

B.C. AGRICULTURAL CLIMATE ADAPTATION RESEARCH

Provincial Workshop * Kelowna, B.C.

Four Points Conference Centre, 5505 Airport Way

DECEMBER 2, 2019

Registration desk

10:30 am - 1:30 pm	Registration desk
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Focus group discussion

11 am - 12:30 pm Pre-registration required	Meritage Room A Barriers to Adaptation in the Okanagan Agriculture Sector - focus group session for producers: Detailed description
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APPLIED RESEARCH

AGRICULTURE ADAPTATION FOR TREE FRUIT & WINE GRAPE GROWERS

	Meritage Room A	Meritage Room B
1- 1:20 pm	Building resilient vineyards through cultivar diversity (Elizabeth Wolkovich, University of British Columbia)	Changing climate, shifting crops - future crop suitability modelling to inform future crop choices (Kirsten Hannam, Agriculture & Agri-Food Canada, Summerland Research & Development Centre)
1:30- 1:50 pm	The effect of deficit irrigation on fruit quality in wine grape production (Simone Castellerin, University of British Columbia)	Importance of crop drive-rows in soil carbon storage in woody perennial crops; a regional study along the Okanagan Valley (Andrew Midwood, University of British Columbia, Okanagan)
2:00 - 2:35 pm	Testing agro-thermal heat treatment of Okanagan grapevines to improve yield & adapt to wet and cold conditions (Chad Douglas, Quails' Gate Winery) Mini info session: Resources for Okanagan growers for water supply information, wildfire & invasive species (Kellie Garcia, Okanagan Basin Water Board & Harmony Bjarnason, BC Agriculture & Food Climate Action Initiative)	Use of technology and data for adaptation in the tree fruit sector - How ready are we for innovative agricultural practices and to adapt to climate challenges? (Svan Lembke & Lee Cartier, Okanagan College) - Discussion: How can we leap-frog the big data revolution in agriculture for BC tree fruits? (Svan Lembke & Youry Khmelevsky, Okanagan College)

2:35 - 2:50	15 minute break	15 minute break
2:50 - 3:10 pm	Managing emerging diseases in an emerging grape-growing region (José Ramón Úrbez-Torres, Agriculture & Agri-Food Canada, Summerland Research & Development Centre)	Managing fire blight and scab with the BC Decision Aid System for Integrated Pest Management (Molly Thurston, Claremont Ranch Organics)
3:20 - 4:00 pm	Organic amendments and cover crops can enhance yield stability and agricultural resilience in Canadian vineyards (Mehdi Sharifi, Agriculture & Agri-Food Canada, Summerland Research & Development Centre) Quantifying Change with Sustainable Winegrowing BC Standards (Katie Pease, Sustainable Winegrowing British Columbia)	Postharvest deficit irrigation for improved resilience of cherry to climate change <ul style="list-style-type: none"> - Louise Nelson, University of British Columbia, Okanagan - Gayle Krahn, Jealous Fruits - Bart Fieten, Carcajou Fruit Co. Mini info session: Resources for Okanagan growers for water supply information, wildfire & invasive species (Kellie Garcia, Okanagan Basin Water Board & Harmony Bjarnason, BC Agriculture & Food Climate Action Initiative)
4 - 5:00 pm	Research poster session & refreshments with cash bar <ul style="list-style-type: none"> • Examining soil quality in the Fraser River delta following 3-year grassland set-asides, Teresa Porter, UBC • Climate Change Adaptation Pathways: Supporting Sustainable Local Food in B.C., Anna Stemmerger, BC Ministry of Agriculture • The Effects of 3,4-Dimethylpyrazole Phosphate Nitrification Inhibitor on Nitrification and Denitrification Microbial Genes Abundances and Nitrous Oxide Emissions, Katherine Faye Jansen, UBC, Okanagan • Determining the effect of agro-thermal heat treatment on vine performance and crown gall disease in grapevines, Portia McGonigal, UBC, Okanagan • Consequences of Elevated Carbon Dioxide on Plant-insect Interactions, Jimmy Kyu Baik, UBC • Influence of Postharvest Deficit Irrigation on Sweet Cherry Cold Hardiness, Elizabeth Houghton, UBC, Okanagan and AAFC SuRDC • Greenhouse gas exchange above potato and pea crops in the Lower Fraser Valley, Delta, BC, Ningyu Quan, UBC • Agricultural field and landscape scale assessment of changes in soil organic carbon in the Lower Fraser Valley for enhanced climate change adaptation and mitigation, Lyndsey Dowell, UBC 	

<p>5 - 6:00 pm</p>	<p>Meritage Room A & B combined Workshop Welcome</p> <ul style="list-style-type: none"> - John Janmaat, ACARN Steering Committee member & Associate Professor, University of British Columbia, Okanagan <p>KEYNOTE PRESENTATIONS</p> <p>Developing Resilient Orchards, Dr. Lee Kalcsits, Washington State University, Wenatchee Tree Fruit Research & Extension Center</p> <p><i>Increased volatility in temperatures are creating less predictable snow packs, hotter summers, and changes to seasonal patterns that will affect orchard productivity and quality. High yields and reduced losses to disorders will be required to maintain profitability and to increase the sustainability of production under these changing environments. Irrigated regions of the Western North America rely on a steady supply of water from melting snowpack in nearby mountain regions. In these areas, decreased summer water flows will require the development of water conservation practices that do not negatively impact productivity or quality. Earlier bud break and later frosts will change dormancy and chilling patterns and change frost risk for most apple production regions in the country. Lastly, higher summer temperatures and earlier fruit maturity will increase the risk of sun-related damage. All of these impacts will require changes to management practices that conserve resources while still maintaining quality and productivity. Here, we highlight several strategies to mitigate the impacts of climate change and conserve water resources. These include the use of protective netting to optimize the light environment to reduce heat related losses while also conserving water through reduced evapotranspiration and reduced evaporative cooling. Other strategies include irrigation management to reduce postharvest losses due to heat and nutrient imbalances in susceptible cultivars. Lastly, we highlight the need for more research to develop cultivars that can better withstand changing environmental pressures. These combined strategies will better guide mitigation and adaptation strategies that will help maintain apple production in the future.</i></p> <p>Approaches from California’s Wine Grape Sector, Dr. Ann Thrupp, wine grape sustainability consultant and former manager at Fetzer, Bonterra Vineyards and the California Sustainable Winegrowing Alliance</p> <p><i>This presentation will include a summary of innovative initiatives, programs, and practices being used by winegrape growers and wineries in California to address climate change, and to improve sustainability and resilience to climate-related challenges. It will highlight policy measures, proactive steps to improve energy efficiency and adoption of renewable energy technology to reduce GHG emissions, as well as soil health practices to increase carbon sequestration and water conservation methods. Research projects and measurement protocols to assess GHG emissions and carbon storage will also be mentioned. Dr. Thrupp will identify lessons learned, stressing the importance of fostering innovation, proactive leadership, and diversity to enhance resilience and sustainability.</i></p>
<p>6 - 9:00 pm</p>	<p>Meritage Rooms A & B Banquet dinner with cash bar (tickets required)</p>

DECEMBER 3, 2019

RESEARCH COLLABORATION AGENDA

	Meritage Rooms A & B combined
6 - 7 am	Morning run with Dr. John Janmaat - 9 km route leaving from the venue <i>Sign up here: John.Janmaat@ubc.ca</i>
7 - 8:30 am	Breakfast & registration table opens
8:30 - 8:40 am	Opening & welcome - Sean Smukler, ACARN Chair & Associate Professor, UBC
8:40 - 9:00 am	<p>Session 1: Agricultural extension - better utilizing existing resources & networks to support climate adaptation Session host: Shauna MacKinnon, ACARN</p> <p>Session overview: Climate change presents unprecedented challenges for the B.C. agriculture sector making investment in research and extension increasingly critical. This session will provide an introduction to some of the agricultural extension resources that exist in the province and highlight B.C. Ministry of Agriculture programs. The break out sessions will give participants a chance to contribute to strategies to make the most of existing resources and identify opportunities for improved extension initiatives, including how ACARN can play a stronger role in extension.</p> <p>Framing presentations: Applying extension resources to support climate adaptation in BC agriculture Shauna MacKinnon, ACARN <i>Bio:</i> Shauna MacKinnon is the Coordinator for the Agricultural Climate Adaptation Research Network and the Climate Action Initiative's Farm Adaptation Innovator Program where she is responsible for keeping projects running smoothly and supporting extension activities. Shauna has collaborated on participatory research and extension in the vegetable seed sector, authored market research reports for the organic sector and worked in partnership with major Canadian grocery retailers on sustainable purchasing initiatives. Shauna holds a MA in Geography from the University of Guelph and completed the KPU Richmond Farm School program.</p> Ministry of Agriculture agrologist & industry specialists network Jason Lussier, Ministry of Agriculture <i>Bio:</i> Jason Lussier is the Coastal Team Lead for the Regional Development Services Unit with the BC Ministry of Agriculture. This cross-province unit provides frontline support on various programs and services offered by the provincial government, including regional climate change adaptation and mitigation. Before joining the Ministry, he was the coordinator of the BC Agricultural Climate Adaptation Research Network from 2017-2019 and is now an active member of the Steering Committee.

<p>9:00 - 10:15 am</p>	<p>Break out sessions: Better utilizing resources & networks to support climate adaptation</p> <ul style="list-style-type: none"> ● Mapping BC's extension initiatives (J.Lussier, BC Ministry of Agriculture) ● Maximizing the impact of BC Food Web and online knowledge mobilization (L.Morales, UBC) ● Researcher perspectives on extensions needs - mapping current extension deliverables (S. Charlton, CAI) ● Living Labs for knowledge and technology transfer (G. Telford, AAFC) ● We wish ACARN could...? Idea generation for how ACARN can support extension collaboration (S. MacKinnon, ACARN) ● Open tables for other topics/discussions <p>Table leads report out and prioritization of ACARN extension ideas</p>
<p>10:15 - 10:30 am</p>	<p>Coffee break</p>
<p>10:30 - 11:15 am</p>	<p>Session 2: Collaboration to improve baseline data for agricultural adaptation Session host: Samantha Charlton, CAI</p> <p>Session overview: This session will explore initiatives and opportunities to improve the baseline data that is needed to support adaptation to climate change in the BC agriculture sector. The presenters will share current projects underway to improve data access and data sharing as well as highlight existing gaps. Following the presentations a series of break out sessions will provide space for discussion on specific data needs and opportunities for collaboration.</p> <p>Framing presentations: The value of collaboration & ACARN's data sharing infrastructure Sean Smukler, UBC <i>Bio: Dr. Sean Smukler is an Associate Professor in the Applied Biology & Soil Science program at UBC (Vancouver) and the Chair in Agriculture and the Environment. He is the principal investigator of the Sustainable Agricultural Landscape Lab and his climate change research is primarily based on adaptation approaches for agriculture and soils management.</i></p> <p>Cross-agency collaboration through the Climate Related Monitoring Program Ted Weick, Ministry of Environment <i>Bio: Ted completed his undergraduate at SFU and his graduate work at McMaster studying microclimatology in the Hudson Bay Lowlands. Working in the BC public service since 1989, he led the development and support of computer systems and tools for avalanche technicians and highways maintenance contractors. In 2009, he moved to the Ministry of Environment (and Climate Change Strategy) to coordinate efforts between meteorological networks to improve the provincial data available for climate change analysis. Ted is still coordinating this work, in addition to managing the Provincial Snow Program for collecting and reporting snow pack information for flood forecasting, and ensuring that ambient air quality data is available to public and federal partners.</i></p>

	<p>Data gaps & agricultural adaptation Emily MacNair, BC Agriculture & Food Climate Action Initiative <i>Bio: Emily MacNair has coordinated and managed the BC Agriculture & Food Climate Action Initiative since 2008. Her work has included the development of the BC Agriculture & Climate Change Action Plan, leading projects to evaluate the agriculture sector's risk and opportunities related to climate change, and the development and delivery of current adaptation programming for the BC sector.</i></p>
<p>11:15 - 12:15 pm</p>	<p>Break out sessions: Strategies to improve data sharing and data access</p> <ul style="list-style-type: none"> ● Agricultural weather data sharing (K. Hannam & J. MacDonald, AAFC) ● Soils data sharing (S. Smukler, UBC) ● Forage data sharing (S. Black, UNBC) ● Pest data sharing (J. Carillo, UBC) ● Remote monitoring possibilities (D. Williamson, Okanagan College) ● Water-related data needs & data sharing (N. Melnychuk, BC Ministry of Agriculture) ● Other data sharing needs for agricultural adaptation (S. MacKinnon, ACARN) ● Open tables for other topics <p>Table lead report outs</p>
<p>12:15 - 1:15 pm</p>	<p>Lunch <i>Short lunch presentation -</i> Provincial Government Climate Risk Assessment Anna Stemberger, B.C. Ministry of Agriculture <i>Bio: Since joining the Ministry of Agriculture in 2015, Anna has worked on several climate policy initiatives, including CleanBC and the Pan-Canadian Framework on Clean Growth and Climate Change. She is currently working on the development of B.C.'s new climate preparedness strategy. Working on the Ministry's climate action team, Anna is involved in the integration of climate change into the Environmental Farm Plan Program and supporting the work of the Climate Action Initiative. Anna has a B.Sc. in Natural Resources Conservation from the University of British Columbia.</i></p>
<p>1:15 - 2:00 pm</p>	<p>Session 3: Opportunities for integrating research across data sets & disciplines to better guide agricultural adaptation Session host: Harmony Bjarnason</p> <p>Session overview: This session will set the stage for discussing future directions for collaborative research to support agricultural adaptation in BC. The first two presenters will provide examples of tools that have been developed through collaboration and integration of climate data with agricultural information to guide decision making. The next two presenters will discuss cross-cutting issues related to water management and social benefits. Following the presentations participants will have a chance to discuss research priorities and opportunities in break out sessions focused on specific aspects of agriculture adaptation.</p> <p>Framing presentations:</p>

	<p>The Northwest Climate Toolbox Katherine Hegewisch, University of Idaho Bio: Dr. Katherine Hegewisch is currently a research scientist at the University of Idaho in Moscow, Idaho, working with climatologist Dr. John Abatzoglou. She holds a PhD in Physics from Washington State University in Pullman, WA and as well as several other degrees in Applied Mathematics and Statistics. At the University of Idaho, she is a climate data provider, climate data analyst and a web developer of tools for visualizing climate and remote sensing datasets. Specifically, she is the lead developer of both the Northwest Climate Toolbox and Climate Engine. Today, she will be talking about the Northwest Climate Toolbox.</p> <p>The BC Decision Aid System for Integrated Pest Management Molly Thurston, Claremont Ranch Organics Bio: Molly is a Horticulturist and organic tree fruit producer in Lake Country, BC. Her educational background includes a BSc. in Agriculture Science from the University of Guelph and a MSc. in Biology from UBC Okanagan. Molly is a Professional Agrologist and has worked with tree fruit growers in the Okanagan Valley for the past 14 years. She has recently started her own agricultural consulting practice, focused on promoting innovation and providing agronomic support to fruit growers and packers.</p> <p>Water Research Priorities for Agricultural Adaptation Natalya Melnychuk, BC Ministry of Agriculture Bio: Natalya Melnychuk is this year’s Science Policy Fellow with the BC Ministry of Agriculture. In this role, she is helping to advance agricultural water policy concerns in response to climate change. She comes to this work as a consultant and academic specializing in water policy and governance. Before the fellowship, Natalya delivered projects such as the 2018 water quantity management framework review for the Ontario Ministry of Environment and a cross country provincial scan on environmental flow needs policy. Natalya holds a PhD in Social and Ecological Sustainability and resides in the Shuswap where she sits on her regions Advisory Planning Commission and the Shuswap Watershed Council.</p> <p>Who Cares About What? Social Benefits of Farm-Scale Restoration and Adaptation Projects John Janmaat, UBCO Bio: Dr. John Janmaat is an Associate Professor of Economics at UBC (Okanagan). His climate change research is focused on incentive-based policies for water management, water resource governance and management approaches for climate change.</p>
2:00 - 3:15 pm	<p>Break out sessions Round 3 Discussion on collaborative research, future tools & directions</p> <ul style="list-style-type: none"> ● Future crop suitability modelling (K.Hannam & D. Nielsen, AAFC SuRDC) ● Applying a multi-loop learning approach in assessing agricultural climate capability in a non-stationary climate (A. Stemberger, BC Ministry of Agriculture) ● Water research priorities for agricultural adaptation (N. Melnychuk, BC Ministry of Agriculture) ● Building community support for agricultural adaptation (J. Janmaat,

	<p>UBCO)</p> <ul style="list-style-type: none"> • Open table for other ideas (S. MacKinnon, ACARN) • <i>Other open or participant-led tables can be added</i> <p>Table lead report outs</p>
3:15 - 3:30 pm	<p>Wrap up & closing remarks</p> <ul style="list-style-type: none"> - Sean Smukler, ACARN Chair <p><i>Event evaluations</i></p>