



Announcements

Graduate student position available in soil biochemistry

A graduate student position is available for a motivated candidate to work in the area of soil biochemistry, soil fertility, soil biology and nutrient dynamics. The student will work on a project assessing the effects of amending soils with struvite, a recovered magnesium ammonium phosphate precipitate from wastewater that can be used as a source of nutrients for crop production. It is also pending approval for use in organic agricultural production systems as a source of phosphorus and is recognized for helping to recycle waste phosphorus, working towards more sustainable nutrient management. Specifically, the graduate student will focus on 1) determining the effect of struvite application to soil on crop yield and phosphorus uptake as well as on soil phosphorus chemistry and 2) assessing the effect of struvite application to soils on arbuscular mycorrhizal root colonization. The opportunity to be involved in assessments of the effect of struvite application on water quality implications also exists. The student will have the opportunity to participate in interdisciplinary work with partners at Agriculture and Agri-Food Canada (Brandon Research and Development Centre), the University of Manitoba, the University of Guelph and industry partners. The work will involve conducting controlled environment pot trials, laboratory analysis, and field work. Candidates should have an interest in soil science and nutrient dynamics and have completed a bachelor's degree in soil science, environmental science, agronomy or a related discipline. Laboratory and or field experience is an asset.

Conditions of employment

This position is suitable for a Master's student, but with the right candidate could become a PhD position. The position has the possibility to be based at the University of Guelph, or in Brandon, MB at the AAFC Brandon Research and Development Centre in collaboration with a University (University of Guelph, Brandon University or University of Manitoba). A start date of September 2018 would be ideal, but is negotiable. Applications will begin to be reviewed in mid-July 2018. Interested candidates should contact Dr. Kim Schneider at kimberley.schneider@agr.gc.ca and/or Dr. Henry Wilson at henry.wilson@agr.gc.ca for more information and send a statement of their research interests and related.

M.Sc Position, Soil and Chemistry, Agriculture and Agri-Food Canada (AAFC) and University of Lethbridge

Agriculture and Agri-Food Canada (AAFC) and the University of Lethbridge invite applications from students interested in agri-environmental research. Some research work will be done at the University of Lethbridge in collaboration with Dr. Paul Hazendonk's Lab, but the majority of the research will be conducted at AAFC, Lethbridge Research and Development Centre (AAFC-LeRDC), Lethbridge Alberta, thus providing exposure to both academic and government laboratory research.

The research will investigate how livestock manure application to cropland affects soil carbon and the formation of stable soil organic C (SOC) fractions. Decomposition of applied livestock manure and stability of SOC will be linked to chemical markers to characterize processes that transform livestock manure into recalcitrant SOC fractions. This research will increase our understanding of key parts of soil.

C cycling as influenced by livestock manure type and application history, which in turn affect the health and productivity of soils.

Announcements (Continued)

The research activities include:

- Take samples of soil at the AAFC - LeRDC long-term manure (LTM) plot
- Conduct soil carbon fractionation and chemical analyses on LTM soil and soil samples obtained from other Canadian and international long term study sites, using Dr. Hao's Lab at AAFC - LeRDC
- Examine the nature of C compounds in different SOC fractions using NMR and other equipment in Dr. Hazendonk's Lab at University of Lethbridge
- Analyze data and prepare manuscripts for submission to meetings and journals
- Present results at national and international scientific meeting

The successful candidate must have a B.Sc. in Biology, Chemistry, Soil Science or a closely related field. Preferred candidates will also show evidence of creativity, independence, the desire to learn new things, and excellent written and oral communication skills. A start date of Jan 1, 2019 is ideal, but earlier or later dates will be considered and should be noted in the cover letter. All questions about the position and application materials should be submitted to both: Xiyang Hao (xiyang.hao@agr.gc.ca) and Paul Hazendonk (paul.hazendonk@uleth.ca).

Applications should consist of a single file that includes: a brief cover letter (no more than 2-pages), a curriculum vitae, university transcript, and names and contact information for three references.

The application deadline for admittance for January 1, 2019 is October 1, 2018, but earlier applications will be considered. Students that attain entrance into the U of L graduate program will receive a two-stipend (\$10,000 per year) and further qualify for teaching assistantships (\$7,000 per year), tuition relief, and the Dean's Scholarship which will be awarded on a competitive basis.

M.Sc./Ph.D. Opportunity, Department of Soil Science Department, University of Saskatchewan, Canada

Project title

Development and function of arctic and alpine biological soil crust communities

Project summary

In alpine and arctic environments, Biological Soil Crusts (BSCs) are often a dominant vegetation unit, making these ecosystems a uniquely powerful model for examining the role of BSCs in terrestrial ecosystem development. The first goal in this series of projects is to determine the initial and realized niche ranges of key species found in BSCs. While determining species niche ranges is needed for successful restoration of alpine and tundra plant communities, long-term ecosystem recovery and health is ultimately dependent on restoration of key ecosystem processes. Therefore, our second goal is to link niche construction with the recovery of ecosystem functions for key BSC species. We will achieve these goals by determining niche ranges and recovery of key ecosystem processes under both natural recolonization and active restoration. Optima and niche ranges for key macro and micro BSC phyla will be determined through characterization of BSCs in relation to key microclimate and soil physicochemical factors along subarctic alpine chronosequences, tundra drilling waste materials and mine site tailings. Manipulative growth chamber and field experiments will assist in the confirmation of niche ranges and help to develop BSC restoration techniques.

Announcements (Continued)

Expectations

There are opportunities for both M.Sc. and Ph.D. positions.

- Background in soil and/or plant sciences
- Interest in plant-soil systems, non-vascular plant communities, soil microbial composition and function
- Field work in remote locations including soil sampling, moss and lichen identification
- Experience with molecular analyses/data considered an asset

The expected starting date for the 2-year M.Sc. and 3-year Ph.D. **positions vary from July 1, 2018 to January 1, 2019.**

The stipend for the M.Sc. position is \$22,680 per year and \$27,018 for the Ph.D. position.

Interested candidates should submit a statement of interest, CV and three references, unofficial transcripts and a sample of writing to Dr. Katherine Stewart, Department of Soil Science, University of Saskatchewan (katherine.stewart@usask.ca).

For more information please contact Dr. Stewart.

Jobs at University of Alberta

Assistant/Associate Professor and NSERC Industrial Research Chair in Agricultural Entomology

<https://gallery.mailchimp.com/ca7fd4410b9dab34e3ef8b381/files/c5a32b5d-6036-49d8-9017-efe99e07f7dd/>

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Assistant Professor in Agricultural Plant-Microbe Interactions

<https://gallery.mailchimp.com/ca7fd4410b9dab34e3ef8b381/files/6c831567-d1a6-40ce-a7ef-b747e113a750/>

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Suggested Readings

IUSS book *The Nexus of Soils, Plants, Animals and Human Health*

Read more: <http://www.schweizerbart.de/publications/detail/isbn/9783510654178>

A grass-roots movement for healthy soil spreads among farmers

Read more: <https://www.npr.org/sections/thesalt/2018/04/09/597617822/a-grass-roots-movement-for-healthy-soil-spreads-among-farmers?org=1364&lvl=100&ite=1372&lea=140666&ctr=0&par=1&trk>

Scientists to publish first-ever land health report

Read more: <https://phys.org/news/2018-03-scientists-publish-first-ever-health.html>

Suggested Readings (Continued)

New publication, Agricultural Drones: A Peaceful Pursuit

Read more: <https://www.crcpress.com/Agricultural-Drones-A-Peaceful-Pursuit/Krishna/p/book/9781771885959>

Soil Nitrogen Uses and Environmental Impacts

Read more: <https://www.crcpress.com/Soil-Nitrogen-Uses-and-Environmental-Impacts/Lal-Stewart/p/book/9781138626362>

A book under the umbrella of the international Decade of soils 2015-2024

Read more: http://iuss.org/index.php?article_id=667

BOOK THE DATES FOR FUTURE CSSS ANNUAL MEETINGS

2019 – Joint North American Meeting in San Diego, Soils across latitudes, California, January 6-9, 2019

<https://www.sacmeetings.org/>

2019 – Joint meeting with Rhizosphere 5 in Saskatoon, Saskatchewan, July 10-13, 2019

2020, CSSS annual meeting, Charlottetown, Prince Edward Island, June 21-25, 2020

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