



What We Heard

Climate Change

Climate Change Priorities of
Stakeholders of the
Newfoundland and Labrador
Federation of Agriculture

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Prepared for: Newfoundland and Labrador
Federation of Agriculture

Prepared by: Spicer Facilitation &
Learning
7 Wagg Place
Pasadena, NL A0L 1K0
Telephone: (709) 640-7060

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Executive Summary

In Winter 2020-21, 38 participants participated in virtual stakeholder engagement sessions to provide feedback on the impacts of climate change to the Newfoundland and Labrador Federation of Agriculture (NLFA). This report provides a summary of comments received.

This report was prepared by Spicer Facilitation & Learning in collaboration with the NLFA. This interim report will provide information to the Advisory Committee on the Climate Change project to make informed decisions for research and the development of resources for farmers.

Emerging Themes

Participants were asked to identify both negative and positive impacts of climate change. Themes were identified and participants were asked to prioritize areas of focus for further research and development of resources.

Identified negative impacts of climate change can be summarized as follows:

Changes in Climate	Severity of Weather	Increased Costs	Poor Quality	Biodiversity
<ul style="list-style-type: none"> • Frost in Summer, early and late Fall • Less rainfall, hotter, drier summer • Late Spring / Longer Winter • Greenhouse gas emissions • Increased /severe winds • Rising sea levels / more icebergs • More precipitation • Shift in growing season • Change in weather patterns 	<ul style="list-style-type: none"> • More adverse / extreme weather events • Erratic precipitation • Intensity of precipitation • Drought • Reduced dependability of transportation of goods 	<ul style="list-style-type: none"> • Costs for increased use of storage and coolers • Insurance costs are increasing • Costs for increased use of irrigation systems • Increased heating and cooling costs 	<ul style="list-style-type: none"> • Affect food quality • Soil erosion / nutrient loss / degradation • Cold weather crops not as successful • Reduced crop yields 	<ul style="list-style-type: none"> • New diseases / pests / increase in pest activity • Pollination challenges • Pests in new areas than before

Identified positive impacts of climate change can be summarized as follows:

Crop Diversity	Growing Season	Rising Temperatures	New Opportunities
<ul style="list-style-type: none"> • Able to try new crops not traditional to the province • Catch crops • Diversity of microclimates 	<ul style="list-style-type: none"> • Longer growing season • Greenhouse growing season expanded • Shift in growing season • Faster growth • More efficiencies in off-season 	<ul style="list-style-type: none"> • Higher heat units • Higher biomass • Crop maturity • Longer season for pasturing livestock • More efficiencies in off-season 	<ul style="list-style-type: none"> • Potential to expand markets by fulfilling gaps left by lower yields in southern climates • New market opportunities with crop diversity • New careers • Opportunity to expand greenhouse production

Priorities

The priorities identified by participants for areas of focus and further research are:

Negative

Increase in adverse/extreme weather events
 Soil erosion/nutrient loss/degradation
 Shift in growing season
 New diseases/pests/increase in pest activity

Positive

Greenhouse growing season expanded
 Non-traditional crops/crop diversity
 Longer growing season

1.0 Introduction

The Newfoundland and Labrador Federation of Agriculture (NLFA) is an organization which represents farmers and farmer groups in the province. Our motto is “Farmers Helping Farmers”, and we believe that by sharing information and speaking with a united voice, farmers can work more effectively for the betterment of the agriculture industry, and for the improvement of our Province as a whole.

The Climate Change Office of the Government of Newfoundland and Labrador is working with key sectors in the province to increase knowledge and build resilience to changing climatic conditions, including increased precipitation and temperature, and invasive species and pests. The NLFA is taking the lead in the agriculture sector to work directly with producers and stakeholders to ensure that concerns and aspirations are consistently understood and considered. An objective of this project is to develop a program of seminars and workshops to build adaptation capacity for producers.

1.1 Background

The COVID-19 pandemic in Newfoundland and Labrador hindered efforts to engage stakeholders in person. The NLFA hired Carole R. Spicer, owner of Spicer Facilitation & Learning to oversee the engagement process virtually.

The objectives of the stakeholder engagement are:

- Provide an opportunity for a variety of stakeholders to give feedback to the NLFA
- Ensure all stakeholder concerns are heard
- Create a safe space for participants to provide feedback confidentially
- Provide a prioritized list of areas of concern to the Advisory Committee

1.2 Purpose of Report

The purpose of this *What We Heard* report is to provide a summary of comments received during the engagement process. It is not to provide an interpretation of discussions and input.

2.0 Engagement Process

A series of five virtual engagement sessions were scheduled to provide stakeholders an opportunity to provide feedback. If out of interest, someone participated in more than one session, they were asked to limit their comments to one session only. While the primary focus of the engagement was to gain input from producers, government officials and members of the public including research students, hobby gardeners, special interest groups, and academics were permitted to attend and provide input.

Participants were engaged in a discussion responding to two questions:

1. What negative effects are you observing from climate change?
2. What positive effects are you observing from climate change?

Following the open discussion, themes were identified by the facilitator and validated with the group. Participants were then asked to prioritize one-third of the themes that they wish to be areas of focus.

38 participants participated in a total of 5 virtual sessions.

The NLFA received a written submission from an interested individual who was unable to attend a scheduled session. See Appendix A.

Date	Number of Participants
December 16, 2020	12
January 6, 2021	5
January 11, 2021	8
January 13, 2021	13
January 18, 2021	0
Total	38

3.0 What We Heard

Overall, 9 overall themes were identified by stakeholders during the engagement process.

Identified negative impacts of climate change can be summarized as follows:

Changes in Climate	Severity of Weather	Increased Costs	Poor Quality	Biodiversity
<ul style="list-style-type: none"> • Frost in Summer, early and late Fall • Less rainfall, hotter, drier summer • Late Spring / Longer Winter • Greenhouse gas emissions • Increased /severe winds • Rising sea levels / more icebergs • More precipitation • Shift in growing season • Change in weather patterns 	<ul style="list-style-type: none"> • More adverse / extreme weather events • Erratic precipitation • Intensity of precipitation • Drought • Reduced dependability of transportation of goods 	<ul style="list-style-type: none"> • Costs for increased use of storage and coolers • Insurance costs are increasing • Costs for increased use of irrigation systems • Increased heating and cooling costs 	<ul style="list-style-type: none"> • Affect food quality • Soil erosion / nutrient loss / degradation • Cold weather crops not as successful • Reduced crop yields 	<ul style="list-style-type: none"> • New diseases / pests / increase in pest activity • Pollination challenges • Pests in new areas than before • Microclimates throughout the province

Identified positive impacts of climate change can be summarized as follows:

Crop Diversity	Growing Season	Rising Temperatures	New Opportunities
<ul style="list-style-type: none"> • Able to try new crops not traditional to the province • Catch crops • Diversity of microclimates 	<ul style="list-style-type: none"> • Longer growing season • Greenhouse growing season expanded • Shift in growing season • Faster growth • More efficiencies in off-season 	<ul style="list-style-type: none"> • Higher heat units • Higher biomass • Crop maturity • Longer season for pasturing livestock • More efficiencies in off-season 	<ul style="list-style-type: none"> • Potential to expand markets by fulfilling gaps left by lower yields in southern climates • New market opportunities with crop diversity • New careers • Opportunity to expand greenhouse production

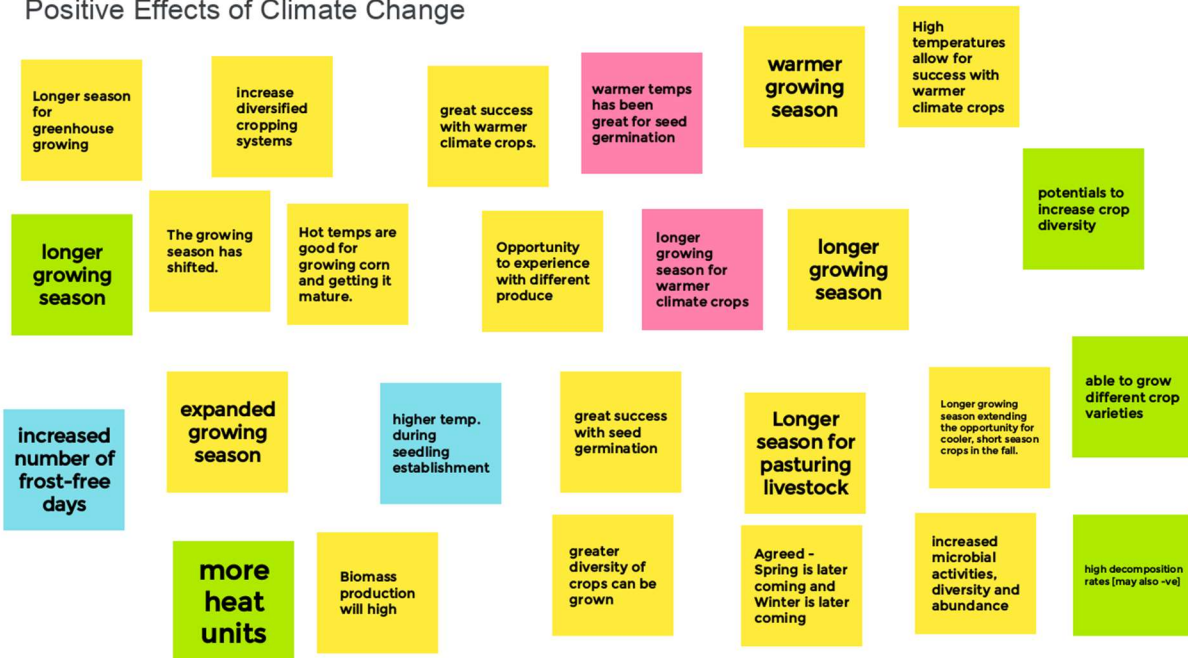
3.1 Session #1

The following comments were received by participants in the first session.

Negative Effects of Climate Change



Positive Effects of Climate Change



23 themes, in random order, were identified by stakeholders during the engagement process.

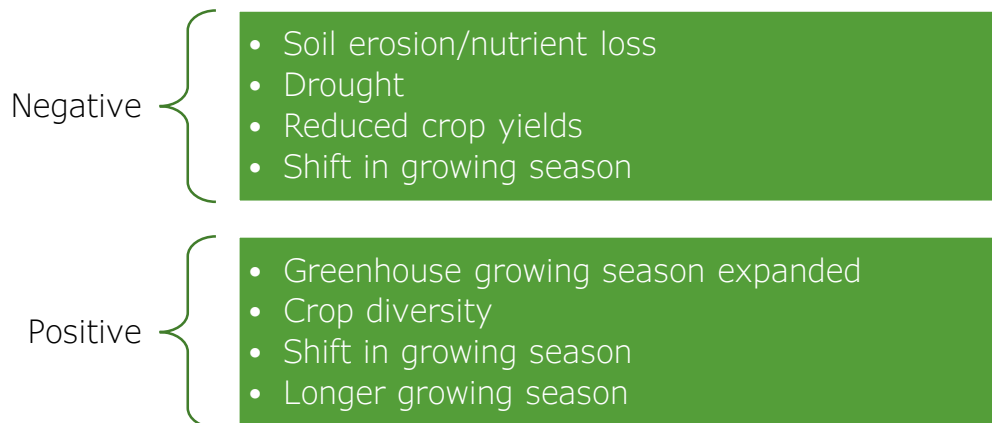
Negative

- Late Spring
- Longer Winter
- Drought
- Erratic precipitation
- Intensity of precipitation
- Soil erosion/nutrient loss
- Hot, dry summer
- New pest activity
- Early fall (and summer) frost
- Shift in growing season
- Cold weather crops not as successful
- Greenhouse gas emission
- Reduced crop yields

Positive

- Shift in growing season
- Crop diversity
- Catch crops
- Greenhouse growing season expanded
- Seed germination/seedlings
- Higher heat units
- Higher biomass
- Crop maturity
- Longer growing season
- Longer season for pasturing livestock

Top areas of concern/focus, in priority order, to participants in this session are:



3.2 Session #2

The following comments were received by participants in the second session.

Negative Effects of Climate Change



Positive Effects of Climate Change



10 themes, in random order, were identified by stakeholders during the engagement process.

Negative

- Affect food quality
- Effects felt differently in areas of province
- Frost in summer, later in season
- New pests/diseases in this area
- Less rainfall, hotter, drier summer
- Costs for storage and coolers increasing
- Increase in extreme weather events

Positive

- Crop diversity (able to try new crops not traditional to the province)
- Longer growing season
- Potential to expand markets by fulfilling gaps left by lower yields further south

Top areas of concern/focus, in priority order, to participants in this session are:

Negative

- Increase in extreme weather events
- Affect food quality
- New pests/diseases in this area

Positive

- Potential to expand markets by fulfilling gaps left by lower yields further south
- Longer growing season

3.3 Session #3

The following comments were received by participants in the third session.

Negative Effects of Climate Change



Positive Effects of Climate Change



11 themes, in random order, were identified by stakeholders during the engagement process.

Negative

- Adverse/Extreme Weather Events
- Change in Pests
- Shift in Growing Season
- Change in Weather Patterns
- Soil Degradation
- Increased Costs (Insurance)

Positive

- Longer Growing Season
- Non-traditional Crops/ Crop Diversity
- New Market Opportunities
- More Efficiencies in Off Season
- Longer Pasture Time

Top areas of concern/focus, in priority order, to participants in this session are:

Negative

- Adverse/Extreme Weather Events
- Change in Weather Patterns
- Shift in growing season

Positive

- More Efficiencies in Off-Season
- Non-Traditional Crops/Crop diversity
- Longer growing season

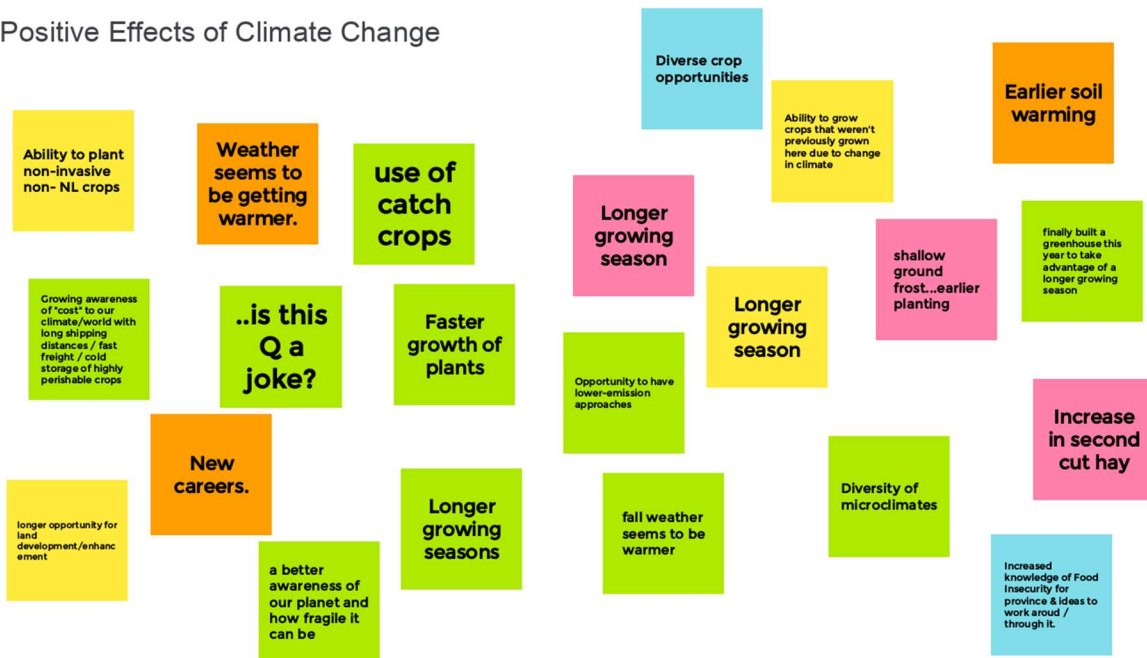
3.4 Session #4

The following comments were received by participants in the fourth session.

Negative Effects of Climate Change



Positive Effects of Climate Change



20 themes, in random order, were identified by stakeholders during the engagement process.

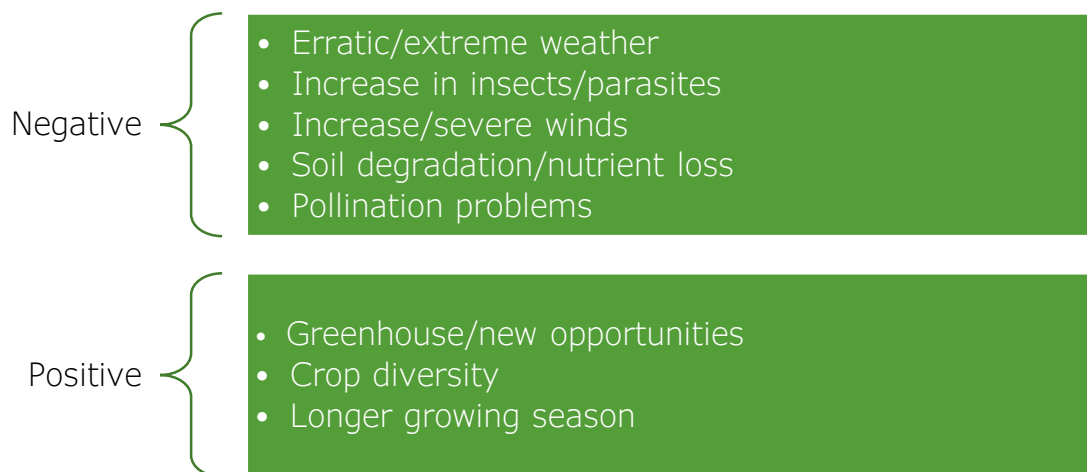
Negative

- Reduced reliability of transportation
- Erratic/extreme weather
- Soil degradation/nutrient loss
- Increased heating/cooling costs
- Increase/severe winds
- Pollination problems
- Increase in insects/parasites
- Rising sea level/more icebergs
- More precipitation
- Late frosts
- Perception of farmers as contributors to climate change
- Access to water
- Fear and anguish

Positive

- Diversity of microclimates
- Crop diversity
- Faster growth
- New careers
- Off-season development
- Greenhouse/new opportunities
- Longer growing season

Top areas of concern/focus, in priority order, to participants in this session are:



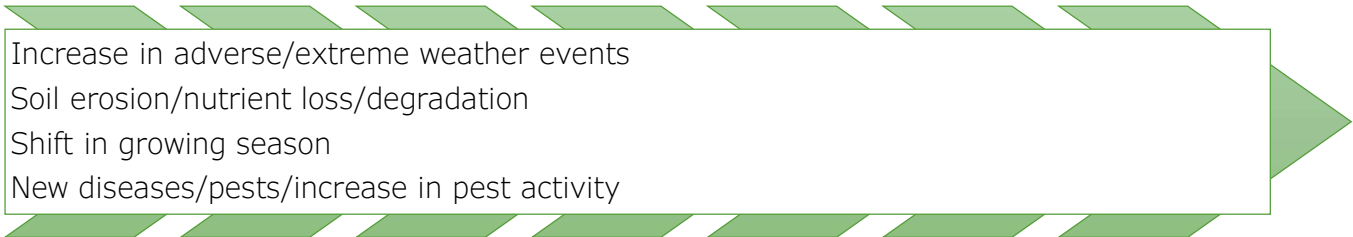
4.0 Summary

Participants were very engaged in the sessions provided by the Newfoundland and Labrador Federation of Agriculture. All expressed thanks at being invited to participate. Climate change is having an impact on agriculture in this province. It was noted that the effects are experienced differently in different areas of the province. Several micro-climate zones are in the province meaning that producers mere kilometers apart may be experiencing different impacts of climate change. More research on climate change and resources for producers to mitigate the effects of climate change would be most welcomed by agriculture stakeholders.

4.1 Priorities


Overall, the following priorities were identified:

Negative



- Increase in adverse/extreme weather events
- Soil erosion/nutrient loss/degradation
- Shift in growing season
- New diseases/pests/increase in pest activity

Positive



- Longer growing season
- Non-traditional crops/crop diversity
- Greenhouse growing season expanded

Appendix A

The following written submission was received by the NLFA.

Climate impacts – Avalon Region.

It is really important to understand up front that generalizing about this region is not appropriate as there are probably hundreds of micro climate locations within it. This is driven by the prevailing wind direction, the effect of the sea temperatures it traverses and local topography. Three examples will help to illustrate this. People who travel the TCH regularly will know that the weather encountered between Butterpot Park and the height of land west of the Salmonier line is quite often foggy or raining or snowing when the areas on either side of this are clear. This reflects the condensation of moisture from wet air picked up off St. Mary's Bay by the SW wind as the air cools over the Hawke Hills. The area between Placentia Junction and the TCH is often wetter than the area north of the TCH as the moisture drops out for similar reasons noted above as air cools over the mountains across Fitzgerald's Pond. I have been rained on in this area when people in nearby New Harbour are happily putting away hay. A third well known example is the generally increasing temperatures experienced the further you travel into Conception Bay in CBS. Farmers will know what happens generally in their own area. We all know that the unexpected will happen like Snowmagedon last year. We've had almost no snow so far this year and few or no ponds frozen over. Nevertheless some things are happening generally fairly steadily. Annual precipitation has been increasing at least since 1950. Mean annual temperature has been increasing which probably has resulted in a mean decline in snow cover period. There appears to be some change in bird migration and insect population extremes.

Precipitation effects:

1. Wetter ground
2. More run off
3. Fertilizer elution will need slow release nitrates in particular and application related to dry period post application. Otherwise this will end up in waterways causing deterioration in water quality as has been demonstrated firmly in Portugal Cove St Philips waterways by Green Team studies under my general guidance. We've found fertility originating from lawns, septic systems and farms.
4. Soil anoxia
5. Soil compaction
6. Foot rot increases in livestock
7. Snail and slug population increases that are carriers of various stages of some parasites
8. Nisher (softer) growth in plants
9. Difficulty getting enough time to carry out field work especially in flat lands and fine soils
10. Heavy rain, hail etc. crop damage
11. Machinery flotation may become an issue
12. Hay and pasture land will need aeration treatment e.g. light disc or spike harrowing
13. Potentially higher humidity may result in more fungal infections

Temperature effects

1. Less snow cover
2. Consequent colder winter soil due to loss of insulation

3. Faster growth of plants including trees
4. Longer growing season
5. Enhanced late ripening fruits
6. More diverse crop opportunities
7. Potential to evaluate changes in forage mixes
8. Increases in second cut hay
9. Opportunity for greater winter kill of insects both beneficial and pest (1920 there were almost no early small pollinators resulting in zero pollinating of 4 different varieties of mature flower loaded cherries as well as a native one and almost no pollination of dogberries) honey bees can't work in low temperatures.
10. Opening for new insect pests from USA especially given our dominant SW wind
11. Earlier soil warming, grass needs a 5C temp, clover 10C to grow well

Wind:

1. Extreme wind damage
2. Higher wind, greater lodging
3. Damage to trees, especially fruit with heavy tops, uprooting in wet soils
4. Change to ballerina type fruit for lower wind damage
5. Need to plant high crops parallel to wind
6. Buildings must be stronger, run parallel to the wind (SW-NE) and possibly less wide
7. Problems with blowing hay windrows and bailing for dry hay vs haylage
8. Spread of windblown seed weeds and new species from USA
9. Possible faster drying effects on hay with more breeze

Other effects general:

1. Potential enhanced survival and reproduction rates leading to population increases in rodents
2. Greater prey numbers will enable greater reproduction rates in foxes and coyotes
3. Parasite numbers and variety on wildlife will increase (e.g. moose die off from deer ticks NB)
4. Changes in pest insect infestations may occur starting earlier and growing more rapidly given temperature enhanced digestion rates
5. Second rounds of insect infestations may occur more frequently
6. Winter kill of pollinators may affect pollination
7. Earlier flowering of fruit crops may result in problems with pollination and frost kill
8. Longer wet or dry periods exact their own problems depending on when they happen

What to do?

I have presented my own take on what has and will continue to happen. Each of these has its own consequences whether positive or negative. We have expertise – federal, provincial, professional within and outside the industry, in the general public and at the University. We should task such individuals with filling out the picture. For example the complex of insect changes could be put to Dr. Dixon federally. The changes to forage crops e.g. earlier maturation or more advantageous varieties to federal expertise and seed producers. Some might be sought from neighbouring provinces e.g. I used to calculate some things compared with a two week later spring and earlier fall with N.S. Largely temperature driven as well as day length due to latitude effects. By the same token our latitudes with increased temperatures now enable useful comparison with historical data from similar ones in the UK and coastal Europe. This requires setting up a formal industry/governments working group to develop a work plan to identify the key questions and piece them out to appropriate individuals to provide advice

based on firmly forecast changes with time and climate data collected by Federal Agriculture research here. It will be necessary to assess climate data from a number of places dispersed throughout the province including coastal Labrador.

There is evidence for almost all of the above effects already.
Dick Whitaker