



CSBE | SCGAB

CSBE/ SCGAB ANNUAL
REPORT, 2022

Annual Report Content

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**THE ANNUAL GENERAL MEETING OF
The Canadian Society for Bioengineering
La Société Canadienne de Génie Agroalimentaire et de Bioingénierie**

Date: Monday July 25, 2022 at 12:00pm: Atlantic Time

Greetings and attendance sign up

Call to order by CSBE-SGGAB President Ying Chen

Introduce Don Petkau, our Society Manager

Appointment of Chair and Secretary for meeting

Notice of the Meeting (Notice of Meeting requirement is 14 days)

Quorum (Twenty-five members including at least 5 Council members)

Update on 2025 ASABF/CSBE joint meeting (Manick Annamalai)

CSBE Foundation (Don Petkau)

CSBE representatives (Aitazaz Farooque, Tim Veldhuis); for EIC in participation in the United Nations Framework Convention on Climate Change (UNFCCC) (Ying Chen)

AGENDA

Approval of the Agenda

Approval of Minutes of Previous Meeting May 12, 2021 in **Virtual Mode** - online

Approval of 2020 Council Member Annual Reports – online

Approval of Treasurer’s Report – **Page 7**

Old Business

New Business

- Approval of Nominating Committee Report – Page 10 (Ying Chen)
- Introduction of Council Members – **Page 10**
- Approval of 2022-2023 budget – **Page 8**
- Approval of Bylaws – None this year
- Appointment of Auditor (Thornton and Co, Winnipeg) for 2023 Financial Statements (Don Petkau)
- Appoint Franklin Kains and Don Petkau to be the signing authorities until the next Annual meeting (Ying Chen)

Announcements

President passing the Gavel to President Elect (Ying Chen to Jan Adamowski)

Remarks from President-Elect – Ying Chen

Adjournment

Minutes of the Annual General Meeting of Members of

The Canadian Society for Bioengineering

La Société Canadienne de Génie Agroalimentaire et de Bioingénierie

Held May 12, 2021 - Time: 13:30 to 15:00 ET in **Virtual Mode via Zoom Link**

Call to order (President Madramootoo)
40 attendees were connected to the Link

CHAIRMAN AND SECRETARY OF THE MEETING

Upon motion made (Sokhansanj) and duly seconded (Raghavean), it was unanimously resolved to appoint President Madramootoo as chairman of the meeting. **Approved.** It was moved (Feddes) and seconded (Raghavean) that Kelly Lund be appointed secretary of the meeting. **Approved.**

NOTICE OF MEETING

The Notice of Meeting requirement (14 days) was met.

QUORUM (Twenty-five members including at least 5 officers of Council)

The quorum requirements were met.

ADDITIONS TO THE AGENDA

-none

APPROVAL OF AGENDA

Upon motion made (Dunmade) and duly seconded (Goel) the agenda was approved.

APPROVAL OF MINUTES OF PREVIOUS MEETING 2020

Upon motion made (Chen) and duly seconded (Sokhansanj), it was unanimously resolved to accept the minutes as distributed. **Approved.**

CORRESPONDENCE

ASABE is willing to host joint meeting with CSBE in North America, with some discussion of Calgary as a host city. ASABE is still trying to normalize their own meetings and host hotels, so it will likely be 2 or more years (2024 or later) before a joint meeting is feasible.

ANNUAL REPORT

An Annual Report document (compilation of Council members' Annual reports) was available in our member Dropbox, with link provided to members in advance via email. The Annual Report included the Agenda, the 2020 AGM Minutes, the proposed 2022 Budget and Statement of Revenues, Expenditures and Holdings. It was moved (Feddes), duly seconded (Ouellette), and **Carried** that the Annual Report be approved as distributed.

UNFINISHED BUSINESS

-none

NEW BUSINESS

- a) The budget for 2022 was included in the Annual Report and presented by Treasurer, Franklin Kains. Upon motion made (Dunmade) and duly seconded (Prasher), it was unanimously resolved to accept the 2022 budget as distributed. **Approved.**
- b) Appointment of Auditor for 2021 Financial Statements. Upon motion made (Feddes) and duly seconded (Duhaime), it was unanimously resolved to reappoint Thornton & Co. as auditors for the 2021 financial activities. **Approved.**
- c) Upon motion made (Feddes) and duly seconded (Dunmade), it was unanimously resolved that Franklin Kains and Kelly Lund be the signing authorities until the 2022 Annual Meeting. **Approved.**
- d) Past president Madramootoo moved that nominations for new Council positions cease, seconded by Jayas. **Approved.**
 - a. **President-Elect:** Jan Adamowski: Motion by Madramootoo, seconded by Jayas, **Carried.**
 - b. **VP Regional:** Valérie Orsat: Motion by Madramootoo, seconded by Ngadi, **Carried.**
 - c. **VP Membership:** Chella Vellaichamy: Agreed to extend for 1 year.
 - d. **VP Industry:** Eric Ouellette: Motion by Madramootoo, seconded by Raghavean/Dhiman, **Carried.**
 - e. **Regional Director, Atlantic:** Travis Esau: Agreed to extend for 1 year.
 - f. **Regional Director, ON:** Pradeep Goel: Motion by Daggupati, seconded by Morisette, **Carried.**
 - g. **Regional Director, MB:** Nazim Cicek: Motion by Chen, seconded by Feddes, **Carried.**
 - h. **Regional Director, AB:** Israel Dunmade: Motion by Madramootoo, seconded by Orsat/Prasher, **Carried.**
 - i. **Regional Directors for QC, SK:** Nominating committee will look to fill in coming weeks.
 - j. **Webmaster:** René Morisette : Agreed to extend for 1 year.
 - k. **Journal Editor:** Sri Ranjan: Agreed to extend for 1 year.
 - l. **Social Media Manager:** Prasad Daggupati: Agreed to extend for 1 year.
 - m. **EIC Rep:** Chandra Madramootoo: Agreed to extend to 2023.
 - n. **CIGR Reg:** Stéphane Godbout : Agreed to extend to 2023.
 - o. **Awards Committee Chair:** Anthony Lau: Motion by Madramootoo, seconded by Jayas, **Carried.**
- e) There were no Bylaw changes so 2020 Bylaws are now 2021 Bylaws.

ANNOUNCEMENTS

- **2021 AGM-CIGR Conference** - Godbout and Morisette gave updated numbers on expected attendance for May 10-14 AGM-Conference hosted virtually from Quebec City.
- **CSBE/SCGAB FOUNDATION** - John Feddes reminded the membership to consider donating to the Foundation. This year the Foundation supported 4 Foundation Undergraduate Scholarships (\$1200) and 2 ¼ Scale tractor teams (Laval, McGill) \$1000. **Expenses exceeded Donations.**
- **AWARDS** – As listed in Annual Report, read by John Feddes.
- **Society Name Change Justification** – Danny Mann explained committee findings justifying name change, followed by some general discussion from members.
- **Webinar Series** – Regional Director Duhaime explained background on development of a webinar series focusing on student presentations; and indicated webinars would continue for near future.
- **Closing Remarks** - President Chen made closing remarks to the AGM attendees.

ADJOURNMENT

President Chen thanked all participants at the AGM, called for adjournment at 3:00 pm. **MSC** that the meeting be adjourned.

Minutes recorded by:

Kelly Lund

Society Manager, Date of approval: _____

ATTACHMENTS:

- a) 2021 CSBE-SCGAB Annual Report**
- b) List of 2021-2022 Council Members**

Treasurer's Report for the 2022 AGM

Franklin Kains, CSBE Treasurer

The following is the treasurer's report for fiscal 2021 and is based on the year-end audit as compiled by Thornton and Co.

Expenditures, Revenues and Budgets

The expenditures, revenues and budgets are shown in Table 1 for this and the previous year. The shaded column in Table 1 are the actuals for 2021. There was an excess of revenue over expenses of \$15,317 for the year. This compares to a deficiency of \$2,970 for the previous year. The main revenue source that allowed this excess was the Unrealized Capital Gain of \$20,899 due to a particularly good year for the investments. Without this, there would have been a deficit of \$5,582. Of note, was a decrease of \$3,071 in revenue from memberships for 2021. This compared to an increase in membership of \$1,554 in the previous year.

Projected Budgets

At our July 2021 AGM, we budgeted for an excess of \$650 of revenue over expenses for the year. This was a low and very conservative estimate given that in-person conferences with the CIGR have generated a significant excess of revenue for CSBE. However, with the continuation of Covid through 2021, the conference which was delayed by a year, had to be run virtually. Despite it not being in-person, the AGM did show an excess of revenue over expenses of \$7,365.

Net Assets

Table 2 shows the Assets and Liabilities for CSBE for the past 2 years as taken from the auditor's report. At the end of 2021, net assets stood at \$241,267 which includes the BMO operating account, the Nesbitt Burns long term investment account, accounts receivable and prepaid expenses. This is an increase of \$3,184 over the year previous or about 1%. Going back to 2013 when the net assets stood at \$139,885, there has been rise of 72%.

Bank and Investment Accounts

Table 3 shows a breakdown of the cash and investment assets at year's end compared to the previous 3 years.

Through the year, the long-term investments rose mirroring a recovery in the stock market. A large amount of cash had been held in the investment account in anticipation of needing it for the CIGR/AGM meeting. After July virtual meeting, \$30,000 was moved from cash to equity investments within the BMO investment account.

Summary

It would appear that financially CSBE has sufficient cash inflow and savings to prudently carry on for near term. Investment gains were significant this year and cannot be expected every year. A reduction in membership revenue is of some concern going forward.

Table 1: Statement of Revenue, Expenses and Budgets for 2021

	2020 Budget	2020 Actuals	2021 Budget	2021 Actuals	2022 Budget	2023 Budget
REVENUE						
Membership fees	\$22,000	\$19,949	\$18,000	\$16,878	\$19,000	\$19,000
Annual Gen Meeting (AGM)	\$70,000	–	\$70,000	\$24,681	\$45,000	\$45,000
Canadian Bio Systems Journal	\$8,000	\$4,904	\$8,000	\$0	\$8,000	\$8,000
Advertising	500	–	500	0	500	500
Expense recoveries (rebates)	\$0	\$2,500	\$0	\$3,564	\$0	\$0
Investment income	\$3,500	\$2,965	\$3,500	\$147	\$3,500	\$3,500
Unrealized capital gains	4000	220	4000	20899	4000	4000
Total Revenue	\$108,000	\$30,538	\$104,000	\$66,169	\$80,000	\$80,000

EXPENDITURES						
Annual General Meeting (AGM)	\$50,000	\$4,083	\$50,000	\$17,316	\$40,000	\$40,000
President's travel to ASABE	\$3,500	\$541	\$3,500	\$677	\$3,500	\$3,500
CDN Bio systems Journal	\$2,000	\$710	\$2,000	\$0	\$2,000	\$2,000
Journal reviewer's incentives	\$2,500	\$271	\$2,500	\$0	\$1,500	\$1,500
Journal Translation	\$600	\$0	\$600	\$0	\$600	\$600
CIGR Dues	\$1,100	\$1,089	\$1,100	\$1,056	\$1,100	\$1,100
EIC dues, directors insurance	\$2,200	\$1,456	\$2,200	\$1,436	\$2,200	\$2,200
EIC project	-	\$0	-	\$750	\$750	\$0
General and student awards	\$5,500	\$6,682	\$5,500	\$5,578	\$5,500	\$5,500
Grad student dues	-	\$924	-	\$1,724	\$1,500	\$1,500
Insurance	-	\$860	-	\$812	\$812	\$812
Interest, bank /credit charges	\$250	\$271	\$400	\$270	\$400	\$400
CSBE manager honorarium	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
CSBE manager office	\$3,750	\$875	\$3,750	\$1,337	\$3,750	\$3,750
Professional audit, CRA filing	\$2,000	\$1,680	\$2,000	\$1,680	\$2,000	\$2,000
Reg'l membership recruitment	\$7,000	\$688	\$7,000	\$241	\$7,000	\$7,000
Travel to AGM	\$5,000	\$0	\$5,000	\$0	\$5,000	\$5,000
Contributions and donations	\$1,000	\$1,102	\$1,000	\$3,971	\$1,000	\$1,000
Manager/president travel	\$2,500	\$0	\$4,000	\$0	\$4,000	\$4,000
Web site	\$800	\$276	\$800	\$754	\$800	\$800
Webmaster honorarium	\$0	\$0		\$1,250	\$1,250	\$1,250
Total Expenditures	\$101,700	\$33,508	\$103,350	\$50,852	\$96,662	\$95,912

REVENUES OVER (UNDER) EXPENSES	\$6,300	(\$2,970)	\$650	\$15,317	(\$16,662)	(\$15,912)
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Table 2: Statement of Financial Position from Thornton & Co., 2021 Audit

	2021	2020
ASSETS		
CURRENT		
Cash	\$ 39,414	\$ 67,493
Accounts receivable	9,566	11,103
Prepaid expenses	878	52,532
	<u>49,858</u>	131,128
LONG TERM INVESTMENTS (Note 8)	<u>191,613</u>	106,955
	<u>\$ 241,471</u>	<u>\$ 238,083</u>
LIABILITIES AND NET ASSETS		
CURRENT		
Accounts payable	\$ 2,679	\$ 1,680
Deferred income	4,395	17,323
	<u>7,074</u>	19,003
NET ASSETS	<u>234,397</u>	219,080
	<u>\$ 241,471</u>	<u>\$ 238,083</u>

Table 3: Bank and Investment Accounts as of Year End

	2021	2020	2019	2018
Investments at Nesbitt Burns				
Cash/short term	\$1,555	\$35,167	\$62,203	\$77,629
Fixed income	\$28,052	\$16,831	\$11,090	\$16,340
Equities	\$163,561	\$90,124	\$95,645	\$78,081
Total of investments	\$193,168	\$142,122	\$168,938	\$172,050
Cash at BMO	\$37,859	\$32,326	\$32,326	\$39,645
Total bank/investment accounts	\$231,027	\$177,706	\$191,571	\$211,659

2022-2023 Council – Nominating Committee Report

Position	Name	Term length	Term start	Term End
President-Elect	Valérie Orsat	1	2022	2023
President	Jan Adamowski	1	2022	2023
Past President	Ying Chen	1	2022	2023
Past-Past President	Chandra Madramootoo	1	2022	2023
VP Technical	Manickavasagan Annamalai	2	2021	2023
VP Regional	Travis Esau	2	2021	2023
VP Membership	Chelladurai Vellaichamy	2	2020	2024
VP Industry	Eric Ouellette	2	2019	2024
Regional Director Atlantic	Aitazaz Farooque	2	2022	2024
Regional Director QC	Sébastien Fournel	2	2021	2023
Regional Director ON	Pradeep Goel	2	2021	2023
Regional Director MB	Fuji Juan	2	2022	2024
Regional Director SK	Venkatesh Meda	2	2021	2023
Regional Director AB	Chandra Singh	2	2022	2024
Regional Director BC	Keith Duhaime	2	2020	2024

Appointed Council Members or Representatives

Secretary Manager	Don Petkau	5	2022	2027
Treasurer	Franklin Kains	3	2017	2023
Web Master	Rene Morissette	3	2008	2023
Managing Editor	Ramanathan Sri Ranjan	3	2012	2023
Journal Editor	Manokararajah Krishnapillai			
Social Media Manager	Prasad Daggupati		2020	2023
EIC Rep	Chandra Madramootoo	1	2021	2023
CIGR Rep	Stephane Godbout	3	2017	2023

Fellows committee

Chair	Ramesh Rudra	2	2020	2024
Vice Chair	Yves Choinière	2	2020	2024
Member	Suzelle Barrington	2	2020	2024
Member	Qiang Zhang	2	2020	2024
Member	Rick Atkins	2	2020	2024

Awards committee

Chair	Anthony Lau	2	2021	2023
Past Chair		2	2017	2022
Member	Erin Cortus	2	2020	2024
Member	Michael Ngadi	2	2020	2024
Member	Qamar Zaman	2	2019	2024
Member	Nazim Cicek	2	2020	2024
Past-President	Ying Chen	1	2022	2023

Nominating committee

Chair	Ying Chen	1	2022	2023
Past Past President	Chandra Madramootoo	1	2022	2023
President-Elect	Valerie Orsat	1	2022	2023
Member-at-large	Pradeep Goel	2	2019	2024
Member-at-large	Prasad Daggupati	2	2019	2024

COUNCIL MEMBER REPORTS

Ying Chen - President

Met with UofM students' groups to recruit student members for CSBE.

Attended CSBE Student Network event within the 2021 ASABE AIM.

Met the CSBE Journal Editor in an effort of reforming the journal, Canadian Biosystems Engineering, including identifying current problems, reorganizing the editorial team, and making the journal more visible.

Established a Meeting Committee under the Society Council to identify the location of CSBE annual conference and to assist ASABE/CSBE joint meetings.

Met with the Meeting Committee Chair to discuss the potential location for 2025 ASABE/CSBE joint meeting.

Spoke to Northeast Agricultural and Biological Engineering Conference (NEBEC) to promote CSBE.

Assisted the Local Organization Committee of 2022 CSBE Technical conference in Charlottetown.

Assisted the process of CSBE name change.

Called for a CSBE representative as liaison with Engineering Institute of Canada (EIC) in the United Nations Framework Convention on Climate Change (UNFCCC) and Conference of Parties (COPs).

Attended ASABE Board of Trustees meetings.

Manickavasagan Annamalai – Vice President Technical

I communicated with Dr. Chandra Singh, Senior Research Chair, Lethbridge College

for the feasibility of hosting the CSBE-2023 Annual meeting at Lethbridge, AB. Dr. Chandra was invited to make a presentation to the CSBE council. The council unanimously approved the proposal to have the CSBE-2023 Annual meeting at the Lethbridge. I will co-ordinate with the Alberta Regional Director to execute the 2023 conference successfully.

I attended the ASABE council meetings (on-line) on behalf of the CSBE and assisted them for 2025 CSBE/ASABE joint conference venue selection process. ASABE representative visited Calgary, Halifax, Montreal, Ottawa, Toronto, and Winnipeg and prepared the site comparison data sheet. This information will be discussed at the forthcoming ASABE-2022 annual meeting and the venue will be finalized. I could not attend the ASABE-2022 annual meeting due to other commitments.

After assuming this position, I am attending the CSBE Annual meeting for the first time at the Prince Edward Island. I am excited to meet all CSBE members in person, learn the current requirements and work for the society.

René Morissette – Webmaster

Chelladurai Vellaichamy – Vice-President (Membership)

Totally we are having 808 members currently. Our membership count increased about 40% when compared with last three years. There was a significant increase in international members count in this year, and there is a huge increase in membership from Nigeria, Sri Lanka, Philippines and India when compared with last year. Totally we have 406 members from Canada, 64 from USA and 348 international members. Statistics of CSBE members at various provinces is shown in figure 1.

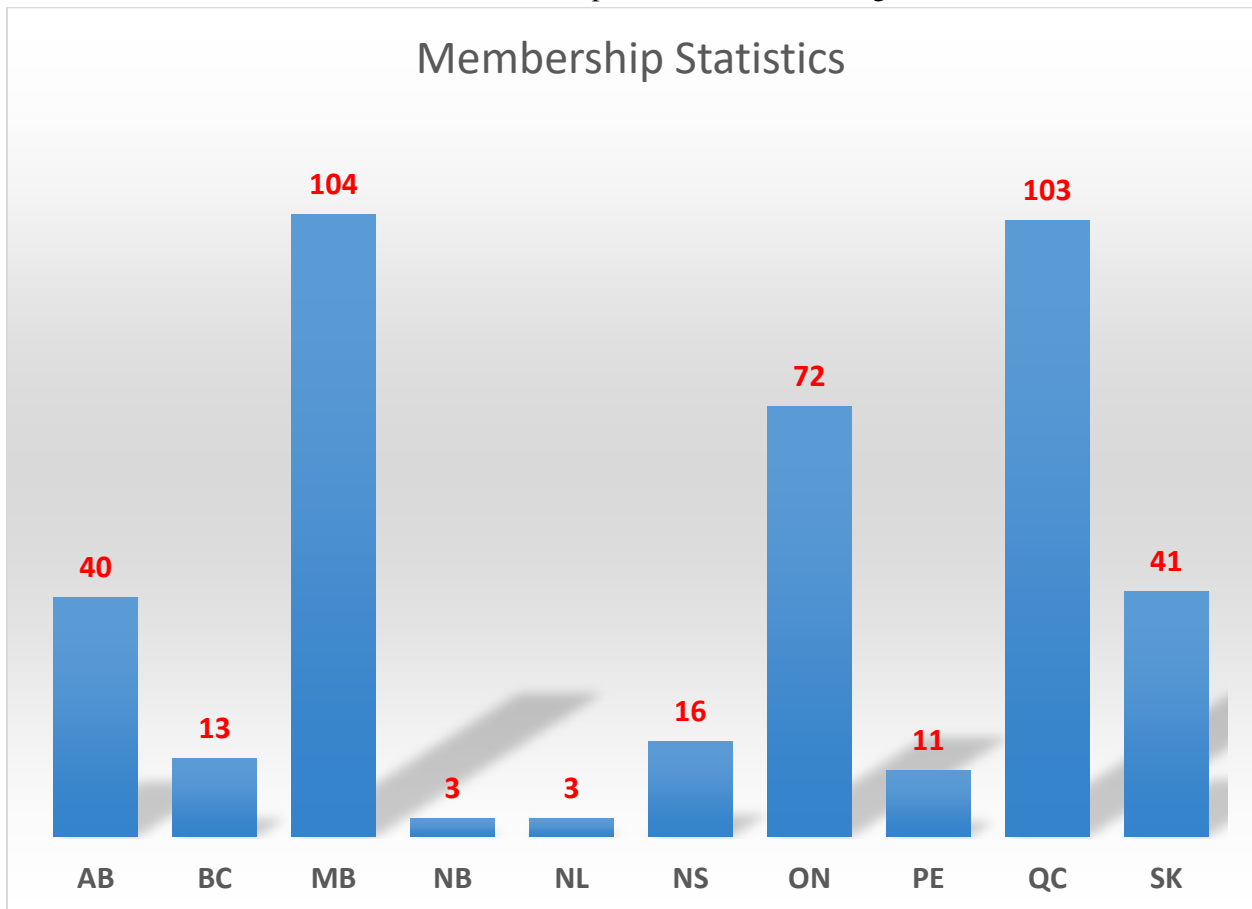


Figure 1. Membership count by Province

Even though the membership count increased this year in general, but the membership count from Canada is still lower than the 2019 (pre-Covid period). Free membership scheme for the students is the major reason for increase in membership count from Asia and African countries. There are 442 student members in which 325 student members from outside of Canada. Currently we are having only 200 professional members, which was 283 in 2020. Regional directors and the society are planning to organize events in all the provinces in order network with potential members and students to increase the membership count.

Anthony Lau - Awards Committee

Committee members: Anthony Lau (Chair)
Valérie Orsat (Past-Chair)
Nazim Cicek
Erin Cortus
Michael Ngadi
Qamar Zaman
Chandra Madramootoo (Past-President)

The Awards Committee members received the nominations and cast their votes for the following 2022 CSBE/SCGAB Awards: Young Engineer of the Year Award - 2 nominees; Winner: Travis Esau John Clark Award - 1 nominee; Winner: Satyd Dev Maple Leaf Award - 2 nominees (one carry-forward from last year); Winner: Danny Mann Jim Beamish Award - 2 nominees; Winner: Asim Biswas There were no nominations (and no carry-forward from the past two years) for the following: Glenn Downing Award, John Turnbull Award, John Ogilvie Award, Industrial Award

Chandra Madramootoo - Report of the CSBE representative to the Engineering Institute of Canada (EIC) Council

The Council met on September 19, 2021 and May 01, 2022. EIC continues to be financially in a strong position, through the work of its investments committee. The Honours and Awards Committee recognizes outstanding engineers each year; CSBE Member Michael Ngadi was the recipient of the K.Y. Lo medal this year for significant engineering contributions at the international level.

The Strategic Conferences Planning Committee is working on a White Paper describing proposed collaboration on the theme of Sustainable Development in the North. CSBE member Suzelle Barrington is leading an effort on interviews for the EIC Oral History Project. Some CSBE members who know the history of the Society and the profession at the time of the Society's formation have been identified for interviews.

UN Framework Convention on Climate Change:

EIC Executive Director Guy Gosselin reminded Council that the EIC has held observer status at the United Nations Framework Convention on Climate Change (UNFCCC) since 2005 (COP11 in Montreal). In November 2021, Darrel Danyluk of the CSCE led an EIC-sanctioned delegation of four graduate students to the UNFCCC's COP26 in Glasgow with the financial support of the University of Calgary.

Darrel informed Council that he has applied to represent the EIC at the UNFCCC inter sessional (SB 56) conference in Bonn (Germany). An SB 56 side event on Implementing Equitable, Sustainable and Climate Resilient Infrastructure & Local Adaptive Capacity is also being organised under the leadership of the World Federation of Engineering Organizations (WFEO) to which the EIC would be a second applicant.

Council members agreed that participation in these UNFCCC sanctioned events is relevant to their society's aspirations (protect permafrost regions, food production, mitigate against floods and droughts, etc.), and represent a good developmental opportunity for their student members. An opportunity exists for

the EIC societies to collaborate on this, and it was agreed that an EIC Special Interest Group be struck to help strategize how best to participate in future events.

An email was sent to the CSBE membership inviting nominations to serve on this committee. Prof. Aitazaz Farooque, UPEI and Tim Veldhuis, student member at University of Manitoba volunteered to serve on the EIC Special Interest Group.

Respectfully submitted,

Chandra A. Madramootoo

Pradeep Goel – Regional Director Ontario

My sincere apologies for not being able to attend the meeting personally.

I am sorry to begin this report on a sad note. We recently lost Dr. W. Trevor Dickinson, Professor Emeritus, School of Engineering, University of Guelph. Trevor passed away peacefully on July 9, 2022, after his battle with Cancer. He was a long-time member of the society. Trevor was a passionate professional, an exceptional mentor, and teacher. During his career he won numerous awards and citations. He will be remembered for dedication, kindness, friendly nature, and for his exceptional contributions in the field of hydrology, soil erosion and water resources. He will be missed immensely.

The Covid-19 pandemic continue to pose serious challenges to our professional and personal life. However, I am happy to share that group members were able to full their commitments and have achieved excellence in their field. A number of new research and developments projects have been started during this year.

Finally, students were able to continue in-person classes. I happy to share that many undergraduate and graduate students have joined the society. I am sure, the new members will benefit from the participation and networking opportunity that society provides.

Unfortunately, due to Covid-19 restrictions, we were not able to organize any in-person event this year. However, priority for the coming year is to organize some in-person events focused on building our professional community. We will also explore opportunity to increase our membership, promote society programs, and engage with members virtually.

Thanks again for the continued help and support!

Regards,

Pradeep Goel

Sebastien Fournel – Regional Director Quebec

The year 2021-2022 was again disrupted by COVID-19, making organization of in-person meetings difficult. However, I participated in a professional gathering organized by the student association of

Université Laval where I presented the society and invited students to register. I hope to do attend this event on a yearly basis. I have also started this year to form a regional committee to assist me in organizing activities and feed me for the newsletter. I also sent multiple emails to past members, inviting them to renew their membership.

Regards,

Sébastien

Travis Esau – Regional Director Atlantic

I began my role as regional director following the CSBE AGM in July 2019. Within this role I have been excited to help build the societies membership especially with new undergraduate and graduate student members. Although Covid had several setbacks in terms of in person meetings and arrangements we did see an increase in student members during the 2022 year. As regional director, I organized an in-person Networking Pizza Party on Tuesday November 30th, 2021. This event helped to introduce the CSBE to the students. Discussions included highlighting the societies mission, potential career opportunities and other activities such as the newsletter, student awards, technical meetings, and society journals. The event also featured 7 presentations from MSc and PhD graduate students who are active with CSBE. Research topics focused on precision agriculture, variable rate technology, machine development and artificial intelligence for crop detection and monitoring. The event helped to spark keen interest in the society and build excitement for this year's AGM taking place in Charlottetown – Prince Edward Island. A great time was had by all participants. I am looking forward to our first in person CSBE conference since 2019 being held in Charlottetown later this month. As co-chair of the LAC for the conference, we have helped to raise over 40K in sponsorship dollars from industry, government, and academia to help make this year's conference a great success.



2022 CSBE/SCGAB STUDENT AWARDS

ASABE 1/4 Scale Tractor Student Design Competition - \$500

Design and construction of a four-wheel-drive tractor taking into consideration the rules specified by the American Society of Agricultural and Biological Engineers (ASABE).

Université Laval, Équipe ULtrac – V. Lacasse, A. Trottier, M. Deschenes, A. Lamarche, L. Lampron, R. Leclerc, A. Pellerin, S. Mathieu, A. Caux, A. Gauthier-Pépin

McGill University, Mutrac – J. Lan, S. McGuire, S. Cole, J. Sieniewicz, C. Laboisie, N. Pratte, L. Parnell, I. Tovar, M. Ma, S. Guité, L. Diaz-Pappas, M. Randall, S. Huo, I. Vignuzzi

CSBE/SCGAB FOUNDATION Undergraduate Scholarship - \$300

Recognizes academic excellence among student members of the Society. The Scholarship is awarded each year to the student member of the Society with the highest GPA in the preceding semester.

Université Laval – *N. Grégoire*

University of Manitoba – *R. Birch*

McGill University – *F. Marcil-Gendreau*

University of Prince Edward Island – *P. Tweel*

Graduate Thesis Award (PhD) - \$200

University of Guelph – *S. M. Ramalingam* for a thesis “Development and Evaluation of Nano-biosensors for the detection of contaminants in food” (Advisor: A. Singh)

University of Guelph – *R. Zeitoun* for a thesis “Development of an Electrochemical Sensor for Quantification of Soil Phosphorus” (Advisor: A. Biswas)

Université Laval – *M.A. Karim* for a thesis “Étude comparative de la production de lactulose par la technologie d'électro-activation par rapport à un procédé d'isomérisation chimique utilisant du lactose, du lactosérum et du perméat de lactosérum comme matières premières et valorisation des matériaux électro-activés pour produire des métabolites précieux à l'aide d'une culture de kéfir et de *Kluyveromyces marxianus* / Comparative study of lactulose production through electro-activation technology versus a chemical isomerization process using lactose, whey and whey permeate as feedstocks and valorization of the electro-activated materials to produce valuable metabolites using a kefir culture and *Kluyveromyces marxianus*” ” (Advisors: M. Aider and R. Hammami)

Université Laval – C.S. Miyashiro for a thesis “Développement de catalyseurs hétérogènes pour la photodégradation du néonicotinoïde acétamipride dans l’eau / Development of heterogeneous catalysts for the photodegradation of the neonicotinoid acetamiprid in water” (Advisor: S. Hamoudi)

Université Laval – N. Lefebvre for a thesis “Conception, fabrication et mise à l’épreuve d’une presse commerciale d’extraction du jus de la biomasse du sorgho sucré et du millet perlé sucré / Design, manufacturing, and testing of a commercial press for the extraction of juice from sweet sorghum and sweet pearl millet biomass” (Advisor: M. Khelifi)

University of Manitoba – X. Yan for a thesis entitled “A study of slatted concrete floors in sow barns and modelling of sow gait” (Advisor: Q. Zhang)

McGill University, Department of Bioresource Engineering – J. Halbe for a thesis entitled “Development of a Sustainable Systems Engineering Framework for the Design and Assessment of Sustainability Visions” (Advisors: J. Adamowski and A. Grunwald)

McGill University, Department of Bioresource Engineering – D. Troiano for a thesis entitled “Biotransformation of biomass waste residues into value-added chemicals using filamentous fungi” (Advisors: V. Orsat and M.J. Dumont)

University of Saskatchewan – M.M.H. Foroushani – for a thesis entitled “Investigation of Lentil Seed Behavior under Microwave and Microwave-Infrared Thermal Treatments and their Impact on Modifying the Physico-Chemical and Functional Properties” (Advisor: V. Meda)

Graduate Thesis Award (MSc) - \$200

Dalhousie University, Faculty of Agriculture – M. Saad for a thesis entitled “Development and evaluation of a radar system for ground surface detection in wild blueberry fields” (Advisor: T. Esau)

Université Laval – M. Allagui for a thesis “Contribution au développement d'un procédé pour la neutralisation du lactosérum électro-activé in situ du réacteur par un mode électrolytique/ Contribution to the development of a process for the neutralization of electro-activated whey in situ the reactor by an electrolytic mode” (Advisor: M. Aider).

McGill University, Department of Bioresource Engineering – S. Greenough for a thesis entitled “The suitability of biochar from non-lignocellulosic feedstocks as potential bio-based reinforcing fillers in rubber composites” (Advisors: M.J. Dumont and S. Prasher)

University of Manitoba – C. Sivakumar for a thesis entitled “Non-destructive characterization of pulse flours from different milling methods” (Advisor: J. Paliwal)

University of Prince Edward Island – H. Khan - for a thesis entitled “Development of management zones for site-specific fertilization in potato fields” (Advisors: B. Acharya)

University of Saskatchewan – J. R. Walter – for a thesis entitled “A CFD-DEM Study of the Aerodynamic Characteristics of Non-Spherical Biological Particles” (Advisors: L. Tabil and D. Sumner)

Undergraduate Awards - \$100

Dalhousie University, Faculty of Agriculture - Undergraduate Design Project – S. Hauser; J. MacKenzie; B. Allain; K. George for a project « Development of an automated blueberry bin dumping system ». (Advisor: T. Esau)

University of Guelph - Undergraduate Design Project – D. Dales; Elena Lee; M. Smith for a project « Process Design to Transform Ovine Hide into Aquafeed ».

University of Guelph - Undergraduate Design Project – H. Lavoie; M. Nenadovich; E. Guiang; H. Liu for a project « Separation and Fermentation of Lactose for the Valorization of Cheese Whey ».

Université Laval - Undergraduate Design Project – M. Deschênes; V. Lacasse; L. Lampron for a project « Conception d'un épandeur à fumier amovible pour une petite remorque de ferme / Design of a detachable manure spreader for a small farm trailer ». (Advisor: M. Khelifi)

University of Manitoba - Undergraduate Design Project – A. Bhatt; M. Carriere; S. Leung; W. Scofield for a project « Mill scale improvement project ». (Advisor: D.Petkau)

McGill University, Department of Bioresource Engineering - Undergraduate Design Project – A. Crèche; J. Harms for a project « Bioponics Bioreactor Modeling and Control-Optimization ». (Advisors: C. Madramootoo, M. Lefsrud, S. Sun)

University of Prince Edward Island - Undergraduate Design Project – E.O. Hutchinson; H.B. Driouech; M. Opong-Ampomah; Z. Fatimafor a project « Generating Hydropower from Wastewater Outflows »

University of Manitoba – Undergrad Thesis - W. Scofield for a thesis entitled “Design, use and efficacy of an inexpensive, user-serviceable automated bench-scale bioreactor sampling apparatus” (Advisor: D. Levin)

McGill University, Department of Bioresource Engineering – Undergrad Thesis – P. Cleyet; A. Bouvier; A. Trancart; W. Tadros for a thesis entitled “Drop of Power: Rainwater as a power source for a micro hydroelectric system” (Advisor: C. Madramootoo)

University of Prince Edward Island - Undergraduate Thesis – K. MacLeod for a thesis entitled “Development of vegetation indices using machine learning and drone technology” (Advisor: A. Farooque)

2022 CSBE/SCGAB AWARDS and FELLOW

CSBE/SCGAB FELLOW

The designation of Fellow has honorary status to which members of distinction may be elected, but for which they may not apply. A Fellow shall be a member of outstanding and extraordinary qualifications and experience in the field of agricultural, food or biological engineering. A Fellow shall have been a member of the Society for ten years and have twenty years of active practice in the profession.



Dr. Jitendra Paliwal graduated with a bachelor's degree in Agricultural Engineering from G.B. Pant University (India) in 1994, an M.Sc. (1997) and a Ph.D. (2002 in Biosystems Engineering from the University of Manitoba (UM). He is now a Professor of Biosystems Engineering in the Price Faculty of Engineering and holds two Associate Dean portfolios (Graduate Programs and Academic) in the Faculty of Agricultural & Food Sciences (FAFS), UM. In addition, he is FAFS' Equity, Diversity, and Inclusion (EDI) Lead and currently serving on UM's President's EDI Task Force.

Jitendra initiated the development of an Imaging and Spectroscopy Laboratory in the Department of Biosystems Engineering in 2002. The laboratory uses non-destructive optical techniques to assess grain quality post-harvest. Jitendra's research group has developed hardware and software solutions which are widely used by the designers of grain quality monitoring and assessment systems. His research team develops techniques to modernize and automate post-harvest handling and storage of grains, oilseeds, and pulses. These include low-cost NIR analyzers, integrated Raman-NIR instruments, grain bin monitoring systems, and techniques to detect precursors to spoilage by non-invasive electromagnetic imaging. One of his ideas to adapt a cancer imaging modality into a non-invasive grain monitoring system (called GrainViz) has been a major commercial success for Manitoba's engineering community. His engineering achievements have been documented in more than 112 peer-reviewed technical papers published in many international scientific journals. In addition, he has contributed chapters in six different books and presented his research results at conferences worldwide.

His research work has been funded through federal and provincial grants along with private corporations' research contracts exceeding ten million dollars. An important aspect of his work has been to train the next generation of highly qualified engineers. Jitendra has contributed to the successful completion of 101 student theses (Bachelor's, Master's & Ph. D). He has also supervised the work of 17 post-doctoral fellows and 3 research associates.

Jitendra is a researcher of international fame and holds an Honourary Visiting Professor appointment at the South China University of Technology (SCUT), Guangzhou since the year 2016. In addition, he has developed collaborative research exchange programs with Universities in the USA (Purdue, Southern Illinois), Egypt (Mansoura), Nigeria (Port Harcourt), Ireland (University College Dublin), Iran (Sharif, Teheran), China (Nanjing, SCUT, Zhongkai) and India (Central Scientific Instruments Organization). Jitendra, in collaboration with the University of California (Los Angeles) and the University of Tokyo (Japan), is a lead member of the International Society for Biological Shape Analysis; an international consortium consisting of scientists, physicians, dentists, and engineers.

Jitendra is a member of the Canadian Society for Bioengineering (CSBE), the American Society of Agricultural and Biological Engineers, and the Canadian Agricultural Safety Association. He was an Associate Editor of CSBE's journal Canadian Biosystems Engineering. He was the 100th President of Engineers Geoscientists Manitoba, the provincial regulator for the professions of engineering and geoscience in Manitoba. In addition, he served as an expert advisor to review Bill 48 and Bill 49 of the Manitoba Government from April-May, 2020. He is also a member of an expert panel of food scientists of Indian origin named VAIBHAV, to advise the Government of India on long-term strategies for food sustainability.

Jitendra has been a recipient of many prestigious honours and awards. These include Engineers Geoscientists Manitoba's Outstanding Service award (2022), Early Achievement award (2008) and Technical Excellence award (2017) Awards. As for the CSBE, he has received the Society's John Clark award (2017), Young Engineer award (2012) and best Ph.D. thesis award in 2002. He has also received UM's Merit Award in the combined category of teaching, research and service (2015), and is a Fellow of Engineers Canada since 2017.

CSBE/SCGAB MAPLE LEAF AWARD

This award is given to honour members of the CSBE/SCGAB who have distinguished themselves as leaders in the profession. It is the highest award made by the Society in recognition of leadership in the profession. The award is given for outstanding personal qualities, society activities, and professional abilities.



Dr. Danny Mann is nominated for his contributions to engineering in agricultural, food and biological systems for service to CSBE/SCGAB and ASABE through Extension, Teaching, Research, and International activities. Over the decades, Danny has made exceptional contributions to biosystems engineering as an educator, professor, researcher, and leader. Coming from a farm background, Danny knows that farming is one of the most dangerous occupations

in Canadian society. He has been actively involved in developing safety strategies with the Canadian Agricultural Safety Association (CASA). His research work has contributed to safer designs and modifications of agricultural equipment to accommodate disabled farmers. Danny is also a very dedicated teacher. A philosophy of Danny is that, an engineering professor “design” future engineers; this philosophy guides him leading the engineering education. He believes that engineers must meet the required graduate attributes, and he has put constant efforts to achieve this. Danny has many personal qualities. He is extremely organized and responsible person. While being soft spoken, Danny demonstrates high level of integrity. He is congenial, conscientious and passionate about his work, serving communities, and helping others. Danny is the most deserved person for the Maple Leaf Award.

YOUNG ENGINEER OF THE YEAR AWARD

This award is given to recognize and encourage outstanding work by younger members of the Society. The award is given to members under 40 years of age. It is given for outstanding contributions to agricultural, food and/or biological engineering through design and development, extension and management, or research and teaching.



Dr. Travis Esau is an Associate Professor at the Department of Engineering in the Faculty of Agriculture, Dalhousie University. Dr. Esau is both a Licensed Professional Engineer and a Professional Agrologist. Dr. Esau is a mechanical engineer specializing in machine systems and automation engineering focusing on agricultural mechanized systems, digital agriculture, precision agriculture, data management, automation of agricultural operations and data-driven decision analysis for complex agricultural and biological systems. Traditional agricultural farming is not sustainable and severely requires new engineering advancements to remain competitive in both local and global markets. His research involving advanced mechanized systems increases farm efficiency and uses environmental resources more effectively. His research team consists of research staff and undergraduate/graduate/postdoc students. Dr. Esau is also involved with graduate student supervision at University of Prince Edward Island where he holds an adjunct position in Sustainable Design Engineering. Dr. Esau has secured funding from grants including Natural Sciences and Engineering Research Council (NSERC) - Discovery, NSERC - Collaborative Research and Development, Canadian Agricultural Partnership, United States Department of Agriculture – Critical Agricultural Research and Extension, MITACS - Accelerate, in addition to other provincial and industry sponsored funding opportunities. He is an active member of several committees and contributes as a reviewer/editor of various scientific journals. Dr. Esau is excited to help build the Canadian Society of Bioengineering membership especially with new undergraduate and graduate student members. He is looking forward to co-chairing with Dr. Aitazaz Farooque, the 2022 CSBE annual general meeting and technical conference being held in Charlottetown.

JIM BEAMISH AWARD

This award is given annually to the CSBE/SCGAB member who, in the opinion of the Awards Committee, has produced outstanding work in industry, teaching, research, or extension in the area of soil and water, or environmental sciences.



Dr Asim Biswas' pioneering research enables producers and policymakers to increase land-based agricultural productivity in an environmentally, ecologically, and financially sustainable manner by integrating soil data, sensors, and technology with fundamental knowledge of soil and crop production practices,. In a short time (<11 years since PhD) he has become a global leader in the development of data-driven technological solutions for sustainable soil management. Believing that 'better measurement leads to better management', Biswas is reinventing on-farm data collection and analysis techniques to improve soil management leading to increased agricultural production in smart, sustainable, and economic ways. He has developed more accessible methods and algorithms to map soil variability to the centimeter by combining soil sensor data with physiographic and

traditional farm-collected crop data (e.g., yield). His partnership with a Manitoba-based precision agriculture equipment manufacturing company led to the development of the SoilReader. His optimized field sampling and 3D-mapping techniques have been integrated into Canadian farm operations, including Woodrill Ltd., a large grain grower, consulting, input supply, and elevator operation in Guelph, Ontario. His recently developed carbon offset system was adopted by CarbonTerra Inc. in Saskatoon to develop a soil carbon credit trading platform using crypto, blockchain and AI methodologies. Committed to data accessibility for growers, Biswas has developed a free on-line soil mapping service – the Ontario Soil Information System. With a mobile (Android) application he developed, farmers can mount their phones on a stick equipped with a sensor and poke it into different areas of their land, quickly receiving precise soil data.

JOHN CLARK AWARD

This award, given in memory of John Clark, is given to the CSBE/SCGAB member who, in the opinion of the Awards Committee, has produced outstanding work in industry, teaching, research or extension in one or more of the fields of Electric Power and Processing, Energy or Food Engineering.



Dr. Satyanarayan (Satya) Dev has been a member of CSBE/ASABE since 2006. He obtained a bachelor's degree in food process engineering from Tamil Nadu Agricultural University in India and later completed an M.S. and Ph.D. degree from the Bioresource Engineering Department at McGill University Canada. Dr. Dev is currently an Associate Professor and Chair for the Biological System Engineering program at the Florida Agricultural & Mechanical University in the USA. His experience as an academic and professional engineer spans well over one and half decades. He has been recognized for his outstanding scholarship with awards such as Young Engineer of the Year award

(CSBE), and Outstanding Young Researcher Award (ASABE-Florida Branch). His service to the professional society has been recognized by the Northeast Agricultural and Biological Engineers Conference (the largest section of ASABE) with the Distinguished Service Award. Dr. Dev's research and area of expertise include electromagnetic equipment design, food safety and security, food microbiology, biosecurity, mathematical modeling and simulation, multidimensional additive manufacturing, nutraceuticals, and functional foods, expert systems. He has published and contributed to over 41 peer-reviewed papers, 10 book chapters, 2 books, 60 conference presentations, 5 US patents, and 1 report of invention. His research has attracted over \$7.43 million since 2015, mostly nationally competitive grants from several US funding agencies like NSF and USDA. Dr. Dev has trained several highly qualified personnel at undergraduate and graduate levels. He is a prolific inventor that led to his election into the 2022 Senior class of the National Academy of Inventors in the United States. Dr. Dev is an outstanding candidate worthy of the recognition as a food engineer extraordinaire by being awarded the prestigious John Clark