



Climate Action Initiative
BC AGRICULTURE & FOOD

Delta

Adaptation Strategies Update

BC Agriculture & Climate Change
Regional Adaptation Strategies series

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other project partners
BCAC/ARDCorp



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Introduction

The *Delta Adaptation Strategies* plan was completed in 2013 and project implementation took place between fall of 2013 and fall of 2016. In late 2016, the BC Agriculture and Food Climate Action Initiative (CAI) undertook a process to re-visit the strategies and actions that were identified as high priorities in the original plan, to assess progress in plan delivery and to determine areas of focus for the future. The intent of this process was not to repeat the original (and still relatively recent) comprehensive planning process, but rather to undertake an efficient and targeted update that reflects progress and captures changes in context and priorities.

This document outlines the *Strategies Update* objectives and methodology, describes implementation progress, and defines key actions and implementation priorities moving forward. The *Strategies Update* process had three overarching objectives:

- To review and reflect on progress in addressing priority actions from the *Delta Adaptation Strategies*;
- To identify highest priority areas in the plan that have not been addressed or require additional support; and
- To identify new or emerging adaptation priorities/projects.

Overview of Delta Adaptation Strategies

The original planning process took place in Delta from the fall of 2012 to the spring of 2013, bringing together agricultural producers and specialists, along with local and provincial government representatives. Approximately 40

participants took part over the course of two workshops. A local advisory committee that included representatives from the Delta Farmers' Institute, the Corporation of Delta, the Delta Farmland & Wildlife Trust, the BC Blueberry Council, the BC Greenhouse Growers Association and the BC Ministry of Agriculture, provided guidance and input throughout the process.

The resulting *Delta Adaptation Strategies* plan outlines the anticipated changes in climate and the associated agricultural impacts.¹ It also provides clear actions, suited to the specifics of the local context, both with respect to projected changes in climate and local capacity and resources. The plan includes 11 strategies and 26 actions for agriculture to adapt to four priority impact areas:

- 1) Increasing coastal flood risk;
- 2) Changing hydrology (effects on water supply and salinity levels);
- 3) Increasing amount and variability of precipitation (excess winter and spring moisture); and
- 4) Increasing variability and extreme conditions.

Upon completion of the planning process, \$300,000 of *Growing Forward 2* funding was made available to implement collaborative projects identified in the plan. The advisory committee that was formed to guide the planning process transitioned into an oversight “working group” for development and delivery of projects. By the autumn of 2016, seven projects had been implemented and funding had been fully expended.

¹ The climate change projections and four impact areas are described in more detail in the *Delta Adaptation Strategies* available at:
<http://www.bcagclimateaction.ca/wp/wp-content/media/RegionalStrategies-Delta.pdf>

Methodology

The process to review and update the *Delta Adaptation Strategies* included the following four steps:

- 1) Undertaking analysis of progress on strategies and actions;
- 2) Conducting meetings with local partners and the working group;
- 3) Holding an information gathering and prioritization workshop; and
- 4) Developing a draft document and circulating it for working group review prior to finalization.

Each of these steps is described in more detail below:

1) Progress analysis: CAI undertook a review of projects implemented to determine which strategies and actions from the *Delta Adaptation Strategies* plan have been completed (wholly or partially). This analysis also included a review of any recommendations for next steps or additional activities from completed projects to support further actions in priority areas.

2) Local partner and working group meetings:

Targeted meetings were conducted with key partners to discuss the plan update process, to review areas of positive progress, to identify gaps, and to determine possible areas of focus for future projects. The CAI met with representatives from the Delta Farmer's Institute, the Corporation of Delta and the Delta Farmland and Wildlife Trust.

During a working group meeting, a short discussion was facilitated with a focus on key outcomes of the projects completed to date and preferred areas of focus moving forward. Members of the working group completed a ranking exercise to identify the strategies they felt were currently the highest priorities (capturing the individual perspectives of working group members).

These consultations with project partners and the working group confirmed that undertaking a formal process to update the *Delta Adaptation Strategies* plan was both valuable and timely.

3) Prioritization workshop: A workshop was conducted to assess progress on the prioritized strategies and actions within the *Delta Adaptation Strategies* plan and to discuss preferred areas of focus for near-term implementation.

The workshop was held on December 6th, 2016 at the Coast Tsawwassen Inn in Delta, BC. Workshop participation was by invitation and there were 16 participants – including Delta producers and participants from key partner groups/agencies – with active knowledge of implementation activities in Delta.

The workshop began with an overview of the Delta adaptation projects completed to date, as they relate to the climate change impacts and strategies within each of the four Impact Areas in the plan. Workshop participants then voted on the most important strategies within each Impact Area (see Appendix I: voting card). When selecting priorities, participants were asked to take into consideration the following:

- The potential to build on momentum, activities or results of earlier work with next steps;
- The degree of urgency of the strategy; and
- The potential for linkage to related local initiatives and/or synergistic opportunities.

The results of the voting activity were tallied and workshop participants were divided into small groups to discuss the strategies that received the most votes. Participants also brainstormed possible additional actions, ranked and determined the top two actions, and then completed action planning based on prioritized actions. A workshop summary was provided back to all workshop participants.

Methodology continued




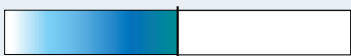


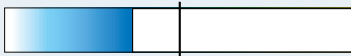
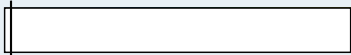



4) Draft development and completion: Utilizing the workshop summary, the CAI team developed a draft *Delta Adaptation Strategies Update* document. This document was then shared back with the local working group for feedback. Additional final

adjustments and edits were completed, and the final *Delta Adaptation Strategies Update* was distributed back to workshop participants and project/program partners.

Summary of Progress to Date

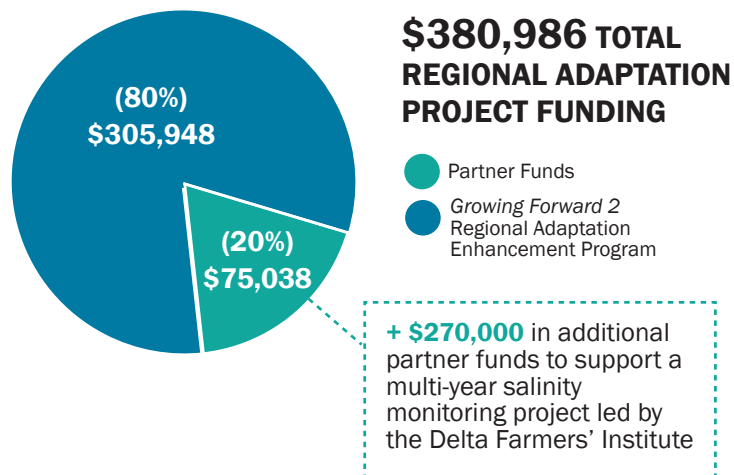
The original *Delta Adaptation Strategies* plan identifies 11 strategies and 26 actions to support agricultural adaptation to climate change through the development of (regionally relevant) tools and resources that enhance adaptive capacity.

The *Implementation Progress Table* below provides a visual summary of estimated progress made towards addressing the strategies in the *Delta Adaptation Strategies* plan. Additional details about projects can be found in the introductions to each strategy in the following section (beginning on next page). A table listing all strategies and actions, along with projects completed, is located in Appendix II.

<i>Delta Implementation Progress Table</i>		not started	partially addressed	fully addressed
Strategy 1.1	Incorporate agricultural issues into decision-making processes regarding sea level rise & diking			
Strategy 1.2	Undertake dike improvements & raise dike levels to address sea level rise			
Strategy 1.3	Improve flooding impact mitigation measures			
Strategy 2.1	Monitor & enhance irrigation infrastructure to manage during times of low water supply			
Strategy 2.2	Assess & enable implementation of agricultural water storage options in Delta			
Strategy 2.3	Disseminate existing information & tools for irrigation & salinity management			
Strategy 2.4	Pilot & demonstrate technologies, practices & crops for managing salinity			
Strategy 3.1	Pilot the development of a holistic approach to stormwater & drainage issues across the agricultural land base			
Strategy 3.2	Increase availability of technical information & incentives for farm level stormwater & drainage management (planning, installation & upgrades)			
Strategy 4.1	Pilot & demonstrate practices and technologies for managing challenging & variable conditions (drainage, salinity, nutrient, crop protection)			
Strategy 4.2	Develop a collaborative communications strategy highlighting the potential impacts of climate change to the food system & the value of local agriculture			

Investment in Delta Regional Adaptation Projects: 2013 – 2016

Over a three year period seven Regional Adaptation projects were undertaken that addressed the highest priorities identified in the *Delta Adaptation Strategies* plan. These Regional Adaptation projects were supported with \$305,948 of seed funding provided through *Growing Forward 2* and \$75,038 from contributing partners. The Delta Farmer's Institute has since secured \$270,000 in additional funds to implement next steps (a multi-year salinity monitoring project on the lower Fraser River) identified through one of the priority projects.



Project Funding Partners

Corporation of Delta
Metro Vancouver
Real Estate Foundation of BC
City of Surrey

Other Project Partners

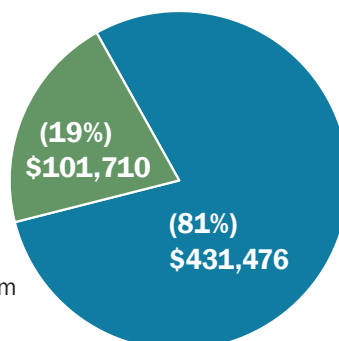
Delta Farmers' Institute (Administrator)
Agriculture in the Classroom
Delta Farmland & Wildlife Trust
BC Blueberry Association (Working Group)
BC Dairy Association (Working Group)
BC Ministry of Agriculture (Working Group)

Investment in Delta Farm Adaptation Innovator Projects: 2013 – 2016

During the same period, three Farm Adaptation Innovator projects were funded in the Delta area. The Farm Adaptation Innovator Program supports applied research projects that seek to demonstrate and evaluate practices and technologies that may reduce weather related production risks and/or increase new production opportunities.

\$533,186 TOTAL FARM ADAPTATION INNOVATOR PROJECT FUNDING

● Partner Funds
● Growing Forward 2 Farm Adaptation Innovator Program



Project Funding Partners

BC Potato & Vegetable Growers' Association
Natural Sciences & Engineering
Research Council of Canada
Lower Mainland Horticulture
Improvement Association
Centre for Sustainable
Food Systems at UBC Farm
UBC Faculty of Land & Food Systems
E.S. Cropconsult Ltd.
Delta agriculture producers

Other Project Partners

Crophorne Farm Ltd.
Dubois Agrinovation
Osborne Seed Company
Delta Farmers' Institute
Delta Farmland & Wildlife Trust
Agassiz Research Station
Cooperating growers
Douglas College
Chemical companies
AT Films Inc.

\$914,172 INVESTED IN DELTA ADAPTATION PROJECTS

Delta Adaptation Strategies Update

The Strategies that have been identified as highest priority for near term implementation (through the process outlined in the Methodology) are highlighted in green text boxes. The seven prioritized actions (along with seven possible projects) developed and fleshed out through the workshop – and subsequent input received from the Delta Adaptation Working Group – are described under the relevant Strategy and highlighted in light blue text boxes.

Impact Area 1: Increasing Coastal Flood Risk

Strategy 1.1 [Prioritized] - *Incorporate agricultural issues into decision-making processes regarding sea level rise and diking*

Progress to Date

Two projects have been undertaken to address this strategy and its associated actions. The first project was a study, *Potential Economic and Agricultural Production Impacts of Climate Change Related Flooding in the Fraser Delta*, that provides an analysis and evaluation of the potential impacts of climate change related flooding to the Fraser delta's agricultural land base and production capacity. The study evaluates the economic/production value of the land base vulnerable to flooding in the Fraser delta area, and utilizes case studies of various types of climate change related flooding to assess agricultural impacts.

Following the completion of the study the second project was a Forum, hosted in Delta in January 2015, to share the findings with local groups/agencies. This event brought together agricultural producers, government representatives and other local partners to develop a shared understanding of potential impacts of climate change related flooding to agriculture in the Fraser delta. The Forum served to highlight the specific issues and needs for agriculture, and identified strategies, opportunities and next steps for action.

Priority Action #1

Enhance study data and expand its reach

Flood protection is costly and requires broad community and government support. It is important to have a full estimate of the value of Delta agriculture to support dialogue about these issues. The original study was a valuable foundational assessment. However, the study could be enhanced by incorporating estimates of other values provided by agriculture (to the Delta community). Additional research could include analysis of the value of the ‘services’ provided by the agricultural sector (e.g. environmental goods and services, contributions to local and provincial food security).

Activities

- Fill information gaps relating to ‘value of farming in Delta’ by:
 - Incorporating food security implications
 - Estimating value of environmental goods and services provided by Delta farmland (e.g. wildlife habitat, green space)
- Integrate findings (from above) with results of previously completed economic study to create a more comprehensive report
- Communicate key information from completed assessment to general public to further public understanding of agriculture’s contribution to Delta’s economy, community and the environment.

Implementation Details

- Delta agricultural production has a positive impact on food security across the Lower Mainland. The geographic scope of the economic assessment will need to be carefully considered (e.g. Delta, Metro Vancouver, Fraser Valley).
- The communications campaign should include a mechanism for Delta residents to express their thoughts regarding the value of Delta’s agricultural sector and the need for flood protection/dike improvements to protect agricultural land.

Possible Partners

Agricultural organizations
BC Ministry of Agriculture
We Heart Local (and other buy local groups)
Delta Chamber of Commerce
Delta Farmers’ Institute
Delta Farmland and Wildlife Trust

Timeframe

Phase 1: Filling information gaps and integrating results into study
Short-term (less than two years)

Phase 2: Communication campaign
Short-term (less than two years)

Cost

Phase 1 and Phase 2 :
Low (less than \$50,000)

Strategy 1.2 [Prioritized] - Undertake dike improvements and raise dike levels to address sea level rise

Progress to Date

No actions were undertaken through the Climate Action Initiative between 2013 and 2016 to accomplish this Strategy. During this period, the Corporation of Delta has completed approximately one kilometre of riprap erosion protection upgrades along Boundary Bay to improve the capacity of dikes to withstand wave action during extreme storm events.

Priority Action #2

Coordinate information exchange and strengthen the agricultural sector's engagement in regional and local flood management initiatives

There are existing initiatives underway in the Lower Mainland to address flood management and protection and associated policies – such as the Fraser Basin Council's Lower Mainland Flood Management Strategy – where agricultural representation could be improved. Delta producers are aware that planning is occurring, but are unsure of the best approach for effective engagement.

A valuable first step would be to provide a venue to explore possibilities for the agricultural sector's participation in these flood management initiatives. An information exchange session could also create an opportunity for information sharing about various processes for dike maintenance and upgrade planning, which remain unclear for many producers.

The information exchange could culminate with clearly identified options for increased engagement of the agricultural sector with flood management initiatives (including exploring potential for coordinated agricultural engagement across the Lower Mainland).

Activities

- Identify key participants and topics to be addressed
- Discuss flood management related initiatives underway, agricultural assets at risk from flooding and how the agricultural sector can better engage in future discussions/initiatives
- Provide information and updates about the official process for dike upgrades
- Identify clear steps that the agriculture sector can take to support the process for advancing flood management policies, activities and initiatives

Implementation Details

- Will need a strong project lead to take the ‘next steps’ and continue to coordinate action with the agricultural sector.
- There is potential to coordinate engagement with the broader Metro Vancouver/Fraser Valley agricultural community.
- Important to present information on projected costs to the agriculture sector (and broader community) from flooding, drawing on previous studies and possibly results of priority action #1 above.

Possible Partners

Agricultural organizations
Agricultural producers
BC Ministry of Agriculture
BC Ministry of Forests, Lands and Natural
Resource Operations and Rural Development
Corporation of Delta
Delta Dikes and Drainage Advisory Committee
Delta Farmers’ Institute
Fraser Basin Council
Other local governments (e.g. Metro Vancouver)

Timeframe

Short-term (less than 2 years)

Cost

Low (less than \$50,000)

Strategy 1.3 [Not Prioritized] - Improve flooding impact mitigation measures

Progress to Date

A two-part project was delivered that partially addressed this Strategy. The project developed a Guidebook and planning process for farm level flood preparedness and mitigation, and then tested it with six Delta producers. Individual farm strategies were identified using the Guidebook and the focus of this planning was on evaluating risks and identifying appropriate actions for reducing flooding impacts.

The piloted Guidebook has not yet been made broadly available to other Delta producers but opportunities to build on the project outputs and results are being explored by CAI and partners.

Impact Area 2: Changing hydrology (effects on water supply & salinity levels)

Strategy 2.1 [Prioritized] - *Monitor and enhance irrigation infrastructure to manage during times of low water supply*

Progress to Date

The study, *Modelling Effects of Climate Change and Dredging on the Availability of Irrigation Water for Delta Farmers*, was undertaken to partially address this Strategy. This project modeled baseline and future salinity levels in the lower Fraser River to evaluate how climate change impacts might affect the availability of irrigation water at Delta's irrigation intakes. The resulting data and projections help to assess the risks and inform planning and decision-making. The report provides recommendations and a plan for a salinity monitoring program including technology options, equipment placement options, data retrieval options and other considerations.

Along with a number of partners, the Delta Farmers' Institute launched a multi-year salinity monitoring program in early 2017. This real-time monitoring will help to ground truth the modeling study, as well as provide improved data to support decision-making around irrigation water infrastructure and management.

Priority Action #3

Undertake irrigation system planning

The Delta hydraulic system includes some 591 kilometres of ditches, 20 outfalls, 3093 culverts and bridges, and over 100 water – level and flow – control structures. The system operates in drainage mode from fall to spring, providing drainage and flood protection for the area, and in irrigation mode from spring to fall, providing agricultural water supply.

The Delta irrigation system is continually improving, but is currently only able to deliver limited fresh water to the west side of Delta and to Westham Island. Salinity monitoring is conducted at select intake locations. During periods of low Fraser River flows and high irrigation demand, there are limits to the availability of fresh water and some agricultural producers find that they are not able to obtain sufficient quantities of irrigation water to meet their immediate needs. To assist producers in securing consistent access to fresh water for irrigation, further salinity monitoring and conveyance system upgrades could be undertaken.

The agriculture sector would be well served by the development of near-term (5-10 year) and medium-term (10-20 year) irrigation system plans. Incorporating climate change considerations, this planning could define projected infrastructure needs and priorities, required monitoring data and a maintenance and operations program, as well as indicate the associated costs of an optimal system.

Activities

- Assess the state of the current irrigation system
- Identify current strengths and deficiencies of the system
- Review current and (projected) future needs and priorities
- Develop a near term and longer term plan
- Confirm budget commitments to implement plan

Implementation Details

- Operations and maintenance must include a ditch-cleaning schedule.
- The document should be a working document that is regularly updated.

Possible Partners

Agricultural organizations
Corporation of Delta
Delta Dikes and Drainage Advisory Committee
Delta Farmers' Institute
Delta producers
Neighbouring local governments
Provincial and federal government

Timeframe

Short-term (less than 1 year)
Medium-term (to be updated by partners every 2 years)

Cost

Development of plans:
Low (less than \$50,000 each)
Implementation of plans:
High (\$100,000+)

Priority Action #4

Increase accessibility and applications of salinity data from monitoring activities

Salinity monitoring activities have high capital costs associated with purchasing and installing monitoring equipment and coordinating data transfer. Budget constraints limit the new monitoring project's scope with respect to associated activities to share the monitoring data and ensure its application. This action supports the broad extension of the utility and reach of salinity monitoring information.²

Activities

- Increase accessibility of salinity monitoring data to producers
- Develop producer tools for using data to enable better planning decisions (i.e. for irrigation scheduling and seasonal planning)
- Use actual data to validate the model developed as a part of the *Fraser River Salinity Modeling and Monitoring* project

² Once the current DFI monitoring project has progressed further and its scope is clear, there may be a need to revisit this action to consider supporting additional monitoring stations to also improve the available data set.

Implementation Details

- Tie river flow/salinity data from all monitoring sites into a digital user interface
- Producers have interest in information/tools relating to the estimated number of hours of pump time on a given day or an irrigation scheduling tool tied to the data
- Need to determine how farmers would prefer to access the salinity data (e.g. from a website, from a smart phone app, and which website is preferred)
- This project should begin after a few seasons of data have been collected through the monitoring project

Possible Partners

BC Ministry of Agriculture
City of Richmond
Corporation of Delta
Delta Farmers' Institute
Delta producers (particularly those who are already using salinity data)
Researcher/academics in related fields

Timeframe

Short-term (less than 2 years)

Cost

Medium (\$50,000 - \$100,000)

Strategy 2.2 [Prioritized] - Assess and enable implementation of agricultural water storage options in Delta

Progress to Date

No actions were undertaken between 2013 and 2016 to accomplish this Strategy.

Priority Action #5

Complete feasibility assessment for water storage on public/under-utilized lands

This action has not yet been pursued, because water storage for irrigation purposes is largely impractical in Delta. Key limitations are the land base required for an adequate volume of storage and the high value of Delta's agricultural land base. However, there may be specific circumstances in which water storage is feasible or a business case can be made. There may be potential for storage as a supplementary or emergency (end of season) water source, for small-scale or specialty farm uses that are currently served using municipal water, or for under-utilized land that cannot be used for other production activities.

Activities

- Complete a high level assessment of viability of potential storage locations (including cost-benefit), as well as extent of potential storage
- If the high level assessment indicates sufficient opportunity, complete a detailed cost-benefit analysis for storage on public/underutilized lands

Implementation Details

- Specific engineered plans and cost for individual reservoirs are beyond the scope of this project
- Some properties may have a positive cost-benefit if the land is not viable/productive for other purposes
- There may be underutilized land in the Agricultural Land Reserve (ALR) owned by Corporation of Delta (a water reservoir on this land would still support agricultural activity, even if land is not farmed or farmable)
- Explore water reservoir options that provide habitat and other environmental benefits
- Feasibility analysis would include looking into expanding the ditch system, however this project mostly applies to reservoirs
- Sensitivity analysis should include changes to costs and benefits under different climate change scenarios (e.g. increased temperatures, increased precipitation and variability)
- This work requires an interdisciplinary team with expertise in agriculture production, land-use planning and engineering
- There are some existing resources available that could inform this project (e.g. DIEP system, pump station information, existing fact sheets etc.)

Possible Partners

Agricultural organizations
BC Ministry of Agriculture
Delta Farmers' Institute
Delta Farmland and Wildlife Trust
Delta producers who are already using
water storage

Timeframe

Short-term (less than 2 years)

Cost

Phase 1: preliminary high level assessment
Low (less than \$50,000)

Phase 2: Low (less than \$50,000)*

*Scale this project up from a small investment based on likelihood of a promising business case.

Strategy 2.3 [Not Prioritized] - Disseminate existing information and tools for irrigation and salinity management

Progress to Date

No activities were undertaken to disseminate existing information and tools regarding irrigation management.

Progress was made in supporting producers with salinity monitoring and management. To assess current knowledge/practices and identify potential informational needs regarding effective drainage and salinity management, a scan and survey were undertaken. The scan reviewed previous drainage related research and demonstration activities in Delta, as well as other regions that could provide insight for alternative management options.

The survey assessed the extent of drainage and salinity issues in Delta and documented current producer management approaches to gauge the need and interest for further research. Seventeen (17) producers were surveyed (managing an estimated 45% of the farmable land in Delta) and data was collated and analyzed. The survey found that about 75% of producers were concerned with drainage and about the same percentage were concerned about salinity impacts to production.

This report helped to define the focus of a collaborative project to test and evaluate drainage and salinity management practices through the Farm Adaptation Innovator Program.

Strategy 2.4 [Not Prioritized] - Pilot and demonstrate technologies, practices and crops for managing salinity

Progress to Date

Progress has been made with research and demonstration regarding salinity reduction and management. As noted above, a pilot project has been initiated by the University of British Columbia and the Delta Farmers' Institute (through the Farm Adaptation Innovator Program) to trial and evaluate a number of drainage and salinity management practices. This project involved producer co-operators across Delta and is intended to provide improved information about best practices.

No progress has been made in assessing salt tolerant crops or investigating the effects of the rising (salt) water table.

Impact Area 3:

Increasing amount and variability of precipitation (excess winter and spring moisture)

Strategy 3.1 [Not Prioritized] - Pilot the development of a holistic approach to stormwater and drainage issues across the agricultural land base

Progress to Date

No actions were undertaken between 2013 and 2016 to develop and test collaborative approaches to stormwater and drainage management.

Strategy 3.2 [Prioritized] - Increase availability of technical information and incentives for farm level storm water and drainage management (planning, installation and upgrades)

Progress to Date

As previously noted, a project to review and compile previous research, and to survey current producer drainage and salinity management practices and concerns, was completed in the spring of 2015. This project informed the development of an applied research project (also noted above) undertaken by UBC and the Delta Farmers' Institute to evaluate a range of drainage management approaches. The project, funded through the Farm Adaptation Innovator Program (FAIP), includes demonstration and evaluation of spacing configurations of drain tile, as well as testing and evaluating of surface treatments including cover crops and grassland set asides. In total, 30 fields are being sampled for soil type, and monitored and assessed for the efficacy of a range of drainage management practices, including cleaning and maintenance of drainage tile systems. The project includes consideration of costs and benefits and is intended to generate tools to support producers with more informed decisions about drainage management.

Priority Action #6

Support piloting, demonstration and knowledge transfer of drainage management options

This action consists of activities to support and extend applied research for improved drainage management in Delta. The value of the FAIP pilot project would be increased if data were collected over a longer period of time. There could also be benefits to integrating additional questions about how to optimize installation of drainage infrastructure and how to improve infiltration of soils. There is interest in investigating other drainage technologies and practices (besides drain tiles) such as the use of interceptor ditches to keep salinity/water out.

Activities

- Extending the timeline and parameters of the current drainage pilot
- Identifying additional research components (to integrate preliminary findings and other research questions)
- Providing additional knowledge transfer of findings to producers

Implementation Details

- Support continuation of partnership between UBC/researchers, producer co-operators and DFI
- May need to take findings and test in different locations/soils
- There is value in interim knowledge transfer of current FAIP project:
 - o Produce a clear and simple summary of drainage pilot project results of research for producers
 - o Provide a specific web location to get up to date information and reference materials on drainage
- Host a knowledge transfer event
 - o Bring producers together to share information – host half-day field tour and information exchange between producers
 - o Invite technology providers and other experts (UBC, DFI, Delta, Ministry of Agriculture etc.)

Possible Partners

Agricultural organizations
BC Ministry of Agriculture
Delta Farmers' Institute
Delta producers
University of British Columbia

Timeframe

Medium-term (2-5 years)

Cost

High: \$100,000+

Impact Area 4: Increasing variability and extreme conditions

Strategy 4.1 [Not Prioritized] - Pilot and demonstrate practices and technologies for managing challenging & variable conditions

Progress to Date

Three FAIP projects are piloting and demonstrating farm-level technologies and practices to support adaptation in Delta. The first – described under Strategy 3.2 – is demonstrating and evaluating practices for drainage and salinity management on Delta farms. The second project – led by E.S. Cropconsult and working with 16 producer cooperators who grow seed, organic and conventional potatoes – is assessing how potato yields are affected by thrips at varying crop stages, local thrips transmission of tomato spotted wilt virus, and the varietal preferences of thrips (all in relation to measured growing season weather conditions).

A third and final project is assessing whether protective crop covers can extend the growing season and help to avoid some of the adverse effects of climate change brought on by variability, extremes in precipitation (particularly in the spring and fall) and warmer and drier summers. Trials are being undertaken at three locations in BC, including with Crophorne Farm Ltd. in Delta. Using data gathered from these plots, researchers from UBC will evaluate the effectiveness of a range of plastic film mulches and low tunnels in modifying soil and horticultural crop environments to support adaptation to anticipated changes in climate.

Strategy 4.2 [Prioritized] - Develop a collaborative communications strategy highlighting the potential impacts of climate change to the food system and the value of local agriculture

Progress to Date

Delta agriculture exists in extremely close proximity to its urban and residential neighbours. As a result, the sector's resilience, and even the preservation of an agricultural land base, depends on the support and commitment of the broader population. To address this, a series of outreach activities were undertaken to tell the stories of local farming families, while explaining what climate change means for agriculture in the area.

The project included local media stories, a poster with a harvest calendar and farm/adaptation information, three videos, new website content for the Corporation of Delta and two climate change education units building on an existing school program. The Delta Farmers' Institute and Agriculture in Classroom are working to enhance and expand the use of the school units in Delta (in the 2017-2018 school year).

Priority Action #7

Maintain regular (low cost) communication with the Delta community about agriculture and climate change

The series of outreach and education activities continue to be valuable but it is necessary to have an on-going, consistent and multi-year approach for updating materials and maintaining visibility with Delta residents. A number of steps (identified below) could create the potential for this more consistent approach to outreach and communications.

Activities

- Identify and implement low-cost measures that could occur regularly (e.g. social media)
- Diversify the ways to communicate with Delta residents (e.g. billboards, farm tours, farm stands etc.)
- Explore opportunities to link and optimize communication with other possible partners (e.g. retailers/ buy local initiatives - linking to their websites, sponsors)

Implementation Details

- Continue to direct people to videos and website
- Create large posters to put up at farm stands/markets for customers to direct them to information
- Use the posters as a weekly or regularly updated reminder for consumers – something big and visual which changes to keep attention
- Create a new set of videos to maintain interest
- Undertake a video contest (maybe partnering with post-secondary institutions or places that train people to make videos/use technology)
- Create a migrating exhibit that could go to schools and other venues
- Use the bill board at the Town and Country

Possible Partners

Agriculture in the Classroom
Delta Agriculture Society
Delta Farmers' Institute
Delta Farmland and Wildlife Trust - (Day at the Farm)
Corporation of Delta
Farmers markets and individual producers (farm stands etc.)
Retailers/processors

Timeframe

Medium-term (2-5 years)

Cost

Low (less than \$50,000) – this depends on duration and number of activities

Appendix I

Delta Voting Card

VOTING CARD: ☒ Check one strategy from Area A, B, C
(three checked boxes total)



A Impact Area 1: Changing coastal flood risk

Strategy 1.1
Incorporate agricultural issues into decision-making processes regarding sea level rise and diking

Strategy 1.2
Undertake dike improvements and raise dike levels to address sea level rise

Strategy 1.3
Improve flooding impact mitigation measures

B Impact Area 2: Changing hydrology (effects on water supply & salinity levels)

Strategy 2.1
Monitor and enhance irrigation infrastructure to manage during times of low water supply

Strategy 2.2
Assess and enable implementation of agricultural water storage options in Delta

Strategy 2.3
Disseminate existing information and tools for irrigation and salinity management

Strategy 2.4
Pilot and demonstrate technologies, practices and crops for managing salinity

C Impact Area 3: Increasing amount & variability of precipitation (excess winter & spring moisture)

Strategy 3.1
Pilot the development of a holistic approach to stormwater and drainage issues across the agricultural land base

Strategy 3.2
Increase availability of technical information and incentives for farm level stormwater and drainage management (planning, installation and upgrades)

Impact Area 4: Increasing variability & extreme conditions

Strategy 4.1
Pilot & demonstrate practices and technologies for managing challenging & variable conditions (drainage, salinity, nutrient, crop protection)

Strategy 4.2
Develop a collaborative communications strategy highlighting the potential impacts of climate change to the food system and the value of local agriculture

Appendix II

Summary of strategies, actions and implementation to date

Impact Area 1 Increasing coastal flood risk		
Strategy	Actions	Implementation Details
Strategy 1.1 Incorporate agricultural issues into decision-making processes regarding sea level rise & diking	Action 1.1A Facilitate information exchange (between producers and Delta) regarding sea level rise projections, risks and current plans and processes	Partially addressed by forum: <i>Agricultural Vulnerabilities to Coastal Flooding</i>
	Action 1.1B Evaluate the economic and food security implications of sea level rise and inundation for Delta’s agricultural land base	Partially addressed by report: <i>Potential Economic Impacts of Climate Change</i>
Strategy 1.2 Undertake dike improvements & raise dike levels to address sea level rise	Action 1.2A Increase communication regarding maintenance and upgrading of existing dikes (as an interim step)	Not yet addressed
	Action 1.2B Create a reserve fund for the Corporation of Delta to fund dike and drainage upgrades	
	Action 1.2C Partner with non-traditional funders for dike improvements	
Strategy 1.3 Improve flooding impact mitigation measures	Action 1.3A Enhance community and farm-level emergency planning for agricultural operations at risk of inundation	Partially addressed by pilot project: <i>Flooding Preparedness and Mitigation</i>
	Action 1.3B Provide information regarding site-specific flood mitigation measures to producers	
Impact Area 2 Changing hydrology (effects on water supply and salinity levels)		
Strategy	Actions	Implementation Details
Strategy 2.1 Monitor & enhance irrigation infrastructure to manage during times of low water supply	Action 2.1A Monitor the effectiveness of the new irrigation intake and communicate results with producers	Partially addressed by report: <i>Modelling Effects of Climate Change and Dredging on the Availability of Irrigation Water for Delta Farmers</i>
	Action 2.1B Identify options, opportunities and partners for expanding irrigation infrastructure onto Westham Island	Not yet addressed
Strategy 2.2 Assess & enable implementation of agricultural water storage options in Delta	Action 2.2A Undertake cost-benefit analysis of agricultural water storage options in Delta (including cooperative and individual storage systems)	Not yet addressed
	Action 2.2B Develop communications materials and (potentially) explore funding/co-funding options	

Impact Area 2 (continued) Changing hydrology (effects on water supply and salinity levels)		
Strategy	Actions	Implementation Details
Strategy 2.3 Disseminate existing information & tools for irrigation & salinity management	Action 2.3A Disseminate existing information and tools on irrigation management through locally effective means	Partially addressed by report: <i>Climate Change Adaptation and On-Farm Drainage Management in Delta, British Columbia: Current Knowledge and Practices</i> and FAIP project: <i>Improving On-Farm Drainage Management to Reduce the Impacts of Climate Change in Delta</i>
	Action 2.3B Disseminate relevant information to support producers with salinity monitoring and management	
Strategy 2.4 Pilot & demonstrate technologies, practices & crops for managing salinity	Action 2.4A Develop research and demonstration projects with a focus on salinity reduction and management	Partially addressed by report: <i>Climate Change Adaptation and On-Farm Drainage Management in Delta, British Columbia: Current Knowledge and Practices</i> and FAIP project: <i>Improving On-Farm Drainage Management to Reduce the Impacts of Climate Change in Delta</i>
	Action 2.4B Conduct agronomic and economic viability scan for more salt-tolerant crops	
	Action 2.4C Investigate effects of rising (salt) water table	
Impact Area 3 Increasing amount and variability of precipitation (excess winter & spring moisture)		
Strategy	Actions	Implementation Details
Strategy 3.1 Pilot the development of a holistic approach to stormwater & drainage issues across the agricultural land base	Action 3.1A Develop the planning process	Not yet addressed
	Action 3.2B Undertake collaborative stormwater management planning	
	Action 3.2C Undertake recommended actions	
Strategy 3.2 Increase availability of technical information & incentives for farm level stormwater & drainage management (planning, installation & upgrades)	Action 3.2A Pilot and demonstrate drainage management options	Partially addressed by report: <i>Climate Change Adaptation and On-Farm Drainage Management in Delta, British Columbia: Current Knowledge and Practices</i> and FAIP project: <i>Improving On-Farm Drainage Management to Reduce the Impacts of Climate Change in Delta</i>
	Action 3.2B Support stormwater and drainage management planning for Delta farms	
	Action 3.2C Provide cost-share supports for implementation of farm storm-water management/drainage infrastructure	
Impact Area 4 Increasing variability and extreme conditions		
Strategy	Actions	Implementation Details
Strategy 4.1 Pilot & demonstrate practices and technologies for managing challenging & variable conditions (drainage, salinity, nutrient, crop protection)	Action 4.1A Identify partners and priorities	Partially addressed by three FAIP projects: <i>Improving On-Farm Drainage Management to Reduce the Impacts of Climate Change in Delta</i> , <i>Adapting BC Horticulture through Protected-Crop Research & Demonstration</i> , <i>Evaluation of Thrips Damage to Potatoes in a Changing Climate</i>
	Action 4.1B Pilot and demonstrate management approaches in Delta (research plots or with willing producer partners)	
Strategy 4.2 Develop a collaborative communications strategy highlighting the potential impacts of climate change to the food system & the value of local agriculture	Action 4.2A Initiate a collaborative communications strategy	Partially addressed by pilot project: <i>Agriculture and Climate Change Collaborative Communications Strategy</i>
	Action 4.2B Develop and implement a collaborative communications strategy	