



CLIMATE CHANGE ADAPTATION PROGRAM

Fraser Valley Agriculture Water Management

Fact Sheet

Funding for this project has been provided by the Governments of Canada and British Columbia through Growing Forward 2, a federal-provincial-territorial initiative. The program is delivered by the Investment Agriculture Foundation of BC.

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FRASER VALLEY AGRICULTURAL WATER MANAGEMENT

Adapting to Climate Change in the Fraser Valley

The Climate is Changing

Farmers are used to adapting to the weather and difficult conditions. But climate change will present greater challenges than what has been experienced by farmers in the past.

What Are We Expecting?

Temperature

Average annual change ↑

- +1.0°C by 2020s and +1.8°C by 2050s
- ↑ in all seasons
- ↑ Growing Degree Days & Frost Free Days

Precipitation

Average annual ↑

- Decrease in Summer Precipitation ↓
-7% by 2020s and -13% by 2050s
- Increase in Winter Precipitation ↑
+3% by 2020s and +6% by 2050s
- Decrease Winter Snowfall ↓
-12% by 2020s and -24% by 2050s

Extremes

What are now extremes become more common

- More extremely hot days in summer
- Drier summer conditions
- Increase in frequency, intensity and magnitude of extreme rainfall events



What Does This Mean For Farmers?

Warmer/drier summer conditions =

- Decreasing summer/fall water supply at same time as increasing need for irrigation and livestock water
- Potential impacts to crop yield/quality
- Increasing complexity and costs associated with water management

Wetter winter conditions/increase in extreme precipitation =

- Increasing pressure on drainage infrastructure
- Increasing runoff, erosion, site specific flood risk



What Can I Do?

Know your water rights

Surface water in B.C. has required a licence for use for over 100 years. On February 29, 2016 the *Water Sustainability Act* (WSA) replaced the *Water Act*. Farmers who use an existing well for farm activities now need to apply for a water licence and pay a water rental fee. Farmers will also need to apply for a water licence *before* drilling a new well. Domestic groundwater users are exempt from licensing.

If you use a well for farm activities, apply for a water licence ASAP

- In B.C., if there is a drought, the person whose water licence has the oldest date is given priority. This licence is called the FITFIR ('First in Time, First in Right') system.
- Existing groundwater users who drilled their wells before February 29, 2016 have until March 1, 2019 to submit an application & prove their date of first use (a well record or other documentation can be submitted as evidence).
- The one-time application fee is waived until December 31, 2017 for existing groundwater users.

If you use surface water be sure to have a water licence

It is best to have legal rights to the water you need for your farm.

If you have questions about your water licence application or your well, contact Front Counter BC:
1-877-855-3222 or
FrontCounterBC@gov.bc.ca

Plan your response to drought & dry conditions

Learn how to mitigate the affects of dry conditions on livestock, soil & on various crop types and plan ahead for prolonged periods of dry weather:

<http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/drought-in-agriculture>

BC Agriculture Water Calculator

This tool can help you calculate the quantity of water required for irrigation and livestock when you apply for a water licence. With this tool you can zoom in to your property, enter the details for your land (crop, soil and irrigation type). You can download and print a report with a map and submit it with your application.

www.bcagriculturewatercalculator.ca



Adapting to Climate Change in the Fraser Valley

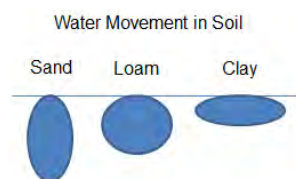
Manage Soil Moisture

Soil is your storage tank for water and you want to irrigate only what the soil can hold. Irrigating the right amount at the right time can:

- Increase yields, improve product quality,
- Improve plant health, reduce disease
- Reduce irrigation costs (e.g., power costs from pumping, system maintenance etc.)
- Conserve nutrients by ensuring they don't get flushed below the root zone
- Increase drought tolerance

Irrigation Tips

- Use an irrigation scheduling method to water only when necessary. The Irrigation Scheduling Calculator is a helpful tool which uses information from local weather stations: <https://www.irrigationbc.com/>
- Soil type and rooting depth determine how much water your soil can hold and how water moves through soil. If you under-water and do not fill the root zone, your crop won't be as drought tolerant. If you over-water, nutrients will leach out of the root zone.



- Drip systems: check placement & number of emitters. Improper emitter placement may cause salt build up in the root zone and insufficient supply to the plant roots. The correct amount of emitters spaced properly should irrigate at least 50% of the root zone to ensure good crop growth.
- Soil moisture sensors are a relatively easy way to help make improved water management decisions. The number of sensors, types of sensors, and field placement affect their accuracy. For information on how to use these sensors go to: <https://goo.gl/pxjFgP>

Rainwater Harvesting & Water Reuse

Several dairy farmers and nursery and greenhouse growers in the Fraser Valley are now harvesting rainwater and reusing water.

Recycling On Dairy Farms

Valeldoom Farms collects the water used to wash the milk parlor, pumps it to a 500 gallon holding tank in the top of the barn, and uses this to wash the holding area. They also reuse some of the flush water. This saves manure storage space costs and saves about \$100/year in power costs by pumping less clean water



"We have to store every drop of water on the farm. ...The less inputs we have, the less we have to get off the farm"
Tom Hoogendoorn,
Valeldoom Farms

Nursery & Greenhouses

Water recycling and rainwater harvesting can also help reduce water and nutrient expenses, manage runoff, and deal with increased rainfall on nursery and greenhouse sites.

One local producer, Van Belle Nursery, uses water circulation and reuse to manage runoff and reduce the use of water and other inputs. Van Belle manages water differently at each of its four growing sites



"Rainwater is free and clean, and when water is reused, other inputs like fertilizers and copper can be reused too"
Valerie Sikkema, Van Belle Nurseries

At one site, rainwater is collected by gutters in the greenhouse roof and transported via downspouts integrated in the roof support posts into collection pipes. From here rainwater flows by gravity to one of three large tanks. Rainwater is used for irrigating before drawing from a nearby creek. Harvesting rainwater also helps manage runoff to the creek.

Van Belle also collects and reuses excess irrigation water. At indoor sites, impermeable and vertically drained cultivation floors collect excess water. At outdoor sites, excess irrigation water and rain is drained from sloped permeable or impermeable growing beds into a central location. It flows via

pipes/ditches to a storage tank. Water is filtered before entering the storage tank and treated before use to remove bacteria and fungi.



What about when we have TOO MUCH water?

October 2016 was the wettest month on record in the Fraser Valley. In the future, increasing rains in spring and fall could lead to saturated soil and cause problems for planting and harvesting. The Delta Farmers Institute and researchers from UBC's Faculty of Land and Food Systems are partnering on a project which is evaluating different drainage practices (drain cleaning and maintenance, set asides, different tile spacing, cover crops, etc.) and is assessing the most cost-effective practices for increasing the number of workable days and reducing salinity. This project is in progress and more details will become available soon.

For more information on this project visit: www.bcagclimateaction.ca/faip

Improving Forage Production

The Pacific Field Corn Association and the Agassiz Research and Development Centre are partnering on a project to help producers in the Fraser Valley to improve farm profitability and security in a changing climate by increasing the yield and quality of their forage crops.

This study is looking at how to water crops to maximize forage yield during dry summer months and minimize nutrient losses. Applying the right amount of water at the right time can reduce nutrient loss and substantially increase forage yields and help reduce dependency on feed imports.

For more information on this project: www.bcagclimateaction.ca/faip