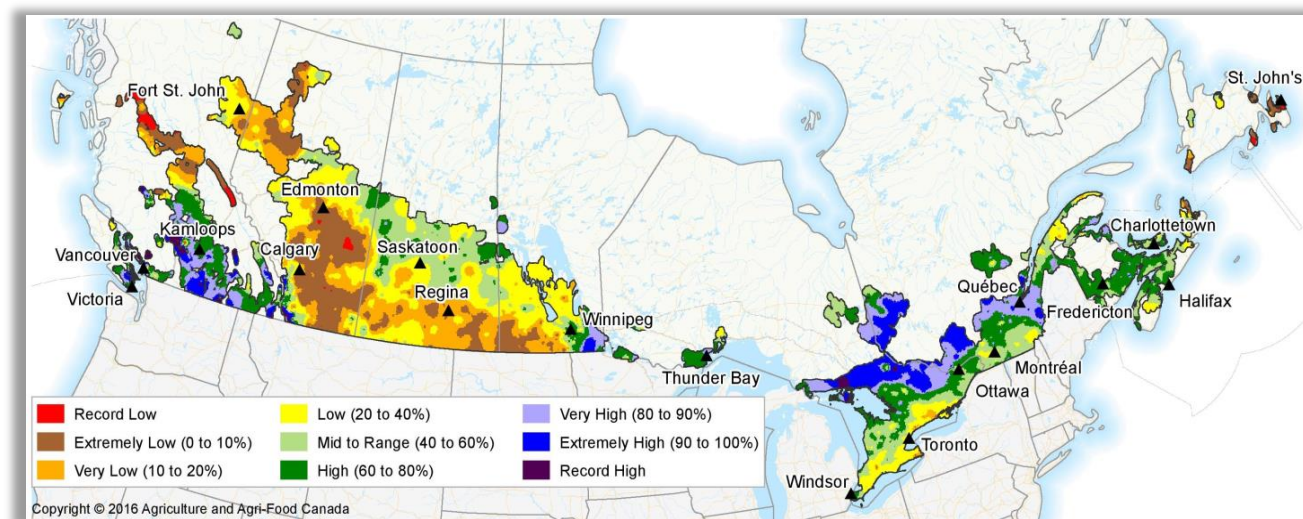


2016 Annual Report of Agroclimate Conditions Across Canada

EXECUTIVE SUMMARY

This is a brief overview of Canadian agroclimate conditions during the 2016 agricultural growing season. Globally, 2016 was the hottest year on record, replacing the record set in 2015¹. One of the strongest-ever El Niño events influenced weather patterns around the world and in Canada resulted in the second warmest winter on record and the fourth warmest year in 70 years. Throughout the 2016 growing season Canada's agricultural regions experienced excessive moisture, flooding, drought, wildfires, damaging winds, severe storm events, and abnormally hot and cool periods.

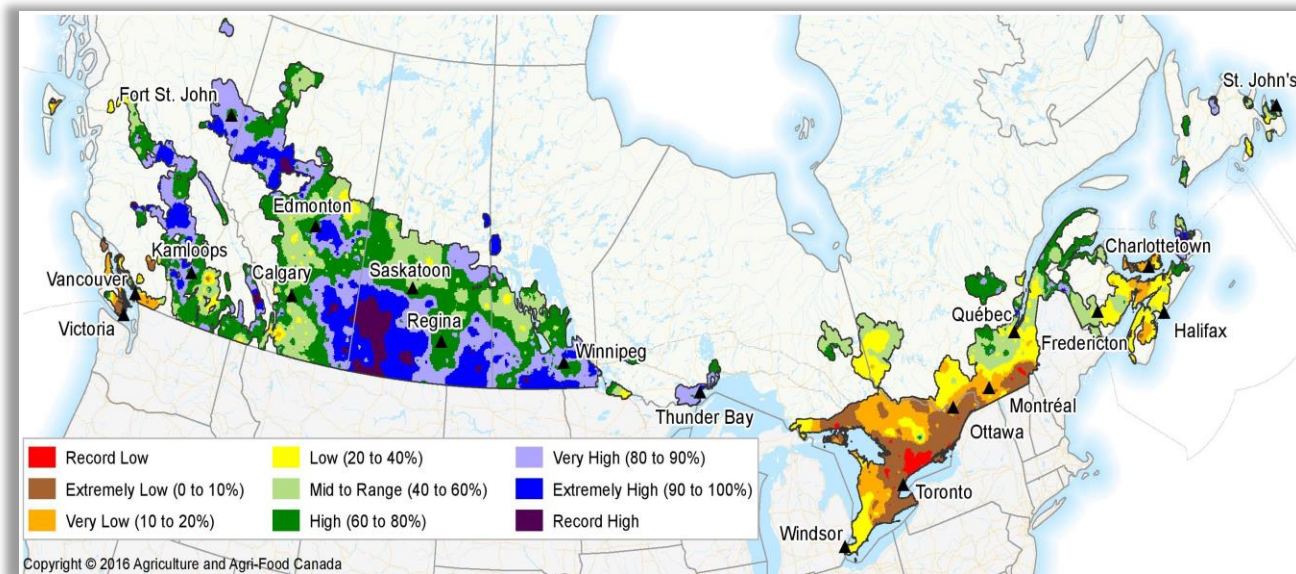


Winter Precipitation Compared to Historical Distribution (November 1, 2015 to March 31, 2016)

In western Canada, the growing season started dry and finished under wet conditions; in eastern Canada, the season began wet and ended under dry conditions. Overall, agricultural production fared better than initially expected given the significant agroclimate risks of excess moisture and drought. Crop yields were the second highest on record, with the exception of corn in Ontario. Excess moisture in parts of the Prairie region resulted in decreases in crop quality and yields and, as of the end of December, 2.5 million acres remained unharvested.

An early warm, dry spring in 2016 resulted in poor soil moisture conditions for seeding across much of Canada. Concerns over drought in the Prairie region began to increase but

were soon alleviated by significant rainfall throughout late May and June. Summer storms across the Prairie region resulted in flooding, crop damage, and excess moisture concerns. Warm, dry conditions in eastern Canada continued through the summer worsening drought in southern and eastern Ontario, southern Quebec and Atlantic Canada.

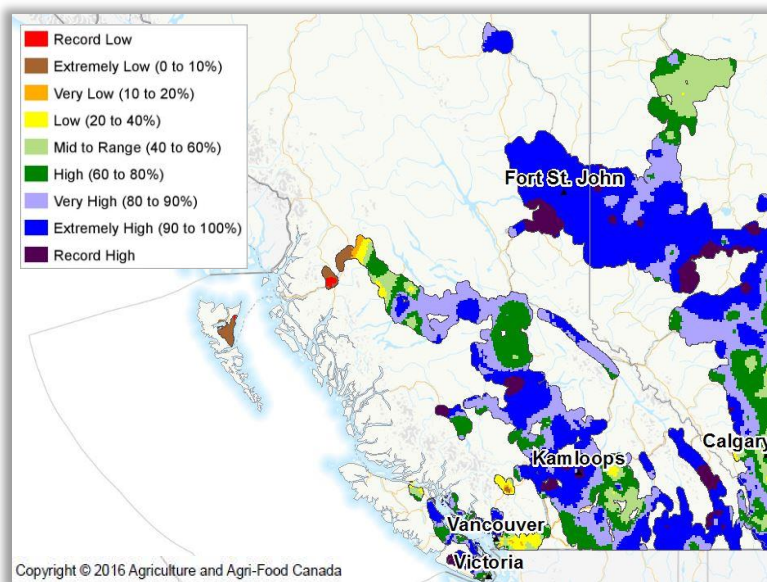


Growing Season Precipitation Compared to Historical Distribution (April 1 to July 31, 2016)

Drought conditions in the east peaked in early to mid-August, with rain coming too late for some crops. By December, regions significantly impacted by drought were designated eligible for the Livestock Tax Deferral Provision². Going into winter, soil moisture levels remained low in parts of southern Ontario and Nova Scotia, and excess moisture conditions remained in the Prairie region. Flooding may pose a risk for the eastern Prairies in the spring of 2017.

BRITISH COLUMBIA

Above average temperatures and a low snowpack, especially in western regions, contributed to early snowmelt and spring runoff throughout the province. Many streams reached their peak flows much earlier than normal. Hot, dry spring conditions resulted in an early start to the growing season and the fire season. Despite early concerns for drought, a wet, cool summer season resulted in adequate moisture throughout most agricultural regions of the province. The most significant



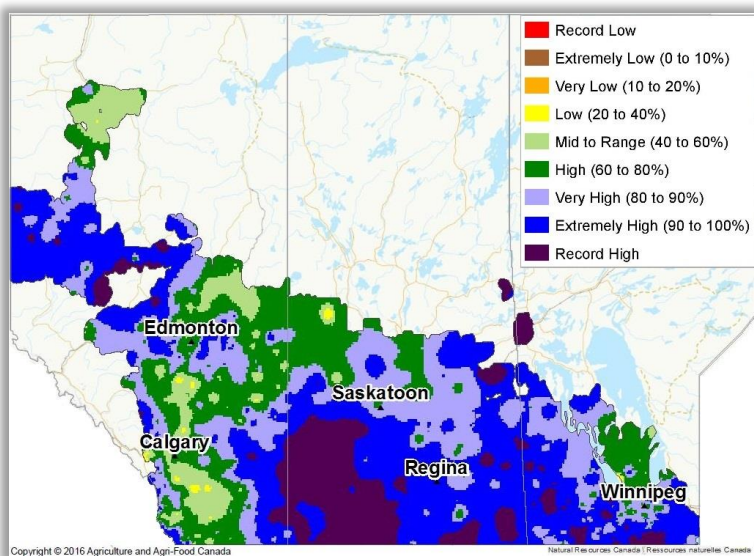
Growing Season Precipitation Compared to Historical Distribution (April 1, 2016 to October 31, 2016)

climate-related impact was excess moisture in the Peace River region. Above normal precipitation throughout the growing season resulted in localized flooding and infrastructure damage. Excess moisture combined with the early onset of winter resulted in reduced yields and some crop loss. All other regions of the province experienced ideal conditions over the growing season, and harvest was completed with no significant agroclimate impacts.

PRAIRIE REGION (Alberta, Saskatchewan, Manitoba)

Below normal snowfall over the winter resulted in the development of drought conditions in the spring. The most significant agroclimate impacts at the start of the growing season were drought, wind, and wildfires in Alberta, and to a lesser extent in northern Saskatchewan. Hot, dry conditions and poor soil moisture delayed crop emergence, increased soil erosion, and resulted in stunted pasture and hay development. However, conditions abruptly changed in late May with persistent and significant precipitation. As summer progressed, frequent and abnormally slow-moving storms with heavy rain resulted in localized flooding and excess soil moisture. There were numerous reports of large hail, heavy rain, high winds, and tornadoes. One such storm event during the August long weekend began in Alberta and moved through Saskatchewan resulting in damage to crops, buildings, machinery and significant localized flooding. The Prairie region experienced more than twice the number of tornadoes, almost three times the number of hail events, and a third more heavy rain events during the 2016 summer season than normal.

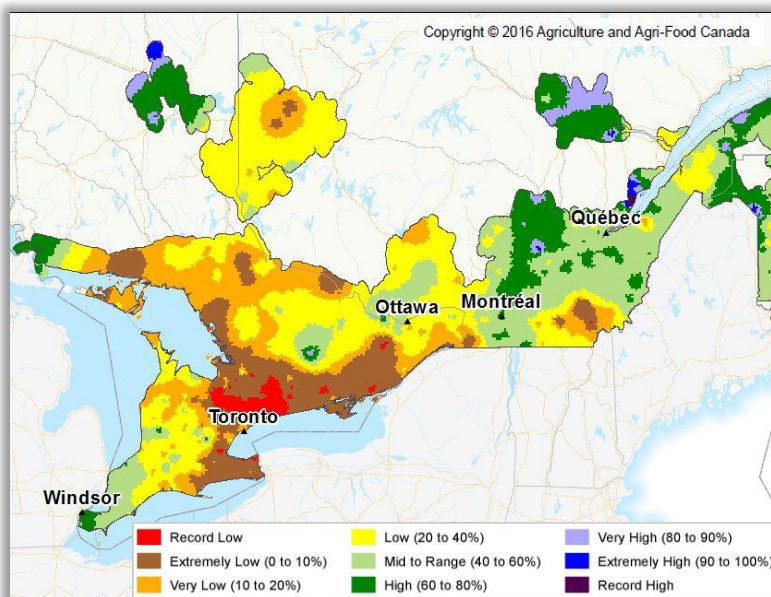
Frequent rain and abnormally cool weather hindered harvest progress throughout late September and much of October when early snowfalls halted field operations. By the end of the growing season, a large portion of the Prairie region had received more than 200 per cent of average precipitation, with 93 per cent of the agricultural area (representing 40,740 farms and 7.6 million cattle) receiving high to record-high precipitation. Following a cold, wet autumn, the Prairie region recorded its warmest November on record with more than 300 daily high temperature records set in the first two weeks of the month. The above normal warm conditions through November allowed the majority of harvest and haying operations to be completed by the end of the month. However, ten per cent of Alberta crops, and up to eleven per cent of Saskatchewan crops, will remain in the field until spring.



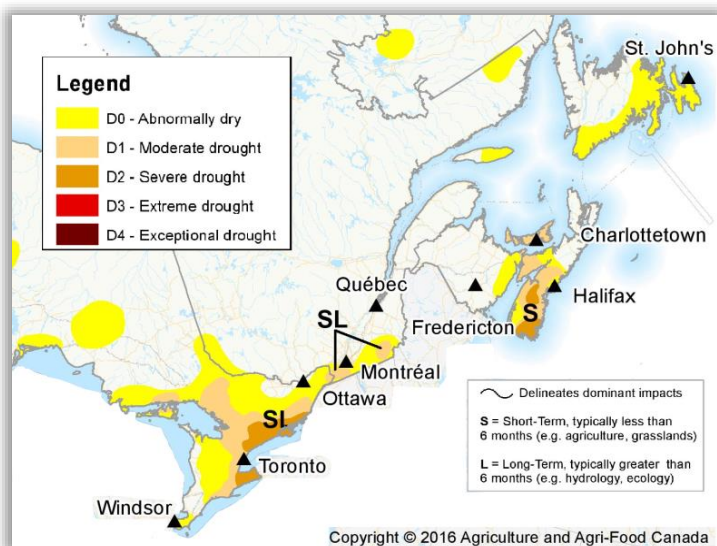
Growing Season Precipitation Compared to Historical Distribution (April 1, 2016 to October 31, 2016)

CENTRAL REGION (Ontario, Quebec)

Central Canada experienced a cool and wet early spring and received more than 150 per cent of average precipitation. However, in May the situation drastically changed and drought conditions began to impact crop development. Ontario and portions of Quebec remained very dry throughout the summer, and drought resulted in negative impacts to crop development. Corn, soybeans and hay were the most significantly impacted crops. Portions of Ontario recorded the sixth driest summer on record since 1938. By August, most agricultural regions had precipitation deficits of 40 mm to 100 mm, and severe deficits of more than 120 mm existed in southern Ontario and Quebec along Lake Ontario and the St. Lawrence River. Rainfall in early fall recharged the soil moisture and improved drought conditions, but not enough to alleviate moisture deficits. At the end of October, 53 per cent of forage crops and 98 per cent of soybean crops were under drought conditions in Ontario. At that time, 78 per cent of the agricultural area in Ontario had received low to record-low precipitation, representing 18,580 farms and 1.5 million cattle. Final harvest results were mixed depending on the crop type and timeliness of rain events. Overall, provincial corn and soybean yields were average and above average respectively, but eastern areas experienced marked decreases. Drought conditions in southern Quebec improved over the fall, and harvest was essentially completed by the end of October, under ideal conditions.



Growing Season Precipitation Compared to Historical Distribution (April 1, 2016 to October 31, 2016)



Canadian Drought Monitor (August 31, 2016)

ATLANTIC REGION

Atlantic Canada had a slow start to the growing season, as excess moisture and cool temperatures delayed field operations in the spring. By the end of May, conditions improved and operations caught up to near-seasonal. As in the Central region, much of the Atlantic region,

particularly Prince Edward Island and southern Nova Scotia, received extremely low precipitation, with parts of Nova Scotia experiencing the driest summer in more than 90 years. Significant late season precipitation improved soil moisture conditions across the region which aided potato yields, but the rain came too late for corn and soybean crops which reported below average yields due to dry summer conditions.

Growing conditions were mixed for fruit and berry producers. Cranberry yields were good as the warm dry weather staved off fungi. Wild blueberry producers, apple growers and vintners also benefited from the dry heat as it produced smaller but sweeter produce with high yields. Conversely, strawberry and cherry crops were down 15 and 60 per cent respectively due to precipitation deficits. Moderate drought persisted through the fall in southern Nova Scotia and southern New Brunswick, where water supply issues and forage shortages occurred. Yields of corn and soybeans were slightly below average due to the dry summer.

WINTER OUTLOOK

Through the first half of the 2016-17 winter season, western Canada experienced a mix of well below normal and well above normal temperatures, while central Canada was above normal. Generally, since November 1 western Canada, with the exception of southern Manitoba, had received well below normal precipitation. As of December 31, Manitoba had received 150 per cent of normal winter snowfall, the second highest December amount on record. Eastern Canada received near normal precipitation; however areas that experienced very dry conditions during the summer have received very little precipitation.

As of December 31, weak La Niña conditions were present, and a return to neutral conditions is expected in February. The forecast for January through March has a low confidence level due to the absence of clear indicators and disagreements between models. Much of the country is expected to experience an extended warm spell in January. The warmest region is expected to be central Canada with temperatures 10 to 20°C above normal. Arctic air is expected to return in late January, and cooler than normal conditions are expected in February, particularly for Manitoba, Ontario and Quebec. The March forecast suggests above normal temperatures for much of the country, with the highest probability in eastern Canada. By the end of the winter season, agricultural areas are expected to have received above normal precipitation. Based on the winter forecast and spring projections, the risks of excess moisture in the eastern Prairies and dry conditions in Ontario will continue and may have agricultural impacts at the start of the 2017 growing season.

References:

¹ NOAA National Centers for Environmental Information. "State of the Climate: Global Analysis—Annual 2016." Available online at www.ncdc.noaa.gov/sotc/global/201613

² Government of Canada News Release. "Livestock Producers in Three Provinces Receive Tax Relief for 2016." Available online at <http://news.gc.ca/web/article-en.do?nid=1158849&tp=1>

2016 NATIONAL DASHBOARD OF AGROCLIMATE RISKS

Date	BC	AB	SK	MB	ON	QC	ATL
Dec 06	excess moisture, snow	excess moisture, snow	excess moisture	excess moisture			
Nov 01		excess moisture, cool temps, snow	excess moisture, cool temps	excess moisture	low soil moisture		
Oct 04	excess moisture	excess moisture	excess moisture, frost	excess moisture	low soil moisture	low soil moisture	drought, dry
Sept 20	excess moisture	excess moisture, cool, frost	excess moisture, cool, frost	excess moisture	drought, low soil moisture	low soil moisture	drought, dry
Sept 07		excess moisture, cool temps	excess moisture	excess moisture	low soil moisture	low soil moisture	dry
Aug 23	dry, heat	excess moisture, humidity	excess moisture, thunderstorms	excess moisture	low soil moisture	dry	dry
Aug 09		thunderstorms, hail	thunderstorms, excess moisture	excess moisture, wind	drought, heat	heat, drought	drought
Jul 26			excess moisture, thunderstorms	excess moisture, wind	drought	disease	
Jul 12	dry	excess moisture	excess moisture, flooding	excess moisture	drought	low soil moisture	
Jun 28	flooding, dry			excess moisture	dry, low soil moisture	low soil moisture	
Jun 14	dry, low snowpack	low soil moisture		excess moisture			
May 31	dry	low soil moisture			dry	dry	
May 17	dry	drought, wind, wildfire	dry, wildfire				
May 03	dry	drought, wind, wildfire	dry, wildfire				

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.

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Electronic version available at www.agr.gc.ca/drought

For more information, reach us at droughtwatch@agr.gc.ca or call us toll-free 1-855-773-0241