

Model-based principal field crop estimates, August 2021

Released at 8:30 a.m. Eastern time in *The Daily*, Tuesday, September 14, 2021

In 2021, Canadian farm operators are projected to produce more corn for grain, but less wheat, canola, barley, soybeans and oats than in 2020, according to recent yield models using satellite imagery. Lower production has largely been driven by ongoing drought conditions in Western Canada, which are expected to lead to a decrease in yields.

Harvest progress across the Prairies was reported by the provincial agriculture departments to be well ahead of the average due to advanced crop development.

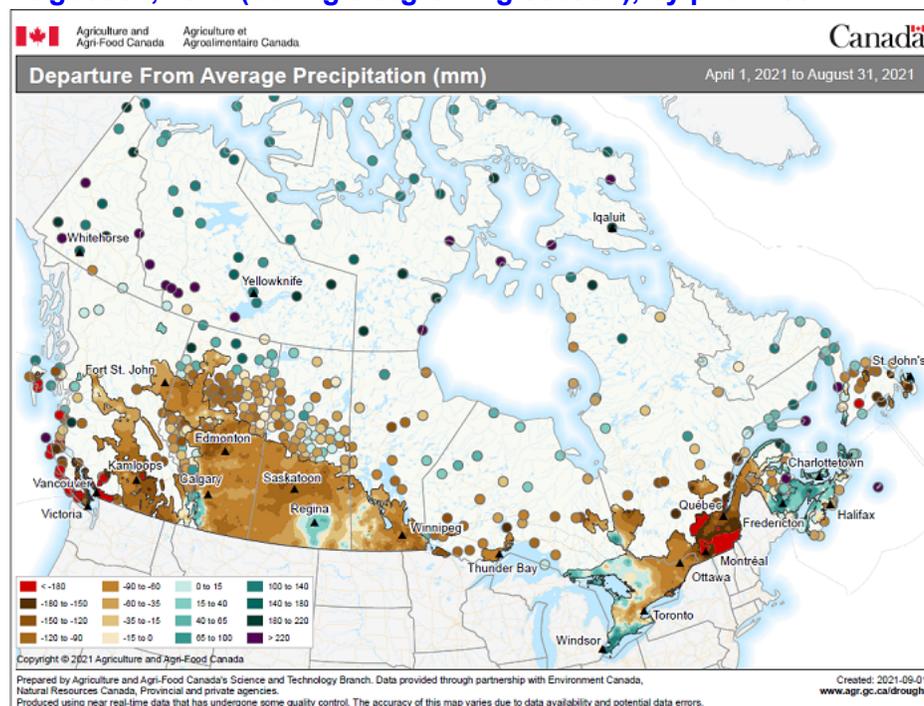
At the end of August, the Alberta government reported that over one-quarter (26%) of the major crops had been harvested, well over double last year's harvest season (10%) and the 2016-to-2020 five-year average (11%).

Farm operators in Saskatchewan had harvested 40% of their crops, up from 28% last year and the five-year average (22%).

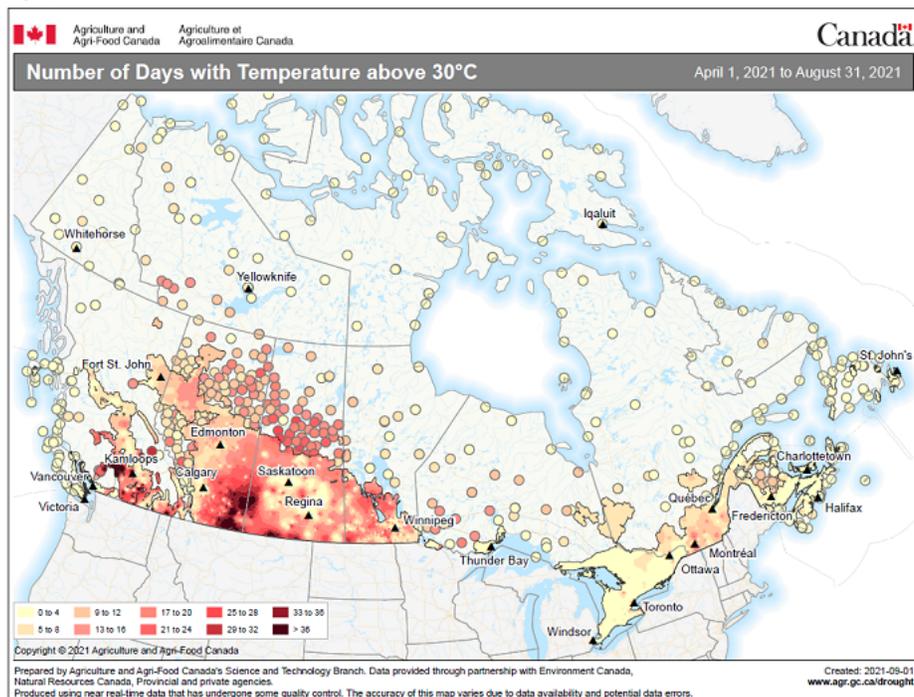
Manitoba reported harvest progress at 35%, up from 13% last year and the five-year average of 28%.

Farm operators across Western Canada have had to contend with a lack of rain (Map 1), which further exacerbated soil moisture conditions, already low at the start of the growing season. Prolonged periods of temperatures higher than 30°C (Map 2) during the season compounded this problem.

Map 1 – Departure from average precipitation (in millimetres) from April 1 to August 31, 2021 (during the growing season), by province



Map 2 – Number of days above 30°C from April 1 to August 31, 2021 (during the growing season), by province



During pollination—which is one of the most sensitive developmental stages for all crop species—temperatures above 30°C can be particularly detrimental to crop production. A lack of rain and high temperatures have negatively impacted crop growth and yield potential across much of the Prairies.

Since 2016, Statistics Canada, in collaboration with Agriculture and Agri-Food Canada, has relied on proven satellite technology to model preliminary crop yields and production. These methods have been successfully used for the past five years to produce September yield estimates and to replace July yield estimates beginning in 2020. The September release of the Crop Reporting Series is a joint release between Statistics Canada and Agriculture and Agri-Food Canada.

The Crop Condition Assessment Program (CCAP) indicates that overall plant health in Western Canada was lower to much lower than normal, having decreased considerably throughout August. This indicates the likelihood of lower than normal yields.

An assessment of Normalized Difference Vegetation Index (NDVI) curves, which are a measure of plant health, indicated that in almost all parts of the Prairies, crops reached peak health well ahead of normal. In some instances, peak NDVI occurred up to four weeks earlier, before decreasing rapidly, as a lack of moisture and high temperatures took a toll on plant health.

This is the first instance since 1987, when Statistics Canada first began monitoring crop conditions using coarse resolution satellite images, that the NDVI curves have peaked so early in the growing season. The CCAP also indicates that dry conditions have impacted almost all of Western Canada. By comparison, other notable drought years, such as 2002—while difficult for many farm operators—were less widespread than this year's.

In Eastern Canada, the CCAP data are similar to average, as parts of Ontario and the Maritimes received higher-than-normal rainfall, while most of Quebec remains drier than average.

Adverse weather conditions are expected to have considerable impacts on crop yields, with substantial yield declines anticipated for most crops in Western Canada. The projections for the principal crops produced in Canada are described in the following sections.

Wheat production expected to decrease on lower harvested area and yields

Nationally, wheat production is projected to decrease 38.3% year over year to 21.7 million tonnes in 2021, on lower anticipated yields (-32.6% to 35.2 bushels per acre) and less harvested area (-8.5% to 22.7 million acres).

The decrease in wheat area would largely be attributable to spring wheat, which in addition to having less seeded area in 2021, has been impacted by drought conditions in Western Canada.

Durum wheat yields are also expected to fall considerably, while winter wheat, which is predominantly grown in Ontario, is expected to yield in line with historical averages on account of better growing conditions within the province.

In Saskatchewan, wheat harvested area is expected to fall 7.9% to 11.8 million acres, and yields are anticipated to decrease 38.8% to 28.1 bushels per acre, to bring total wheat production down 43.6% year over year to 9.0 million tonnes.

Wheat yield in Alberta is expected to decrease 40.5% to 33.2 bushels per acre in 2021, and harvested area is projected to fall 7.0%, resulting in a 44.6% production decrease to 6.1 million tonnes.

Wheat production in Manitoba is projected to fall 35.0% to 3.4 million tonnes in 2021, the result of lower harvested area (-17.2% to 2.6 million acres) and lower yields (-21.4% to 48.2 bushels per acre).

In contrast, wheat production in Ontario—the majority of which is winter wheat—is projected to rise 8.9% to 2.7 million tonnes year over year, on increased harvested acres (+2.3%) and yields (+6.4%).

Lower anticipated yields push canola production to lowest level since 2010

Nationally, canola production is expected to fall 34.4% to 12.8 million tonnes in 2021, as drought conditions on the Prairies drove yields to their lowest level in a decade (-39.5% to 25.3 bushels per acre), offsetting higher harvested area (+8.1% to 22.2 million acres). If this were to happen, this would be the lowest canola production since 2010.

Canola production in Saskatchewan is expected to decrease 47.2% to 5.8 million tonnes. It is projected that lower yields (-50.4% to 21.2 bushels per acre) will offset the increase in harvested area (+6.3% to 12.0 million acres).

In 2021, canola production in Alberta is expected to decrease 17.1% to 4.3 million tonnes. Yields are projected to decrease 28.6% to 28.7 bushels per acre, while harvested area is expected to rise 16.0% to 6.6 million acres.

In Manitoba, yield is expected to fall 21.3% to 32.6 bushels per acre and harvested area to edge up 0.1% to 3.4 million acres, resulting in a 21.1% production decrease.

Corn for grain production projected to increase on higher yields

Nationally, corn for grain production is projected to increase 5.9% to 14.4 million tonnes in 2021, with yields anticipated to rise 7.8% to 165.4 bushels per acre. Meanwhile, harvested area is expected to fall 1.7% to 3.4 million acres.

In Ontario, the largest corn for grain producing province, production is expected to increase 7.5% to 9.6 million tonnes, on higher yields (+9.3% to 179.1 bushels per acre). This would offset lower harvested area, which is expected to fall 1.6% to 2.1 million acres.

Corn for grain production in Quebec is projected to rise 9.1% to 3.6 million tonnes. Yields are expected to increase 10.1% to 159.3 bushels per acre, while harvested area is expected to decline 0.8% to 880,300 acres.

Soybean production expected to fall despite greater harvested area

At the national level, soybean production is projected to decrease 7.4% year over year to 5.9 million tonnes in 2021. The main source of this decline is lower yields, which are expected to fall 11.7% to 40.9 bushels per acre, while harvested area is anticipated to rise 4.8% to 5.3 million acres.

Farm operators in Ontario are projected to produce 2.8% fewer soybeans in 2021 for a total of 3.8 million tonnes. Harvested area is expected to rise 3.2% to 2.9 million acres, while yield is anticipated to decrease 5.9% to 47.7 bushels per acre.

In Manitoba, soybean production is projected to decrease 22.2% to 905 000 tonnes in 2021. Harvested area is expected to increase 13.5% to 1.3 million acres. However, yields are projected to fall 31.4% year over year to 25.6 bushels per acre due to dry conditions in the province.

In Quebec, soybean production is projected to decrease 6.9% to 1.1 million tonnes on lower yields (-11.0% to 43.1 bushels per acre), which will more than offset the projected 4.5% increase in harvested area.

Barley and oat production projected to fall due to dry conditions

Barley production is expected to fall 33.5% year over year to 7.1 million tonnes in 2021. Despite higher anticipated harvested area (+7.8% to 7.5 million acres), lower yields (-38.4% to 43.8 bushels per acre) due to hot, dry conditions, are expected to push national production lower.

Oat production is projected to fall 43.6% to 2.6 million tonnes. Harvested area is expected to decrease 14.2% to 2.8 million acres and yields are expected to drop 34.3% year over year to 60.0 bushels per acre in 2021.

Note to readers

This release provides the preliminary production estimates for 2021, as well as revised production data for 2020, if applicable. The estimates are calculated according to an approach developed by Statistics Canada in close partnership with Agriculture and Agri-Food Canada. These yield estimates are based on a model that incorporates coarse resolution satellite data from Statistics Canada's Crop Condition Assessment Program, data from Statistics Canada's Field Crop Reporting Series, and agroclimatic data.

The approaches used to produce these estimates are in line with the AgZero initiative underway at Statistics Canada, which aims to produce high-quality estimates using modelling, administrative data, and other non-traditional survey-based approaches.

The Field Crop Reporting Series collects data from Quebec, Ontario, Manitoba, Saskatchewan and Alberta for all survey cycles during the crop year (from March to December). However, data are collected twice a year (in the June Field Crop Survey on seeded areas and in the November Field Crop Survey on final crop production) for Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick and British Columbia, which represent between 2% and 4% of national totals.

As of 2014, August production estimates for British Columbia and the Atlantic provinces are calculated using the final estimates of the last three crop years. The harvested area is first estimated based on the ratio obtained from the sum of harvested areas of the last three years over the sum of the seeded areas of the last three years. This average ratio is applied to their current year's seeded acreage from the June survey. This harvested area is then multiplied by the average yield of the last three years to estimate production.

Final production estimates for 2021 will be released on December 3, 2021 and are subject to revision for two years.

August model-based data were used to produce estimates of crop yield and production in Manitoba and Saskatchewan using parcel-level crop insurance data, while Alberta, Ontario and Quebec are modelled at the Census Agricultural Region (CAR) level. For more information on the model-based methodology please consult [An Integrated Crop Yield Model Using Remote Sensing, Agroclimatic Data and Crop Insurance Data](#).

Readers are also invited to consult the [Crop Condition Assessment Program](#) web application, which is an additional tool to assess growing conditions of field crops during the crop year. Readers can monitor a vegetation index of crop land on a weekly basis.

Table 1
September estimates of production of principal field crops, Canada

| | 2019 | 2020 | 2021 | 2019 to 2020 | 2020 to 2021 |
|----------------|---------------------|--------|--------|--------------|--------------|
| | thousands of tonnes | | | % change | |
| Total wheat | 32 670 | 35 183 | 21 715 | 7.7 | -38.3 |
| Durum wheat | 5 017 | 6 571 | 3 545 | 31.0 | -46.1 |
| Spring wheat | 25 952 | 25 842 | 15 321 | -0.4 | -40.7 |
| Winter wheat | 1 700 | 2 770 | 2 849 | 62.9 | 2.8 |
| Barley | 10 383 | 10 741 | 7 141 | 3.4 | -33.5 |
| Canola | 19 912 | 19 485 | 12 782 | -2.1 | -34.4 |
| Chick peas | 252 | 214 | 64 | -14.8 | -70.2 |
| Corn for grain | 13 404 | 13 563 | 14 368 | 1.2 | 5.9 |
| Dry field peas | 4 236 | 4 594 | 2 527 | 8.4 | -45.0 |
| Flaxseed | 486 | 578 | 379 | 18.9 | -34.5 |
| Fall rye | 326 | 475 | 412 | 45.9 | -13.3 |
| Lentils | 2 382 | 2 868 | 1 802 | 20.4 | -37.2 |
| Mixed grains | 192 | 233 | 117 | 21.5 | -49.7 |
| Mustard seed | 135 | 99 | 71 | -26.6 | -28.2 |
| Oats | 4 227 | 4 576 | 2 579 | 8.2 | -43.6 |
| Soybeans | 6 145 | 6 358 | 5 886 | 3.5 | -7.4 |

Source(s): Table [32-10-0359-01](#).

Available tables: table [32-10-0359-01](#).

Definitions, data sources and methods: survey number [5225](#).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).