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Commodity Intelligence Report

Canada: Record Wheat Yield, with favorable conditions for other crops in 2020/21

Favorable weather conditions during the growing season have led to above-average estimated yields across the board for major field crops, and solid expectations for production. USDA estimates wheat yield at a record 3.64 metric tons per hectare (t/ha). Rapeseed yield is estimated at 2.35 t/ha, up 2 percent over last year. Corn and soybean yields are also up 8.3 and 12.7 percent, respectively, over 2019/20. Yield estimates, year-to-year changes, and records for four of Canada's largest field crops, representing both of Canada's major agricultural regions (the Prairies and Central Canada), are given in Figure 1. The Prairies saw warm temperatures throughout the summer and generally adequate precipitation (Figure 2). At the extremes, drier conditions developed in southern Saskatchewan and southeast Manitoba, while excessive rainfall was observed in parts of southwestern and northern Manitoba and northern Alberta. The southeastern portion of Central Canada (Ontario and Quebec), where most of Canada's corn and soybeans are grown, has been drier over the summer, though periodic rains in mid-July and early August aleviated some of the dryness. Crop conditions here have been locally reported as average to above-average, indicating negligible effects of dryness on crop development in the regions.

Сгор	2020/21 Yield (t/ha)	2019/20 Yield (t/ha)	Year-to-Year Change (Percent)	Record Yield (t/ha) <i>(Year)</i>
Wheat	3.636	3.350	8.5%	3.598 (2013)
Rapeseed	2.349	2.303	2.0%	2.372 (2016)
Corn	10.000	9.238	8.3%	10.209 (2015)
Soybeans	3.000	2.662	12.7%	3.001 (2012)

Figure 1. Estimated yields for 2020/21, the previous year (2019/20), year-to-year percent change, and record yield, for four of Canada's largest field crops. Source: USDA

USDA uses remote sensing technologies, such as derived satellite imagery products, in Canadian crop assessments. This summer, crop conditions have been well above average across the country as indicated by satellite-derived Normalized Difference Vegetation Index (NDVI) analyses using imagery collected by the Moderate Resolution Imaging Spectroradiometer (MODIS) aboard NASA's Terra satellite (Figure 3). Notable in these analyses are the relative values of peak NDVI, the highest values in the NDVI

curves (Figures 4 through 8). NDVI is a measure of relative greenness of vegetation-essentially rising each growing season as the crops develop to their full potential, and falling with senescence and dry down in the latter parts of the season as crops approach harvest. As a general rule, the higher the NDVI at each point on the curve, the healthier the vegetation at that stage in plant development. Peak NDVI reflects the health of crops at the height of the growing season and is highly predictive of eventual crop yields. USDA uses a crop mask to isolate croplands from non-cropped areas, and the NDVI profiles are a mixture of the predominant crops. For 2020/21, NDVI analyses indicate crop conditions at well-above average in each of the prairie provinces (Figures 4 through 6), particularly in Alberta, where conditions have been near average to wellabove average at every stage of the growing season (Figure 6). As harvest approaches, NDVI remains above average throughout Canadian croplands. USDA yield estimates for Canada's major field crops are above average.

The trend among Canadian farmers for the 2020/21 season has been a shift in major field crops away from corn and oilseeds, in favor of grains. Wheat planting was mixed, with spring wheat reductions offset by increases in winter wheat and durum. Below is a summary by crop of USDA crop estimates and conditions.

<u>Wheat</u>

USDA estimates Canada wheat production for 2020/21 at 36.0 million metric tons (mmt), up 11 percent over last year, and 16 percent above the 5-year average. Reduced area planted to spring wheat has been offset by increased durum planting and reduced winterkill of winter wheat, pushing the harvested area estimate higher, to 9.9 million hectares (mha), up 3 percent from last year, and 5 percent above the 5-year average. Yield is forecast at a record 3.64 t/ha, up 9 percent over last year, and 10 percent above the 5-year average.

The shift towards durum is a response to increased demand for pasta in light of the COVID-19 pandemic. Statistics Canada estimates an 18 percent increase in area for durum and a 47 percent increase in area of winter wheat, offsetting a 4 percent reduction in spring wheat area. A mild winter in Ontario led to less winterkill, resulting in the increased winter wheat area, and an increase of 69 percent in estimated production for winter wheat. The overwhelming majority of Canada's winter wheat crop is grown in Ontario.

As noted above, weather conditions have been favorable for wheat, and the corresponding NDVI response has been strong throughout much of the Prairies this summer, where 98 percent of the spring and durum wheat crop is grown (Figures 3 through 6). Spring wheat is 73 percent of the total Canadian wheat crop, based on the 5-year average. Durum wheat is 19 percent of total wheat production.

Rapeseed

USDA estimates Canada rapeseed production for 2020/21 at 19.5 mmt, unchanged from last year and down 2 percent from the 5-year average. Harvested area is estimated at 8.3 mha, down 2 percent from last year and 5 percent below the 5-year average. Offsetting the reduction in area, yield is estimated at 2.35 t/ha, up 2 percent over last year and 3 percent above the 5-year average.

Rapeseed is grown almost exclusively in the Prairie provinces. Favorable rainfall in the major rapeseed-producing areas of southern and central Alberta have boosted yield potential in that province, and rapeseed yields in the province could exceed their 5-year average by up to 6 percent. Alberta conditions offset the drier conditions in portions of central Saskatchewan and excessive moisture in southwestern Manitoba, where yield potential has been tempered.

<u>Corn</u>

USDA estimates Canada corn production for 2020/21 at 14.0 mmt, up 4 percent from 2019, and 2 percent above the 5-year average. Harvested area for corn is estimated at 1.4 mha, down 4 percent from last year and virtually unchanged from the 5-year average. Yield is estimated at 10.00 t/ha, up 8 percent over last year, and 2 percent above the 5-year average. Similar to soybeans, the majority of corn is grown in Ontario (63 percent), Quebec (26 percent), and Manitoba (9 percent).

Soybeans

The majority of soybean production is in Ontario (55 percent), followed by Manitoba (24 percent) and Quebec (16 percent). While the summer has been drier in Central Canada, USDA analyses and provincial reports indicate crop conditions remain above-average. USDA estimates Canadian soybean production for 2020/21 at 6.0 mmt, virtually unchanged from last year, but down 12 percent from the 5-year average. Yields are estimated at 3.0 t/ha, up 13 percent from 2019, and ahead of the 5-year average by 7 percent. The increase in yields has been offset by a reduction in area by 12 percent from 2019 and 18 percent below the 5-year average, now estimated at 2.0 mha for 2020/21.



Canada Seasonal Rainfall – June 1 to August 31, 2020

Figure 2. Percent of normal rainfall, June 1 through August 31, 2020



Canada: NDVI Response

Figure 3. Normalized Difference Vegetation Index (NDVI) anomaly at peak for the Prairie provinces



Manitoba, Canada MODIS NDVI

Figure 4. Normalized Difference Vegetation Index (NDVI) seasonal time series for Manitoba croplands



Saskatchewan, Canada MODIS NDVI

Figure 5. Normalized Difference Vegetation Index (NDVI) seasonal time series for Saskatchewan croplands



Alberta, Canada MODIS NDVI

Figure 6. Normalized Difference Vegetation Index (NDVI) seasonal time series for Alberta croplands



Ontario, Canada MODIS NDVI

Figure 7. Normalized Difference Vegetation Index (NDVI) seasonal time series for Ontario croplands



Ontario, Canada MODIS NDVI

Figure 8. Normalized Difference Vegetation Index (NDVI) seasonal time series for Quebec croplands

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Global Agricultural Information Network (Agricultural Attaché Reports) https://www.fas.usda.gov/databases/global-agricultural-information-network-gain

Crop Explorer https://ipad.fas.usda.gov/cropexplorer/

Global Agricultural Monitoring System (GLAM) <u>https://glam1.gsfc.nasa.gov/</u>

Global Agricultural and Disaster Assessment System (GADAS) https://geo.fas.usda.gov/GADAS/index.html