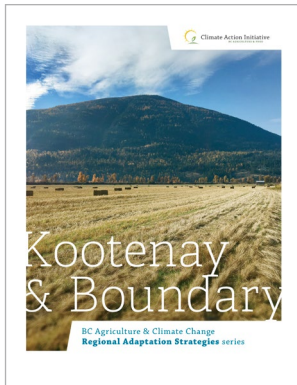


# Kootenay & Boundary

AGRICULTURAL IMPACTS as assessed in 2019



THE CHANGES IN CLIMATE projected for the Kootenay & Boundary region will have a range of impacts on agricultural production. Potential agricultural impacts are summarized the table below.

This table is extracted from the *Kootenay & Boundary Adaptation Strategies* full report, published in 2019 by the BC Agriculture & Food Climate Action Initiative. To read the full report, visit: [www.ClimateAgricultureBC.ca](http://www.ClimateAgricultureBC.ca)

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> <li>↗ Increase in average temperatures</li> <li>↗ Increase in summer average and maximum temperatures</li> <li>↗ Increase in number of days above 25°C and 30°C</li> <li>↘ Decrease in summer precipitation</li> </ul>	<p><b>Warmer &amp; drier summers</b> (changing hydrological regime):</p> <ul style="list-style-type: none"> <li>▪ Lower summer stream flows</li> <li>▪ More frequent and extended dry periods in summer</li> </ul>	<ul style="list-style-type: none"> <li>– Increase in agricultural water demand</li> <li>– Reduction in water supply availability</li> <li>– Increase in need for new/improved water storage and irrigation infrastructure</li> <li>– Reduction in water flows and water pressure in purveyed water systems (due to increased water demand)</li> <li>– Negative impacts to crop yields and quality (particularly non-irrigated crops)</li> <li>– Changes to timing and use of rangelands for grazing cattle</li> <li>– Forage crop losses and increase in livestock feed costs during dry years</li> <li>– Increase in pest pressure</li> </ul>

continued on next page →

→ continued from previous page

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> <li>↗ Increase in summer temperatures, reduction in summer rainfall and periods of extreme heat (longer, warmer and drier summers)</li> <li>↗ Increase in winter and spring temperatures (more rapid snowmelt, drier conditions)</li> </ul>	<p><b>Increasing wildfire risk:</b></p> <ul style="list-style-type: none"> <li>▪ More frequent and intensive wildfire events</li> </ul>	<ul style="list-style-type: none"> <li>– Damage and losses to agricultural assets and infrastructure</li> <li>– Increase in costs associated with preparing for, managing and responding to wildfire</li> <li>– Stress and psychological challenges for producers</li> <li>– Lost production during active wildfire and recovery period</li> <li>– Negative impacts to animal and crop health and productivity/ yield from smoke</li> <li>– Reduced human capacity and worker productivity (respiratory and cardiac illnesses) from smoke</li> <li>– Changes to pollinator behaviour</li> <li>– Long-term impacts to soil, hydrology and forest ecosystems</li> <li>– Increase in invasive species pressure in burned areas</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in variability of conditions (including temperatures, precipitation and extremes)</li> </ul>	<p><b>Increasing variability:</b></p> <ul style="list-style-type: none"> <li>▪ Fluctuating and unpredictable seasonal conditions (temperature/ moisture)</li> <li>▪ Increased uncertainty over frost timing (spring/fall)</li> </ul>	<ul style="list-style-type: none"> <li>– Damage to crops from extreme temperature fluctuations in late winter and early spring</li> <li>– Reduction in crop productivity and quality</li> <li>– Increased costs to adopt new farm practices/install infrastructure to mitigate risk</li> <li>– Shifting/unpredictable schedule for farm activities</li> <li>– Changes to pollinator behaviour</li> </ul>
<ul style="list-style-type: none"> <li>↗ Warmer winter and spring temperatures</li> <li>↗ Increase in winter and spring precipitation</li> <li>↗ Increase in extreme precipitation events</li> </ul>	<p><b>Potential for increased flooding (changing hydrological regime):</b></p> <ul style="list-style-type: none"> <li>▪ Increasing river flows in winter and spring</li> <li>▪ Earlier peak stream flows/ freshet</li> </ul>	<ul style="list-style-type: none"> <li>– Risk of catastrophic flooding and damage to farm buildings and equipment</li> <li>– Impact to farm profitability due to crop or livestock losses</li> <li>– Increase in need for farm and community flood-readiness (and associated costs)</li> <li>– Disrupted access to local services/supply chains/transportation networks</li> <li>– Increase in pressure on flood-protection infrastructure</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in average precipitation in winter</li> <li>↗ Increase in intensity/ frequency of extreme rainfall events</li> </ul>	<p><b>Extreme precipitation (changing hydrological regime):</b></p> <ul style="list-style-type: none"> <li>▪ Potential for more rain-driven flood events</li> <li>▪ Increase in excess moisture</li> <li>▪ Increase in run-off</li> </ul>	<ul style="list-style-type: none"> <li>– Increase in site-specific flooding (and associated crop/ infrastructure losses)</li> <li>– Damage to riparian areas (erosion, washouts, silting)</li> <li>– Reduced access to fields and risk of soil compaction</li> <li>– Increase in pressure on farm drainage systems</li> <li>– Increase in risk of soil erosion and landslides</li> <li>– Reduced windows for crop development and seasonal tasks (pollination, planting, harvesting)</li> <li>– Increased disease pressure (from excess moisture)</li> </ul>

continued on next page →

→ continued from previous page

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> <li>↗ Increase in average and maximum summer temperatures</li> </ul>	<p><b>Increase in extreme heat events:</b></p> <ul style="list-style-type: none"> <li>▪ Increasing number of days per year over 25°C and 30°C</li> </ul>	<ul style="list-style-type: none"> <li>– Increase in evapotranspiration and crop water demand</li> <li>– Risk of crop damage and loss (especially for crops without irrigation)</li> <li>– Negative impacts to livestock health and productivity</li> <li>– Increase in need for livestock and poultry cooling infrastructure</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in average temperatures</li> <li>↗ Increase in growing degree days</li> <li>↗ Increase in frost free days</li> <li>↗ Increase in winter minimum temperatures</li> <li>~ Shift in precipitation patterns</li> </ul>	<p><b>Changing crop suitability ranges:</b></p> <ul style="list-style-type: none"> <li>▪ Changing seasonal conditions</li> <li>▪ Changing production windows</li> </ul>	<ul style="list-style-type: none"> <li>– Increase in management complexity and cost (e.g., with season extension)</li> <li>– Inconsistent yield and quality of previously suitable crops</li> <li>– Difficulty in identifying suitable crops for changing conditions</li> </ul> <p><b>Potential Opportunities:</b></p> <ul style="list-style-type: none"> <li>+ Increase in suitability for new varieties and new crops</li> <li>+ Less winter kill of perennial crops (e.g., peach trees)</li> <li>+ Opportunity for season extension and additional harvest of certain crops</li> </ul>
<ul style="list-style-type: none"> <li>↗ Increase in annual temperatures</li> <li>↗ Increase in winter minimum temperatures</li> <li>↗ Increase in spring precipitation and extreme rain events</li> <li>↗ Drier summer conditions</li> </ul>	<p><b>Changes in pests, diseases &amp; invasive plants:</b></p> <ul style="list-style-type: none"> <li>▪ Increasing winter survival rates</li> <li>▪ Increasing number of cycles in a year</li> <li>▪ Introduction of new pests and diseases</li> <li>▪ Changing range/distribution of pests, diseases and invasive species</li> </ul>	<ul style="list-style-type: none"> <li>– Reduction in efficacy of previous pest management schedules and practices</li> <li>– Increase in management costs and complexity</li> <li>– More frequent and increased damage to crops</li> <li>– Impacts to livestock health (poisonous weeds/ poor pasture)</li> <li>– Reduction in forage and pasture quality/yield</li> </ul>