



2017 Annual Report of Agroclimate Conditions Across Canada

NATIONAL OVERVIEW

This report provides a brief overview of agroclimate conditions across Canada during the 2017 agricultural growing season. Globally, 2017 was another hot year, the second or third hottest on record based on independent analysis by two science agencies^{1, 2}. In Canada, the 2017 growing season was warm and dry in the west and cool and wet in the east (Figure 1). Agricultural regions experienced a wide range of climate and weather-related impacts including drought, wildfires, flooding, and severe storm damage.

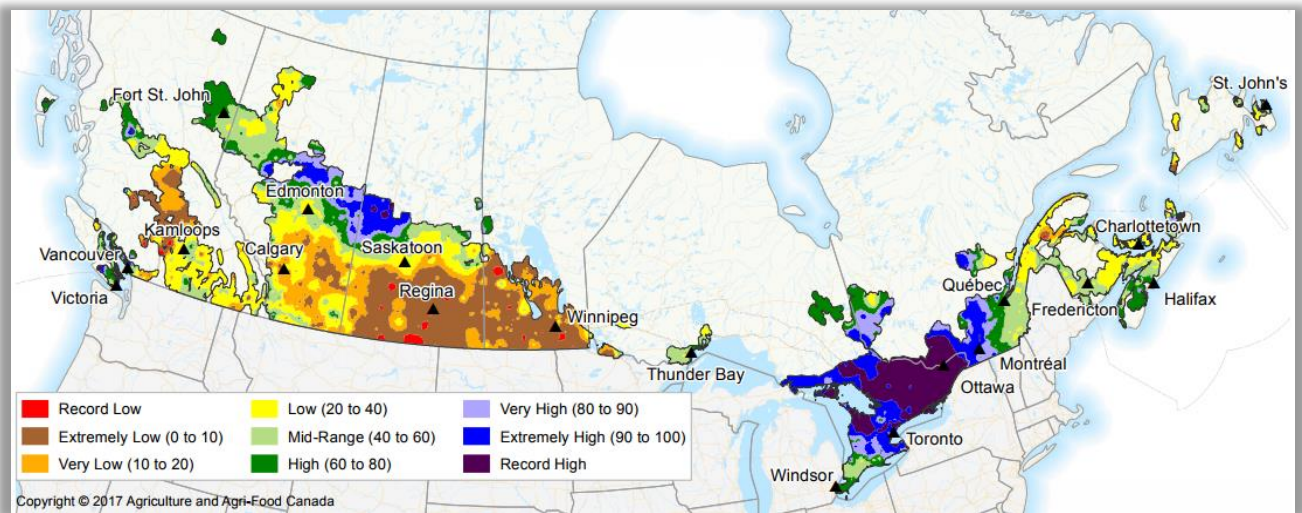


Figure 1 - Growing Season Precipitation Percentile (April 1 to August 31, 2017)

In Western Canada, a large portion of the southern region, from the British Columbia Interior to the southeastern Prairies, experienced the driest summer in 70 years³. Many areas recorded less than half of normal rainfall during the growing season³. These extremely dry conditions resulted in British Columbia experiencing the worst wildfire season in provincial history with widespread damage to fencing, forage crops, and rangeland. Drought conditions, record high temperatures, and frequent strong winds across British Columbia, and most of Alberta and Saskatchewan resulted in heat stress, accelerated crop maturation, and poor grain fill, as well as reduced livestock feed and water availability. A small portion of the northern agricultural region in Alberta and Saskatchewan experienced persistent excessive moisture conditions that caused significant delays in spring seeding, crop development, and harvesting operations.

Eastern Ontario and southeastern Québec were dominated by wet conditions and cool temperatures which resulted in delayed crop development. Late in the growing season, dry conditions emerged in parts of eastern Québec and Atlantic Canada, which impacted crop yield and quality.

Going into winter, soil moisture reserves improved in British Columbia, but remained low across the southern Prairies and parts of Atlantic Canada. Soil moisture was reported as adequate to surplus across much of southern Ontario and Québec. Overall, agricultural production fared better than initially expected given the extent and severity of drought across Western Canada and persistent excess moisture concerns across Eastern Canada. Production for all principal field crops increased by more than 7,600 kilotons compared to last year⁴. Antecedent moisture conditions, just enough rain and sun at the right times, and local variability helped realize production despite the adverse conditions.

PACIFIC REGION (British Columbia)

Above average spring precipitation and good winter snow pack in British Columbia resulted in excess moisture conditions for much of the province. Wet conditions delayed seeding, and put many of the crops two weeks behind schedule. In the Peace region, approximately 20 per cent of the annual crop acreage was left unseeded this year due to excess moisture. In south and central parts of the province, the wet spring was followed by one of the driest summers on record, with little or no precipitation from June through to September, and significant drought conditions developed (Figure 2). The central Okanagan experienced its warmest and driest July since 1969⁵. The first cut of dryland forage crops was good; however, the second cut did not occur in the southern interior due to drought. Strong spring growth and hot dry conditions, coupled with high winds contributed to persistent wildfires across the province resulting in the worst year on record for wildfires³. More than 1,300 wildfires burned approximately 1.2 million hectares of land across south and central regions between April and November. Damage in the province was estimated to be more than \$127 million⁶. Agricultural impacts included the loss of rangeland, forage, fencing and livestock infrastructure, as well as cattle mortalities.

The provincial government is providing \$2.2 million over three years to help producers replace damaged fencing on crown land⁷. The British Columbia Ministry of Agriculture reported that approximately 2,800 head of cattle were relocated with government assistance, and an unknown number of cattle were moved by private and non-government organizations. The 2017 Canada-British Columbia Wildfires Recovery Initiative, valued at up to \$20 million, to assist producers with the costs incurred by the wildfire damage was announced September 5, 2017⁸. This provided

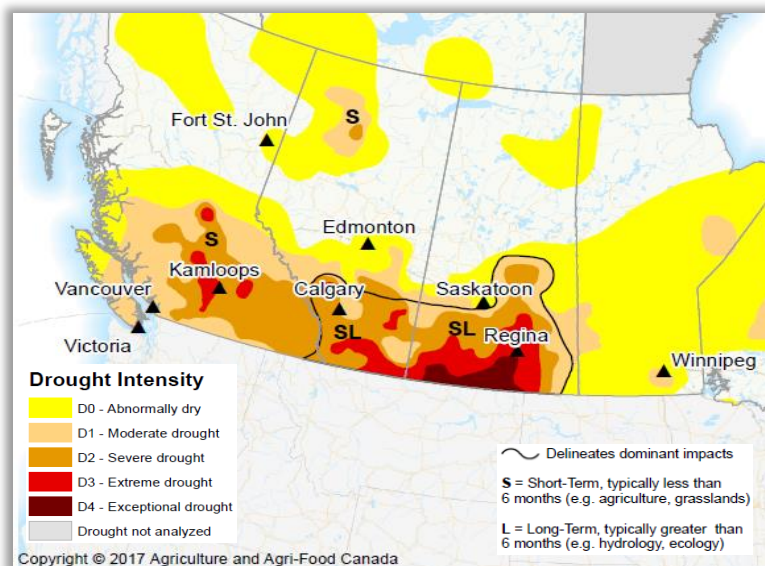


Figure 2 - Canadian Drought Monitor (September 30, 2017)

feed to roughly 18,000 head of cattle. Concerns over long term forage supplies exist, as the health and productivity of fire impacted rangeland is expected to be reduced next year. Much of southern British Columbia, including Vancouver Island, suffered from reduced feed supplies due to drought and pest issues. Increased precipitation levels in early August provided some relief to drought affected areas, although soil moisture deficits persisted in central British Columbia. Overall, provincial crop yields were below average due to late seeding and drought conditions throughout the summer.

PRAIRIE REGION (Alberta, Saskatchewan, Manitoba)

The growing season started with well below normal precipitation for much of the southern Prairies. In northern agricultural regions of Alberta and Saskatchewan, wet spring conditions resulted in further delays to harvesting the 2016 crops. This situation, coupled with two large snowfalls in April, caused significant delays in spring seeding and crop development in these regions. Northern Manitoba also experienced excessive moisture and spring flooding, although the impacts to agriculture and seeding operations were less severe than in northern Alberta and Saskatchewan. In southern parts of the Prairies, spring seeding was completed ahead of the five-year average due to the early arrival of spring that brought warm and dry conditions. These conditions were so intense that in some areas, uneven germination occurred despite good soil moisture reserves.

Drought dominated the southern Prairies throughout the summer. Beginning in June, drought conditions developed rapidly as a result of strong winds, hot temperatures and little to no rain in many areas (Figure 3). Many locations in southern Saskatchewan reported the driest, or second driest, year on record. Prairie livestock production was negatively impacted by water scarcity and salinization, feed shortages and heat stress. Drought impacts on crop production included heat stress, shorter crop canopy height and poor grain fill. Canola crops suffered reduced yields from excessive heat, and first-cut forage yields were reduced. Drought impacts were moderated by soil moisture reserves from previous years. Across the southern Prairies, the harvest was completed well ahead of the five-year average.

Northern Alberta and Saskatchewan experienced excess moisture conditions, which delayed harvest operations and left roughly two per cent of field crops unharvested over the winter around Edmonton, Alberta. For the second consecutive year, excess moisture conditions resulted in crops remaining unharvested in this region. In southern Alberta and Saskatchewan, drought resulted in below average yields. Quality remained high, however, because of limited disease incidence. Manitoba agricultural production reported average to above average yields, despite drought concerns.

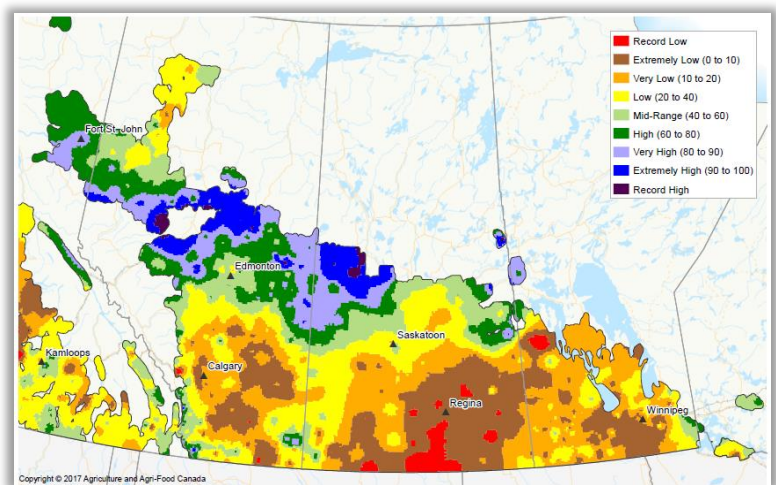


Figure 3 - Growing Season Precipitation Percentile (April 1 to October 31, 2017)

Dry conditions continued into the fall season and high winds fanned local wildfires across southern Alberta and Saskatchewan. In southern Saskatchewan, wildfires burned more than 36,000 hectares⁹ and caused agricultural infrastructure, crop and livestock losses valued at approximately \$1 million¹⁰. Fall precipitation events improved surface soil moisture conditions across the southern Prairies, but were not sufficient to recharge subsurface soil moisture prior to the winter freeze. There are ongoing concerns with livestock feed supplies and soil moisture levels, both excess and deficit. Fall soil moisture deficits reduced seeded acreage for winter cereal crops.

CENTRAL REGION (Ontario, Québec)

Above normal spring precipitation across Ontario and Québec resulted in a large number of significant flood events and excess soil moisture conditions. Cool temperatures and above normal precipitation (Figure 4) contributed to the delay of seeding and persistent delays in crop development across Central Canada, particularly in eastern Ontario and western Québec, where 10 to 15 per cent of fields were flooded during seeding. Summer storms brought intense precipitation and hail damaged 8,000 hectares of cropland in eastern Québec and areas north of Toronto¹¹. The 2017 Canada-Quebec Hail Assistance Initiative, valued at up to \$13 million, provided assistance to farmers who incurred extraordinary expenses as a result of hail damage¹¹. Warm and dry fall weather arrived in time for harvesting in Ontario and eastern Québec. Drought conditions emerged in late summer in eastern Québec, which delayed crop development and ultimately resulted in reduced yields and livestock feed shortages. Overall, yields were near average in Ontario and Québec as favorable conditions in parts of the region resulted in higher than normal yields, compensating for yield shortfalls caused by excess moisture and drought in other areas.

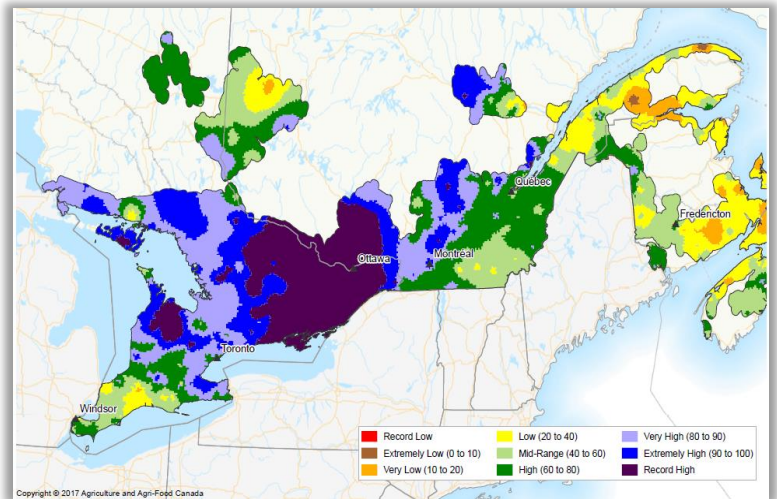


Figure 4 - Growing Season Precipitation Percentile (April 1 to October 31, 2017)

ATLANTIC REGION (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador)

Atlantic Canada began the growing season with above normal precipitation. This more than replenished the moisture deficits from last season, and contributed to spring flooding and excess moisture conditions. May 2017 was the wettest May in five years, and

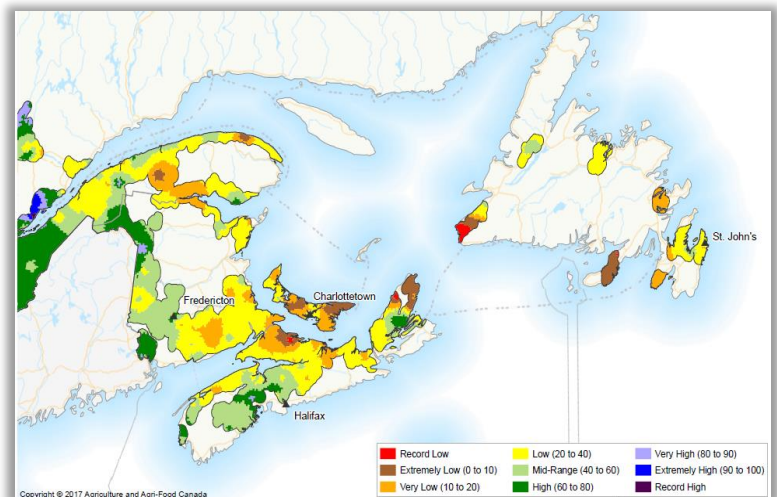


Figure 5 - Growing Season Precipitation Percentile (April 1 to October 31, 2017)

seeding was delayed by an average of two weeks across the region. Dry conditions set in over the summer in parts of Atlantic Canada, with the driest areas in New Brunswick (Figure 5). The impacts of the dry conditions were minimized due to reserve soil moisture levels from the wet spring. Impacts to yields were variable throughout the Atlantic Provinces. Persistent abnormally dry conditions in New Brunswick resulted in stunted growth and reduced yields for corn, soybean, potatoes and other crops. Low water table levels remain a concern across parts of Atlantic Canada going into winter.

WINTER OUTLOOK (as of December 31, 2017)

Through the first half of the 2017-18 winter season temperatures were above normal for Western Canada and below normal in Eastern Canada. Since November 1, 2017, precipitation was variable across British Columbia, with above normal precipitation in the south and below normal levels in the central region. The Prairie region continued to receive well below normal precipitation. Eastern Canada generally received near normal precipitation, but dry pockets still persist. La Niña conditions emerged at the beginning of the winter season; conditions are expected to weaken and return to neutral conditions by the start of spring. For more information on the El Niño phenomenon, see Environment and Climate Change Canada's webpage at <https://www.canada.ca/en/environment-climate-change/services/el-nino.html>.

January temperatures are expected to remain above normal for much of Western Canada and near to below normal for Eastern Canada. Seasonal forecasts for January to March show near normal temperatures for coastal British Columbia, and below normal temperatures for southeastern British Columbia, southern Alberta and southwestern Saskatchewan. Above normal temperatures are expected in the Great Lakes region and in Atlantic Canada. The seasonal precipitation forecasts suggest above normal precipitation will be received in southeastern British Columbia, southern Alberta, southern Ontario and Atlantic Canada. For more information on the forecasts and confidence levels, see Environment and Climate Change Canada's Seasonal Forecast webpage at https://weather.gc.ca/saisons/index_e.html.

2017 NATIONAL DASHBOARD OF AGROCLIMATE RISKS

	BC	AB	SK	MB	ON	QC	ATL
April 11	abnormally cold excess moisture	untimely precipitation	excess moisture flooding	excess moisture flooding	cool temperatures	No Report	
April 25	abnormally cold excess moisture	abnormally cold untimely precipitation excess moisture	abnormally cold excess moisture	excess moisture flooding	excess moisture	flooding excess moisture	
May 9	excess moisture flooding	abnormally cold excess moisture	abnormally cold	excess moisture	abnormally cold excess moisture flooding	excess moisture abnormally cold flooding	excess moisture flooding
May 24	excess moisture flooding	excess moisture	excess moisture abnormally cold		excess moisture abnormally cold	excess moisture damaging winds flooding	excess moisture
June 6	excess moisture untimely precipitation	excess moisture	too much / little precipitation thunderstorms	not enough precipitation	excess moisture abnormally cold high humidity	excess moisture	excess moisture
June 20	excess moisture	excess moisture	too much / little precipitation		excess moisture		
July 5	too much / little precipitation	excess moisture	drought	not enough precipitation	excess moisture abnormally cold	hail	
July 18	wildfire abnormally warm dry	too much / little precipitation	drought heat stress	dry heat stress	excess moisture abnormally cold		dry
August 1	wildfire abnormally warm dry	too much / little precipitation abnormally warm	drought heat stress	dry	excess moisture abnormally cold	too much / little precipitation abnormally cold	dry
August 15	wildfire drought	too much / little precipitation abnormally warm	drought flooding	dry	excess moisture	too much / little precipitation	dry
August 29	wildfire drought	drought thunderstorms	drought excess moisture	dry	abnormally cold thunderstorms	too much / little precipitation	
September 12	wildfire drought	too much / little precipitation drought	drought	dry	excess moisture abnormally cold	excess moisture abnormally cold	
September 26	wildfire drought	too much / little precipitation drought	drought		excess moisture	abnormally warm drought	
October 11	drought	too much / little precipitation, drought	drought		excess moisture	excess moisture, drought	dry
November 7	drought	drought, wildfire, damaging winds, excess moisture	drought, damaging winds, wildfire				dry

Green/Yellow/Orange/Red is a continuum of 'No significant risk' to 'Large or Urgent risk'.

On a regular basis throughout the growing season, AAFC monitors and reports on a suite of agroclimate risks to agricultural production. This dashboard is a high-level summary of risks by region across the country, by reporting period. The colours represent the level of overall risk, and the key words highlight the most-significant risks.

References

- ¹NOAA National Centres for Environmental Information. "State of the Climate: Global Analysis Annual 2017." Available online at <https://www.ncdc.noaa.gov/sotc/global/201713>
- ²NASA. "Long-Term Warming Trend Continued in 2017: NASA, NOAA." Available Online at <https://www.nasa.gov/press-release/long-term-warming-trend-continued-in-2017-nasa-noaa>
- ³Government of Canada. "Canada's top 10 weather stories 2017." Available online at: <https://www.canada.ca/en/environment-climate-change/services/top-ten-weather-stories/2017.html>
- ⁴Agriculture and Agri-Food Canada. "Canada: Outlook for Principal Field Crops, 2017-10-13. Available online at <http://www.agr.gc.ca/eng/industry-markets-and-trade/market-information-by-sector/crops/outlook-for-principal-field-crops-in-canada/canada-outlook-for-principal-field-crops-2017-10-13/?id=1508184606804>
- ⁵Kelowna Capital News. "July's weather was one for the record books: Hottest and driest July on record in the Central Okanagan." Available online at <https://www.kelownacapnews.com/news/julys-weather-was-one-for-the-record-books/>
- ⁶CBC News: British Columbia. "Two of B.C.'s worst wildfires cost insurers more than \$127 million." Available online at <http://www.cbc.ca/news/canada/british-columbia/b-c-wildfires-cost-insurers-127-million-1.4309611>
- ⁷Government of British Columbia News Release. "Range fencing replacement program provides \$2.2 million." Available at <https://news.gov.bc.ca/releases/2017FLNR0066-000963>
- ⁸Government of Canada News Release. "Governments of Canada, British Columbia meet with First Nations community leaders and Canadian Red Cross to discuss progress and next steps in B.C. wildfires response" Available online at https://www.canada.ca/en/public-safety-canada/news/2017/09/governments_of_canadabritishcolumbiameetwithfirstnationscommunit.html
- ⁹CBC News. "Ranchers who lost grazing lands to wildfire get support". Available online at <http://www.cbc.ca/news/canada/saskatchewan/ranchers-grazing-lands-pdap-wildfire-assistance-1.4435553>
- ¹⁰CBC News. "Funding up in the air for Sask. Farmers dealing with loss of cattle after fire" Available online at <http://www.cbc.ca/news/canada/saskatchewan/funding-up-in-the-air-for-sask-farmers-dealing-with-loss-of-cattle-after-fire-1.4390416>
- ¹¹Government of Canada News Release. "Joint assistance from Ottawa and Quebec to help farmers from the Montérégie region affected by extraordinary hail events in 2017." Available online at https://www.canada.ca/en/agriculture-agri-food/news/2017/12/joint_assistancefromottawaandquebec-to-helpfarmersfromthemonteregi.html

Catalogue No. A48-2E-PDF
ISSN No. 2292-7816
AAFC No. 12749E

2017 Annual Report of Agroclimate Conditions Across Canada
© Her Majesty the Queen in Right of Canada, represented by the Minister of Agriculture and Agri-Food,
2017
Electronic version available at www.agr.gc.ca/drought
For more information, reach us at droughtwatch@agr.gc.ca or call us toll-free at 1-855-773-0241.