

Vancouver Island

Regional Adaptation Program | **AGRICULTURAL IMPACTS** | as assessed in 2020



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

This table is extracted from the *Vancouver Island Adaptation Strategies* full report, published in 2020 by the Climate & Agriculture Initiative BC. To read the full report, visit: www.ClimateAgricultureBC.ca

Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> ↗ Increase in average temperatures ↗ Increase in summer average and maximum temperatures ↗ Increase in number of days above 25°C and 30°C ↘ Decrease in summer precipitation 	<p>Warmer & drier summers (changing hydrological regime):</p> <ul style="list-style-type: none"> ▪ Lower summer stream flows ▪ More frequent and extended dry periods in summer 	<ul style="list-style-type: none"> – Increase in agricultural water demand – Negative impacts to water quality (e.g., algal blooms) – Reduction in water supply availability and increase in likelihood of temporarily losing access to water – Increase in need for new/improved water storage and irrigation infrastructure – Negative impacts to crop yields and quality (particularly non-irrigated crops)
<ul style="list-style-type: none"> ↗ Increase in annual average and minimum temperatures ↗ Increase in seasonal (winter, fall, spring) precipitation ↗ Drier summer conditions 	<p>Changes in pests, diseases & invasive plants:</p> <ul style="list-style-type: none"> ▪ Increasing number of cycles in a year ▪ Introduction of new pests and diseases ▪ Changing range/distribution of pests, diseases and invasive species 	<ul style="list-style-type: none"> – More frequent and increased damage to crops – Inability to rely on previous pest management schedules and practices – Increase in management costs and complexity

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Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> ↗ Increase in variability of conditions (including temperatures, precipitation and extremes) ↗ Increase in extreme events (precipitation, heat, wind) 	<p>Increasing variability:</p> <ul style="list-style-type: none"> ▪ Fluctuating and unpredictable seasonal conditions (temperature/moisture) ▪ Increased uncertainty over frost timing (spring/fall) 	<ul style="list-style-type: none"> – Loss of perennial crops to winterkill in cold/dry winters – Damage to crops from extreme temperature fluctuations in late winter and early spring (e.g., negative impacts to blossom set) – Shifting/unpredictable schedule for farm activities (seeding, germination, harvesting, etc.) – Increase in costs to adopt new farm practices/install infrastructure to mitigate risk – Changes to pollinator behavior and in extreme cases, pollinator die-off – Damage to infrastructure and disruption to supply chains from severe winter storms
<ul style="list-style-type: none"> ↗ Increase in average and maximum summer temperatures 	<p>Increase in extreme heat events:</p> <ul style="list-style-type: none"> ▪ Increasing number of days over 25°C and 30°C 	<ul style="list-style-type: none"> – Increase in evapotranspiration and crop water demand – Risk of crop damage and loss (e.g., fruit scald and leaf burn) – Negative impact to crop productivity and crop quality – Impacts to livestock health and productivity – Shifting timing of animal husbandry
<ul style="list-style-type: none"> ↗ Warmer winter and spring temperatures ↗ Increase in winter, spring and fall precipitation ↗ Increase in frequency and intensity of extreme precipitation events 	<p>Increase in extreme precipitation (changing hydrological regime):</p> <ul style="list-style-type: none"> ▪ Potential for more rain-driven flood events ▪ Increase in excess moisture ▪ Increase in run off ▪ Increasing flows in major rivers in winter and spring (and in some cases autumn) 	<ul style="list-style-type: none"> – Increase in site-specific flooding (and associated crop/infrastructure losses) – Increase in risk of soil erosion (particularly on stream or river banks) and landslides – Decrease in access to fields and risk of soil compaction – Increase in pressure on flood-protection infrastructure and on-farm water storage infrastructure – Increase in pressure on farm drainage systems (exacerbated by run off from upland development, forestry)
<ul style="list-style-type: none"> ↗ Increase in summer temperatures, reduction in summer rainfall and periods of extreme heat (longer, warmer and drier summers) ↗ Increase in winter and spring temperatures (less snow accumulation, more rapid snowmelt, drier conditions) 	<p>Increasing wildfire risk:</p> <ul style="list-style-type: none"> ▪ More frequent and intensive wildfire events 	<ul style="list-style-type: none"> – Negative impacts to animal and crop health and productivity/yield from smoke – Disrupted access to local services/supply chains/transportation networks – Damage and losses to agricultural assets and infrastructure (including loss of power for irrigation pumps) – Increase in costs associated with preparing for, managing and responding to wildfire – Lost production during active wildfire and recovery period

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Projected Climate Changes	Projected Effects	Potential Agricultural Impacts
<ul style="list-style-type: none"> ↗ Increase in average temperatures ↗ Increase in growing degree days ↗ Increase in frost free days ↗ Increase in winter minimum temperatures ~ Shift in precipitation patterns 	<p>Changing crop suitability ranges:</p> <ul style="list-style-type: none"> ▪ Changing seasonal conditions ▪ Changing production windows 	<ul style="list-style-type: none"> - Increase in risk and costs to take advantage of opportunities - Inconsistent yield and quality of previously suitable crops - Difficulty in identifying suitable crops for changing conditions <p>Potential Opportunities:</p> <ul style="list-style-type: none"> + Increase in suitability for new varieties and new crops + Season extension and additional harvest of certain crops
<ul style="list-style-type: none"> ↗ Increase in annual average temperatures ↗ Increase seasonal (winter, fall spring) precipitation and extreme precipitation events ↗ Sea-level rise 	<p>Increasing coastal flood risk:</p> <ul style="list-style-type: none"> ▪ Potential sea level rise of 26-98 cm above mean sea level 	<ul style="list-style-type: none"> - Increase in salinity of water table and soil - Migration of salt wedge upstream - Increase in risk of coastal inundation