BCSOA CONFERENCE 2024

JUNE 18–19

Sidney BC

Organizing Committee 2024

The British Columbia Seed Orchard Association (BCSOA) is a group of tree seed orchardists interested in the exchange of technical, operational, research and development information to promote good seed orchard management. Every second year the group hosts a conference to connect with members, hear from expert speakers, and share information.

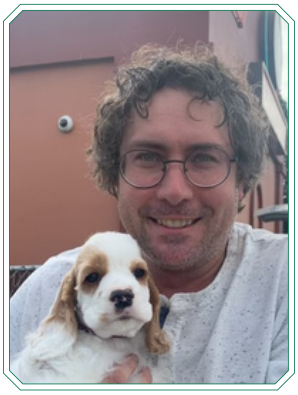
This year's conference will introduce the latest technological advancements in our field and dive into the history and science behind these practices. The speakers and tours will focus on field technicians, highlighting how advancements and future changes in tree improvement will affect their work and inspire innovative ideas for adaptation and transformation in the sector.

The organizing committee hopes you have a great experience at the 2024 BCSOA meeting. Please enjoy all that the conference and Sidney have to offer.

Sincerely the 2024 organizing committee,

Corey Mathieson

Rut Serra



Chris Halldorson

Dave Kolotelo

Brian Barber

Abbi Vernier

Sanya Nar

June 18 - Conference Day Agenda

Time	Topic	Speaker
8:20-8:30	Introduction and Housekeeping	Rut Serra
	Session 1: Climate Change Adaptation	
8:30-9:00	Irrigation Equipment and Scheduling for Water Efficiencies	Karen Hounsome
9:00-9:30	Climate Change Impacts on Reforestation Feasibility for BC Tree Species	Colin Mahony
9:30-10:00	Douglas Fir Seed Orchards in France: Management and Adaptation	Baptiste Antoine
10:00-10:30	Refreshments and Health Break	
	Session 2: New Technologies for our Practices	
10:30-11:00	Using Drones Brings Accuracy with Cost and Time Efficiency	Mark Vendrig
11:00-11:30	A Primer to Cone Induction	Patrick von Aderkas
11:30-12:00	Mobile Elevated Work Platforms in Tree Seed Orchards: Safety, Efficiency, Versatility	Corey Mathieson

June 18 - Conference Day Agenda Cont.

12:00-1:00	Lunch Break	
	Session 3: Program Updates and Genetics	
1:00-1:30	The Sordid Sex Lives of Coastal Douglas Fir: Who's Doing Who When Love is in the Air?	Jon Degner
1:30-2:00	BC Seed Orchard Pest Management Update 2024	Geoff Bradley
2:00-2:30	Historical Aspects of Seed Orchard Research	Michael Stoehr
2:30-2:45	Refreshments and Health Break	
2:45-3:45	Roundtable: Seed Orchard Updates Across North America	Orchard Managers
3:45-4:15	2024 BCSOA Business Meeting	Rut Serra
5:30-9:00	Banquet Dinner and Evening Event at Mary Winspear Centre with Smokestacks Band	

BCSOA 2024

SPEAKERS

Tuesday, June 18th 2024

Karen Hounsome

SiteOne Landscape Supply

I have been involved in the Irrigation Industry for over 40 years. I am currently working for an irrigation equipment supply company doing design and education for irrigation systems. I am actively involved with the Irrigation Association of BC (IIABC) in which I am the current president. I work with organizing new systems and reviewing existing systems for better water usage.
Irrigation and water are my passions and so I got involved with education of this important subject.

Notes

Key Presentation Points:

Questions for the Speaker:

Colin Mahony, PhD, RPF

BC Ministry of Forests

Colin has a 25-year career in forestry starting with 10 years as a forestry consultant on restoration of forests disturbed by mountain pine beetle, wildfire hazard reduction around communities, silviculture prescriptions, timber supply analysis, and many other aspects of forest management. Colin did his PhD research in ecological climatology with Prof. Sally Aitken at UBC Forestry, focusing on the emergence of novel climate types in BC. Colin joined the BC Government in 2020 as Research Climatologist in the Office of the Chief Forester. His current work is establishing the Future Forest Ecosystems Centre to translate climate change projections into decision support tools for ecosystem management.

Notes

Key Presentation Points:

Questions for the Speaker:

Baptiste Antoine

AgroParisTech/INRAE

I am a French student at AgroParisTech, and I am an apprentice at INRAE to become a forest engineer. Previously, I completed a two-year diploma in forest management.
My main work focuses on evaluating French Douglas fir seed orchards in the context of climate change. I am particularly interested in comparing two varieties of French Douglas fir that differ in their vegetative phenology, and growth. The objective is to assess if they have different tolerances and behaviors towards drought episodes and to identify any potential implications for forest management.

Notes

Key Presentation Points:

Questions for the Speaker:

Mark Vendrig, MSc

Precision Crop Tech

Mark founded Precision Crop Tech and holds a Master of Science in Environmental Chemistry. He worked as an environmental engineer for over 20 years, extensively using remote sensing and aerial imagery. With the emergence of reliable drone technology, he started working with drones in 2012, and in 2015, he worked closely with DJI and started helping redesign hardware and software for crop spraying drones. In 2017, he set up Precision Crop Tech. He established a process for integrating soil testing, tissue testing, GIS, LIDAR and multispectral imagery and drone crop spraying, leading to Precision Crop Tech being recognized as Canada's top Precision Ag provider in 2023. After hundreds of trials and nearly 6000 hours of flying, Precision Crop Tech has helped extensively with trials at Agri Foods Canada and various chemical and biological treatment suppliers and helped drive technology development with Transport Canada, Nav Canada, Health Canada and OMAFRA. Precision Crop Tech is now working on an AI agronomic platform to utilize all the data we collect, and we are developing a sizeable autonomous ground rover for agriculture.

Notes

Key Presentation Points:

Questions for the Speaker:

SPEAKERS

Tuesday, June 18 2024

Patrick von Aderkas, PhD

University of Victoria

I first got interested in trees when I was a Junior Forest Ranger in Northern Ontario. Botany degrees followed (Guelph, Manchester) and then I worked for National Research Council and Canadian Forestry Service before landing my current job in UVic's Centre for Forest Biology in 1989. I've been interested in the evolution of gymnosperm reproduction, especially conifers. My bag of tricks includes proteomics, metabolomics, microscopy and tissue culture. The best part of my job has been the many wonderful undergraduate and graduate students that I've trained.

Notes

Key Presentation Points:

Questions for the Speaker:

SPEAKERS

Tuesday, June 18 2024

Corey Mathieson, BSF, RPF

Mosaic Forest Management

As Tree Improvement Supervisor at Mosaic Forest Management, Corey oversees seed production activities at Mount Newton Seed Orchard in Saanichton, BC and seedling nursery quality control for the 10 million trees planted by Mosaic Forest Management each year. He graduated from Lakehead University with an Honours Bachelor of Science in Forestry in 2009 and has been working in silviculture and tree seed production since 2007. He is passionate about the work of tree seed production and its role in a sustainable forest industry. Mount Newton Seed Orchard maintains 100 acres of seed orchard for three Species (Douglas-Fir, Western Redcedar, and Western White Pine), with a total of about 6000 ramets producing enough seed for 10 million seedlings annually.
He resides in North Saanich with his wife and two kids who look forward to camping and climbing a mountain or two this summer on Vancouver Island.

Notes

Key Presentation Points:

Questions for the Speaker:

SPEAKERS

Tuesday, June 18, 2024

Jonathan Degner, PhD

BC Ministry of Forests

Jon Degner is a tree breeder and research scientist with Ministry of Forests, where he manages the coastal Douglas-fir and Sitka spruce tree breeding programs. His background is in forest tree genetics, genomics, and evolutionary biology. He works, lives, and plays in the Cowichan Valley on Vancouver Island, in the traditional territories of the Hul'qumi'num and Ditidaht speaking peoples.

Notes

Key Presentation Points:

Questions for the Speaker:

SPEAKERS

Tuesday, June 18 2024

Geoffrey Bradley, MSc

BC Ministry of Forests

Geoff Bradley is the Seed Orchard Pest and Plant Health Biologist for the BC Ministry of Forests, and has been in this role since 2018. He works with orchard staff from provincially and privately run orchards throughout BC to provide orchardists with pest management and tree health information, guidance and expertise. Geoff has a degree in plant biology from the University of British Columbia and a MSc in Plant Pathology from Simon Fraser University. Geoff previously worked in a variety of roles in the Plant Protection Branch of the Canadian Food Inspection Agency and worked with a wide range of quarantine pest related activities in Forestry, Horticulture, and Grain crops. Geoff works out of the Kalamalka Forestry Centre in Vernon and lives in the lovely little village of Lumby BC.

Notes

Key Presentation Points:

Questions for the Speaker:

Michael Stoehr, PhD, RPF

BC Ministry of Forests (retired)

Michael earned both a BSc and a MSc in Forestry from Lakehead University in Thunder Bay, completing these degrees in 1985. Following this, he pursued a PhD in Forest Genetics at the University of Toronto, graduating in 1989. His academic journey continued with postdoctoral research at McMaster University and the University of Victoria from 1989 to 1999. From 1999 to 2001, he was the Seed Production Researcher with the Research Branch of the BC Ministry of Forests. Subsequently, he dedicated nearly two decades, from 2001 to 2020, as a Coastal Douglas-fir breeder, making significant contributions to the field.

Notes

Key Presentation Points:

Questions for the Speaker:

June 19 - Tour Day Agenda

Time	Topic	Speaker
7:45-8:00	Board Bus at Mary Winspear Centre and Drive to Pacific Forestry Centre	
8:30-10:00	**Stop 1: Pacific Forestry Centre** Drought Trials in Fdc and Cw Cw root- and butt-rot disease Swiss needle cast in Fdc	Dan Mazerolle, Jon Degner, and Nicolas Feau
10:00-10:30	Refreshments and Health Break at PFC	
10:30-11:00	Board Bus and Drive to Applied Bio-nomics	
11:00-12:00	**Stop 2: Applied Bio-nomics** Biological Pest Control	Brian Spencer
12:00-12:15	Board Bus and Drive to WFP Orchard and Nursery	
12:15-1:15	Lunch Break at WFP	
1:15-2:45	**Stop 3: WFP Orchard and Nursery**	Rut Serra, Annette Van Niejenhuis, and Christina Lavoie
2:45-3:00	Board Bus and Drive to MoF Orchard	
3:00-4:30	**Stop 4: Ministry of Forests Orchard** Drone Demonstration	Chris Halldorson and Mark Vendrig
4:30-5:00	Board Bus for Drop off at Mary Winspear Centre	

PACIFIC FORESTRY CENTRE

Dan Mazerolle, Jon Degner, and Nicolas Feau

The Pacific Forestry Centre (PFC) is one of six research centres within the Canadian Forest Service (Natural Resources Canada), that conduct forest research activities, providing a regional, national, and international voice for Canada's forest sector. While the Pacific Forestry Centre includes employees from various federal departments directly related to forests, such as the Canadian Forest Service and the Canadian Wood Fibre Centre, it also accommodates staff from other federal departments such as Parks Canada and the Canadian Food Inspection Agency. Research priorities at the PFC include forest entomology and pathology, fire management, forest inventory and monitoring, climate change and carbon accounting, and economic and market research. The PFC also contributes to the economic development of first Nations through its Indigenous Forestry Initiative.

The PFC greenhouse facility tour will present experiments that lie at the intersection of research conducted by scientists from the Canadian Wood Fibre Centre and the Entomology and Phytosanitary research programs:

Firstly, a drought study experiment aiming to select coastal Douglas-fir families that are tolerant to drought (those experiencing minimal growth loss under drought) will be presented. The experiment consists of screening full-sib advanced families (series 3) for growth performance and survival under drought. Seedlings are grown in styroblocks in a polyhouse, they are currently in their third growing season. The study is randomized and fully replicated, there are 12 pairs of blocks under drought and 12 pairs under optimal watering. In the fourth year of the study, all seedlings will be watered normally, to evaluate recovery from drought (resilience). Then, survival will be evaluated in the fifth year under severe drought conditions (ie. complete water withholding). Results from a similar experiment with western red cedar will be discussed.

The second experiment presented involves a western redcedar (WRC) root- and butt-rot disease. The goal of this experiment is to select elite genotypes with better resistance to the fungal pathogen Coniferiporia weirii. Between November and December of 2022, around 2,500 three-year-old seedlings of 75 full-sib families and one operational composite seed-lot were inoculated with C. weirii using the wood block-stick method. The process of disease infection has been monitored through yearly measurement of seedling growth and fungal levels on roots. A final assessment of wood-decay will be made by killing the seedlings in the next year or two.

Finally, the third experiment presented consist of a preliminary setup for controlled inoculations of Douglas-fir seedlings with the fungus Nothophaeocryptoppus gaeumanii. This species is the fungal pathogen responsible for Swiss needle cast, a disease with strong impact on coastal Douglas-fir growth. A discussion will be held on how controlled inoculations and genomics can contribute to identifying the molecular bases of tolerance to this disease in Douglas-fir.

APPLIED BIO-NOMICS

Brian Spencer

We will begin with a general walk-through of the site. My discussion will focus on the products that have been successful in seed orchards and nurseries over the years. While many products in your industry use "bin-based" systems with factitious hosts and may not be visually interesting, there are exceptions, such as Aphidoletes (Aphids and Adelgid), which are quite captivating to observe. During the tour, you will see the production houses, the lab, and the shipping and packaging areas.

WFP ORCHARD AND NURSERY (SAANICH FORESTRY CENTRE)

Rut Serra, Annette Van Niejenhuis, and Christina Lavoie

Western Forest Products (WFP) Orchards and Nursery provide high quality seed/cuttings and seedlings to supply WFP reforestation needs. Established in 1964, we are the oldest continuously operating seed orchard in Canada, with an average annual production of 12 million seeds from about 4,000 ramets. The Nursery was established in 1982 and produces about 3.6 million seedlings annually utilizing 27 greenhouses. Species grown include western red cedar, coastal Douglas fir, yellow cypress, western hemlock, mountain hemlock, Sitka spruce, true firs (balsam, noble, grand), red alder and white pine.

During the tour, we will visit the yellow cedar hedge orchard (Yc 805), the weevil resistant Sitka spruce orchard (Ss 172), the low elevation coastal Douglas-fir orchard (Fdc 166) and the low elevation western redcedar orchard (Cw 198). Some of the topics we will discuss through the tour include orchard cycle from establishment to retirement, irrigation and water management, vegetation management, pruning, pest and disease management, and nutrition management. On the nursery side, we will learn about the growing regime of the 10 different species of seedlings and the production line for sowing and lifting.

MINISTRY OF FORESTS ORCHARD AND DRONE DEMONSTRATION

Chris Halldorson (MoF) and Mark Vendrig (Precision Crop Tech)

Saanich Seed Orchard

Saanich Seed Orchard is a BC Ministry of Forests orchard, producing improved seed and vegetative cuttings for both ministry and private sector use. The land the orchard currently occupies was initially acquired by the province in 1972 with the first orchard being planted in 1975 as the #120 Douglas-fir seedling orchards.The permanent structures being build between 1980 and 1997.

The site comprises 27 hectares with 6 producing seed orchards, consisting of two Douglas-fir orchards, redcedar, high elevation hemlock, white pine and red alder.There are also two vegetative cuttings orchards for yellowcedar, one for coastal, the other for interior BC use. An additional three seed orchards located at the Cobble Hill Fire Base, consisting of two white pine and one sub-alpine fir orchard all in the development stage.

Saanich Seed Orchard also shares its location with Ministry genetics staff and operations, housing two breeding orchards and two clone banks on site.

In the tour of the site, we will highlight some of the challenges faced at Saanich Seed Orchard. Challenges that include issues of drainage in heavy clay soils, vegetation management in the coastal environment, maximizing the water used in irrigation, and how the site has evolved to meet these challenges.

Drone Demonstration

The weather will determine if we can fly. If high winds and rain prevent flying, we will do a static display and run folks through the aircraft and software to demonstrate how it works. If the weather cooperates, we will fly, showing how the aircraft works, and we will spray a small area within a field with water. We will have some posters in the field to show the types of spray we can achieve. The flight time will be about 5 to 10 minutes, with a lot of briefing and question time.

Attendees

Abbi Vernier	Western Forest Products
Andrew Hicks	Roseburg Forest Products
Angela Kuysters	Incremental Forest Technologies Ltd.
Annette van Niejenhuis	Western Forest Products
Baptiste Antoine	INRAE
Ben Alexandrowicz	Silvaseed Company
Bendix Hollmann	BC Tree Seed Centre
Bevin Wigmore	Mosaic Forest Management
Brian Barber	Select Seed Co. Ltd.
Brian Roth	Tolko
Chelsea Tougas	Weyerhaeuser
Chris Halldorson	BC Ministry of Forests
Colin Mahony	BC Ministry of Forests
Corey Mathieson	Mosaic Forest Management
Dan Gaudet	Vernon Seed Orchard Company
Dan Walczak	Western Forest Products
Danielle Clark	BC Ministry of Forests
Darian Domes	Cascade Timber Consulting
Dave Richardson	Forestart Ltd
David Kolotelo	BC Tree Seed Centre
Forrest Edelman	Weyerhaeuser - Regeneration
Frederik Vroom	SelectSeed Co. Ltd.
Geoffrey Bradley	BC Ministry of Forests
Ian MacLachlan	HASOC and Blue Ridge Lumber
Jason Padden	Mycorrhizal Applications
Jesse Wildeman	BC Ministry of Forests
John Jayne	Cascade Timber Consulting
Jonathan Degner	BC Ministry of Forests
Joseph O'Donoghue	BC Ministry of Forests- Saanich Seed Orchard
Josephine Russell	PRT Armstrong
Justin Hetu	Incremental Forest Technologies, HASOC
Justin Zenkner	Weyerhaeuser
Karen Hounsome	SiteOne Landscape Supply
Katherine Spencer	BC Ministry of Forests
Kona Van Diest	BC Timber Sales - Provincial Operations
Laurel Cowburn	Kalamalka Seed Orchard
Luke Wonderly	Weyerhaeuser Western Regen
Mark Vendrig	Precision Crop Tech
Martin Howes	AbacusBio Ltd
Mary-Ann Fargo	Tolko - Eagle Rock Reforestation
Michael Stoehr	Retired (BC Ministry of Forests)
Natasha Kuperman	Seed the North, Inc.
Patrick von Aderkas	University of Victoria
Rob Jensen	Precision Crop Tech
Rut Serra	Western Forest Products
Sanya Nar	Mosaic Forest Management
Sean Webb	Arbutus Grove Nursery
Simeon Smith	Rayonier Inc.
Siriol Paquet	Sylvan Vale Nursery Ltd.
Stephen Goodfellow	PRT
Sue Woodall	Weyerhaeuser
Taylor White	BC Tree Seed Centre
Tia Wagner	Vernon Seed Orchard Company
Tim Earl	Green Diamond Resource Company
Trevor Kovits	Mosaic Forest Management
Viviana Olivares	Weyerhaeuser - Regeneration

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