Regional Extension Program

WHAT WE HEARD REPORT

Engagement with Producers on Environment and Climate Priorities

August 2024

Photos: Emrys Miller

BRITISH COLUMBIA | Ministry of Agriculture and Food

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Acknowledgements

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Contributors:

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VGN RESOURCES GROUP, INC.

This report was authored by VGN Resources Group on behalf of the Ministry of Agriculture and Food.

Participants' contributions have been written as close to verbatim as possible while protecting the speaker's privacy. Some comments may seem vague, incomplete, or require interpretation by the reader, but this choice ensures that the voices of participants are honoured and truthfully represented.

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Photo: Emrys Miller

Executive Summary

In 2023 the B.C. Ministry of Agriculture and Food initiated a producer engagement process for the Regional Extension Program to identify producers' priorities and knowledge gaps around climate change and environmental sustainability that can be addressed by localized field trials, demonstrations, and knowledge transfer events.

To achieve a regional, producer-led strategy, the Ministry convened seven Regional Extension Committees, one for each of the agricultural regions of the province, designed to represent the breadth of agricultural climates, soils, and commodities produced in each region. These committees collaborated on identifying their regional and commodity-specific needs and their unique climate challenges.

Following the identification of these priority areas, the Ministry facilitated 18 producer engagement sessions, which consisted of 15 open houses and three workshops. Sessions were held across the seven agricultural regions of the Province and attracted 228 participants. The goal of this engagement was to identify environment and climate challenges and solutions in a producer-led, regionally focused setting, along with primary challenges to production and potential solutions. The sessions identified key challenges such as barriers to adoption and gaps in knowledge that limit uptake of new practices.

This What We Heard Report summarizes findings from the engagements. It outlines the priority areas identified by Regional Extension Committees, and the key challenges and extension program initiatives brought forward by participants with each associated priority area.

This input was then organized into five key themes, which are also presented according to region and priority area.

1. Water Management – Participants noted issues with this vital resource, including how to spread awareness of drought and future water shortages. Maintaining steady water levels with continued access, while implementing efficient irrigation techniques and water management technology were cited as solutions. Additional solutions included hosting regional-based workshops and encouraging producers to share best practices. Participants also highlighted the need for data-sharing, asset mapping, and education.

2. Soil Health and Nutrient Management – Multiple participants stated that assessing soil health and adopting best practices for tilling and fertilizing were inhibited by a lack of knowledge. Another common issue noted was the lack of tools, support, and education around soil types and how to manage their unique nutrient structures. Solutions included hosting workshops on soil diversity and to fill in the knowledge gaps in soil health, tilling and fertilizing.

3. Extreme Temperature & Weather – Common issues from producers included insufficient flood preparedness and mitigation, and a general lack of emergency planning. The wellbeing of livestock and farm workers was specifically noted during wildfires and evacuations, with the logistics of moving animals cited as being especially challenging. Participants identified important knowledge gaps as difficulties in accessing funding and information about adapting to the changing climate. For solutions, participants

called for more regional planning in response to extreme weather emergencies. Other ideas included a call for increased education through workshops, and the creation of a peer support group and mobile app to encourage networking and make information easier to access.

4. Managing for Sustainability – Damage to farms by local wildlife, and the impacts of pesticides on biodiversity were raised as issues. Participants also highlighted the lack of trials for forage and field forage varieties. Solutions included developing interactive software for access tests, pilots, and workshops. There were also more requests for further education and expanded access to information, such as adaptable crop varieties.

5. Pest & Disease Management – While there are many pests that producers face in each region, one common issue highlighted throughout the engagement sessions was a lack of tools to help identify pests and disease, along with how to prevent and treat pests and disease.

Report Structure

To help the reader navigate this report, we've outlined the sequencing of key themes here. After an introduction, this report describes the objectives and methodology of the engagement process and identifies the regional workshops and open houses by noting the dates, locations and number of participants. The next section of the report identifies the main themes by the regional extension committees for each of the seven regions in the Province, and then consolidates these into five key themes for the Province as a whole. The five key themes are subsequently discussed in terms of *Issues* and *Solutions*, based upon the comments by the participants. In the final section of the report the discussion returns to the regions and addresses particular issues and solutions unique to each. The report ends by providing a brief context for the engagements as part of a longer process, the culmination of which will see projects being implemented to address regional priorities for environment and climate strategies.

The report contains four appendices:

- Appendix I – Attendees to the Engagement Sessions by Region and Commodity
- Appendix II – Detailed Notes of Engagement Sessions by Region
- Appendix III – Digital Survey Responses
- Appendix IV – List of 2023/2024 Regional Extension Projects

BRITISH COLUMBIA | Ministry of Agriculture and Food

Regional Extension Program

Summary of Producer Engagement on Environment and Climate Priorities

DELIVERY

15 - Open Houses

3 - Workshops

TOP PRIORITIES

- Water Management
- Soil Health & Nutrient Management
- Extreme Temperature & Weather
- Managing for Sustainability
- Pest & Disease Management

MOST REPRESENTED PARTICIPANT COMMODITIES

Livestock
(Beef, Dairy, Poultry & Eggs)

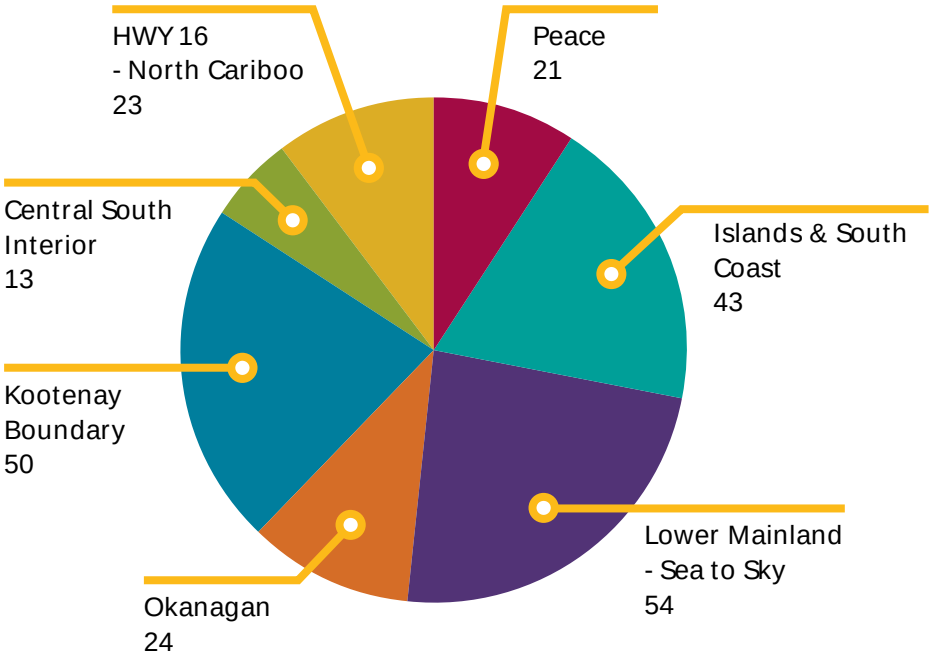
Vegetables

Tree Fruit & Nuts

Berries

Nursery/Greenhouse
Floriculture/Vertical Farming

PARTICIPANT NUMBERS BY REGION



228 TOTAL PARTICIPANTS

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Introduction

Agricultural producers are grappling with the impacts of climate change and are on the front lines of developing strategies that maintain economic viability alongside environmental sustainability. Top issues, response strategies, and the feasibility of potential solutions differ across British Columbia's diverse regions, highlighting the need for targeted extension and applied research projects.

To meet these needs, the B.C. Ministry of Agriculture and Food's new Regional Extension Program aims to increase on-farm adoption of management practices that support producers in making their operations more climate resilient, sustainable, and economically viable.

Projects delivered through this program will address one or more of the following priority areas:

- Soil health including carbon sequestration and nutrient management
- Water supply and management
- Waste management
- Greenhouse gas emission reductions
- Riparian, grassland and habitat management
- Reducing impacts of wildfire
- Reducing impacts of flooding and extreme precipitation events
- Reducing impacts of extreme temperatures

The Regional Extension Program soft-launched in April 2023 with an initial slate of 16 projects (see Appendix IV). At the same time, the Ministry initiated a producer engagement process to identify their priorities and knowledge gaps around climate change and environmental sustainability that can be addressed by extension. The program's goal is to respond to the regional needs of agricultural producers by developing tools and information to support climate change adaptation and mitigation.

The types of extension projects that will be funded and delivered through this program include:

- On-farm demonstrations and field days
- Knowledge transfer events (e.g., workshops, webinars, short courses, presentations)
- Communications and digital resources (e.g., factsheets newsletters, videos, podcasts)
- Relationship-building (e.g., farmer-to-farmer networks, discussion groups)
- Tool development (e.g., decision aid tools)
- Knowledge development (e.g., BMP modelling and datasets, curriculum development, BMP protocol development)

Regional Extension Committees

In April 2023, seven Regional Extension Committees were formed to give input on the environmental and climate concerns in their regions. The Ministry's Regional Agrologists strategically developed the membership list to represent the highest production areas in their regions and the breadth of agricultural commodities produced. Membership may also have included representatives from farmers, institutes, and organizations representing specific production methods or producer demographics.

The final membership was comprised of 90 producers and industry representatives across the seven regional committees. Each committee met between three and five times, as needed to discuss the challenges experienced across the region and the knowledge gaps that could be filled to support agricultural change and resiliency. The aim of this process was to ensure that the environmental sustainability and climate adaptation areas of focus and subsequent projects represented each region's geography, production types and production interests. It was not feasible to include all producer groups due to logistical limitations. The committees are intended as one point of engagement in the broader process which will include other activities to gather input and shape projects.

Project Inventory and Development of Regional Guidebooks

To support producers in understanding the existing knowledge and potential gaps around climate adaptation and mitigation, the Ministry worked with the Agricultural Climate Action Research Network (ACARN) to develop a guidebook for each region. These guidebooks highlight the priority areas identified by the Regional Extension Committees and contain an inventory of recent field research and information resources to facilitate producer engagement and kick-off the development of new projects and solutions to meet the needs of the sector while building on past success.

Engagement Timeline

April 2023 – Regional Extension Committees (RECs) established to provide guidance and input on broader producer engagement.

May to November 2023 – REC members met with Ministry staff 4-6 times to

- review and give input on Ministry priority areas, resulting in shortlisted priorities for each of the 7 regions.
- provide guidance to Ministry staff on how to engage with a broad and diverse section of producers in their regions.

June to August 2023 – Project inventory of past and current research/extension in each region.

September to October 2023 – Regional priorities and project inventories developed into regional guidebooks to support discussions with producers.

November 2023 – Engagement sessions in each region to meet with producers, confirm/validate regional priorities, and gather ideas for extension projects.

Producer Engagement Sessions

In November 2023, following the prioritization of key climate issues by the Regional Extension Committees, the Ministry held 18 producer engagement sessions, comprised of 12 open houses and six workshops. The sessions were hosted by Regional Agrologists and were advertised broadly through Ministry channels, commodity associations, and regional producer groups.

The objective of the engagement sessions was to garner feedback on the regional priorities and highlight any additional climate and environment-related issues that participants have been experiencing. Along

with outlining challenges, these sessions also focused on highlighting potential solutions, related barriers to adoption, and identifying gaps, such as the need for developing new knowledge or access to existing knowledge. The priorities are outlined on Page 9 for each regional session.

Engagement Structure and Overview

The Ministry conducted six workshops and 12 open houses across seven different regions. A total of 228 persons attended the sessions. Table 1 provides a regional breakdown of attendees.

Islands and South Coast	Lower Mainland – Sea to Sky	Okanagan Similkameen	Kootenay Boundary	Central South Interior	Highway 16 North Cariboo	Peace
43 Participants	54 Participants	24 Participants	50 Participants	13 Participants	23 Participants	21 Participants
Parksville (Workshop) Nov. 15, 2023 **Virtual (Workshop)** Dec. 5, 2023	**Abbotsford (Open House)** Nov. 9, 2023 **Surrey (Open House)** Nov. 10, 2023 **Pemberton (Open House)** Nov. 14, 2023	**Penticton (Open House)** Nov. 8, 2023 **Oliver (Open House)** Nov. 14, 2023 **Cawston (Open House)** Nov. 14, 2023 **Kelowna (Open House)** Nov. 16, 2023	**Grand Forks (Workshop)** Nov. 28, 2023 **Creston (Workshop)** Nov. 29, 2023 **Cranbrook (Workshop)** Nov. 30, 2023	**Kamloops (Workshop)** Nov. 21, 2023	**Smithers (Open House)** Nov. 6, 2023 **Vanderhoof (Open House)** Nov. 7, 2023 **McBride (Workshop)** Nov. 8, 2023 **Quesnel (Open House)** Nov. 9, 2023	**Farmington (Workshop)** Nov. 23, 2023

Table 1 - Regional Session Details

Open Houses

Open house sessions were structured to allow participants to be able to come and go throughout the session. The benefit and aim of the format was to encourage networking among participants and for participants to provide feedback on the priority areas that were of interest to them. Some regions structured their events to include presentations from industry experts.

Workshops

Workshop sessions were structured with a main presentation followed by breakout groups. Participants were encouraged to attend for the entire session. Like the open houses, the aim of the workshop was for participants to provide feedback on the priority areas and potential solutions for the region. The workshops also gave participants the opportunity to identify any other challenges they may be facing and included information from Ministry staff on related topics (e.g., engagement timelines and information about the local Regional Extension Committee).

Additional Items

In most sessions, an additional list of topics was collected for items that did not directly relate to the regional priority areas or could not be addressed with the available funding for extension yet were still important to producers. Examples of this were major infrastructure changes, policy changes, and elements outside of the Ministry of Agriculture and Food's jurisdiction.

Digital Survey

A digital survey was created and launched in November 2023 to provide an option for producers who were unable to attend in-person, or those who attended but wanted to provide additional feedback. A total of 75 responses were received between November 20, 2023 and January 15, 2024. The survey results are summarized in Appendix IV.

Results of Engagement Sessions

The top environmental sustainability and climate change adaptation issues ("regional priorities") as identified by the Regional Extension Committees were shared at the fall engagement sessions, where participants at the engagement events were asked to share their experience and opinion on the priority areas and any other climate or environment-related issues they have experienced.

Regional Priorities: Overview

The feedback from participants at the open house and workshop sessions reflected the priorities identified for each region by the Regional Extension Committees. These are provided in Table 2.

Islands and South Coast	• Drought Management • Extreme Heat Management • Extreme Rainfall Event Management • Crop Sustainability • Changing Pest and Beneficial Insect Populations • Increasing Weather Variability (Virtual Workshop)
Lower Mainland – Sea to Sky	• Water Management • Managing Extreme Heat • Management for Soil Health • Nutrient Management Practices • Pest Management
Okanagan Similkameen	• Nutrient Management • Reducing Impacts of Extreme Temperature • Water Availability and Management • Adapting to Changing Pests and Diseases • Flood Management • Wildfire Management

Kootenay Boundary	• Water Supply and Management • Soil Health and Nutrient Management • Adapting to Extreme Weather • Managing Riparian and Grassland Habitats
Central South Interior	• Water Sustainability and Storage • Soil Health Management • Management for Biodiversity/Habitat • Nutrient Management Practices • Crop Selection for Resilience
Highway 16 – North Cariboo	• Soil Health Management • Water Storage and Development • Nutrient Management Best Practices • Grazing Management Systems • Crop Selection for Resilience
Peace	• Soil Health Management • Water Storage and Development • Sustainable Water Management • Management for Biodiversity/Habitat Health • Managing Extreme Precipitation

Table 2 - Regional Priorities

Regional Priorities: Key Themes Consolidated

The following categories represent a consolidation of the priorities presented to and discussed by participants at the regional sessions. Since the same general issues were identified in multiple regions, they have been consolidated into five broad themes. Table 3 showcases the top concerns and challenges identified by participants, along with the solutions and project ideas provided in response.

1. Water Management

Issues

- How do we increase awareness of future water shortages?
- Cost of building water storage or upgrading existing systems.
- Loss of productive land to water storage.
- Maintaining water quality and continued access, when it is being impacted by drought and increased demand.
- Uncertainty of the best, most efficient irrigation techniques.
- Expand access to current water management technology, like water sensors, flow meters, and gravity-fed systems.

Solutions

- Regional-based workshops.
- Share best practices with other producers on water storage techniques and regional soil conditions.
- Increase awareness of water management technology and different funding opportunities.
- Need for data-sharing, asset mapping, and education around water management, including erosion, glacial storage, and livestock watering systems.
- More applied research.

2. Soil Health and Nutrient Management

Issues

- What are the best practices for tilling and fertilizing?
- Lack of knowledge around assessing soil health.
- Need more tools, support, and education around soil types and how to manage their unique nutrient structures.
- In certain regions, such as Northern B.C., acidic soil is a unique challenge being faced.
  It is a problem that needs further research and funding to address.

Solutions

- Workshops on soil diversity, cover crops, hedgerows, beneficial insects, and best practices.
- Showcase how BMP can positively impact plan health.
- On-farm demo training; peer-to-peer data collection for the long term.
- Increase access to experts and their knowledge.
- Variable rate nutrient application technology.
- Soil health assessment tool, resources, and interpretation guide.
- Regional composting sites.
- Leveraging and using existing nutrient management research

3. Extreme Temperature & Weather

Issues

- Lack of flood preparedness and mitigation.
- Lack of emergency planning in general.
- Challenging logistics of moving animals during evacuations.
- Wellbeing of livestock and farm workers is impacted by extreme heat, high winds, smoke, etc.
- Unpredictable growing conditions make it challenging to select crops.
- Funding needed to make cooling technologies accessible and combat extreme heat.
- General gap in knowledge around funding opportunities and where to access information.
- Concern over the lack of variety trials.
- Reduction in carrying capacities and dormant pastures.

Solutions

- Must be regional planning for extreme weather emergencies.
- Increase education through workshops, advertising, and e-mail communications regarding environmental conditions, farm assessments, etc.
- Create a peer support group or expert hotline so producers can ask questions and share knowledge.
- Funding and other supports for producers that must move livestock, or that lose products, during evacuations.
- On-farm research on adapting to extreme temperatures.
- Design mobile crop/livestock shades and covers.
- Look to countries with hot climates for best practices.

4. Managing for Sustainability (Crops, Biodiversity, Habitats)

Issues	Solutions
• Concern over damage being done by local wildlife, such as elk. E.g., damage to fences and wheel lines. • Impact of pesticide-use on biodiversity. • Lack of trials for forage and field forage varieties. • Need for year-round greenhouses.	• Assessing biodiversity impact through crop strips or wildflower buffers on field edges. • Interactive software – access tests, pilots, workshops. • Field trial: Comparing the benefits of intercropping species managing for biodiversity and feed (including economics). • Provide education on cover crops, adaptable crop varieties, and best methods for weed control. • Grassland protection through rotational grazing.

5. Pest & Disease Management

Issues	Solutions
• Grasshoppers, aphids, and moles were all highlighted as pest problems for the Okanagan. • Lack of tools to help identify pests and disease, along with how to treat them.	• Common request for information on how to effectively manage regional pests, including which products to use and when. Producers want to make knowledge-based decisions when it comes to pest and disease management. • An app that can help identify pests, disease, and make related information much more accessible and sharable.

Additional Feedback

Although the following feedback does not fit into the five themes above, it is still relevant to the overall project.

1. In-person events should be scheduled at more convenient times during the growing season.
2. More funding needs to be available for variety and on-farm trials related to multiple priority areas.
3. Utilize the wisdom of producers that are successfully addressing the challenges listed above.
4. Spread awareness of funding opportunities and where to access information – people need to be linked to the right resources.

Key Themes by Region

The following sections highlight the input from participants by region. Under each theme, the responses are sorted into *Issues* and *Solutions.*

Islands and South Coast

Figure 1 - Image Credit: Nicole Pressey

Key Issues

1. Need for more efficient irrigation.
2. Revamping of permits for water storage dugouts and wells.
3. Access to education and factsheets for producers on better rain catchment systems and solutions.

Key Solutions
1. Research on crop adaptation for drought for the region, as well as soil management.
2. Develop research data on crops relating to drought. Soil management trials for drought resistance.
3. Field trials and on-farm demonstrations for drought-resistant crops and soil enhancements. Tailor to this region. Make results and knowledge gained accessible and widely disseminated.

Figure 2 - Image Credit: Emrys Miller

Key Issues

1. Detrimental effects on animal welfare.
2. Reduction in carrying capacities and dormant pastures.
3. Need for shading for crops and livestock.

Key Solutions
1. Look to other countries with naturally warmer climates for examples of what could be used here.
2. Smaller scale crops.
3. Research options and costs. Design and prototype a mobile crop shade structure for small scale. Evaluate and demonstrate.

Figure 4 - Image Credit: Emrys Miller

Key Issues

1. Need for knowledge on French drains, berms, and swales.
2. Need for support for those effected by atmospheric rivers.
3. Need for rainwater capture systems.
4. Effects on soil structure and aggregate stability.

Key Solutions
1. Project goals include low-cost tools and practical solutions.
2. Soil health workshops. • Accessible language. • Practical, on-farm field demos. • Soil sampling. • Using soil mentor app.
3. KT events.

Figure 3 - Image Credit: Lesley Edwards

Key Issues

1. Concerns around shifting growing seasons due to environmental changes.
2. Encroaching bog-rush in seasonally flooded forage production fields.
3. Lack of information on drought-toleration crop varieties or suitable alternatives.
4. Lack of access to existing resources and information.

Key Solutions
1. Bring in experts to present on the topic. 2. On-farm demos and trials. 3. Yield and heat/drought tolerance – quality of crops.
4. Presentations, data collection, field trials on farms – demo field days are challenging during harvest season.
5. Tech report and webinars.

Figure 5 - Image Credit: Nicole Pressey

Key Issues

1. Lack of tools to identify diseases, pests and insects.
2. Need for real-time data on pests and statistics on seasonal trends.
3. Need for biosecurity for livestock and poultry.

Key Solutions
1. Web-based site or app to help identify pests using pictures, while providing some basic management solutions.
2. Diagnostic tools.

Lower Mainland – Sea to Sky

Figure 6 - Image Credit: Emrys Miller

Key Issues

1. Expense of replacing drip lines that are damaged from iron clogging and flooding caused by logging upslope during periods of high rainfall.
2. Issues with drainage and flooding, specifically for poultry and forage operations.
3. Revamping of permits for water storage dugouts and wells.
4. Access to education and factsheets for producers on better rain catchment systems and solutions.

Key Solutions
1. Storage of water during high periods to help during periods of low precipitation.
2. Regional assessment on irrigation infrastructure and needed improvements/upgrades.
3. Ensuring adequate municipal water supply for those without well access.
4. More incentives or funding necessary for more efficient irrigation technology, i.e., booms vs guns.
5. Information on crop varieties that best match the current climate realities.
6. On-farm water storage case study, including costs and process.
7. Cooperation with First Nations regarding a drainage path for Sumas Prairie.
8. How much water do we need now, in 10 years, and in 20 years?
9. Irrigation scheduling; soil moisture sensors for difficult soil types.

Figure 7 - Image Credit: Emrys Miller

Key Issues

1. Unclear guidelines for temperatures and air quality levels that workers can safely work in, and whether there will be government reimbursement for lost hours due to these conditions.
2. Increasing wildfires that impact agriculture operations.
3. Heat dome – successive planting and young crops were burned up.
4. Lack of pollination in extreme heat causing issues in crop development and seed production.

Key Solutions
1. Learning strategies from areas in the world where hot summers have been “normal” in their history.
2. Alternative crops more suitable to hotter and drier conditions.
3. Need to research appropriate plants/varieties for changing climate.
4. Trialing different barn cooling technologies.
5. Alternate crop trials/fact sheets to best deal with drought – on farm demos.
6. Greenhouse and climate control upgrades, along with more incentives.
7. Examine the fossil fuel emissions in B.C. agriculture and make a research-based plan to reduce them.

Figure 8 - Image Credit: Dieter Geesing

Key Issues

1. Nutrient absorption and nutrient requirements for different soil types.
2. Need for long-term soil testing with high phosphorous, potassium, and nitrates on dairy land.
3. Need for shading for crops and livestock.

Key Solutions
1. Cash incentives for updates.
2. Educational short courses on soil management, cover crops, crop rotations, and soil amendments.
3. Cover crop varieties and seeding methods.
4. Shifting from herbicide use to mechanical or high-tech equipment.
5. On- farm research demonstration on soil health practices – e.g., cover crops, bio-fumigation.
6. Identify lowest reliable soil testing kits that may be available for use by farmers in the field to reduce need, cost, and complexity of collecting samples for the lab. Samples by zone.
7. Proper management according to the crop. During the dry months cultivation after grass (for vineyards).
8. Regarding soil, what about the contaminants in ditches upstream of farms?

Figure 9 - Image Credit: Emrys Miller

Key Issues

1. Using the right form of nitrogen at the right time to prevent leaching.
2. Operating and growing a crop under various soil conditions (i.e., different areas) where nutrient management and tailoring is not practical.

Key Solutions
1. General guidelines for nutrient management (fertilizer volumes) by crop.
2. Workshops on soil test interpretation, rates, and split applications of fertilizers.
3. Increased support on nutrient management planning.
4. Cash incentive for upgrades (composting/separation).
5. Regional projects that redistribute manure from municipalities with an overabundance to municipalities that are deficient; convert waste products and nutrients for crops and create renewable energy.
6. Access to live application services in remote areas.

Figure 10 - Image Credit: Emrys Miller

Key Issues

1. Organic farmers rely on natural predators (e.g., owls, coyotes) for pest control. When these predators are impacted by chemical and other control measures, they experience redoubled pest issues.
2. Misidentification of pests and diseases. If producers don't know the cause, then they can't properly address the issues.
3. Migratory birds damaging cover crops and spreading avian influenza.
4. Mice problem on blueberries and no access to SGARs.

Key Solutions
1. On-farm research where grower does conventional practice in one half of their field, rand researcher does best management practices in the other half. Compare production and cost; field days to demonstrate.
2. Cover crop varieties that provide a natural deterrent.
3. We all depend on the continued survival of pollinator insects, including bees. We know that bee health suffers when they are placed in blueberry field. We need publicly funded research to find out why. Is it specific herbicide or pesticide use? We need to find out.
4. Workshop on how to use rodenticides safely and effectively.
5. Ecosystem-based pest control approaches.
6. App for spray schedules based on crop stages, along with what pests to target and what to use.
7. Spayed female cats for pest control.
8. Support to grow out and trial more varieties.
9. Workshops before harvest to show how to recognize pests.

Okanagan Similkameen

Figure 11 - Image Credit: Nicole Pressey

Key Issues

1. Lack of tools, support, and education around soil types.
2. Lack of information on how to manage unique nutrient structures of soils.
3. Workshops needed on soil diversity and management, cover crops, hedgerows, beneficial insects, and best practices.

Key Solutions

1. Greater diversity equals more resiliency – diversity of soil biology, forage stands, crops, livestock, forests, etc.
2. Seed production and breeding is necessary for any long-term adaptation to climate change. Without ongoing seed selection in multiple regions of B.C., we will not have the diversity of varieties with climate adapted genetics in the future.
3. Information on how to interpret soil samples, planning, and future testing. Soil probes should be divided into regions, soil types, and then linked to current BMP programming.

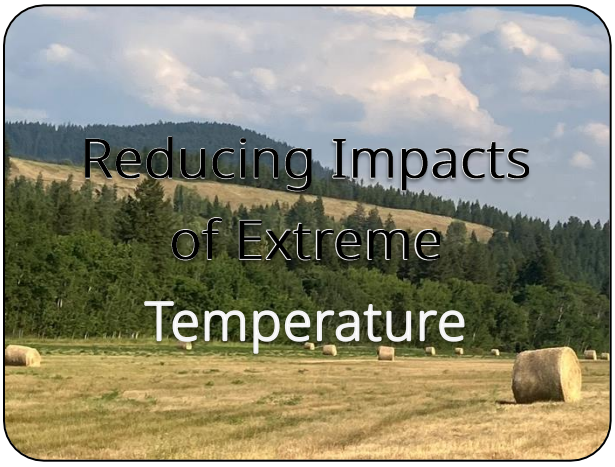


Figure 12 - Image Credit: Nicole Pressey

Key Issues

1. There are not enough supports to help producers during extreme weather events, both hot and cold.
2. More technology is needed for crop cooling and using water efficiently.
3. More funding to help make new tools accessible to producers.

Key Solutions

1. Workshops needed to help educate growers on mitigating the impacts of extreme weather, along with which varieties are more climate resilient.

Figure 13 - Image Credit: Emrys Miller

Key Issues

1. Concerns over continued access to water and utilizing efficient irrigation techniques.
2. More information and education needed around water management technology and funding opportunities.

Key Solutions
1. Expand access to current technology, including water sensors, flow meters, gravity-fed systems.

Figure 14 - Image Credit: Nicole Pressey

Key Issues

1. Pest concerns included grasshoppers, aphids, and moles.
2. Information needed on how to effectively manage these pests, which products can be used, and the right time to use them. Producers want to make knowledge-based decisions when it comes to pet and disease management.

Key Solutions
1. Conduct more research and trials – look at other trials happening and adapt to B.C.

Figure 15 - Image Credit: Emrys Miller

Key Issues

1. Lack of regional planning for flood emergencies, including the implementation of an extreme weather program for natural disasters.
2. Gap in knowledge when it comes to accessing information and funding opportunities.

Key Solutions
1. Solutions included dredging and gravel removal in channels, along with creek and riverbank stabilization.

Figure 16 - Image Credit: Flickr

Key Issues

1. Concerns over the impacts of smoke from wildfires, specifically smoke taint impacting wine grape crops and destroying entire crops of vegetables.
2. Concerns over the lack of variety trials and lack of funding for producers impacted by wildfire (e.g., ranchers that have to pull cattle from burned ranges, or that have lost products by being evacuated with produce left in storage).

Key Solutions
1. Need the ability to test smoke-tainted crops, locally and quickly, before harvesting.
2. Conduct variety trials and set aside funding for producers impacted by wildfire.

Kootenay Boundary

Figure 17 - Image Credit: Emrys Miller

Key Issues

1. Widespread concerns over water quality and continued access, especially with new farms tapping into the water supply, and it being impacted by increasing droughts due to climate change.
2. Concerns over flood preparedness and mitigation, and lack of information on both.
3. How is water managed and stored on farms?

Key Solutions
1. Important to expand education on these issues, rather than solely focusing on regulation.
2. Provide workshops and expand advertising, along with providing frequent e-mail updates regarding environmental conditions, farm assessments, and benchmarking.

Figure 18 - Image Credit: Karen Tabe

Key Issues

1. Widespread confusion over which products to use, at what times.
2. There is not enough information around and expert help for producers that have questions.

Key Solutions
1. Host educational demonstrations and workshops. There is significant demand for information and training. Examples included education on companion crops, crop varieties that work in certain climate conditions, soil amendments, tools for crop planning, etc. Participants also requested financial information and guidance, such as how to incorporate economic analysis and explanations for spreading and transportation costs.
2. Create greater access to experts that can provide guidance and perform farm assessments. Examples included an expert hotline, or arranging a speaker series that producers can attend.

Figure 19 - Image Credit: Karen Tabe

Key Issues

1. Challenges associated with various extreme weather events. For example, evacuation planning difficulties with moving animals, the impacts of extreme heat on livestock and workers, risks associated with flooding, and challenges with high winds.
2. Difficulty planning for unpredictable growing conditions and navigating crop failure.

Key Solutions
1. Supports that address extreme weather concerns, such as prescribed burning on private land, exploration of crops better suited to changing conditions, evacuation planning on farms, training and research for adapting to extreme heat and other conditions.
2. Auditing biodiversity and ecosystem services to determine impact on the bottom line and prioritize BMPs for adoption. Regionally appropriate adaptations, corroborate with data generated in other regions. Farmers need to know that there is a legitimate, positive impact (data) to invest in BMPs.

Figure 20 - Image Credit: Emrys Miller

Key Issues

1. There is not enough information and educational opportunities available to help farmers and producers.

Key Solutions
1. Workshops and demonstrations on livestock management, crop rotation, soil testing, field trials, grassland soil health and grazing management.
2. Share a list of resources that includes recommendations for materials (books, podcasts, etc.) related to eco-agriculture.
3. Elk management trial that specifically targets private and crop land, includes soil and forage samples, and pulls from current and past data.

Central South Interior

The session in this region was unique because participants were given a variety of projects to review rather than beginning with the priority areas as a whole. Participants were asked to provide feedback, both in the form of comments and by voting for which projects they supported. Space was also provided for additional ideas, although it did not always generate feedback.

Figure 21 - Image Credit: Emrys Miller

Key Issues

1. Lack of trials, demonstrations, and decision-making tools.
2. Lack of information on water storage options; access to expert advice.
3. Lack of modern irrigation technology.

Key Solutions
1. Enhanced landscape use and management of water for agriculture.
2. Water storage options and use demonstrations: factsheet, workshop, expert for pathfinding.
• More aggressive project and implementation added.
• Water storage and reduced flooding capture higher points in the watershed.
3. Soil moisture triggered irrigation: moisture sensor trial/demo, decision-making tools.

Figure 22 - Image Credit: Emrys Miller

Key Issues

1. Lack of soil test training – how to test, read, implement.
2. Lack of variety trials and on-farm demonstrations.
3. Cost of transitioning to new technology and better practices.

Key Solutions
1. Soils 101 workshop and soil testing factsheet.
2. CARO Analytical Services – Alberta a. Showcase how BMP can positively impact plant health and soil biology.
3. On farm demo training to capture change over seasons.
4. Peer-to-peer data collection at workshop sites for the long term.
5. Pull together soil research and practices from other jurisdictions.
6. Have AF pull industry to variety trial table then act as a referee.
7. Fund transition to better practices and incentivize maintaining good practices.

Figure 23 - Image Credit: Emrys Miller

Key Issues

1. Conflict with elk – disease crossover, damage to fences and wheel lines, predators follow elk and target cattle, etc. This results in compromised practices and increases risks for those working with the livestock.
2. Assist/take on the licencing/navigating the regions.

Key Solutions

1. Assessing biodiversity impact through crop strips or wildflower buffers on field edges: Field project.
   - Interactive software (access tests, pilots, workshops)
     - Info specific to the region
     - Info that has been applied to the region
   - Mulching, no till/low till, above ground plan.
   - Diversity influence below and above ground.
   - Factsheet/flow charts – BMPs, diversity, public good, economics.
   - Situational and scale
   - Many opportunities at the local level – e.g., cover crops.
   - Microbial/soil level
   - A lot of tools for support – lack of community awareness; more portals to bring info together.

   Also, diversity in cropping; agronomic diversity; food security, economic resiliency; demo; shorter term.
2. Funding for pollinator habitat (interest in).
3. Integrated Pest Management (IPM): Workshops for each commodity, factsheets
   - Decrease the number of pesticides available/registered in vegetable production:
     - IPM
     - Forecast head of time, when pesticides will be available
   - IPM:
     - Information that is out there.
     - Commodity specific.

   Insight would be beneficial prior to/in advance of formal list. Information needs to be in real time – newsletters, other communications.
4. Additional Idea: Connect noxious weed management with rotational grazing – intensive, weed specific.

Figure 24 - Image Credit: Dieter Geesing

Key Issues

1. Lack of information on nutrient application technology, soil mapping, manure, compost operations and techniques, etc.
2. Lack of workshops, factsheets, and field days.

Key Solutions
1. Know your manures: The Do's and Don'ts of manures in organic and small lot operations, pros and cons of different manures, calculations for your crop and fields: factsheet, workshop.
2. Variable rate nutrient application technology: factsheet • Soil mapping cost-share on detailed soils on farm. • Incorporate plant growth. • Field day/workshop – how to do the math on small/large scale.
3. Compost operations, techniques, considerations, tools and calculators; field day • Biological consideration of using compost – other amendments (soil health) • Economic breakdown – own compost vs buying.
4. Foliar analysis "how-to". • How to interpret results • Which labs provide foliar analysis

Figure 25 - Image Credit: Emrys Miller

Key Issues

1. Lack of information on crop selection, resilient crop varieties, factsheets, etc.
2. Lack of new technology, such as apps and webpages.
3. Need field trials and demonstrations.

Key Solutions
1. Comparing the benefits of intercropping species managing for biodiversity and feed (including economics): field trial/demo.
2. Find seed company factsheets and reference on AF website or industry sites.
3. Feasibility, with climate change – market opportunities of alternative crops (e.g., dry beans, hazelnuts).
4. Use older species, which are adapted to our regions, work well? Then raise awareness.
5. App development – like AB's Bluebook Crop Guide, France-Livestock, or Netherlands-hortic.

Additional Ideas
1. Comparing the benefits of intercropping species managing for biodiversity and feed (including economics): field trial/demo.
2. Where is the product going? • Processing, GHG for trucking, transport infrastructure.
3. Do a better job with sharing research happening in B.C.
4. Intercropping vs. managing for diversity.

Highway 16 – North Cariboo

Figure 26 - Image Credit: Karen Tabe

Key Issues

1. Lack of a soil assessment tool.
2. Insufficient education on soil health and how to interpret assessments.
3. No information on best practices for tilling and fertilizing.

Key Solutions
1. Workshops on soil health and soil biology.
2. Expand education, especially on “fly ash.”
3. Build soil organic matter in Northern Regions.

Figure 27 - Image Credit: Emrys Miller

Key Issues

1. Productive land is being lost to water storage.
2. Uncertain how to build a proper dugout for water storage.
3. High costs with building water storage – there should be funding to help offset.

Key Solutions
1. Share best practices with other producers on water storage techniques and regional soil conditions (i.e. silt/sand).
2. Monthly ‘Farmer Field Days’.
3. Tools to measure soil moisture availability in order to quantify crop demands, including evaporation and transpiration.

Figure 28 - Image Credit: Nicole Pressey

Key Issues

1. Lack of workshops and field days that focus on soil health.
2. Lack of knowledge around when and how to apply critical nutrients.

Key Solutions
1. Host workshops for producers that focuses on soil health.
2. Prioritize regional composting sites.
3. Must use permaculture practices.
4. Leverage and use existing nutrient management research.
5. Crucial to have weather stations in various regions in order to identify the right times to apply critical nutrients.

Figure 29 - Image Credit: Brenna Schilds

Key Issues

1. Lack of information on the economics of grazing practices, including return on investment.
2. Lack of information on the steps, tools, and resources on how to integrate silvopasture principles into livestock operation.

Key Solutions
1. Silvopasture is a specific area of interest.
2. Spread information to help producers understand the concept of “yield does not equal profit.”
3. Host workshops and demonstrations to explain the methods of interseeding, fencing, and foraging when it comes to livestock.

Figure 30 - Image Credit: Flickr

Key Issues

1. More information needed on native grasses, chicory, yellow alfalfa, and different types of bromes were all highlighted.
2. Need further education on growing cover crops in the North.
3. Lack of focus on crops that are more adaptable to changing climate conditions and stresses.
4. Lack of knowledge around best practices for weed control.

Key Solutions
1. Identify what common parameters are being measured.
2. Trials for forage and field forage varieties.
3. Further research on native grasses, chicory, yellow alfalfa, and different types of bromes.
4. Hosting workshops and spreading awareness of best practices for weed control, growing cover crops, and selecting crops that are more adaptable to changing climate conditions and stresses.

Peace

Figure 31 - Image Credit: Brenna Schilds

Key Issues

1. Soil pH levels are challenging, as this region has soil with a naturally high acidic pH value.
2. Acidic soil limits the variety of crops that can be grown.

Key Solutions
1. More research and trials needed.
2. Expand education and share knowledge with producers.
3. Managing pH values via amendments such as wood ash, prescribed farming training sessions, incorporation of legume perennials in annuals, and investigate tills vs no-till.

Figure 32 - Image Credit: Karen Tabe

Key Issues

1. High cost of developing water storage on farms.
2. Insufficient information and education on dug-outs, dams, and managing watershed areas.
3. Lack of applied research.

Key Solutions
1. Provide more information and education on related topics, such as dug-outs, surface water vs. ground water.
2. Create on-farm assessments and tours.

Figure 33 - Image Credit: Foster Richardson

Key Issues

1. Need for education and data sharing.
2. Asset mapping.
3. Need education on the many aspects of "water management", from erosion, glacial storage, to livestock watering systems.

Key Solutions
1. Applied research.
2. Expand education on irrigation.
3. Data sharing with producers and farmers.

Figure 34 - Image Credit: Brenna Schilds

Key Issues

1. Understanding and leveraging natural habitats.
2. Understanding how wildlife impacts producers' yields.
3. Understanding the broader implications of biodiversity.

Key Solutions
1. More educational tools for farmers and producers, including farm tours, leveraging natural resources (like beavers).
2. Conduct more research and comparative studies on yields and biodiversity.

Figure 35 - Image Credit: Brenna Schilds

Key Issues

1. Concern around extreme precipitation and its connection with water storage and management.

Key Solutions
1. Finding ways to manage water infiltration on fields.
2. Developing on-farm water planning.
3. Utilization of practices like subsoiling.

Looking Forward

The Ministry would like to thank everyone who took the time to share their ideas on climate and environment-related issues.

The regional priorities reflected in this What We Heard report will inform the development of projects for the new five-year Regional Extension Program.

Producers are encouraged to connect with the Ministry to be notified of upcoming extension events and future opportunities to provide feedback:

- Connect with your Regional Agrologist.
- Subscribe to AgriService BC e-bulletin and Facebook to stay up to date about upcoming webinars, events, programs and resources.

Appendix I – Participant Demographics

Islands and South Coast

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Berries	1	
Vegetables	6	
Nursery/Greenhouse/ Floriculture/ Vertical Farming	11	
Tree Fruit & Nuts	3	
Livestock (Poultry & Eggs)	9	(2) Berries (2) Tree Fruit (3) Goats
Livestock (Dairy)	2	
Livestock (Beef)	1	
Other	9	Sheep Wool/Sheep, Forage, Angora Goats, Seeds, Cannabis
TOTAL	43	

Lower Mainland – Sea to Sky

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Berries	8	(1) Mixed Row Vegetables
Vegetables	12	
Nursery/Greenhouse/ Floriculture/Vertical Farming	5	(1) Mixed Berries and Tree Fruit (1) Mixed Grain and Oilseed
Tree Fruit & Nuts	1	(1) Wine Grapes
Livestock (Poultry & Eggs)	6	(3) Mixed Forage and Row Vegetables
Livestock (Dairy)	14	(1) Mixed Potato and Blueberries (1) Mixed Beef, Greenhouse, Berries
Livestock (Beef)	1	(1) Mixed Grain, Forage, Berries
Other	7	(3) Municipal Representatives; (2) Non-Profit Organization; (1) Floricultural Grower (1) Investment Agriculture Foundation of BC
TOTAL	54	

Okanagan Similkameen

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Viticulture	2	
Tree Fruit & Nuts	13	(3) Apples; (1) Prunes; (4) Cherries (2) Berries; (2) Ground Crops
Livestock (Beef)	5	(1) Hay
Hay	1	
Other	3	(1) Municipal Representative; (1) Non-Profit Organization (1) Regional Safety Consultant
TOTAL	24	

Kootenay Boundary

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Nursery, Greenhouse, Floriculture, Vertical Growing	2	(1) Wine Grapes, (1) Hydroponic Unit - 2024
Forage, Grain & Oilseeds	1	
Livestock (Dairy)	1	(1) Livestock (Beef), Livestock (Poultry & Eggs), Livestock (Other – Hogs, Goats), Equine, Forage, Grain, and Oilseeds, Nursery, Greenhouse, Floriculture, Vertical Growing, Row Vegetables
Livestock (Beef)	14	(4) Equine; (2) Livestock (Other – Hogs, Goats) (4) Forage, Grain & Oilseeds (2) Poultry & Eggs (2) Nursery, Greenhouse, Floriculture, Vertical Growing (2) Berries; (2) Row Vegetables
Livestock (Poultry & Eggs)	3	(2) Berries, Tree Fruit & Nuts, Row Vegetables (1) Livestock (Other – Hogs, Goats)
Other	29	(1) Input Supply; (2) Regional Crown Corporation (2) Municipal Representatives; (1) Livestock (1) Non-Profit Organization; (1) Land Matcher
TOTAL	50	

Central South Interior

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Row Vegetables	2	(1) Hay Production, Cattle
Feedlot	2	(2) Forage
Hay	1	(1) Cattle
Livestock (Poultry)	1	
Livestock (Beef)	5	(1) Poultry
Other	2	(1) Small-Scale Meat Producers Association (1) Consultant
TOTAL	13	

Highway 16 – North Cariboo

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Vegetables	3	(1) Garlic; (2) Hay, Market Garden
Livestock (Beef)	15	(6) Forage
Other	5	(3) Forage; (1) Lamb
TOTAL	23	

Peace

Commodity	Number of Attendees	Number of Attendees per Commodity with Mixed Crop
Row Vegetables	1	
Grain & Oil Seeds	7	(1) Forage
Berries	1	
Forage	1	
Livestock (Beef)	7	(1) Poultry; (1) Forage; (1) Hog
Other	4	
TOTAL	21	

Appendix II – Regional Notes

Islands and South Coast

Parksville (Workshop)

- **November 15, 2023**
- **9:00 AM – 4:00 PM (PST)**

Virtual (Workshop)

- **December 5, 2023**
- **6:30 PM – 9:00 PM (PST)**

Regional Priorities

1. **Drought Management**
2. **Extreme Heat Management**
3. **Extreme Rainfall Event Management**
4. **Crop Sustainability**
5. **Changing Pest and Beneficial Insect Populations**
6. **Increasing Weather Variability (Virtual Workshop)**

1. Drought Management

Issues

Challenges on storing water from winter to summer
Irrigation: Cost, tech, ROI
Water availability
Fire Risks
Ability to store water: Large capacity
Short grazing period for livestock
Using groundwater to water livestock: concerns
Setting up watering stations: costs, land usage
Grazing/forage supply: shortages/changes
Poor hay yields
Length of seasonal pasture: affected by drought
Existing tree species dying in silvopasture settings
Having to use round bales for livestock during what would have been grazing periods
Recycling water used for processing
Escalating feed prices
Difficult to navigate all the different websites/info/legislations
Need for research on crop adaption for drought for the region as well as soil management
Not enough knowledgeable/trained specialists to put on workshops and perform irrigation assessments/plans
Demand for water management workshops exceeds capacity of experts to host them
Concerns that water is being wasted by neighbouring producers (Nanaimo): irrigation not at correct time of day, watering areas not needed
Need access to water and funding to get water infrastructure (Duncan)

Holding ponds don't make economic or practical sense to install on small farms
Restrictions for water curtailment were handled and communicated by government
BMP funding is not accessible
IAF doesn't answer calls and doesn't have enough resources to help clients who apply
Leased land farms are not eligible for EFP/BMP
The categories are too expensive (make lower cost categories)
Cannot afford the infrastructure ones
Not enough time to apply for most programs: short windows, not at a good time of the year to apply
Needed to water pastures this year because they kept trying to die
Hay crop was very sparse: Too much water and then too little
Need water accessibility and the ability to irrigate
Access to information: What can we learn from other countries and jurisdictions (California) webinar and Zoom
Water recycling program (greenhouses) – drop fertilizer use by 20%
Aquifer map needed to help locate new wells and dugouts
Pastures went dormant very quickly and wasn't enough hay. Too many animals for available land. Drought has drastically reduced carrying capacity
Abattoir couldn't keep up with demand, people need to slaughter early
We need more water collection/ need to build up water to store water
Dry hard soil is quite bare. If there was to be an atmospheric river it would cause major erosion event
It would be interesting to get a case study from Abbotsford after the flooding. What practices protected the soil from erosion?
We should be auditing water consumption similar to BC Hydro. Get our numbers in see how it compares to other producers in the Region. Need responsible, accountable water usage. Some crops may no longer make sense in this climate. Financial incentives to track (will be challenging because it is not centralized. It would be like how many hours of the pump, etc.)
Municipal water: • How to help farms communicate with municipalities who are playing 'fast and furious' with water • Need more advocacy for farmers who are using municipal water for food production. • Concern about (a local farm)'s water source drying up and they will go to municipal. • Farmers need better access to advocacy at municipal level. • Can ministry help with this?
Building capacity for irrigation monitors and sending equipment for water use efficiency and expertise for operating this kind of equipment. Irrigation equipment not available if people aren't using it. Need water management workshop.
Need province wide hydrology map online
Is there an expert who can design farms for maximum water drainage and storage?
Reach out to IIABC (irrigation industry association of BC) They will provide a course for a minimum number of people?
Need an expert who knows hydrology as well as what are the current legislations, because that might impact what you can do. E.g. "you have a stream, but can't touch it"

Have WesTech rep with a farmer who has installed system i.e. adapt the system for your own farm, and how to do that
In the summer, no water. In the spring, too much water. Need more dugouts. Plant trees around dugouts.
Dry spring: bad apple harvest
Digging wells or ponds is very expensive. Worth it for higher value crops like wine grapes but not for lower value crops like hay. Although hay is expensive now due to drought.
Licensing for greywater use? Love to pilot innovative ways of greywater recycling but regulations are extremely complex especially difficult for smaller operations.
Interested in testing out different designs for raised beds for crops that would improve water management / water use efficiency / resilience to drought
Lack of Regional water storage is an issue
Need diversity of commodities: Having combo of annuals/perennials, growing on different farm sites, growing different crops.

Solutions

Field trials and on-farm demonstrations for drought resistant crops and soil enhancements tailored to the area. Make results and knowledge gained accessible and widely disseminated to producers.
Explain the reasoning for well water control
Provide factsheets on real-world extreme events that work. i.e. putting old hay bales in strategic areas to catch water from extreme events to let the water soak in and not cause erosion, and ideal cover crops for particular climates/produce.
Building soil organic matter and cover cropping
Mulch and smart efficient irrigation
Incorporating hedgerows, shade trees and berry shrubs
Intensive pasture management
Incentive programs to install rain catchment systems
Installation of lower energy-use lights for indoor growers
Creating micro-climates to develop and increase the amount of carbon in an area
Building berms and swales
Advocating for local Government purveyors and agriculture
Capacity building for water technical expense and equipment
Advocating for public discussion around equitable use of regional water resources-how do we get together to start the conversation?
Develop research data on crops resistant to drought/Soil management trials for drought resilience
Develop app or website to more easily navigate info-like Sustainable AG Research Extension (SAFE)
Find a “librarian” to direct inquiries and find info
Reach out to IABC “?” to see if anyone else can help
Pair CID with farmer for workshop and supplier (i.e. next tech)
Pair water management workshops with on-farm demonstrations or field days

Hybrid delivery of water management/storage/drainage workshops-in-person and virtual/recorded: include 3-5 min video of highlights
Include subject matter experts such as CID, farmer supplier and include other subjects as well
Could we pilot a greywater recycling BMP, and have ministry of ag help get regulatory exemptions/exceptions?
Tools like FarmWest. Data about water use is helpful. Farmer is partnered with the Davis weather app to link moisture sensors to the app to help him monitor data for irrigation management.
Intercropping cover crops with vegetable row crop
Practices that reduce water consumption: • Good irrigation practices • Strategic farm management • Monitoring and use of sensors for moisture
Regenerative practices that build up soil's water storage capacity by increasing soil organic matter: Cover crops, mulching, rotational grazing (help with extreme heat and rainfall as well)

2. Extreme Heat

Issues

Wildfire prevention
MAF should identify farms through land use inventory NOT Ministry of Finance
Need cost share funding without need to put all $ up front-more from lenders with guarantee from MAF (e.g. Extreme Heat Program)
Need for livestock cooling but can't use misters/soakers on reduced water use or newer water license
Animal Welfare-emails and factsheets on animal handling is needed
Need for livestock cooling
Need for links to animal welfare resources
Need for demonstration for difficult shade managements, tactics: trees/under solar panels
Need for more info on cooling of crops and seeds
Better barn cooling techniques: misting requires water use, new water licences
Don't know if they can keep growing in a greenhouse: temps are too high ~ 50C-sunburning and stunting-staffing concerns, impacts pests
Animal welfare and extreme heat – need to carefully time drop-offs for processing as the animals can't sit out in the heat. Also need more ice at this time, which is an expense
Infrastructure needs for extreme heat: Painting buildings white, shade cloth, misting systems: funding
Funding for water recycling and UV treatment needed
GH designed on -8 and last few years it has dropped -14. Perennial plants (citrus) at risk of dying
Heat impacts pollination

Days to maturity changes and things are harder to predict i.e. not as easy to plan for CSA boxes making sure things will be spread out over season
Heat fatigue and wildfire impacts on human and animal health
We need more shade on pasture, more silvopasture
Markets shift because SSI is tourist market and when it's too hot people don't come to the market. Very hard for farmers to keep produce cool. Maybe evening markets?
Apples are literally cooking on the trees!
Seed development terminates at 86 degrees

Solutions

Design and prototype a mobile crop shade structure (small scale crops): evaluate, demonstrate research options and costs
Providing more shade blocks
White landscape fabric vs. black
Better weather forecasting systems and communications/alerts
Factsheets on how to prepare for extreme heat and alternative forage plants that cool soil and provide shade
Allowing unmowed shoulders on interior farm roadways
Cost of water storage tanks and cisterns
Notifications on cellphones for extreme heat warnings
Workshops on building swales, berms, and French drains
Incentive programs for indoor farms to replace energy intensive HP lights with energy efficient LEDs
Need for online well aggregated site for sharing all info under the same umbrella to share funding, info, ideas. Email notifications of topics you choose to be notified about.
Demonstrate what is available in terms of mobile shade systems: livestock
Bring diversity of resources in one place
Reach out to existing farms to see projects: shade management in difficult areas: show & tell model
Look to other countries with hot climates for examples (i.e. India)
Explore B.C. specific and Regional developed options
Design and prototype a mobile crop shade structure (small scale): evaluate, demonstrate
Utilize lighter colours to help with heat (i.e. white)
Look into green roofs
Demonstrations on technical expertise for barn cooling: dairy, poultry: fans, settings, setup, water pressure, equipment: limit increase in water use required
Increased info on animal welfare
Solar panels used as shade
Hedge/planting funding (to increase shade, habitat, biodiversity)

3. Extreme Rainfall Event Management

Issues

Need for more info/workshop on soil health workshops
Need for emergency management app
Need for course “Insurance 101”: Understanding insurance programs /what are you signing up for/where to get best advice
High tunnel programs: need for funding program & identifying tunnel system for the operator
Need for central place where farmers can go when there is an emergency/need to know how to reach support network (feed transportation, etc.)
Need for app with factsheets, contact info, after hours numbers and testing info
Farmers don’t always know how to find all the info they need to get through the funding portal/IAF
Need for education on whether the farm is in a high-risk flood zone: need to make decisions based on good information and this can change crop decisions/clear mapping of floodplains
Flooding-wet pastures-need help with draining (Comox Valley Regional District wants farmers to keep water on their properties
Drainage options - local government requires water to stay on property – how do we deal with excess water
Can’t bring in fill due to ALR-need clean fill
Need to deal with multiple levels of government and bureaucracy while trying to farm! Need a contact person that farmers can talk to help navigate programs authorization
Soil structure and aggregate stability
Water Always Wins (resource book)-demo project in India
Soil Mentor-Nicole Masters UK-do we have something like this is Canada/BC?
Rainwater capture systems-mixed response on the utility of these
Need to know how much water every farm is using and then find ways to decrease
Farmers barrow water-it goes back to the ground
Cost of storage facilities and capture of rainwater can be prohibitive-space limitations on farm
May not be able to use rainwater for livestock production-would need to test water
Support network was really affected by atmospheric river event-access to lab, feed, etc. transportation concerns if you can’t move products in and out of a Region. Need to ensure roads are clear. Clear communication with government is required and government staff are unavailable after hours
Wet spring: had poultry issues, but not good hay harvest
Excessive rainfall – specifically impacts on manure (in pits and on fields) Will need to put rooves on manure pits, change in spreading times seasonally to prevent runoff
High rainfall and water flow through creeks on properties – sediment settles into bottom of creeks making them less deep and they’re not allowed to dredge it up. Result is lower water flow volume, potentially quicker shut off of water use during drought: Is there a practice that can be approved/permitted to restore the flow of the river? Something like this was done on Barnston Island in the Fraser Valley

As a make-shift solution: outdoor above ground swimming pools to store rainwater, capture from all roofs and gutters. Issues with this: • Can't possibly capture enough water to last through August! • Can't justify space taken away from production (for proper ponds or dugouts or for swimming pools) • Water from roof runoff would not be suitable for meat production or livestock watering from a food safety perspective – regulations around this

Solutions

Soil health workshops that are not too "science based": layman terms/practical / Need for on-farm demos and sampling/reading the samples and what to do with them/soil meter app
Having efficient dugout pumps that don't require high maintenance
Workshops on building swales
Proper drainage and the ability to store water while it is abundant
Established root systems that hold topsoil avoiding erosion
Systems to prevent harmful runoffs
"Every 1% increase in soil organic matter equates to 20,000 gallons of additional water holding capacity per acre"
Expertise advice on French drains, berms and swales
Knowing which native perennials or wild grasses have the deepest root systems to break up clay and allow infiltration
Sediment and erosion control
More wetlands
Replant programs for less that 15 acre farms-raspberries lost to extreme heat/rainfall

4. Changing Pests and Beneficial Insect Populations

Issues

Increased pests
Climate was hotter and pests take off quicker
Need for crop scouting support (in-person) / continue to have pest consultants available to farmers
Need for education on insect and disease identification
Elk as pest: eating forage corn and hay crops / need research project on hazing elk (scaring out of fields) with drones
Growing degree day modelling for key pests
Root maggot and rust fly
Need monitoring support for crop pests
Real time data to make pest decisions by
Degree day modelling to predict pest pressures
Pest ID support
Digital tool that ID's pests and gives general pest management recommendations
Need for annual pest pressure data for farmers to make pest decisions
AF should be data producers and distributors of data

Degree day modelling and weather stations to make local decisions
Need more info to manage specific pests like small scale farmers IPM guides/more for wireworm and cabbage maggot etc./ individualized IPM advise for farmers on their farms to help them make an IPM plan
Pests have increased-trying to use biological controls (losses are heavier) pest outbreak earlier in the year that wiped out the rose crop right at graduation season

Solutions

Diagnostic tool for identifying pests and insects
Better mosquito control
Using nature to help bring the birds in with houses and natural crop planting
Pest management using biological methods and how biodiversity can assist
Biosecurity for livestock and poultry
Farmer to farmer “alert” group changes
Treatment options for poultry pests
Non-lethal methods to reduce crop losses to birds
Incentives to support native pollinator plantings
App that ID’s pests based on plant species grown and offers treatment options based on pest stage
Laminated pest ID sheets for greenhouses and fields
Can government help with bulk buying to lower price and improve access to supplies: Limited on island!
Tool (phone app) for pest ID (take a photo, ID the pest, offer strategies and options for pest control)- this app exists already but it is not BC-focused and does not provide management strategies. • NAFEX has a FB group where farmers can post pics of pests and crop damage and experts can offer info. • Would have to be moderated. Issues around social media – would not want to turn into forum for misinformation, targeting farmers for practices, etc. • Tag topics/posts by region/commodity, etc.

5. Crop Selection for Resilience

Issues

Encroaching “bog rush” in seasonably flooded forage growing areas
Lack of info on drought tolerant varieties (annual/perennial) suitable alternatives: forage or vegetation
Need access to organic matter to build up soil health
Funding could be provided for bringing in organic matter: New BMP?
Need for access to vegetable production experts
Access to new research on crop production (global)
Put monitoring tools such as apps, brix meters, tensiometers, soil probes into the hands of farmers
Removing crop varieties in some areas may be necessary (e.g. almonds in California)

Specific need identified for drought tolerant, club-root resistant brassicas
In addition to the on-farm trials run on the island, have an experienced Ministry staff member (i.e. Thom) mine through academia across the world to find scientific research that has already answered these questions, mine out the data and distribute it in a form (factsheet) understandable and digestible by busy farmers. Crop trials, results, etc. Don't reinvent the wheel -> find what's already published and help us access/understand it.

Solutions

Technical webinar on drought tolerant varieties: Field trials hosted on farm: grad student data collection/cognizant that demo field days not usually possible due to harvest season
Compare different treatments for bog rush: measurable objective
Field day and workshop on bog rush

6. Increasing Weather Variability (Virtual Workshop)

Issues

Insufficient structures and infrastructure

Solutions

Greenhouse and proper shelter infrastructures
Research into technical solutions (i.e. portable temporary structures)
Knowledge on which resilient heritage s/breeds work in specific weather environments
Field trials on crops that finish early and are hardier

Additional Ideas

Farm size should be income based, not physical size for farm tax status
$2500 threshold for the farm tax status is too low and dilutes small farm business sales
Labour is the main problem; there needs to be better access and knowledge of small-scale equipment for weeding, harvesting, planting etc.
EFP/BMP: Modernize EFP/BMP access and streamline ability for farms to get funding Many of the environmental BMP's are outdated Get IAF to apply case #'s and have dedicated staff for the applications to have continuity of service Farm specific programs for smaller farms Current programs are too prescriptive and too many "gates" to access the program Make funding available for farms already doing regenerative agriculture and organic agriculture Many progressive farms are successful models of many of the EFP / BMP's but their businesses also need help to advance their sustainable practices also to the next level Regen AG leaders and organic producers are often not supported by most AF programs
Communications:

AF needs to better communicate out the funding programs, resources for production, staff roles and contact info Communicate better about how and why things are being done in a particular way (water curtailment, rodenticides, AEMCODE, other policy changes) Less talking and planning, more actual funds to farmers to succeed. Have individual farm programs that are tailored/ flexible for the farm to decide what they need (like Small Farm Accelerator Program) Small mixed vegetable farms need labour help such as appropriate sized technology for weeding, planting, washing, harvesting Farmers need more opportunities to be able to network with other farmers to share knowledge Need access to the advanced practices and technologies from other countries, particularly Europe (some type of place to easily access info from other locations that is vetted by professionals here first so there is not too much searching needed
Extension: • It should be a public good (providing data, production info, weather stations) but not "control" the data. Let it be available and used in whatever way the farmer wants. • Want personalized extension services and site visits and regular check-ins to all producers in the region (phone, email) • BC Ferries need to have a more streamlined process for Ag producers (priority loading and protocols for livestock transport, feed transport, frozen food and fish)
It was 30 Celsius on May long weekend!
Forage production left to go to seed – impacts the farm next door through seed dispersal and insect loads.
Cost of feed ($10/lamb after feed costs, processing costs etc.)
Money needed to retrofit to grow new crops/varieties or retrofit for current varieties
Can now grow peaches!
Not enough water to flood cranberries at the critical time of year (Thanksgiving)
Can't expand (take advantage of economies of scale) because of the cost of land
Need more research on what is tried and true
Integration between Ministry and other funders is needed (other funding programs are being offered through BC Hydro, Farm Credit Canada, etc. we need to know about these- how do we let people know?
BCAC shared a lot of info with their members
More peer-to-peer info-farmer friends
Meat processing: • Inspectors are not available on Saturdays – farmers are often working full time during the week and in other jobs off farm and have limited time to do processing • Quota limits for processing limit the amount that can be processed – makes it a barely breakeven endeavor • Insurance/WCB rates – particularly difficult and expensive for small scale meat processors
Succession Planning: • How do we get the next generation into farming? • Mentorship program through Farmers for Climate Solutions

BC Ferries-shipping products off-island is nearly impossible due to costs and unreliability
More beneficial to focus on commodities than on regions for this extension program – commodities have specific needs
Cost to maintaining biosecurity – have to keep biosecurity equipment on hand at all times – this isn't always considered.
BC Hydro – LED lighting for greenhouses – might be funds available through Farm Credit Canada to visit other countries (?)
Please do not schedule funding applications opening during times of high production.
Please ask yourself: does this decision respect farmers? Provide barriers to farmers?
What if the MAF identified farm use and farm status through the land use inventory instead of the M of finance through a taxation function
Vancouver Island resembles the AG model +climate of the UK much more than the rest of Canada. Access their modelling + methods for drainage, winter growing, AG management instead of reinventing the wheel or coping the Prairies.
The funding windows for the IAF and BMP funding are very difficult to meet and have requirements such as a quote or a resume from a contractor. The release of the categories also was so close to the funding window that it was almost impossible to determine a project and meet the requirements. Also, they were released in very busy seasons.
Make availability of AG water a priority
Fix unlicensed well issue…it's ridiculous!
Solve issues around Natural Resource Police action
Curtail logging activity impact on AG water supply
There is a huge amount of public money spent on diking, pumping infrastructure irrigation water supply to support AG in Fraser Valley. The precedent is established for doing this. Develop programs to support AG on the island. It has more AG land that FV and would take far less money to make the island a viable place for AG. There are important environmental, biosecurity and local food production issues for doing this as well.
Extension delivery models must include all mechanisms: in person; hybrid streaming; recorded edited; summary delivery "the trailer"
IAF Funding for projects and research seems focused on larger projects and commodity crops when niche crops offer potentially disproportionate value to climate change mitigation and adaption strategies
Use local post-secondary institutions to work with farmers to design and run crop trials for master's students and publish the results. Ensures scientifically accurate data at a lower cost to province
Change your growing season so that summer drought becomes the dormant season; explore winter forage/silage crops like forage brassicas and have your fields fallow in summer
Change policy to ensure all farms regardless of their taxation status can participate in all programs
Understand that Van Island and Gulf Islands have a regional context that is unique
Understand that extension funding needs to encompass more than a climate lens. New entrant farmers need the basic skill set first
Please do not schedule extension activities and funding opening at the same time.
Peer-to-peer support per sector is lacking. / Only two potato growers north of the Malahat – where to get advice re. new varieties, practices

Younger generation doesn't know farming and related jobs exist: beneficial inset rearing, GIS, etc. Secondary and undergrad students get discouraged from pursuing AG education. How does the farmer find the students who will do research on your farm?
Need professional governance for local adapted skill set=aquaculture and small-scale rural specialty P.Ags
Compost costs have double in last 5 years
Supply chain challenges since COVID/floods. We should rely less on external inputs.
Extension Approaches: • Positive feedback on Bonnie and Kiara's IPM newsletter and her iNaturalist portfolio where farmers could post pictures and she would respond with ID and some helpful information. She was helpful/responsive. • Farmers Institutes could send out data and share. • Please make EFP / BMP accessible to non-profits • Field Days/ tours on farms (i.e. find farmers that have had success creating habitat for beneficials (Changing pests and beneficial topic)). • Case studies that include economic data/time/investment information • Training for EFP planners, agrologists, AF staff, and producers on systemic/systems approach that is progressive/regenerative. • Decision Aid Tools (i.e. what projects should I prioritize this year?). Finding solutions is easy but how do I pick which one to go with? • EFP that has regenerative goals built in. A model of always improving. EFP planners support soil analysis every 5 years (soil health indicators). • Maybe extension providers who can support through phone/video/pictures. You could call your RA or EFP Planner and talk through things. • BMP program was more open to multiple use funding streams (I wasn't allowed electric wheelbarrow, but I was allowed a tool that was just for compost application). • They loved the EFP questionnaire because it educated then on best practices as they worked through it.
What is the best way to get a hold of you? • EFP is a good potential communication channel. That person who comes on farm and is also visiting other farms and can pass on information is such a valuable tool. • Should send an email to renew 6 months before plan elapses. • Prioritize communication in fall/winter/early spring. • Time windows for project application need to be over the winter. April is too late. • Regional database/calendar of events. Maybe a one-stop-shop for all Island events could be hosted/maintained by the Ministry? • WhatsApp group around specific topics (Community of Practice). Possible regional ones that RA's will send select, important updates through.
Can't get farm status so can't access funding…not many options for land leasers
Barrier to information access: • Only registered professionals can give water management advice. Because of professional reliance [regulations]. Therefore, you need a P.Ag. with that practice area, which is hard to find. We need more registered professionals. • We need educational workshops from people with practical experience (not certified) because people don't need certification for education outside professional reliance.

Information sharing: • Farmers who have used technology should be able to share information, but they can't under the professional reliance model because of liability issues. • Need to support farmers conforming to new regulation. But how to get this information out to farmers? What are our legal responsibilities? • Workshop for farmers around legislation. Difficult for farmers to stay up to date.
SARE (Sustainable Agriculture Research & Education) in the US • Canada should have a similar one with info relevant to Canadian context. • Lots of cover crop information. • Have an online forum with experts who can answer Qs from producers. Decision-making tool • Help with deciding which on-farm projects to pursue given limited time and financial resources. • EFP helps with access to funding but not necessarily expertise.
Is the Crofton Paper Mill an appropriate use of local water resources? there should be a public conversation about that. AN advocacy group with the same level of strength as the Crofton group.
Need broad public discussion on how to allocate our water resources.
Is there a role for extension in advocating to ministries in charge of regulations? How can extension support ministry of ag to advocate for farmers and help them navigate regulatory challenges?
One producer learned about a local/regional policy consultation process and saw that farmers would be impacted by the issue. They noticed that very few farmers were attending the local gov's consultation events. They worked with another farmer to organize a farmer-specific in-person event to raise awareness about the policy. They were able to get about a hundred farmers to attend that event, with a range of ages and commodities represented. They wanted to share that farmers prefer and appreciate spaces that are FOR farmers, not necessarily open to the public. This approach helps build trust and ongoing participation. They would like to see that farmer-focused approach in future regional extension events. They appreciated that the Parksville event was farmer focused.
Another priority area that was brought up is waste management. There was interest in circular waste management. For example, recognizing that one farm's waste (chips/trimmings from perennials) could be another farm's inputs (mulch). • Ideas for extension: Waste materials "speed dating" event or online marketplace (like craigslist)
Three farmers agreed that producers are motivated by the challenges posed by climate change. To reach those who are not as interested in regenerative practices, extension must highlight the economic benefits of BMPs, as well as highlight the multiple benefits of BMPs (e.g. regenerative practices improve soil but also improve resilience to drought).
What extension approaches would be most effective? • Better, more coordinated government communications. Pushing communications through industry associations is effective. The producer gave examples of communications for avian flu (AI) as effective. They received AI messaging through multiple emails from different sources.

- Safe spaces for farmer-to-farmer discussions. This was agreed upon by all 3 farmers. This method helps get past the lack of trust towards government.
- People WANT to get together in person. They want to see demonstrations and feel/touch/smell instead of just listening to a presentation. Government could support by paying an organizer (instead of farmers organizing on a volunteer/unpaid basis) and for food.
- Seasonality and timing matter. Weekdays 9-5 is hard for many farmers working off-farm jobs. Communicating in the off-season is good.

Ideas for communication channels:

- Farmers' institutes vary in how active they are.
- Regional districts can have helpful networks.
- Commodity groups are good.
- Social media is generational. Some people use it a lot, others not at all.
- Paper notices / posters at community hubs "where old-timers hang out". For example, feed stores and popular cafes.
- Gov could form a group of diverse farmers (e.g. diff generations) to advise on communications.

Would like to see better regional advocacy for farmers. For example, the producer knows of farmers in Richmond who do not have access to agricultural water rates. Can ministry help?

Environmental Farm Plan (EFP) Program:

- There are not enough EFP Planning Advisors. The new requirements for advisors to have a P.Ag. designation is limiting. We need more climate- and regenerative- focused professionals in BC.
- Want to see climate adaptation integrated into the EFP program and workbook.
- Want to see more support for farmers to implement their completed EFPs.

Communications:

Want to receive information via:

- Emails from RAs
- Instagram (for some, not for others)
- AgriService bulletins

Extension ideas

- Idea for an "Ag App"- one place to find everything.
- Idea to find a way to share information, events, etc. within the ag community, ideas:
  - Calendar where producers could add in their own events or events that they know of
  - Posting platform (e.g., Like Reddit)
  - Note: would have to submit content or monitor in some way so that erroneous things aren't posted.

Do not want to receive information via paper – prefer to access info via phone.

AF's website is inaccessible- hard to navigate and read, find information, and figure out who to contact.

Create a digital forum (not Facebook) for producers to connect

AF needs to present web content better. E.g. by issue, or through a series of questions to arrive at a selection of content appropriate for the user's situation (good to have different ways to get the same information). In this way, info could be presented on other practices in addition to the primary topic (e.g., soil health relevant to many issues).

Farmer started following a researcher early on, they published a lot through the British Grasslands Society, and he became a member so that he always had access to the latest research • England has specific research farms; students trained on-site and have info and research specific to the region • NZ has consultants who are mostly retired dairy farmers and paid to support and coach newer farmers. One client interviewed 3 consultants, each consultant wrote a report on their farm, and they hired the one who wrote the best report/suggestions
Dairy farm tours as part of the Pacific Ag show are missed. Farmers want to get out and see the newest tech and ideas. Farmers LOVE visiting other people's farms. PEER-TO-PEER – farmers want to connect with each other to learn. They don't need to explain the issue and constraints to get realistic suggestions, solutions are more applicable. To share lessons learned, producers must feel safe to feel vulnerable and be willing to share their losses, mistakes, and lessons learned. Solutions are practical, not expensive, e.g. Shade cloth over calf hutches and the dramatic impact on temperature inside hutches
Mentorship • Same people in each industry are drawn on and they are burning out • MAF could help set up buddy farms • MAF could compensate mentors for new farmers • EG. Young agrarian mentorship program- but could be MAF supporting/facilitating
Networking, education and access to experts
Holding more Industry Association Workshops
Encouraging trailing of controlled burns through First Nations engagement
Increasing the leverage on policy to favour locally produced goods as opposed to imports
Finding experts and having them provide an educational forum
More support for fiber and textile production
Streamlining grant application processes
Inability to access government staff after hours; after an extreme weather event.
Too much focus on consultants in funding programs: farmers know what they need on their farms.
Replant programs need to be open for small farms less than 15 acres.

Lower Mainland – Sea to Sky

Abbotsford (Open House)

- **November 9, 2023**
- **12:00 – 4:00 PM (PST)**

Pemberton (Open House)

- **November 14, 2023**
- **12:00 – 4:00 PM (PST)**

Surrey (Open House)

- **November 10, 2023**
- **12:00 – 4:00 PM (PST)**

Regional Priorities

1. **Water Management**
2. **Managing Extreme Heat**
3. **Management for Soil Health**
4. **Nutrient Management Practices**
5. **Pest Management**

1. Water Management

Issues

	Votes
Iron clogging drip lines are expensive to replace and difficult to fertigate.	4
Drainage/flooding (poultry) and forage.	2
High rainfall events causing flooding especially where upstream activities have cause increased runoff and/or increased sedimentation, such as logging or housing developments.	1
Chemical water waste in closed system.	0
Drainage in Cloverdale (152nd to 176th) low lying farms – the soil waterlogged 8-9 months of the year.	0
Increasing pressure on current irrigation systems (due to more heat earlier in the year).	0
Drainage and irrigation issues due to beaver dams in Cloverdale.	0
Water storage solutions.	0
Solutions need more water drawn from the ground.	0
Plastic mulching trials. How can we get the same yield with using less water?	0
Well water limitations; difficult to anticipate how long water will last.	0

Water license for one farm only covers 10% of the required water it needs.	0
Dike system upkeep to minimize flood risk – we need to keep our local diking district.	0

Solutions

	Votes
Storage of water during high periods to help during periods of low precipitation.	11
Regional assessment on irrigation/drainage infrastructure and needed improvements/upgrades.	10
Ensuring adequate municipal water supply for those without well access.	7
More incentives or funding necessary for more efficient irrigation technology, i.e., booms vs guns.	5
Information on crop varieties that best match the current climate realities.	4
On farm water storage case study – costs and process.	4
Assessment on most effective and efficient irrigation methods (e.g., solid set vs big gun).	3
How much water do we need now, in 10 years, and in 20 years?	3
Irrigation scheduling; soil moisture sensors for difficult soil types.	3
Stronger support for food and forage vs other interests.	2
Do research on when each variety of crop needs the water at the best time of growth.	2
There needs to be more education of the public (and producers) that groundwater and surface water are inter-linked. The provincial regulatory regime needs to reflect this reality in practice. As water becomes scarcer, increasing recommendation of all water for food will be essential.	2
Tile drainage vs land leveling. More engineering of drainage – tile spacing, etc.	2
Water quality – assessment of water going into and out of irrigation systems.	2
Availability of and access to regionally adapted variety – support for seed trialing and breeding.	1
In times of water scarcity, we should restrict non—food crops first, and mandatory stoppage/restrictions need to be applied earlier, before more serious environmental issues arise.	1
Needs trials extension services for any possible crop.	1
Subsidy to replace or workshop to maintain drip lines.	1
Investment is needed in large, piped irrigation water for agriculture.	1
Water management regimes to influence phenology to build resilience in conifer seedlings – climate change; need onsite demonstrations; out planting trials.	1
Increase capacity or flow Nicomekl to help drain farmland in Cloverdale.	1
Is the Ministry of Environment even issuing/studying new water licences?	1

Area-wide plan for drainage of agricultural lands in low lying areas of Cloverdale.	0
Subsidies for increasing or improving (i.e., making more efficient) irrigation systems.	0
Create a map of aquifers and overlay with street map in order to see the percentage of surface paved and how much land there is to refill aquifer.	0
Workshop on landscaping (e.g. swales, French lines) in order to slow down water into soil; need to understand grey water better to use for irrigation.	0
Fraser River Salinity Monitoring Report.	0
Incentives for farmers to support studies/change in order to minimize risk and loss.	0
Mitigate flood issues with proper drain tile, deep tillage, and soil aerating.	0
Re: water quality, it would be valuable to create an inventory of chemical inputs on soil. • Fungicide coating on corn seed. • Glyphosate spraying on hedgerows. • Herbicide use on row crops. And to monitor that surface and ground water for these inputs. To determine the extent to which these products do, or do not, persist in water that we all rely on.	0
Water access – agricultural water reserves, research needs, projections.	0
Water conservation with precision agriculture (e.g., container, greenhouse recycling, etc.)	0
Finding ways to monitor well water and aquifer capacity – the public needs to see it to encourage well users to conserve water, especially in the ALR.	0
Mitigate flood issues with proper drain tile, deep tillage and soil aerating.	0
More public facing water issues, i.e., low aquifers in an area like Metro's Reservoir Graphic; show the public why they need to conserve water for agriculture.	0

Additional Ideas

	Votes
Solution to Nooksack River flooding.	4
Cooperation with First Nations regarding a drainage path for Sumas Prairie.	4
Need subsidy for irrigation and harvested produce.	3
BC and the Lower Mainland gets significant annual rainfall, plus they have the Fraser River. There should not be a shortage of water. Investment in water storage and systems to move it are critical.	3
Lack of maintenance on all waterways – clean and dredge the ditches!	1
Water management practices should take the survival and wellbeing of wetland ecosystems into account (e.g., through riparian zones).	1
Riverbank erosion is an issue and environmental barriers are needed for protection for airborne diseases and soil movement.	1

Diesel pumps and not being able to have access to 3-phase electricity.	0
Replace diesel irrigation with electric pumps.	0
The data from the water sample wells showing annual re-charge is wonderful. Making that data more accessible would increase public understanding. PGOWN network data accessibility.	0
Changing authorities in water management – Ministry of Agriculture vs Ministry of Forest or the Ministry of Environment.	0
There should be well and water table level monitoring before sending notices out.	0
Need more water licences – currently cannot irrigate all our land.	0
Investment and research in diking infrastructure / systems.	0
Watershed plan/management in agriculture context.	0
The provincial government must issue more water licences for farmlands in Surrey.	0
Need funding from government to encourage farmers to invest in modern irrigation systems.	0

2. Managing Extreme Heat

Issues

	Votes
Clear guidelines on what outdoor temperatures we can ask workers to work in, as well as air quality. Government reimbursement for lost hours due to these conditions.	2
Increasing wildfires that impact agriculture operations.	1
Heat dome – successive planting and young crops burned up.	1
Lack of pollination in extreme heat causing issues in crop development and seed production (low germ).	1
Loss of capacity of shade trees to capture carbon and provide cooling conditions.	0
Sweet corn – successive planting caught up to each other during the heat dome.	0
• Temperature change in enclosed buildings; dairy animals, feed storage (insurance/safety), location of buildings, water rights (regulations), soil impacts	0
Shade trees not tolerating extreme heat or wet weather conditions.	0
Limited vegetable production in hot summer months.	0
Lack of water for crops to survive.	0
Cost associated with retrofitting existing livestock facilities.	0
Difficult to keep working outside in extreme heat. Help with facilities such as cool water pools or showers would be appreciated.	0
Crop varieties not suitable to extreme heat.	0

Increased anxiety/mental health impacts due to extreme heat/weather and its impacts.	0

Solutions

	Votes
Alternative crops more suitable to hotter and drier conditions.	8
Need to research appropriate plants/varieties for changing climate here.	5
Trialing different barn cooling technologies.	4
Alternate crop trials / fact sheets to best deal with drought; on farm demo.	4
Greenhouse and climate control upgrades, along with more incentives.	2
Examine the fossil fuel emissions in B.C. agriculture and make a research-based plan to reduce them.	2
In-field shade options for pasture operations.	1
Invest into new technology for operations that can keep barns cool (e.g., cooling pads and misters).	1
Address the systemic drivers of the climate crisis to mitigate catastrophic impacts of heat and other extreme weather.	1
Support to help increase the quality and quantity of regionally adaptable seeds.	1
Heat – recognize that water is critical to animals and crops.	1
Trial of white or other light-coloured mulch liners.	0
Agroforestry and silvo-pasture systems to mitigate sun/shade.	0
Due to extreme climate conditions, we need to have research project in order to come to a solution to mitigate the damage.	0
Need for more emergency planning and wildfire mitigation operations.	0
Heat pumps for cooling poultry barns.	0
Research on more drought resistant varieties of crops.	0
Field crop shade incentive for extreme heat and climate issues. Shade solutions exist in southern states, would they work here?	0

Additional Ideas

	Votes
Learning strategies from areas in the world where our hot summers have been “normal” in their history.	2
There is not enough coordination between the Ministry of Environment and Ministry of Agriculture, along with poor enforcement – hold farmers responsible for environmental practices, water quality, etc.	0
Continue funding improvements to farms (e.g., for dealing with extreme heat).	0
Heat management strategies for farm laborers.	0

3. Soil Health Management

Issues

	Votes
Nutrient absorption and nutrient requirements for different soil types.	2
Being able to have long-term soil testing with high phosphorous, potassium, and nitrates on dairy land.	1
The loss of soil due to insufficient cover cropping is a huge issue to us all.	1
Economic pressure can make “ideal” soil management practices hard to implement, especially in the middle of the busy season.	0
Being able to have an effective drainage system and soil protection from winter geese, ducks and other birds.	0
Finding good quality compost/mulch that is not contaminated with plastic, etc.	0
Cultivation of trees like hedging cedars on agricultural land removes many tones of soil each year.	0
Four different types of soil on one operational field.	0
We can no longer justify promoting and supporting crops that result in soil loss or destruction. • Spreading gravel on agricultural land for hedging cedars is contrary to food sovereignty. • Removing soil in pots is unconscionable.	0

Solutions

	Votes
Cash incentives for upgrades.	9
Educational short courses on soil management, cover crops, crop rotations, and soil amendments.	8
Cover crop varieties and seeding methods.	6
Shifting from herbicide use to mechanical or high-tech equipment.	5
On-farm research demonstration on soil health practices – e.g., cover crops, bio-fumigation.	4
Identify lowest reliable soil testing kits that may be available for use by farmers in the field to reduce need, cost, and complexity of collecting samples for the lab. Samples by zone.	2
Proper management according to the crop. During the dry months cultivation after grass (for vineyards).	2
Regarding soil, what about the contaminants in ditches upstream of farms?	2
Compost treatment trials.	1
Testing/certification program for compost/mulch so we can be confident in its quality.	1
For vineyards: extension services viticulture; fruit production; we need trials of different varieties and growing practices.	1
Make excessive nutrition, particularly nitrogen into soils, expensive.	1

Reporting/testing on individual field and crop basics – water needs for soil type and nutrient needs for crop type.	1
Work with regional provincial governments to strengthen riverbank erosion and environmental barriers to reduce soil movement.	1
Teach local farmers to work together on sharing resources of fertilizer; accessibility between industry use, on certain fields.	0
Strip till corn crops.	0
Implement measures, such as increased taxation, which discourage production of trees on agricultural land. Trees remove much soil at every harvest and take land out of basic food production. Presumably trees are more profitable in the short term but at huge long-term cost – one day we may have no choice.	0

4. Nutrient Management Practices

Issues

	Votes
Using the right form of nitrogen at the right time to prevent leaching.	3
Operation growing a crop under various soil conditions (i.e., different areas) where nutrient management and tailoring is not practical.	2
There is an excess of manure in the Fraser Valley and insufficient land base to utilize it.	1
Adapting nutrient management regulations to changing climate patterns.	1
Not enough funding available for manure management upgrade.	1
Nutrients being misapplied in field crops (berries and field vegetables).	1
If using manure, rates of commercial fertilizer is reduced to low level, and Terralink won't make custom blends for small amounts. There are also problems with adding enough micronutrients to mix.	1
Guidelines that are struggling to maintain pace with current crop practices.	0
Leaching contamination of waterways is a major problem around and on our farm.	0
More funding for manure storage.	0
High P levels in soils due to repeated applications of manure.	0
Composting crop residues – how effective is it?	0

Solutions

	Votes
General guidelines for nutrient management (fertilizer volumes) by crop.	5
Workshops on soil test interpretation, rates, split applications of fertilizers.	5
Increased support on nutrient management planning.	4

Cash incentive for upgrades (composting/separation).	2
Regional projects that redistribute manure from municipalities with an overabundance to municipalities that are deficient; convert waste products and nutrients for crops and create renewable energy.	2
Access to live application services in remote areas.	2
Better education for the farmer on nutrient management.	1
Improve crop production guides with BMPs – update and make more usable.	1
Manure analysis for accurate nutrient placement.	1
Ongoing evaluations of agricultural runoff, leading to regulation of amounts of nutrients spread on land.	1
Provision of local nutrients to reduce reliance on foreign markets for inputs.	1
Research on alternative fertilizers and soil amendments including utilizing other commodity's by-products.	1
Training/mentorship of new consultants – agrologists are retiring and producers are relying on sales reps for advice.	1
Workshop on nutrient management for blueberries – third party advice, not associated with fertilizer sales.	1
Audit the number of animals on farms in relation to land application.	1
Nutrient management related to run-off issues linked to AEM regulations: • Sampling protocols and techniques • Sample and monitor planning • run-off strategies and needed design upgrades • Technical workshops and podcasts	1
Nutrient management regimes and changes under operational conditions for different conifer seedling species needed in different BC regions: • Nutrient mixes • Trials • Climate change plant physiology workshops	1
Capturing the expertise of retiring agrologists/consultants through workshops, videos, field days.	0
Create an annual nutrient budget for the Fraser Valley. Record nutrient inputs (feed/hay), record nutrient outputs (milk, crops) and publish annually.	0
Different types of manure application equipment for reducing ammonia emissions.	0
Research on nutrient uptake on various cover crop options in colder months.	0
Research or demonstration to determine impacts of a practical one-size-fits-all operation/crop nutrient management plan; different crops, varieties, knowing when to tailor needs	0

5. Pest Management

Issues

	Votes
As organic farmers, we rely on natural predators (e.g., owls, coyotes) for pest control. When these predators are impacted by chemical and other control measures, we experienced redoubled pest issues.	8
Misidentification of pests and diseases. If producers don't know the cause, then they can't properly address the issues.	8
Migratory birds damaging cover crops and spreading avian influenza.	5
Mice problem on blueberries and no access to SGARs.	4
Increased wildlife conflict – grizzly bears eating carrots, etc.	1
Screening trials for availability of new pesticide chemistries for pests on conifer/seedlings – both forest and agricultural pests. What's needed are trials, chemistry and scouting, and workshops.	1
Information exchange as new pests enter area.	1
Quicker approval of technologies to combat new pests.	1
Migratory birds bringing avian influenza.	1
How do we effectively dispose of crop residues to minimize disease in fields?	0
Voles chewing away on root crops.	0
Host of pests (insect or fungal) can be trees and plants around our farm.	0
Temperature in the summer increases pest population.	0
Pest management for beavers; damaging blueberry plants along Nicomekl	0
Scorch virus in blueberries; how to reduce spread and help plants be more resilient	0

Solutions

	Votes
On-farm research where grower does conventional practice in one half of their field, rand researcher does best management practices in the other half. Compare production and cost; field days to demonstrate.	10
Cover crop varieties that provide a natural deterrent	9
We all depend on the continued survival of pollinator insects, including bees. We know that bee health suffers when they are placed in blueberry field. We need publicly funded research to find out why. Is it specific herbicide or pesticide use? We need to find out.	9
Workshop on how to use rodenticides safely and effectively	7
Ecosystem-based pest control approaches.	6

App for:
• Spray / management schedules based on crop stages.
  ○ What pests to target
  ○ What can be used
  ○ Photos for pest ID
	5

All in one convenient place.	
Spayed female cats for pest control.	4
Support to grow out and trial more varieties - variety trials.	4
Workshops before harvest in a field that has a lot of problems to show farmers the pests and how to recognize them.	4
1-on-1 field visits with consultant/agrologist to assess health of fields.	3
Effective biological controls for common pests.	3
Hedgerows and pollinator strips as insectaries.	3
Start clean; preventative programs with bios; rotation; good monitoring.	2
Assistance with beaver management – control beavers, don't protect them.	2
Funding for an agriculture focused wildlife conservation officer. As climate change increases, so does wildlife conflicts and stress.	2
Cover crops for bio-fumigation	1
Field days for IPM training – small groups of 10 producers max, organized through packers.	1
More research into mixed and companion planting that reduces pest pressure.	1
Regional diversity: farms need to be better spread; planting wind breaks.	0
More flexible approach when importing plants – the CFIA rules are too rigid and unreasonable.	0

Additional Ideas

	Votes
Legalize herbicide application with drone technology.	3

Okanagan Similkameen

Penticton (Open House)

- **November 8, 2023**
- **8:00 AM – 4:00 PM (PST)**

Oliver (Open House)

- **November 14, 2023**
- **12:00 – 4:00 PM (PST)**

Cawston (Open House)

- **November 14, 2023**
- **8:00 AM – 12:00 PM (PST)**

Kelowna (Open House)

- **November 16, 2023**
- **8:00 AM – 1:00 PM (PST)**

Regional Priorities

1. **Nutrient Management**
2. **Reducing Impacts of Extreme Temperature**
3. **Water Availability and Management**
4. **Adapting to Changing Pests and Diseases**
5. **Flood Management**
6. **Wildfire Management**

1. Nutrient Management

Issues & Solutions

Seed production and breeding is necessary for any long-term adaptation to climate change. Without ongoing seed selection in multiple regions of B.C., we will not have the diversity of varieties with climate adapted genetics in the future.
How to interpret soil samples, planning, and future testing.
How to access and use existing tools.
Demonstration sites, ideally neighbour-to-neighbour.
Supporting adoption practices that are a good business decision vs philosophy (i.e., organics).
Kid-friendly events.
Special draw or attraction as an event.
Delivering extension to non-English producers.
Utilizing cover crops, flail mowers, and mulches for nutrient management.
Diversity of soils; alkaline sites; how to adjust nutrient management and be crop specific (e.g., free fruits vs vineyards).
Minimize nitrogen use and chemical fertilizers.
Rotational grazing and cover cropping.

Resources to help producers understand nutrient management of range/forage without use of chemical fertilizers.
Extension of the grazing season and ways to decrease feeding costs.
Workshops on soil management, cover crops, hedgerows, beneficial insects, and pollinators.
Tools and events to demonstrate how to improve soil health.
Targeted utilization of range to achieve diversity and production targets.
Greater diversity equals more resiliency – diversity of soil biology, forage stands, crops, livestock, forests, etc.
Soil probes should be divided into regions, soil types, and then linked to current BMP programming.
Soil pits, understanding diversity of soils on your farm.
Important to understand the interactions between nutrients.
How do you get a true idea of the soil types on your land, especially on large acreages with variable soil? Develop an app, input your soil sample analysis and allow it to help make your decisions. Tie into BC-DAS?
Need to help producers understand nutrient applications where it can be understood what the intended purpose of a certain application is.
Decisions need to be knowledge-based, rather than just applying treatments because a neighbour is.
Best practices methodology of soil sampling – monitoring is important. Sampling should also be subsidized.
Nutrient management to decrease costs.
Protection of nutrients, soil, and water upslope because of downslope impacts.

2. Reducing Impacts of Extreme Temperature

Issues & Solutions

Workshop series on replanting, prepping soil, caring for young vines through extreme weather.
Evaporative cooling for lettuce production • Peaty (35% om); high pH, sulphur; high water table • Trial on high pressure evaporative cooling system; MJ tech out of Holland
More investment in pruning workshops addressing cold damage – along with soil health workshops.
Seed varieties and seed saving for climate resilience.
Water is a concern if drought, heat domes, and burning from wildfires persists.
Cold and frost have led to some tree loss, but the long-term is still unknown with extreme temperatures.
Growers need more tools and support to help them manage through cold weather events.
More tech needed for cooling and efficient water use.
Rootstocks for heat and cold tolerance.
Extreme weather is killing off some tree fruits and grape vines, resulting in removal and replanting.

Year to year variability in temperatures are hard to predict and adapt to – producers trying to figure out how to not have total crop failure.
Research trials on how different practices can impact the temperature in an orchard or vineyard.
What varieties are resilient to extreme temperatures? Specifically, when it comes to soft fruits, cherries, apples, vineyards, etc.
Help producers understand long-term implications of heat and cold on crops. Consistency on crop varieties seems to be becoming more variable. Knowing when to pick fruit is highly important.
Provide research and talks on what the long-term implications of extreme weather can have on tree fruits.
Demonstrate how to get consistency through crop varieties when weather is not consistent.
Put money into research and development effects of extreme heat on trees and crops.
Alert system on forecasting. For example, “heat is coming in 5 days, so water now!”
Base knowledge of what stress looks like in a tree.
Tools to increase production – pick a few growers and run a pilot.
Showcase a well-managed orchard and show the yield that they are getting – use SIR as help.
Create a template for growers to follow.
Demonstrate the value of extension and create growers who are making decisions based on knowledge and just doing something because their neighbours are.
Covers to help with rain and extreme temperatures.
Water for crop-cooling is not feasible in certain regions.

3. Water Availability and Management

Issues & Solutions

Soil moisture monitoring – Sentec AG requires monthly subscription, BeeHive subscription. • Info on moisture meters, where to source, pros/cons of equipment that’s available. • Tradeshow booth with suppliers. • Nutrient management workshops and fertigation workshops. • Video events with centralized website housing extension videos, factsheets; integrating AI.
Continued access to water is vital.
Water and irrigation were mentioned multiple times as important areas.
Commercializing nature – elderberry is drought tolerant.
Switch to no-tillage, incorporate charcoal into compost, and continue seed selection for drought tolerance.
The groundwater well registry is a “gong show.”
Uncertainty whether irrigation water could be shut off.
Soil moisture sensors linked to pivot irrigation systems – possible demo?
Rate differential program with BC Hydro based on timing.
It needs to be about quality, not just quantity.
Water storage feasibility/pilot study/demonstration.

Soil health/management practices (i.e., cover crops) to improve water retention. For example, adding mulching to orchards to improve water retention.
Impacts from logging uplands and headwaters – collaborate on mitigation/prevention.
Efficient technologies needed to help with drought and irrigation.
Water shortage and the threat/option to shut off in the future when an area irrigates.
Irrigation and soil health are top of mind.
How do you manage your irrigation zones that have multiple soil types?
Promote new irrigation resources and assess current irrigation systems.
Flow meters, pressure sensors for emitters, etc.
Centralized extension website.
Soil amendments in sandy soil to increase soil water capacity and storage.
Use water sensors.
Knowing how much to water. People tend to water based on a schedule and not on information.
Make a video showing a healthy tree, watered tree, and stressed tree. Show images of different trees when uptaking water.
How to water for different areas with different holding capacities.
What are the best irrigation systems to use for different sites?
Research and development on efficiency and uptake of calcium for fruit. System to make calcium uptake better. Could do a presentation on what is new and what decisions need to be made.
Gravity-fed system for water; participant's 8 acres of cherries ran out of water in August last year.
How to water for different areas with different holding capacities.
Water will always be a concern.
Effluent water is not an option due to food safety requirements.

4. Adapting to Changing Pests and Diseases

Issues & Solutions

Weed control management trials – look at trials happening in USA and adapt trials to B.C.
Integrated Crop Management Services – pest management extension agents.
Pest and disease management – water availability and management – varieties drought trials.
Grasshoppers are a growing threat – farmers need support to help control them and implement preventative methods.
Moles are impacting forage yield qualities, also need prevention and control supports.
Integrated Pest Management!
Are there management options available for treating cytosphora canker?
What post-harvest, storage, and management options are available for perennial canker?
Management practices that can disseminate information.
Managing grasshoppers, as a region, in a timely manner.
Need to prevent pine grass from setting in – not good for cattle grazing.
Managing aphids – especially challenging for small fruit growers.

Disturbances create space for invasive species to come in.
Need more information around beneficial insects and pollinators to have around.
Stop using products like Round Up.
Important to get a good source of woodchips to prevent introducing or spreading diseases.
Knowledge of how to use DAS and how it applies to each farmer; understand how it helps make decisions.
Show growth models and what stages of pests are present. Add pictures of the pests that growers can refer to for the growth cycle stages.
Create a DAS phone app.
Know what products to use and when, support knowledge-based decisions.

5. Flood Management

Issues & Solutions

Dredging and gravel removal in channels.
Consideration of post-wildfire recovery (i.e., seeding to slow/hold water).
Creek and riverbank stabilization (upstream and within/near agriculture properties).
Extreme weather program.
Knowing where to access information and funding opportunities.
Regional planning for flood emergencies.
Flooding indirectly affects tree fruit producers because the Similkameen Nursery is located in a flood risk area.
Link soil health to managing flood risk.

6. Wildfire Management

Issues & Solutions

What varieties work during heavy smoke seasons? In the 2021 season, we suffered near total loss of cabbage, except for one type. We need variety trials.
Smoke taint in grapes and wine. Smoke taint is a pesticide concern and may be a problem in the future.
Range re-seeding after fires.
Control jack-pine region through controlled burns.
Funding for sprinklers and water guns.
Farmers need the ability to test smoke-tainted grapes, locally and quickly, before harvesting.
Farmers need support for alternative wine production for grapes that have been smoke tainted.
It is challenging to align business with climate/environmental decisions.
Funding for ranchers who have to pull cattle from ranges due to wildfires for two years after burns.
Targeted control burning to mitigate wildfire fuel.
Utilizing green alleys to be FireSmart (vineyards).
One struggle with smoke taint impacting vineyards and their wine is the effect it may have on consumer confidence in the products.
Jack pine regrowing in burn areas – species will reburn within 10 years of growth.

Plant more fire-resistant tree species.
Pilot project underway to replant burn areas with trees, including conifers, and berries.
Lowest priority of issues stated. However, looking at other impacts of evacuation from wildfire – like losing fruit in storage after evacuation, especially cherries.

Additional Ideas

Programs need to tackle expenses. The changes can be costly initially before you see a benefit.
Financial support for adaptation. Shared resources where possible. Collaborative and supported participatory breeding projects.
Farm tax status needs overhaul to incentivize farmers to adopt BMPs.
Compensation/recognition for farmers who are engaged and provide feedback to the government.
Want more engagement sessions on VI.
Timing events according to the off season. Events should be afternoon sessions during the growing season. Also suggested that in-person meetings happen after 6 pm, or during the winter.
Farmer to farmer networking; podcasts are great, but social interaction is very important.
Diversity in extension (i.e., field events, factsheets).
Replanting workshops – what are leading viticulturists doing? How to manage young vines? Continuation of pruning workshops that BCCA completed this spring.
Link into CANOVI Variety Trials, and field tour by FarmFolk CityFolk.
The mental health of farmer's is intrinsically linked to the instability created by climate change. • AgSafe has some offerings, but there is limited counselling to AgSafe members.
Interested in emerging markets; what crops will be suitable in B.C. in 30-50 years? Support for emerging markets – make it scalable. Guidelines for developing production guides for emerging markets.
Support in establishing on-farm trials.
#1 issue is guaranteed availability.
Pair field events with BMP funding, along with funding to accommodate smaller producers too.
Production guides: Updated, printed copies with annual updates that can be replaced in the book. These printed annual updates should be available to all growers, not just those with memberships.
Wood Land Resource Manager program.
Cost-share programs are a good incentive to adopt new technologies.
More info needed about electric equipment to lower carbon emissions (what works and is practical).
Chipping programs for tree fruits renewal, rather than burning.
Average producer needs help with submitting applications and general help with computer skills. Most producers have an idea on how they would implement projects.
Learn from neighbours to the south; grazers; grain and cereal producers.
Link people to the right resources.

Process of permits for too lengthy to have work needed done in a timely manner.
Region needs to come together and collaborate to come up with solutions. Need government collaboration with Ministry of Forests, etc., there are too many silos.
Hands on, practical field events are high value.
How to connect applied systems at the farm level – how to bring that to a broader group? How to disseminate new information in a palatable way?
Diversification of crops and integration of animals onto the orchard.
Most First Nations ranchers are not BCCA members, so there is a lack of access to some programs.
Incentivize broader stewardship of wildlife habitat, etc.

Kootenay Boundary

Grand Forks (Open House)

- **November 28, 2023**
- **12:00 – 4:00 PM (PST)**

Cranbrook (Open House)

- **November 30, 2023**
- **12:00 – 4:00 PM (PST)**

Creston (Open House)

- **November 29, 2023**
- **12:00 – 4:00 PM (PST)**

Regional Priorities

1. **Water Supply and Management**
2. **Soil Health and Nutrient Management**
3. **Adapting to Extreme Weather**
4. **Managing Riparian and Grassland Habitats**

1. Water Supply and Management

Issues

Water Quality: • With dairy, using slough water is a concern. • Connection between drainage ditches and water quality.
Erickson Water System: • Changing practices won't affect cost. • Connecting new development and water users to costs for system. • Federal/Provincial responsibility.
"Can we keep the water we do have as clean as we can?"
There are other issues impacting water, not just agriculture.
Traditional focus was on getting fields dry – now looking at irrigation.
Influx of new farms, will it affect supply? • Package of info for new farms (realtors too?) about water access and rules.
How can we plan/have bigger water system managed to account for upcoming change?
Some AG groups still need fundamental irrigation.
Is there a parallel for something like proAction for other sectors to drive improvement? There is currently a gap.
Biggest concern is quantity of supply.
Fertigation – important component for tree fruit – field days and factsheets.
Flood Preparedness: • Is there any kind of plan on how to learn about this?

• Does AG in the valley want a better understanding of how the water levels are managed and factor into our own decisions.
• Diking – infrastructure needs money and improvement for preparedness.
• Still need irrigation education in the area
  ○ Variation in water use among growers.
  ○ Training, scheduling.
  ○ Extension should have repetition; similar irrigation stuff would be good.

Existing water allocations – how do we find space for new agriculture?
Principles that are Lacking: • Long-term planning and stewardship • If there was funding to pay for set asides of cropping that builds soil, would drive adoption. Farmer to farmer evidence will also help.
What are the types of on-farm water storage?
Knowledge to build up early season soil moisture? Is it worth it?
What about fall irrigation? How and when?
What are the local water supply patterns for new farmers?
Enforcement of unlicensed users and GLF licencing.
Practicality of underground drip systems (locally). • Canola • Soil types, how deep, worthwhile for hay/forage.
Big challenge is flooding and flood mitigation.

Solutions

Need proactive education about looming issues, not regulation.
Drought - Change priority around water orders/where food supply.
How to relay info about season and drought**:** • Helps plan out irrigation schedule. • How environmental conditions affect crops – timely so people can react in time. • Daily/weekly updates via e-mail.

During drought – how to curb inefficient use?
• Education to inform about how best to do this.
  ○ Like webinars, in-person network still relevant.
  ○ E-mail communications still the main basis.
  ○ Location should be less formal than REC.

For new farmers, more advertising (like through Facebook) would help get more information out about key things.
Cost effective/cost efficient workshops for irrigation – highlight pilots.
Weather stations.
Cost benefits of early irrigation.
Lethbridge Irrigation Provisions – RPH irrigation, New Way Irrigation, Oliver Irrigation.
On-farm irrigation scheduling/soil moisture meter.
Coordinate better with Columbia Basin Trust.
On-farm assessment to find efficiencies and improvements.
Woven Willows – take it from a concept to reality.

Need follow-up communications to help with delivery.
The KBFA model is a good starting point.
"What are you already doing that you'd want to show your neighbours?" • People need to see it works on a neighbour's farm, be able to see in person (as opposed to edited YouTube videos).
Benchmarking: • 20+ individuals share their individual data that gets aggregated, summarized to remove personally identifiable information.

2. Soil Health and Nutrient Management

Issues

"What do I feed? How do I do it?"
There is confusion over how and what to apply, and when is the right time.
Tree fruit: with fertigation trials or demonstrations, the farmers are clustered so field days with factsheets would work.
"With dryland farming, are there certain seeds that would work without adding synthetic fertilizer?"
Issue: sourcing organic amendments/inputs • Spent grains/mash from breweries as possible feedstock? • Some local ranchers make trips to get it for feed, soil amendments, and also composts it.
Drainage: • Using swales and other techniques to remove excess water. • Need to find sources of info from multiple sources of expertise. • "Who can we turn to, to get this kind of help?"
Challenge is pasture rejuvenation. Do practices from elsewhere work here? Localized knowledge like bale grazing – need the local data.

Solutions

Demonstrations, incentives to de-risk the producer demonstrators.
Incorporate economic analysis. E.g., at what point does this break even?
What varieties work for this region? Funding for growing corn, soybeans, and forage. • What are the best forage varieties for dryland agriculture?
Need more advanced projects to attract more advanced learners.
There should be a speaker series with three big names a year invited, advertised far in advance, that can cater to different audiences with different needs and preferences.
Sponsor a prize! (e.g., for the best corn crop)
Provide hot lunches and drinks at meetings.
Data sharing that is communicated in plain language, so it is accessible to everyone.
Soil amendments (manure, pulp mill residuals) vs synthetic fertilizer: does it make sense to use soil amendments?
Explain spreading costs, transportation costs, so farmers can better understand the whole picture.

Workshops to understand soil and forage analyses – supported by some funding to help with testing.
Tree fruit: best practices to fertigate, nutrient application, including the mechanics (backflow prevention, etc.), how to get caught up and keep up with new technology.
Education on companion crops (pest, wildlife management).
Programming for amending soil (fertilizer alternatives), including through use of cash crops.
Decision tools for crop planning (forage – cash crops). E.g., options for cover cropping based on previous crop, also for companion planting options.
Sap testing on variety of horticultural crops, including others.
Principle to keep in mind is that knowledge is valuable.
Considerations: • "We can't all make it in person."   ○ There should be a virtual option. • Need lots of pictures, photos, where people go (e.g., tractor dealership).
Soil Health: • Tree fruits – target opportunities during replant or when growers are replanting/renovating. • Organic matter additions, disease suppression. • Incorporation of animals/grazing. • Education on soil health, effects on crop quality, yield, etc. • Residual effects of herbicides in soil, effects on soil health, beneficial insects, biodiversity.
College-level courses, e.g., Soils 101, 200 – basic and intermediate levels.
Reduced tillage.
Practices should incorporate perennials, legumes, and cover crops.
Organic soil amendments like chicken manure and the cost-benefit of it. • Applies to tree fruits too, including manure, Ogogrow.
Tie knowledge transfer to money incentive, e.g., attend this workshop, get some money after attending.
Demonstrate: • No-Till • Compost • Rotational grazing or incorporating animals into crop rotation. E.g., using poultry for weed control. • Soil testing as a start to knowing what you have. • Selenium deficiencies, micronutrients – alternatives and synthetic fertilizers. • How do we break through to others and scale up? • Knowing where to go for local resources and case studies. • Help to de-risk trying out new practices. • How to get started, "soil assessments", what is the plant lacking? • Need for inputs/amendments to improve soil health/fertility.
Need for trials that prove the efficacy of different practices.
Access to experts: how to interpret soil tests and tell if practices are working – someone that goes farm-to-farm to provide advice.
Basic information needed:

• Fertilizer recommendations, seeds, etc. • Forage 101 analysis. • Hands-on learning. • Understanding cost/benefit of transporting these sources of nutrients/organic matter. • "We need people to guide us to this info, even if they don't have the answers."

3. Adapting to Extreme Weather

Issues

Wildfires • Evacuation planning, especially for animals - logistically challenging with moving animals (where and how). • Fire Smarting.
Flooding: • Dependence on the ID dam. • Risk of flooding in the flats (hogs, dairy, beef, cash crops). • Dredging of dikes. • Managing high volume freshets.
Challenges with high winds.
Extreme Heat: • Hogs and livestock need shade structures. • Impact on crops.
Drought: • Tapping into water tables.
Labour: • Keeping workers safe in extreme heat and smoke.
Adapting Existing Infrastructure: • High tunnels with shade cloth.
Pest & Pathogen Pressure: • What to do with infected pest residue?
Existing Programs: • Paperwork a challenge – needs to be Jan or Feb. • Funding for agri-tech is not necessarily what is needed. • Awareness of funding opportunities.
Navigating crop failure.
Planning for erratic/unpredictable growing conditions (Spring shoulder seasons) • Protected growing structures. • Shorter term crops (insurance crops) ready to quickly adapt to rising temperatures (e.g., risk of lettuce bolting).
Rising insurance costs.
Longer cold periods and later into Spring.
Program criteria is not taking into account the proper criteria.
BRMB – inspectors are not accessing properly.
Low precipitation during the hot and dry summers.

Changes in plant communities:
• South/southwest slopes are drier and hotter now.
  ○ Fitted in with invasive or less desirable species (e.g., tumble mustard).
  ○ Plant varieties (valuable ones) that are suited to fill the niche – crested wheatgrass has done well.
  ○ Barrier is a lack of knowledge on variety among professionals that make decisions on range.

Old Kimberley Airport ecosystem restoration – outcomes include roads and landings filled with quackgrass, which is a fire risk.
Unused agricultural land increases risk for drought.

Solutions

Exploring adapting crops to changing growing conditions.
Prescribed burning on private land and protecting adjacent land (education, resources).
Fire Smarting.
Evacuation planning for farms.
Training for on-farm research adapting to extreme heat.
Creation of group/peer group with support from extension agent for long-term project (annual veg focus); farmers gain skills to execute future projects.
Demonstrating/determining the value of biodiversity, soil health, other ”BMPs” on crop resilience (i.e., its ability to withstand extreme temperatures).
Auditing biodiversity and ecosystem services to determine impact on bottom line and prioritize BMPs for adoption. • Need to be able to describe the impact of BMP program (need measurable data) for CBT and Ministry. • Farmers also need to know that there is a legitimate, positive impact (data) to invest in BMPs. • Regionally appropriate adaptations. • Apply across crop types. • Develop user-friendly ecosystem audit tools (accessible to CBT).   ○ Trying to become more farm specific. • Develop a baseline through multi-year assessments of farms in our region to create a metric/baseline of ecosystem services. • Use data generated in other regions for corroborations. • Measurable data may open the door for other funding sources.
Fogging/Misting livestock and staff with misting sprinklers.
Shifting to electric equipment (cooler to operate, silent, cuts down on servicing).
Make it fun for farmers to “level up” on-farm practices.
Possibility for CBT and the Province to work together on self-assessment tool.
Need to understand which BMPs have high impact (and regionally specific).
Farmers working in the dark without annual check-ups and baseline comparisons.
Hotline for support before and during extreme heat events.
Broader ecosystems service programming.
Cost benefit/production.

IAF System.
Different types of poisons – outlining it, information, feed store/suppliers.
Local representation – see portal first.
Set up open specialist calls for the region.
More funding for CO's.
1-on-1 meetings are more accessible – bring in specialists and peer support.
Stockyard/bear fencing.
Accountability on funding.
Farmgate Plus – based on hanging weight vs live weight.
Feed store fertilizer – input and supplier.
Controlled growing as a response to extreme weather – but it will take more energy if the summer is very hot.
Weather data would help, especially having more specific heat units.
Increased public awareness of the issue – suggest holding a forum to inform other decision makers.
Better access to what others are doing, e.g., Logan (Utah) experiment on grass and varieties.
Usage of silvopasture to increase shade.
Working group for controlled environment.
Pilot of grazing for fine fuels – collars would make a huge difference in ability to do this.
Virtual farming: reduce reliance on farming/replacing farming.
Education of the public to recognize the benefit of fuel reduction for communities.
Share information about where/how to focus grazing.
For drought, there is inconsistency on how water restrictions are enforced.
There needs to be better channels of communication for drought and enforcement: earlier in the season, more proactive, and don't pit the public against Ag.
Use straw as mulch for vegetables.
Vegetables can benefit from weeds and moisture conservation.
Wildfire preparedness, e.g., fine fuel reduction, intensive cattle grazing and electric collars, extending pilots, overcoming tech challenges with cell towers.

4. Managing Riparian and Grassland Habitats

Issues & Solutions

Natural management vs cultivated acres.
Cow management – producer culture/education.
Grassland protection – rotational grazing and different grazing management.
"Not the cow, but the how." • Management of livestock. • Human health connection. • Public, producer and consumer. • First Nation collaboration.
Regen: • Crop rotation. • Local research.

• Soil testing (measurements) • Cost share. • Carbon sequestration program.
Multi-species drought tolerant grasslands and perennial grains.
Recommendations for books, podcasts, and those advancing eco-agriculture.
Field trials – grass mixes for flood plains.
Local educators or connections with the USA.
Grasslands and soil health – private and crown.
Grasslands project – off stream watering, fencing.
Research on flooding and river changes.
Elk management trial: • Pull from current/past data. • Private and crop land. • Samples (soil, forage). • Report, fact sheet.
Rangeland collaboration.

Additional Ideas

Note: The following items are extension-specific takeaways that were identified for the Kootenay-Boundary, unlike the other regions where *Additional Ideas* represents feedback from participants that did not fall under the topic of extension.

Dial-an-Expert option for one-on-one conversations; someone to visit on-site and provide advice and help calibrate equipment. • Information on who to contact needs to be circulated and pushed out to farmers.
Solar energy – feasibility study, ROI, funding for it.

Central South Interior

Kamloops (Workshops)

- **November 21, 2023**
- **1:00 – 5:00 PM (PST)**

Regional Priorities

1. **Water Sustainability and Storage**
2. **Soil Health Management**
3. **Management for Biodiversity/Habitat**
4. **Nutrient Management Practices**
5. **Crop Selection for Resilience**

1. Water Sustainability and Storage

Issues & Solutions

	Votes
A) Enhanced landscape use and management of water for agriculture.	22
• Future water availability – how to increase awareness of future water shortage?	0
B) Water storage options and use demonstrations: factsheet, workshop, expert for pathfinding.	22
• More aggressive project and implementation added.	5
• Water storage and reduced flooding capture higher points in the watershed.	4
• Large scale and small-scale storage.	0
• Interaction with soil health and structure.	0
• Regional based workshops.	0
• Producer/locality specifics for storage? Also, information on who owns the collected and stored water.	0
• Economic value and impacts. Cost to maintain and upkeep – plus, who inspects?	0
C) Soil moisture triggered irrigation: moisture sensor trial/demo, decision-making tools.	10
• Important to curb those who over-water.	0

Additional Ideas

	Votes
Water: • Decision-making tools	0

○ Based on region ○ Growing and habitat production goals ▪ Biodiversity ▪ Water Use ▪ Erosion Control	
Soil Moisture Trigger Irrigation: • Incorporate plant water status in relation to soil moisture. • Soil type/texture and relationship with soil moisture. • Site vs region data input. • A. Peterson soil moisture demo days. • Commodity based. • Farmwest data explanation "webinar."	0
Water Storage: • Funding associated and options. • Economic value of building "large" irrigation districts. • Crop changes based on increasing water availability. • GAP analysis on water storage. • Workshop/factsheet on the WSA – MoF/WLRS workshops.	0
Ability for producers to access moisture tools in emergency times – pressure bombs, leaf seasons (grapes).	0

2. Soil Health Management

Issues

	Votes
Where do biologicals fit in?	0
Understand plant uptake on soil, along with crop types.	0
Economics of changing soil health year-after-year.	0
Link to economics.	0
Incentivizing maintaining BMP on farm.	0
Capture soil c. on rangeland through grazing.	0
Focus on economics to be financially viable.	0

Solutions

	Votes
A) Soils 101: workshop, soil testing factsheet	14
• Soil test training ○ How to test ○ How to read ○ How to implement ○ 201 + 301 progression	
• CARO Analytical Services – Alberta ○ Showcase how BMP can positively impact plant health. ○ Soil biology	
• On farm demo training to capture change over seasons.	5

• Peer to peer "data collection at workshop sites for long term" • Pull together soil research and practices from other jurisdictions. • Have AF pull industry to variety trial table then act as referee. • Fund transition to better practices and incentivize maintaining good practices.	

3. Management for Biodiversity/Habitat

Issues

	Votes
Elk Conflict: • Limited entry. • Counts. • Liaison with FOR/WLRS. • Damage fencing by elk. • Forcing compromised practices. • Take bigger risk due to elk induced loss. • Linked issues – predators follow elk and target cattle. • Disease crossover. • Damage to wheel lines.	1
Assist/take on the licencing/navigating the regions.	1
Forages and storage hay: • Share funding needed, and/or materials with production support.	0
Use of pesticides and impact on biodiversity. Forestry use and its impact on landscapes – influence on wildlife behaviour, impact on farms via refugia found on farms.	0
Small economic relationship- with investment in biodiversity/habitat.	0
Producer cost for greater benefit.	0
Price put on habitat; non-productive land not feasible (examples exist).	0
Increase funding for those pieces providing ecosystem services – incentives for adoption.	0

Additional Ideas

	Votes
A) Assessing biodiversity impact through crop strips or wildflower buffers on field edges: Field project.	4

• Interactive software (access tests, pilots, workshops)
  ○ Info specific to the region
  ○ Info that has been applied to the region	

• Mulching, no till/low till, above ground plan.	
• Diversity influence below and above ground.	
• Factsheet/flow charts ○ BMPs	

○ Diversity ○ Public good ○ Economics	
• Situational and scale	
• Many opportunities at the local level – e.g., cover crops	
• Microbial/soil level	
• A lot of tools for support – lack of community awareness; more portals to bring info together.	
• Also, diversity in cropping; agronomic diversity; food security, economic resiliency; demo; shorter term.	
• Funding for pollinator habitat (interest in)	1
B) Integrated Pest Management (IPM): Workshops for each commodity, factsheets	0
• Decrease the number of pesticides available/registered in vegetable production: ○ IPM ○ Forecast head of time, when pesticides will be available	
• IPM: ○ Information that is out there. ○ Commodity specific.	
• Insight would be beneficial prior to/in advance of formal list. Information needs to be in real time – newsletters, other communications.	

Solutions

	Votes
Connect noxious weed management with rotational grazing – intensive, weed specific.	1
Collaborate with neighbours; regionality is highly important. Builds networks and peer community; see other practices and adoption.	0
Bee friendly farming; native pollinators; partnership within Canada and the US.	0
Local demos on implementation; field tour of existing operations.	0
Dry forest; burning back on landscape.	0
FireSmart around property: • Support for program • Approved in July, but only 3 local assessors. • FireSmart professionals enable those with expertise to be on qualified list; involving Indigenous groups.	0
Liaison body that understands farming, biodiversity, and riparian areas. • Benefit to consumers provided by AG. • Translation challenges and benefits to society.	0
Noxious weed management: • Central and South Interior • Private land	0

• Money and awareness are issues – needs consistent funding. • Funding timing – dedicated funds throughout the growing season.	

4. Nutrient Management Practices

Issues

	Votes
Phosphorus management in P-affected areas (Shuswap)	0

Additional Ideas

	Votes
A) Variable rate nutrient application technology: factsheet	4
• Soil mapping cost-share on detailed soils on farm.	
• Incorporate plant growth.	
• Field day/workshop – how to do the math on small/large scale.	
B) Compost operations, techniques, considerations, tools and calculators; field day	3
• Biological consideration of using compost – other amendments (soil health)	
• Economic breakdown – own compost vs buying.	
C) Know your manures: The Do's and Don'ts of manures in organic and small lot operations, pros and cons of different manures, calculations for your crop and fields: factsheet, workshop.	2
• How to test manure and where to interpret it? (Handling samples)	

Solutions

	Votes
Foliar analysis "how to" • Interpreting results • Which labs – soil health integrator	1
Cross-sector sharing – e.g., between dairy to beef, garden, etc.	0
Grazing for nutrient management.	0
How to manage nutrients during extreme weather?	0
Basic infrastructure of soil and nutrient management • How to use tools available? • Expert advice?	0
Cost-shared soil sampling program that is shared regionally.	0
Economics indirect models.	0
Crop rotation to help the soil. Matching nutrient management/needs for planting of forage establishment. Rotation to meet this?	0
Economics of replanting, average nutrient management concerns – study/field trials.	0

5. Crop Selection for Resilience

Issues

	Votes
A) Comparing the benefits of intercropping species managing for biodiversity and feed (including economics): field trial/demo.	7
B) Find seed company factsheets and reference on AF website or industry sites.	1
C) Feasibility, with climate change – market opportunities of alternative crops (e.g., dry beans, hazelnuts).	0
D) Use older species, which are adapted to our regions, work well? Then raise awareness.	0
E) App development – like AB's Bluebook Crop Guide, France-Livestock, or Netherlands-hortic.	0

Solutions

	Votes
A) Comparing the benefits of intercropping species managing for biodiversity and feed (including economics): field trial/demo.	7
• Where is the product going? ○ Processing, GHG for trucking, transport infrastructure.	1
• Do better job-sharing B.C. research.	1
• Intercropping vs. managing for diversity.	1
• Enhanced sharing of climate models so farmers can make decisions (e.g., FFD, extreme weather, data sharing).	0
• Equipment costs and contract services.	0
• Labour considerations.	0
• Potential for cash cropping the other species: can be done, consider demos or webinars of success stories.	0
• Cross reference with external groups, universities, or other provinces – even equipment costs.	0
• Market projections to inform crop decisions.	0
• Well-drained soils or rain in fall/spring – which apps work in that scenario?	0
• Pay the collaborator farmer to participate.	0
• Climate model decision tool – water availability, FFD (like U-Pick Forage Tool), zones.	0
• Provide funding to those who are already doing this practice.	0
• Existing websites can be convoluted and hard to find stuff – Google is better.	0
• Experts in the field, government supplied. Have experts available to share new ideas, suggest solutions.	0

• What if those using cover crops, but want funds to use different cover crops as a cash crop?	0
• BC should add economics in report out.	0
• Publish what everyone is doing, even farmers, including crop performance.	0
• AB publishes species/research. Rely on seed sales – persons.	0
• Grow annual, chop, manure, perennial.	0
• Water needs for each spp.	0

Additional Ideas

	Votes
Incentivize BMPs by prioritizing water access for producers who are practicing BMPs and increasing the water holding capacity of soils, reducing runoff and erosion, increasing biodiversity, improving water quality, etc.	1
Managing flea-beetle in vegetable production (connected with increasing spring & summer temperatures).	0
Resources to execute EFPs & BMPs.	0

Highway 16 – North Cariboo

Smithers (Open House)

- **November 6, 2023**
- **4:00 – 8:00 PM (PST)**

McBride (Workshop)

- **November 8, 2023**
- **4:00 – 8:00 PM (PST)**

Vanderhoof (Open House)

- **November 7, 2023**
- **4:00 – 8:00 PM (PST)**

Quesnel (Open House)

- **November 9, 2023**
- **4:00 – 8:00 PM (PST)**

Regional Priorities

1. **Soil Health Management**
2. **Water Storage and Development**
3. **Nutrient Management Best Practices**
4. **Grazing Management Systems**
5. **Crop Selection for Resilience**

1. Soil Health Management

Issues & Solutions

pH & liming: ROI
Sheep wool?
Fly Ash trial
Regional amendment availability/inventory
Consistent MAF soil sampling and follow-up program, work with producer directly on farm
Soil Health assessment tool
Soil Health triangle tool and resources & interpretation guide: Physical, chemical biological
What is soil biome?
Creating soil organic matter
Regional compost facility to produce material for sale
Local soil test program embedded in schools, colleges & libraries
Summer student as part of soil health team
Understanding economics of soil health: how to calculate
Plants with large root mass: warm season viable in this Region?
Is zero till the best practice to build healthy soil for rejuvenating pastures?
How do I propagate/introduce worms?
Develop see for production and longevity and not on how much seed it will produce per acre
Field trial water retention testing, percolation test

Trials on soil amendments, ash, shavings & wood fiber
Long-term research on high/low fertilizer rates to determine overall cost benefit
Research already exists: collect & make easily available. Utilize Regional demo plots accompanied by Field Days to connect producers
PG high acidity-wood ash, bale grazing increase OM-use transects to see differences and compare bale grazed areas to non-bale grazed. Test for microbiology, OM infiltration, porosity
Interpretation of soil analysis: Nutrient maps: management options: How and when to plant
Can you grow more by improving soil health?
Alternative to ploughing?
Can you increase soil organic matter by 1% with cell grazing, cover crops, multi-species, increased infiltration rates?
Is aerating soils worthwhile?
Explain components of soil health: CEC, SOM, pH
Compare farms to each other, no till vs. till. Biological composition, Hillside & Mackin
Improve understanding of biological quality: OM, pH, CEC
Perennial rye grasses that grow shorter between rows & doesn't creep
Too aggressive, green manure, lessons learned with too much tillage, different cover crops, soil triangle, biology
Lower pH with sulfur by 1.0, are yield increased? Cost?
Balancing soil? Yield, nutritive density, protein, starch, soil balance. K:Mg ratios
Soil Health & Biology Workshop & Tillage Practices
Fly Ash: What we know so far: Factsheet &/or Trial
Soil Health and Biology Workshop & Tillage Practices
Soil Health: Workshop and Field Day
How do you build soil organic matter in the North: Covered by Jessee Mathies Modules that build upon each other.

2. Water Storage and Development

Issues & Solutions

Info for licences required for stock watering on fields
How to plan/use best sources
Using swales on contour
Keyline/chisel plow water infiltration
Large dugout design: ROI
Solar water pump trials
Portable watering schemes
How to switch over a system from diesel
Cost of water developments
Water storage tanks bulk purchase
Comparison of different water systems: ROI and up-front cost
BCAC video: How to build a dugout
Is there water available for irritation in Nechako?

Build more dams: Raise high water
C4 trial in drought year: Brendan's trial and field tour
Soil health: What it is, means, how to measure and manage
Farmer led monthly Field Days: Show one good and one bad thing, work cooperatively to solve
Weather stations need repair and calibration: Wayne Ray, Solecki & Butch Ruiter
Why grass wasn't growing back as well as previously
How-to economics: Get water when rotationally graze, solar waterers, cistern tank
Use beavers: How to encourage them to stay in area
Tank storage pump: Gravity solar mobile unite
Need dugout, good habitat, contribute to water table, do without license, catch water under certain size
This year highlighted need for more water storage: a tour of existing storage sites so producers can see the possibilities and learn about the authorization process from other producers
Info on practice to encourage water absorption: leaf residue, silvopasture. Design systems with less overland flow, retain water, beaver analog dams. Reintroduce willow alder, shading, less evap-trans, withstand high flows, retain water
Collecting roof water
Authorizing a dugout
Difficult to build soil health without water
Water is running out: Look at improving use, forestry impact
How to get water: Not full cost to farmer. Help build cisterns, dams and dugouts
Farm storage is concerning as it takes land out of production
Need groundwater and aquifer mapping
Cistern dugout in silt/sandy silt: Community based water schemes
Importance of water to agriculture needs to be pushed to political level in government
Most efficient water use, water is limited, how much can particular soil produce?
Agriculture water allocation
Surface Water
Water storage with agroforestry-shelterbelts, riparian
Monthly Farmer Field Days
Developing on-farm stock watering, an authorizations perspective field event, winter feeding
Quantifying crop demands-evaporation and transpiration, plant physiology, measuring soil moisture availability.

3. Nutrient Management Practices

Issues & Solutions

Permaculture practices
Bio-solids
Regional composting
Fall fertilizing: Losses?

Agronomic optimum yield different than economic optimum yield.
Sheep wool?
Roller crimper: Fall rye
Research already exists, collect and make easily available, utilize regional demonstration plots accompanied by Field Days to connect producers
Amendments and cost efficiency and optimal crop productivity
Nutrients demands of crop and impacts on soil
Soil testing services - nutrient management
Critical timing of nutrient application
Forest waste and manure- UBC lab
Weather stations to identify right time to apply critical nutrients
Pulp sludge, wood ash, fly ash, ground drywall and manure- info on field amendments
Cow bedding-nutrient composition
Mineralization project based on different manures
Composting facility between Williams Lake and Quesnel
Wildfire fighting costs are extreme: WUI Fuel management-burn manure and fiber, cheaper than fighting fires
Weather stations in region
Fine fuel management in WUI trees-bedding+ manure-soil-trees
P leading from cattle operation is biggest concern
More education on nutrients, organic, inorganic, release under different timing, climate, P buildup
Balance micro-nutrient, soil testing tissue
Carbon tree-bedding-soil-tree pellet go to Japan
Brix refractometer for soil testing, tissue testing
Is this embedded in other projects, mineralization of manures?
Soil Health Workshop & Field Day

4. Grazing Management Systems

Issues & Solutions

Rotational grazing info, when to move cows
Electric fence info
Full grazing hayfields, harmful?
Virtual fencing trial
Forage chicory
How to calculate carrying capacity
Ranching for profit/mentorship
Enhanced options for soil testing
Economics ROI of these practices
Weed management through managed grazing. Winter feeding on pasture to increase nutrients
Economics of grazing brassicas, number of grains, soil profile
Seed seems to run East-West, hard to get North-South seed supply going

Livestock distribution with water development.
Yield does not equal profit
Add legume seed to mineral as seeding method, Alberta trial, reduce seed cost, summer feed on perennial pasture
Understanding grazing principles, economics of grazing practices, ROI on grain and forage
Tumble wheel demo for e-fence
Jaren Reimer on-farm demo and economics tracking
Funding for more water sources, encourage rotational grazing
Chicory: can it extend grazing, add calcium, DLF seeds choice chicory -2 degrees
Brisket tags fencing with cell service, less fencing moving cattle
Greater biology: Life extends the grazing season, soil health=extended grazing season
Producer led Field Days: Demo fencing methods, paddock size, cycle time, water systems, sick anial treatment
Pasture renovation-no till projects, reintroduce legumes on degraded pastures, silvopasture: examples from previous research-compare C credit planted pasture, compare after grown back.
Cost-benefit of overgrazing compared to leaving carry over. Bale grazing-extending grazing season, increase in OM, compare gains on calves. Don't do trails, producer panel at knowledge transfer events
ROI bale grazing
Swarth grazing in Northern climate
Big roots-graze-hayfield
Wildfire fuel management
Pasture design and water in paddocks
Silvopasture on smaller, diversified farms, biodiversity, shelter belts-biodiversity bmp, does it fit here?
Soil and Plant Physiology - Manage for windows for grazing, harvest, and rest
Methods of interseeding
How to integrate silvopasture principles into a livestock operation? What are the steps, tools, resources? Can I co-manage with Crown Range and forest tenures?

5. Crop Selection for Resilience

Issues & Solutions

Yellow alfalfa and trefoil trial
Alfalfa persistence, variety
Manchar brome, Carelton brome
Smooth brome trials
Broadcast seeding on snow
Winter barley for fall plant
Common garden trials
Drought tolerant forages
Native grasses
Plant physiology/heat stress
Forage chicory

Nitrogen source cover crops
Forage Variety trials
Poly-crops, plant diversity
Long term variety trials, protected elk pawing
BCRC video style, describe production Brix measurement
Hybrid rye tests
Warm season grass trials
Access to heritage grain varieties: height and are better for feeding
Chicory
Resilient horticulture plant and seed varieties, year-round greenhouses for produce and native species, solar powered greenhouses
Need to develop forage and field crops that will be adapted to change, crops tolerant of drought and hotter temperatures. There are existing crops that may work well here
Trials with annuals on acidic soils, sorghum, corn, new varieties of legumes on farm demos, KT PG very challenging acidic soils
Demonstrations with fall rye, how do you re-establish grass, effective in rotation to manage hawkweed
Overseeding
Fall seeding / springs are too wet
Vegetables suited to our climate: What can we grow that we are not already growing
Soil test to determine which crops to grow
Multiyear forage plots to take into account climate variation
Common garden across the Region
Use BC eco seed coop farmer to farmer network to compare experience, share seeds specific to region
Sweet lupines, faba, low tannins different heat units for dairy ration
Hardy shoulder season crops: peas, fall rye, triticale, faba
OPB cover crops, winter kills, rye is tricky, weed problems
Dryland vegetable farming prairies crop selection
Early, late maturing wheat or barley, sunlight factors, Lethbridge, fall rye and triticale
Legume cover crops: funding and trials
Common Field - How to grow cover crops in the North? Why**?**
Common field, what parameters are we measuring, perennials, various site prep, searching for forage have wide climatic adaptability, elasticity
Warm season trial on Community Pasture, on different soils, replicated, same start date
Weed control (hawkweed) with fall rye
Cover Crops

Additional Ideas

How can we produce fertilizer closer?
Who owns the water that gets stored?
Will the captured water be taken away?
How can Alcan give water back?
Yield is not the same as profit!

We need to change our perceptions on profit and yield.
Are there Regional/Northern sources of protein feed supplement?
Fish offal? Kelp? Is it affordable or available? Quantity for Livestock: Poultry/dairy use
Need for local cheaper dogfood for livestock dogs
Ranching for profit vs. mentorship
Producers were asked: (Smithers) What strange plant or animal behavior did you see this summer/fall? • I had chestnuts on my tree! • Thistles died in drought • Aggressive bears not afraid of dogs

Peace

Farmington (Workshop)

- **November 23, 2023**
- **10:00 AM – 4:00 PM (PST)**

Regional Priorities

1. **Soil Health Management**
2. **Water Storage and Development**
3. **Sustainable Water Management**
4. **Management for Biodiversity/Habitat Health**
5. **Managing Extreme Precipitation**

1. Soil Health Management

Issues

Managing soil pH with alternative amendments: ex. Lime, humic acids: Impacts on chemical, physical, properties, yield economics
Integration of perennial legumes into annual cropping systems
Timing cleared high organic soil into sustainable production
Targeted tillage
Capitalizing on existing projects and focusing on the extension of knowledge
Knowledge data base

Solutions

	Votes
Use of wood ash for pH adjustment	6
Extension and training material capturing existing and past projects	4
Perennial legumes in annuals	4
Prescribed farming training sessions: prescribed fire training	3
Study on best management practices for organic soil	2
Comparing no-till vs. targeted till	2
Building a depository for farmer experience	1
Livestock: crop integration support tool	1
Comparing no-till vs. targeted till	1

2. Water Storage and Development

Issues

How to protect dugouts: natural and medicinal plants: PFRA upcycle data: different water systems: seasonal: FAQ for Oil & Gas: PFRA upcycle the data: FN collaborations: off stream/solar systems
Strategies for dams
Need for incentive programs for storage on farm: Regional specific: Risk-free loan options
Applied research needed
WSA education and clarification need: delivered by Neutral organization: Local educators
Implications on food security
Need for public/producer collaborations with water storage and fish management: Public education
Wildfire prevention: livestock specific
Need for dug out mapping: Southern Saskatchewan examples
Need for water shed management education
Need for legal information specific to regions
Need for workshops: 5W's Who What Where When Why
Need for water storage calculator
Need for education on surface water vs. ground water

Solutions

	Votes
Dug out education: Fact sheets	3
Farm Tours	2
Surface Water verses Ground Water Education	2
Public education (fish)	1
WSA education	0

3. Sustainable Water Management

Issues

Need for asset mapping
WSA: education and clarification: delivered by neutral organization i.e. BCCA, University/College
Link to food security
Need for water management 101: all commodities both workshop and self-directed
Need for a water mentorship program: Grant writing and on farm
Adjusting government contribution in BMP/EFP
Need for information on whether dams impact weather patterns: • Cross reference prior years info vs. current • Research/data collection
Need for education on erosion
Education on glacial storage: data and understanding

Solutions

	Votes
Applied Research: Farmer led trials and combination of other topics	4
Irrigation: Education License issues	3
WSA Education	2
Mentorship Program	1
Weather Systems	1
Data Sharing	1
Small weather cycle: Data collection on farm trial	1

4. Management for Biodiversity/Habitat

Issues

Wildlife: lure crop
Concerns with elk: elk fence under EPP/BMP
Creating habitat without impacting bottom-line
Balanced ecosystems: Managing for one species doesn't work
Symbiotic relationships between animals
Pros and cons based on location:
• Beave dam development
• High rain run off: damns washout then you wait for beavers
• Education knowledge /sharing
• HWY 16 example: There is a association
Compensation for crop loss due to wildlife

Solutions

	Votes
Beaver dams: Knowledge transfer and education	6
Crop rotations including legumes into grain crop production	4
Plant species books (Northern specific): App or multi-platform/workshops	3
More farm tours for idea generation	3
Comparative study of yield over time: What's impacting the output variation	4
Tool to show increasing biodiversity leads to financial gains for producers for more than just 1 commodity	3
Habitat enhancement	5
Regional Information Hub • Awareness of bee habitats • What do beneficial insects need so we can maintain pollinators throughout seasons	0

Additional Ideas

Mapping and drones: where is the wildlife moving: for large scale producers
Rock piles and edge of riparian areas: awareness
More information about climate change projections would be helpful
More AF staff but not at Head Office
Bring in grant writer to help producers apply for various funding source**s**/programs
Make your programs easier to access
Stop offloading to other agencies/groups
More farmer-to-farmer info sharing on various platforms: Region specific

5. Managing Extreme Precipitation

Issues

Need for addressing infiltration on fields: amending soil
Education and demos on sub-soiling
Need to leverage and capture local knowledge
Understanding the broader circular economy: impacts on all areas
Difference between South and North: what works where

Solutions

	Votes
Water Infiltration on fields: • Soil amendments (manure, lime, ash) • Crops (radish) cover crop, inter-cropping • Livestock	11
Subsoiling: • Demos on farms • Summarize local knowledge	7
On-farm water planning: • Field maps to identify less productive areas • Drainage & water storage plans on farms	4
Landscape level planning for water management • o/g, forestry, agriculture: collaborative understanding of water movements for planning	3
Big-picture circular economy: • Connections/collaboration with other Regions of BC (i.e. feed South/manure North)	0

Appendix III – Digital Survey Responses

Regional Extension Program: Questionnaire

Q1 Tell us about you and your operation.What are the primary agricultural product(s) you produce?

Answered: 75 Skipped: 0

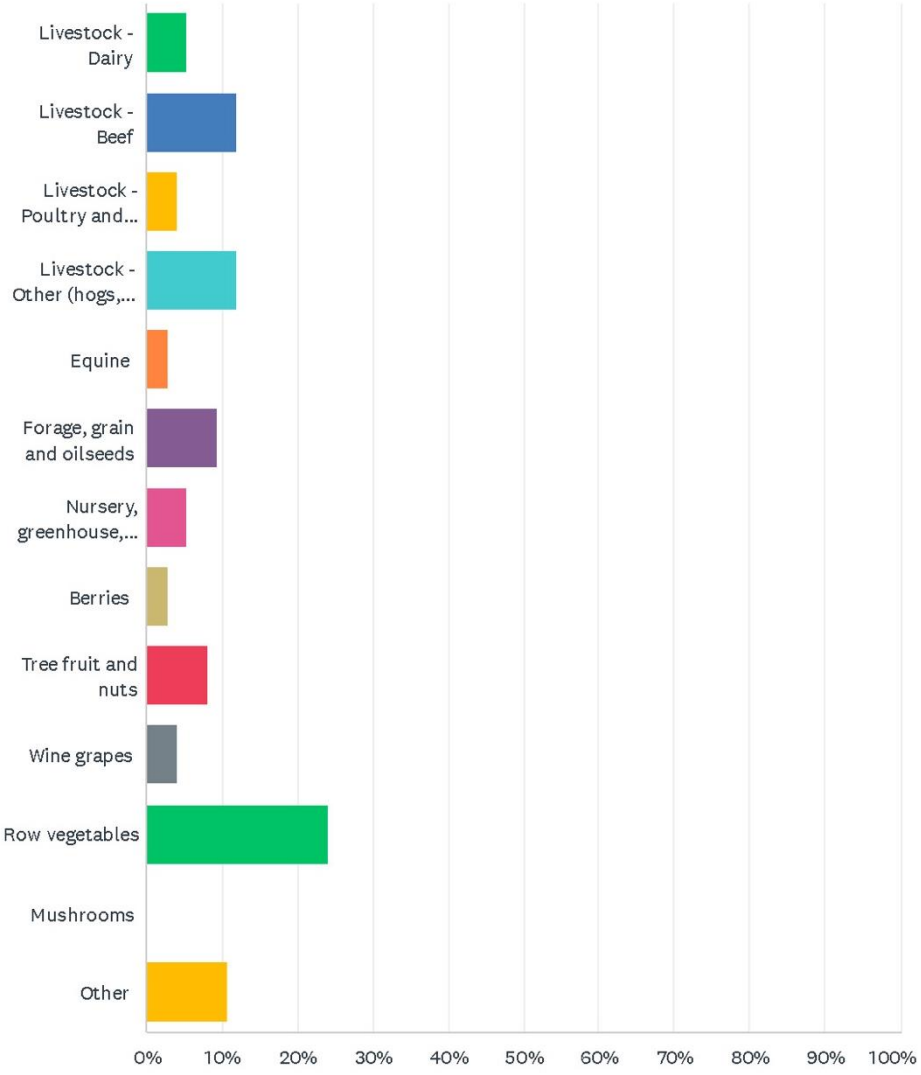


Figure 36 - Survey Results (Page 1)

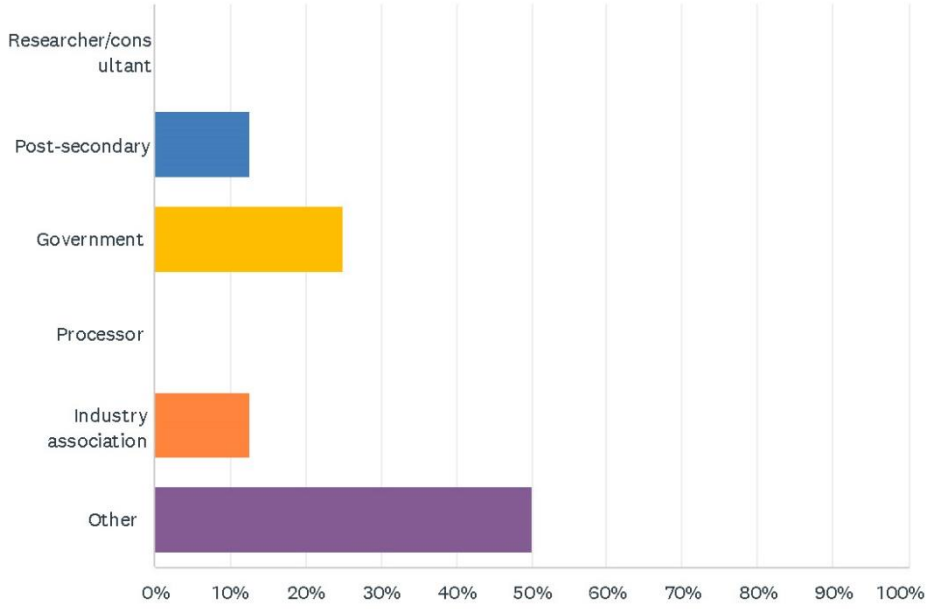
ANSWER CHOICES	RESPONSES	
Livestock - Dairy	5.33%	4
Livestock - Beef	12.00%	9
Livestock - Poultry and eggs (including breeder)	4.00%	3
Livestock - Other (hogs, goats, sheep, other)	12.00%	9
Equine	2.67%	2
Forage, grain and oilseeds	9.33%	7
Nursery, greenhouse, floriculture, vertical growing	5.33%	4
Berries	2.67%	2
Tree fruit and nuts	8.00%	6
Wine grapes	4.00%	3
Row vegetables	24.00%	18
Mushrooms	0.00%	0
Other	10.67%	8
TOTAL		75

Figure 37 - Survey Results (Page 2)

Regional Extension Program: Questionnaire

Q2 If you are not a primary producer, please select the most appropriate designation

Answered: 8 Skipped: 67



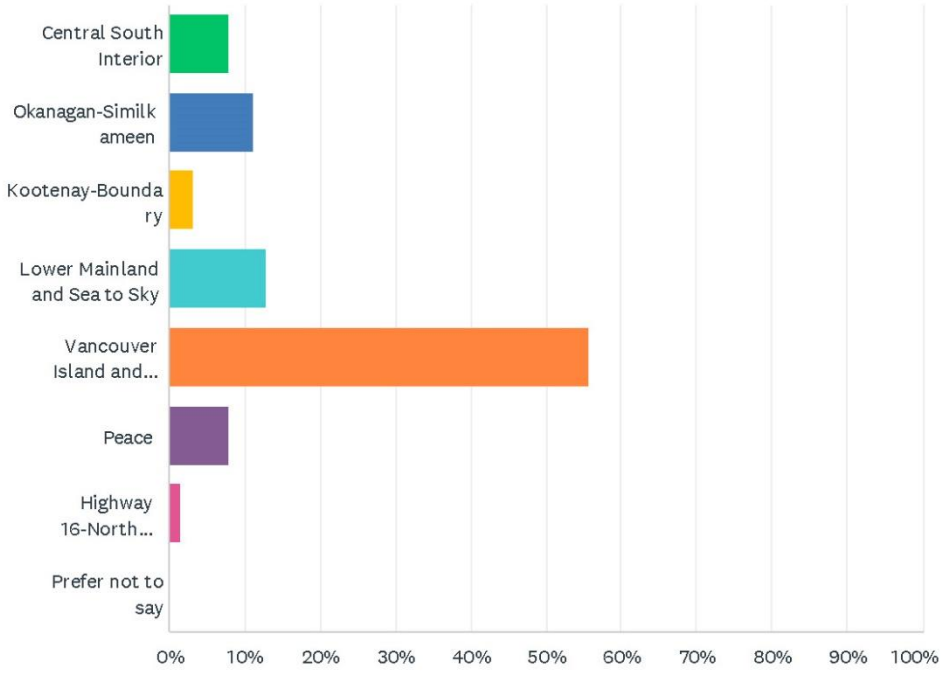
ANSWER CHOICES	RESPONSES	
Researcher/consultant	0.00%	0
Post-secondary	12.50%	1
Government	25.00%	2
Processor	0.00%	0
Industry association	12.50%	1
Other	50.00%	4
TOTAL		8

Figure 38 - Survey Results (Page 3)

Regional Extension Program: Questionnaire

Q4 What region do you farm in? Please refer to the map.

Answered: 63 Skipped: 12



ANSWER CHOICES	RESPONSES	
Central South Interior	7.94%	5
Okanagan-Similkameen	11.11%	7
Kootenay-Boundary	3.17%	2
Lower Mainland and Sea to Sky	12.70%	8
Vancouver Island and South Coast	55.56%	35
Peace	7.94%	5
Highway 16-North Cariboo	1.59%	1
Prefer not to say	0.00%	0
TOTAL		63

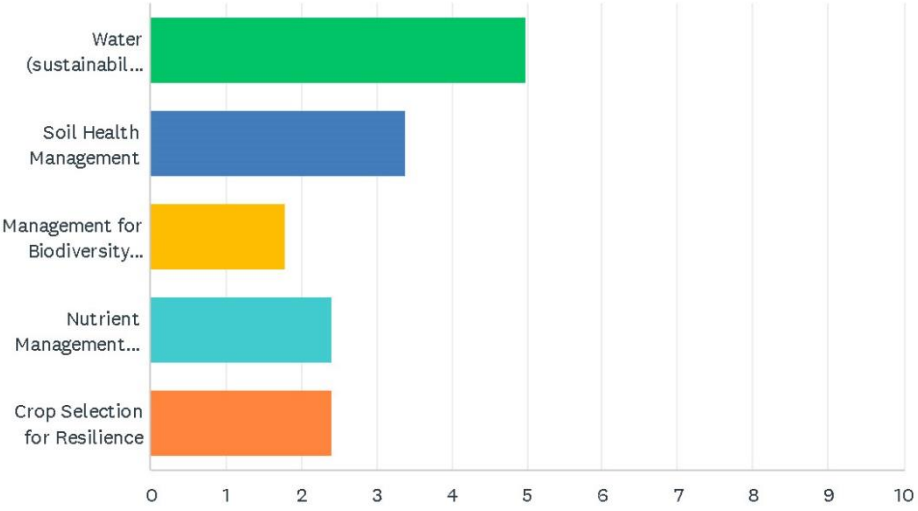
Figure 39 - Survey Results (Page 4)

Regional Extension Program: Questionnaire

Central South Interior

Q5 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (5) to your own operation.

Answered: 5 Skipped: 70



	1	2	3	4	5	TOTAL	SCORE
Water (sustainability and storage)	100.00% 5	0.00% 0	0.00% 0	0.00% 0	0.00% 0	5	5.00
Soil Health Management	0.00% 0	60.00% 3	20.00% 1	20.00% 1	0.00% 0	5	3.40
Management for Biodiversity/Habitat	0.00% 0	0.00% 0	40.00% 2	0.00% 0	60.00% 3	5	1.80
Nutrient Management Practices	0.00% 0	20.00% 1	0.00% 0	80.00% 4	0.00% 0	5	2.40
Crop Selection for Resilience	0.00% 0	20.00% 1	40.00% 2	0.00% 0	40.00% 2	5	2.40

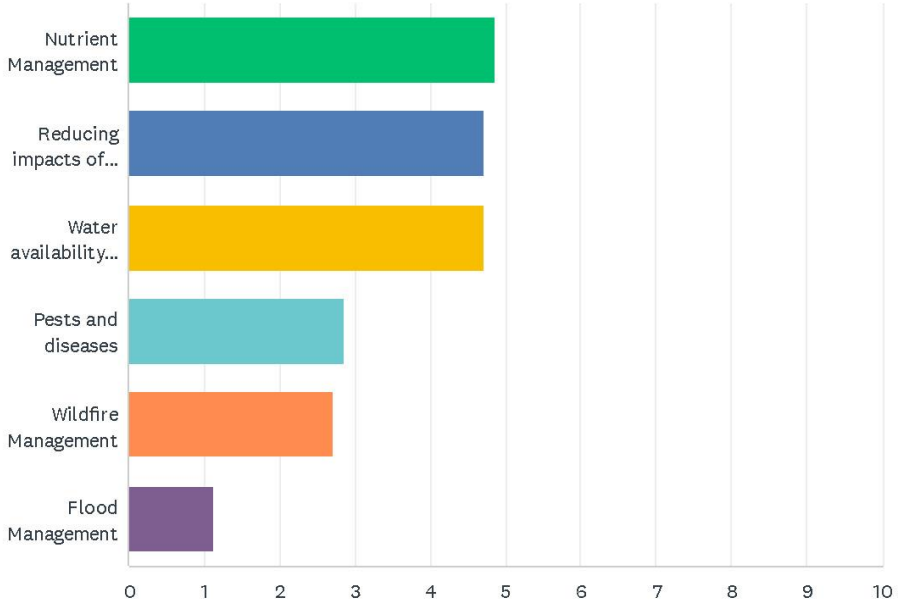
Figure 40 - Survey Results (Page 5)

Regional Extension Program: Questionnaire

Okanagan-Similkameen

Q6 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (6) to your own operation.

Answered: 7 Skipped: 68



	1	2	3	4	5	6	TOTAL	SCORE
Nutrient Management	42.86% 3	14.29% 1	28.57% 2	14.29% 1	0.00% 0	0.00% 0	7	4.86
Reducing impacts of extreme temperature	14.29% 1	42.86% 3	42.86% 3	0.00% 0	0.00% 0	0.00% 0	7	4.71
Water availability and management	28.57% 2	42.86% 3	0.00% 0	28.57% 2	0.00% 0	0.00% 0	7	4.71
Pests and diseases	0.00% 0	0.00% 0	28.57% 2	42.86% 3	14.29% 1	14.29% 1	7	2.86
Wildfire Management	14.29% 1	0.00% 0	0.00% 0	14.29% 1	71.43% 5	0.00% 0	7	2.71
Flood Management	0.00% 0	0.00% 0	0.00% 0	0.00% 0	14.29% 1	85.71% 6	7	1.14

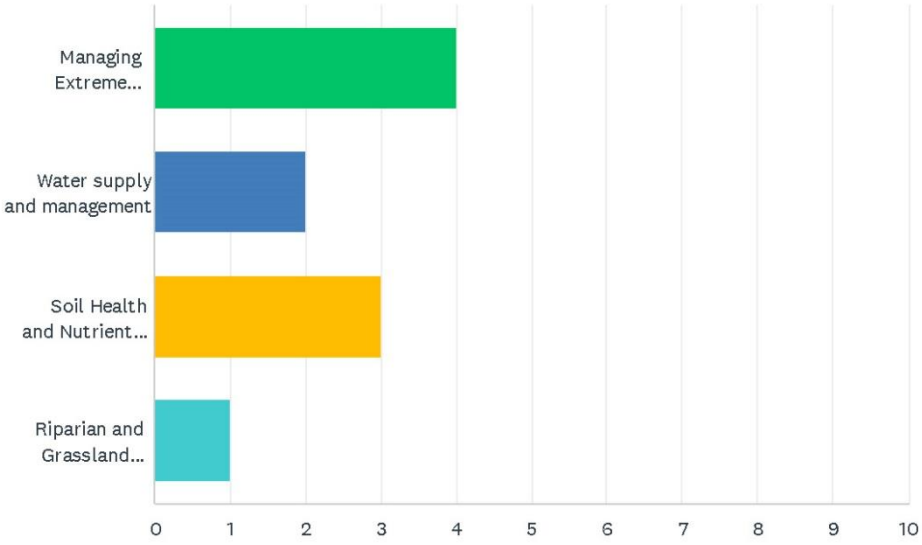
Figure 41 - Survey Results (Page 6)

Regional Extension Program: Questionnaire

Kootenay-Boundary

Q7 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (4) to your own operation.

Answered: 1 Skipped: 74



	1	2	3	4	TOTAL	SCORE
Managing Extreme Temperatures	100.00% 1	0.00% 0	0.00% 0	0.00% 0	1	4.00
Water supply and management	0.00% 0	0.00% 0	100.00% 1	0.00% 0	1	2.00
Soil Health and Nutrient Management	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1	3.00
Riparian and Grassland Management	0.00% 0	0.00% 0	0.00% 0	100.00% 1	1	1.00

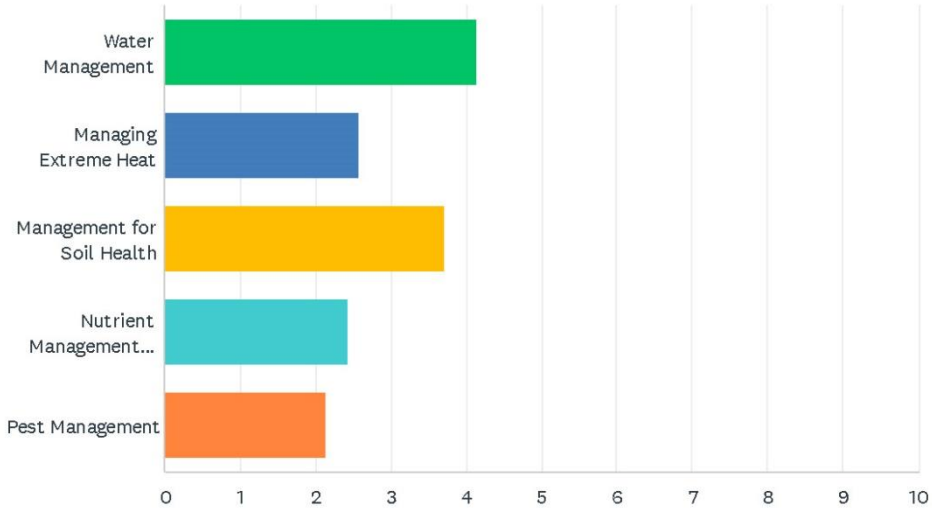
Figure 42 - Survey Results (Page 7)

Regional Extension Program: Questionnaire

Lower Mainland and Sea to Sky

Q8 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (5) to your own operation.

Answered: 7 Skipped: 68



	1	2	3	4	5	TOTAL	SCORE
Water Management	42.86% 3	42.86% 3	0.00% 0	14.29% 1	0.00% 0	7	4.14
Managing Extreme Heat	28.57% 2	0.00% 0	14.29% 1	14.29% 1	42.86% 3	7	2.57
Management for Soil Health	28.57% 2	28.57% 2	28.57% 2	14.29% 1	0.00% 0	7	3.71
Nutrient Management Practices	0.00% 0	14.29% 1	28.57% 2	42.86% 3	14.29% 1	7	2.43
Pest Management	0.00% 0	14.29% 1	28.57% 2	14.29% 1	42.86% 3	7	2.14

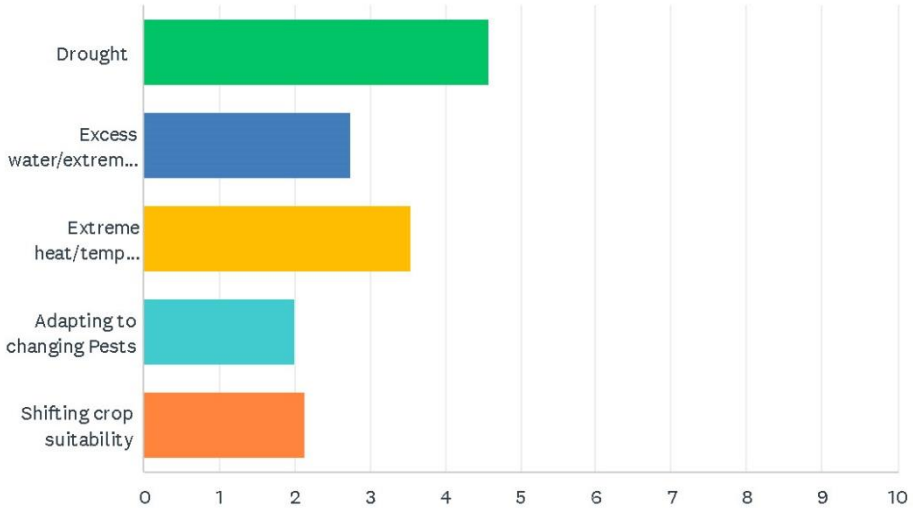
Figure 43 - Survey Results (Page 8)

Regional Extension Program: Questionnaire

Vancouver Island and South Coast

Q9 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (5) to your own operation.

Answered: 31 Skipped: 44



	1	2	3	4	5	TOTAL	SCORE
Drought	70.97% 22	19.35% 6	6.45% 2	3.23% 1	0.00% 0	31	4.58
Excess water/extreme precipitation events	6.45% 2	25.81% 8	29.03% 9	12.90% 4	25.81% 8	31	2.74
Extreme heat/temp extremes	19.35% 6	35.48% 11	32.26% 10	6.45% 2	6.45% 2	31	3.55
Adapting to changing Pests	0.00% 0	6.45% 2	12.90% 4	54.84% 17	25.81% 8	31	2.00
Shifting crop suitability	3.23% 1	12.90% 4	19.35% 6	22.58% 7	41.94% 13	31	2.13

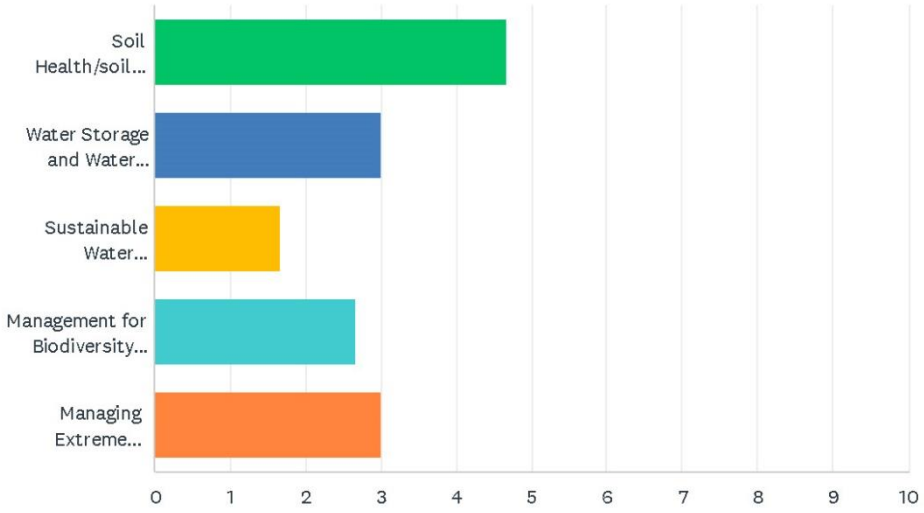
Figure 44 - Survey Results (Page 9)

Regional Extension Program: Questionnaire

Peace

Q10 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (5) to your own operation.

Answered: 3 Skipped: 72



	1	2	3	4	5	TOTAL	SCORE
Soil Health/soil health management	66.67% 2	33.33% 1	0.00% 0	0.00% 0	0.00% 0	3	4.67
Water Storage and Water Development	0.00% 0	33.33% 1	33.33% 1	33.33% 1	0.00% 0	3	3.00
Sustainable Water Management	0.00% 0	0.00% 0	33.33% 1	0.00% 0	66.67% 2	3	1.67
Management for Biodiversity/habitat health	0.00% 0	33.33% 1	0.00% 0	66.67% 2	0.00% 0	3	2.67
Managing Extreme Precipitation	33.33% 1	0.00% 0	33.33% 1	0.00% 0	33.33% 1	3	3.00

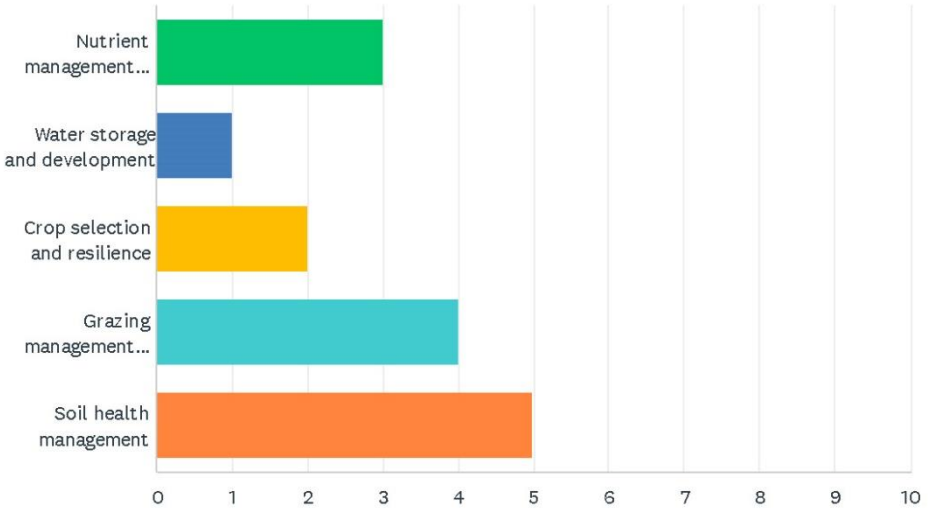
Figure 45 - Survey Results (Page 10)

Regional Extension Program: Questionnaire

Highway 16 - North Cariboo

Q11 The following environment and climate-related issues were identified as being high priority for your Region by a committee of producers and other industry stakeholders. Please rank the issues from the most relevant (1) to least relevant (5) to your own operation.

Answered: 1 Skipped: 74



	1	2	3	4	5	TOTAL	SCORE
Nutrient management practices	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1	3.00
Water storage and development	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 1	1	1.00
Crop selection and resilience	0.00% 0	0.00% 0	0.00% 0	100.00% 1	0.00% 0	1	2.00
Grazing management systems	0.00% 0	100.00% 1	0.00% 0	0.00% 0	0.00% 0	1	4.00
Soil health management	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1	5.00

Figure 46 - Survey Results (Page 11)

Appendix IV – List of 2023/2024 Extension Projects

Climate adaptive growing practices for potatoes ($47,000)
Evaluate nutrient and water management for growing potatoes in the Fraser Valley using combinations of irrigation and fertilizer treatments, and develop a report with best management practices for mitigating heat and drought to share with farmers during field days so they can better adapt growing techniques to the changing climate.

Climate and surface water risk assessment tool demos ($200,000)
Test and demonstrate the use of the Landscape and Range Resiliency Planning Tool, a climate-change modelling and surface water risk-assessment tool, in the Bulkley Nechako, Cariboo and Kootenay regions to help farmers better prepare for impacts of climate change.

Cover cropping field days in Okanagan vineyards ($3,400)
Deliver four cover-crop knowledge transfer field days in 2023 on the different growth stages of vineyards and how they impact cover-crop management to support farmers in the Okanagan.

Delta salinity monitoring tool and field days ($80,500)
Expand the salinity-monitoring network (measures the salt in the water supply) in Delta, develop a mobile app for producers to access the information from the network and provide a field day to help farmers with irrigation scheduling.

Extension video production ($95,000)
Work with Aspen Films Inc. to create 12 to 15 AgriService BC videos on the Regional Extension Programs projects.

Forage crop resiliency demos for Island farmers ($56,120)
Help manage and mitigate the impacts of climate change by demonstrating suitable crops for the region that will help farmers and ranchers improve crop-climate resilience, increase yield and reduce the use of fertilizer for forage and feed production on Vancouver Island.

Koksilah community water use coordinator ($10,000)
Support producers in the Koksilah River watershed on Vancouver Island with an irrigation-scheduling project to help them be better prepared for drought conditions from the impacts of climate change.

Pasture renovation field days ($5,000)
Look at pasture-renovation techniques that will help the soil in aged pastures in the region so farmers can use the land.

Phosphorus management field days ($50,000)
Work with producers and hold field days in the North Okanagan, Lower Mainland and on Vancouver Island to help farmers adopt best management practices that will reduce phosphorus loss and improve soil health on farms.

Provincial drought workshops ($75,000)
Provide livestock drought workshops in drought-affected regions in B.C. to give farmers the information they need so they can be better prepared and implement new strategies and best management practices that help them adapt to the impacts of climate change.

Regenerative research and field days for berries and vegetables ($30,000)
Support on-farm demonstration research and field days for berry and vegetable growers in the Lower Mainland to promote regenerative agriculture practices that increase resilience to climate change and support economic viability.

Silvopasture online workshop ($56,000)
Test and create a self-guided online learning silvopasture workshop for farmers and ranchers so they can learn about and apply new and best management practices that improve water quality and land-use planning.

Silvopasture resources and field days in the Thompson-North Okanagan ($36,450)
Create materials to develop a silvopasture training workshop and hold field days for farmers and ranchers in the Thompson-North Okanagan so they can learn about and apply new and best management practices that improve water quality and land-use planning.

Sustainable pest management for potatoes ($3,660)
Deliver bi-weekly integrated pest management newsletters for potato growers in B.C. to help with key pest issues and provide recommendations during the growing season to help with crop production.

Targeted grazing for wildfire management ($260,000)
Help farmers and ranchers adopt targeted grazing practices, and test and monitor grazing best management practices on farms in the Cariboo, Kootenays, Okanagan and Thompson-Nicola regions so farmers can be better prepared for wildfires.

Water management and irrigation training ($29,740)
Provide field days and workshops for water management and training across B.C. for farmers and ranchers to be better prepared for drought conditions, and train provincial government employees on agricultural water management so they can support agricultural producers.