



# CLIMATE CHANGE ADAPTATION PROGRAM

## Regional Adaptation Strategies Summary: Cariboo

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# Cariboo Region SUMMARY

BC Agriculture & Climate Change  
**Regional Adaptation Strategies** series

**W**hile agricultural producers are accustomed to adapting to a range of conditions, climate change is anticipated to bring a new and more challenging scope and scale of change.

Adaptive approaches, decisions and practices will enhance the agriculture sector's resilience and capacity to manage through climate change impacts.

The *Cariboo Adaptation Strategies* planning process brought together agricultural producers and specialists, along with local and provincial government representatives in the Cariboo. Approximately 80 participants took part over the course of four workshops and one implementation meeting. A local advisory committee provided guidance and input throughout the process.

The resulting document is intended to outline clear actions, suited to the specifics of the local context, both with respect to anticipated changes in climate and local capacity and resources. The plan includes 12 strategies and 32 actions for agriculture to adapt to five priority impact areas: (1) increasing wildfire risk; (2) changing hydrology; (3) increasing variability; (4) changing pests, diseases and invasive species; and (5) changes to wildlife and ecological systems.

## *Agriculture in the Cariboo Region*

- The Cariboo is a large region (80,000 square km) with diverse topography, micro-climates and production conditions.
- 936,000 hectares (12% of regional area) are in the Agricultural Land Reserve (2012).
- There are more than 1,000 farms in the region.
- For 27% of Cariboo agricultural operations, beef cattle contribute over 50% of farm income.
- Forage crops make up 93% of the total cropped area (50,000 hectares).
- There is increasing diversity in the livestock and horticultural crop production in the region.

# Regional Climate Projections



- Annual average *temperature increase of 1°C by 2020s, and increase of 1.8°C by 2050s*
- *12 more frost-free days and 147 more growing degree-days annually by 2020s*
- *Annual precipitation increase of 4% by 2020s, and 6% by 2050s*

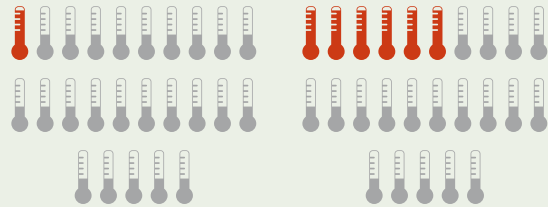


recent past



2050s

- *2.5 times the number of summer warm days (days in June, July and August that are warmer than the 90th percentile historic baseline temperature for that day)*



recent past

2050s

- *6 times the number of extremely hot days (days so hot they used to occur only once every 25 years)*
- *Increased frequency, intensity and magnitude of extreme rainfall*

# Agricultural Impacts



The changes in the climate projected for the Cariboo will have a range of impacts on the agriculture sector.

A sample of these impacts is provided here. *(A more extensive and detailed list is provided in the full report.)*

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> <li>↗ Increase in summer temperatures</li> <li>↘ Decrease in summer precipitation</li> </ul>	<b>Increase in wildfire risk</b>	<ul style="list-style-type: none"> <li>▪ Increase in severity &amp; frequency of damage to agricultural infrastructure &amp; productivity</li> <li>▪ Costs of preparing for, managing &amp; responding to wildfire</li> <li>▪ Long-term impacts to soil &amp; hydrology after moderate to high severity burns</li> </ul>
<ul style="list-style-type: none"> <li>↘ Decrease in summer precipitation</li> <li>↘ Decrease in snowpack (especially in spring)</li> </ul>	<b>Changing hydrology</b> <ul style="list-style-type: none"> <li>▪ Drier summer conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Decrease in quality &amp; amount of water supply for livestock &amp; irrigation</li> <li>▪ Water stress &amp; decreased productivity for crops &amp; rangeland</li> <li>▪ Increase in need for water storage &amp; irrigation (and associated costs)</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in winter temperatures</li> <li>↗ Increase in extreme rainfall events</li> </ul>	<b>Changing hydrology</b> <ul style="list-style-type: none"> <li>▪ Runoff &amp; flooding</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increase in damage to infrastructure &amp; productivity</li> <li>▪ Increase in soil erosion</li> <li>▪ Risk to dam integrity</li> <li>▪ Challenges with timing for planting/harvesting</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in temperatures</li> <li>↗ Increase in spring precipitation &amp; extreme rain events</li> <li>↗ Drier summer conditions</li> </ul>	<b>Changing pests, diseases &amp; invasive plants</b>	<ul style="list-style-type: none"> <li>▪ Increase in crop damage &amp; losses</li> <li>▪ Increase in management costs, complexity &amp; uncertainty</li> <li>▪ Negative effects on livestock health</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in temperatures</li> <li>~ Shift in precipitation patterns</li> <li>↗ Increase in wildfire frequency &amp; severity</li> </ul>	<b>Changes to wildlife &amp; ecological systems</b>	<ul style="list-style-type: none"> <li>▪ Changing patterns of plant succession &amp; species composition</li> <li>▪ Loss of crops, livestock, forage &amp; stored feed</li> <li>▪ Establishment of new invasive plants</li> </ul>

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# Next Steps: Strategies + Priority Actions

*12 strategies and 32 actions* were identified to support the Cariboo region agriculture sector with adapting to climate change. Of the total 32 actions, *13 were seen to be priority actions* for immediate implementation, and are shown here. (*The complete list is provided in the full report.*)

## **IMPACT AREA 1**

### *Increasing wildfire risk*

STRATEGY 1.1 Collaborative approaches to fuel and wildfire management

**ACTION 1.1A** *Develop collaborative agriculture wildfire plans*

STRATEGY 1.2 Farm-level wildfire damage mitigation planning

**ACTION 1.2A** *Develop agriculture specific wildfire preparedness and mitigation resources*

**ACTION 1.2B** *Develop individual farm/ranch level wildfire plans*

## **IMPACT AREA 2**

### *Changing hydrology*

STRATEGY 2.1 Restore and enhance natural water storage capacities in local watersheds

**ACTION 2.1A** *Establish local watershed restoration projects to evaluate and demonstrate restoration and enhancement options*

**ACTION 2.1B** *Evaluate, demonstrate and share soil management and cropping options for improved water retention*

STRATEGY 2.2 Maintain and enhance agriculturally significant dams

**ACTION 2.2A** *Inventory and prioritize existing dams / water storage*

**ACTION 2.2B** *Develop cooperative approaches to dam assessments, upgrades, maintenance and management*

STRATEGY 2.3 Maximize agricultural water use conservation and efficiency

STRATEGY 2.4 Identify flood and runoff prone agricultural areas and implement mitigation measures

## **IMPACT AREA 3**

### *Increased variability*

STRATEGY 3.1 Conduct local research to increase resilience

**ACTION 3.1A** *Strengthen the capacity for a coordinated regional approach to agricultural research*

STRATEGY 3.2 Support and enhance holistic and adaptive grazing management systems

**ACTION 3.2A** *Monitor and evaluate how different grazing and management regimes affect: soils development, nutrient cycling and profitability*

## IMPACT AREA 4

### *Changing pests, diseases & invasive plants*

STRATEGY 4.1 Increase regional monitoring for pests, diseases and invasive species

STRATEGY 4.2 Implement best management practices for pest, disease & invasive species issues

**ACTION 4.2B** *Conduct pilot projects for effective farm-level management (particularly for emerging issues)*

**ACTION 4.2C** *Collaborate with key agencies and partners for management of pests, diseases and invasive plants*

## IMPACT AREA 5

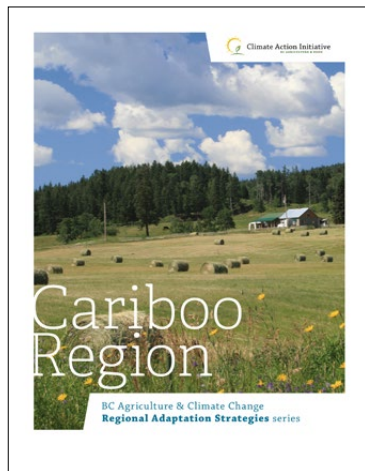
### *Changing wildlife & ecological systems*

STRATEGY 5.1 Maintain rangeland productivity in a changing climate

**ACTION 5.1A** *Research, pilot and demonstrate practices and technologies for maintaining range productivity*

**ACTION 5.1B** *Pilot alternate livestock watering options*

STRATEGY 5.2 Collaborative management of changing wildlife impacts



download the full report at

[www.BCAGClimateAction.ca](http://www.BCAGClimateAction.ca)



## Climate Action Initiative

BC AGRICULTURE & FOOD

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*This summary is published March 2015 by the British Columbia Agriculture & Food Climate Action Initiative, featuring photos by Allen Dobb. ✉ The project contact is Emily MacNair, Emily@BCAGClimateAction.ca.*

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