# Fruit and Vegetable Growers of Canada

# REPORT

## CANADIAN GREENHOUSE EXCELLENCE NETWORK SUMMIT

FEBRUARY 14, 2023, OTTAWA, ON

PREPARED BY:

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# Executive Summary

Canadian greenhouse vegetable growers are dedicated to excellence, and are known for their early adoption of new technology and sustainable practices. The sector is engaging in a national conversation to develop a research network, the Canadian Greenhouse Excellence Network (CGEN), that is intended to advance collective opportunities towards the vision for Canada as a world leader in sustainable agriculture and agri-food.

**Introduction**

The Canadian Greenhouse Excellence Network (CGEN) is an initiative of the Fruit and Vegetable Growers of Canada through the engagement and financial support of our greenhouse vegetable members, and in partnership with Dr. Rupp Carriveau, Director of the Environmental Energy Institute at the University of Windsor.

The CGEN Roundtable Tour, which included the series of online and in-person *PowerHour* stakeholder engagement sessions and the CGEN Summit, sought to engage stakeholders in a national conversation, by seeking their input and gauging their priorities to inform the development of the network.

The inaugural CGEN Summit took place on February 14, 2023, in Ottawa, ON. Close to 50 representatives from Canadian greenhouse vegetable growers, allied industry, academia, government policy makers and elected officials met to identify common challenges, propose solutions, and forge new opportunities at the critical intersection of energy, food production, and the environment.

The Summit Agenda is included in Appendix A of this report.

**Reporting and Next Steps**

What follows here is a report from the CGEN Summit. The report includes:

- Highlights from a small sample of the CGEN *PowerHour* results gathered from over 100+ days of stakeholder engagement. The CGEN *PowerHour* sessions' interactive presentation and live-polling brought together feedback from 100 participants from across the greenhouse vegetable sector.
- A synthesis of key points from the CGEN Summit presentations and grower panel, the workshop on strategic planning and capacity building, and the discussions with policy-makers.

For more information, please visit the FVGC website (Greenhouse Vegetable Working Group page).

The next steps include the process of reporting back to the greenhouse vegetable working group membership at the FVGC Annual General Meeting and establishing next steps of the governance, membership, and funding structures of CGEN.

We look forward to continued engagement with our valued stakeholders.

# Summit Opening

## Welcome

Julie Paillat, National Coordinator, Greenhouse Vegetable Industry, FVGC welcomed everyone to the Summit and provided a brief overview of the Fruit and Vegetable Growers of Canada (FVGC). FVGC is the national voice of Canadian fruit and vegetable growers and represents the approximately 14,000 farms growing over 120 different crops, with a farm gate value of approximately $5.9 billion.

## Opening Remarks

**George Gilvesy, Chair, Ontario Greenhouse Vegetable Growers**

The greenhouse vegetable sector is represented nationally by its members at the FVGC Greenhouse Vegetable Working Group (GVWG).

The GVWG vision for the sector is: *An agricultural powerhouse that delivers safe, nutritious, high-quality, and sustainable fresh fruit and vegetables year-round*.

Our mission: *To position the Canadian greenhouse vegetable sector as a recognized leader in sustainable agriculture: driven by our commitment to excellence, demonstrated in our responsible stewardship of people and the planet, and unified by a tireless pursuit of innovation, competitiveness, and growth*.

In the fall of 2021, the GVWG's revised vision and mission statements and revaluation of national research and innovation priorities set a goal to develop a "Greenhouse Network of Research Excellence." These decisions were made to align our high-level priorities, guide the strategic outcomes, and secure the funding needed for research to support growth and competitiveness while meeting the federal mandates on environment, climate change, and targets for net zero.

Looking ahead at the challenges and opportunities, this new approach was needed that:

- Brings together a network of highly qualified personnel (HQP) and expertise from across various disciplines in academia, government, and industry,
- Works collaboratively on greenhouse vegetable research and innovation priorities to achieve our vision for the sector, and,
- Addresses emerging competitiveness issues, while amplifying opportunities for the sector to contribute to climate action, food security and economic recovery in an era of disruption.

It was recognized that the sector is fortunate to have dedicated greenhouse research facilities and a critical mass of highly-qualified personnel available across the country, as well as devoted experts who are finding Canadian solutions to Canadian challenges.

The Summit's purpose is to bring stakeholders together and discuss how this new network, the Canadian Greenhouse Excellence Network, can put growers' needs at the centre of what we do and begin to better address the future challenges and opportunities together.

Three goal statements drive the further development of CGEN:

1. CGEN is built on a strong Public-Private Partnership model that benefits greenhouse vegetable growers, allied industry, academia, government, and Canadians.

2. CGEN is a connector of people and expertise that enables research, collaboration, validation, and commercialization from the basis of grower-identified challenges and opportunities.

3. CGEN is an effective mechanism to help off-set and stabilize the rising price on carbon emissions, return fuel charge proceeds back to the sector, and build our roadmap to help achieve net zero emissions.

The value of the network is in its ability to inform policy decisions, programs and incentives, and to deliver tangible benefits towards climate action, food security, and economic growth.

## CGEN Launch

Julie Paillat outlined that as the GVWG prepared for the Agri-Science Cluster program, it triggered the submission of an Expression of Interest for a national greenhouse vegetable research network from Dr. Rupp Carriveau. She acknowledged Linda Delli Santi, Chair of the GVWG as well as Niki Bennett, Chair of the Research Working Group, for their contributions in championing the development of CGEN despite being unable to attend the Summit.

The combined efforts of Julie, Niki, and Rupp to build the *PowerHour* programming allowed for the engagement of sector stakeholders; additional champions were added and momentum was built along the way. The Summit participants, including growers and GVWG members, allied industry, academia/researchers, government were acknowledged for their engagement and support. The *PowerHour* programming and the CGEN Summit were made possible due to the GVWG dedication and financial support, as well as support from FVGC staff.

The pathway to a successful Canadian Greenhouse Excellence Network has three high-level strategic building blocks: stakeholder engagement via the Roundtable Tour (CGEN *PowerHour,* Summit) to shape the design of the network; design of the Network to strategically align objectives, timelines, and resources; and validation of the Network, through endorsement of the sector's unique roadmap.

CGEN is currently in the early stages, between stakeholder engagement and network design. Today's Summit provides an opportunity to find areas of alignment and take a major step forward towards validation and endorsement of the network. From there, as stakeholders work together on the sector roadmap and CGEN starts its activities, it can deliver tangible benefits towards climate action, food security and economic growth.

## Opening Address

**Francis Drouin, Parliamentary Secretary to the Minister of Agriculture and Agri-Food, Member of Parliament for Glengarry-Prescott-Russell**

The Parliamentary Secretary began his address by acknowledging and thanking growers for their hard work, in spite of rising energy costs, supply chain issues and labour challenges experienced. During the pandemic, growers have been able to keep Canadians fed and demonstrated tremendous resilience through these challenges. This industry represents 27,000 jobs and continues to make significant advance in technology and innovation. There are strong partnerships in place between the industry, government, and academia.

The launch of CGEN is timely as the greenhouse industry makes a unique contribution to food security for Canada and the world. There is need to build on our strengths. Several examples of advances made at AAFC research centers and specific government programs such as the Agricultural Clean Technology Program, that contribute

to meeting the needs of the industry were presented. The federal government continues to work to address labour shortage issues; including an initiative to streamline and standardize the processing of Labour Market Impact Assessment (LMIA) applications of agricultural foreign workers who come to Canada, by implementing a Recognized Employers Program. Other initiatives are underway to help build a reliable work force for the future. The greenhouse industry has a proud record of achievement. Canada has unique energy needs. It is important to continue to ensure the ongoing growth of the greenhouse industry in Canada for the future.

## CGEN Roundtable Tour Report

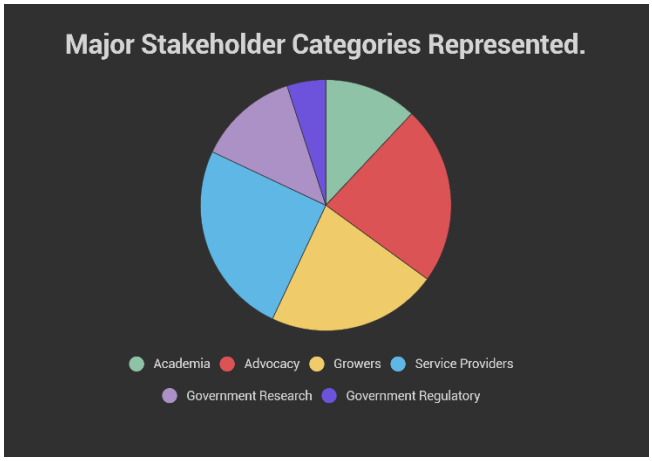
**Dr. Rupp Carriveau, Director, Environmental Energy Institute, University of Windsor**

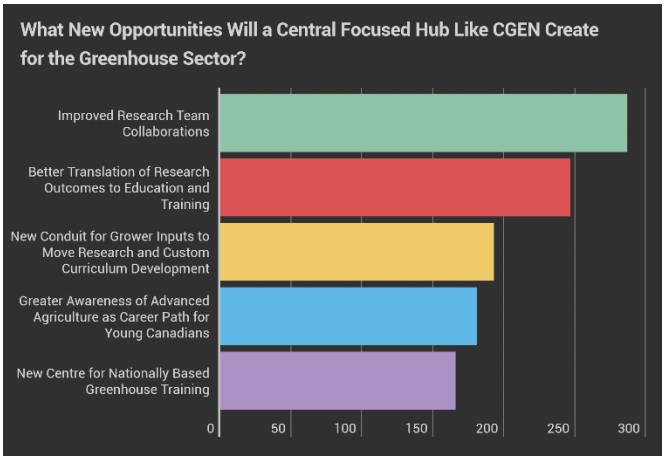
A total of 10 CGEN *PowerHour* sessions were held from the end of September, 2022 to the end of January, 2023. The sessions included a dedicated session in French with key stakeholders in Quebec, and in-person sessions hosted in Leamington at the Ontario Greenhouse Vegetable Growers, in Niagara at Vineland Research and Innovation Center, and in Abbotsford at the Pacific Ag Show.

Dr. Rupp Carriveau, who led the Menti™ live-polling portion of the CGEN *PowerHour*, presented his report which illustrated the responses to the sixteen questions posed. The series of 10 CGEN *PowerHour* sessions engaged a total of 100 participants and generated 4106 unique polling votes. Participants were polled on key questions regarding the greenhouse industry needs and potential benefits of a greenhouse excellence network.

The CGEN *PowerHour* results are available at www.environmentalenergyinstitute.com/cgen.

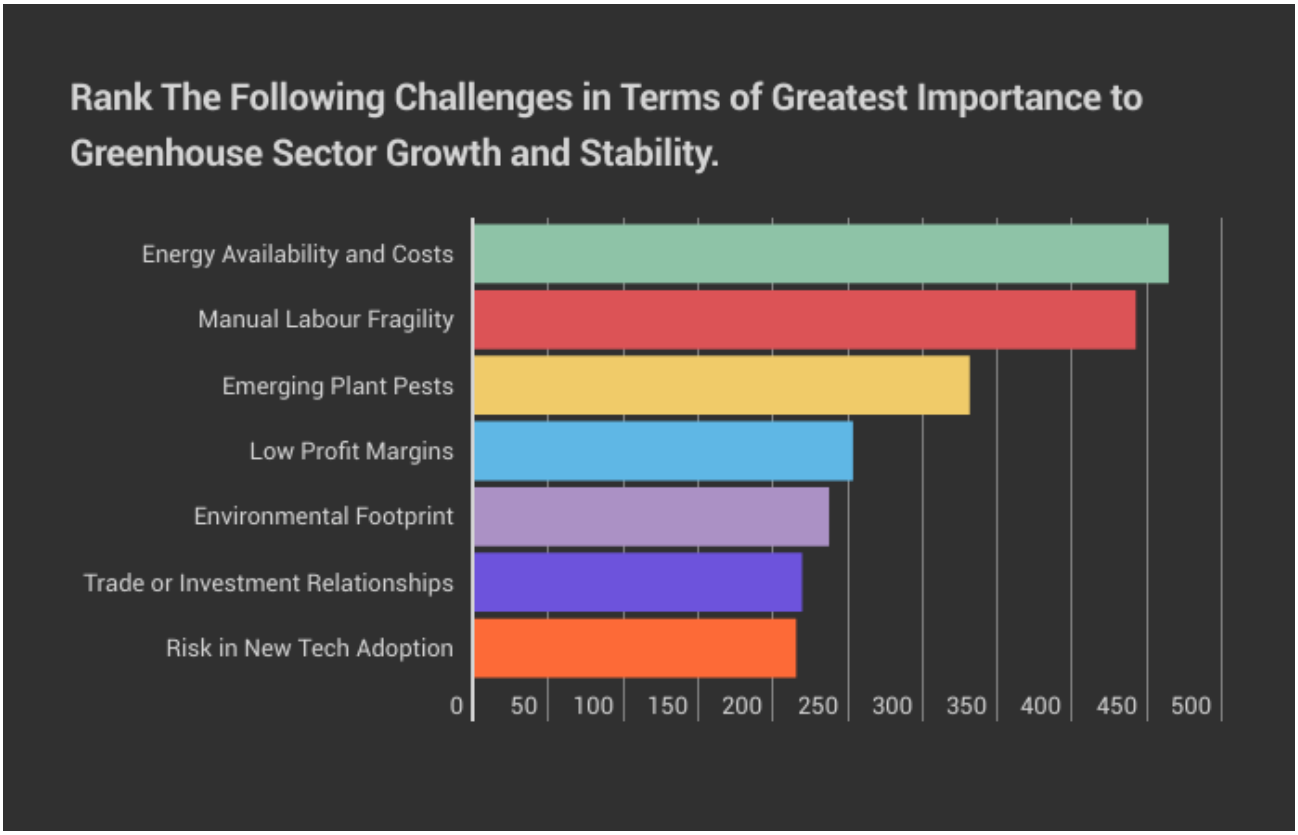
Some highlights are provided here:




Participants' responses of potential benefits from a proposed central hub like CGEN included:

- Improved dialogue between the industry (producers and suppliers), government and educational institutions;
- Pathway to receive Canadian information, similar to what is seen with *HortiDaily*; increased communication, storytelling/branding, sharing ideas, solving of complex problems, defining gaps/opportunities, impact.
- Global recognition as leaders in this space and a more resilient food supply for the country.




Views were also obtained about CGEN's potential role, such as: training needs CGEN could help address; topics on which CGEN could educate policy makers and the public at large; types of stakeholders that should be involved in CGEN; where linkages would be of value; how CGEN could increase the translation of sector innovation to commercialization; as well as questions regarding the funding of the network.

Overall, the volume and quality of the information gathered is of significant value and strongly suggests that stakeholders endorse establishing CGEN.

# Excellence: Opportunities and Challenges facing the Canadian Greenhouse Vegetable Sector

A series of presentations from subject matter experts were provided in order to set the stage for the discussion on the opportunities and challenges facing the Canadian greenhouse vegetable sector.

## Grower Perspectives

Aaron Coristine, Manager, Science and Regulatory Affairs, Ontario Greenhouse Vegetable Growers (OGVG), moderated a conversation with a panel of two growers: Michael DelCiancio, DC Farms and Jarrod Hall, Vine Fresh Acres and Lebo Farms. They were joined by George Gilvesy, Chair, OGVG, and together, the panel provided the growers' perspectives on energy, labour needs, competitiveness, and trade.

The growers pointed out that to improve energy efficiency on the scale required, adopting a strategic approach to manage natural gas usage under contracts is valuable, especially given the timing and price fluctuations in terms of energy demands for the crop vs. supply vs. any excess energy that could be available back to the grid. The investment to install LED lighting for year-round greenhouse production has to improve electricity efficiency by 40% (compared to HPS lights only). The ability to use natural gas to generate and use a facility's own electrical power via a combined heat and power (CHP) system is also of great interest but requires major private investment and does not have the policy support or incentives it needs to reach its potential.

Carbon dioxide ($CO_2$) must be purchased if a grower is not equipped to recapture $CO_2$ (e.g., from the natural gas-powered boilers or cogeneration) for its subsequent use in the crop to foster growth. While growers are 'directionally correct' in their carbon use/reuse in their food production systems, how the growers' efforts are measured against definitions of carbon sequestration or net zero is still under development.

Using crop waste as biomass nutrient to fertilize another crop (mushroom farm) illustrates the type of ground-breaking projects growers are getting involved in. There are many opportunities to utilize waste and generate efficiencies, and for greenhouse operations to become a carbon sink. The carbon price exemptions provided in the Greenhouse Gas Pollution Pricing Act and additional carbon relief for primary agriculture that would result from amendments under Bill C-234 are important to growers, their confidence and therefore willingness to invest, expand and diversify in Canada. While the sector is implicitly within scope for the carbon price exemptions for farm machinery used for heating and cooling, clarity about how greenhouse operations will see that Bill implemented is still needed.

Innovation is critical to finding efficiencies in greenhouse production. Examples of technology in the greenhouse include: nutrient buffering systems, automated vegetable transport and packing, autonomous growing as well as artificial intelligence (AI). Innovations like these contribute to a shift in required skill sets and to leveraging hand-labour more efficiently, although skilled and knowledgeable farm labour is still key to operations. Foreign workers are essential; finding ways to enable a faster pathway to residency in Canada for them is critical.

Canada needs to maintain its competitive advantage and stand out further ahead of the competition. There is a need to continue to drive the industry forward and to support it, to be a global leader. Enhancing communications, building trust, and educating the public are key. It is also important to define sustainability in ways that are realistic for the greenhouse industry.

## Energy: Modelling and Transitions

**Dr. Rupp Carriveau, Environmental Energy Institute, University of Windsor**

Energy needs and demand for greenhouses are complex; greenhouses also produce energy. There are many opportunities to leverage this aspect. Energy modelling can help to identify realistic needs, environmental modifiers, transition timelines as well as considerations to take into account for critical energy infrastructure. Understanding sustainability is also important. Energy modelling is an area that needs to continue to be supported. Data from growers can serve to build and improve models. Truly understanding the energy requirements of the growing process through modelling can provide the ability to enhance that environment.

## Automation and Technology

**Rita Sterne, Greenhouse Technology Network**

There is movement in automation and technology across the entire greenhouse industry value chain. Moreover, the speed at which change is occurring has increased. There are tremendous opportunities to take advantage of technology. Access to capital and funding is essential to support the adoption of technology. In order to support the innovation pathway, funding that can support projects of increased complexity as well as diverse types of collaboration is needed. The human element is key; there is a need to be quicker and more courageous in sharing knowledge about technology and innovation.

As a network, CGEN can contribute to fostering conversations about key issues that are inter-related, such as labour and technology. Complexity requires diversity; connecting and bringing a variety of voices at the table is important, as solutions will emerge from that diversity of perspectives.

## Labour, Skills and Training

**Jennifer Wright, Canadian Agricultural Human Resources Council (CAHRC)**

Workforce data was presented. Access to labour during the pandemic has highlighted the importance of foreign workers, but also the impact of labour issues on the food supply. The trend in labour shortage is increasing in all industries. The CAHRC is working with partners the Canadian Federation of Agriculture (CFA) and Food and Beverage Canada (FBC-ABC) to launch of the National Workforce Strategic Plan for Agriculture and Food and Beverage Manufacturing. The goal is to build a comprehensive roadmap to workforce stability for the agriculture and food and beverage manufacturing sectors: a plan to address issues, move forward with tangible actions and the ability to measure progress. Through this process, there is a working group that is focusing on skills and looking at ways to ensure that the workforce has the required skill set in order to enable the industry to adopt technology and innovation.

## Trade and Canadian Investment

**George Gilvesy, Ontario Greenhouse Vegetable Growers**

Between 2011 and 2021, Canada's total greenhouse exports and farmgate value has more than doubled, from 1.1 million to over 2.2 million dollars. Canada is the North American leader in greenhouse vegetable production, with strong exports to the United States. Canadian growers have made significant investments of $1.2 to $1.5 million per acre. In terms of the 1500 acres of growth in the past ten years – this private investment is equivalent to the sum of 1.8 to 2.25 billion dollars. As a comparator, an automobile manufacturing plant requires an estimated investment of 650 million dollars; the greenhouse investment equates to three such automobile plants. It was noted, that the lengths to which various jurisdictions go to compete for and secure this investment must be recognized.

Canada must retain its competitive position in the marketplace by: optimizing costs and competitiveness; maintaining and enhancing Canada's premium position in the market, quality, and service; ensuring market access; and providing ongoing research and innovation to support future-new products in greenhouses.

Canada must maintain an investment climate to support its greenhouse vegetable sector by: ensuring stability on policy; providing necessary infrastructure to support growth; currency stability; and prioritizing food production and food security. Trade harmonization with the United States is important to support a stronger North American trading bloc. A North American approach would be valuable to ensure that Canada is not at a competitive disadvantage.

## Discussion – Challenges and Opportunities

Summit participants engaged in small group conversation to identify and discuss challenges and opportunities. Key points were reported back in plenary.

### Barriers or challenges

**Discussion question:**

1. **What barriers or challenges stand in the way of the linkages CGEN aims to build between people and expertise?**

    - Meeting communication needs/expectations – outreach and building connection among all stakeholders, given the diversity of stakeholders and multiple channels of communication and events.
    - Research being done in silos; silos between growers, researchers, and technology. Not knowing the right questions to ask. Getting the best team assembled. Avoiding redundancy.
    - Differences in needs between various regions, resulting in challenges in aligning priorities. Competition and lack of trust and/or lack of relationships between growers, or between growers and researchers/solution providers, limits opportunity and chance to solve similar problems.
    - Competition for research funds, access to funding and technology, secrecy/limited sharing of results.
    - There is a legacy of low adoption around early tech developments which previously over-promised and under-delivered. Grower-fatigue of early adoption where they face high risk and/or low return on investment.
    - Labour shortages and challenges. Lack of understanding companies' workforce needs (e.g., management, executives, etc.) and bridging the skills gap. How to supplement the foreign worker program by leveraging the domestic work force.
    - Avoiding duplication, dilution of funds, reduced efficiency (or perception thereof) between CGEN and what other networks, or stakeholder groups are already doing.
    - Developing clarity around CGEN's purpose and mandate, as the network is in its infancy. Need clear value proposition(s), differentiation, branding, etc. that resonates with various stakeholders.
    - Navigating various levels of government (municipal, provincial, federal) can cause hurdles to research, regulatory, or policy support and interest/incentives for innovation.
    - Lack of understanding of the regulatory and policy challenges that impact the industry (e.g., energy policy, use of natural gas for heat and $CO_2$, electricity demand/supply for year-round production).

### Opportunities CGEN can create for the greenhouse sector

**Discussion question:**

2. **What new opportunities will a central focused hub like CGEN create for the greenhouse sector?**

    - A central network of communication and integration. Improved connection between growers and other stakeholders/expertise efficiently – without a major time commitment. Network creates calm out of noise. Industry driven, real-life validation with businesses as the engine of success.
    - Communication and connection with growers; getting grower's input and feedback on research advancements can improve applicability/practicality to commercial settings, scale, transferability.

- Communicating sector needs to the government; problem-solving could be tackled by working groups, and conveying what is needed on their part to get to solutions more quickly.
- Synergy between diverse groups within CGEN, creating the ability to rapidly disseminate information and best practices.
- Education and public awareness about the greenhouse industry, which can lead to funding and support. Events at secondary schools, colleges, universities to better understand the sector. Curriculum integration. Educating investors to broaden the range of promising technologies that get to commercialization.
- Real-time data/information. A database of information (e.g., research database, knowing which varieties are used by growers would help researchers focus their studies on most relevant varieties).
- Opportunity to increase collaboration between researchers; e.g., collaboration as a condition of approval for funding proposals.
- Identifying commonalities between different groups and regions, to better align priorities.
- Conducting strategic stakeholder mapping and/or asset mapping for the sector is critical (e.g., where to go to for what).
- Shift in the source of our talent and intellectual property; increase exports of Canadian innovation; vs. technology from Netherlands that requires further validation before adoption in Canadian setting.
- Providing support to SMEs on the pathway to commercialization (e.g., proposal writing, investment advice, where to seek help). Canadian companies competitive on the global stage.
- Support sustainable growth of the sector (food production/exports, economic/jobs, and environmental). Support industry (A.I., pest control/biocontrol, lighting, etc.)

# CGEN Strategic Planning and Capacity Building

## Part 1: Envisioning CGEN

Julie Paillat and Dr. Rupp Carriveau presented preliminary thinking for an emerging vision for the Network as a starting point for the conversation.

The initial vision is that CGEN, at its core, is acting as a central hub – a connector of people and expertise; a network of existing brick and mortar facilities; an instrument for sector-specific knowledge translation and transfer that can help navigate a pathway for commercialization and provide a point of connection for growers, researchers, and private solution providers.

CGEN is envisioned as a vehicle to support sector growth with policies informed by science and data; used by policy-makers and regulators, public infrastructure supports and investments (e.g., energy, water, transportation, etc.); as well as private investment in sustainable production.

The preliminary vision is that of a network that connects stakeholders distributed throughout the country. Stakeholders include: growers, labour, marketers, utilities providers, government (regulations and funding), trading partners, service providers, government laboratories, students, indigenous and northern communities,

transport, and retailers. The network is growing centric; ultimately bringing value to Canadians and consumers. The governance or network architecture could include a Steering Committee, sub-committees focused on specific activities, working groups on different topics (e.g., research, education, knowledge transfer and commercialization, etc.), supported by an operations group for day-to-day operation activities.

Participants were invited to add their own reflections and ideas to envision CGEN.

### Additional Elements of Vision

**Discussion question:**

3. **What would you add to the CGEN Vision?**

   A hub to position Canada as a global leader. Think bigger. A grander, 5-year vision with organizational sustainability (self-sustaining model after "x" number of years).

   - Hub elements: multi-institutional learning, job creation, marketing (promoting the sector), economic impact, commercialization (start-up, scale-up), research and innovation, policy. Community outreach is also an element (equity deserving groups, Indigenous ways of knowing, youth engagement, etc.).
   - Various views: growing centric (vs. grower centric), i.e., about the industry as a whole, even broader than food as a single rallying point. Suggestion CGEN include controlled environment agriculture (mushrooms, floriculture, vertical farming, cannabis).
   - A clear purpose, value proposition for CGEN membership. Return on investment. Growth indicators.
   - Strategic communication to translate 1) grower needs into 2) focused research that will 3) inform policy development and 4) regulatory implementation;
     - Research that responds to and addresses regulatory challenges.
     - Policies that are informed by science and by industry (growers, suppliers) input.
   - Lobbying on behalf of the greenhouse sector.
   - Aspirational focus (e.g., what should the industry look like in 10 years, what is needed to get to net zero, crop diversification, job creation, co-op/career advancement opportunities, new entrants, youth engagement, equity diversity and inclusion (EDI), etc.).
   - Data hosting (economic/government/performance data) from across the country that growers can access to get insights in real time for better decision making vs. retrospective reports annually.
   - Economic and trade impacts. Benchmarking, standards, and providing market data for forecasting. International soft-landing facilitation in key target regions globally.
   - Sustainability platform and standards (e.g., kwh per kg of food), certifications (e.g., organic), audits/testing.
   - CGEN is validated as it drives novel research, attracts down stream value-chain business investments and private funding, enhances global food supply system and its integrity.
   - Mechanism for government incentives and returns (from all levels of government) to growers.

## Part 2: CGEN Strategy

Participants took part in conversations to begin to articulate the strategy around four themes:

## Theme 1: Governance of the Network and the Key Partners

**Discussion question:**

4. **What does the CGEN Governance look like? What's the model? Who is at the table?**

- A Board of Directors (growers/grower reps need to be driving force and more than half), with involvement of other groups such as allied industry (suppliers, retail), academia, government, and investors (funders, accelerators, venture capital). Include representation of Indigenous or northern communities, organic production.
- Board overseeing Steering Committees and working groups: e.g., science advisory, government advisory, funding advisory; the composition of steering committees to include growers, government, academic, service providers.
- Operations team must maintain connection with growers. Operations to include finance and business development; communications; research knowledge & technology transfer (KTT); data management.
- Membership structure(s). Participation from the supply-chain, distribution network (retail aspects including consumer-facing marketing). Partners e.g., CAHRC.
- Agreement: regional representativeness is needed. Various views on committees or working groups (by geographic region, to problem-solve, etc.).
- Volunteer participation? Legal representation?

## Theme 2: Capacity Building

**Discussion question:**

5. **What needs to happen to achieve the above outcome: Build capacity across the network?**

- Formalize the network: vision, governance, action plan and marketing strategy (build the brand, attract more interest and members; key messaging).
- Build around the strategic plan, business objectives e.g., growing consumer demand and growing exports, and sectors priorities. Reiterative process: identify issues, action steps, measure progress.
- Provide clear value to core members, attract new membership: thought leadership, networking opportunities, sharing knowledge and research. Understand connection, relationships, rapport. Create a community through collaboration and trust.
- The CGEN workplan will need to consider governance; roles and responsibilities, followed by funding (i.e., phased approach).
- Be a sounding board. Build capacity around specialists and teams to provide a support system that meets grower challenges and needs (e.g., provide advice, marketing intelligence, etc.); providing answers to grower challenges. Identify existing capacity to attract to the network (avoid duplication), identify gaps and ways to fill them.
- Engagement: bring people together (e.g., annual general meeting, working groups, webinars, information sessions, innovation challenges for students/start-ups, etc.); tell stories, develop mechanisms to share experiences; community outreach.
- Develop a strategic plan for the network (e.g., a 10-year roadmap, reviewed/updated every 2 years).

- Data management: navigate privacy concerns and security needs, improve user reliability of data (e.g., with contextual information and education). Investigate data sharing as a currency.
- Identify research priorities, i.e., every 5 years for Agri-Science Cluster, evergreen list; aligned with vision, government goals and timelines.
- Build a nomination process by which organizations could propose names for the Board. Clear and regular reporting process to members (quarterly Board/Committee meetings), measurable goals, and accountability/trust.

## Theme 3: Funding

**Discussion question:**

6. **What are the means to fund such a network?**
    - Fee for service: Identify services and value-added offerings the network can provide for a fee. (e.g., referral fees for businesses, training/courses, grant/proposal writing, etc.)
    - Membership fee structure.
    - Events that can fundraise/generate revenue to support activities (e.g., conference fees).
    - Re-investing funds from intellectual property, commercialized products e.g., percentage royalty.
    - Multi-levels of government – federal, with support: provincial, regional, territorial, municipal.
    - Government programs, P3 Model, leveraged/stacked where possible (e.g., Sustainable Canadian Agricultural Partnership, AAFC and other departments, all levels of government).
    - Federal fuel charge (carbon tax) proceeds.
    - Sponsorships, Publications.

Note: it was suggested to use the term “investment” rather than “funding”.

## Theme 4: Roles and Responsibilities – Belonging or Benefiting from the Network

**Discussion question:**

7. **How do you see yourself belonging in and/or benefiting from the network?**
    - Networking, collaboration, learning opportunities (e.g., activities such as workshops or training; role in research collaboration; and knowledge transfer and adoption).
    - Participation in board, committees, working groups.
    - Facilitation of knowledge transfer and uptake through active participation in various applications/sectors; validation of technology.
    - Information sharing across the value chain. Provincial extension activities.
    - Identify and leverage existing linkages; ensure that CGEN does not duplicate work done by others (conduct an environmental scan, identify gaps, etc.).
    - Increase in research and innovation, funding opportunities, business growth, resources.
    - Set the right tone in effective communications, outreach to a broad membership.

- Public trust and education; Opportunities for generating grassroots interest, shared values e.g., food security, food sovereignty.
- A stronger voice with government and policy makers.

## CGEN Portal Demonstration

Dr. Rupp Carriveau presented a brief tour of what the CGEN portal could look like, to illustrate how someone could interface with the Network.

Three areas were shown:

- Project builder: to locate resources (e.g., people, facilities, funding, relevant published research).
- Earn Greenhouse Credentials (i.e., upgrade skill set, select courses).
- Learn about Canada's greenhouse sector (e.g., take a video tour, fast facts, published reports).

# Informing the Sustainable Agriculture Strategy

CGEN has the potential to be a central element of sustainable agriculture in Canada. In this context, to inform thinking in this area, a panel of experts provided Summit participants with information on government strategy, policy and programs.

## Sustainable Agriculture Strategy (SAS)

**Scott Ross, SAS Co-Chair and Executive Director, Canadian Federation of Agriculture (CFA)**

The Sustainable Agriculture Strategy (SAS) is a new initiative; it was formerly referred to as "the Green Agricultural Plan". SAS recognizes sustainability as the triple bottom line: in order to advance the industry on environmental aspects, the economic and social elements must also be considered.

The SAS includes five priority themes: 1. Climate change mitigation; 2. Adaptation and resilience; 3. Biodiversity; 4. Soil health; and 5. Water.

An overview of the planned engagement sessions for the SAS (January-March 2023) was provided; these include stakeholder workshops on various topics: goals and outcomes; data, measurement and targets; approaches (i.e., actions, steps) to reach outcomes. Data and data governance are key elements of the strategy. Discussion questions include topics such as: Is net zero feasible? What is net zero? What is the path forward? It is important for those who have an interest, to engage in the dialogue and contribute to the conversation.

Sustainable Agriculture Strategy Consultation:
https://agriculture.canada.ca/en/department/transparency/public-opinion-research-consultations/sustainable-agriculture-strategy.

## Building Partnership

**Jason Flint, Executive Director, Crops and Horticulture Sector Development and Analysis Directorate, Market and Industry Services Branch, Agriculture and Agri-Food Canada (AAFC)**

Several examples of partnerships between AAFC and the greenhouse sector were highlighted. This includes work done by research stations across the country on questions of interest to greenhouse operations (e.g., pests, minor use, lighting and abatement, automation, AI, market access, etc.). Other AAFC Branches and programs of interest include the AgriScience Clusters, the Agricultural Clean Technology Program, and the Sustainable Canadian Agricultural Partnership (Sustainable CAP), beginning April 1, 2023. One way to look at partnerships is to consider how they can serve CGEN objectives. Once a specific objective is identified by CGEN, the right partnerships can be sought to help the Network achieve it.

## Innovation in Smart Grids

**Tom Levy, Deputy Director, Energy Science and Technology Programs, Office of Energy Research and Development, Energy Efficiency and Technology Sector, Natural Resources Canada (NRCAN)**

Smart grids combine end uses that communicate with the utility through sensors and technology that enable two-way communication between the utility and the customer. Smart grids provide many opportunities and touch every facet of society. NRCAN's Smart Grid Program funded 22 projects worth 316 million dollars, targeting outcomes such as reducing greenhouse gas emissions, better utilization of electricity assets and increasing reliability and resilience of systems.

The transition required includes the technology itself, as well as the market (utility and customer transition) and the supporting regulatory framework. Policy drivers are the needs for reliable, clean and affordable solutions. Classes of solution include: clean distributed generation, grid infrastructure management, grid operational management and demand management. Transition pathways and the mapping of technologies to policy were presented. Audience remarks highlighted that this type of NRCan fund could potentially be a suitable vehicle for the type of energy system innovation that is rapidly growing in the Greenhouse sector.

# Summit Close

## Concluding Remarks

**Rebecca Lee, Executive Director, Fruit and Vegetable Growers of Canada (FVGC)**

Rebecca Lee expressed her thanks to Summit participants for their dedication and participation and noted that the FVGC is thankful for the full support of the GVWG members and the partnership with Rupp Carriveau, in launching the CGEN initiative.

The first Summit provided an opportunity to hear from some of the most innovative and forward-thinking experts in the fields of greenhouse vegetable production, climate action, food security, and economic growth. Summit participants discussed the challenges and opportunities facing this sector, and contributed to developing a vision for the future of greenhouse agriculture in Canada and for CGEN. Today is just the beginning of a journey to undertake together, to transform the face of our sector and ensure its long-term viability.

# Appendix A – Summit Schedule

FRUIT & VEGETABLE GROWERS OF CANADA | PRODUCTEURS DE FRUITS ET LÉGUMES DU CANADA

1922-2022 Celebrating resiliency, growth and opportunity
Célébrer la résilience, la croissance et les opportunités

**Canadian Greenhouse Excellence Network (CGEN) SUMMIT AGENDA**

**Tuesday, February 14th, 2023**

**Pearson Room, Lord Elgin Hotel, 100 Elgin St, Ottawa, Ontario K1P 5K8**

| TIME | ACTIVITY | OTHER DETAILS |
|---|---|---|
| 7:15 AM | Registration Open | |
| 7:30 | Breakfast | Buffet served in the room |
| 8:30 | WELCOME & OPENING REMARKS | Intersol Group, FVGC |
| 8:45 | BACKGROUND & INTRODUCTIONS | Intersol Group, FVGC |
| 9:10 | OFFICIAL OPENING OF CGEN SUMMIT & ADDRESS | Francis Drouin, MP Glengarry – Prescott – Russell, Parliamentary Secretary to the Minister of Agriculture and Agri-Food |
| 9:20 | CANADIAN GREENHOUSE EXCELLENCE NETWORK (CGEN) – ROUNDTABLE TOUR REPORT<br><br>Question Period | Presentation by Dr. Rupp Carriveau, Director, Environmental Energy Institute, University of Windsor<br>Intersol Group |
| 9:50 | BREAK | |
| 10:15 | EXCELLENCE: OPPORTUNITIES AND CHALLENGES FACING THE CANADIAN GREENHOUSE VEGETABLE SECTOR | Intersol Group, Aaron Coristine (OGVG) |
| 10:20 | Grower perspectives | Michael DelCiancio, Owner, DC Farms<br>Jarrod Hall, CFO, Vine Fresh Acres and Lebo Farms |
| 10:50 | Energy: modelling and transitions | Rupp Carriveau, Environmental Energy Institute |
| 11:00 | Automation & Technology | Rita Sterne, Greenhouse Technology Network |
| 11:10 | Labour, Skills & Training | Jennifer Wright, Canadian Agricultural Human Resources Council |
| 11:20 | Trade and Canadian Investment | George Gilvesy, Chairman, Ontario Greenhouse Vegetable Growers |
| 11:30 | CHALLENGES AND OPPORTUNITIES – DISCUSSION AT TABLES, REPORT OUT | Intersol Group |
| 12:00 | LUNCH | |
| 13:00 | WORKSHOP: CGEN STRATEGIC PLANNING AND CAPACITY BUILDING | Intersol Group |
| 13:05 | CGEN STRATEGIC PLANNING AND CAPACITY BUILDING – Part 1: ENVISIONING CGEN | Rupp Carriveau, Julie Paillat |
| 13:55 | CGEN STRATEGIC PLANNING AND CAPACITY BUILDING – Part 2: CGEN STRATEGY | Intersol Group |
| 15:10 | CGEN Portal Demo | Rupp Carriveau, Julie Paillat |
| 15:15 | BREAK | |

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The Coffee and Tea Break was sponsored by A&L Laboratories.

FRUIT & VEGETABLE GROWERS OF CANADA | PRODUCTEURS DE FRUITS ET LÉGUMES DU CANADA

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| TIME | ACTIVITY | OTHER DETAILS |
|---|---|---|
| 15:30 | INFORMING THE SUSTAINABLE AGRICULTURE STRATEGY | |
| 15:35 | Sustainable Agriculture Strategy Consultation | Scott Ross, SAS Co-Chair and Executive Director, Canadian Federation of Agriculture (CFA) |
| 15:45 | Building Partnership | Jason Flint<br>Executive Director, Crops and Horticulture Sector Development and Analysis Directorate, Market and Industry Services Branch, Agriculture and Agri-Food Canada (AAFC) |
| 15:55 | Innovation in Smart Grids | Tom Levy<br>Deputy Director, Energy Science and Technology Programs, Office of Energy Research and Development, Energy Efficiency and Technology Sector, Natural Resources Canada (NRCAN) |
| 16:00 | OPEN DISCUSSION IN PLENARY | Intersol Group |
| 16:30 | MENTI.COM (Live-polling) | Rupp Carriveau |
| 16:40 | WRAP UP / CONCLUDING REMARKS | Rebecca Lee, FVGC |

**Tuesday, February 14th, 2023**

**Québec Room, Lord Elgin Hotel, 100 Elgin St, Ottawa, Ontario K1P 5K8**

| TIME | ACTIVITY | OTHER DETAILS |
|---|---|---|
| 18:00 – 20:00 | CGEN SUMMIT RECEPTION | Private Event. Pre-registration required. Please contact areid@fvgc.ca for more information. |

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