



PRESIDENT'S MESSAGE

A growing number of scientific publications focused on soils and growing public interest in soils observed over the last couple of decades are (slowly) leading to the recognition that soil science has a central role in understanding and managing numerous natural resource challenges such as climate change, biodiversity, water quality, and food security. For example, agroecosystems in the northern Great Plains and Canadian Prairies are transitioning toward more intensified production mainly due to climate-driven shifts in greater early-season water availability and an extended growing season, which in turn will increase the susceptibility of soil degradation. Permanent ground cover provided by perennial grasses can buffer climate-induced stresses while improving soil conditions to facilitate agroecosystem resilience. Developing science-based guidance on how to value non-provisioning ecosystem services from perennials under a changing climate is a key prerequisite for their adoption in crop production systems. As many ecosystem service benefits associated with perennials are derived from changes to soil properties and processes, soil scientists can play a key role in providing this guidance. The importance of soils in addressing global issues was made very clear by the two keynote speakers at our Annual Meeting in Kamloops under the theme "Soil - Our Silent Ally for Food Security and Sustainable Development". One common, clear message from these two talks was that soils are central to broader ecosystem functioning, and that as soil scientists we need to be proactive in ensuring soils are considered, and properly so, in dealing with local as well as global issues.

Our Annual Meeting, co-organized with the Pacific Regional Society of Soil Science in Kamloops, BC in May, was a great success (see detailed report in this newsletter). A huge "thank you" goes to the Organizing Committee, the session chairs, volunteers and sponsors that worked hard to organize and support this year's conference. Participants at our Annual Meeting in Kamloops also had the opportunity to attend three field tours. The tour of the Lac du Bois Grasslands Protected Area was "mandatory" since it was included as one of the conference sessions and it provided a nice break from typical indoor conference setting. Thank you Chuck Bulmer, Brian Wallace, Gerry Neilsen, Tom Forge, and Scott Smith for coordinating all these field tours!

Our next Annual Meeting will be at Trent University (June 10-14, 2017) in Peterborough, ON, so please stay tuned for future announcements (and note the call for sessions at the end of this newsletter). I hope that many of you will book this into your schedules and join us. Discussions have already started for 2018. We will be meeting with the Canadian Geophysical Union (CGU) and Computational Infrastructure for Geodynamics (CIG) in Niagara Falls, ON in June 2018. Even though this schedule deviates from our usual alteration of East and West conference locations, we were not able to obtain a suitable western location and/or partnering organization for 2018 Annual Meeting. This will be our forth meeting with CGU and I hope that it will be as successful as the previous ones.

The CSSS was one of the integral sponsors of the 2016 North American Envirothon (July 24-29, 2016, Peterborough, ON) with *ca.* 500 visitors from across Canada and the US. The study material entitled "What lies beneath...your feet!", prepared by CSSS members and available to download at <http://csss.ca/education-committee/>, was a great resource for students who prepared for this year's competition and will be used in future Envirothon events. It is very exciting to report that for only the second time in Envirothon's 37-year long history, a Canadian team (i.e., the University of Toronto Schools team) won the competition. With "Soils and land-use" as one of five subject areas at this competition, which involves 500,000 high school student participants annually, our discipline is put on the radar of the future generation of natural resource professionals.

Going forward we are committed to better promoting students in the society newsletter, and in this issue, look for pieces by PhD students Mitalie Makhani and Marcus Phillips as well as from the student rep on the society Council, Carolyn Wilson. These are some of the current issues that Council is working on and new ideas and initiatives are always welcome. Hence, bring your ideas forward, help us build your Society.

Maja Krzic
President, CSSS



CSSS Council 2016

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2nd CANADIAN ORGANIC
SCIENCE CONFERENCE

September 19-21, 2016 • MONTREAL-LONGUEUIL (QUEBEC) CANADA

Conference website: www.craaq.qc.ca/cosc2016

“Sharing research that grows organic” is the theme of the 2nd Canadian Organic Science Conference. On the program: two days of conference presentations (in English) and a field day of visits to Quebec organic farms.

World renowned international and Canadian scientists will present their research in all aspects of organic agriculture, including soil science, crop and livestock production, and value chain development.

This key event will be held on September 19-21 at the Sandman Hotel in Montreal-Longueuil, and is a unique opportunity for researchers and organic producers to share organic knowledge.

We hope to see you there!

Caroline Halde, Ph.D.

Co-chair of the 2nd Canadian Organic Science Conference

Assistant professor, Université Laval

Québec City, QC, Canada

caroline.halde.1@ulaval.ca

Agroecology Lab at Université Laval : <https://carolinehalde.wordpress.com>

MAJA KRZIC NAMED 3M NATIONAL TEACHING FELLOW

Congratulations to Maja Krzic (The University of British Columbia, Vancouver) on being named 3M National Teaching Fellow. This award is Canada’s most prestigious recognition of excellence in university teaching and educational leadership. The Fellowship recognizes university teachers who have demonstrated leadership in enhancing post-secondary teaching excellence and superlative undergraduate teaching, sustained over several years.



Fellows are given a lifetime membership in the Society for Teaching and Learning in Higher Education (STLHE) and they also join a vibrant and energetic Fellowship of 300 dedicated and inspiring leaders and teachers who have helped shape university education in Canada for last 30 years.

Read more in Macleans magazine at: <http://www.macleans.ca/education/the-university-professors-who-are-at-the-heads-of-their-class/>

Nathan Basiliko

2016 CSSS Award Recipients

The CSSS annual meeting in Kamloops (May 14-19, 2016) was an opportunity for our society to acknowledge the winners of CSSS awards.

Dr. David Lobb, Fellow

Congratulations to our latest CSSS Fellow, Dr. David Lobb, Professor in the Department of Soil Science and Senior Research Chair for the Watershed Systems Research Program at the University of Manitoba. Dr. Lobb has a distinguished record of research, teaching and extension activities in the areas of soil erosion, soil and water conservation and sustainable agriculture. He has made major contributions to the development of the tillage erosion risk and soil erosion risk indicator models, and provided significant input to Agriculture and Agri-Food Canada's program on Watershed Evaluation of Best Management Practices. His research on soil erosion and sedimentation is widely disseminated in Environmental Farm Plans and other extension materials across Canada. Dr. Lobb has provided substantial service to the CSSS over the years, having served as a Councillor as well as President and other roles.



Dr. David Lobb receiving his CSSS Fellow Award from President-Elect Joann Whalen

Dr. Angela Bedard-Haughn, Pedology Travel Award

The CSSS Pedology Travel Award was given to Dr. Angela Bedard-Haughn, University of Saskatchewan. This award provided travel funds (up to \$4000) that allowed Dr. Bedard-Haughn to participate in the course "Hands-on Global Soil Information Facilities" at the International Soil Reference and Information Centre (ISRIC) Spring School in the Netherlands.



AIC and CSSS-CJSSS Travel Grants

A generous financial contribution from the Agricultural Institute of Canada and the Canadian Journal of Soil Science made it possible to award AIC and CSSS-CJSSS travel grants, each valued at \$600, for CSSS student members to attend the annual meeting. Recipients of these awards were:

Leonardo León	McGill University	Ph.D.	AIC travel award
Jason Lussier	U. British Columbia	M.Sc.	AIC travel award
Siddhartho Paul	U. British Columbia	Ph.D.	AIC travel award
Prem Pokharel	University of Alberta	M.Sc.	CSSS-CJSS award
Anya Reid	U. British Columbia	Ph.D.	CSSS-CJSS award



Winners of the student travel grants from Agricultural Institute of Canada and the Canadian Society of Soil Science-Canadian Journal of Soil Science. From left to right: Leonardo León, Anya Reid, Jason Lussier, Siddhartho Paul, Prem Pokharel, President-Elect Joann Whalen

Student Travel Awards

We were pleased to offer CSSS student travel awards to 12 graduate student members of CSSS to attend the annual meeting. Each recipient of this award received a travel grant of \$600. The winners were:

Zhor Abail	McGill University	Ph.D.
Mayowa Adelekun	University of Manitoba	Ph.D.
Amanda DeBruyn	University of Guelph	M.Sc.
Ahmed Lasisi	University of Manitoba	M.Sc.
Haixiao Li	Université Laval	Ph.D.
Mi Lin	McGill University	Ph.D.
Sirajum Munira	University of Manitoba	Ph.D.
Shayeb Shahariar	University of Saskatchewan	Ph.D.
Khalil Walji	University of British Columbia	M.Sc.
Xiaoyue Wang	University of Saskatchewan	Ph.D.
Carolyn Wilson	Dalhousie University	M.Sc.
Yakun Zhang	McGill University	M.Sc.



Winners of the CSSS student travel grants. Top left to right: Yakun Zhang, Sirajum Munira, Shayeb Shahariar, Carolyn Wilson, Khalil Walji, Ahmed Lasisi, Mayowa Adelekun, President-Elect Joann Whalen. Bottom left to right: President Maja Krzic, Xiaoyue Wang, Haixiao Li, Mi Lin, Zhor Abail, Amanda DeBruyn.

CSSS Student Oral Presentation Awards

A highlight of the annual meetings is the announcement of the winners of the CSSS student presentation competition. The C.F. Bentley Award was initiated in 1983 to encourage and recognize excellence in oral presentations by students at the CSSS annual meetings. The Award honours Dr. Fred Bentley who was CSSS President in 1956-57 and inducted as a CSSS Fellow in 1973. Winners at the 2016 CSSS annual meeting were:



1st Place (\$500):

Adam Gorgolewski

(U. Toronto) for his talk on "Sugar maple downed woody debris is a methane sink"



2nd Place (\$300):

Andrea Hanson

(Laurentian University) for her talk on "Testing soil mixtures for reclamation of diamond mine wastes in a subarctic region"



3rd Place (\$200):

Zhor Abail

(McGill) for her talk on "Does plant litter quality affect nitrogen excretion from earthworms?"

CSSS Student Poster Presentation Awards

The President's Award was established in 1992 to foster excellence in student poster presentations as a means of disseminating research results at the CSSS Annual Meetings. Winners at the 2016 CSSS annual meeting were:



1st Prize (\$500):

Eric Vukicevich

(UBC Okanagan) for his poster titled "Can cover crops be used as a management tool to mitigate decline in perennial agriculture?"



2nd Prize (\$300):

Yakun Zhang

(McGill) for her poster titled "Comparison of sampling designs for calibrating three-dimensional digital soil maps of soil organic matter"



3rd Prize (\$200):

Leonardo León

(McGill) for his poster titled "Tillage intensity boosts the soil nitrogen supply from green manure to arugula"

CSSS Undergraduate Book Award

The CSSS Undergraduate Book Award recognizes undergraduates at Canadian universities who demonstrate excellence in Soil Science. Candidates are nominated by their academic department and receive a copy of [*Soil Sampling and Methods of Analysis*](#) (2nd Edition). The award winners were:

Jason Lion

Jordan Frizzley

Sarah J. Thacker

Landon Sealey

Ashley Ammeter

Kyra Lightburn

Keane Tirona

Cassieanna Krane

Ryan Lalonde

Laura Thériault

Joanne Plourde

Hannah Arseneault

University of British Columbia

University of Northern British Columbia

University of Alberta

University of Saskatchewan

University of Manitoba

University of Guelph

University of Toronto

Laurentian University

McGill University

Université Laval

Université du Québec à Chicoutimi

Dalhousie University

Joann Whalen
President Elect

2016 CSSS-PRSSS JOINT ANNUAL MEETING

2016 CSSS-PRSSS JOINT ANNUAL MEETING MAY 14-19, 2016 Thompson Rivers University, Kamloops, BC

On behalf of the Organizing Committee for the 2016 Joint Annual Meeting for the Canadian Society of Soil Science and the Pacific Regional Society of Soil Science, we would like to thank members of the CSSS for contributing to a very successful conference in Kamloops this spring.

The conference theme "Soil - Our Silent Ally for Food Security and Sustainable Development" and 12 technical sessions focused on functions and services provided by soils that play a tremendous role in the sustainability of human civilization as well as local and global ecosystems. In total, 173 soil scientists and other conference and tour participants (including 73 students) shared 162 oral and poster presentations that addressed ways to increase food, fibre and biofuel production, maximize carbon sequestration and improve water quality while minimizing greenhouse gas emissions, industrial impacts, erosion and nutrient losses.

In addition to the conference participants, we also want to thank the large number of colleagues that have worked very hard to organize and support this conference, including the following.

Other members of the Organizing Committee:

Kent Watson	Chuck Bulmer	Bryanna Thiel	Gerry Neilsen	Scott Smith
Tom Forge	Zineb Bazza	Brian Wallace	Tim Philpott	Shannon Berch

Plenary speakers:

Ray Weil	Mark Liebig
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Banquet speaker: Don Gayton

Special session chairs:

Asim Biswas	Steeve Deschênes	Keith Reid	Brandon Heung	Saeed Dyanatkar
Sean Smukler	Margaret Schmidt	Kim Schneider	Hida Manns	Chuck Bulmer
Noura Ziadi	Scott Chang	Sylvie Quideau	Amanda Diochon	
Rich Farrell	Kirsten Hannam	Laura van Eerd	Mario Tenuta	Brian Wallace
Wendy Gardner	Tom Yates	Tom Forge		

CSSS business office:

Barbara Sanipelli	Steve Sheppard
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Sponsors:

Faculty of Land and Food Systems, University of British Columbia	
Canadian Journal of Soil Science	University of Northern British Columbia
Thompson Rivers University	Western Ag Innovations

We would not have had a successful conference without you, so thank you!

Maja Krzic, Conference Chair
Tom Pypker, Vice-Chair (Local Arrangements)
Margaret Schmidt, Technical Committee Chair

TRIVIA, TILLY HATS, AND CHERNOZEMS: THE 2016 STUDENT REPORT

Back by popular demand, 2016 marked the return of the annual Graduate Student Trivia night at the CSSS AGM and Conference. The event was well-attended and we nearly filled Duffy's Pub in Kamloops with 40+ student members in attendance. A big thank-you is extended to past-PRSSS president, Tim Philpott, for his great hosting skills, as well as sponsorship from both societies for prizes and appetizers.

2016 also saw the return of CSSS promotional merchandise, which was made available through the efforts of the society. The goal of this initiative is to increase the visible of soil science and the Canadian Society of Soil Science on campuses across the country. Keychains, tilly hats, t-shirts and coffee mugs were sold at cost to interested members of both CSSS and PRSSS. We had some eager young members who volunteered to sell merchandise at our table, see photo of Eric below.



Student volunteer Eric Vukicevich, a PhD student from UBCO holding one of the CSSS T-shirts for sale in Kamloops

For those members who did not have the chance to make a purchase, items will also be available at the 2017 AGM. Quantities are limited, so don't delay!

On a final note, I will be completing my final term as CSSS Student Representative on council this year. I very much enjoyed my time on council and strongly recommend that new graduate students apply for the position. Look for calls for nomination in the upcoming months!

*Carolyn Wilson
Graduate Student Representative*

CALL FOR SESSION PROPOSALS FOR THE 2017 CSSS CONFERENCE

For the CSSS Annual Meeting in Peterborough, Ontario on June 10-14, 2017, we are soliciting session proposals. Session proposals should include a title, the names and email addresses of one or more organizers/conveners (with the principal contact name underlined) and a meaningful description (< 250 words) in Microsoft Word. Any special requirements/considerations should be included.

These session proposals should be forwarded to: **Dr. Marney Isaac** (marney.isaac@utoronto.ca, Chair of the Technical Session Committee) with a copy to **Mehdi Sharifi** (mehdisharifi@trentu.ca, Chair of the 2017 CSSS Organizing Committee) by **October 30, 2016**.

The coordinators will contact the session proposers over the following months so that the accepted session proposals will be posted on the conference website in early December 2016. The Abstract deadline is **February 15, 2017**. Comments and suggestions are welcome.

A TRIBUTE TO ROBERT J. SOPER

PROFESSOR EMERITUS
DEPT. OF SOIL SCIENCE, UNIVERSITY OF MANITOBA

Robert J. Soper passed away on July 20, 2016. Bob was a professor in the Dept. of Soil Science at the University of Manitoba from 1958 to 1991. His research career spanned a wide range of topics in soil chemistry, soil fertility and crop production. Of particular note was his outstanding work on nitrogen and phosphorus nutrition in crops.



Bob was one of a team of pioneers to develop and use radioactive phosphorus in crop nutrition studies in the field. This early work showed the benefit of ammonium nitrogen for improving phosphorus uptake in plants and helped establish ammonium phosphate as the best phosphorus fertilizer for the Canadian Prairies. Later, at the University of Manitoba, he elucidated the soil and crop factors that affected the uptake of fertilizer and soil phosphorus responsible for the varying yield response to fertilization by crops commonly grown on the prairies. The information from these studies was and still is used for crop nutrition recommendations.

Bob also became an internationally respected leader in the use of stable isotope-labelled nitrogen to measure nitrogen dynamics in soil and biological nitrogen fixation in legume crops. Bob's contribution to the introduction of soil testing as a means of predicting the need for nitrogen fertilization of crops was extremely important. The test for soil available nitrogen was mainly developed by him and is used for agronomic and environmental purposes in Manitoba and most other regions of the North American Great Plains.

In addition to his work to improve nitrogen and phosphorus nutrition in crops, Bob also led studies on potassium, sulphur and zinc nutrition that are still used to form the basis of fertilizer recommendations for these nutrients.

Beyond his many important research achievements, Bob is also remembered warmly by his colleagues and students for his role as a thought-provoking teacher, mentor and supervisor. He provided students with inspiring ideas on experimental design, treatments, techniques and interpretation of data. In particular, his former graduate students remember him best for the friendly and collegial manner in which he supervised them, his keen mind and professor-student team approach to research.

Bob was recognized for his achievements in several ways. He received [Western Canada's Agronomy Merit Award](#) and the [Queen Elizabeth II Silver Jubilee Medal](#), and was named a [Fellow of the Canadian Soil Science Society](#). Following his retirement, he was named Professor Emeritus at the University of Manitoba.

Bob will be long remembered and valued for his pioneering work on crop nutrition, soil testing and fertilizer recommendations, as well as his warm, bright and collegial relationships with colleagues and students.
http://passages.winnipegfreepress.com/passage-details/id-237330/SOPER_ROBERT

Geza Racz and Don Flaten

ALBERT OLIVER RIDLEY (1932-2016)

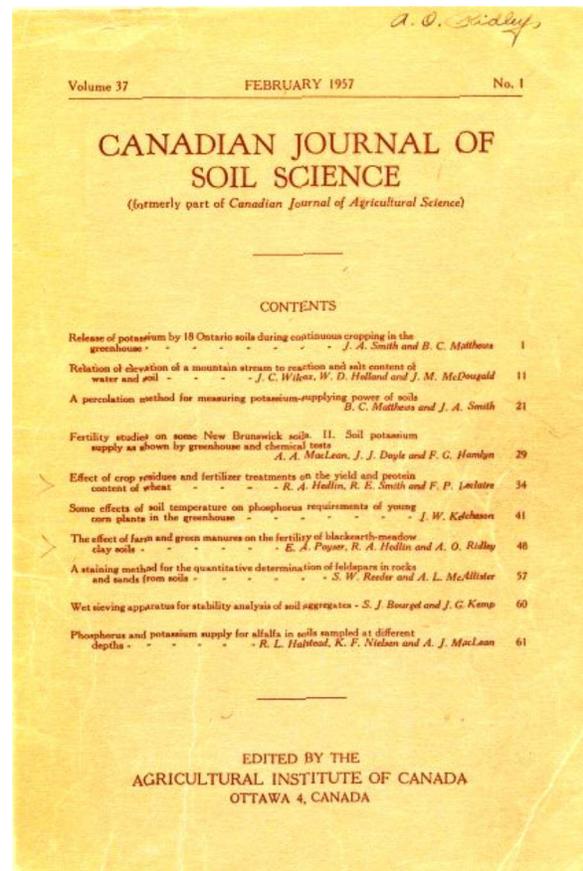
Al Ridley, retired professor in the Dept. of Soil Science, passed away on Sunday, August 14, 2016. Al's academic and professional life was largely invested in the University of Manitoba. He completed his B.Sc. in Agriculture at the U of M in 1954 and his M.Sc. in Soil Science at the U of M in 1958. From 1954 until 1958, while working on his M.Sc., Al also worked as a field technician for the Dept. of Soil Science. Then, from 1958 until his retirement in 1995, he worked as a lecturer and then professor in the department.

Professor Ridley's main focus was teaching and applied research in soil fertility and fertilizer management, along with soil management and conservation. During his lengthy career with the U of M, Al taught hundreds of Aggies, mainly Ag Diploma students, but he also supervised graduate students from Manitoba and around the world. Al also conducted practical field research on the efficiency of different times, forms and methods of fertilizer application; the effects of tillage, green manures, livestock manures, crop rotations and commercial fertilizers on soil fertility and quality; as well as the development of soil productivity rating systems for Manitoba Crop Insurance. In particular, his work on time of application of nitrogen fertilizer for cereal production has been of great importance to Manitoba agriculture.

International agriculture was another dimension of Al's career. He worked on several agronomy projects at the Queensland Wheat Research Institute in Toowoomba, Australia (1988) and for the Canadian International Development Agency at Kenya's National Plant Breeding Station in Njoro (1974-1975 and 1980-1982). Wherever Al worked, his most important contribution was to help farmers manage their nutrients and soil in an efficient and sustainable way. This legacy of his teaching, research and extension accomplishments benefited many farmers and their farms during his lifetime and will continue to do so for many years to come.

Don Flaten

(A note and picture received from Dr. Flaten along with the tribute above is as follows):
"For your information, I have also attached a copy of the cover and table of contents for the first volume of the Canadian Journal of Soil Science, February 1957. This volume also contains Al's first publication. Subscription costs at that time were \$2 per year for any address in Canada, the US, Mexico, Central or South America, or the British Commonwealth!"



NORTH AMERICAN ENVIROTHON, PETERBOROUGH, ONTARIO – JULY 2016

From July 24th to 29th approximately 500 visitors from 52 provinces and states, and a team from China converged at Trent University in Peterborough to compete in the North American Envirothon organized by Forests Ontario. Envirothon is a hands-on environmental challenge where students compete at regional, provincial/state and the North American level in core subject areas: 1) SOILS, 2) forestry, 3) aquatic ecology, 4) wildlife, and 5) annually-changing current environmental issue, which this year was invasive species.

CSSS was a key sponsor of the event and many members contributed to its success. In conjunction with Forests Ontario staff CSSS members developed a new soil science educational resource to help students prepare for this year's competition. The resource has information on current soil issues and includes lesson plans and activities. It is available for anyone to download at <http://www.forestsontario.ca/education/resources/what-lies-beneath-your-feet/>. CSSS also sponsored the soils testing station and several members assisted as workshop trainers, testing leaders and presentation judges.

For only the second time a Canadian team won the competition. Ontario, represented by University of Toronto Schools (UTS) finished in first place, followed by Pennsylvania and California (<http://www.forestsontario.ca/news/toronto-school-top-team-at-2016-north-american-envirothon-championship/>). The team from Missouri scored the highest marks at the Soils station. Many thanks from Forests Ontario to the CSSS for taking such an active role in the 2016 North American Envirothon.

Paul Hazlett



Photos from the 2016 Envirothon, including CSSS representative David Kroetsch receiving a sponsorship award

CANADIAN SOCIETY OF SOIL SCIENCE TREASURERS' REPORT FOR 2015

Submitted by **Kent Watson, Treasurer**, at the Canadian Society of Soil Science Annual General Meeting, May 14 - 19, 2016
Kamloops, British Columbia

Financial Reports for 2015

The CSSS 2015 income expense statement shows the society continues to be healthy financially. The revenue for our Wood Gundy Investment Accounts was down \$9,377 over 2014 (\$16,325) but still generated \$6,592 in revenue. Conference revenues from the 2015 Montreal conference did not come in until the 2016 fiscal year and are \$24,632.96 and will be reflected in the 2016 books. A \$10,000 loan in 2014 to the Montreal organizing committee was paid back in 2016 and will appear on the 2016 books. There was an error in the amount we were paid from the Banff Conference and we had to pay back \$3,710 for the 2014 in 2015 and this is reflected in the 2015 books.

The forecast for 2015 was a loss of \$3,438.00. Our loss was \$4,151.68. However, with the \$24,632.96 for the 2015 conference and the repayment of the \$10,000 start-up loan we generated an approximate revenue of \$30,481.00 for 2015.

However, in 2016 the CSSS council agreed to a one time support of \$10,000.00 for Envirothon. An international student award has also been established and \$4000.00 will be spent in 2016. This award will increase to \$10,000.00 per year in 2017, 2018, 2019 and 2020. This award is offset from income from AIC and CSP Journal income funds. There was a budgeted surplus for 2016 of \$540.00. This is forecast to be approximately a \$20,481.00 income for 2016.

CSSS Operating Funds Income and Expenses

Income for 2015 is generated from three broad sources. Our Wood Gundy Investments generated \$6,592 in Income. Credit Union earnings were \$1,044. Other revenue from membership, royalties, BNY Trust and CNH Capital totaled \$28,054. Total income was \$35,692 down from \$66,273 in 2014. This decrease was for two reasons. There was no conference revenue and the conference start-up loan made in 2014 had not been paid back. The conference revenue generated in 2015 and the loan were paid in 2016 and will be reflected in the 2016 books as noted above.

Operating expenses in 2015 were \$27,966. They were \$38,045 in 2014. The Conference organizing committee did not take a \$10,000 start-up loan in 2015. Student awards totaled \$11,877 in 2015 and \$10,956 in 2014. In 2015 there was a \$921 increase in the Undergraduate Book Award. Total Expenses were \$39,844. Revenue – Expenses resulted in a \$4,151 loss for 2015. The budgeted loss was estimated to be \$3,438.

CSSS Balance Sheet for Trust and Operating Accounts

Equity in the CSSS Trust Fund increased again in 2015. The trust fund increased in value from \$369,881 from December 31, 2014 to \$376,474 by December 31 2015, an increase of \$6,592. A number of accounts became due during 2015 and the proceeds were placed into Mutual Funds. As of December 2015, the Trust fund held approximately 29% (drop of 5%) income investments, approximately 17% (decrease of 1%) of its assets in equity funds and approximately 53% (increase of 5%) in mutual funds. The majority of the Trust Fund is held as a series of different types of bonds with interest rates ranging between 4.16% and 5.53% and staggered maturity dates from September 2011 through December 2020.

The Credit Union Term TLT1 #2 36-month term deposit came due in 2014 and the monies were placed into the Credit Union Savings account. On January 1, 2015 we had \$60,500.00 in savings generating 1% interest. On January 6, 2015 \$40,000.00 of this was placed in a term account at 2.5% interest. This will generate \$1,050 over 21 months. We have \$62,952 in term deposits. The funds in the CSSS term deposits provide a buffer in case of large and unanticipated CSSS expenses. The CSSS remains financially healthy.

(Note that the Wood Gundy Fund is a trust fund and is to be held as such into the future. This fund generates revenue that is used, when need be, to offset the student awards when needed. The principals are not to be cashed in. In other words, the \$6,592 increase this could be used to offset student awards if required. This would be paid back into the trust fund when funds became available in the future).

Budget Proposed for 2017

There are no major changes anticipated for the 2017 financial year (Table 1). The term deposits in the operating accounts will increase interest earnings. Membership revenue is expected to remain at levels similar to 2015. Potential conference revenues from the 2017 meeting are difficult to forecast and has been estimated at \$4000. An advance to whoever is organizing the 2017 conference has been included in the budget as an income and as an expense. If an advance is requested, it would show as an expense and

an income and the proposed budget deficit of \$910.00 would not change.

Membership income was budgeted at \$24,000 in 2014 and 2015. However, over 2013, 2014 and 2015 they have been under that and the budgeted income for 2017 has been set at \$21,000 which just under the 2015 the actual which was \$21,049.

Table 1 also presents the historical actual, approved and proposed budget. Actuals for 2013, 2014 and 2015 are presented along with the approved 2014, 2015, and 2016 budgets.

Tables 2 Is the Balance sheet from Jan 1, 2014 to Dec 31, 2014. Table 3 is the Income statement from Jan 1, 2014 to Dec 31, 2014.

The Books were sent to our auditors Xiying Hao and Edith Olson. Both auditors found the books to be in order. An email request has been sent to see if they would be willing to audit the books in 2017 for 2017.

I would move that the society give Xiying Hao and Edith Olson a vote of thanks for their work in auditing this year's books.

Table 1: Proposed and actual past budgets, approved 2016 budget, and proposed 2017 budget

	2013 Actual	2014 Actual	2015 Actual	Approved 2014 Budget	Approved 2015 Budget	Approved 2016 Budget	Proposed 2017 Budget
Income							
Membership and Publication Fees	\$23,771	\$18,325	\$21,049	24,000.00	24,000.00	20,000.00	21,000.00
Conference Income	\$0	\$22,512	\$0	2,000.00	2,000.00	2,000.00	4,000.00
Income from Trust Received	\$18,678	\$16,325	\$6,593	7,000.00	7,000.00	13,000.00	6,500.00
Other Income	\$81,071	\$0	\$349	300.00	10,000.00	0.00	10,000.00
Charitable Donations	\$711	\$773	\$0	50.00	50.00	500.00	50.00
Interest Earnings on Chequing and Savings Accounts	\$1,872	\$1,916	\$1,045	1,500.00	1,800.00	1,800.00	1,100.00
Royalties	\$1,416	\$1,456	\$2,406	600.00	600.00	800.00	1,500.00
BNY Traust & CNH Wire in Capital C	\$3,319	\$4,963	\$4,251	2,472.00	2,472.00	2,500.00	4,000.00
AIC and CSP Journal							10,000.00
Transfers from Trust and Retained Publications Earnings	\$0	\$0	\$0	0.00	0.00	0.00	0.00
Total Income	\$130,837	\$66,270	\$35,693	\$37,922	\$47,922	40,600.00	58,150.00
Expenses							
Operating Expenses							
Office Contract/Expenses	\$8,949	\$7,862	\$8,097	7,500.00	7,500.00	8,000.00	8,100.00
Newsletter/Proceedings	\$1,630	\$477	\$4,199	2,500.00	2,000.00	1,000.00	2,000.00
AGM / Student Reception	\$0	\$350	\$874	1,000.00	1,000.00	1,000.00	1,000.00
Council Travel	\$1,979	\$8,466	\$4,391	1,000.00	2,500.00	5,000.00	5,000.00
Conference Startup Loan	\$10,000	\$10,000	\$0		10,000.00		10,000.00
AIC Dues	\$1,000	\$1,000	\$1,500	1,000.00	1,000.00	1,000.00	1,500.00
IUSS dues	\$1,886	\$1,371	\$1,391	1,600.00	1,800.00	1,600.00	1,500.00
Other Operating Expenses	\$71,131	\$173	\$2,347	500.00	500.00	500.00	2,000.00
CSSS and Soils of Canada websites	\$4,692	\$676	\$647	3,000.00	3,000.00	1,000.00	1,000.00
Digital Financial Records	\$0	\$0	\$0	0.00	0.00	0.00	0.00
Postage	\$1,673	\$0	\$1,270	2,000.00	1,800.00	1,000.00	1,500.00
Bank Service Charges	\$5	\$12	\$7	30.00	30.00	30.00	30.00
Receiver General	\$30	\$20	\$0	0.00	30.00	30.00	30.00
Total Operating Expenses	\$102,975	\$30,407	\$24,723	\$20,130	31,160.00	20,160.00	33,660.00
Publications Fees Paid (CJSS, CJPS, CJAS, Agri-week)	\$3,334	\$4,442	\$3,245	5,500.00	5,000.00	4,500.00	5,000.00
Expenses Payable by Bentley and Publications Trust							
- Bentley Speaking Award	\$1,000	\$1,200	\$1,000	1,000.00	1,000.00	1,200.00	1,000.00
- President's Poster Award	\$1,000	\$1,000	\$1,200	1,000.00	1,000.00	1,000.00	1,200.00
- Student Travel Award	\$7,200	\$7,200	\$7,200	7,200.00	7,200.00	7,200.00	7,200.00
- CSSS Conference Travel Award		\$0					
- Undergraduate Book Award	\$633	\$556	\$1,478	1,000.00	1,000.00	1,000.00	
- NSERC Women in Soil Science (5000 for 5 Yrs)	\$1,000	\$1,000	\$1,000	1,000.00	1,000.00	1,000.00	1,000.00
- N. American Forest Conference (1000 every 5Yrs)				1,000.00	0.00	0.00	0.00
- Special Trust Fund Projects (CSSS Journal?)	\$0	\$0	\$0	0.00		0.00	
- Member travel to International Conference		\$3,695			4,000.00	4,000.00	0.00
- International Student Travel Award							10,000.00
- Envirothon							
Total Expenses Payable by Trust	10,833.31	14,651.00	11,878.00	12,200.00	15,200.00	15,400.00	20,400.00
Total Expenses	\$117,142	\$49,500	\$39,846	\$37,830	\$51,360	40,060.00	59,060.00
Net Income Over Expenses/(Loss)	\$13,695	\$16,770	-\$4,153	\$92	-\$3,438	540.00	-910.00

Table 2: Balance Sheet Jan 1 to Dec 31, 2015

ASSET		
Current Assets		
CIBC Wood Gundy (Cash)	0.00	
CIBC Wood Gundy Income Inve...	110,589.02	
CIBC Wood Gundy Equities	65,821.70	
CIBC Wood Gundy Mutual Funds	200,063.41	
CIBC Wood Gundy Total Assest		376,474.13
Sunova Credit Union Chequing	5,039.42	
Sunova Credit Union Savings	4,790.52	
Sunova Credit Union Petty Cash	134.03	
Sunova Credit Union Surplus S...	386.11	
Sunova Credit Union Common ...	925.00	
Sunova Credit Union Accounts T...		11,275.08
Credit Union Term TLT1 #2 36 ...	0.00	
Credit Union Term TLT2 #1 84 ...	22,952.59	
Credit Union Term TF21 #3 21 ...	40,000.00	
Sunova Credit Union Term Total		62,952.59
Funds Payable to Operating		0.00
Accounts Receivable	0.00	
Total Receivable		0.00
Total Current Assets		450,701.80
TOTAL ASSET		450,701.80
LIABILITY		
Current Liabilities		
Accounts Payable	0.00	
Suvona CU Uncashed Cheques	0.00	
Funds Payable to Operating	0.00	
Total Current Liabilities		0.00
TOTAL LIABILITY		0.00
EQUITY		
Owners Equity		
Retained Earnings - Previous Year	454,853.48	
Current Earnings	-4,151.68	
Total Owners Equity		450,701.80
TOTAL EQUITY		450,701.80
LIABILITIES AND EQUITY		
		450,701.80

Table 3: Income Statement Jan 1 to Dec 31, 2015

REVENUE		
Change in Assets CIBC Wood Gundy		
CIBC Wood Gundy (Cash)		6,991.55
CIBC Wood Gundy Income Investments		-1,651.65
CIBC Wood Gundy Equities		-928.00
CIBC Wood Gundy Mutual Funds		2,180.95
Total Change Assets CIBC Wood Gundy		6,592.85
Revenue Sunova Credit Union		
Sunova Credit Union Chequing	0.00	
Sunova Credit Union Savings	214.93	
Sunova Credit Union Surplus Shares	53.89	
Sunova Credit Union Commin Shares	0.00	
Sunova Credit Union Accounts Total		268.82
Credit Union Term TLT1 #2 36 mo	0.00	
Credit Union Term TLT2 #1 84 mo	776.17	
Sunova Credit Union Term Deposits		776.17
Total Revenue Sunova Credit Union		1,044.99
Other Revenue		
Membership & Journal - Cheque	120.00	
Membership & Journal - Online	20,928.71	
Active Network Fees	0.00	
Total Membership Revenue		21,048.71
Conference Revenue		0.00
Royalties		2,405.67
Charitable Donations		0.00
Other Income		0.00
CNH Wire In Capital C		501.36
BNY Trust		3,750.00
Lanyon Solution		148.97
Calendar Sales		200.00
Total Other Revenue		28,054.71
TOTAL REVENUE		35,692.55
EXPENSE		
Expenses		
General Travel Expenses	0.00	
Office Contract/Expenses	8,097.60	
T-D Visa A&A	0.00	
Newsletter/Proceedings	4,198.74	
Currency Exchange	6.50	
AGM/Student Reception	873.93	
Conference Fees to Host Orgaination	3,710.00	
Council Travel	680.51	
AIC Dues	1,500.00	
AIC Subscription	3,245.03	
IUSS Dues	1,390.79	
Other Operating Exxpenses	2,346.78	
CSSS and Soils of Canada Websites	646.72	
Digital Financial Records	0.00	
Postage	1,270.11	
Bank Service Charges	0.00	
Receiver General	0.00	
Expenses Total		27,966.71
Publication Fees (CJSS, Agri-week)		0.00
Operating Expenses Total		27,966.71
Payed by Bently & Publication Trust		
Bently Speaking Award	1,000.00	
President's Poster Award	1,200.00	
Student's Travel Award	7,200.00	
CSSS Conference Travel Award	0.00	
Undergraduate Book Award	1,477.52	
Awards Total		10,877.52
NSERC Women in Soils (5000 for 5ry)	1,000.00	
N Am. For Conf. (1000 every 5yrs)	0.00	
Special Trust Fund Projects	0.00	
Total Projects Paid by Trust		1,000.00
Total Expenses		11,877.52
TOTAL EXPENSE		39,844.23
NET INCOME		-4,151.68

GOING TO THE “ROOT” OF THE PROBLEM

Note: this is the first in what will be a regular “From the Field” piece in the CSSS newsletter by member students on their research

If we zoom back in time to 2013, I still have a vivid memory of looking out at the fields in south India where I worked as an Agricultural Food Security Intern with the MS Swaminathan Research Foundation. The soil was beautiful and red, but the fields were dry and the crops were suffering. Although the tribal farmers I worked with had limited access to technology they were very much aware of changes in the climate over the years. I saw first-hand the impacts of drought and heat stress on their crop production. This is how my burning desire to study abiotic stress response and tolerance in plants was born. I decided to go to the “root” of the problem and study... root systems, of course!

My name is Mitalie Makhani and I am currently a PhD Candidate (Renewable Resources) at McGill University in the Department of Natural Resource Sciences. I am co-supervised by Dr. Joann Whalen from McGill University and Dr. Baoluo Ma from Agriculture & Agri-Food Canada, Eastern Cereal and Oilseed Research Centre in Ottawa. The overarching goal of my thesis is to quantify canola root biomass in relation to canola growth and tolerance to climate stress in Québec. Canola is a cool-season crop which belongs to the Brassicaceae family and it is one of the top three most important oilseed crops worldwide. The seeds consist of 10-45% protein while the oil content ranges between 30-50%. It is commonly used as a cooking oil, animal feed and an important feedstock for the Canadian biodiesel industry which is rapidly expanding. Based on climate change predictions canola is expected to experience an increased intensity of abiotic stressors.



Mitalie dyeing canola roots prior to scanning in WinRHIZO image analysis system.

To reduce crop production risks and losses, quantification of root biomass and allocation is critical because the resource capture ability of roots helps to support crop growth and optimum yield. The study of root biomass quantification and belowground dynamics *in situ* usually requires destructive sampling and up to the present time is poorly understood. Conventional methods of quantifying root biomass such as root excavation are often inadequate, time and labour intensive. My research aims to link root growth to crop growth and overall crop tolerance to heat and drought stress by utilizing non-destructive techniques to provide a platform for further strategies that are appropriate for minimizing crop production losses. I am also exploring possible avenues with plant growth promoting rhizobacteria (PGPR) and root interactions for increased stress tolerance and resilience. The results of this ‘radicle’ root research will provide the basis for developing further technologies and agronomic practices to optimize canola production for profitable yields, while reducing risks. More than anything else, I hope this work will allow me and other researchers to help smallholder farmers who have limited access to resources.

Mitalie Makhani, PhD candidate, McGill University

**CANADIAN SOCIETY OF SOIL SCIENCE STUDENT MEMBER
MARCUS PHILLIPS SITS DOWN WITH LONG-TIME CSSS MEMBER
PROF. DARWIN ANDERSON**

Darwin Anderson is a Professor Emeritus at the University of Saskatchewan with a good memory and long experience as a member of the Canadian Society of Soil Science. Earlier this year Marcus Phillips, PhD candidate in the Department of Geography at Carleton University, asked Darwin a few questions about his time in the Society. A paraphrased version of their conversation follows.

Marcus: Of course, it was long before you became a member, but could you tell me about when, by whom, and why the Canadian Society of Soil Science was formed?

Darwin: There was a precursor to the official CSSS called the Soils Group, which was formed within the Canadian Society of Technical Agriculturalists in 1932. Professor J.H. Ellis from the University of Manitoba was its first president. However, it was not until 1955 that the Canadian Society of Soil Science officially developed out of the Soils Group. At its inception, the CSSS was a scientific society within the Agricultural Institute of Canada, along with societies for other agricultural disciplines such as animal science and plant science. The purpose of the Society in its early days was not all that different than it is today. It provided a way for soil scientists to get together and talk about soil and soils at conferences, as well as go on field trips, which were particularly important at that time. Of course, in addition to this a scientific journal was an important part of the Society, and in the early days the journal was called Scientific Agriculture.

Marcus: Would you say that the membership in those days was similar to the present membership of academics and professionals?

Darwin: Similar in many ways, but there is one huge, obvious difference. Today I think that about half of our membership are women; this is a stark contrast to the past. For example, I was looking at a photo taken in 1970 at a meeting of the National Soil Survey Committee, which was closely related to the CSSS. There are about 100 people in the photo, but there is not a single woman among them. Another change is a big increase in the number of students in the Society. In recent years the CSSS has encouraged student participation, I think quite successfully, through the presentation and travel awards.

Marcus: And the sorts of topics that are discussed, would you say that they have changed since the early days?

Darwin: I think the focus has really broadened. When the CSSS was part of the Agricultural Institute of Canada there was more of a focus on agriculture than there is today. I remember very well discussions within the Society about this focus during the 1980s and 1990s. There were many agriculturalists within the CSSS that felt the association between the Society and the Agricultural Institute of Canada was very valuable, but there were others, some agriculturalists included among them, that were quite critical of this association, perhaps feeling that it limited the breadth of the kind of scientists that would become members and attend meetings. The latter argument ultimately developed into the Society that we know today, where science that has to do with soil but is not necessarily agricultural in nature is simply accepted as a part of soil science. Our meetings now include connecting up with scientific societies from other disciplines, including geography, forestry, the Geophysical Union, and many others.

Marcus: What advice do you have for people who are a little bit like me, early career members looking to get the most benefit that they can from their time with the Society?

Darwin: I think that students should consult with their supervisors when they're ready to present results, and try to attend the meetings. While you're at the meetings, don't hesitate to introduce yourself to somebody that you know from the literature. I think that most of us older people are happy to learn that someone is reading our work, so please let us know. It's not just about making the older members feel good though, networking is important, and the sort of personal contact that happens at meetings and on field trips is a really important part of developing your career.

Marcus: Can you think of ways that early career members can help give back and improve the CSSS?

Darwin: Be involved. You probably won't be asked for too much early on, but take any opportunities you see. One of the best things you can do is accept requests to do reviews for the Journal whenever you can; it's a great way to get involved with something scientific.

Marcus: Is there a particular anecdote or experience that illustrates how the Society has helped you in your career?

Darwin: Working with the Canadian Journal of Soil Science has been particularly important for me. After I'd been working as a reviewer for the Journal for some time, the editor, Umesh Gupta, invited me to become an associate editor in about 1980. I told him I wasn't sure that I was able to take on the responsibility, and I remember quite clearly that Umesh said "Darwin, you're the only person in Canada that can do this job." Of course, this was an exaggeration, but it was a persuasive one. I worked as an associate editor, and then went on to be the editor for three years in the late 1980s. It was tough sometimes as I had to reject some papers, but I definitely got to know some of the people writing the articles, and in this way made many contacts that served me well throughout my career.

Marcus: Thanks for taking the time to chat today. Do you have any final comments that you'd like to see in print for everyone to read?

Darwin: I think it's really encouraging to see the CSSS doing as well as it is today. There have been many changes through the years, but for the most part they've been positive. It's particularly encouraging to see the CSSS stepping up to fill gaps that emerge. A good example of this is the Canadian System of Soil Classification. This sort of pedology work was maintained by the Canada Soil Survey Committee and, as part of Agriculture Canada, the Expert Committee on Soil Survey. Those committees don't exist anymore, but the Pedology Subcommittee of the CSSS has really shown some leadership in taking over the role of keeping the Canadian System of Soil Classification up to date. Overall, it's clear that the Society is playing, and will continue to play, an important role in the development of soil science in Canada and elsewhere the world.



Professor Anderson in the Arctic, describing a soil profile (Photo by Maxime Paré)

UPCOMING CONFERENCES

The INI 2016 7th Annual Nitrogen Conference will be held in Melbourne, AU December 4-8, 2016. More information may be found at: <http://csss.ca/wp-content/uploads/INI-2016-Sponsorship-Prospectus.pdf>

ASA-CSSA-SSSA Annual Meeting, November 6-9, 2016, Phoenix, AZ. Conference theme "Resilience Emerging from Scarcity and Abundance" (<https://www.acsmeetings.org/>)

7th International Nitrogen Initiative Conference, December 4-8, 2016, Melbourne, Victoria, Australia (<http://www.ini2016.com/>)

ACES and ESP conference on Ecosystem Services, December 5-9, 2016, Jacksonville, FL. (<http://www.conference.ifas.ufl.edu/aces/index.html>)

Society of Range Management, January 29 – February 2, 2017, St. George, UT. Conference theme "Linking Science, Practice, and Decision Making" (<http://www.rangelands.org/events/>)

Water Environment Federation (WEF) Residuals and Biosolids Conference, April 8-11, 2017, Seattle, WA. Conference theme "The Future of Biosolids and Bioenergy" (<http://www.wef.org/ResidualsBiosolids/>)

European Geosciences Union, General Assembly, April 23-28, 2017, Vienna, Austria (http://egu2017.eu/information/general_information.html)

11th North American Forest Ecology Workshop, Edmonton, AB, June 19-22, 2017, Conference theme "Sustaining forests: from restoration to conservation" (<http://nafew.org/>)

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