CSHS 2026 National Annual Conference

Inclusive Canadian Horticulture from Coast to Coast to Coast

June 17-20, 2026

Acadia University, Wolfville, Nova Scotia, Canada
Unceded and ancestral territory of the Mi'kmaw nation

Schedule

Wednesday, June 17, 2026

Time	Location	Session	Speaker	Description
8:00 AM	**Bus meets at Acadia Athletics Complex**	**Local Tour**	**Local Tour**	**Local tour of the Annapolis Valley**
3:00 PM	Fountain Commons	Registration	Registration	Conference Registration | Poster & Exhibitor Setup
5:00 PM	**KC Irving Centre Garden Room**	**Welcome Reception & Mixer**	**Welcome Reception & Mixer**	**Tickets includes in General Registration | Tickets available for purchase for Day-Registrants | Dinner on Your Own after the Mixer**

Thursday, June 18, 2026

Time	Duration	Location	Session	Speaker	Description
7:30 AM		Fountain Commons	Registration	Registration	Conference Registration | Poster & Exhibitor Setup
8:00 AM		**PLENARY SESSIONS**	**PLENARY SESSIONS**	**PLENARY SESSIONS**	**PLENARY SESSIONS**
8:00 AM		Patterson 107	Plenary Session	Elder Dr. Lorraine Whitman, Glooscap First Nation	Opening Ceremony & Prayers
8:30 AM		Patterson 107	Plenary Session	Dr. Beatrice Amyotte, AAFC & Dr. Lord Abbey, Dalhousie U.	Intro Remarks from the CSHS 2026 Conference Chair & CSHS President
8:45 AM		Patterson 107	Plenary Session	Dr. Allison Walker, Acadia U. & Mr. Geoff Mercer, AAFC	Welcome Remarks from University and Government Administrators
9:15 AM		Patterson 107	P1.1 Plenary Session	Dr. Kyle Bobiwash, U. Manitoba Indigenous Scholar	Keynote Address | Farming relationships through ecology
10:15 AM		**Patterson Lobby**	**Morning Coffee Break**	**Morning Coffee Break**	**Morning Break**
10:45 AM		Patterson 107	I1.1 Indigenous & Northern Horticulture	Mrs. Heather Berry, CSHS 2026 Indigenous Chair	Plenary Address | Braiding Knowledge Systems: An Introduction to Working with Indigenous Partners
11:15 AM		Patterson 107	Indigenous & Northern Horticulture	Mrs. Heather Berry, CSHS 2026 Indigenous Chair	Video | Calls to Action for Indigenous Allies in Science
11:30 AM		Patterson 107	I1.2 Indigenous & Northern Horticulture	Dr. Wade Abbott, AAFC	Invited Speaker | Consumption of traditional plants and seaweeds in the Pacific Northwest by rewilded cattle
12:00 PM		Patterson 107	I1.3 Indigenous & Northern Horticulture	Mr. Brett Weighill, Piikani Nation Secondary School	Invited Speaker | Medicine before Food: Sweetgrass Research, Food Sovereignty, and Inclusive Horticulture in Piikani Nation

12:30 PM	**Fountain Commons**	**Lunch**	**Lunch**	**Lunch**
12:30 PM	**Patterson 107**	**CSHS AGM | Chair L. Abbey**	**Dr. Lord Abbey, CSHS President**	**CSHS AGM | Lunch Provided**
2:00 PM	Patterson 107	I2.1 Indigenous & Northern Horticulture	Dr. Shawna MacKinnon, AAFC	Invited Speaker | The Naurvik Initiative: food production systems for Indigenous food sovereignty in the North
2:30 PM	Patterson 107	I2.2 Indigenous & Northern Horticulture	Dr. Julia Wheeler, AAFC	Invited Speaker | Community-level approaches to food production and resilient food systems in sub-Arctic Canada
3:00 PM	Patterson 107	I2.3 Indigenous & Northern Horticulture	Mr. Terrell Roulston, Acadia U.	Taxonomic uncertainty shapes habitat suitability and conservation priorities for native North American apples (Malus spp.).
3:15 PM	**Patterson Lobby**	**Afternoon Coffee Break**	**Afternoon Coffee Break**	**Afternoon Break**
3:45 PM	Patterson 107	I3. Indigenous & Northern Horticulture	Mrs. Heather Berry, CSHS 2026 Indigenous Chair	Indigenous Talking Circle | Chair Mrs. Heather Berry, Elder Dr. Lorraine Whitman, Ms. Zabrina Whitman, Dr. Kyle Bobiwash, Dr. Emmanuelle D'Amours, Dr. Julia Wheeler, Dr. Shawna MacKinnon, Dr. Wade Abbot, Mr. Brett Weighill, Ms. Jordan Eyamie
6:00 PM	**Various Locations**	**Students Only Evening Event**	**Ms. Sarah Drury, CSHS Student Chair**	**Students Only Evening Event: Paint, Pub and Bonfire [Registration Required] | Dinner on Your Own for Others**

Friday, June 19, 2026

Time	Duration	Location	Session	Speaker	Description
8:00 AM	Fountain Commons		Registration	Registration	Conference Registration | Poster & Exhibitor Setup
8:15 AM	**PLENARY SESSIONS**		**PLENARY SESSIONS**	**PLENARY SESSIONS**	**PLENARY SESSIONS**
8:15 AM	KC Irving Centre Auditorium		P2. Plenary Session	Dr. Beatrice Amyotte, AAFC & Dr. Lord Abbey, Dalhousie U.	Intro Remarks from the CSHS 2026 Conference Chair & CSHS President
8:30 AM	KC Irving Centre Auditorium		P2.1 Plenary Session	Dr. Shahpour Alirezaee, U. Windsor	Keynote Address | Robotics and Artificial Intelligence in Precision Agriculture: Applications and Future Prospects
9:30 AM	KC Irving Centre Auditorium		P2.2 Plenary Session	Dr. Harrison Wright, AAFC	Plenary Address | Same Year and Legacy Effects of the Historic 2025 Drought on Nova Scotia's Woody Perennials: Apples, Wine Grapes and Blueberries
10:00 AM	KC Irving Centre Auditorium		P2.3 Plenary Session	Dr. Vicky Levesque, AAFC	Plenary Address | Building soil health and climate resilience in horticultural systems through organic amendments

10:30 AM	**KC Irving Centre Lobby**	**Morning Coffee Break**	**Morning Coffee Break**	**Morning Break**
11:00 AM	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS** **Indicates Student Competitor
11:00 AM	Patterson 107	C1.1 Crop Improvement	Dr. Jun Song, AAFC	Invited Speaker | Integration of Untargeted Metabolomics and Genome-Wide Association Studies Reveals Genetic Control of Apple Fruit Quality
11:30 AM	Patterson 107	C1.2 Crop Improvement	Dr. Shawn Clark, NRC	Rapid domestication of Rubus arcticus for regional fruit production
11:45 AM	Patterson 107	C1.3 Crop Improvement	Dr. Anze Svara, U. Saskatchewan	A first look at quantitative evaluation of cold-hardy fruit germplasm at Usask
12:00 PM	Patterson 107	C1.4 Crop Improvement	Dr. Marco Todesco, UBC	Panning for gold: characterizing the genetic basis of fruit colour diversity in salmonberry
12:15 PM	Patterson 107	C1.5 Crop Improvement	Mr. Jonathan Gaiero, AAFC	Genomic and phenomic signatures of Canadian strawberry germplasm
11:00 AM	KC Irving Centre Classroom	F1.1 Fruits	Dr. Shawkat Ali, AAFC	Invited Speaker | Emergence of New Pathogens on Strawberry and Raspberry Under Changing Environmental Conditions
11:30 AM	KC Irving Centre Classroom	F1.2 Fruits	Mr. Clay Elzinga, Acadia U.	** | Characterizing Strawberry Aroma for Future Cultivar Development
11:45 AM	KC Irving Centre Classroom	F1.3 Fruits	Ms. Kylie DeViller, Acadia U.	** | Genome-wide association study of apple fruit morphology
12:00 PM	KC Irving Centre Classroom	F1.4 Fruits	Mrs. Shakirah Azeez, Dalhousie U.	** | Phytochemical assessment, genotoxicity and cytotoxicity screening of extracts from three varieties of haskap leaf
12:15 PM	KC Irving Centre Classroom	F1.5 Fruits	Mr. Ernesto Alonso Lagarda-Clark	** | Defining Haskap (Lonicera caerulea cv Aurora) berry ripening nature: the role of ethylene and alternative respiration in physicochemical ripening events
11:00 AM	KC Irving Centre Auditorium	H1.1 Horticulture Technology	Dr. Praveen Saxena, U. Guelph	Invited Speaker | Conservation, Preservation, and Restoration (CPR): An Integrated System for Safeguarding Canadian Plant Biodiversity
11:30 AM	KC Irving Centre Auditorium	H1.2 Horticulture Technology	Dr. Sarah Lane, U. Fraser Valley	Validated soil phytohormone analysis with paired targeted-untargeted workflow reveals soil phytohormone signatures with links to plant health and land use
12:00 PM	KC Irving Centre Auditorium	H1.3 Horticulture Technology	Dr. Poonam Singh, Assiniboine College	Substrate stratification drives performance of Typha biochar-based soilless growing media

12:15 PM	KC Irving Centre Auditorium	H1.4 Horticulture Technology	Dr. Roksana Saleh, Dalhousie U.	Climate-Smart Mixed Growing Medium for High-Yield, Low-Input Crop Production and Commercial Deployment
11:00 AM	Patterson 213	V1.1 Vegetables	Dr. Mary Ruth Macdonald, U. Guelph	Invited Speaker | Evaluation and modification of electric autonomous robots for vegetable production
11:30 AM	Patterson 213	V1.2 Vegetables	Dr. Jonathan Neilson, AAFC	Effects of adopting soil health building practices on potato production
11:45 AM	Patterson 213	V1.3 Vegetables	Mr. Kappeeran Venkatesan, Dalhousie U.	** | Implications of Climate Change Induced Temperature Variation on Phytophthora infestans
12:00 PM	Patterson 213	V1.4 Vegetables	Mr. Pratik Gyawali, Dalhousie U.	** | Effect of Ascophyllum nodosum extract on Arbuscular mycorrhizal fungi germination and potato growth
12:15 PM	Patterson 213	V1.5 Vegetables	Mr. Vijaya Ragavan Mohan, Dalhousie U.	** | Ascorbic Acid Seed Priming Enhances Yield and Related Re-sponses in Broccoli Under Water Deficit Stress
12:30 PM	**Fountain Commons**	**Lunch**	**Lunch**	**Lunch**
2:00 PM	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS**	**CONCURRENT SESSIONS** **Indicates Graduate Student Competitor
2:00 PM	Patterson 107	C2.1 Crop Improvement	Dr. Bourlaye Fofana, AAFC	Diploid potatoes: When Less Can Be More
2:15 PM	Patterson 107	C2.2 Crop Improvement	Dr. Kyle Gardner, AAFC	Identification of a novel source of self-compatibility variation in diploid potato, Solanum tuberosum
2:30 PM	Patterson 107	C2.3 Crop Improvement	Dr. Beatrice Amyotte, AAFC	Strawberry breeding for improved adaptation across Canadian regions and growing systems
2:45 PM	Patterson 107	C2.4 Crop Improvement	Dr. Justin Renkema, AAFC	Strawberry cultivars vary in their response to transplant steam treatment protocols
2:00 PM	KC Irving Centre Classroom	F2.1 Fruits	Dr. Shawn Clark, NRC	Evaluating Indoor Agriculture Facility Performance: A comparison of retrofitted facilities and turnkey solutions
2:15 PM	KC Irving Centre Classroom	F2.2 Fruits	Dr. Simone Castellarin, UBC	Impact of heatwaves on grapevine (Vitis vinifera L.) physiology in major cultivars grown in British Columbia
2:30 PM	KC Irving Centre Classroom	F2.3 Fruits	Dr. Ian Willick, AAFC	Impacts of alleyway tillage on L'Acadie hybrid grapevine performance
2:45 PM	KC Irving Centre Classroom	F2.4 Fruits	Dr. Xiaotang Yang, AAFC	Predicting Apple Dry Matter Content Using Vis–NIR Spectroscopy: From Orchard to Storage
2:00 PM	KC Irving Centre Auditorium	H2.1 Horticulture Technology	Mr. Roman Javorek, Dalhousie U.	** | Characterization of RNAi Machinery and Candidate Target Genes in Synchytrium endobioticum toward Spray-Induced Gene Silencing for Potato Wart Management

2:15 PM	KC Irving Centre Auditorium	H2.2 Horticulture Technology	Ms. Maud Maayaa Asare, U. East Anglia	** | Germination dynamics of Cryptolepis sanguinolenta: Impact of seed storage duration and hormonal factors
2:30 PM	KC Irving Centre Auditorium	H2.3 Horticulture Technology	Mr. Dane Harder, U. Sask	** | A comprehensive study of soil and plant health indicators and their relationship to the growth of Fraxinus pennsylvanica in the urban environment
2:45 PM	KC Irving Centre Auditorium	H2. Horticulture Technology	Ms. Vijitha Amalapridman, Dalhousie U.	** | Dose-Dependent Effects of Phosphorus–Nitrogen Caged Compounds on Plant Growth, Yield, and Physiology
2:00 PM	Patterson 213	V2. Vegetables	Mrs. Sarah Olusola, Dalhousie U.	** | Effect of phenylalanine on tomato seed germination and seedlings establishment
2:15 PM	Patterson 213	V2. Vegetables	Mr. Aswin Jeyapandian, Dalhousie U.	** | Effect of Crustacean Shell Hydrolysate Biostimulant on Tomato Crop Growth and Phytochemical Performance
2:30 PM	Patterson 213	V2. Vegetables	Ms. Jashanpreet Kaur, Dalhousie U.	** | Can Kale Rhizobacteria Affect Tomato Seed Germination and Seedling Growth?
2:45 PM	Patterson 213	V2. Vegetables	Qiucheng Jiang, Dalhousie U.	** | Tomato Plant Response to different Concentrations of Caffeine
3:00 PM	**Fountain Commons**	**Afternoon Coffee Break**	**Afternoon Coffee Break**	**Afternoon Break**
3:30 PM	**OPEN POSTER SESSION**	**OPEN POSTER SESSION**	**OPEN POSTER SESSION**	**CONCURRENT SESSIONS** **Indicates Graduate Student Competitor ****Indicates Undergraduate Student Competitor
3:30 PM	Fountain Commons	PI. Indigenous & Northern Posters	Mr. Mohit Sharma, U. Laval	** | Non-destructive prediction of total soluble solids and firmness in haskap berries using portable near-infrared spectroscopy
3:30 PM	Fountain Commons	PI. Indigenous & Northern Posters	Anneliese Henneberg, Acadia U.	**** | Effects of changing winter conditions on germination of native Wapna'ki Forest species.
3:30 PM	Fountain Commons	PI. Indigenous & Northern Posters	Tedi Pollak, Acadia U.	** | Investigating Arctic louseworts for mycorrhizal associations and parasitism
3:30 PM	Fountain Commons	PI. Indigenous & Northern Posters	Anamika Ray, Anandi Botanicals	Micropropagation & related services for conservation of Indigenous plants, phytoremediation, smart packaging and related data solutions.
3:30 PM	Fountain Commons	PC. Crop Improvement Posters	Mr. Lachlann Simms, Acadia U.	Morphometric Analysis of Leaf Shape Diversity in Malus
3:30 PM	Fountain Commons	PC. Crop Improvement Posters	Ms. Alison Purcell, Acadia U.	** | Examining co-inheritance of reproductive and vegetative traits in hybrid grapevines
3:30 PM	Fountain Commons	PC. Crop Improvement Posters	Mr. Ethan Surman, U. Guelph	** | Cutting to the Core: Developing Genetically Resistant Peaches to Brown Rot Disease Through Chlorogenic Acid
3:30 PM	Fountain Commons	PC. Crop Improvement Posters	Ms. Naincy Sharma, U. Guelph	** | Postharvest Dynamics of Ethylene and Quality Traits Across Diverse Peach Textural Groups
3:30 PM	Fountain Commons	PC. Crop Improvement Posters	Ms. Carmen Peng, Acadia U.	** | Leafing Through Pyrus: Comprehensive Morphometrics of Leaf Shape Variation in Pear
3:30 PM	Fountain Commons	PF. Fruit Posters	Mr. Riley Lemieux, Acadia U.	** | Rootstock Effects on Scion Wood Anatomy and Agronomic Traits in Grafted Honeycrisp Apple Trees

3:30 PM	Fountain Commons	PF. Fruit Posters	Ms. Cindy Yu, Dalhousie U.	Poster Presenter** | Kombucha Fermentation as a Postharvest Strategy for Haskap Berry Utilization and Value Addition
3:30 PM	Fountain Commons	PF. Fruit Posters	Ms. Sarah Drury, AAFC	** | Mycovirome characterization reveals multiple viruses co-infecting a single isolate of the phytopathogenic fungus Botrytis cinerea
3:30 PM	Fountain Commons	PF. Fruit Posters	Ms. Sophia-Rose Snelgrove, U. Fraser Valley	** | The effect of increasing temperature on cranberry pollen germination
3:30 PM	Fountain Commons	PF. Fruit Posters	Ms. Taylor Cahill, Acadia U.	** | The effect of soil silicic acid amendments on strawberry plants grown under drought conditions
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Ms. Anne-Sophie Carreau, U. Laval	Poster Presenter | Developing growing media from recycled materials for rooftop vegetable production
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Ms. Clara Ryan, Acadia U.	Poster Presenter | Soil Health Responses to Apple Woodchip and Oyster Mushroom Amendments: An Incubation Study
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Mr. Mohammad Eshaq Rasekh, U. Guelph	Poster Presenter** | Physiological Response and Bitter Pit Reduction in 'Honeycrisp' Apples Treated with Modified Preharvest Hexanal
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Mr. Aswin Jeyapandian, Dalhousie U.	Poster Presenter** | Green Crab-Derived Meat Hydrolysate Biostimulant Enhances Tomato Crop Growth and Phytochemical Performance
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Dr. Champa Wijekoon, AAFC	Poster Presenter | Resveratrol (a human health promoting polyphenolic compound) as a phytochemical elicitor enhances growth, ripening, and phenolic accumulation in tomato (Solanum lycopersicum) cultivated under urban agriculture systems
3:30 PM	Fountain Commons	PH. Hort Tech Posters	Ms. Lainey Peters, U. Fraser Valley	** | Kynurenine as a growth regulator in Fragaria vesca
6:30 PM	**Fountain Commons**	**Gala Dinner & Awards**	**Dr. Shahrokh Khanizadeh & Dr. Raphael Ofoe, CSHS**	**Tickets includes in General Registration | Tickets available for purchase for Day-Registrants**

Saturday, June 20, 2026

Time	Duration	Location	Session	Speaker	Description
8:00 AM	KC Irving Centre	Registration	Registration	Conference Registration | Poster & Exhibitor Setup	
8:45 AM	**PLENARY SESSIONS**	**PLENARY SESSIONS**	**PLENARY SESSIONS**	**PLENARY SESSIONS**	
8:45 AM	KC Irving Centre Auditorium	P3. Plenary Session	Dr. Beatrice Amyotte, AAFC & Dr. Lord Abbey, Dalhousie U.	Conference Closing Remarks from the CSHS 2026 Conference Chair & CSHS President	
9:00 AM	KC Irving Centre Auditorium	P3. Plenary Session	Dr. Gurpreet Singh Selopal, Dalhousie U.	Plenary Address | Nanoengineering for Sustainable Agriculture Technologies	

9:30 AM	KC Irving Centre Auditorium	P3. Plenary Session	Dr. Jayasankar Subramanian, U. Guelph	Plenary Address | Contemporary breeding in peach to address consumer trends and climate change
10:00 AM	**KC Irving Centre Lobby**	**Morning Coffee Break**	**Morning Coffee Break**	**Morning Break**
10:30 AM	**WORKSHOPS**	**WORKSHOPS**	**WORKSHOPS**	**WORKSHOPS**
10:30 AM	KC Irving Centre Classroom	W1. WORKSHOP: R Data Science Skills	Dr. Danielle Quinn, Ms. Paige Levangie, Mr. Terrell Roulston, Acadia U.	Workshop: Data Science Skills in R programming language for all levels
10:30 AM	KC Irving Centre Auditorium	W2. WORKSHOP: Scientific Grant Writing	Dr. Kirk Hillier, Acadia U. | Panel L. Abbey, M. Todesco, S. Castellarin, B. Fofana	Workshop: Grant Wring for successful research funding in the natural sciences
12:30 PM	**End of Conference**	**End of Conference**	**Poster & Exhibitor Takedown**	**Poster & Exhibitor Takedown | Lunch on Your Own**

Conference Chair's Welcome Message

Dear Friends and Colleagues,

I am so pleased to welcome you all to the Canadian Society for Horticultural Science 2026 National Annual Conference.

Our 2026 conference will take place in Mi'kma'ki, the unceded and ancestral territory of the Mi'kmaw nation. This landscape is home to an amazing diversity of natural life, including stunning Wabanaki forests, farmlands, cities and oceanscapes. As we gather over the next few days, we will have a unique opportunity to learn directly from Mi'kmaw Elders and other knowledge keepers about their experiences growing plants and food. I encourage us all to approach this opportunity with respect and gratitude for people and place, in keeping with the principles of Peace and Friendship that were ratified by Treaty three hundred years ago in 1726.

Our host institution is Acadia University, whose mission is to provide a personalized and rigorous education; promote a robust and respectful scholarly community; and inspire a diversity of students to become critical thinkers, lifelong learners, engaged citizens, and responsible global leaders. In this spirit, I encourage thoughtful conversation and engagement among all delegates, from students at early stages of their careers to celebrated leaders in Indigenous, academic, government, and industry research. In particular, I encourage support for our undergraduate and graduate student presenters as they share their research progress and discoveries.

Our theme for 2026 is Inclusive Canadian Horticulture from Coast to Coast to Coast. We are thrilled to welcome our regional Indigenous partners from Glooscap First Nation and the Annapolis Valley First Nation, as well as peers in horticultural science and technology from across Canada. We gather as a group of nearly one hundred delegates, including experts in horticultural crop genetics, physiology, pest and disease management, Indigenous and Northern horticulture, horticulture technology, and more. Together we represent the depth and breadth of horticultural science in Canada today. Among us is the next generation of scientists, presenting rich opportunities for knowledge exchange and collaboration. We will build upon the legacy of the Canadian Society for Horticultural Science, established seventy years ago in 1956.

The conference will begin on Wednesday, June 17th, with a Local Tour of the Nova Scotia Annapolis Valley, including a showcase of the AAFC Kentville Research and Development Centre, lunch at a local winery, and a visit to Webster Farms owned by the Annapolis Valley First Nation. The tour has been organized by our local committee: Dr. Migicovsky, Ms. Purcell, Dr. Willick, and Ms. Hines. In the evening, we will convene in the Acadia University KC Irving Centre Garden Room for a Welcome Reception with all conference delegates.

Our first day of conference proceedings, Thursday, June 18th, will focus on Indigenous-led horticulture projects and community food initiatives. We begin with an opening ceremony from Elder Dr. Lorraine Whitman and welcome addresses from Dr. Allison Walker, Professor of Biology at Acadia University, and Mr. Geoff Mercer, Director of Research, Development and Technology at AAFC Kentville. We will then hear talks from Keynote Speaker Dr. Kyle Bobiwash, Assistant Professor and Indigenous Scholar at the University of Manitoba, and Indigenous Chair Mrs. Heather Berry. Invited Speakers for Thursday are Dr. Wade Abbott, Mr. Brett Weighill, Dr. Shawna MacKinnon, and Dr. Julia Wheeler; scientific chair for this session is Dr. Emmanuelle D'Amours.

The CSHS Annual General Meeting, Chaired by Dr. Lord Abbey, will take place over lunch on Thursday, June 18th. The afternoon will close with an Indigenous Talking Circle during which time our speakers will reflect on their experiences as Indigenous community members and allies, and consider how each of us can contribute to inclusive and secure food systems. In the evening, Student Chair, Ms. Sarah Drury, will host a Paint, Pub, and Bonfire event for student delegates to get to know each other and enjoy the small-town nightlife in Wolfville.

Our second day of proceedings, Friday June 19th, will expand the scope of discussion to address critical topics in the areas of horticultural innovation and adaptation. We will begin with a Keynote Address from Dr. Shahpour Alirezaee, Assistant Professor of Electrical and Computer Engineering at the University of Windsor, who will examine the applications and prospects of artificial intelligence in horticulture. We will then hear regional perspectives on climate

adaptation and resiliency from Dr. Harrison Wright, AAFC Plant Physiologist, and Dr. Vicky Levesque, AAFC Soil Health Scientist. The day will continue with breakout sessions for focused presentations on crop improvement, fruits, horticulture technology, and vegetables, featuring a suite of invited speakers, oral presenters, and graduate student oral presenters. Our Invited Speakers for Friday are Dr. Jun Song, Dr. Shawkat Ali, Dr. Praveen Saxena, and Dr. Mary Ruth Macdonald. The scientific chairs for these sessions are Dr. Raphael Ofoe, Dr. Jayasankar Subramania, Dr. Vasantha Rupasinghe, Dr. Jonathan Neilson, and Dr. Simone Castellarin.

In the afternoon of Friday, June 19th, we will have an Open Poster Session featuring graduate and undergraduate student presenters as well as snacks and refreshments for visiting members of the community. In the evening, we will celebrate science excellence with a Gala Dinner and Awards Ceremony in the Fountain Commons Great Hall. CSHS Lifetime Member Dr. Shahrokh Khanizadeh will share a personal reflection on the history and importance of the society and CSHS Communications Officer Dr. Raphael Ofoe will speak about his experiences as an early career academic in horticultural science. CSHS Awards Chair Dr. Vasantha Rupasinghe will present awards to graduate and undergraduate students for their outstanding oral and poster presentations at the conference.

Our final day of proceedings, Saturday, June 20th, will begin with plenary lectures by Dr. Gurpreet Singh Selopal, Assistant Professor of Engineering at Dalhousie University and Dr. Jayasankar Subramanian, Professor of Plant Agriculture at the University of Guelph. Their invited lectures will cover the themes of nanotechnology and contemporary plant breeding, providing a future-focused outlook and inspiration for continued conversation as we close our formal program. After coffee, we are pleased to offer free technical workshops in Data Science and Grant Writing led by Acadia faculty members Dr. Kirk Hillier and Dr. Danielle Quinn alongside research associates Ms. Paige Levangie and Mr. Terrell Roulston. The conference will end at 12:30 PM on Saturday, June 20th.

My name is Béatrice Amyotte, and I join you as the CSHS treasurer as well as a researcher in berry breeding and genetics. My Mother is Métis from Saskatchewan and my Father is Québécois. Growing up and through my career, I have had the privilege to live in Yukon, Saskatchewan, Ontario, Québec and Nova Scotia. Each of these places and their incredible people have taught me important lessons about plants, biodiversity, and growing food. I am passionate about fruits, in particular berries, because of their importance to culture, community, health, and wellness. I have served the CSHS since 2022 when I helped to organize the local tour for the conference in Halifax. Being part of the society has given me the chance to build connections with wonderful new colleagues and friends across Canada. As 2026 Conference Chair, I aim to be an ally and advocate for diverse perspectives in horticulture research and food production, and I hope to learn something new from each of you throughout the course of our conference.

I am joined by many exceptional people in hosting CSHS 2026. The Local Chair is Dr. Zoë Migicovsky, Canada Research Chair in Agri-Food and Sustainable Agriculture at Acadia University. The Indigenous Chair is Mrs. Heather Berry, a proud member of the Mohawks of Kahnawake and the Deputy Director of Indigenous Science at AAFC. Our Society President and Scientific Chair is Dr. Lord Abbey, Professor of Horticulture at Dalhousie University. Our Past President and Sponsorship Chair is Dr. Bourlaye Fofana, AAFC Research Scientist in Horticultural Genetics and Biotechnology. Other organizers not previously listed include Dr. Champa Wijekoon, Mr. Jonathan Gaiero, Ms. Zabrina Whitman, Ms. Maddie Radvanyi, Ms. Jennifer Kershaw, Ms. Kylie DeViller, Mr. Clay Elzinga, Ms. Carmen Peng, Ms. Kate Lukeman and Ms. Christena Macdonald. On behalf of the CSHS and our brilliant conference committee, we are pleased to welcome you all from near and far to our home in Mi'kma'ki and to share in this wonderful opportunity for science and learning.

See you soon,

Dr. Beatrice Amyotte
Treasurer, Canadian Society for Horticultural Science
Chair CSHS 2026 National Annual Conference

CSHS President's Welcome Message

On behalf of the Canadian Society for Horticultural Science, it is my honour to welcome you to our 2026 Annual National Conference.

This year's theme, Canadian Horticultural Innovations and Collaborations from Coast to Coast to Coast, celebrates the extraordinary diversity of the land, people, and ideas. We gather with deep gratitude on the traditional lands of the Mi'kma'ki (pronounced Mig-mah-gee), the ancestral and unceded territory of the Mi'kmaw (Mig-mah) Nation. This territory is governed by the "Treaties of Peace and Friendship" which Mi'kmaq and Wolastoqiyik (WOOL-ah-sto-gway) people first signed with the British Crown in 1725. These treaties did not implicate or affirm the surrender or transfer of land to the British, but recognized Mi'kmaq and Wolastoqey (WOOL-ah-sto-gway) title and set the rules for what was to be a long-standing relationship between nations, initially preventing war and facilitating trade. Indigenous knowledge is critical to understanding the natural world, and we recognize the equal and important contributions Indigenous peoples have made to science. Your knowledge, stewardship, and partnership are vital to shaping a more inclusive and sustainable horticulture for us all.

Alongside you, we welcome horticultural scientists from every province and territory, comprising researchers, educators, growers, and students whose work spans resilient crops, climate adaptation, soil health, and food sovereignty. Together, we are planting the seeds of a truly national collaboration; one that bridges Indigenous and Western science, connects Atlantic to Arctic to Pacific, and grows solutions rooted in place and shared purpose. Over the coming days, may we exchange ideas freely, build lasting partnerships, and leave with renewed commitment to a horticultural science that serves every community.

Welcome, and let's grow together.

Thank you for being part of the 2026 CSHS Annual National Conference.

Meegwetch. Wela'lioq.

Sincerely,
Dr. Lord Abbey
President, CSHS

CSHS 2026 National Annual Conference Committee

Coordinating Committee	
Conference Chair	Dr. Beatrice Amyotte, AAFC, Kentville, NS
Indigenous Chair	Mrs. Heather Berry, AAFC, Charlottetown, PE
Committee Member	Dr. Shahrokh Khanizadeh, ELM Consulting. Saint-Lazare, QC
Committee Member	Dr. Jonathan Neilson, AAFC, Lethbridge, AB
Committee Member	Mr. Jonathan Gaiero, AAFC, Kentville, NS
Committee Advisor	Ms. Zabrina Whitman-Francis, Acadia University, Wolfville, NS
Scientific Committee	
Scientific Chair	Dr. Lord Abbey, Dalhousie University, Truro, NS
Awards Chair	Dr. H.P. Vasantha Rupasinghe, Dalhousie U., Truro, NS
Committee Member	Dr. Champa Wijekoon, AAFC, Winnipeg, MB
Committee Member	Dr. Simone Castellarin, UBC, Vancouver, BC
Committee Member	Dr. Shahrokh Khanizadeh, ELM Consulting. Saint-Lazare, QC
Committee Member	Dr. Raphael Ofoe, Dalhousie University, Halifax, NS
Committee Member	Dr. Zoe Migicovsky, Acadia University, Wolfville, NS
Committee Member	Dr. Jayasankar Subramanian, University of Guelph, Guelph, ON
Committee Associate	Dr. Emmanuelle D'Amours, AAFC, Normandin, QC
Committee Associate	Dr. Bourlaye Fofana, AAFC, Charlottetown, PE
Sponsorship Committee	
Sponsorship Chair	Dr. Bourlaye Fofana, AAFC, Charlottetown, PE
Committee Member	Dr. Champa Wijekoon, AAFC, Winnipeg, MB
Committee Member	Dr. Raphael Ofoe, Dalhousie University, Truro, NS
Local Committee	
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Committee Member	Dr. Ian Willick, AAFC, Kentville, NS
Committee Member	Ms. Alison Purcell, Acadia University, Wolfville, NS
Committee Advisor	Ms. Sarah Hines, Acadia University, Wolfville, NS
Committee Advisor	Ms. Jen Kershaw, Acadia University, Wolfville, NS
Student Committee	
Student Chair	Ms. Sarah Drury, AAFC, St-Jean-sur-Richelieu, QC
Committee Member	Mr. Clay Elzinga, Acadia U. & AAFC, Kentville, NS
Committee Member	Ms. Kylie DeVillier, Acadia U. & AAFC, Kentville, NS
Student Volunteer	Ms. Carmen Peng, Acadia U. & AAFC, Kentville, NS
Student Volunteer	Ms. Kate Lukeman, Acadia U. & AAFC, Kentville, NS
Student Volunteer	Ms. Christena MacDonald, Acadia U. & AAFC, Kentville, NS
Student Volunteer	Ms. Clara Ryan, Acadia U. & AAFC, Kentville, NS
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Keynote speakers

Dr. Kyle Bobiwash

Dr. Kyle Bobiwash, of Mississauga First Nation, is an Assistant Professor and an Indigenous Scholar in the Faculty of Agricultural and Food Sciences at the University of Manitoba. At the University of Manitoba, his lab focuses on understanding the ecology of beneficial insects in agro-ecosystems and the greater landscape. Their goal is to better characterize the landscape and resources utilized by insects to understand how land management might affect insect community composition and ecosystem service delivery. In addition to his ecological work, Kyle is also a researcher in residence with the Office of the Chief Science Advisory of Canada, where he combines his academic work on building Indigenous science capacity with government-wide efforts to build a Canadian science ecosystem that is driven by Indigenous leadership and collaboration.

Dr. Shahpour Alirezaee

Dr. Shahpour Alirezaee is an Assistant Professor in the Department of Mechanical, Automotive & Materials Engineering at the University of Windsor. He received his Ph.D. in Electrical Engineering from Amirkabir University, Tehran, Iran. He is the founder of the Autonomous Intelligence Robotics Center (AIRC) and serves as coordinator of the BEngTech Mechatronics Program and the Siemens Mechatronic Systems Certification Program (SMSCP) at the University of Windsor. Dr. Alirezaee is a Senior Member of IEEE (SMIEEE) and a licensed Professional Engineer (P.Eng). His work focuses on advancing robotics, autonomous systems, and smart manufacturing technologies. His research interests include robotics (mobile robots, robot manipulators, and human-robot interaction), autonomous systems (connected autonomous robots, autonomous underwater vehicles, drones, and navigation systems), and advanced manufacturing (embedded robotic and vision systems, and artificial intelligence). His work also explores applications in agriculture and greenhouse systems, where intelligent automation and sensing technologies are used to improve productivity, sustainability, and precision operations. Dr. Alirezaee actively collaborates with industry partners and interdisciplinary teams to address challenges in automation, digital manufacturing, and intelligent systems integration. He is also committed to education and workforce development, engaging students in hands-on learning and applied research, and contributing to the advancement of next-generation engineering solutions.

Plenary speakers

Ms. Heather Berry

Heather is a proud member of the Mohawks of Kahnawake and earned her B.A in Psychology from Carleton University, after training in Social Service Work with Algonquin College and spending her early career working with grassroots Indigenous organizations. Heather has over 15 years of experience working with the Federal government and has spent the majority of her career analyzing complex issues and policies and formulating recommendations on government initiatives as they relate to Indigenous Peoples in Canada. She has spent her career navigating the complex environment created by colonialism, from use if the Indian Act and into self-government agreements, as well the relationship of Indigenous people with the Federal and Provincial governments. Prior to joining the public service she worked for several National Indigenous Organizations and the Royal Bank of Canada. Most recently, Heather has been working as a Deputy Director of the Indigenous Science Liaison Office at Agriculture and Agri-Food Canada where she provides advice and recommendations on science policy and Indigenous collaboration within AAFC. In addition, she is an integral member of a 14 department I-STEM Cluster providing key advice and recommendations on how to better include Indigenous Knowledge and expertise with AAFC and across the partner departments. Outside of work, Heather manages a forest woodlot, practices beadwork, loves weight-lifting, and shares her life on Prince Edward Island with her husband Michael and their two cats, Billy and Happy.

Dr. Gurpreet Singh Selopal

Dr. Gurpreet Singh Selopal is currently an Assistant Professor in the Department of Engineering, Faculty of Agriculture, at Dalhousie University, and the founder of the Sustainable Nanoengineering lab (SNL). Dr. Selopal is a Licensed Professional Engineer. He is a well-established nanotechnologist in the field of sustainable energy conversion/storage, environmental remediation, and smart agriculture technologies. His research projects focus on advanced nanoengineering of multifunctional quantum materials, nanofabrication, and architectural design optimization to make these technologies more reliable, economically viable, and affordable for net-zero transitions. He has 90+ peer-reviewed publications in high-impact journals (*Adv. Energy Mater., Nano Energy, Adv. Sci., Chem. Eng. J., Adv. Funct. Mater., etc.)*. He serves as a reviewer for 30+ journals and several provincial/federal funding agencies. Dr. Selopal has an impressive record of training HQP in different technologies.

Dr. Subramanian Jayasankar

Dr Subramanian has over 35 years of experience in horticulture, especially fruit crop improvement in India, US and Canada. He has worked with diverse crop species and for the past 24 years has been working with tender fruits - both using conventional and contemporary approaches. He has developed and released 15 improved varieties mostly in tree fruits, in India and Canada. He is an investigator in several provincial, national and international grants such as IDRC and has obtained over 14 million dollars in grants as PI or Co-PI. Currently his work is focusing on breeding 'stony hard' peach varieties for changing consumer needs, molecular plant microbe interactions in peach and plum diseases and post-harvest physiology of fruits, especially bitterpit in apples. He has invited to present his work at several national and international organizations including the *UN General Assembly's Market Place in New York* and at the *Global Affairs Canada, Ottawa*. He is a member of the editorial board in three International Journals and has reviewed manuscripts for over 20 International journals, and many international grants. He has published over 125 research articles, co-edited 3 books, has 8 patents and 20 PBRs.

Invited speakers

Dr. Wade Abbott

Dr. Wade Abbott received his Ph.D. in Biochemistry at the University of Victoria in 2005. He then completed postdoctoral research fellowships at the University of Victoria (2005-2008) and University of Georgia, Complex Carbohydrate Research Centre (2008-2010). Dr. Abbott moved to Lethbridge, Alberta in 2011 to start his own lab with Agriculture and Agri-Food Canada at the Lethbridge Research and Development Centre. Currently, he is a Senior Research Scientist and Adjunct Professor in the Departments of Chemistry & Biochemistry, and Biological Sciences at the University of Lethbridge. His group studies carbohydrate active enzymes and metabolic pathways from diverse microbiomes, using a combination of high-resolution sequencing, agricultural glycomics, and bioinformatics. Working in collaboration with research groups across Canada, the USA, and Europe he has published over 100 papers and filed several patents. In 2018, Dr. Abbott started working with First Nations on co-developed projects related to characterization cell walls from traditional plants and seaweeds. These partnerships have led to new perspectives, considering the role of western science and traditional ecological knowledge, in the relationships between people, animals, and the land.

Mr. Brett Weighill

Brett Weighill is an educator, researcher, and interdisciplinary practitioner working at the intersection of Indigenous education, cultural ecology, and regenerative agriculture. Holding degrees in Biology and Education and a Master of Arts in Education from the University of Lethbridge, he explores how Indigenous land-based knowledge and scientific inquiry can be braided together through reciprocal, community-led collaboration. His graduate work focused on sweetgrass cultivation, ecological restoration, and Indigenous-led eco-action research on the Piikani Nation, contributing to both educational scholarship and peer-reviewed scientific publication. Brett is currently pursuing doctoral research in regenerative agriculture, examining how historical and philosophical relationships between Indigenous and European land stewardship practices influence contemporary agricultural systems. His work centers on relational accountability, food sovereignty, and building practical pathways for more inclusive and ecologically grounded science.

Dr. Shawna McKinnon

Dr. MacKinnon obtained her Ph.D. from the University of Ottawa where she worked on “Bioactive Terpenoids of the Rutales” that exhibit antifeedant and/or antimalarial activity. She then conducted postdoctoral studies at the Department of Chemistry at the University of Alberta focusing on the synthesis of oligosaccharides using enzymes, and the identification of the phytotoxins produced by a black spot pathogen of canola. In her 17 years at the National Research Council of Canada, she worked on the chemical profiling and medicinal activities of fruit such as blueberries, cranberries, and rosehips but also a range of marine plants including the study of plant stimulatory compounds in commercial seaweed extracts, the isolation of marine toxins from algal blooms and the growth stimulatory properties of the microalgal. During this time she lead and completed a number of industry client projects which included a project on the indoor hydroponic growth of leafy green vegetables.Dr. MacKinnon’s main research focus is on Northern Agriculture where she investigates the use of controlled environment agriculture (CEA) plant production systems (e.g. containerized, cold frames, etc.,) to grow traditional and non-traditional plants of interest to Indigenous communities with the end goal of increasing food security in the North. She has expertise in system design/setup and plant production and collaborates with The Arctic Research Foundation in the “Naurvik” project which is an Inuit-led, co-developed project in Gjoa Haven, Nunavut. She also conducts research on the use of biocontrol pest management strategies in crops grown in containerized CEA systems. As a phytochemist her laboratory conducts research on fruit chemistry. She joined AAFC located in Kentville, Nova Scotia in 2017.

Dr. Julia Wheeler

Dr. Wheeler grew up on the east coast of Newfoundland and attended Memorial University for both her undergraduate degree (Biology Hons, 2007) and MSc (Biology, 2009) where she first developed an interest in boreal ecology. Dr. Wheeler worked in Labrador between 2007-2010 on projects evaluating climatic drivers of treeline ecotone change. In 2011 she moved to Switzerland where she completed her PhD at the University of Basel and the Swiss Federal Institute for Snow and Avalanche Research in Davos, Switzerland (2011-2014). During her PhD Dr. Wheeler studied alpine shrub community responses to climate change. Dr. Wheeler completed postdoctoral research program at the University of Massachusetts-Amherst and the Harvard Forest in Petersham, Massachusetts (2014-2017), where she studied the interactive impacts of invasive plant species and climate change on forest tree recruitment. In 2017 Dr. Wheeler returned to Newfoundland and Labrador and joined Agriculture and Agri-Food Canada in St. John’s as a research scientist. At AAFC, the broad goals of her research program are to assist with the development of resilient and sustainable food systems in Northern communities in Canada through research into season specialized cold-climate vegetable production systems.

Dr. Harrison Wright

Dr. Wright joined AAFC in his current capacity as a Research Scientist in 2017; however, he has been affiliated with AAFC research (e.g., student, grad student, terms) for over 25 years. His formative years were spent growing up on a mixed family farm (apples, strawberries and hay). Harrison's research spans both Plant and Postharvest Physiology in relation to woody perennials (e.g., apples, pears, blueberries and wine grapes). A frequent focus of this research involves the primary production and long-term storage potential of fruit in the context of weather extremes and climate change. Dr,\. Wright holds a certification in Engineering (Mount Allision University, NB), a BSc in Physics and a BA in English (Acadia University, NS), a MSc in Agriculture and a PhD in Plant Physiology (Dalhousie University, NS) and completed a postdoctoral fellowship in Postharvest Physiology (Laval University, QC).

Dr. Vicky Lévesque

Dr. Vicky Lévesque is a soil health scientist with expertise in agronomy, soil science, and agricultural microbiology, with a strong focus on horticultural systems. She obtained her BSc in Agronomy, MSc in Soil and Environmental Sciences, and PhD in Agricultural Microbiology from Université Laval (Québec, Canada). She then completed a postdoctoral fellowship with Agriculture and Agri-Food Canada (AAFC) in Québec City. Through her graduate studies and postdoctoral research fellow, she developed an interdisciplinary research approach integrating soil physics, biochemistry, and microbiology to address key challenges in agricultural sustainability. Since 2020, Dr. Lévesque has been a soil health scientist at AAFC in Kentville, Nova Scotia. Her research explores innovative soil management strategies—particularly biochar, compost, and wood-chip amendments—to improve soil health, increase soil carbon sequestration, and enhance productivity in horticultural cropping systems. She also investigates sustainable, soil-based approaches to mitigate pathogen pressures in perennial fruit crops, including apple orchards. Dr. Lévesque is a dedicated mentor, managing a state-of-the-art research laboratory and guiding graduate students pursuing MSc and PhD degrees. She has been invited to speak at numerous national and international events and has contributed to community leadership, including co-chairing a special session on *Biochar as an Amendment in Temperate Soils* at the 2018 Canadian Soil Science Society meeting. Since January 2026, she has served as Associate Editor of the *Canadian Journal of Soil Science*. She currently leads a national, industry-supported project focused on improving the climate resilience of Nova Scotia vineyards and co-leads initiatives within the Nova Scotia Agricultural Climate Solutions Living Lab addressing climate-smart management practices in woody perennial horticultural crops.

Dr. Jun Song

Dr. Jun Song is a research scientist at the Kentville Research and Development Centre, Agriculture and Agri-Food Canada (AAFC), Nova Scotia, Canada. He received his Ph.D from University Hohenheim, Germany in 1994. He then worked on his postdoctoral research at Michigan State University between 1994-1998, USA. He joined AAFC as a research scientist in 2001. Dr. Song's research focuses on maintaining and improving quality of horticultural produce. He specializes in the flavour biochemistry, postharvest physiology and biochemistry of fruit and vegetables. He has established the 'omics' research platform (proteomic and metabolomics) at AAFC focusing on horticultural and food products. Dr. Song has been leading numerous national research projects using integrated 'omics' techniques to reveal the control mechanism and identify biomarkers for flavour, texture, ripening and physiological disorders in fruit. He is the member of the ASHS and ISHS. He was the elected chair of postharvest working group of the ASHS. He serves as a member of the USDA postharvest biology working group (NE-1836). Dr. Song is an adjunct scholar at Dalhousie University, Nova Scotia, Canada.

Dr. Shawkat Ali

Dr. Shawkat Ali is a Research Scientist at Kentville Research and Development Centre with Agriculture and Agri-Food Canada. His research program focuses on diseases of tree fruits and small fruits. In tree fruit systems, his group works on apple summer diseases, apple sudden death, and apple replant disease. He also leads research on several fungal and viral diseases affecting small fruits. Dr. Ali's group has a strong interest in developing alternative and sustainable disease management strategies to support both tree fruits and small fruit production. Dr. Ali completed his Master's degree in Biotechnology from Quaid-i-Azam University and his Ph. D in Botany at the University of British Columbia. Following his Ph, D., he worked as a post-doctoral fellow at the University of Sherbrooke and as a visiting scientist at Saint-Jean-sur-Richelieu Research and Development Centre Québec. He later completed another post-doctoral fellowship at King Abdullah University of Science and Technology in Saudi Arabia. Dr. Ali also held short-term visiting scientist position at the Max-Plank Institute of Molecular Physiology in Potsdam, Germany, and at the Institute of Molecular Plant Sciences at the University of Edinburgh, in the UK. Dr. Ali has published more than 55 research papers in prestigious peer-reviewed journals and serves as an editor for three scientific journals. He is also an adjunct professor at the Department of Biology, Acadia University and at the Department of Plant, Food and Environmental Sciences, Dalhousie University as well as an External Graduate Faculty member, at the University of Maine, USA.

Dr. Praveen K. Saxena

Dr. Praveen K. Saxena is a Professor in the Department of Plant Agriculture and Director of the Gosling Research Institute for Plant Preservation (GRIPP) at the University of Guelph. His research focuses on the regulatory mechanisms underlying plant morphogenesis and stress tolerance, with applications in plant conservation and sustainable crop production. His work integrates advanced micropropagation, bioreactor technologies, controlled-environment systems, and stress-mitigation approaches to enable large-scale propagation of climate-resilient plants and support biodiversity conservation. His research program is highly collaborative, working closely with Parks Canada, Indigenous communities, and the horticulture industry to advance plant germplasm conservation and the commercial propagation of economically important ornamental, medicinal, and food crops.

Dr. Mary Ruth McDonald

Mary Ruth McDonald is a professor in the Department of Plant Agriculture, at the University of Guelph. Her research and outreach activities focus on vegetable crops, with an emphasis on vegetables on muck soils, the management of plant diseases, integrated pest management and sustainable crop production. This includes the use of drones for monitoring plant disease and the assessment of agricultural robots and other new technologies for vegetable crops. Her research group also conducts basic and applied research on clubroot on canola and brassica vegetables. Dr. McDonald teaches a portion of the undergraduate Introduction to Plant Agriculture and team teaches a graduate course in plant disease epidemiology. She has advised or co-advised over 35 M.Sc. students and 10 Ph.D.'s. Her research has been recognized by numerous invitations to speak at national and international grower meetings and scientific conferences, and by a number of awards, including the International Excellence in Integrated Pest Management award in 2015, and the Outstanding Research award from the Canadian Phytopathological Society in 2021.

Presentation Abstracts

Thursday, June 18, 2026

P1: Plenary Session (Patterson 107)

P1.1 Keynote address: Farming relationships through ecology

Kyle Bobiwash

University of Manitoba, Winnipeg, MB, Canada

Farms represent important habitat for a range of species from beneficial insects or soil microorganisms to persistent pests. Optimizing the ecological relationships among these diverse species can significantly enhance agricultural productivity and sustainability, moving beyond traditional approaches that often neglect these intricate interactions. Through better understanding these relationships at local levels, farmers can implement targeted strategies that promote beneficial biodiversity, potentially reducing reliance on external inputs and fostering more resilient agroecosystems and more efficient management. This approach, serves as a manner of ecological intensification, which aims to harness natural ecological processes to maintain productivity while minimizing environmental impact. Such strategies necessitate farmer-researcher partnerships that center the concerns and needs of stakeholders in the transformation of fruit agriculture. Through considerations of interactions and relationships in agroecosystems we can drive better innovation and research pathways that reconnect the whole of society with food systems and biodiversity.

I1 Indigenous & Northern Horticulture (Patterson 107)

I1.2 Invited Speaker: Consumption of traditional plants and seaweeds in the Pacific Northwest by rewilded cattle provides a unique lens for co-developed research into the digestion of complex cell walls by grazing ruminants.

Wade Abbott

Agriculture and Agri-Food Canada, Lethbridge, AB, Canada

The *muusmuus* are a herd of rewilded cattle herd living on Meares Island, B.C in the traditional territory of the Tla-o-qui-aht First Nation (TFN). Missionaries brought the first cattle to the island in the 19th century as a source of meat and milk for the Christie Residential School (1900-1983). Oral history of the TFN explains that the herd eventually wandered away from their paddocks, opting for a free-ranging lifestyle and today their descendants roam the throughout the ancient village of Opitsaht, mountains, forests, and beaches of Meares Island. The *muusmuus* forage on the traditional plants and seaweeds native to the forests and coastlines of the Pacific Northwest. Fascinatingly, the *muusmuus* have adopted a lifestyle more similar to a leaf-consuming “browser” (e.g., elk, moose) rather than a “grazer” (e.g., cattle, bison). Evidence provided will highlight that cattle adapt to the digestion of unconventional forages, including seaweeds. The traditional ecological knowledge of TFN recognizes that several of the plants consumed by the herd have been used historically as medicines by the TFN people. In this light, the herd displays remarkable resilience to disease, inclement weather, and seasonal dietary constraints, and have thrived without antimicrobials, vaccinations, or conventional management practices. We believe that this herd holds new clues into solving major problems facing Canadian beef producers, including enteric methane emissions, antimicrobial resistance, and overall animal health, as the herd’s resilience may be closely related to their browsing lifestyle and diet. Relationships built with the TFN are enabling the team to weave traditional ecological knowledge and western science to help unlock these clues, and we believe, provides a model for reconciliatory research practices in support of the priorities of Indigenous peoples.

I1.3 Invited Speaker: Medicine before Food: Sweetgrass Research, Food Sovereignty, and Inclusive Horticulture in Piikani Nation

Brett Weighill

Piikani Nation Secondary School, Piikani, AB, Canada

Medicine before Food: Sweetgrass Research, Food Sovereignty, and Inclusive Horticulture in Piikani Nation
As Canadian horticulture increasingly emphasizes inclusion, food sovereignty, and climate resilience, meaningful collaboration with Indigenous communities requires more than participation. It requires restructuring how research itself is conducted. This presentation examines an Indigenous-led horticultural research partnership within Piikani Nation, centered on the cultivation and scientific study of sweetgrass (*Anthoxanthum nitens*), a culturally significant plant with ecological and ceremonial importance. Drawing from a Master's thesis in Indigenous-led eco-action education and a peer-reviewed comparative plant and soil microbiome study, this presentation explores how Indigenous governance, ceremonial protocol, and community permissions shaped the direction, timing, and methods of scientific inquiry. Situated within broader conversations on Indigenous food sovereignty and Canadian food systems, the project demonstrates how horticultural spaces such as school greenhouses can function as sites of cultural revitalization, youth engagement, and scientific contribution. Rather than treating Indigenous knowledge as additive to scientific frameworks, this presents local protocol, relational accountability, and land-based knowledge as foundational to research design. Prioritizing medicine before food, the ceremonial transfer of sweetgrass samples for laboratory analysis reversed conventional extractive research models by establishing cultural authority before scientific analysis. Findings from sweetgrass carbohydrate and soil microbiome analysis provide emerging evidence for the plant's role in soil health, biodiversity, and carbon cycling, highlighting the horticultural and ecological value of culturally significant species. At the same time, the educational framework demonstrates how Indigenous youth can engage in scientific research without departing from language, ceremony, and community priorities. This presentation offers a model for inclusive horticultural science in Canada; braiding Indigenous protocol, food sovereignty, and scientific rigour into a collaborative framework for climate adaptation, ecological restoration, and reciprocal knowledge production.

I2 Indigenous & Northern Horticulture (Patterson 107)

I2.1: The Naurvik Initiative: food production systems for Indigenous food sovereignty in the North

S MacKinnon[1]*, Q Digweed[2], B Amyotte[1], U McKim[3], LE Jewell[4], and the Arctic Research Foundation[5]: B Kogvik, M Ullikataq, K Kogvik, B Tiriaraq, B Puqiqnak, L Oogak, D Porter, P Kogvik, D Siksik, J Qirqqut, I Kogvek, K Agluqqak, W Nahagolik

[1]Agriculture and Agri-Food Canada, Kentville, NS, Canada
[2]Agriculture and Agri-Food Canada, Harrow, ON, Canada
[3]Agriculture and Agri-Food Canada, Ottawa, ON, Canada
[4]Agriculture and Agri-Food Canada, St. John's, NL, Canada
[5]Arctic Research Foundation, Gjoa Haven, NU, Canada

The high cost, low availability, and low quality of fresh produce in Northern communities supports the need to produce nutritious and affordable food in northern regions in Canada. The need to develop food-producing systems that are suitable for the needs of Indigenous people in a specific region can be met by research partnerships that are co-developed between community members and researchers and that respect the deep knowledge and skillsets possessed by all participants. Soils in the high Arctic in Canada are scarce and when present, have limited potential to grow plants in their natural state. A cold climate and a short growing season pose significant challenges for outdoor plant growth. Therefore, there is little or no agriculture in far northern communities in Canada. From its beginning in 2019, Naurvik ("A Growing Place" in Inuktitut) has been a community-led, green-energy powered, Indigenous-staff run, plant production initiative located in Gjoa Haven, NU, located within Inuit Nunangat. Its main focus has been to develop approaches to producing food that improve local food sovereignty in the community of Gjoa Haven, while complementing traditional foods and supporting the community's traditional way of life. "Lessons learned" from this initiative will be shared with other communities in Nunavut interested in sustainable food productions such as Naurvik.

I2.2: Community-level approaches to food production and resilient food systems in sub-Arctic Canada

B Andersen[1], T Broomfield[2], K Compton[3], M Faulkner[3], L Jewell[3], M Itjuligijet[4], S McCann[3], U McKim[5], E Oberndorfer[3], C Parsons[3], T Smith[5], D Wiseman[3], S Yanni[5], J Wheeler[2]*

[1]AngajukKâk, Makkovik Inuit Community Government, Canada
[2]Director of Renewable Resources, Nunatsiavut Government, Canada
[3]Agriculture and Agri-Food Canada, St. John's, NL, Canada
[4]Makkovimmi Itjuligijet-Makkovik Composters, Makkovik, Nunatsiavut, Canada
[5]Agriculture and Agri-Food Canada, Ottawa, ON, Canada

Food systems in Northern communities are shaped by unique challenges, including poor soils, short growing seasons, variability in wild-harvested foods like berries, and frequently-disrupted supply chains. We partnered with the Inuit Community of Makkovik in Nunatsiavut (the self-governing Inuit region in northern Labrador) to address these challenges by developing regionally applicable strategies for compost production and cold-climate vegetable production, and by examining factors driving variation in bakeapple (*Rubus chamaemorus*) productivity, with the overall goal of supporting resilient local food systems. We evaluated preparation methods and mixing ratios for composts using renewable locally-available organic feedstocks such as kitchen waste, seaweeds (*Fucus* spp.), cardboard, and chipped woody shrubs (*Salix* spp., *Alnus alnobetula*). Sustained community contributions diverted waste and produced Grade A compost for raised-bed vegetable production. We compared local composts to commercial imports and found that over two growing seasons, lettuce, Swiss chard, carrot, and beet grown under season extension showed similar yields in local composts relative to commercial composts. Between 2021–2025, bakeapple yield data showed high variation among 10 sites and between years within sites (e.g., 53 berries/m² in 2024 vs. 3 berries/m² in 2025). Analysis of potential environmental and molecular drivers is ongoing. Pollinator sampling identified diverse flies (Muscidae, Syrphidae, Empididae) and bees (Apidae, Halictidae, Megachilidae), with work ongoing to identify genus and species. This partnership will continue through 2031 to build and expand on these findings, with the goal of developing regionally-specific technical resources to increase knowledge sharing from this partnership project throughout Nunatsiavut and elsewhere in the Canadian North.

I2.3: Taxonomic uncertainty shapes habitat suitability and conservation priorities for native North American apples (*Malus* spp.).

TT Roulston[1,2]*, TL Moreau[2], Z Migicovsky[1], TW Smith[3]

[1]Acadia University, Wolfville, NS, Canada
[2]University of British Columbia, Vancouver, BC, Canada
[3]Agriculture and Agri-Food Canada, Ottawa, ON, Canada

Conservation of crop wild relative (CWR) plants is essential to protect biodiversity and ensure food security through availability of genetic resources for breeding. To assess how taxonomic uncertainty influences predictions of habitat suitability, climate change vulnerability, and in situ conservation priorities for CWRs, we use native North American apples (*Malus* spp.) as a case study. Using Maxent species distribution models, we project suitable habitat under near-future climate scenarios (2030–2070), comparing eastern *Malus* sect. *Chloromeles* modeled as individual species versus a single combined taxon, alongside the western species *Malus fusca*. We also assess climatic niche differentiation within sect. *Chloromeles* using principal component analysis (PCA). *Malus fusca* habitat showed climate resilience, with poleward and inland expansion. In contrast, the eastern species and their combined section were projected to lose all or nearly all their historical suitability by 2050—2070. Species in sect. *Chloromeles* occupied distinct climatic niches and section-level predictions of habitat suitability differed in expanse and specificity compared to individual models. Taxonomic classification influences predictions of habitat suitability and climate vulnerability, with conservation implications for uncertain taxa (e.g. species in *Malus* sect. *Chloromeles*). We call for broader integration of taxonomic uncertainty into SDM workflows.

I3. Indigenous & Northern Horticulture (Patterson 107)

I3.1 Indigenous Talking Circle

This Talking Circle will be an opportunity for guided reflection on Thursday's Indigenous-focused proceedings. Ms. Heather Berry, AAFC Deputy Director of Indigenous Science, will be joined by the day's speakers who will reflect on their experiences as Indigenous community members and allies. The featured speakers are Elder Dr. Lorraine Whitman, Acadia University Elder; Ms. Zabrina Whitman, Acadia University L'Nu Affairs and Indigenization Executive Advisor; Dr. Kyle Bobiwash, University of Manitoba Assistant Professor and Indigenous Scholar; Dr. Emmanuelle D'Amours, AAFC Research Scientist in Northern and Indigenous Agriculture; Dr. Julia Wheeler, AAFC Research Scientist in Resilient and Sustainable Food Systems; Dr. Shawna MacKinnon, AAFC Research Scientist in Phytochemistry and Northern Agriculture; Dr. Wade Abbot, AAFC Research Scientist in Chemistry and Biochemistry; Mr. Brett Weighill, Educator and Ph.D. Candidate with Piikani Nation; and Ms. Jordan Eyamie, Manager of Webster Farms with Annapolis Valley First Nation. All are welcome to participate and consider how each of us can, in our own way, contribute to inclusive and secure food systems. Learn more about Talking Circles in the Indigenous Protocols Handbook.

Friday, June 19, 2026

P2: Plenary Session (KC Irving Centre Auditorium)

P2.1 Keynote Address: Robotics and Artificial Intelligence in Precision Agriculture: Applications and Future Prospects

Shahpour Alirezaee

University of Windsor, Windsor, ON, Canada

This keynote presents a comprehensive overview of the integration of robotics and artificial intelligence (AI) in advancing precision agriculture, with a focus on enhancing efficiency, reducing labor costs, and supporting environmental sustainability. It highlights how intelligent robotic systems—ranging from ground-based manipulators and mobile robots to drones and autonomous navigation platforms—are transforming modern agricultural practices. The presentation begins by introducing the principles of precision agriculture and the critical role of AI-enabled robotic systems in enabling data-driven and autonomous farming. It then examines key enabling technologies, including hardware components such as robotic arms, mobile platforms, sensors, and vision systems, alongside software frameworks that incorporate AI for perception, localization, decision-making, motion planning, and control. Applications are discussed across a variety of agricultural environments, including greenhouses, open fields, and orchards. Examples include automated harvesting, crop monitoring, planting, and precision spraying, demonstrating how robotics and AI improve accuracy, adaptability, and operational efficiency. Particular emphasis is placed on greenhouse and controlled-environment agriculture, where intelligent systems support optimized resource management and high-precision operations. The keynote also addresses current challenges, including system complexity, high implementation costs, robustness in dynamic and unstructured environments, and integration with existing agricultural practices. It highlights the importance of interdisciplinary approaches that combine robotics, AI, big data analytics, digital twins, and human–robot interaction. Finally, the talk explores future prospects, emphasizing the role of connected autonomous systems, advanced AI algorithms, and smart sensing technologies in shaping the next generation of agricultural systems. Overall, the keynote underscores the transformative potential of robotics and artificial intelligence in precision agriculture, paving the way toward more efficient, resilient, and sustainable farming practices.

P2.2 Plenary Address: Same Year and Legacy Effects of the Historic 2025 Drought on Nova Scotia's Woody Perennials: Apples, Wine Grapes and Blueberries

Harrison Wright

Agriculture and Agri-Food Canada, Kentville, NS, Canada

With a 25-year annual rainfall average of 1174 mm (Environment and Climate Change Canada, Kentville), the province's temperate maritime climate typically produces ample moisture for agriculture. While the 2025 annual rainfall was down moderately (833 mm), it was the timing of this shortfall, centred squarely on the key plant growth and development months of summer, that made the 2025 drought so impactful to woody perennial crops. At only 68 mm, the summer of 2025 marked the driest on record (Kentville: 112 years), down 77% from the historic norm. Apple size and yields were both down approximately 30%, with concentrated sugars up an equivalent amount. Wild blueberry yields were down nearly 50% on account of smaller fruit size and berry shrivel that prevented the harvest of some fields. Interestingly, wine grape yields and sugar levels were close to anticipated norms, though all three woody perennials showed signs of decreased vegetative growth. Nutrient uptake decreases during drought, with stomatal closure, reduced transpiration and lower ion diffusion and microbial activity levels in the soil all being factors. Widespread sampling showed many nutrient deficiencies in the dormant wood of all three commodities. However, savings, concentration and imbalances can also occur during drought: wood carbohydrates were stable to high, while wood calcium levels were high in apple, normal in grape and deficient in blueberry. Growers and researchers will be monitoring the growth and development of their woody perennial crops closely in 2026 in what is hoped to be a year of recovery and moderate yields.

P2.3 Plenary Address: Building soil health and climate resilience in horticultural systems through organic amendments

Vicky Lévesque

Agriculture and Agri-Food Canada, Kentville, NS, Canada

Soil health is increasingly recognized as a cornerstone of sustainable horticultural production, particularly in the context of climate change, soil degradation, and increasing pressure on water resources in perennial cropping systems. In Canada's temperate and boreal horticultural regions, improving soil water use efficiency while maintaining crop productivity presents both a significant scientific challenge and an opportunity for innovation. This presentation will highlight recent research examining the use of organic soil amendments—including biochar, compost, and wood-chip materials—as strategies to enhance soil health, improve soil water retention, and support resilient horticultural production, with a focus on apple and grape systems in Atlantic Canada. Drawing on results from greenhouse studies, field experiments, and on-farm trials, this work integrates physical, chemical, and biological indicators of soil health to better understand how these amendments influence soil structure, water-holding capacity, nutrient availability, and microbial activity under variable soil conditions. By linking soil processes to soil health management outcomes in horticultural systems, this research aims to support the development of beneficial management practices that improve environmental sustainability, climate resilience, and long-term productivity. The talk will conclude with perspectives on future research directions to advance water-smart soil management in perennial horticulture.

C1. Crop Improvement (Patterson 107)

C1.1 Invited Speaker: Integration of Untargeted Metabolomics and Genome-Wide Association Studies Reveals Genetic Control of Apple Fruit Quality

J Song[1]*, B Amyotte[1], LC Palmer[1], M Vinqvist-Tymchuk[1], J Gaiero[1], K Dougherty[2]

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Large-scale omics approaches, including genomics, proteomics, and metabolomics, have become powerful platforms for investigating fruit biology and are central to advancing modern agriculture by improving productivity, environmental resilience, and product quality. Integrating multiple omics technologies offers a particularly effective strategy for enhancing the resolution and impact of fruit quality research and trait improvement. Here, we demonstrate the application of LC–MS-based untargeted metabolomic analysis integrated with genome-wide association studies (GWAS) to uncover genetic and biochemical determinants of the apple (Malus domestica) fruit metabolome. Untargeted LC–MS profiling provided an unbiased, high-resolution assessment of metabolic variation, enabling the detection and quantification of more than 3,000 metabolites across over 500 genetically diverse apple genotypes. Metabolomic-GWAS revealed more than 900 significant metabolite locus associations and identified multiple genomic hotspots linked to major classes of phenolic compounds, including flavanols, dihydrochalcones, flavonoids, and flavonol-related metabolites. Our results reveal several genetic control mechanisms governing both the abundance and structural diversity of phenolic compounds in apple fruit. Furthermore, the integration of genetic and metabolomic data demonstrated strong potential for using genomic information to validate, annotate, and classify previously unknown or uncharacterized metabolites. This multi-omics framework provides critical insights into the genetic architecture and biosynthetic regulation of the apple metabolome and identifies novel candidate genes and metabolic pathways. These findings offer valuable targets for marker-assisted breeding and gene-editing approaches aimed at optimizing phenolic composition, ultimately improving fruit quality and enhancing the nutritional and health benefits of apples for consumers.

C1.2: Rapid domestication of *Rubus arcticus* for regional fruit production

SM Clark*, A Todd, T Orr, D Cram, DY Patel, K Dogantzis, X Zhang, AMR Ferrie, D Konkin

National Research Council of Canada, Saskatoon, SK, Canada

Local food production is desirable for a number of reasons ranging from improved quality and food sovereignty to reduced food waste and environmental impacts related to transportation. Advances in plant breeding have created the potential for the rapid domestication of understudied orphan crops to expand options for what plants we can grow as sources of food and where and how we can grow them. Arctic raspberry (*Rubus arcticus*) is an herbaceous ground cover raspberry species that is found across Canada and northern Europe. This species has potential for both indoor agriculture and gardens even in Canada's most northern regions; however, the species is generally considered to lack the productivity require for cultivation. We have sequenced the Arctic raspberry genome and completed a chromosome-level assembly with Oxford Nanopore, PacBio technology and Hi-C chromosome contact data. RNA sequencing of a number of tissues was completed to support gene annotation and generate expression data for candidate gene identification. The S-locus and candidate S-RNase genes responsible for the self-incompatible flower phenotype were identified in the newly completed genome using several bioinformatics approaches. Gene editing was used to introduce frameshift mutations in the candidate genes. An Arctic raspberry plant with self-compatible flowers that will achieve full fruit set without the need for pollinators was achieved. Work is currently underway to make further improvements to this species. This work demonstrates the potential for modern breeding approaches to rapidly improve orphan crops and to expand the crops species that could be grown year-round and/or northern climates.

C1.3: A first look at quantitative evaluation of cold-hardy fruit germplasm at Usask

A Švara[1]*, E van Heerde[1], S Sarkar[1], C Bell[1], J Schaeffer[1], T Johnson[1], F Ukis[1], G Cai[1], B Bors[1], T Sharbel[1], H Zhang[1], K Tanino[1], S Akhter[2]

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The Fruit Program at the University of Saskatchewan maintains a unique and diverse collection of woody perennial fruit germplasm, including haskap (*Lonicera caerulea*), saskatoon (*Amelanchier alnifolia*), sour cherry (*Prunus* hybrids), apple (*Malus domestica*), and hazelnut (*Corylus* hybrids), among others. This collection represents a valuable reservoir of genetic variation for agronomically important traits, particularly adaptation to Prairie conditions, including extreme cold hardiness, growth habit, and suitability for mechanical harvest. While previous efforts have focused primarily on qualitative assessments and selection for breeding, systematic quantitative phenotyping is required to fully leverage this resource for future breeding applications. In 2025, we conducted the first comprehensive round of quantitative evaluations targeting key agronomic and fruit quality traits in haskap, saskatoon, and hazelnut germplasm. Preliminary results reveal substantial phenotypic variation across all three crops, particularly for fruit quality attributes. Notably, several advanced breeding selections exhibited improved performance relative to currently available cultivars grown in Canada. The data represent an initial quantitative assessment of the breeding potential within the USask Fruit Program and provide a foundation for informed parent selection and trait-based breeding. The outcomes support the development of resilient, high-quality fruit cultivars adapted to the Canadian Prairies, with potential relevance to similar cold-climate production regions globally.

C1.4: Panning for gold: characterizing the genetic basis of fruit colour diversity in salmonberry

A Jamaldin[1], K Hirabayashi[1], C Elphinstone[1], V Schimmack[1], C Baldassi[1], M Fenniri[1], A Mykitiuk[1], S O'Neill[1], S Correard[3], SJ Jones[3], A Chida[3], S Scherer[4,5], I Ragoussis[1,6], SJM Jones[3,7], The Canadian Biogenome Sequencing Consortium, A Rosado[1], SD Castellarin[1], M Todesco[1,7]*

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[4]The Hospital for Sick Children, Toronto, ON, Canada
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Wild berry species represent an important source of food for countless animals (including hikers), are culturally relevant to many Indigenous populations, and can serve as reservoirs of useful diversity for improvements of their cultivated counterparts. Their fruits often display characteristic bright colours that are attractive to frugivores and consumers alike ("But this beauty serves merely as a guide to birds and beasts, that the fruit may be devoured and the seeds disseminated." (Darwin, 1866)). Salmonberry (*Rubus spectabilis*), an iconic berry of the Pacific North-West, is peculiar in that it can have fruits of two very distinct colours, red and gold. Combining high-quality genome assemblies, pooled bulk segregant sequencing, and metabolomics and functional analyses, we show that this fruit colour dimorphism is linked to genetic variation at a cluster of MYB transcription factors controlling synthesis of anthocyanins. Patterns of genetic differentiation at this locus, together with the fact that the two morphs co-exist throughout the range of salmonberry, suggest that balancing selection acts on these genes to maintain fruit colour diversity. This work highlights the value of high-quality genome assemblies in enabling new insights in plant ecology and evolution, even in non-model species, and in facilitating access to wild diversity for crop improvement.

C1.5: Genomic and phenomic signatures of Canadian strawberry germplasm

J Gaiero*, N Raymond, S Morse, F Mujica, B Amyotte

Agriculture and Agri-Food Canada, Kentville, NS, Canada

The AAFC Small Fruit Germplasm Development Program is incorporating state-of-the-art genetic tools to advance berry selection for growers and nursery partners and to provide fundamental research into gene markers and analytics. In collaboration with University of California Davis, 100 strawberry lines were genotyped from our program. Combining our new genotyping information and selected trait markers from peer-reviewed literature, we have identified strawberry lines with strong positive attributes. In addition, we have genetic data from 350 cultivars from across the globe at our disposal, which has provided us important genetic context in which our Kentville lines make themselves known. In furthering our goals, we will harness the combined power of phenomic and genetic data, utilizing publicly available and experimentally derived data to look for other important trait markers for selection of lines and phenotype predictions.

F1. Fruits (KC Irving Centre Classroom)

F1.1 Invited Speaker: Emergence of New Pathogens on Strawberry and Raspberry Under Changing Environmental Conditions

S Ali[1]*, E Kabir[1], S Rehman[2]

[1]Agriculture and Agri-Food Canada, Kentville, NS, Canada
[2]Western Crop Innovations, Lacombe, AB, Canada

The talk will be focused on the isolation and characterization of several fungal pathogens including *Neopestalotiopsis* spp., *Cladosporium cladosporioides*, and *Cladosporium pseudocladosporioides* from symptomatic strawberry and raspberry plants. Identification of these pathogens was confirmed through spore morphology and multilocus sequence analysis. The *Neopestalotiopsis* spp., we recovered in NS are closely related to previously reported aggressive strains affecting strawberry and blueberry in the Southeastern United States. Our work on blossom and fruit blight in strawberry and raspberry led to the identification of *C. cladosporioides* and *C. pseudocladosporioides* as causal agents. Pathogenicity of all isolated fungi was validated on multiple strawberry and raspberry cultivars using detached leaves, whole plants, and fruit inoculations. We observed significant variations in virulence among *Neopestalotiopsis* spp. isolates across different strawberry tissue types, whereas no notable variation in virulence was detected for *C. cladosporioides* and *C. pseudocladosporioides* on either host. The appearance and rapid spread of highly aggressive strains of *Neopestalotiopsis* spp. along with cross-infection on blueberries underscore the urgent need for continued surveillance, population-level pathogen analysis, and the development of resistant cultivars to mitigate the spread of this emerging and rapidly evolving pathogen. Additionally, the cross infection of *C. cladosporioides* and *C. pseudocladosporioides* on both strawberry and raspberry highlights the importance of long-term management strategies to protect the berry industry in Canada.

F1.2: Characterizing Strawberry Aroma for Future Cultivar Development

C Elzinga[1,2]*, B Amyotte[2], M Jordan[2], Z Migicovsky[1]

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[2] Agriculture and Agri-Food Canada, Kentville, NS

Strawberry (*Fragaria×ananassa*) is an economically and nutritionally important fruit crop in Canada. Among the key drivers of market value is aroma, which contributes directly to consumer preference and purchasing decisions. Aroma is primarily determined by volatile organic compounds (VOCs). Despite its importance, aroma is rarely a primary target for breeding, as measuring aroma remains costly and complex, making it difficult for plant breeders to select for desirable VOCs effectively. We phenotyped over 40 different VOCs across a diverse population of 234 unique strawberry accessions sourced from Agriculture and Agri-Food Canada and United States Department of Agriculture germplasm collections and grown in Kentville, Nova Scotia. Using headspace solid phase microextraction (SPME) with two-dimensional gas chromatography time of flight mass spectrometry (2D-GC-TOF-MS), we quantified 36 VOCs from ripe fruit. We also collected agronomic phenotypes, including fruit weight, colour, harvest date, and flowering date. Additional information about these strawberries, such as year of release and improvement status, was also recorded. Our findings revealed that aroma profiles were dominated by positive inter-compound correlations, that elite aroma-producing accessions were largely distinct from top commercial varieties, and that fruit weight and harvest date were associated with the abundance of select VOCs. Ultimately, this improved understanding of aroma composition will guide our selection of future accessions and cultivar development in our breeding program at AAFC Kentville.

F1.3: Genome-wide association study of apple fruit morphology

K DeViller[1]*, DH Chitwood[2], S Myles[3], M Li[4], L Bouzar-Benlabiod[1], Z Migicovsky[1]

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Fruit shape and size are critical traits for apple breeding as visual appearance is the primary way that consumers assess fruit quality and make purchasing decisions. Understanding how these traits differ across diverse varieties helps inform future breeding targets in apple. Linking variation in fruit appearance with genetic markers can help improve the efficiency of breeding for these traits through marker-assisted selection approaches. To investigate the genetic basis of fruit morphology in apple, we used a comprehensive morphometrics approach to examine variation across 5,724 images representing 534 unique apple accessions, with over 250,000 single nucleotide polymorphisms (SNPs) using genotyping-by-sequencing. We applied a pseudo-landmarking approach and combined these overall morphological measurements with traditional measurements such as fruit length, width, and weight. After identifying the primary sources of variation in apple fruit shape, we integrated these data with DNA sequencing to perform genome-wide associations studies and determine if predictive genetic markers associated with fruit morphology could be identified. Taken together, our findings provide a roadmap for the genetic improvement of fruit shape and size in modern apple breeding programs.

F1.4: Phytochemical assessment, genotoxicity and cytotoxicity screening of extracts from three varieties of haskap leaf

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[2]Federal University of Technology Minna, Nigeria
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[4]University of Ottawa, Ottawa, ON, Canada.

Over the past decade, the haskap (*Lonicera caerulea*) plant has attracted considerable research interest because of its pronounced nutritional and health-promoting properties, yet the large leaf-to-berry ratio generated each harvest remains under-utilized. This study aimed to characterize the phytochemical profile of leaves from three haskap varieties (Rebeka, Ruben, Wojtek) and to evaluate the safety of their extracts for potential food-industry applications. Amino acids and secondary metabolites were quantified by LC-MS/MS, while polyphenolic composition was assessed with the TMIC PRIME plant assay; genotoxicity and cytotoxicity were screened using the SoS-ChromoTest protocol at both undiluted and 10-fold diluted concentrations. The predominant organic acids were ascorbic, malic, oxalic, shikimic, and succinic, with malic acid reaching the highest levels (10.14 ± 0.01 µmol g^{-1} in Rebeka, 10.93 ± 0.01 µmol g^{-1} in Ruben, and 11.25 ± 0.06 µmol g^{-1} in Wojtek). Essential-to-non-essential amino-acid ratio was recorded as 10:90%, 12:88%, and 9:91% for Rebeka, Ruben, and Wojtek leaves, respectively. The polyphenol p-coumaric acid dominated the leaf extracts. Bacterial growth factor (GF) values spanned 1 – 1.2 and induction ratios (IR) 0.77–1.12, indicating the extracts were non-genotoxic and non-cytotoxic under tested conditions. These findings suggest that haskap leaf extracts are a safe, bioactive ingredient for fortifying foods and beverages, offering a sustainable route to valorize an abundant agricultural byproduct.

F1.5: Defining Haskap (*Lonicera caerulea cv Aurora*) berry ripening nature: the role of ethylene and alternative respiration in physicochemical ripening events

EA Lagarda-Clark*, C Goulet, A Duarte-Sierra

Université Laval, Québec, QC, Canada

The ripening physiology of haskap berry (*Lonicera caerulea* L.) remains insufficiently characterized, particularly regarding its climacteric nature and the role of alternative respiratory pathways. This study investigated the structural, physiological, biochemical, and molecular changes occurring during ripening of haskap berries cv. *Aurora*, with emphasis on ethylene production, respiration rate, alternative oxidase (AOX) activity, and quality related attributes across green mature (GM), color turning (CT), and purple mature (PM) stages. Non-destructive micro-computed tomography (µCT) was applied in haskap berries, revealing significant increases in fruit volume and concomitant reductions in internal porosity during ripening. Physiologically, ethylene production and respiration rate exhibited a climacteric type pattern, with a pronounced peak at the CT stage. While most physicochemical traits evolved independently of ethylene, firmness decline showed an ethylene-associated response. Gas chromatography–mass spectrometry (GC-MS) identified 32 volatile compounds, with marked compositional shifts from lipoxygenase-derived C_6 aldehydes and alcohols at GM to ester and furanone dominated profiles at PM. Multivariate analysis (PLS-VIP) revealed strong associations between ethylene and several esters, suggesting partially ethylene-dependent aroma biosynthesis. At the molecular level, AOX gene expression patterns indicated a protective role for alternative respiration during late ripening, with *AOX2* emerging as the predominant isoform potentially involved in redox homeostasis at PM. Collectively, these findings support a climacteric type ripening behavior in haskap berries and highlight coordinated roles of ethylene and alternative respiration in regulating structural development, aroma formation, and quality traits, providing new insights to optimize harvest and postharvest management.

H1. Horticulture Technology (KC Irving Centre Auditorium)

H1.1 Invited Speaker: Conservation, Preservation, and Restoration (CPR): An Integrated System for Safeguarding Canadian Plant Biodiversity

PK Saxena

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Human-mediated stressors, emerging pathogens, and climate change are accelerating the global loss of plant biodiversity, threatening species of ecological, cultural, and economic importance. Concurrent drivers, including habitat degradation, extreme climatic variability, and rapid genetic erosion, further emphasize the urgent need for innovative and resilient conservation strategies. The Gosling Research Institute for Plant Preservation (GRIPP) addresses this challenge through an integrated framework—Conservation, Preservation, and Restoration (CPR)—designed to safeguard, propagate, and restore plant diversity. CPR integrates advanced technologies, including bioreactor-based micropropagation, cryopreservation, and stress-mitigation approaches, to enable efficient germplasm conservation and scalable plant production. These technologies have been successfully applied to a wide range of species, including endangered, medicinal, ornamental, forestry, and culturally significant plants, particularly those important to Indigenous communities. This presentation will highlight our recent research advances in cryopreservation, in vitro propagation, and transplantation systems, along with the use of stress-modulating indoleamine compounds to enhance plant resilience. Collectively, CPR represents a scalable and transformative strategy for conserving plant biodiversity and sustainable horticulture in a rapidly changing climate.

H1.2: Validated soil phytohormone analysis with paired targeted-untargeted workflow reveals soil phytohormone signatures with links to plant health and land use

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Soil chemistry is vital for successful horticultural outcomes, and productivity is intricately tied to key elements of soil environments like nutrient availability. The contribution of microbiomes, plant-plant signaling, and the influence of soil-borne phytohormones is emerging as critical to plant health. However, chemical complexity inherent to soils, along with the variety and low abundance of phytohormones hinders comprehensive characterization and study. We developed and validated a liquid chromatography-mass spectrometry method with solid phase extraction and an integrated targeted-untargeted hormonomic workflow to enable future discoveries in this growing field. We evaluated targeted method performance for twelve phytohormones from classical pathways and four environmental plant-growth regulators, karrikins naturally produced during wildfire. Validation showed our method meets standard requirements for linearity and precision, with high sensitivity and recovery rates for most analytes within 20% of matrix-adjusted spiked value, although soil type influenced results. Quantification was paired with untargeted analysis incorporating putative annotations for 250 additional phytohormones and hormone-related metabolites. Using this method, we evaluated three soils collected from sites with active agricultural or horticultural uses: peat-rich potting soil used in greenhouses, clay-rich soil from a field with cultivation history, and sandy soils from undisturbed grassland pasture. Targeted analysis revealed endogenous hormones across soils were dominated by salicylic acid and auxins. When combined with untargeted analysis, soils showed diverse chemical signatures linked to land use, including plant community composition, anthropogenic influences, and stress response. This method will provide a framework to explore soil phytohormones and their relationship to plant resilience in diverse horticultural settings.

H1.3: Substrate stratification drives performance of Typha biochar-based soilless growing media.

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Peat is widely used in soilless growing media; however, its extraction contributes to carbon dioxide emissions and environmental degradation. This study evaluated *Typha*-derived biochar as a sustainable alternative to peat, with particular emphasis on the effects of substrate configuration (homogeneous versus stratified) and amendments with chitin and sulphur on plant growth and rootzone chemistry of *Calendula officinalis*. A greenhouse experiment was conducted using eight substrate treatments, including homogeneous and stratified biochar–peat mixes with and without chitin and sulphur, alongside peat and Pro-Mix controls. In all biochar treatments, *Typha* biochar was incorporated at 40% (v/v) with 60% peat. Homogeneous mixes consisted of uniformly blended biochar and peat, whereas stratified systems were constructed with a lower layer of biochar beneath a peat layer. Substrate configuration had the greatest influence on plant performance. Stratified media consistently produced significantly greater growth compared to homogeneous mixes, which showed overall poor performance. Nutrients within the rootzone were also better managed in stratified systems. The addition of sulphur enhanced plant growth across treatments, while the combined application of chitin and sulphur further improved performance. Stratified mixes amended with both chitin and sulphur produced growth comparable to peat-based controls. These results demonstrate that substrate stratification is a critical factor in optimizing the performance of biochar-based growing media. When combined with appropriate amendments, *Typha* biochar shows strong potential as a sustainable soilless growing media additive.

H1.4: Climate-Smart Mixed Growing Medium for High-Yield, Low-Input Crop Production and Commercial Deployment

R Saleh*, L Abbey

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Climate change, soil degradation, and reliance on synthetic inputs present ongoing challenges to sustainable crop production. This study developed and evaluated a climate-smart mixed growing medium composed of locally sourced, upcycled natural materials to improve soil health, enhance nutrient efficiency, and support high-quality crop production without chemical fertilizers, pesticides, or herbicides. Greenhouse trials across multiple plant species demonstrated significant improvements in performance, with yield increasing by 240% and crop quality by 52% relative to conventional media. Multivariate analysis using a two-dimensional PCA biplot confirmed strong associations between optimized medium composition and enhanced plant productivity and quality. The engineered medium improved soil physicochemical properties, including a 37.5% increase in porosity, balanced pH (6.3), and controlled salinity (1494.9 mg L–1), while enabling slow nutrient release and reducing nutrient loss. In addition to agronomic performance, this study examined commercialization feasibility. The formulation uses cost-effective, locally available inputs, supporting supply stability and scalability within regional markets. Initial production has been established, and the product is entering retail testing. This work demonstrates a validated, climate-smart solution that integrates scientific innovation with practical application. The mixed growing medium offers a sustainable, low-risk approach to producing high-quality crops while reducing environmental impact and supporting local agricultural economies.

V1. Vegetables (Patterson 213)

V1.1 Invited Speaker: Evaluation and modification of electric autonomous robots for vegetable production

MR McDonald[1]*, G Farintosh[1], IN Ezeh[1], C Baresich[2], K Vander Kooi[1]

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Two electric autonomous agricultural robots were assessed. The solar-powered FarmDroid FD was assessed for seeding and cultivation in onion on high organic matter (muck) soil over 3 years. The battery powered Naio Orio was assessed for seeding onion (2025) and for cultivation in carrot and table beet on muck (55% organic matter) and mineral (3% organic matter) soil (2024). The Orio was also fitted with custom-designed broadcast and hooded sprayers that were used in both crops. The FarmDroid was evaluated in a nonreplicated trial on 2.8 ha in a commercial field over 3 years and compared to grower practice. Improvements to the FarmDroid included a change from three to four wheels and improving the cultivator tines. A change from single seeding to clusters of three, 9.5 cm apart, and removal of the valve for geolocation of seeds increased seeding rate from 225 to 550 m hr^{-1}. Yields were similar to the grower field in all years, but slightly lower than the Orio in 2025. Cultivation with the robot could replace three of four people for hand weeding. Replicated trials with the Orio found no differences in yield or weed biomass between the robot and tractor on either soil type for carrot but could not be repeated in 2025 because of maintenance and connectivity problems. Both robots require some monitoring and cannot drive on roads, so must be trailered to fields. Further side by side research is needed to determine costs and savings with this technology.

V1.2:Effects of adopting soil health building practices on potato production.

JAD Neilson

Agriculture and Agri-Food Canada, Lethbridge, AB, Canada

It is generally understood that adopting soil health building practices is beneficial to agricultural systems. However, there is uncertainty whether soil health building practices have net positive or negative economic outcomes. A survey of published datasets where a soil health friendly practice was compared to a conventional system and tuber productivity and quality was reported. Based on this survey we identified three commonly used broad categories of soil health building practices: reduced tillage, adding carbon, and cover cropping. Total tuber yield was the most frequently reported productivity metric. Disease incidence and severity was also commonly reported. A relatively small number of papers reported tuber quality, such as specific gravity and French fry color. On average agricultural systems that incorporated soil health building practices had ~10% higher tuber yields compared to conventional systems. However, there is high variability in the data and the magnitude and direction of the effect is depended on the type of soil health building practice employed. Other factors such as seasonal precipitation, irrigated vs dry land, and soil texture and chemical properties also affect tuber yield outcomes. Disease severity and incidence tended to be lower in systems that include soil health building practices, though there were also reports of negative outcomes. Studies that reported tuber quality showed a a decrease in specific gravity. This highlights that there can be a trade off between building soil health and agricultural productivity, particularly when considering traits beyond total yield.

V1.3: Implications of Climate Change Induced Temperature Variation on *Phytophthora infestans*

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Increasing atmospheric temperature have been shown to alter the disease dynamics of the plant pathogens, including *Phytophthora infestans*. This poses a great threat to global food security by affecting the staple food crops production such as potatoes. However, the effect of varying temperatures on the virulence of *P. infestans* is not fully understood. Thus, this study aimed to investigate the influence of changing temperature on the virulence of the late blight pathogen *P. infestans*. To analyze the virulence, three *P. infestans* isolates (US-23, US-8, and US-17) were inoculated in pea agar and potato tuber slices followed by treatment under different temperatures. The treatment temperature included 10 ºC, 15 ºC, 18 ºC, 20 ºC, and 25 ºC. The radial growth of the pathogen was observed, and the lesion size of the infection was measured from post-inoculation days 2 to 10. The aggressiveness of the pathogen was analysed by calculating the area under the disease progress curve (AUDPC). The enzymatic activity of cell-wall degrading enzymes was analysed using Dinitro-salicylic acid method (DNS) method. Pathogen aggressiveness and enzymatic activity varied with the temperature and isolate. Aggressiveness consistently increased from 10 ºC, peaked at optimum temperature 18-20 ºC, and started to decline above 20 ºC regardless of isolate. The isolate US-23 showed the highest aggressiveness, followed by US-8, with the lowest being US-17. However, the enzymatic activity decreased with increasing temperature. These results suggest that the pathogen virulence is temperature- and isolate-dependant, a critical consideration for developing climate-resilient disease management strategies.

V1.4: Effect of Ascophyllum nodosum extract on Arbuscular mycorrhizal fungi germination and potato growth

P Gyawali*, B Prithiviraj

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Potato is one of the most important staple crops grown all over the world, but its production is often limited by low nutrient availability and poor soil conditions. The incorporation of biostimulants like *Ascophyllum nodosum* extract and arbuscular mycorrhizal fungi can be an alternative approach for sustainable potato production. The interaction between *Ascophyllum nodosum* extract (ANE) and arbuscular mycorrhizal fungi (AMF) in potato (S*olanum tuberosum*) was observed under *in vitro* and *in vivo* conditions. Under *in vitro* conditions, two types of extracts, first, crude aqueous ANE (0.01–0.1%) and second, solvent-extracted ethyl acetate fractions (1–10 ppm), were applied to the AMF spores. The 0.01% crude ANE increased germination by ~29% as compared to the control, while 1 ppm extract enhanced germination by ~33–46%, indicating a dose-dependent response with reduced effects at higher concentrations. In the greenhouse experiment, combined ANE and AMF treatments improved plant performance, where 0.2% ANE + AMF treatment increased leaf number by ~66% and canopy size by ~69% compared to the control. The AMF colonization in potato roots was confirmed by using microscopic analysis. Overall, the results demonstrated that the application of ANE can promote AMF germination, and the combined application can improve the overall potato performance.

V1.5:Ascorbic Acid Seed Priming Enhances Yield and Related Responses in Broccoli Under Water Deficit Stress.

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Drought stress significantly constrains broccoli (*Brassica oleracea L.*) productivity by impairing growth, photosynthesis, and yield. Seed priming with ascorbic acid (AsA) has shown promise in enhancing early seedling performance; however, its effects on head development and yield under water deficit remain limited. This greenhouse pot experiment evaluated four seed treatments (control, water-primed, 1 mg L^{-1} AsA, and 10 mg L^{-1} AsA) under two irrigation regimes (100% and 50% field capacity). Growth and physiological traits were assed via repeated measures analysis; biochemical responses and yield were assessed using two-way ANOVA. AsA priming significantly enhanced plant height ($p = 0.0005$), canopy length ($p < 0.001$), leaf area ($p < 0.001$), net photosynthesis ($p < 0.001$), and chlorophyll content ($p < 0.001$) under both water regimes.in both water regimes. Antioxidant-related compounds, including phenolics, flavonoids, and carotenoids were significantly ($p<0.05$) increased with AsA treatment, while hydrogen peroxide accumulation significantly ($p<0.05$) decreased. Total yield per plant increased significantly ($p = 0.001$) with increasing AsA concentration, with 10 mg L^{-1} enhancing yield by 37.83% relative to the water-primed control and by 70.5% relative to the non-primed control, independent of water regime. Percentage dry weight was unaffected by AsA treatment. Overall, AsA seed priming enhanced physiological resilience and yield of broccoli under water-limited conditions, indicating its potential as a low-cost strategy for drought mitigation.

C2. Crop Improvement (Patterson 107)

C2.1: Diploid potatoes: When Less Can Be More

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Commercial potato production has traditionally relied on tetraploid cultivars. But, growing interest in diploid breeding is prompting a reassessment of this paradigm. An EMS-mutagenized diploid potato collection comprising 721 clones was evaluated for tuber appearance and dormancy, with 54 selected clones assessed for marketable yield across multi-year field trials. The collection displayed extensive tuber phenotypic variation: 86% of clones produced acceptable to excellent tubers, and 80% showed good to high dormancy. Market classes included 55% creamer, 41% table/chip, and 4% frying types. Across years, 74% of creamer clones and 70% of table/chip clones yielded comparably to tetraploid checks, with 17% of creamer clones outperforming their checks. For the Canada No. 1 grade yield, 20% of creamer and 29% of table/chip clones equaled or exceeded the checks. In contrast, frying types consistently underperformed. Specific gravity was comparable to tetraploid checks across all market classes. These results demonstrate that diploid potatoes, despite having only two chromosome sets, can match tetraploids in tuber quality, yield, processing traits, and storability for the fresh market, highlighting their promise for both breeding and commercial production.

C2.2: Identification of a novel source of self-compatibility variation in diploid potato, *Solanum tuberosum*

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Within the last decade there has been considerable efforts by potato breeders in developing cultivated potato germplasm at the diploid level. A driver of these efforts has been the characterization and use of a self-compatibility (SC) mutant believed to have been derived from *Solanum chacoense*. Here we describe efforts to identify and characterize a novel source of self-compatibility (SC) in cultivated potatoes that is distinct from the known SC mutants that carry the *S-Locus Inhibitor* (*SLI*) gene. We generated two genetic mapping populations derived from a common SC parent (1212x), believed to carry a novel SC locus that was also negative for the presence of the common *SLI* haplotype, for Bulked Segregant Analysis (BSA). Self-compatible/Self-incompatible pools of progeny, and the parental genotypes from both populations, were sequenced to high depth using Illumina short reads and were analyzed using (1) standard BSA using allele count differences between bulks and also (2) kmer decomposition via the CoSSA mapping strategy. In each population there was a consistent ~5 Mb region on the distal end of chromosome 4, composed of several peaks, that was associated with differences between SC/SI bulks using BSA. Results of the kmer analysis overlapped completely with the standard BSA and suggested several individual 1 Mb windows within the 5 Mb region for further targeted candidate gene analysis. Here we describe ongoing work to fine map the locus inherited from 1212x, and detail molecular marker development for rapid screening of SC in additional progeny for germplasm development.

C2.3: Strawberry breeding for improved adaptation across Canadian regions and growing systems

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The AAFC Small Fruit Germplasm Development Program is focused on breeding high quality strawberry varieties for field, greenhouse, and controlled environment production in Canada. This talk will provide an overview of our current projects. Our breeding objectives are supported by foundational research in genetics and genomics, investigating fruit quality attributes, disease resistance, and environmental adaptation traits in collaboration with government, university, and external research institutions. We conduct advanced testing through the Canadian Berry Trial Network, an industry-funded project which coordinates variety trials for strawberry, blueberry, and raspberry in British Columbia, Ontario, Quebec and Nova Scotia, helping growers to make science-informed decisions about which cultivars to choose for their environments, production systems, and market needs. Lastly, we aim to support Indigenous food sovereignty by partnering on community-led projects in Indigenous berry plant propagation, preservation, and production research. Overall, our program strives to positively impact economic resilience, climate adaptation, food security, and nutritional well-being for Canadians by supporting year-round domestic production of fresh, healthy, and delicious berry fruits.

C2.4: Strawberry cultivars vary in their response to transplant steam treatment protocols.

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Steam treatment of dormant strawberry transplants is an effective way to reduce pests and diseases. However, the effect of steam treatment protocols on plant survival, growth and yield and how effects may vary by cultivar has not been fully assessed. We compared 12 bare-root, short-day cultivars steam treated at 44 °C for 2h. Survival was 94.1% for control and 93.9% for steam treated plants, with no steam treatment by cultivar effects. There was no effect of steam treatment on numbers of leaves per plant. Steam treatment reduced the number and weight of 'Cabot' strawberries, but the other 11 cultivars were not affected. In a second experiment, we assessed steam treatment protocols of 2h or 4h at 44 °C with or without a rest period at room temperature after the 1h pretreatment at 37 °C on 5 bare-root, short-day cultivars. A rest period before a 4h but not 2h treatment, greatly improved survival of 'Malwina', 'Cabot', and St. 'Laurent' but not 'Audrey' or 'Valley Sunset' compared to no rest period. Leaf number and size was reduced without a rest period for a 4h treatment in 'Malwina' and 'St. Laurent'. Runner production was improved with a rest period before a 2h treatment in 'Audrey' and 'St. Laurent'. There were no effects of steam treatment protocol on yield for any cultivar. Overall, transplant steam treatment is compatible with survival, growth and fruit production of most bare-root strawberry cultivars, with a rest period important before a 4h treatment for some cultivars.

F2. Fruits (KC Irving Centre Classroom)

F2.1: Evaluating Indoor Agriculture Facility Performance: A comparison of retrofitted facilities and turnkey solutions

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Indoor agriculture provides the opportunity to grow horticultural produce year-round, independent of outdoor environmental conditions. This can expand production to remote areas where consistent access to fresh, good quality produce is challenging, thereby improving food security and food sovereignty while supporting more resilient regional food systems. While this approach has great promise, indoor agriculture facilities can also be expensive and difficult to operate. To address these challenges, as well as to better understand crop suitability and expected yield, the National Research Council (NRC) has created the Modular Agriculture Research Station (MARS) to study the costs, resource requirements, and operational performance of a commercial grade, modular indoor agriculture facility. As part of this work, we have undertaken a comparative study between MARS and a commercial indoor agriculture facility operated by Let-Us Grow, located in a retrofitted school building in Hudson Bay, Saskatchewan. Key resource inputs – including labour hours, electricity and water along with harvested biomass and revenue have been tracked from both facilities. In addition, automated methods were developed to monitor energy use and environmental parameters across both facilities, and an overview of these methods will be presented. The results of this study will provide valuable insights for communities and organizations considering investments into indoor agriculture as a means to increase local food production and improve the sustainability of regional food systems.

F2.2: Impact of heatwaves on grapevine (*Vitis vinifera* L.) physiology in major cultivars grown in British Columbia

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Climate change poses an increasing risk to grape and wine production in British Columbia, where heat stress events (heatwaves) can severely impair grapevine physiology. Elevated temperatures (> 35 °C) disrupt key physiological processes such as photosynthesis and water transport, potentially causing lasting damage to grapevines. In this study, we analyzed historical climate data and future projections, and we revealed that heatwave frequency, with temperatures exceeding 35 °C, will rise across major wine regions globally, including the Okanagan Valley, the main wine region of British Columbia. Despite this risk, responses to heat stress remain poorly characterized for the main cultivars grown in this wine region. We simulated heatwave conditions in growth chambers by exposing eight grapevine cultivars—Cabernet Franc, Riesling, Semillon, Malbec, Merlot, Gewürztraminer, Viognier, and Chardonnay—to a maximum temperature of 40 °C. Photosynthetic performance was assessed using an infrared gas analyzer. Semillon, Cabernet Franc, and Merlot exhibited the greatest sensitivity to elevated temperatures, primarily due to reductions in stomatal conductance. Additional assays evaluating tolerance to extreme heat (up to 51 °C) revealed irreversible damage to the photosynthetic apparatus at 47 °C, with no significant differences in thermotolerance among cultivars.

F2.3: Impacts of alleyway tillage on L'Acadie hybrid grapevine performance.

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Alleyway or inter-row tillage is a common soil management technique in European vineyards to improve grape (*Vitis* spp.) quality by managing weeds, reducing water competition, and alleviating soil compaction. However, the practice of tillage can injure roots, which results in a loss of vine vigour and reduced overwintering bud cold hardiness. For cool climate growing regions in the Annapolis Valley, Nova Scotia, the success of a grape crop can depend on selecting for cold hardy cultivars and managing environmental conditions to promote overwintering bud survival. In this study, we evaluated the performance of alleyway tillage on hybrid grape 'L'Acadie' production and bud hardiness as compared with the conventional perennial grass cover at four cane-pruned commercial vineyards. In 2024 and 2025, tillage did not negatively impact yield, berry weight, firmness or juice composition (total soluble sugars, titratable acidity, and pH). Low temperature exotherm peaks associated with the minimum survival temperature in buds collected in 2025-2026 were 1.5 to 2.0°C lower in non-tilled as compared with tilled buds. Overwintering buds collected from tillage-treated 'L'Acadie' were more susceptible to de-hardening after exposure to 4°C and 20°C for 3 d, accumulated higher volumes of tissue water, and buds broke 2 to 3 d earlier as compared with buds collected from non-tilled vines. These findings suggest that the application of inter-row tillage should be limited to regions where grapevine bud cold hardiness surpasses the average low winter air temperatures and should be paired with an aggressive winter pruning schedule.

F2.4: Predicting Apple Dry Matter Content Using Vis–NIR Spectroscopy: From Orchard to Storage

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Abstract: Dry matter content (DM) in apple fruit is an important indicator for on-tree development, maturity, and overall fruit quality. In this work, a handheld visible/near-infrared (Vis–NIR) spectrometer was used to non-destructively predict DM in apple fruit from early fruitlet development through harvest to after storage. Spectral scans were collected from a wide range of selections from Tree Fruit Breeding Program at AAFC Summerland Research and Development Centre. Spectral data within the 726–1008 nm range were used for model calibration, with DM determined by conventional destructive methods as reference values. Independent validation was carried out using multiple apple cultivars and advanced selections, including Gala, Ambrosia™, Aurora Golden Gala™, Snowflake™, and Sunpunch™. The models showed strong predictive performance, with R^2 values of 0.72, 0.89, and 0.90, and RMSE values of 0.47, 0.51, and 0.50 for fruitlets, harvest fruit, and stored fruit, respectively. These results demonstrated that Vis–NIR spectroscopy is an effective tool for accurately predicting DM across developmental stages in apple fruit. Incorporating a broad range of cultivars and breeding selections in model calibration may improve model robustness and support a broader application in breeding and physiology programs, maturity monitoring, and postharvest quality assessment.

H2. Horticulture Technology (KC Irving Centre Auditorium)

H2.1: Characterization of RNAi Machinery and Candidate Target Genes in *Synchytrium endobioticum* toward Spray-Induced Gene Silencing for Potato Wart Management

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Synchytrium endobioticum is an obligate biotrophic chytrid fungus and the causal agent of potato wart (PW) disease. Infected tubers are unmarketable, and infested fields can remain under quarantine for decades, resulting in major economic losses. PW is currently managed primarily through soil fumigation and the use of resistant cultivars. However, both approaches have notable limitations. RNA interference (RNAi), particularly spray-induced gene silencing (SIGS), offers a potential alternative management strategy, although its feasibility depends on a thorough understanding of the pathogen's biology, including its endogenous RNAi machinery and suitable candidate target genes. In this study, we used a comparative bioinformatic approach to assess the copy number, domain architecture, and evolutionary importance of key RNAi components, Argonaute (AGO), Dicer (DCL), and RNA-dependent RNA polymerase (RdRP) in *S. endobioticum*. In collaboration with the Canadian Food Inspection Agency (CFIA), we produced fresh PW galls on Russet Burbank tubers using the Glynne–Lemmerzahl (GL) inoculation method. Expression patterns of chitin synthase (CHS) and Rho GTPase (RHO) gene families are currently being evaluated by qPCR across different life stages of PW. Together, the evolutionary characterization of the RNAi machinery and the transcript abundance of candidate target genes across PW life stages will be presented and discussed in the context of informed decision-making for the development of double stranded RNA (dsRNA) targets in *S. endobioticum*, with the goal of advancing SIGS as a novel management tool for potato wart disease.

H2.2: Germination dynamics of *Cryptolepis sanguinolenta*: Impact of seed storage duration and hormonal factors

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Cryptolepis sanguinolenta (*Cs*) is a medicinal plant commonly known for its antimalaria, antibacterial, anticancer, and anti-inflammatory properties. However, the seeds of *Cs* are known to lose their viability shortly after harvest (8 weeks storage), and other factors complicate its germination. Therefore, to help resolve this pitfall the current study aimed to investigate the effect of various seed priming techniques on maximum germination. *C. sanguinolenta* seeds (stored for 2, 4, 6, 8, 10, 12. 14, 16 weeks) were first planted to determine their germination alongside with hormone level quantifying high-performance liquid chromatography (HPLC). Furthermore, *Cs* seeds after 8 weeks of storage were treated with three different priming agents for 24 hours at different concentrations: gibberellic acid at 150, 300 and 500 ppm, Tokyo 8 at 10, 20, and 40 ml/L, and a commercial bio stimulant ComCat at 0.4, 0.8, and 1.2 g/L. Our results show that seed stored for 16 weeks had the highest germination percentage (97.3%). Furthermore, quantification of the germination hormone GA and dormancy hormone ABA in *C. sanguinolenta* seeds revealed a significant reduction in GA at 8 weeks after storage, which corresponded to a drop in germination rates from the 6th week (84.7%) to 44.0% by the 8th week. Interestingly, priming 8-week-old seeds with GA at 300 ppm restored germinability (95.3%), thereby enhancing seedling establishment. This result provides a practical way to improve seed viability for sustainable domestication and conserving *C. sanguinolenta*.

H2.3: A comprehensive study of soil and plant health indicators and their relationship to the growth of *Fraxinus pennsylvanica* in the urban environment.

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Landscape trees in the urban environment are constrained by various levels of physical, biological, and chemical factors both above and below-ground. This study sampled 60 *Fraxinus pennsylvanica* var. *subintegerrima* (Marsh) of ‘vigorous’, ‘moderate’, and ‘declining’ health status in center-medians and boulevards in diverse locations within the city of Saskatoon, SK, to determine which factors of soil and tree health are associated with premature tree decline. Soil metrics of total organic and inorganic carbon (TOC, TIC), electrical conductivity (EC), pH, bulk density (BD), and soil texture were collected at each site. Tree health measurements of chlorophyll reflectance, branch internode growth, fresh and dry leaf weight, diameter at breast height (DBH), trunk damage, boulevard width, and trunk-to-roadway distance were collected in 2024/25. Trees in the ‘declining’ population showed lower chlorophyll reflectance, higher soil pH and EC at both soil depths, lower average branch diameter for all years, and a significantly higher presence of trunk damage compared to the vigorous population. TOC content at vigorous sites was significantly higher than the declining population at the 0-15 cm soil depth. A band dendrometer study was conducted to measure changes in stem circumference in a sub-population of six vigorous and six declining trees in June 2025. Band dendrometers showed similar patterns of water loss and uptake among all trees at the daily temporal scale, but declining sites saw consistent decreasing trends in seasonal growth. This work underlines the importance of monitoring environmental health in highly constrained, yet common sites for street tree planting.

H2.4: Dose-Dependent Effects of Phosphorus–Nitrogen Caged Compounds on Plant Growth, Yield, and Physiology

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The increasing demand for sustainable agricultural practices has driven the exploration of alternative fertilizers that enhance crop productivity while minimizing environmental impacts. In this context, the current study investigated the potential influence of phosphorus- and nitrogen-rich caged (P-NC) compounds as slow-release fertilizers on the growth and development of tomato (*Solanum lycopersicum* L.) plants. The experiment consisted of six treatments: two P-NC formulations applied at two different application rates (T1-$1P^0_{200}$, T2-$1P^0_{400}$, T3-$2P^0_{200}$, T4-$2P^0_{400}$), T5-commercial premixed compound fertilizer, and T6-as control (water) with three replications. Compared to the control, the 2P0400 treatment substantially enhanced all measured growth and yield parameters, with major improvement in reproductive traits including number of flower buds (950%), number of fruits (400%), and fruit weight (502.4%). In addition, shoot and root biomass increased markedly, with fresh and dry weights rising between 340% and 755% relative to the control. The overall performance of plants treated with the $2P^0_{400}$ was statistically similar to those that received the commercial fertilizer. Physiological responses under the $2P^0_{400}$ treatment were also comparable to those observed with the commercial fertilizer. In contrast, the control treatment produced the lowest performance across all the morpho-physiological traits studied. Therefore, it is concluded that $2P^0_{400}$ can promote tomato plant growth and development by providing more favorable nitrogen and phosphorus through efficient nutrient-release behavior. However, further studies on environmental impacts are recommended before its commercialization as a fertilizer.

V2. Vegetables (Patterson 213)

V2.1: Effect of phenylalanine on tomato seed germination and seedlings establishment

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Compost contains many under-exploited compounds as components of humic and non-humic substances. One of these compounds was found to be phenylalanine (Phe), an amino-acid that contains nitrogen (N), hydrogen (H), carbon (C) and oxygen (O), whose role in compost is not documented in the literature. A growth chamber study was performed to determine the effect of Phe on tomato (*Solanum lycopersicum*) seed germination and seedlings establishment. The experimental treatment were 335.8mg of Phe per kg of soil and control (water). Phe showed no significant ($p<0.05$) difference in germination percentage and germination rate index compared to control. However, total root surface, total root length, root volume, total hypocotyl length and total hypocotyl surface area were significantly ($p<0.05$) increased than control. Plant photosynthetic parameters including maximum quantum efficiency and potential photosynthetic capacity were increased by 65% and 84%, respectively, compared with the control. Plant water use efficiency, average leaf humidity, average respiration rate and average stomatal conductance were all significantly ($p<0.05$) increased compared to control. Stem girth and leaf number were found to be significantly ($p < 0.05$) high in Phe compared to control (4 mm versus 3 mm; 9 leaves versus 6 leaves). Phe significantly ($p<0.05$) increased leaf greenness, plant height and fresh weight by 48%, 20% and 24% respectively, compared to the control. In conclusion, the Phe application improved seed germination and seedling establishment of tomato. Future research will focus on elucidating changes in plant chemical profiles and assess their effects on fruit production.

V2.2: Effect of Crustacean Shell-Derived Hydrolysate Biostimulant Enhances Tomato Crop Growth, Pigmentation, and Phytochemical Performance

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Valorizing crustacean shell waste from the seafood processing industry as agricultural biostimulants represents a circular economy approach aligned with sustainable crop production goals. The present study investigated the effect of crustacean shell supernatant (CSS) applied at 0.25, 0.5, 1, 2 and 5% (v/v) on greenhouse-grown tomato (*Solanum lycopersicum* cv. Scotia). It was shown that photosynthetic pigmentation was significantly ($p < 0.001$) improved, with the CSS 1% recording the highest total chlorophyll content (180.74 µg g^{-1} FW), more than three times that of the control (50.65 µg g^{-1} FW). Gas exchange analysis showed that the CSS 2% achieved the greatest net photosynthetic assimilation rate (4.05 µmol CO_2 m^{-2} s^{-1}; $p < 0.05$) compared to the control (1.77 µmol CO_2 m^{-2} s^{-1}). Secondary metabolite accumulation was greatest at CSS 2%, with the highest phenolic (378.75 µg GAE g^{-1} FW; $p < 0.001$) and flavonoid concentrations compared to the control. Oxidative stress markers were significantly ($p < 0.001$) reduced across CSS treatments, with the CSS 2% recording the lowest proline content compared to the control. These results demonstrate that crustacean shell-derived hydrolysate is a promising waste-valorised biostimulant capable of meaningfully improving tomato crop quality and productivity. Future studies will use transcriptomic and proteomic approaches to identify the genes and proteins underlying CSS-mediated growth enhancement.

V2.3: Can Kale Rhizobacteria Affect Tomato Seed Germination and Seedling Growth?

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Seed biopriming with plant growth-promoting rhizobacteria (PGPR) is a sustainable strategy to enhance crop productivity, yet optimal application protocols remain poorly defined. In this study, five novel kale (*Brassica oleracea* var. *acephala*) root isolated rhizobacteria were used as seed bio-primers to evaluate their growth-promoting potential in “Scotia” tomato (*Solanum lycopersicum*). Tomato seeds were treated with the individual isolates (L11, L10, Phrp-R, D-In-D, I-4), and the combined consortium across four durations (1.5, 3, 12, and 24 h). Germination analysis revealed that none of the treatments significantly ($p > 0.05$) affected any of the germination parameters. However, I-4 and Phrp-R significantly ($p < 0.01$) increased root volume by *ca*. 22.5% and 22%, respectively, compared to the control, while the 24 h priming duration was identified as the optimal biopriming time. Moreover, the five combined isolates demonstrated a significant ($p < 0.01$) increase of *ca*. 6.3% in total shoot length at the 24 h duration. These findings indicate that biopriming with kale-derived rhizobacteria enhances seedling morphology without compromising seed germination parameters. A 24-h optimal window provides a standardized protocol for leveraging microbial synergy to improve seedling vigour. Future research will investigate the physiological, biochemical, and molecular effects of these strains on promoting tomato plant growth.

V2.4: Tomato Plant Response to different Concentrations of Caffeine

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Caffeine, a widespread purine alkaloid in plants, is known for its allelopathic and defensive properties, yet it is not clear if and how it regulates plant growth and stress tolerance. In this study, the concentration-dependent effects of exogenously applied caffeine (0 - 12 mM) on tomato (*Solanum lycopersicum*) plants under greenhouse conditions was determined. Morpho-physiological indices, supported by molecular analyses of hormone- and stress-related gene expressions were assessed. The results revealed that low caffeine concentrations ranging from 0.125 to 0.25 mM significantly ($p<0.01$) increased net photosynthetic rate, stomatal conductance and transpiration rate compared to higher concentrations or the control (0 mM). However, higher caffeine concentrations from 8 mM to 12 mM, particularly the 12 mM significantly ($p<0.01$) increased tomato plant height, stem diameter and number of leaves. The control and the 0.5 mM caffeine treatments led to the highest soluble sugar and proline contents in the plant tissue, while the least soluble sugar and proline contents were found in plants treated with ≥10 mM caffeine. The highest protein content of 36.44 mg BSA/g FW was due to the 12 mM caffeine treatment, while lower concentrations resulted in lower protein levels. The control gave the highest total phenolics and flavonoid contents, and the least was observed at 10 mM caffeine. The expressions of SINCED3 (ABA) and SIERF5 (ethylene) were significantly ($p<0.01$) highest in plants at 12 mM. These findings highlight concentration-specific effects of caffeine on tomato plants, offering new insights into its function and potential applications in plant stress physiology.

Open Poster Sessions (Fountain Commons)

PI. Indigenous and Northern Posters

PI1: Non-destructive prediction of total soluble solids and firmness in haskap berries using portable near-infrared spectroscopy

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Non-destructive assessment of fruit quality is a critical requirement for emerging haskap berries (*Lonicera caerulea)* production and postharvest management. This study investigates the use of a portable near-infrared spectroscopy (NIRS) device for rapid prediction of total soluble solids and firmness in a commercially important haskap variety, namely 'Aurora'. Spectral data were collected from intact berry samples, after which measurements of total soluble solids (TSS) and firmness were obtained sequentially from the individual samples. Prediction models were developed using Gaussian process regression and evaluated following a structured training, cross-validation, and independent testing strategy. For TSS prediction, the model achieved an R^2 of up to 0.85, with RMSE and MAE values of 0.96°Brix and 0.53°Brix, respectively, on the test dataset. Firmness prediction showed comparable performance, with an R^2 of 0.87 and RMSE and MAE of 0.29 N and 0.20 N, respectively. The developed models provide reliable predictions of both soluble solids and firmness, supporting the adoption of portable sensing technologies for postharvest haskap quality monitoring, enabling improved decision-making throughout the production.

PI2:Effects of changing winter conditions on germination of native Wapna'ki Forest species

A Henneberg*, Z Panchen

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The Wapna'ki Forest is a unique ecosystem, home to many specialized species. Many of these species require cold stratification to break seed dormancy and germinate. Winter conditions in Nova Scotia allow for cold stratification. However, these conditions are being affected by climate change and may be less effective at meeting dormancy requirements as winters warm and shorten. This experiment aims to evaluate how changing winter conditions are affecting cold stratification and germination success. Seeds will be treated to one of several winter climate change scenarios, including a warm spell, cold snap, and shorter winter. Species that experience lower stratification and germination rates will be more at risk of population decline due to lower levels of recruitment as climate warms and may face extirpation. The project will begin in early May 2026. Likely test species include *Fragaria virginiana*, *Acer rubra*, and *Cardamine diphylla*. The results of this project will allow for better understanding of which species are at risk due to climate change and ecozone movement. We seek feedback on the proposed methods and trial scenarios.

PI3: Investigating Arctic louseworts for mycorrhizal associations and parasitism

TC Pollak*, SD Doyle, AK Walker, ZA Panchen

Acadia University, Wolfville, NS, Canada

Louseworts (*Pedicularis* L.) are hemiparasitic flowering plants with Arctic-alpine distribution. Some edible species are traditionally harvested by Inuit, and communities in Nunavut are interested in cultivating them to increase their availability and aid in food security efforts. However, louseworts are difficult to grow outside their natural environment. Recent studies have found mycorrhizal associations in lousewort species, which we hypothesize may promote their germination. This study examined *Pedicularis langsdorffii* subsp. *arctica*, and aimed to answer these questions: (1) which types of fungal associations does *P. langsdorffii* form, and with which fungi? (2) what parasitic associations does *P. langsdorffii* form? (3) Which factors mediate seed germination in *P. langsdorffii*? Roots of *P. langsdorffii* and nearby plants (primarily *Salix arctica*) were examined in the field for association. *Pedicularis langsdorffii* and *S. arctica* roots were stained and examined under a microscope for fungal associations. Fungal DNA was extracted from roots and soil, then sequenced to identify the species present. Germination experiments were conducted to assess germinability with different substrates (Arctic soil, potting soil, filter paper), and treatments (scarification, light, moist chilling, host presence). Parasitism on *S. arctica* was documented. Dark septate endophytic fungi (DSEF), ectomycorrhizal fungi (EMF), and arbuscular mycorrhizal fungi were documented in both *P. langsdorffii* and *S. arctica* roots. DNA sequencing detected DSEF and EMF. None of the germination trials were successful, though tetrazolium testing showed 60-80% seed viability. Results suggest that *P. langsdorffii* forms both parasitic and mycorrhizal associations, but further research should examine factors affecting germination.

PI4: Micropropagation & related services for conservation of Indigenous plants, phytoremediation, smart packaging and related data solutions.

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Funded by Result Driven Agriculture Research (RDAR) and Sustainable Canadian Agricultural Partnership (S-CAP), our project aims to help with conservation of keystone species like Sweetgrass as well as rare and rapidly declining indigenous species like the wild turnip. While these species have great traditional and cultural significance, Sweetgrass is considered as a keystone species which helps build and sustain the prairie grassland ecosystem. The decline of Sweetgrass leads to a cascade of effects like the decline of many other native species which in turn leads to the decline of the local wild bee population, which eventually negatively impacts the output of agricultural crops in the prairies. This project is in collaboration with Naapi's Garden and Katoyiss seed bank. The seed bank has been running into problem with the collection of seeds due to non-viability, infection and fungus. The few seeds which do germinate rarely survive and do not complete their life cycle to produce more seeds. Since these species are rapidly declining for numerous reasons, they are hard to find in the wild as well. Anandi Botanicals stepped into solve this problem through micro-propagation. So far we have successfully multiplied Sweetgrass, Wild turnips, Wild onion, Wild tobacco in our lab, while we continue to develop protocols for many other species.

PC: Crop Improvement Posters

PC1: Morphometric Analysis of Leaf Shape Diversity in *Malus*

L Simms[1]*, G Volk[2], B Gutierrez[3], DH Chitwood[4], V Meakem[3], Z Migicovsky[1]

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Malus (apple) species display a wide array of leaf shapes ranging from simple elliptical to highly lobed. Leaf morphology can be used to distinguish plants and may play an important role in plant growth and development but has not yet been well-characterized in *Malus*. In this study, we examined over 4,000 leaves from across 18 *Malus* species using a pseudo-landmarking based approach that captures the contour of the leaf, reflecting overall variation in shape. We identified the primary sources of variation in leaf shape using principal components analysis (PCA) and measured traditional linear measurements. Aspect ratio (leaf width/leaf length), which was strongly correlated with morphometric PC1, explained nearly half of the total variation in shape. We also evaluated our ability to predict continent of origin and species based on our comprehensive morphometric measurements using linear discriminant analysis (LDA). LDA prediction accuracy at the continent level was approximately 87.4%, while species-level prediction models produced a broad range of accuracies (28-86%). Comparing leaves from species native to North America and Asia also revealed that Asian species had significantly lower aspect ratios. Together, these findings demonstrate that comprehensive morphometric techniques like pseudo-landmarking can capture leaf shape variation in *Malus* that could be used to improve species identification. Lastly, our study provides a foundation for future germplasm characterization efforts, including the integration of physiological, environmental, or genomic data to better understand the drivers of morphological diversity in *Malus* leaves.

PC2: Examining co-inheritance of reproductive and vegetative traits in hybrid grapevines

A Purcell[1]*, P Cousins[2], Z Migicovsky[1]

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Grapevine (*Vitis* spp.) is one of the most economically significant and widely cultivated fruit crops globally. Most species produce lateral determinant meristems (tendrils and inflorescences), which are found opposite the leaf at the node, at two successive nodes, followed by a skip (a node lacking a tendril or an inflorescence). However, the position of the first lateral meristem and the length between nodes (internode length) can vary among individuals. These traits may influence canopy structure, reproductive potential, and overall vine performance. In this study, we examined tendril development and other vegetative traits including shoot growth, internode length, leaf size, and chlorophyll content, across eight hybrid *Vitis* crosses. These crosses also segregated for two reproductive traits, flower sex (perfect vs pistillate) and fruit colour (black skin berries with red flesh vs all other berry colour categories) which were determined in the seedlings using molecular markers. We measured ~500 seedlings to examine how these reproductive traits influenced early vegetative development, in particular tendril quantity and distribution. Our results offer insights into how vegetative traits may be co-inherited with reproductive traits. Ultimately, this work contributes to our understanding of vegetative traits in grapevine and can be used to help inform targeted breeding strategies for hybrid grapevine production.

PC3: Cutting to the Core: Developing Genetically Resistant Stone Fruits to Brown Rot Disease Through Chlorogenic Acid

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Peaches are one of the most important global tree fruit crops within the Rosaceae family and are threatened by numerous pests and diseases, especially fungal pathogens. Brown rot (caused by *Monilina fructicola*) is one of the most common and devasting diseases in then tender fruit industry. It is largely managed through chemical treatments, but there has yet to be a genetic based method of control/prevention. The role of phenols, such as chlorogenic acid (CGA), aiding in resistance to brown rot have been documented but not well known. By investigating CGA interaction with brown rot, peach cultivars with little/reduced susceptibility to brown rot will have higher levels of chlorogenic acid in mature fruit compared to more susceptible cultivars. 30 commercial varieties of peaches from the University of Guelph's breeding program in Vineland, ON will be used, 15 varieties that are susceptible and 15 varieties that are documented to be less susceptible. Mature fruits from each variety will be inoculated with *M. fructicola* following inoculation, CGA content will be quantified using a downstream product 5-O-caffeoylquinicacid (5-CQA) via ultra-performance liquid chromatography. DNA from used cultivars will be sequenced and used in a GWAS as well. By understanding CGA content in relation to brown rot susceptibility, growers can be more informed on what varieties are more resistant to brown rot. Having more reliance on genetic based resistance, the tender fruit industry (especially the Niagara peninsula) can spend less money on treatments and reduce the cost on environmental and human health as well.

PC4: Postharvest Dynamics of Ethylene and Quality Traits Across Diverse Peach Textural Groups

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Peach fruit exhibit distinct textural phenotypes: Melting Flesh (MF), Non-Melting Flesh (NMF), and Stony-Hard (SH). These differences arise from variations in the genetic and hormonal regulation of ripening, ultimately shaping postharvest quality and marketability. Although ethylene-mediated softening is well established, time-dependent comparisons of these texture classes across storage environments, along with assessments of ripening inducibility in SH fruit, remain limited. This study quantified postharvest changes in ethylene production, firmness, total soluble solids (TSS), and titratable acidity (TA) across these texture classes, and evaluated the responsiveness of SH genotypes to exogenous ethylene. MF fruits showed a rapid climacteric rise in ethylene under RT, with peak levels exceeding ~24,000 PPB and a sharp decline in firmness from ~30 N to below 5 N within 5–7 days. In contrast, SH fruits maintained consistently low ethylene production and high firmness under both storage conditions. Cold storage suppressed ethylene production across all groups (MF peaks reduced to ~1,500 PPB) and delayed softening, although MF fruits continued to lose firmness over time and were more susceptible to chilling injury. NMF fruits displayed relatively stable firmness with moderate ethylene production. Exogenous ethylene treatment in SH genotypes induced endogenous ethylene production and accelerated softening, indicating that ripening pathways remain functionally intact but are endogenously repressed. Across all treatments, TSS and TA showed limited variation. This study provides a systematic, multi-genotype comparison of peach texture classes across postharvest durations, highlighting strong suppression of ethylene in SH phenotypes alongside their reversible ripening capacity.

PC5: Leafing Through *Pyrus*: Comprehensive Morphometrics of Leaf Shape Variation in Pear

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[2]United States Department of Agriculture (retired)

Leaf morphology plays an important role in pear (*Pyrus* spp.) taxonomy and breeding because leaf traits may reflect underlying genetic variation, including physiological or species differences. To assess morphological variation within *Pyrus*, scanned leaves from the United States Department of Agriculture germplasm collection were analyzed using pseudo-landmarking, a comprehensive morphometric approach. Traditional linear measurements, such as length, width, and area, were also measured. A total of over 1,500 leaves from 12 species were examined. The primary sources of morphological variation in leaf shape were quantified using principal components analysis, with the first two components explaining over 50% of total shape variation. Furthermore, aspect ratio showed a very strong positive correlation with PC1, indicating that variation captured by PC1 is largely driven by differences in leaf shape. While morphometric analysis captured some separation between species, there was also substantial overlap reflecting a continuous distribution of leaf shapes within *Pyrus*. To estimate the accuracy with which both species identity and geographic origin could be predicted using leaf shape, we used a linear discriminant analysis, which showed variability in prediction accuracy based on both categories. Taken together, these findings suggest that leaf morphology may at least partially reflect species-level differentiation within *Pyrus*, but that leaf shape alone does not provide sufficient information for accurate species-level identification. Ultimately, this study contributes to improving morphometric methods for species classification in *Pyrus* and can support further studies to understand the sources and consequences of variation of leaf shape within this horticulturally important genus.

PF. Fruits Posters

PF1: Rootstock Effects on Scion Wood Anatomy and Agronomic Traits in Grafted Honeycrisp Apple Trees.

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Grafting is an important horticultural practice in woody perennial fruit crops, including apples. By grafting a shoot system (scion) onto a root system (rootstock), apple cultivars with desirable traits can be clonally propagated. Rootstocks may also impart beneficial characteristics to the tree such as improved tolerance to abiotic and biotic stresses and graft-transmissible effects on vigour, yield, and fruit quality. In apples, dwarfing rootstocks are particularly important as they limit vegetative growth and increase precocity, resulting in earlier fruit production and increasing the productivity of the orchard. In 2010, an NC-140 orchard trial of apple rootstocks using ‘Honeycrisp’ as the scion cultivar was established at the Kentville Research and Development Centre (Kentville, NS). The evaluated rootstocks represent four different dwarfing rootstock breeding programs: Malling, Budagovsky, Pillnitz and Cornell-Geneva®. We examined the effects of 17 different rootstocks on scion wood anatomy and tree agronomic traits collected from 2010 to 2024. Wood samples were collected in 2024 from the scion wood of 69 trees. Annual growth was quantified from the digital images of each sample based on the width of each tree ring. Annual tree ring width measurements were linked with historical yield and tree height data. Together, this work uses a novel phenotyping approach to investigate the relationship between rootstock, scion wood anatomy, and important agronomic traits. Ultimately, these findings can assist fruit growers in selecting the most appropriate rootstock for their orchard.

PF2: Kombucha Fermentation as a Postharvest Strategy for Haskap Berry Utilization and Value Addition

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Haskap berries (*Lonicera caerulea*) are nutrient-dense superfruits rich in anthocyanins, phenolic acids, vitamins, minerals, and organic acids. However, their fragile skin and sensitivity to postharvest handling severely limit fresh market shelf life at ambient and refrigerated conditions. Kombucha fermentation offers a value-added strategy to extend haskap fruit marketability by using the symbiotic culture of bacteria and yeast (SCOBY) to biotransform native berry bioactives into potentially beneficial postbiotic metabolites. This study investigated fermentation kinetics and postbiotic metabolite profile in haskap berry kombucha over a 14-day fermentation period at room temperature. Fermentation progress was monitored through changes in turbidity, pH, total soluble solids, and titratable acidity. Postbiotic metabolites were quantified using targeted high-performance liquid chromatography-mass spectrometry (HPLC-MS), while untargeted high-resolution mass spectrometry provided a broader metabolomic profile. Antioxidant capacity and phenolic content were assessed using ferric-reducing antioxidant power (FRAP), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging, total phenolic content (TPC), and total anthocyanin content (TAC) assays. During the fermentation, pH decreased from 3.3 to 3.0, total soluble solids declined by 3.6 °Brix, and titratable acidity increased by 2.3-fold, consistent with microbial sugar consumption and organic acid accumulation. Targeted HPLC-MS identified several phenolic postbiotics, including protocatechuic acid, phloroglucinaldehyde, gallic acid, and quinic acid. This is the first comprehensive characterization of haskap berry kombucha fermentation. The kombucha biotransformation of haskap berries offers a novel postharvest strategy for haskap growers, addressing fresh-market limitations, while creating a functional beverage with potential health-promoting properties.

PF3: Mycovirome characterization reveals multiple viruses co-infecting a single isolate of the phytopathogenic fungus *Botrytis cinerea*

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Botrytis cinerea is a phytopathogenic fungus that causes significant economic losses in many crops. Mycoviruses are abundant in *B. cinerea*, and those that reduce host virulence are of particular interest as biocontrol agents. MiSeq and NovaSeq sequencing of a *B. cinerea* isolate, Bc2019-174, revealed the presence of Botrytis cinerea fusarivirus 8, Sclerotinia sclerotiorum partitivirus 2, Sclerotinia sclerotiorum partitivirus 3, and a novel strain of a virus in the family *Mymonaviridae*. The full genome length of this *Mymonaviridae* virus was ~9.1 kb, and analysis of the RNA-dependent RNA polymerase gene showed an 85% sequence similarity to Botrytis cinerea negative-stranded RNA virus 4. Bc2019-174 produced larger lesions on detached bean leaves and exhibited no difference in mycelial growth rate on potato dextrose agar (PDA) plates compared to the virus-free *B. cinerea* isolate, B05.10. While B05.10 produced large scattered sclerotia when grown on PDA plates in the dark at room temperature for three weeks, Bc2019-174 failed to produce sclerotia. Transmission electron microscopy of purified viral particles from Bc2019-174 revealed isometric particles 27–35 nm in diameter likely belonging to the partitiviruses. Enveloped, filamentous particles and helical, coiled rod-like particles belonging to the *Mymonaviridae* virus were also detected. Bc2019-174 was co-cultured with B05.10 to evaluate horizontal mycovirus transmission; no transmission was detected, possibly due to vegetative incompatibility between the isolates. Single-conidial Bc2019-174 isolates were cultured and consistently harboured mycoviruses, indicating vertical transmission. The discovery of these co-infecting mycoviruses expands the known mycovirome diversity and understanding of viral-host interactions in *B. cinerea.*

PF4: The effect of increasing temperature on cranberry pollen germination

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Cranberries (*Vaccinium macrocarpon*) are a small fruit specialty crop native to the East Coast of North America. British Columbia is Canada's second largest cranberry producer with a farm gate value over $57 M. With climate change, the risk of rising temperatures and extreme heat during bloom (May and June) may lead to decreases in overall yield. In this study, we investigated the effect of increasing temperatures on cranberry pollen germination. Six cranberry varieties (Vasanna, Haines, 9811, Mullica Queen, Crimson Queen and BG) were collected and pollen germinated at 30°C, 35°C, 38°C and 42°C for twenty-four hours. After 24 h pollen viability was assessed by observing the percent germination of the pollen tetrads and measuring pollen tube lengths. At 30 - 38°C we observed a maximum germination rate of ~60 % across varieties, with a critical threshold of 38 °C, as germination was fully inhibited at 42 °C in all varieties. Pollen tube length also declined significantly as temperatures increased over 38°C. As maximum germination was only ~60%, this may suggest the presence of a secondary threshold below 30°C, ongoing replicated experiments are aiming to fully characterize this response. These results indicate that temperatures exceeding 38°C during flowering are likely to lead to negatively impact cranberry yields.

PF5: The effect of soil silicic acid amendments on strawberry plants grown under drought conditions

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Strawberries are an economically and nutritionally important fruit crop in Canada. However, their growth and yield can be compromised when under water-limited conditions. Recent research suggests that application of silica to the soil may reduce the effects of drought stress in plants. To test that potential of silica in drought-stressed strawberries, 20 cv. 'Wendy' and 20 cv. 'Valley Sunset' were grown in a controlled growth chamber with set day/night cycle. For each cultivar, half the plants (n = 10) were treated with a 24 mM monosilicic acid solution applied to the soil. Strawberries within the silica-treated and non treated groups received water to maintain a soil water content of 50-70% to promote optimal irrigation (n = 5) or 20-30% to induce water-limiting stress (n = 5). All plants were evaluated for stomatal length, width and density, leaf relative water content, runner and trifoliate growth. Physiological measurements were collected in the morning and afternoon to determine the effect of soil rehydration, including leaf stomatal conductance, transpiration rate, vapor pressure deficit, water mole fraction, quantum efficiency, electron transport rate, leaf temperature. Data were analyzed using a linear model that accounted for variation due to silica treatment, cultivar, and water treatment across several traits. Silica was found to significantly increase transpiration in the morning and afternoon, increase stomatal conductance in the afternoon, and decrease quantum efficiency in the afternoon. Future work may include examining the impact of silica on strawberry plants via varying concentration or frequencies of monosilicic acid application.

PH. Horticulture Technology Posters

PH1: Developing growing media from recycled materials for rooftop vegetable production

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Urban rooftop farming is a promising strategy to optimize underused urban spaces and valorize locally sourced materials. However, growing media suitable for intensive rooftop vegetable production remain scarce, and their physicochemical properties strongly influence crop performance and system functionality. This study aimed to develop lightweight growing media formulated from recycled organic and mineral components to reduce the environmental footprint of rooftop food production. Six experimental growing media were produced by combining two mineral structural components—foamed glass aggregate and crushed brick—with varying proportions of compost and biochar. They were compared with a horticultural growing medium and a commercial green roof growing medium used as controls. Yields of lettuce (*Lactuca sativa*), dwarf bean (*Phaseolus vulgaris*), and mini pak choi (*Brassica rapa* subsp. chinensis) were evaluated over two growing seasons, together with temporal monitoring of growing media physicochemical and biological properties. Experimental growing media produced yields comparable to or higher than the horticultural control. Compost significantly increased yields, whereas biochar had a significant negative effect, with no interaction between factors. Lettuce performed better in foamed glass–based growing media than in crushed brick–based ones. The most suitable properties for vegetable production—optimal pH, low bulk density, high water-holding capacity, and adequate air-filled porosity—were observed in the foamed glass–compost mixture. These results demonstrate that recycled lightweight growing media can support productive rooftop agriculture while meeting key green roof substrate requirements.

PH2: Soil Health Responses to Apple Woodchip and Oyster Mushroom Amendments: An Incubation Study

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Apple orchard renewal requires removing all existing trees, resulting in a loss of soil carbon and degradation of soil health and biodiversity. Recycling aboveground apple trees as a mulch could be one way to improve soil health. A 56-day incubation study was conducted at AAFC Kentville Research and Development Center (NS, Canada) to assess the effect of apple woodchip mulch inoculated with or without an oyster mushroom mycelium on microbial activity and biodiversity in orchard soil. Soil was collected from an orchard established in 1996 and four treatments were compared: i) control (unamended soil) (CON), ii) soil with apple woodchip mulch (MCH), iii) soil inoculated with oyster mushroom mycelium (M) and iv) soil with apple woodchip mulch inoculated with oyster mushroom mycelium (MM). Destructive soil sampling was completed at days 1, 7, 14, 28, 42, and 56 post-treatment application. Biological activity was analyzed by N-acetylglucosaminidase, fluorescein diacetate hydrolysis, easily-extractable glomalin-related soil protein, and soil respiration. Soil bacterial (16S rRNA) and fungal (ITS2) community compositions were assessed on days 1, 28 and 56 using high-throughput sequencing. Soil treatments MCH and MM exhibited the greatest biological activity compared to CON and M. There was a significant shift of fungal and bacterial communities throughout the incubation study, especially when comparing CON to MCH and MM treatments. Preliminary results suggest the application of a carbon source (i.e., apple woodchip mulch alone or in combination with oyster mushroom mycelium) improves biological activity and shifts microbial diversity within orchard soil.

PH3: Physiological Response and Bitter Pit Reduction in 'Honeycrisp' Apples Treated with Modified Preharvest Hexanal

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[2]University of Guelph, Guelph, ON, Canada

'Honeycrisp' apples (*Malus domestica* Borkh.) are prone to bitter pit (BP) a physiological disorder that reduces market value, quality, and storability of the fruit. BP mitigation using hexanal has been studied in recent years, the mechanisms underlying its effects remain unclear. This study examines postharvest changes when applying preharvest hexanal in a different manner than reported previously, for BP mitigation. The research objectives are to determine when and how many foliar sprays are required during the growing season, and the most effective treatment to reduce BP in 'Honeycrisp' apples. As demonstrated by multiple indicators, including bitter pit incidence, severity, and progression, as well as marketability of the fruit, ethylene emission and weight loss, modified hexanal applications has mitigated bitter pit, better than the previous reports. These treatments show potential to extend the shelf life of 'Honeycrisp' apples while maintaining the fruit quality.

PH4: Green Crab-Derived Meat Hydrolysate Biostimulant Enhances Tomato Crop Growth and Phytochemical Performance

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The European green crab (*Carcinus maenas*) is one of the most destructive marine invasive species causing substantial ecological and economic damage to coastal ecosystems and shellfish aquaculture across North America. Bio-conversion of green crabs into agricultural biostimulants can boost food production and reduce ecological harm. The present study evaluated the effect of green crab meat-derived hydrolysate (CMS) applied at 0.25, 0.5, 1, 2 and 5% (v/v) on greenhouse-grown tomato (*Solanum lycopersicum* cv. Scotia). The results showed that photosynthetic pigmentation was significantly ($p < 0.001$) enhanced, with the CMS 0.5% and the CMS 5% recording the highest total chlorophyll contents (141.94 and 142.19 μg g^{-1} FW, respectively) compared to the control (50.65 μg g^{-1} FW). Carotenoid content was also significantly ($p < 0.001$) elevated, peaking at the CMS 5% (49.30 μg g^{-1} FW) and the CMS 2% (44.19 μg g^{-1} FW) treatments compared to the control (15.19 μg g^{-1} FW). Secondary metabolite accumulation was greatest at CMS 2%, with the highest total phenolic (469.49 μg GAE g^{-1} FW; $p < 0.001$) and flavonoid concentrations compared to the control. Oxidative stress markers were significantly ($p < 0.001$) reduced at CMS 2%, reflected in the lowest reactive oxygen species (ROS) accumulation and proline content among all the treatments compared to the control. These findings support the potential of invasive green crab meat hydrolysate as an effective and ecologically beneficial biostimulant for crop production. Future studies will use a transcriptomic approach to identify genes regulating the observed responses.

PH5: Resveratrol (a human health promoting polyphenolic compound) as a phytochemical elicitor enhances growth, ripening, and phenolic accumulation in tomato (*Solanum lycopersicum*) cultivated under urban agriculture systems

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Resveratrol is a polyphenol found in both edible and non-edible plants and is one of the phytochemical elicitors related to plant defence other than its documented roles in human health benefits. Improving the quality and productivity of horticultural crops in urban agriculture addresses food security and sustainability challenges**.** The aim of this study was to investigate the effects of resveratrol on horticultural crop production. *Solanum lycopersicum* 'Chocolate Cherry' dwarf tomatoes were grown in a mini-hydroponic system with and without 20 mM resveratrol treatment. Resveratrol treated plants showed greater height (8.6 ± 1.9 cm) and average leaf number (3-4 per plant), with higher fruit total phenolic content (TPC) (31.68 µg/mL GAE) than controls. *Solanum lycopersicum* 'Rosy Finch' plants were grown in fogponics systems. Resveratrol treatment (20 mM) was applied twice: three weeks after sowing, and at the 20–30% flowering stage. Our study showed that early growth (weeks 1–3) was similar, but treated plants were taller (16.6 ± 3.0 cm) by the 5th and 7th week, compared to controls (14.8 ± 2.7 cm). The fruit yield at 8th week was higher (34 fruits) in treated plants compared to the control (12 fruits). These findings demonstrate that resveratrol acts as an effective phytochemical elicitor, enhancing growth and increasing TPC while accelerating fruit ripening in dwarf tomatoes grown in both controlled hydroponic and fogponics systems. This study highlights novel roles (growth and ripening) of resveratrol for the first time outside of its well-established role as in plant defense.

PH6: Kynurenine as a growth regulator in *Fragaria vesca*

L Peters*, LAE Erland

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Tryptophan acts as a precursor for necessary phytohormones, including auxin and the indoleamines melatonin and serotonin that allow the plant to adapt to environmental stress and overall growth. In mammalian and microbial systems, one of the main tryptophan degradation routes including for auxin, is via the kynurenine pathway. While kynurenine is known to be produced by plants, its function remains mostly unexplored in plants. e studied the growth effects of kynurenine on *Fragaria vesca* 'Regina' cv. in unstressed and PEG simulated drought stress (5%) conditions in in vitro culture conditions. Kynurenine was tested at 0, 10 µM and 50 µM, with 10 µM serotonin, another tryptophan-derived phytohormone included as a positive control. After four weeks of growth, we found that kynurenine moderately increased root growth, but to a lesser extent than serotonin. Kynurenine did not significantly affect crown or petiole growth. To further explore the potential for kynurenine to modify plant growth we then tested growth of seedlings to different branch points in the kynurenine pathway including anthranilic acid, 3-hydroxyanthranilic acid, kynurenic acid and quinolinic acid and found kynurenine positively affected root length, petiole length as well as seed germination. Quinolinic acid, a precursor for NAD in animals, completely inhibited germination, while the intermediates anthranilic and 3-hydroxyanthranilic acid had intermediate effects. Our results suggest that the kynurenine pathway is active in plants and may plant a role in regulation of root organogenesis.

Gala Dinner

Invited Speaker: The Canadian Society for Horticultural Science (CSHS): A Personal and Historical Perspective

Shahrokh Khanizadeh, Eng., Ph.D.

Dr. Khanizadeh is the Vice President of ELM Consulting in Saint-Lazare, Quebec, Canada.
He is a Retired Senior Research Scientist with Agriculture and Agri-Food Canada and the
Editor-in-Chief for Archives of Phytopathology and Plant Protection.

The Canadian Society for Horticultural Science (CSHS) has played a pivotal role in advancing horticultural research, education, and professional collaboration in Canada for more than eight decades. This presentation provides a brief historical overview of the Society, tracing its origins to the Western Canadian Society for Horticulture, established in 1943 in response to the need for coordinated horticultural research and cultivar development adapted to Canadian conditions. The evolution of the organization into a national society reflects the growth and diversification of horticultural science across Canada.

Drawing upon more than forty years of personal involvement with CSHS, beginning as a student member in 1985 and later serving in various leadership roles, including President, the presentation highlights key milestones in the Society's development. Particular emphasis is placed on the importance of volunteerism, mentorship, student engagement, and the strong professional networks fostered through annual meetings and Society activities.
The presentation also examines the Society's transition into the digital era, including the establishment of the first CSHS website in 2001, which significantly enhanced communication, visibility, and member engagement. Reflections on the contributions of past leaders, volunteers, and members illustrate how individual dedication has shaped the Society's success and longevity.

Finally, the presentation considers future opportunities and challenges facing horticultural science, including sustainability, climate change, food security, and emerging technologies. The enduring strength of CSHS lies not only in its history and achievements but also in its members, whose commitment will continue to shape the future of horticultural science in Canada.

Saturday, June 30, 2026

Plenary Session (KC Irving Centre Auditorium)

P3.1 Plenary Address: Nanoengineering for Sustainable Agriculture Technologies

GS Selopal

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As the global community accelerates its transition toward sustainability, nanoengineering has emerged as a critical enabler for next-generation clean energy and sustainable agriculture technologies. By enabling precise control over material structure, interfaces, and functionality at the nanoscale, nanoengineering opens new pathways to efficiently harness solar energy while enhancing agricultural productivity. Among these advanced systems, quantum materials, including low-dimensional nanostructures such as quantum dots, nanoflakes, and their hybrid architectures, offer exceptional tunability of optoelectronic properties governed by quantum confinement and interfacial phenomena. These materials exhibit remarkable characteristics, including broadband light absorption (300-2000 nm), high absorption cross-sections, and the potential for advanced photophysical processes such as multiple exciton generation (MEG) and hot-carrier extraction. Such properties position quantum materials as powerful building blocks for integrated platforms spanning photovoltaics, solar-driven hydrogen production, and smart agriculture technologies, including spectrum-controlled greenhouse systems and energy-autonomous farming solutions. However, the practical performance of these systems remains below theoretical expectations, largely due to inefficient charge transfer and significant non-radiative recombination at material interfaces. To address these challenges, nanoengineered surface and interface design is essential. Tailored control over composition, morphology, and heterostructure interfaces enables defect passivation, optimized band alignment, and improved carrier transport dynamics. This talk will highlight advanced nanoengineering strategies, including heterostructure design and interfacial modulation, to systematically enhance the performance of quantum materials. The integration of nanoengineered quantum materials into sustainable agricultural technologies will be discussed, particularly for the spectral management of sunlight, improved photosynthetically active radiation (PAR) greenhouse systems, and nanoengineered controlled-release fertilizers. Finally, pathways toward scalable manufacturing, real-world deployment, and commercialization of quantum-material-enabled agri-tech systems will be outlined.

P3.2 Plenary Address: Contemporary breeding in peach to address consumer trends and climate change

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Peach breeding has evolved from strictly conventional crossing to use molecular tools, as in other tree fruits. In our breeding program, while the conventional crossing remains the nucleus, we are developing and applying molecular markers to augment the variety development process. Major and emerging consumer trends include the use of less pesticides as there is an increasing concern of the long-term effects of pesticides in fruits, that is consumed. Peach typically receives at least 6-8 pesticide sprays for various fungal and bacterial diseases and a few more for insect pests. Cutting this by half will have a great impact on human and climate health. In our program we are developing molecular markers for brown rot resistance, using a GWAS approach. Brown rot is a fungal disease caused by *Monilinia fructicola* that attacks the peach from young shoots in spring, all the way to ripe fruits in fall. Developing brown rot resistant varieties can help to reduce pesticide spray. Younger generations (millennials and Gen z and the like) like to have more fruits in their diet, but they also tend to multitask more than the previous generations. Having juicy (or 'messy') fruits during such multi-tasking is almost impossible. To address this, we are developing peaches that are firm and crispy, yet tasty by using the *stony hard* gene. Only few varieties with stony hard gene exist in the world and none of them seem to be suitable for Ontario based on our observations at Vineland. Currently we have developed and testing some peaches with stony hard genes that will be suitable for the changing climate. Due to their prolonged shelf life and thus improving the chances of being consumed, these peaches, will reduce the wastage and thus carbon footprint, contributing to mitigate climate change. Further the stony hard peaches tend to hang longer in the trees and store better thus providing the growers huge advantage. Finally, such firmer fruits, which will contain all other traits of peach, are preferred by the younger generation over the juicy fruits that tend to drip and considered messy by younger generation. This saves time, money and space and thus helps environment as well.

Workshops

W1: R Data Science Skills Workshop (KC Irving Centre Classroom)

Dr. Danielle Quinn, Ms. Paige Levangie, Mr. Terrell Roulston

This workshop, hosted by Acadia Faculty Dr. and Research Associates Dr. Danielle Quinn, Ms. Paige Levangie and Mr. Terrell Roulston, will cover the basics of data manipulation and plotting, along with a simple introduction to GIS and modeling in R. The focus will be on keeping things practical and low-pressure so participants leave feeling more confident using R. This hands-on R workshop is open to all skill levels, whether you've never touched R or just want to get more comfortable using it.

W2: Scientific writing for successful grant applications in the natural sciences (KC Irving Centre Auditorium)

Dr. Kirk Hillier

This workshop, hosted by Acadia Professor Dr. Kirk Hillier, will feature a panel of academic and government scientists with extensive experience in grant writing and review. The panelists are Dr. Lord Abbey, Dalhousie University; Dr. Bourlaye Fofana, AAFC; Dr. Simone Castellarin, The University of British Columbia; and Dr. Marco Todesco, The University of British Columbia. The workshop will cover the funding landscape in Canada, the anatomy of a strong proposal, common pitfalls, strategic grant development, and practical tools for grant writing in the natural sciences. Dr. Hillier will have copies of his new book, Rebel Researcher: The Unconventional Path to Discovery, available for sale.

Canadian Society for Horticultural Science
Société Canadienne de Science Horticole

About the Society

Founded in 1956, **the Canadian Society for Horticultural Science – Société Canadienne de Science Horticole (CSHS-SCSH)** is a professional society devoted to fostering, promoting and encouraging research and education in all branches of horticultural science in Canada. With a countrywide representation, our members are from a variety of horizons: scientists, educators, students, extension agents and industry personnel involved in research, teaching, information and technology related to all fields of horticulture.

Current Executive Board (2026)

Due to the diversity of horticulture production in Canada, one of the priorities of the CSHS is to have a pan-Canadian representation on its board of directors.

Lord Abbey
President
Dalhousie University, NS

Champa Wijekoon
Vice-President
AAFC, MB

Bourlaye Fofana
Past-President
AAFC, PEI

Beatrice Amyotte
Treasurer
AAFC, NS

Jonathan Neilson
Secretary
AAFC, AB

Vasantha Rupasinghe
Atlantic Representative
Dalhousie University, NS

Emmanuelle D'Amours
Northern Representative
AAFC, QC

Shahrokh Khanizadeh
Quebec Representative
ELM Consulting, QC

Melanie Kalischuk
Ontario Representative
University of Guelph, ON

Jazeem Wahab
Prairie Representative
AAFC, SK

Simone Castellarin
BC Representative
UBC, BC

Raphael Ofoe
Communications Officer
Dalhousie University, NS

Sarah Drury
Student Representative
AAFC & U. Sherbrooke, QC

While we practice a progression within the board based on need, our members are encouraged to submit their candidacy to any currently position available. In fact, CSHS will renew its board members at its 2026 AGM in Wolfville, NS. Terms are for 2 years with the possibility of 2 consecutive terms in the same position. Please contact the CSHS secretary (Jonathan.neilson@agr.gc.ca) if you are interested in any of these positions or any upcoming vacant positions in 2027.

CSHS Annual Conferences

The CSHS also prioritizes travelling around the country for its annual meetings. Since 2016, CSHS held its annual meetings as standalone or joint-meeting in Montreal (CSHS-CSA 2016), Vancouver (CSHS-CSPB 2017), Niagara Falls (CSHS 2018), Guelph (Plant Canada 2019), as virtual conferences in 2020 (CSHS student conference) and 2021 (CPS-CSA-CSHS), Halifax (CSHS 2022), Ottawa (CPS-CSA-CSHS 2023), Winnipeg (Plant Canada 2024) and most recently in Kelowna as a joint conference with the Canadian Society of Agronomy (CSHS-CSA 2025).

CSHS – Halifax, 2026
In 2026, CSHS annual meeting will be held in the East coast region, in Wolfville at Acadia University, with Dr. Beatrice Amyotte as the chair. If you are interested in participating in the next national or local conference organizing committees, please contact the current CSHS secretary (Jonathan.neilson@agr.gc.ca).

CSHS Student Committee

Students are an integral part of the CSHS, and their involvement in the Society is important and valued. A Student board was implemented in 2016 within the Society to support students' initiatives and the Student Committee has so far been very busy.

Over the past year, the CSHS student committee has organized a variety of initiatives to promote horticultural science to the general public. As part of the annual Community Day hosted by Dalhousie's Faculty of Agriculture, CSHS students prepared and distributed approximately 300 rooted Mexican mint cuttings to community members, helping connect horticultural research with the public. The student committee also launched a webinar series in the fall, featuring presentations by Dr. Champa Wijekoon (Agriculture and Agri-Food Canada) on how urban agriculture and plant bioactives can promote sustainable food systems in Canada, and Dr. Emmanuel Nai (Lethbridge Polytechnic) on the use of canola meal as an alternative to fish meal in aquaponics. The CSHS student committee is currently running a photo contest open to anyone passionate about horticulture, with a $50 prize on offer. Submissions are accepted until July 1, 2026, at ealac1@ulaval.ca.

Interested in joining the student committee? Contact Sarah Drury at sarah.drury@usherbrooke.ca for more information.

Becoming a member of the CSHS offers numerous benefits
• Significantly reduced registration fees at CSHS and conference registrations
• Take advantage of reduced memberships with combined registrations with multiple societies
• Reduced page charges to publish in the Canadian Journal of Plant Science
• Timely direct mail alerts to jobs, grant opportunities, etc.
• Eligibility for the CJPS Best Paper Award for horticulture, which comes with an invitation to be a conference speaker

In addition, for students, benefits also include
• Eligibility for Presentation Awards for the best oral and poster presentations
• Eligibility for Travel Awards to annual conferences
• Community & Extension Funding, which supports students activities in their communities
• Networking opportunities between members, and sharing the experience of study and research

For more information and to become a member: www.CSHS.ca