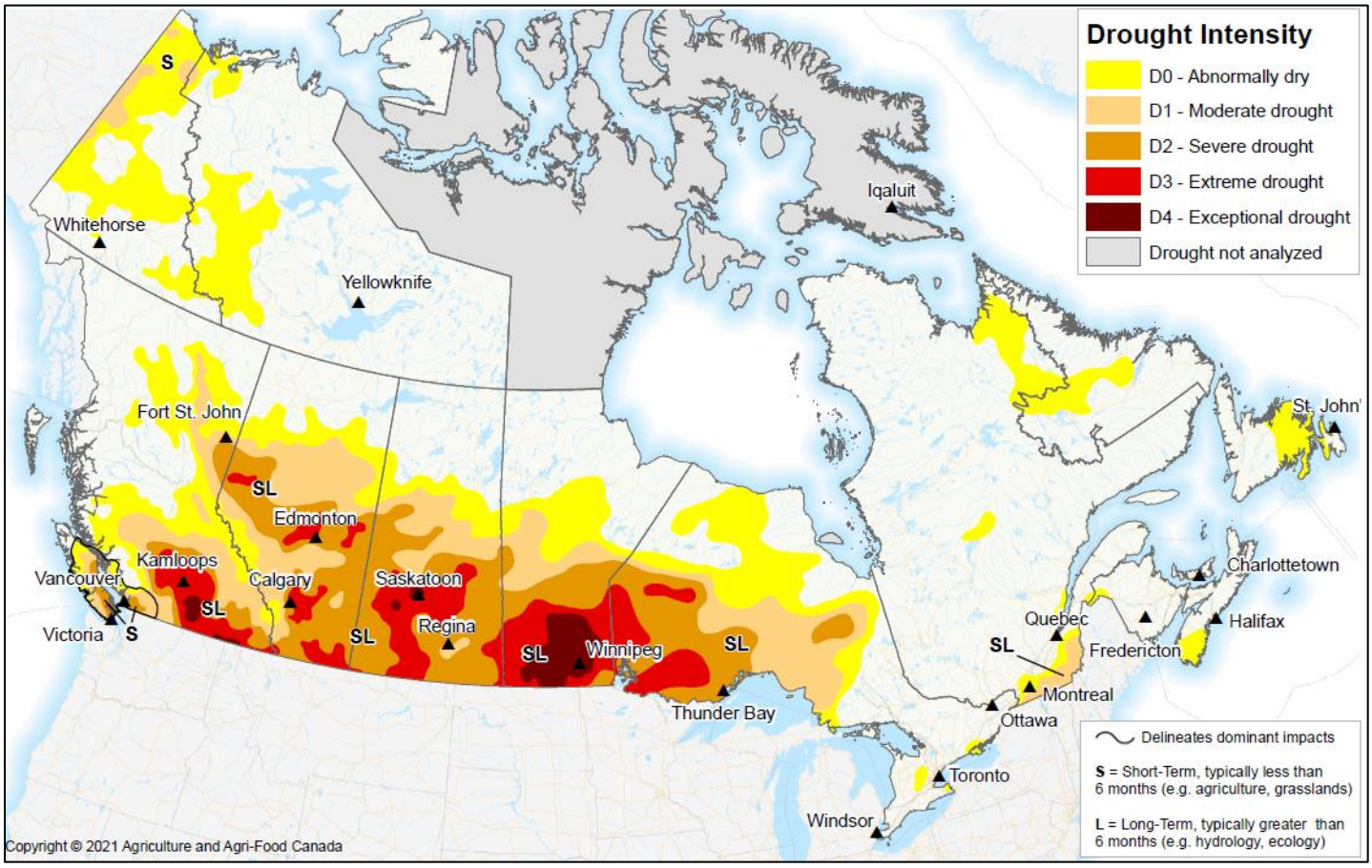
Canadian Drought Monitor

Conditions as of July 31, 2021



In July, well-below normal precipitation and record-breaking temperatures rapidly worsened drought conditions across Western Canada, from Vancouver Island to Northwestern Ontario, resulting in significant and widespread impacts. Above normal temperatures followed the unprecedented high temperatures of early July, which led to drying surface water supplies, reduced streamflow, drying pasture and rangeland, negatively affected crops, and increased wildfires. The unprecedented temperatures throughout Western Canada early in July resulted from an unusually large ridge of high pressure, which created a heat dome stretching from Vancouver Island to Manitoba and into the Northwest Territories at its peak. The system was unprecedented in its intensity and duration and resulted in hundreds of record temperatures being set, including the all-time Canadian record high temperature from 1937 (Yellowgrass,

Saskatchewan, 45 degrees Celsius). In addition to extreme temperatures, most regions in Western Canada received extremely low precipitation of less than 20 mm during the month of July; this led to record wildfires and irreversible agricultural impacts through the entire southern portion of Western Canada and a sharp increase in drought severity and extent.

Across the Central region, normal- to above-normal precipitation through the month of July improved moisture conditions substantially, significantly reducing the amounts of dry and drought conditions throughout southern Ontario and Quebec. Northwestern Ontario, however, received below-normal precipitation through July, which led to increased drought conditions and the development of wildfires. The Atlantic region received normal- to above-normal precipitation which resulted in the improvement of dry areas, with the exception of Newfoundland and Labrador, where below-normal precipitation resulted in expanded dry conditions.

Thirty-nine percent of Canada was classified as Abnormally Dry (D0) or in Moderate to Exceptional Drought (D1-D4), with seventy-four percent of the agricultural landscape classified as Abnormally Dry to Exceptional Drought (D0-D4). Approximately 1,600,000 head of cattle were under Severe to Exceptional Drought (D2-D4) conditions across Western Canada as of the end of July.

Pacific Region (BC)

Through the month of July, drought conditions expanded significantly in British Columbia, where multiple regions experienced a substantial rise in drought classification. Fruit, grain and oilseed production, as well as forages and livestock health, have been significantly impacted by drought conditions and extreme heat. On Vancouver Island, water scarcity issues became more prevalent, as streamflows were recorded at well-below normal and surface water supplies dried up. Moderate Drought (D1) expanded from the previous month, now covering a larger area, given that the island received less than 25 percent of normal precipitation in July and unprecedented high temperatures. With such low precipitation for the area, a large stretch of Severe Drought (D2) and pockets of Extreme Drought (D3) were added to the eastern coast of the island, where Nanaimo recorded the second longest stretch with no precipitation in over 100 years. Across the lower mainland, precipitation deficits through the month continued, following multiple months of below normal rain; this resulted in the expansion of previous Moderate Drought (D2) conditions. Throughout the Interior, drought increased in severity and extent given extremely low precipitation compared to normal through the past 30 days, with some areas receiving only 25 to 50 percent of normal precipitation in the last 90 days. Extreme daily temperatures and precipitation deficits resulted in drought conditions intensifying:

pockets of Extreme Drought (D3) were added through the Thompson-Okanagan and Cariboo regions in the southcentral interior. July's heat dome only exacerbated the effects of low precipitation within the region, resulting in the formation of Exceptional Drought (D4), an event that statistically only occurs once every 50 years. This lack of precipitation and extreme temperatures also resulted in a record number of wildfires, which have threatened communities and caused substantial evacuations of both human and livestock populations, due to loss of grazing land and structures. Through the past 60 days, the Peace Region in northern British Columbia received 25 to 75 percent below-normal precipitation resulting in the northwest expansion of Moderate (D1) and Severe Drought (D2).

By the end of July, fifty-one percent of the Pacific Region was categorized as Abnormally Dry (D0) and twenty-eight percent of the region was in Moderate to Exceptional Drought (D1-D4); these conditions accounted for almost eighty percent of the region's agricultural landscape.

Prairies (AB, SK, MB)

The Prairie region received no reprieve from dry conditions, generating disastrous long-term effects across the region. High temperatures and little rain through the month of July worsened existing conditions across the region which resulted in poor crop development, pastures becoming dormant, and surface water supplies drying up. Livestock producers are struggling to find feed for their animals, with many forced to reduce their herds significantly. Over 1.5 million cattle are now within the Severe Drought (D2) category in the Prairie region; this represents 57 percent of Alberta's, 94 percent of Saskatchewan's and almost 100 percent of Manitoba's beef cattle.

Drought conditions expanded across much of Alberta due to a lack of precipitation through the month of July, made worse by prolonged record-breaking heat with four to seven consecutive days that reached temperatures above thirty degrees Celsius. This heatwave was accompanied by strong, drying winds, creating less than optimal growing conditions and compelling multiple counties to declare agricultural disaster. Pre-existing Moderate Drought (D1) conditions expanded in the north as the Peace River region received only 25 to 50 percent of normal precipitation in the last 3 months. The southern portion of the province received Below Normal to Moderately Low precipitation over the past 30 days, creating a favourable environment for increased grasshopper and gopher populations and thus, further damage to the agricultural sector. Combining both north and south regions, the expansion of drought conditions led to nearly the entire province of Alberta to be classified in Moderate Drought (D1) or worse, except for a stretch along the Rocky Mountains where normal- to above-normal precipitation fell since April 1st. Low precipitation also led to the expansion of Severe Drought (D2) conditions west

from the Saskatchewan/Alberta border into the Peace River region, as well as north from the southern U.S./Alberta border. Even with spotty thunderstorms throughout the month, there was not enough moisture to alleviate drought conditions. As a result, producers are concerned about yield potentials, with some making silage or green feed from struggling cereal crops. Soil moisture deficits carried through from the previously dry fall and winter seasons, coupled with very low precipitation amounts since September 1st, caused pockets of Extreme Drought (D3) to emerge throughout the province. In central Alberta, long-term soil moisture reserves were made worse due to a combination of high heat, intense winds and lack of precipitation, while soil moisture reserves in the east central region were the lowest they have been in over 50 years. Pockets of Extreme Drought (D3) also emerged north from the U.S. border in the southeast corner of the province due to low precipitation in the past 2 to 6 months. Province wide yields are anticipated to be affected as soil moisture deficits and high temperatures impacted productivity during vital developmental periods for crops.

At the end of July, seventy-seven percent of Alberta was classified as Abnormally Dry while sixty-three percent was in Moderate to Severe Drought (D1-D3); this accounts for ninety-seven percent of the agricultural landscape experiencing dry or drought conditions.

In Saskatchewan, high heat and low precipitation stunted crop growth and impacted feed availability through the month of July as any moisture received was not adequate to alleviate drought conditions. Severe Drought (D2) spread around the Regina area due to below normal precipitation and soil moisture deficits. One pocket of Moderate Drought (D1) remained in the central region of the province since the area received localized near-normal precipitation in July, providing better growing conditions for crops in comparison to surrounding regions. Along the southern U.S./Saskatchewan border, Extreme Drought (D3) conditions stretched northward into the central agricultural region of the province based on long-term precipitation data showing Very to Extremely Low values. This expanse of Extreme Drought (D3) surrounded areas that utilize crop irrigation; however, with the high temperatures and accompanying wind, soil moisture reserves were depleted, desiccating crops well before maturity. Two pockets of Exceptional Drought (D4) arose in the west central area of the province, surrounding the Saskatoon area, where less than 40 percent of normal precipitation was received in the last 30 days, along with Exceptionally Low precipitation in the last 6 months. These conditions caused crops to be rated as very poor after suffering through extensive heat and moisture deficits. Producers have reported only spraying crops they deem worth saving and have abandoned poor yielding fields. Exceptionally Low precipitation values warranted the expansion of Moderate Drought (D1) through the northern agricultural region of the province, where uncontrollable wildfire activity led to evacuations of communities and affected agricultural operations. In the northwest region, July rainfall was 40 percent of normal and producers are

expecting yields to be far below anticipated. An expanse of Severe Drought (D2) conditions moved further north due to the area receiving only 25 percent of normal precipitation in the past 30 days. Crops across the province that are anticipated to have low yields are being re-purposed for green feed, aiding producers in the province who are also suffering due to short moisture supply, impacting food and water availability. Provincial water testing determined approximately half of farm-based water supply was unusable or in poor condition. Cooler temperatures and wide-spread rain are needed to maintain what little crop yields and pasture quality remain.

At the end of July, seventy-two percent of Saskatchewan was classified as Abnormally Dry (D0) and sixty-five percent was in Moderate to Exceptional Drought (D1-D4); this accounts for nearly 100 percent of the agricultural landscape experiencing dry or drought conditions.

Manitoba experienced similar conditions of worsening drought through the month of July, where multiple rural municipalities have declared agricultural disaster and most crops will experience a decline in yield potential. Due to Extremely to Exceptionally Low precipitation values in the last 6 months, Moderate Drought (D1) conditions expanded into northern areas of the province, past the Interlake region, as well as further west into Northwestern Ontario. Reports of low water levels were received throughout the month where dugout levels ranged from seventy percent capacity to completely dry, resulting in producers needing to find options to supplement water availability, such as digging wells deeper or expanding dugout size. Comparable to the rest of the Prairie region, crop producers have put efforts into changing intended use of crops and are harvesting for silage and green feed. Much of southern Manitoba saw higher than normal temperatures in July; considering these high temperatures and a significant lack of precipitation in the past 6 months (125 mm below normal), Severe Drought (D2) conditions expanded further north and west into Ontario. The City of Winnipeg reported a mere 8.5 mm of rain in July, compared to their normal of 75.8 mm, setting a new record for the driest July since 2011. Lasting impacts are being felt by producers across the province due to soil moisture deficits and long-term lack of precipitation. Berry, crop and livestock producers are all struggling with yields due to drought conditions not improving. Manitoba saw the largest growth of Exceptional Drought (D4) in the Prairie region, where pre-existing pockets of D4 were combined and will have long-lasting impacts through the southcentral and Interlake regions. Some livestock producers have reported that feed supplies have run out and are culling herds in order to survive an already dismal winter feed situation.

At the end of July, fifty-four percent of Manitoba was classified as Abnormally Dry (D0) while forty percent was in Moderate to Exceptional Drought (D1-D4); this accounts for one hundred percent of the agricultural landscape experiencing dry or drought conditions.

At of the end of the month, sixty-eight percent of the Prairie Region was classified as Abnormally Dry (D0) or in Moderate to Exceptional Drought (D1-D4), with close to ninety-nine percent of the agricultural landscape classified in drought.

Central Region (ON, QC)

The Central Region experienced an array of drought events through the month of July from improvement to degradation, as the northwestern region of Ontario endured a significant expansion of drought conditions, while southern Ontario and Quebec saw general improvement to existing drought.

The northwest region of Ontario received 25 to 50 percent of normal precipitation for the month of July, resulting in the expansion of Moderate (D1) and Severe Drought (D2) conditions from the Ontario/Manitoba border, east beyond Thunder Bay. However, given the longer-term moisture deficit in the last 90 days, where the region received only 25 to 50 percent of its expected precipitation, this led to an expansion of Extreme Drought (D3) as well. The dry conditions experienced in Northwestern Ontario are reaching critical levels where concerns about local and national herd numbers are prevalent as drought continues to threaten the viability of this year's pasture and food sources for livestock. Moderately to Exceptionally High precipitation across Southern Ontario alleviated all drought concerns from the previous month, leaving minimal Abnormally Dry (D0) conditions along the coast of Lake Ontario, as well as the York and Peel regions. Quebec also experienced Moderately High precipitation which improved drought conditions through the southern portion of the province. However, the northeast region of Quebec received 50 to 75 percent of normal precipitation through the past 60 days, which caused the development of Abnormally Dry (D0) conditions.

At the end of July, twenty-nine percent of the Central Region was classified as Abnormally Dry (D0) while sixteen percent was in Moderate to Severe Drought (D1-D3); this accounts for twenty percent of the agricultural landscape of the region.

Atlantic Region (NS, NB, PE, NL)

The Atlantic region experienced a general improvement of dry conditions through the month of July as the region received near- to above-normal precipitation, without the record-breaking temperatures observed in Western Canada. Pre-existing Abnormally Dry (D0) conditions were alleviated on Prince Edward Island due to Very High precipitation values through the growing

season. Additionally, Abnormally Dry (D0) conditions in New Brunswick and Nova Scotia were improved due to near- to above-normal precipitation in the past 30 days. Although much of Nova Scotia received above-normal precipitation in July, a pocket of Abnormally Dry (D0) conditions remained persistent encompassing the southern coast, where monthly precipitation was below-normal. Newfoundland saw the expansion of Abnormally Dry (D0) conditions on the island, as well as a large stretch of D0 develop across parts of Labrador due to the area receiving less than 25 percent of normal precipitation in the last month.

At the end of July, seventeen percent of the Atlantic Region was classified as Abnormally Dry (D0), accounting for eleven percent of the agricultural landscape.

Northern Region (YT, NT)

In July, the Northern Region saw higher than average temperatures, which resulted in dry conditions worsening throughout the region. Pre-existing Abnormally Dry (D0) conditions along the northern coast and U.S./Yukon border expanded given below-normal precipitation through the past 30 to 90 days; these conditions also contributed to the addition of Moderate Drought (D1) in the region. Abnormally Dry (D0) conditions in the western region of the Northwest Territories expanded further west over the Northwest Territories/Yukon border, joining the D0 over both territories.

Twenty-three percent of the Northern Region remained Abnormally Dry (D0) or in Moderate Drought (D1) through the month of July.

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