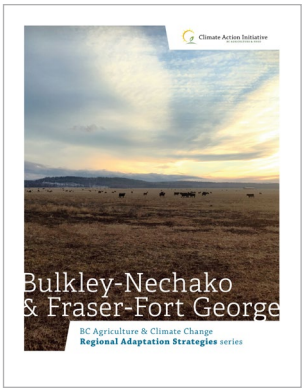
Regional Adaptation Program

BC Agriculture & Food Climate Action Initiative

Bulkley-Nechako & Fraser-Fort George

AGRICULTURAL IMPACTS as assessed in 2019



The changes in climate projected for the Bulkley-Nechako & Fraser-Fort George region will have a range of impacts on agricultural production. Potential agricultural impacts are summarized the table below.

This table is extracted from the *Bulkley-Nechako & Fraser-Fort George Adaptation Strategies* full report, published in 2019 by the BC Agriculture & Food Climate Action Initiative. To read the full report, visit: *www.ClimateAgricultureBC.ca*

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
↗ Increase in summer average temperatures, potential decrease in summer rainfall ↗ Increase in extreme heat events ↗ Increase in winter and spring temperatures (more rapid snowmelt, drier conditions)	***Increasing wildfire risk:*** ▪ More frequent and intensive wildfire events	– Increase in costs associated with preparing for, managing and responding to wildfire – Feed and bedding shortages and increase in associated costs – Lost production during active wildfire and recovery period – Negative impacts to animal and crop health, productivity and yield from smoke – Road closures and loss of access to inputs and to distribution channels – Loss of power and associated irrigation – Stress and psychological challenges for producers
↗ Increase in variability of conditions (including temperatures, precipitation and extremes)	***Increasing variability:*** ▪ Fluctuating and unpredictable seasonal conditions ▪ Increased uncertainty of frost risk timing (spring/fall) ▪ Increased variability in spring and fall precipitation/ moisture	– Risk of livestock injury due to freeze/thaw – Reduced insulation from snow; increase in forage crop winter damage / winterkill – Uncertain timing of blossom set and spring growth – Reduced windows for crop development and seasonal tasks (e.g., pollination, planting, germination and harvesting)

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Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
↗ Increase in average temperatures ↗ Increase in growing degree days ↗ Increase in growing season length ↗ Increase in minimum winter temperatures	***Changing crop suitability ranges:*** ▪ Changing seasonal conditions ▪ Changing production windows	– Potential for additional cuts of hay within season – Opportunities to grow new varieties and types of crops – Potential for season extension – Increase in management complexity, risk and cost (e.g., with season extension) – Inconsistent yield and quality of previously suitable crops – Difficulty in identifying suitable crops for changing conditions
↗ Increase in average temperatures ↗ Increase in summer temperatures ↘ Potential decrease in summer precipitation ↘ Reduction in snowfall (and associated snowpack)	***Warmer & drier summers:*** ▪ More frequent and extended dry periods in summer ▪ Lower summer and fall stream flow levels (more rapid and earlier spring melt)	– Increase in water demand and decrease in water supply – Increase in need for water storage – Increase in costs associated with water supply and water distribution infrastructure – Increase in need for dugout maintenance – Impacts to crop yields and quality (particularly non-irrigated crops) – Increase in need for purchased feed – Late harvest (i.e., due to delayed growth or delayed seed head formation) – Changes to timing and use of rangelands (versus hay) for grazing cattle
↗ Increase in annual temperatures ↗ Increase in winter minimum temperatures ~ Shifting precipitation patterns	***Changes in pests, diseases & invasive species:*** ▪ Increasing winter survival rates ▪ Increasing in number of cycles in a year ▪ Introduction of new pests and diseases ▪ Changing range/distribution of pests, diseases and invasive species	– More frequent and increased damage to crops – Impacts to livestock health – Reduction in forage and pasture quality/yield – Increase in costs for management of pests, diseases, and invasive species
↗ Increase in precipitation in winter, spring and fall ↗ Increase in frequency and intensity of extreme rainfall	***Extreme precipitation events:*** ▪ Increase in runoff ▪ Potential for more rain-driven flood events ▪ Increase in excess moisture	– Increase in site-specific flood risk and drainage issues – Reduced access to fields and risk of compaction – Increase in risk of soil erosion and landslides (exacerbated by wildfire impacts) – Damage to infrastructure (e.g., dams and water storage) – Potential for animal health risks from disease or flooding – Impacts to soil health from nutrient leaching – Damage to riparian areas (erosion, washouts, silting etc.) – Negative impact on crop productivity and quality and changes to crop production (e.g., silage instead of hay)

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Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
↗ Increase in average and seasonal temperatures	***Increase in extreme heat events:*** ▪ Increasing number of days per year over 25°C and over 30°C	– Increase in crop water demand – Change in timing of animal husbandry (e.g., need to shear early or more often) – Increase in crop damage and loss – Increase in prevalence of some pests and associated damage – Impacts to livestock health and productivity – Challenges controlling temperature in poultry and dairy barns
↗ Increase in average temperature ↗ Increase in extreme events (e.g., wildfire, floods etc.) ↗ Potential for longer, warmer and drier summers	***Changing ecosystems & wildlife populations/distribution:*** ▪ Changes in range and distribution of plant and animal populations ▪ Reduction in feed/water sources for wildlife	– Forest encroachment on grazing lands – Changes to plant physiology and nutritional content (e.g., in forage crops) – Increase in conflict with wildlife (bull elk, grizzly bears and wolves) – Increase in pressure on agricultural lands from distribution of deer, elk (loss of crops and feed)