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Quality of Canadian canola 2024

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Summary

In 2024, the percentage of canola samples graded No. 1 Canada was 90.0%, which was lower than in 2023 (95.7%) and lower than the 5-year mean of 91.0%, but higher than the 10-year mean of 89.3% (Table 1). Alberta-Peace River had the lowest percentage of No. 1 canola samples at 83.7% (92.7% in 2023), while Manitoba had 89.3% (95.8% in 2023) and Saskatchewan 96.1% (98.5% in 2023). As in 2023, crop district 6 from Alberta-Peace River had the lowest percentage of canola samples that graded No. 1 (65.9% versus 84.2% in 2023). Ninety percent of the canola samples from Ontario were graded No. 1 and all four samples received from Québec were graded No. 1.

Canadian No. 1 canola was characterized by a lower mean oil content in 2024 than in 2023 (42.4% versus 43.2%) and a higher mean protein content in 2024 than in 2023 (22.9% versus 21.8%) (Table 1). The mean chlorophyll content for No. 1 canola in 2024 was 8 milligrams per kilogram (mg/kg), slightly lower than that in 2023 (Table 1). The mean total glucosinolate content of seeds in 2024 was 13 micromoles per gram ($\mu\text{mol/g}$), slightly higher than that in 2023.

The fatty acid composition data for the 2024 and 2023 canola crops are found in Table 1. The 2024 mean oleic acid content (63.4%) was lower than the 2023 mean (64.2%) and slightly lower than the 5-year-mean (63.8%) and the 10-year mean (63.5%). The mean α -linolenic acid content in 2024 (9.2%) was similar to the 2023 mean (9.1%), while the mean linoleic acid content was slightly higher in 2024 than in 2023 (18.4% versus 17.9%). The mean total saturated fatty acid content was identical in 2024 and 2023 (6.6%) and similar to the 5-year and 10-year means (both 6.7%). This resulted in a higher iodine value for the 2024 canola crop when compared to 2023 (111.9 units versus 111.3 units).

The mean free fatty acid content in No. 1 canola (0.25%) was similar to that in 2023 (0.21%), however, means from some Manitoba crop districts ranged from 0.43% to 0.99%. The No. 1 canola samples from Québec and Ontario had mean free fatty acid contents much higher than the Canadian mean, with 0.57% for Ontario and 4.1% for Québec (Table 2).

Table 1 Quality data for 2024 and 2023 harvest samples of Canola, No. 1 Canada

Quality parameter	2024	2023	5-year mean (2019-2023)	10-year mean (2014-2023)
Number of samples received	1,786	2,043	2,155	2,132
Number of samples graded Canola, No. 1 Canada	1,607	1,955	1,956	1,899
Percentage of samples graded Canola, No. 1 Canada	90.0	95.7	91.0	89.3
Oil content, %, 8.5% moisture	42.4	43.2	43.1	43.7
Protein content ¹ , %, 8.5% moisture	22.9	21.8	21.9	21.1
Protein content of oil-free meal, %, 12% moisture ²	41.1	39.5	39.7	38.9
Chlorophyll content, mg/kg ³	8	9	10	11
Total glucosinolate content of seeds, µmol/g ⁴ , 8.5% moisture	13	12	11	11
Total glucosinolate content of oil-free meal, µmol/g, 8.5% moisture	24	23	20	20
Free fatty acids, %	0.25	0.21	0.20	0.19
Oleic acid, % in oil	63.4	64.2	63.8	63.5
Linoleic acid, % in oil	18.4	17.9	18.3	18.5
Alpha-linolenic acid, % in oil	9.2	9.1	9.0	9.2
Erucic acid, % in oil	0.01	0.02	0.01 ⁵	0.01
Total SFA ⁶ , % in oil	6.6	6.6	6.7	6.7
Iodine value of oil, units	111.9	111.3	111.3	111.9
Total MUFA ⁷ , % in oil	65.0	65.7	65.4	65.1
Total PUFA ⁸ , % in oil	27.6	27.0	27.3	27.7

¹ Protein content calculated from nitrogen (N) content using N x 6.25.

² Trading rules for the North American sale of canola meal requires that calculations for protein claims must be reported on a 12% moisture basis with N x 6.25.

³ mg/kg = milligrams per kilogram.

⁴ µmol/g = micromoles per gram.

⁵ Level was below the limit of quantification.

⁶ SFA = saturated fatty acids. Total SFA is the sum of lauric (C12:0), myristic (C14:0), palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0) and lignoceric (C24:0) acids.

⁷ MUFA = monounsaturated fatty acids. Total MUFA is the sum of palmitoleic (C16:1), oleic (C18:1), eicosenoic (C20:1), erucic (C22:1) and nervonic (C24:1) acids.

⁸ PUFA = polyunsaturated fatty acids. Total PUFA is the sum of linoleic (C18:2), alpha-linolenic (C18:3) and eicosadienoic (C20:2) acids.

Introduction

This report presents quality data and information based on canola samples received from western Canada and eastern Canada (Ontario and Québec) by the Canadian Grain Commission's Harvest Sample Program in 2024. Samples were submitted throughout the harvest period by producers, grain companies and oilseed crushing companies. The following canola quality parameters were measured: oil, protein, chlorophyll, total glucosinolates, free fatty acids and fatty acid composition. Means based on all Canadian samples are weighted according to small areas and provincial production estimates, as a result, the eastern canola quality data have little influence on the Canadian means. Some data on the quality of canola exports are also provided.

Figure 1 shows Statistics Canada's estimated canola production in 2024 for each Canadian province, while Figure 2 shows the estimated canola production for crop districts in Manitoba and Alberta and the census agricultural regions (CARs) in Saskatchewan. Prior to 2018, all canola production reporting in the Prairie provinces was based on small area data (SAD) that corresponded to crop districts. In 2018, Statistics Canada began using CARs to describe production areas in Saskatchewan instead of SAD. The new CAR approach did not correspond well with the crop districts in Saskatchewan, which makes the comparison of historical data more difficult. Samples received from the Peace River area of British Columbia (crop district 8) were combined with Alberta samples to calculate the Alberta-Peace River means. Quality data for these samples are listed under Alberta-Peace River. No small area production data are available for Ontario and Québec from Statistics Canada. The main areas of canola production in Québec are Abitibi-Témiscamingue, Bas-Saint-Laurent, Capitale-Nationale, Chaudière-Appalaches (Sainte-Marie region) and Saguenay-Lac-Saint-Jean.

Figure 1 Estimated 2024 canola production in Canada for each province

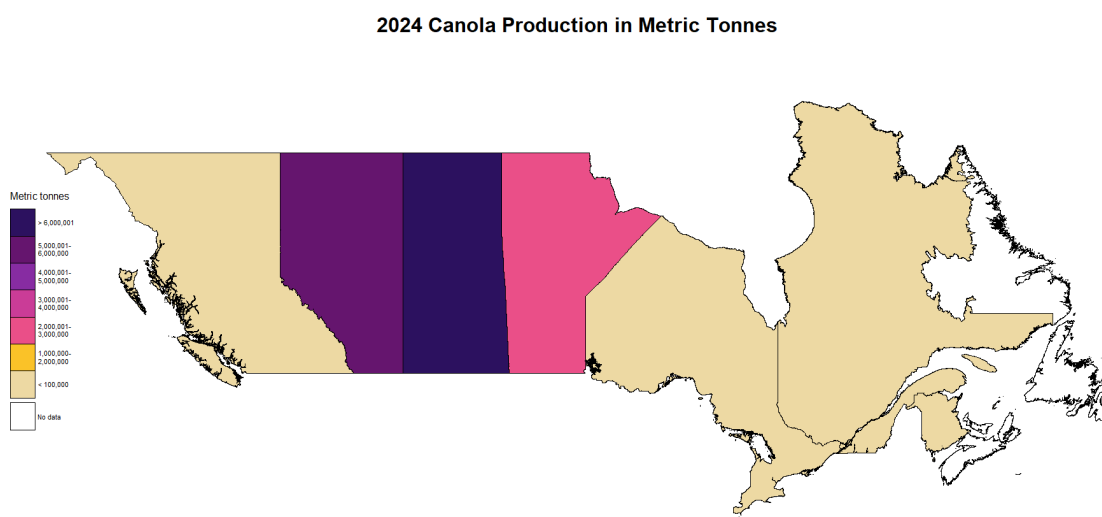
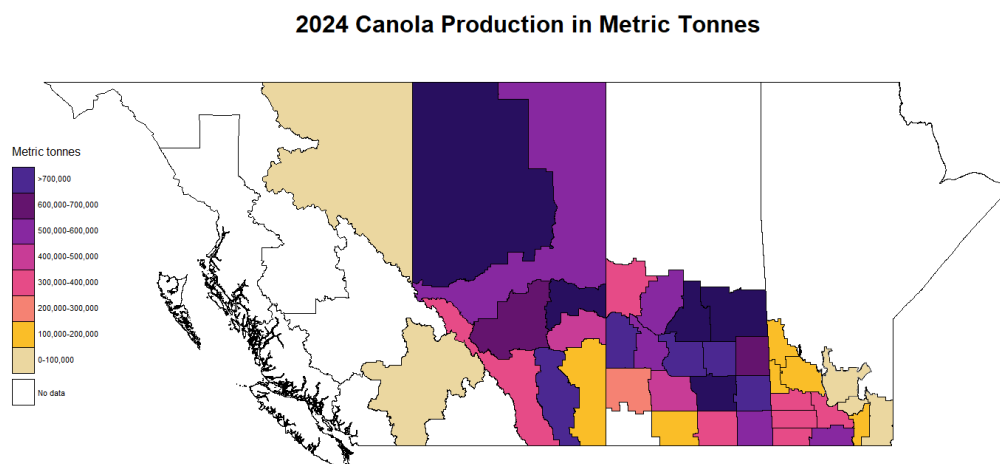


Figure 2 Estimated 2024 canola production in Western Canada according to crop districts (Manitoba and Alberta-Peace River) and census agricultural regions (Saskatchewan)



Weather and production review

The agroclimate maps (Figure 3, Figure 4, Figure 5 and Figure 6) were obtained from [Agriculture and Agri-Food Canada](#). Seeding and harvest progress graphs for each province (Figure 7 and Figure 8) were created using data obtained from provincial reports for [Manitoba](#), [Saskatchewan](#) and [Alberta](#). The growing conditions and the harvest information for Québec and Ontario were obtained from [La Financière agricole du Québec: État des cultures 2024](#), [Canola 2024 Seasonal Summary – Field Crop News](#) and [Prograin | Crop reports for Western and Eastern Canada](#). The number of hectares (ha) seeded with canola (Figure 9) and production data (Figure 10) were obtained from [Statistics Canada](#). A [review of the 2024 canola growing season](#) written by Bruce Burnett was published in *The Western Producer* in December 2024.

Seeding

In both Québec and Ontario, the 2024 winter was warmer than normal with below normal snow accumulation. April temperatures were higher than normal at the beginning of the month and lower than normal at the end of the month. Temperatures became warmer in May, but some late frost occurred at the end of May in Saguenay-Lac-Saint-Jean and Abitibi-Témiscamingue. Canola seeding started after May 6 and by May 21, approximately 50% of the crop was in the ground. By June 4, it was reported that canola seeding was completed early in Capitale-Nationale and Saguenay-Lac-Saint-Jean and completed late in Chaudière-Appalaches (Sainte Marie region). By June 18, canola seeding was considered completed in Quebec with the seeding finished in Abitibi-Témiscamingue on time and Bas-Saint-Laurent early. Both spring and winter canola are grown in Ontario. The spring canola is mainly grown in northern Ontario (e.g. Temiskaming district) whereas winter canola is found in the southern part of the province. Due to the good October seeding conditions and the mild winter, the Ontario winter canola had a good survival rate. Overall, with winter and spring canola being planted, Ontario saw an increase in canola seeded areas in 2024.

In the Prairie provinces, April was warmer than normal, while May and June were cooler than normal (Figure 3). Precipitation in May and June (Figure 4) hindered the seeding of canola. In Manitoba, seeding began after the first week of May, but progress was slower than last year, due to rain in May and June. By early June, only 71 % of the Manitoba canola crop was seeded (Figure 7), with crops ranging from just seeded to the two-leaf stage. Seeding in Manitoba was considered completed after the third week of June. By the end of June, crop development was variable throughout Manitoba, with some canola fields starting to flower and others only at the rosette to bolting stages. Seeding in Saskatchewan and Alberta started after mid-April (Figure 7), about a week earlier than in Manitoba. Despite precipitation that slowed the seeding progress, in Alberta, seeding was considered completed by early June. In Saskatchewan, it took almost an additional week for producers to complete seeding. In both Saskatchewan and Alberta, canola seeding was completed well ahead of seeding in Manitoba (Figure 7).

Growing season

In Québec, June temperatures were higher than normal, although frost was recorded on June 11 in Abitibi-Témiscamingue. Precipitation was below normal in June. In July, certain areas received heavy precipitation that led to some damage, due to excess water. Other areas, such as Bas-Saint-Laurent, reported low-intensity rain events. Generally, the 2024 canola crop grew under hot and humid conditions in eastern Canada.

In western Canada, June precipitation (Figure 4) led to excellent moisture conditions (Figure 5). By the end of June, only the Peace-River area of British Columbia and northwestern Alberta showed severe drought conditions (Figure 5). July started with some areas in the Prairies reporting excessive moisture, due to the precipitation in June. The last major precipitation event was reported, however, around July 1. July temperatures were warmer than normal in the three Prairie provinces (Figure 3), which resulted in crops developing quickly. Most of the canola crop was flowering in July during hot and dry conditions. Temperatures in July and August reached over 30°C (Figure 6), which was a concern since *Brassica napus* canola is known to be sensitive to temperatures higher than 28°C. August temperatures were also higher than normal in most of the Prairies, except in southern Manitoba where they were 2°C to 3°C lower than normal (Figure 3). July precipitation was minimal (Figure 4) and precipitation in August was mainly the result of thundershowers. This resulted in an increase in the drought intensity during July and August (Figure 5).

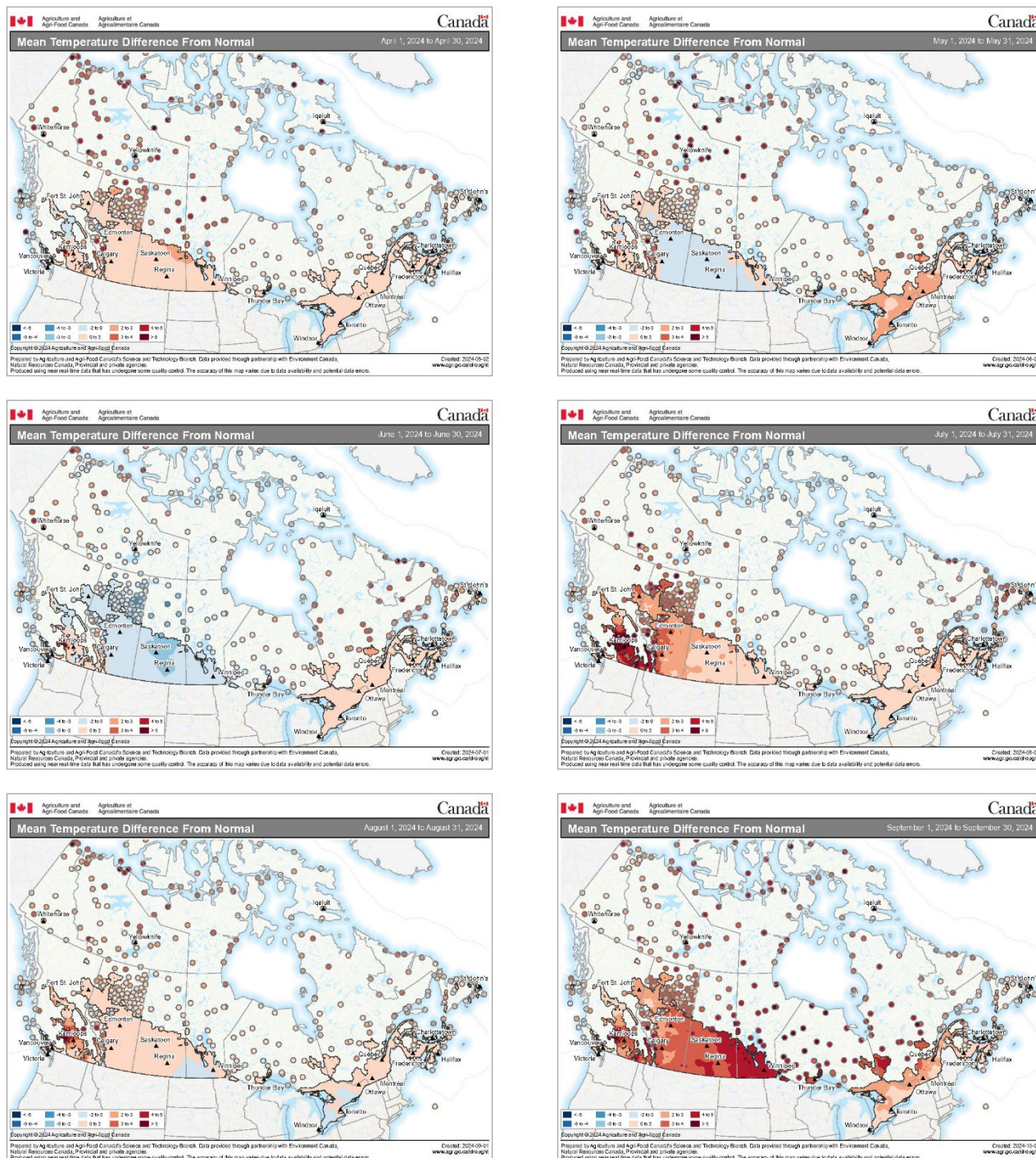
Harvest conditions

Favorable growing conditions allowed Québec producers to start harvesting their canola by the end of August. Harvest activities began in the Bas-Saint-Laurent and Capitale-Nationale regions in September. Early September rain was reported in certain areas of Québec, however, raising concerns about the crop quality. By the end of September, the canola crop was completely harvested in the Capitale-Nationale region and the Chaudière-Appalaches and nearly completed in Saguenay-Lac-Saint-Jean. In contrast, only approximately 30% of the canola crop was harvested in the Bas-Saint-Laurent region at that time. By the end of October, the canola harvest across Québec was considered completed.

In central Manitoba, the swathing of canola started in mid-August, similar to 2023 (Figure 8). The Manitoba harvest progressed smoothly until mid-September when precipitation slowed the progress of harvest considerably (Figure 4). By mid-October, the Manitoba canola harvest was considered completed. The combining of canola began in some fields in southern Saskatchewan during the first week of August. As in Manitoba, the Saskatchewan harvest progressed smoothly until mid-September, when rain slowed its progress (Figure 8). In Alberta, the Peace-River area was the first to report some canola harvest progress by August 13. The following week, canola harvest progress was reported in the southern Alberta, while harvest progress stopped in the Peace-River area due to heavy precipitation. In early September, precipitation resulted in a slower harvest pace in Alberta Peace-River than in Manitoba and Saskatchewan. Later on, however, the Alberta harvest picked up pace, matching that from 2023 (Figure 8). In early October, southern and central Alberta reported that harvest was over 91% complete, while the Peace-River area trailed at 75% complete. By the end of October, the Alberta canola harvest was reported to be completed.

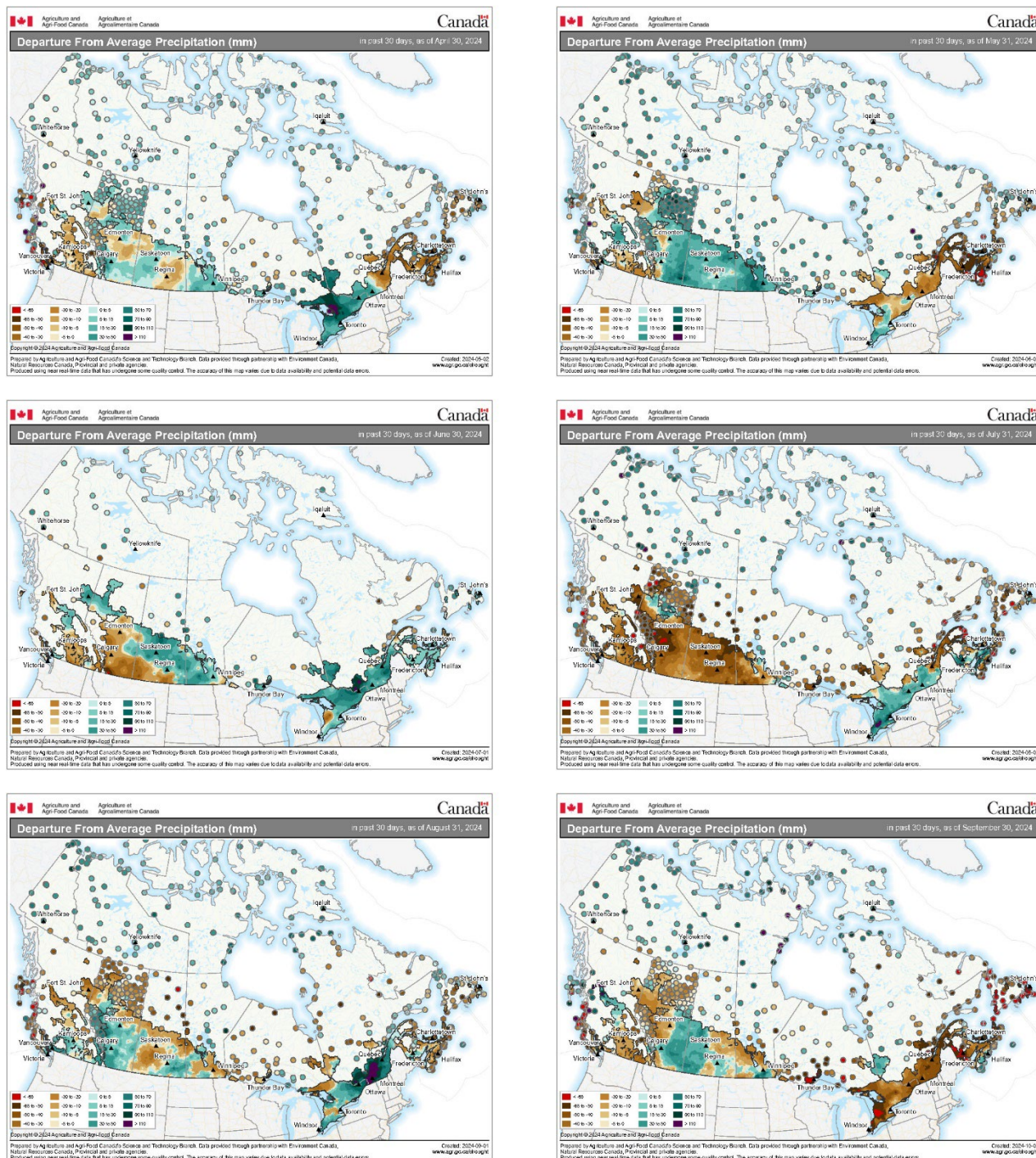
Precipitation at harvest negatively affects canola seeds, as moisture on mature seeds can lead to sprouting damage. Rainfall occurred at different times across the Prairie provinces during harvest, and the extent of sprouting damage in canola from 2024 may vary widely.

Figure 3 Mean temperature differences from normal in Canada from April 1 to September 30, 2024



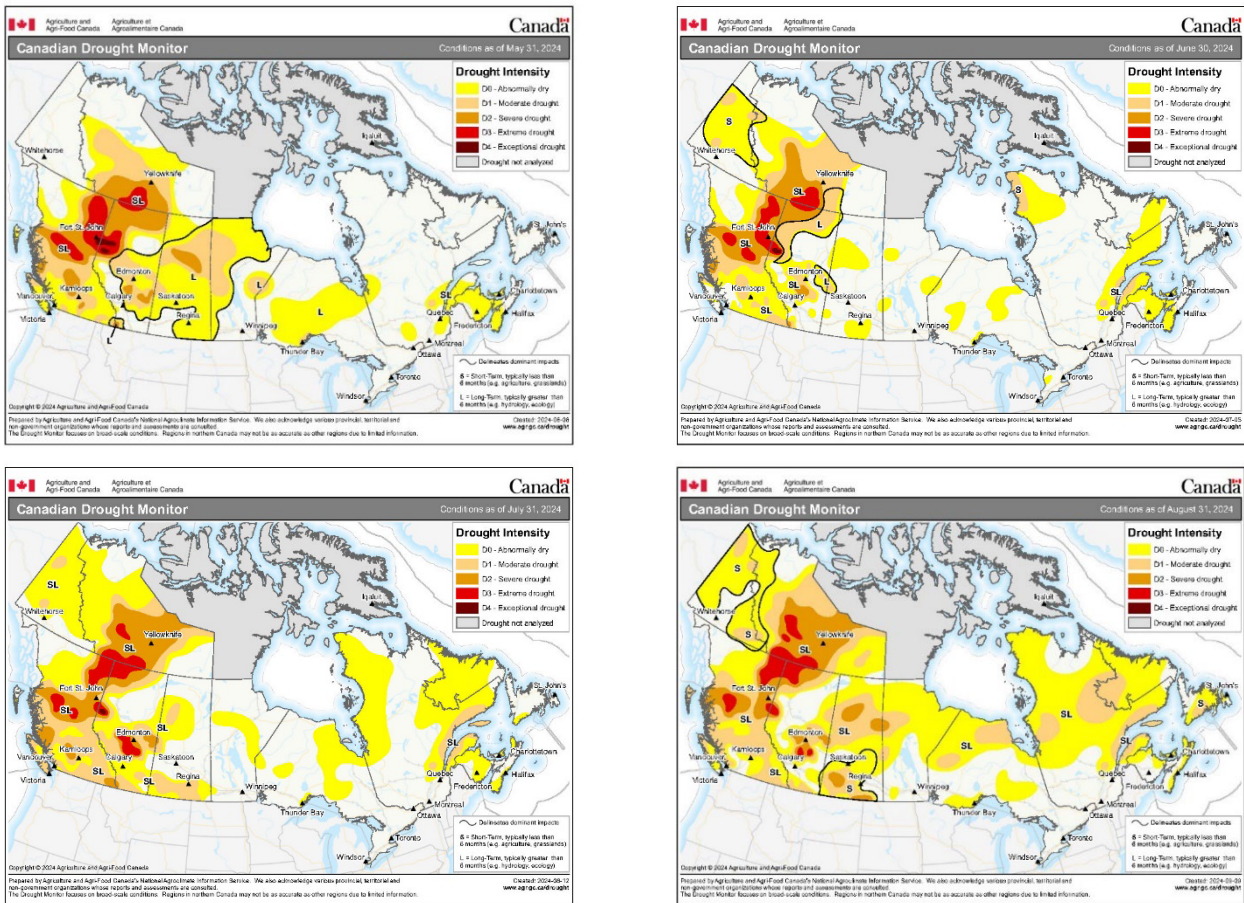
Source [Agriculture and Agri-Food Canada](#)

Figure 4 Departure from average precipitation (mm) in Canada from April 1 to September 30, 2024



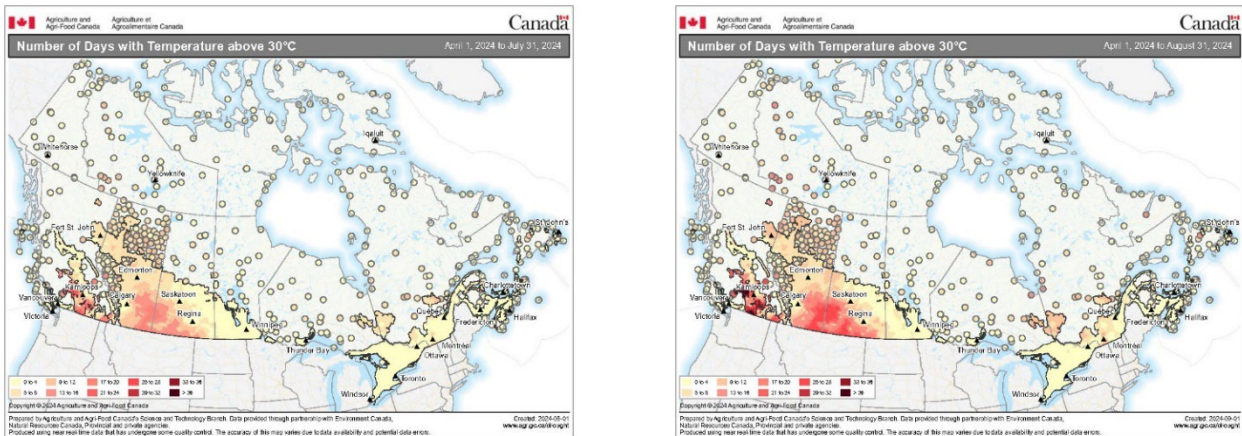
Source: [Agriculture and Agri-Food Canada](#)

Figure 5 Drought intensity in Canada from May 31 to August 31, 2024



Source: [Agriculture and Agri-Food Canada](#)

Figure 6 Number of days with temperatures above 30°C in Canada from April 1 to July 31, 2024 and April 1 to August 31, 2024



Source: [Agriculture and Agri-Food Canada](#)

Figure 7 Seeding progress (%) in Manitoba, Saskatchewan and Alberta during the 2023 and 2024 growing seasons¹

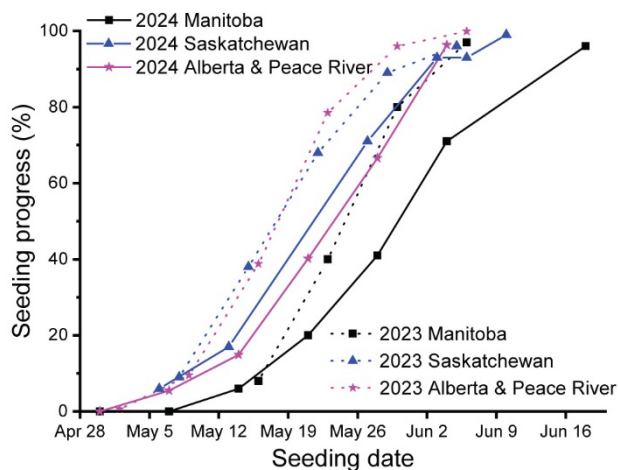
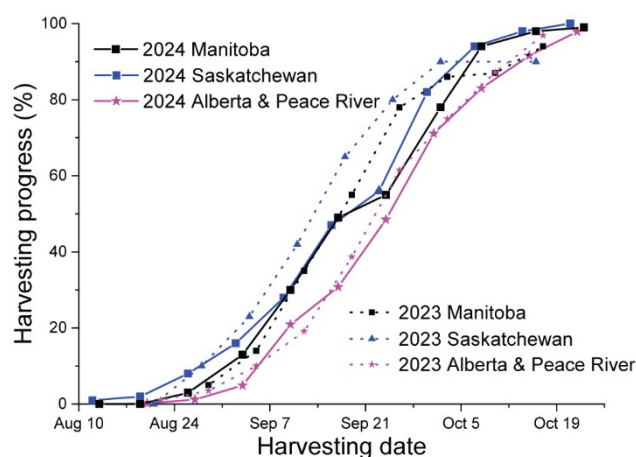


Figure 8 Harvest progress (%) in Manitoba, Saskatchewan and Alberta during the 2023 and 2024 growing seasons¹



¹ No data was available to produce similar graphs for Québec and Ontario.

Production

The number of hectares seeded with canola in Canada since 2000 is given in Figure 9. In 2024, it was estimated that canola producers seeded approximately 30,600 fewer hectares than in 2023 (8,907,500 ha versus 8,938,100 ha). This is approximately 2.2% more than the 5-year average of 8,718,250 ha and 405,900 ha less than the record set in 2017, when 9,313,400 ha of canola were seeded (Figure 9).

Statistics Canada estimated the average yield of canola in 2024 in western Canada to be 2,017 kilograms per hectare (kg/ha). This is slightly lower than the yield reported in 2023 (2,167 kg/ha) and the 5-year average yield (2,129 kg/ha). In 2024, the highest average yield was reported in New Brunswick at 3,040 kg/ha (2,555 kg/ha in 2023), followed by Ontario at 2,763 kg/ha (2,992 kg/ha in 2023), Québec at 2,342 kg/ha (2,292 kg/ha in 2023), Manitoba at 2,079 kg/ha (2,482 kg/ha in 2023), Saskatchewan at 2,012 kg/ha (2,073 kg/ha in 2023) and Alberta at 1,993 kg/ha (2,191 kg/ha in 2023). The lowest yield was observed in British-Columbia at 1,635 kg/ha (1,967 kg/ha in 2023). Lack of precipitation and the July heat blast were again responsible for these low yields in 2024.

As of February 2024, Statistics Canada estimated the production of Canadian canola to be 17,844,515 metric tonnes (MT). This is lower than last year's revised production of 19,191,655 MT and lower than the 5-year average of 18,337,347 MT (Figure 10). In the last 10 years, the lowest canola production occurred in 2021 (14,248,281 MT) and was attributed to drought conditions. Since then, hot and dry growing conditions have prevailed. These conditions have led to lower yields, and therefore, lower production, even if the areas seeded

with canola did not decrease significantly. In 2024, 54.9% of the canola in Canada was produced in Saskatchewan (53.8% in 2023). Québec produced 0.20% (0.18% in 2023), Ontario 0.34% (0.28% in 2023), Alberta 28.5% (29.0% in 2023), Manitoba 15.6% (16.3% in 2023) and British Columbia 0.40% (0.43% in 2023).

Figure 9 Area seeded with canola (hectares) in Canada from 2000 to 2024

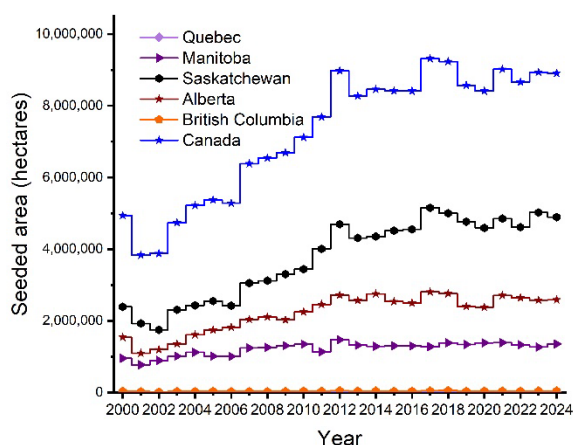
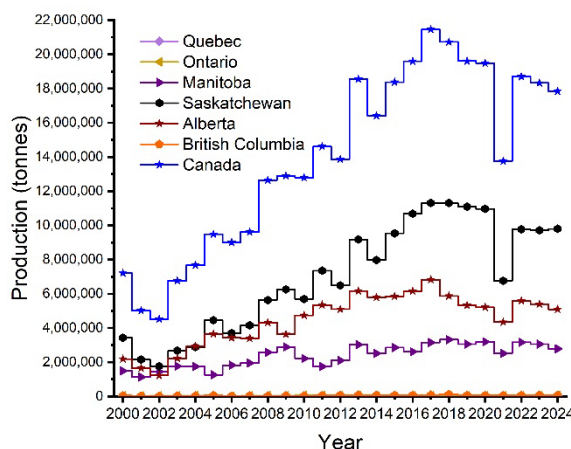


Figure 10 Canola production (metric tonnes) in Canada from 2000 to 2024



Harvest samples and grade distribution

The Canadian Grain Commission's Harvest Sample Program collected canola samples from producers, crushing plants and grain handling offices across Canada. The samples were cleaned to remove dockage prior to grading and testing. Canadian Grain Commission grain inspectors assigned grades based on Chapter 10 of the [Official Grain Grading Guide](#), which applies to canola and rapeseed.

Individual harvest samples were analyzed for oil, protein, chlorophyll and total glucosinolate content using a near-infrared (NIR) spectrometer. This report, however, is based on the analyses, by reference methods, of composite samples. Canola composites were prepared by combining:

- No. 1 Canada samples from each provincial crop district or CAR and eastern province
- No. 2 Canada and No. 3 Canada samples from each province
- Sample Canada samples from western Canada

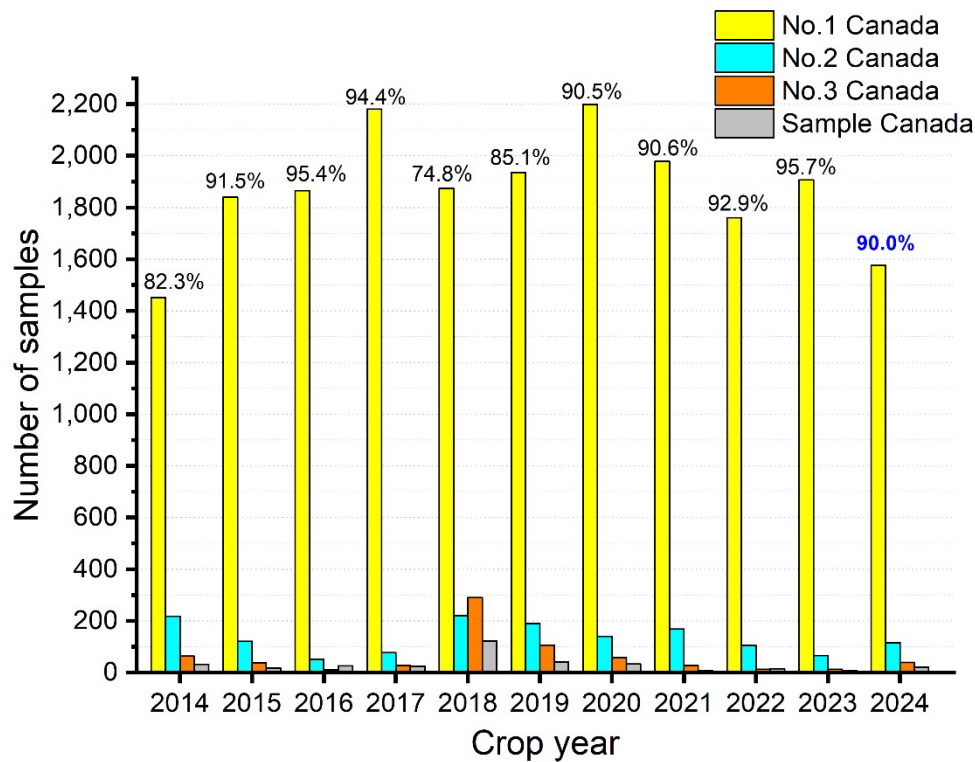
Oil, protein and total seed glucosinolate content are reported on an 8.5% moisture basis to permit annual and regional comparisons. The protein content of oil-free meal is reported on a 12% moisture basis, while the glucosinolate content of oil-free meal is reported on an 8.5% moisture basis to reflect meal-trading rules established by the Canadian Oilseed Processors Association (COPA).

Quality data for Manitoba and Alberta crop districts and Saskatchewan CARs are available in Canadian Grain Commission [reports](#). [Canola variety data](#) are also published each year.

The 2024 harvest report is based on the analyses of 1,786 individual canola samples, 1,607 of which were graded No. 1 (Table 1). Composites of No. 1 canola were made from samples from each western crop district and CAR (Manitoba, Saskatchewan, Alberta and British Columbia) and from the eastern provinces of Ontario and Québec. The crop district, CAR and provincial composites of No 1 canola samples were prepared using 1,600 samples. Specialty oil samples, such as high oleic acid, low linolenic acid and high erucic acid, are excluded from the report. In 2024, we received 257 fewer samples than in 2023, which is 369 and 346 fewer samples than the 5-year and 10-year means, respectively (Table 1).

Canadian export samples of commercially clean (CC) canola from August 2024 to December 2024 had a mean dockage content of 1.3%, with the values ranging from 0.5% to 2.5%. This negatively affected quality factors such as oil, chlorophyll and free fatty acid content. Canola exports containing more than 2.5% dockage are considered not commercially clean (NCC) and their quality factors are usually affected even more.

Figure 11 Number of canola samples received by the Harvest Sample Program and their grade distribution from 2014 to 2024



In 2024, 90.0% of the canola harvest samples were graded No. 1. This is much lower than in 2023 (95.7%), slightly lower than the 5-year mean of 91.0%, but slightly higher than the 10-year mean of 89.3% (Figure 11). The grade distribution of the 2024 canola crop varied greatly between provinces and between crop districts within provinces. The main degrading factors observed in the 2024 canola were sprouting and brown seeds. The

level of distinctly green (DGR) seeds was 0.5% (0.5% in 2023) for No. 1 canola, 2.4% (2.9% in 2023) for No. 2 canola, 3.8% (8.2% in 2023) for No. 3 canola and 0.5% (0.8% in 2023) for Sample grade.

It is important to note that the number of samples in each province or grade may not be representative of the total production or grade distribution. There were sufficient samples, however, to provide good quality information for each province and grade. Provincial and western Canadian means were calculated using the quality results for each crop district or CAR, weighted with the production data (5-year mean) and the grade percentile per crop district or CAR.

Quality characteristics

Table 2 and Table 3 contain detailed information on the quality of Canadian canola harvested in 2024 in Québec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. Table 4 compares the quality of harvest samples to that of recent canola export samples. All the means presented in this report are weighted with the production data. The weighted means of quality data from eastern Canada had little effect on the Canada-wide means as eastern production (Québec and Ontario) is minimal compared to western production (99,719 MT versus 17,805,802 MT). The provincial data that have the most influence on the Canada-wide means are from Saskatchewan, as 55% of Canadian canola was produced in Saskatchewan in 2024.

There were not enough samples graded No. 2 or lower from eastern Canada to prepare composites of the lower grades and run statistical analyses. The lower grade results reflect the quality of canola only from western Canada.

Oil content

In 2024, canola graded No. 1 had a mean oil content of 42.4% (Table 1), which was lower than the 2023 mean (43.2%), the 5-year mean (43.1%) and the 10-year mean (43.7%). The 5-year mean includes the record low oil content observed in 2021 and the second lowest oil content observed in 2022 (Figure 12). This led to a mean that was lower than that for the 2005-2020 period (44.3%). The 2024 mean oil content for No. 1 canola showed some recovery compared to 2021 and 2022, but it was still lower than what was observed during the 2005-2020 period (Figure 12).

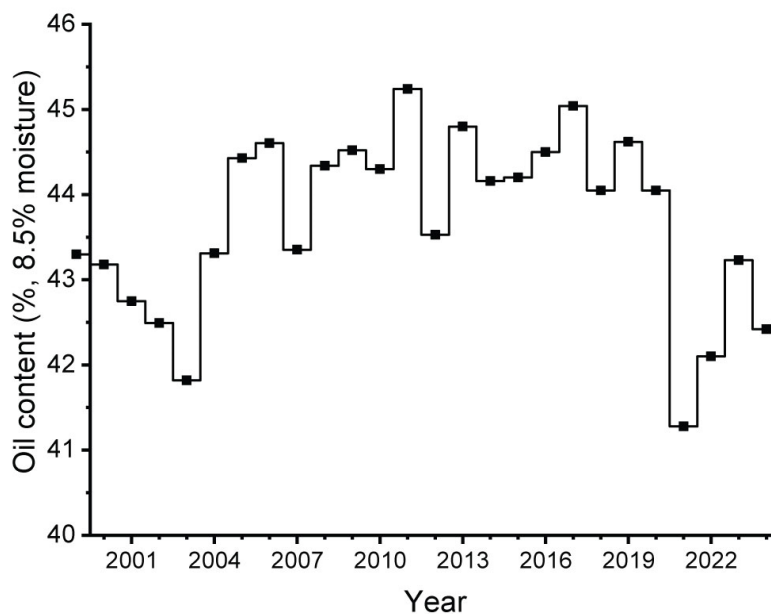
Canola graded No. 1 from the Alberta-Peace River region had a mean oil content of 43.1% (43.8% in 2023 and 42.6% in 2022), higher than the 42.1% for canola No. 1 from Manitoba (42.8% in 2023 and 42.1% in 2022) and the 42.2% for Saskatchewan (43.1% in 2023 and 41.9% in 2022) (Table 2). Samples from eastern Canada had a higher mean oil content than samples from western Canada. Samples from Québec had a mean oil content of 44.6% (43.6% in 2023 and 44.0% in 2022), whereas samples from Ontario had a mean oil content of 43.6% (43.9% in 2023 and 44.9% in 2022).

The oil content of individual canola samples graded No. 1 ranged from 38.5% to 50.0% in Manitoba (37.4% to 49.1% in 2023), 32.5% to 49.1% in Saskatchewan (35.6% to 49.3% in 2023), 35.6% to 49.8% in the Alberta-Peace River region (35.9% to 52.3% in 2023), 43.6% to 46.1% in Québec (41.0% to 46.3% in 2023) and 41.5% to 46.5% in Ontario (38.5% to 47.2% in 2023) (Table 2).

In 2024, the mean oil content of No. 2 canola from western Canada (42.2%) was similar to that of No. 1 canola from western Canada (42.4%). Most samples graded No. 2 were from Alberta-Peace-River. These samples had a mean oil content of 42.4%, slightly lower than the samples from Saskatchewan (42.8%), but much higher than the samples from Manitoba (40.8%). The mean oil content for No. 2 canola samples from western Canada ranged from 37.6% to 48.1%, compared to 37.4% to 47.6% in 2023 (Table 2). In samples from western Canada graded No. 3 canola, the mean oil content was 42.0% (42.3% in 2023) and in those graded Sample it was 42.2% (44.0% in 2023).

Oil content is influenced by both genetic and environmental factors. For any canola variety, hot and dry growing conditions, rather than cool conditions, will result in canola seeds with a lower oil content. In 2024, canola had another very dry and hot growing season. The canola crop initially grew under moderately wet to very wet conditions, with moderate to excess water observed in the Prairie provinces during May and June (Figure 4). Only crops in the Peace-River area and northwestern Alberta experienced drought-like conditions at the end of June (Figure 5). July was very warm (Figure 3), with little to no precipitation (Figure 4) and a significant number of days over 30°C (Figure 6). This caused the canola crop to develop very quickly in the Prairies. This year, unlike last year, night temperatures were not low, so crops could not recover from the heat of the day. All these conditions led to the low mean oil content values that we observed this year compared to 2023. In eastern Canada, temperatures were warmer than normal (Figure 3), with plenty of moisture (Figure 4), but there were almost no days over 30°C (Figure 6). This led to a canola crop in eastern Canada with a higher mean oil content compared to that from western Canada.

Figure 12 Oil content (% , 8.5% moisture) for Canola, No. 1 Canada



The mean oil content for CC No.1 canola exports was 41.8% for December 2024 and 41.8% for August to November 2024 (Table 4). The CC and the NCC export samples of No.1 canola had a lower mean oil content than the harvest samples due to dilution from dockage. Harvest samples are completely clean (0% dockage). The mean dockage for the CC exports was 1.8% for December 2024, 1.2% for August to November 2024, and 1.2% for the previous shipping season (August 2023 to July 2024) (Table 4). NCC exports had a mean dockage of 2.9% for August to December 2024 (Table 4). The export samples from the beginning of this year's shipping season showed a decrease in oil content compared to the previous season, which corresponds to the decrease in oil content found in the 2024 harvest samples when compared to 2023.

Protein content

The mean protein content of canola seed at 8.5% moisture and the calculated mean protein content of oil-free meal at 12% moisture from 2000 to 2024 are given in Figure 13 and Figure 14. The mean seed protein content for all Canadian samples was 22.9% for No. 1 canola, 23.6% for No. 2 canola, 24.1% for No. 3 canola and 23.7% for canola graded Sample (Table 2). The mean seed protein content for No. 1 canola in 2024 (22.9%) was higher than the 2023 mean (21.8%), the 5-year mean (21.9%) and the 10-year mean (21.1%), but was much lower than the record high mean protein content observed in 2021 (24.0%) (Table 1 and Figure 13). The seed protein content of individual No. 1 canola samples ranged from 18.6% to 21.7% for Québec, 17.7% to 23.4% for Ontario, 15.5% to 27.2% for Manitoba, 17.5% to 30.2 % for Saskatchewan and 17.4% to 29.1% for Alberta-Peace River (Table 2). The mean seed protein content for western Canadian samples ranged from 17.6% to 28.4% for No. 2 canola, 20.5% to 28.1% for No. 3 canola and 19.1% to 27.4% for canola graded Sample (Table 2).

A strong inverse relationship between oil and protein content can be observed in canola seeds. In 2024, the mean oil content in seeds was 0.8% lower than in 2023 and the mean protein content in seeds concurrently increased by 1.1%, compared to 2023.

The mean seed protein content of CC exports of No. 1 canola was 23.3% for December 2024 and 22.8% for August to November 2024 (Table 4). Mean seed protein content for the previous shipping season was lower than that for this year's shipping season (22.1% for the 2023-2024 shipping season versus 22.8% for August to November 2024 and 23.3% for December 2024), which is consistent with the 2024 canola protein content of harvest samples (Table 4).

Figure 13 Protein content of seeds (%
8.5% moisture) for Canola, No. 1 Canada

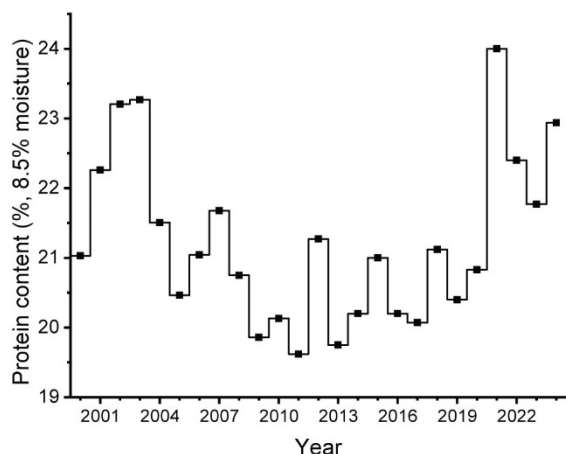
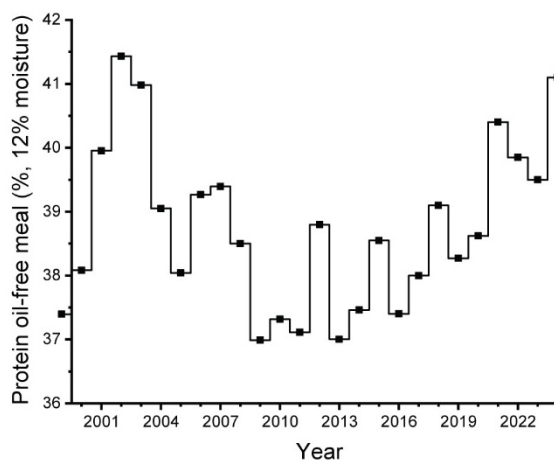


Figure 14 Protein content of oil-free meal
(%, 12% moisture) for Canola, No. 1
Canada



The calculated protein content of oil-free meal is the maximum protein content of a theoretical meal that would be obtained if a crushing plant was able to extract 100% of the oil from canola seeds. In 2024, the calculated mean protein content of oil-free meal at 12% moisture was 41.1%. This was higher than the 2023 mean (39.5%), the 5-year mean (39.7%) and the 10-year mean (38.9%), but lower than the record high mean of 42.0% from 2022 (Table 1 and Figure 14). The calculated protein content of oil-free meal at 12% moisture was highest for samples from Alberta-Peace River (42.3% in 2024 versus 39.9% in 2023), followed by Saskatchewan (41.0% in 2024 versus 39.7% in 2023), Ontario (39.7% in 2024 versus 39.5% in 2023), Manitoba (39.5% in 2024 versus 38.2% in 2023) and Québec (39.1% in 2024 versus 41.5% in 2023).

The calculated mean protein content of oil-free meal at 12% moisture for CC export samples of No. 1 canola was 40.7% for August to November 2024 and 41.3% for December 2024. These results are slightly higher than the value of 40.7% determined for the previous shipping season for CC export samples of No. 1 canola (Table 4).

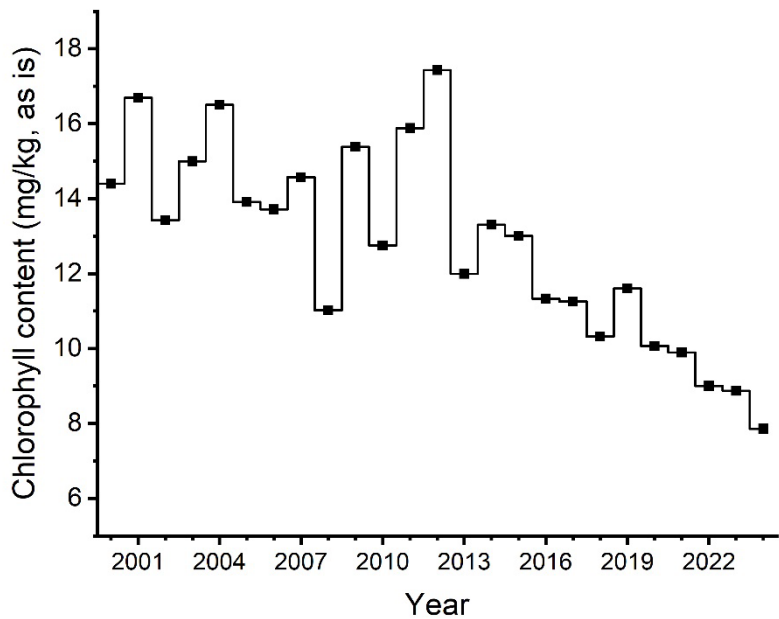
Chlorophyll content

In 2024, the mean chlorophyll content for No. 1 canola was 8 mg/kg for all Canadian samples, 7 mg/kg for Québec samples, 3 mg/kg in Ontario samples, 7 mg/kg for Manitoba and Saskatchewan samples and 10 mg/kg for Alberta-Peace River samples (Table 2). The Canada-wide 2024 mean was lower than the 2023 mean (9 mg/kg) and the 5-year mean (10 mg/kg) (Table 1). It was the lowest mean chlorophyll content observed in the last 10 years (Figure 15). Individual samples of No. 1 canola showed variations in chlorophyll content due to variable growing conditions. The chlorophyll content of No. 1 canola samples ranged from 6 mg/kg to 10 mg/kg in Québec, 4 mg/kg to 18 mg/kg in Ontario, less than 3 mg/kg to 30 mg/kg in Manitoba, less than 3 mg/kg to 37 mg/kg in Saskatchewan and less than 3 mg/kg to 40 mg/kg in Alberta-Peace River (Table 2). Canola from Alberta crop districts 5 and 6 (the western part of the central and north-central districts) had the highest mean chlorophyll content at 13 mg/kg and 15 mg/kg, respectively.

The mean chlorophyll content of canola samples graded No. 2 was 19 mg/kg (Table 2), lower than that in 2023 (21 mg/kg). Canola samples graded No. 3 and Sample had a mean chlorophyll content of 27 mg/kg and 10 mg/kg, respectively. These values are similar to what was observed in 2023 (20 mg/kg for No. 3 canola and 10 mg/kg for Sample grade canola). In 2024, canola samples were downgraded for several factors other than immaturity, such as sprouting and/or brown seeds.

Historical chlorophyll content means vary greatly from year to year (Figure 15) due to variable growing conditions. High chlorophyll content can be related to one or more factors, including delays in seeding due to cold temperatures and rain, poor growing conditions due to lack of heat units, and an early frost. Compared to 2023, seeding moved at a slower pace in Saskatchewan and Alberta-Peace River due to precipitation in May. In Manitoba, seeding was delayed by about a week due to precipitation in May and June, compared to 2023 (Figure 7). However, the hot and dry growing conditions in July pushed the development of crops and the 2024 harvest completion time was similar to last year. As there was no early frost and temperatures remained above normal in September until the end of the growing season (Figure 3), the 2024 canola crop was allowed to mature fully without problems. This led to the low chlorophyll content and the low level of distinctly green (DGR) seeds observed this year.

Figure 15 Chlorophyll content of seeds (mg/kg, as is moisture) for Canola, No. 1 Canada



Canola graded No. 1 must contain no more than 2.0% DGR seeds. In 2024, the mean DGR seed content in No. 1 canola samples was 0.6% for Québec (0.5% in 2023), 0.4% for Ontario (0.6% in 2023), 0.7% for Manitoba (0.7% in 2023), 0.4% for Saskatchewan (0.4% in 2023) and 0.6% for Alberta-Peace River (0.6% in 2023). This gave a mean DGR seed content of 0.5% for all Canadian samples in 2024.

The chlorophyll content of Canadian canola exports is affected by DGR seed and dockage content. The mean DGR seed content was 0.4% for both the December 2024 CC canola exports and the August to November 2024 CC canola exports, and 0.4% for the NCC canola exports for August to December 2024 (Table 4). The CC December 2024 export samples had a slightly higher mean chlorophyll content and a slightly lower DGR seed content compared to the 2024 harvest samples (Table 4).

Glucosinolate content

The mean total glucosinolate content of canola seeds at 8.5% moisture from 2000 to 2024 is given in Figure 16 and the calculated mean total glucosinolate content of oil-free canola meal at 8.5% moisture from 2000 to 2024 is given in Figure 17.

In 2024, canola No. 1 had a mean glucosinolate content of 13 micromoles per gram of seeds ($\mu\text{mol/g}$), higher than the 2023 mean (12 $\mu\text{mol/g}$), the 5-year mean (11 $\mu\text{mol/g}$) and the 10-year mean (11 $\mu\text{mol/g}$) (Table 1). This is the highest mean glucosinolate content since 2015 (Figure 16). Mean total glucosinolate content was 11 $\mu\text{mol/g}$ of seeds for Québec, 10 $\mu\text{mol/g}$ of seeds for Ontario, 11 $\mu\text{mol/g}$ of seeds for Manitoba, 13 $\mu\text{mol/g}$ of seeds for Saskatchewan and 14 $\mu\text{mol/g}$ of seeds for Alberta-Peace River. Samples from CARs 8 and 12 in west-central Saskatchewan, crop districts 1 and 2 in southeastern Alberta and the Peace River area in British Columbia all had mean total glucosinolate content values greater than 15 $\mu\text{mol/g}$ of seeds.

These canola growing areas were the most affected by a lack of moisture during the 2024 growing season (Figure 4 and Figure 5). Figure 6 shows that there was a significant number of days in July and August with temperatures over 30°C in Alberta and parts of Saskatchewan. The 2024 results match the results from previous years since 2021, when both Alberta crop district 1 and Saskatchewan CAR 12 experienced severe to extreme drought conditions during the entire growing season.

These observations and results agree with a research study from Australia that showed hot and dry conditions, post flowering, led to an increase in the total glucosinolate content in canola seeds. As in the years since 2021, heat and lack of moisture were responsible for some of the increase in total glucosinolates observed in 2024.

The December 2024 and the August to November 2024 CC canola exports both had a mean total glucosinolate content of 10 $\mu\text{mol/g}$ of seeds, which is slightly higher than that for the previous shipping season (Table 4).

In 2024, 13 $\mu\text{mol/g}$ of total glucosinolates in seed corresponded to 24 $\mu\text{mol/g}$ of total glucosinolates in oil-free meal on an 8.5% moisture basis (Table 1). This is slightly higher than the 2023 mean of 23 $\mu\text{mol/g}$ for oil-free meal and higher than the 5-year and 10-year means of 20 $\mu\text{mol/g}$ (Figure 17 and Table 1). Total glucosinolate content in Canadian canola meal obtained from conventional crushing plants (expeller press followed by solvent extraction) is much lower than this calculated value. The calculated value assumes that 100% of the oil is recovered from the seed during crushing and that no glucosinolates are destroyed during processing, which is never the case.

Figure 16 Total glucosinolate content of seeds ($\mu\text{mol/g}$, 8.5% moisture) for Canola, No. 1 Canada

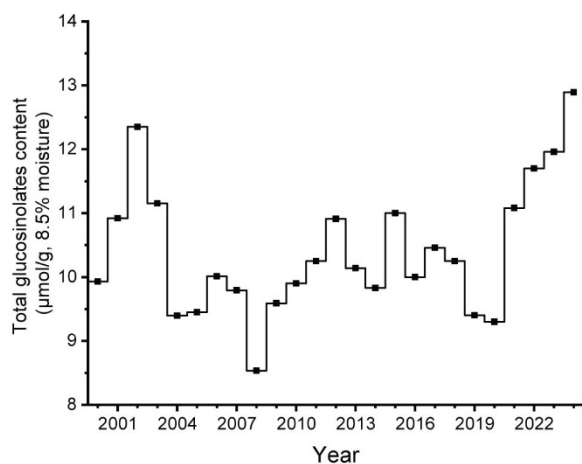
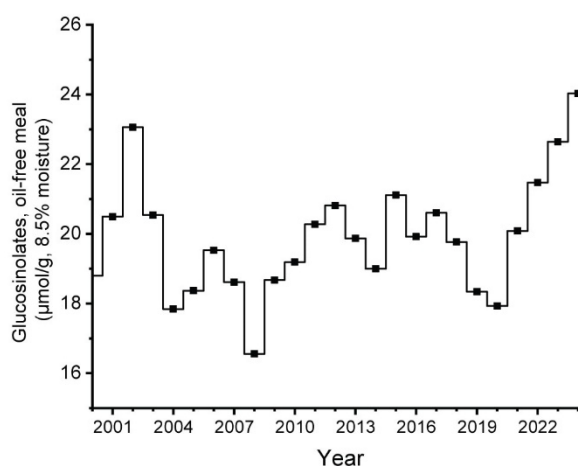


Figure 17 Total glucosinolate content of oil-free meal ($\mu\text{mol/g}$, 8.5% moisture) for Canola, No. 1 Canada



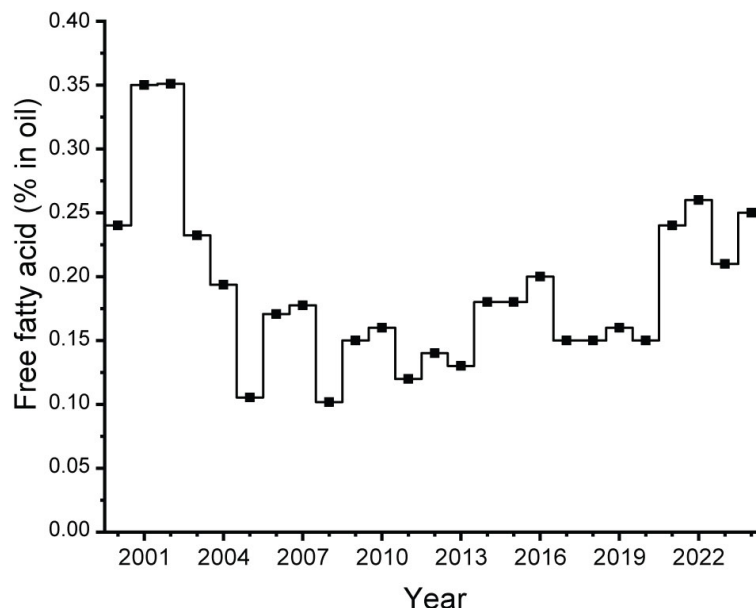
Free fatty acid content

In 2024, the mean free fatty acid (FFA) content of canola samples graded No. 1 was 0.25% (as oleic acid). This is slightly higher than the 2023 mean of 0.21%, the 5-year mean of 0.20% and the 10-year mean of 0.19% (Table 1 and Figure 18). The mean FFA content for No. 1 canola samples (Table 2) from Manitoba (0.43% in 2024 versus 0.41% in 2023) was higher than that for Alberta-Peace River (0.28% in 2024 versus 0.20% in 2023), Saskatchewan (0.19% in 2024 versus 0.16% in 2023) and Ontario (0.41% in 2024 versus 0.49% in 2023). These values were lower than the mean FFA content observed in samples from Québec (0.75% in 2024 versus 0.52% in 2023). Composite samples graded No. 1 from Manitoba had a higher mean FFA content than the western Canadian mean, and ranged in value from 0.30% to 0.99%, which may pose a problem for local crushers.

In western Canada, canola samples graded No. 2 had a higher mean FFA content than those graded canola No. 1 (0.57% in 2024 versus 0.85% in 2023) (Table 2). Samples from Manitoba had the highest mean FFA content (1.21% in 2024 versus 1.61% in 2023), significantly higher than what was observed for the samples from Saskatchewan (0.40% in 2024 versus 0.92% in 2023) and Alberta (0.44% in 2024 versus 0.28% in 2023).

Plant stress and seed sprouting that resulted from hot and dry growing conditions, rain at harvest, or both, can often lead to an increase in FFA content. This year, brown seeds were observed in a large number of samples, which likely was due to plant stress caused by the heat blast and lack of precipitation in July. Sprouting was also noted in many samples from the Prairie provinces. This damage was due to rain during harvest, which was first observed in the Peace-River area of British-Columbia early September, and then later in September for the three Prairie provinces (Figure 4). Any change in the pace of harvest indicates a harvest slow down and/or pause, suggesting rain or heavy rain. The 2024 harvest progress survey showed changes in the pace of harvest (Figure 8) as a result of precipitation (Figure 4).

Figure 18 Free fatty acid content (% in oil, as oleic acid) for Canola, No. 1 Canada



The mean FFA level of CC canola No. 1 was 0.28% for the December 2024 exports and 0.31% for the August to November 2024 exports (Table 4). FFA levels of individual CC canola No. 1 export samples ranged from 0.19% to 0.69% (0.14% to 0.74% for the previous shipping season).

It has been observed that FFA levels can increase during the shipping season. Storage conditions can activate hydrolytic enzymes in seeds which leads to an increase in FFA production. FFA content can vary considerably from each load throughout the entire shipping season.

Fatty acid composition

The mean erucic acid (C22:1) content of all Canadian samples of canola graded No. 1 was 0.01% in 2024, slightly above the limit of quantification. Over the last several years, the mean erucic acid content in canola samples graded No. 1 ranged from below the limit of quantification to just over the limit of quantification (Table 1, Table 3 and Figure 19). These low values are a direct result of plant breeding efforts by the Canadian canola industry.

In 2024, the mean α -linolenic acid (C18:3) content of all Canadian samples of canola graded No. 1 was 9.2%, similar to the 2023 mean (9.1%) and slightly higher than the 5-year mean of 9.0% (Table 1 and Figure 20). Samples from Ontario had the lowest mean α -linolenic acid content (8.3%) followed by samples from Manitoba (8.9%), Saskatchewan (9.0%) and Québec (9.6%). Alpha-linolenic acid content ranged from 8.1% to 10.1% for samples from eastern Canada and from 5.6% to 12.5% for samples from the Prairie provinces. Samples from Alberta-Peace River had the highest mean α -linolenic acid content at 9.8% (9.5% in 2023) (Table 3), with the samples from Alberta crop districts 5, 6, and 7 showing mean α -linolenic acid values equal to or higher than 10%.

In 2024, the mean oleic acid (C18:1) content of all Canadian samples graded No. 1 canola was 63.4%, lower than the 2023 mean (64.2%) and the 5-year mean of 63.8% (Table 1 and Figure 21). The lowest mean oleic acid was found in samples from Québec (62.4% in 2024 versus 63.2% in 2023) and the highest in samples from Ontario (65.0% in 2024 versus 63.8% in 2023) (Table 3). The oleic acid content of samples from the western provinces was similar to each other (63.5% for Manitoba, 63.5% for Saskatchewan and 63.2% for Alberta-Peace River) but lower than last year by almost one percent (64.3% for Manitoba, 64.2% for Saskatchewan and 63.7% for Alberta-Peace River in 2023). The oleic acid content ranged from 60.3% to 64.7% for samples for Québec, 63.5% to 66.5% for Ontario, 58.7% to 66.7% for Manitoba, 57.1% to 67.5% for Saskatchewan and 58.0% to 66.1% for Alberta-Peace River.

The mean total monounsaturated fatty acid (MUFA) content in 2024 was 63.9% for Québec (64.9% in 2023), 66.5% for Ontario (65.6% in 2023), 65.1% for Manitoba (65.9% in 2023), 65.1% for Saskatchewan (65.8% in 2023) and 64.9% for Alberta-Peace River (65.2% in 2023). The mean MUFA content for all Canadian samples was 65.0% in 2024, lower than the 2023 mean (65.7%) and the 5-year mean of 65.4% (Table 1 and Table 3).

In 2024, the mean linoleic acid (C18:2) content was higher than that from last year (18.4% in 2024 versus 17.9% in 2023) (Figure 22) but similar to the 5-year mean of 18.3% (Table 1). Over the last 10 years (2013 to 2023), linoleic acid content has shown a continual decrease (Figure 22). This decrease is likely related to genetics since environmental conditions are usually related to changes from one year to another. Genetic changes are observed over longer time periods, such as a decade.

In 2024, the mean total polyunsaturated fatty acid (PUFA) content was 28.5% for Québec (27.8% in 2023), 26.0% for Ontario (27.0% in 2023), 27.4% for Manitoba (26.8% in 2023), 27.5% for Saskatchewan (26.9% in 2023) and 28.1% for Alberta-Peace River (28.1% in 2023). This resulted in a mean of 27.6% for all Canadian samples (27.0% in 2023), higher than the 5-year mean of 27.3% (Table 1 and Table 3). In canola, PUFA content is directly related to α -linolenic acid (C18:3) and linoleic acid (C18:2) content. In 2024, there was a 0.1% increase in α -linolenic acid and a 0.5% decrease in linoleic acid, which accounted for the 0.6% increase in PUFA content compared to last year.

The mean saturated fatty acid (SFA) content for all canola No. 1 samples was 6.6% in 2024, identical to the 2023 mean and similar to the 5-year and 10-year means of 6.7% (Tables 1, Table 3 and Figure 24). Since 2009, the mean SFA content has varied from 6.6% to 6.9% (Figure 24). In 2024, the mean SFA content for No. 1 canola was 6.8% for Québec, Ontario and Manitoba, while SFA was 6.7% for Saskatchewan and 6.4% for Alberta-Peace River (Table 3).

The fatty acid composition, especially oleic acid and linoleic acid, in the 2024 crop differed from that in 2023. There was a 0.8% decrease in oleic acid, a 0.5% increase in linoleic acid and a 0.1% increase in α -linolenic acid. As a result, the iodine value, which represents the degree of unsaturation in oil, was higher in 2024 (111.9 units) compared to 2023 (111.3 units) (Table 1 and Figure 23). The 0.6 unit increase was much lower than the one observed last year (1.8 units higher in 2023 compared to 2022), but the 2024 iodine value was higher than the 5-year mean (111.3 units) and identical to the 10-year mean (111.9 units) (Table 1). Although the 2024 iodine value showed some recovery from the 2022 record low of 109.5 units (Figure 23), it is still lower than the iodine values that were observed before 2020. For No. 1 canola, the mean iodine value was 112.7 units (112.1 units in 2023) for Québec, 109.4 units (110.7 units in 2023) for Ontario, 111.1 units (110.8 in 2023) for Manitoba, 111.5 units (111.0 units in 2023) for Saskatchewan and 113.0 units (113.7 units in 2023) for Alberta-Peace River (Table 3). This year, the iodine value of every canola sample graded No. 1 ranged from 103.6 units to 119.9 units,

while in 2023 it ranged from 103.2 units to 121.3 units. Canola samples graded No. 2 had a higher iodine value, linoleic and alpha-linolenic acid content, and lower oleic acid content than No. 1 canola samples (Table 3).

Compared to last year, oleic acid content and oil content decreased (63.4% in 2024 versus 64.2% in 2023 and 42.4% in 2024 versus 43.2% in 2023, respectively) (Table 1, Figure 21 and Figure 12). Alpha-linolenic acid content was similar to last year (9.2% in 2024 versus 9.1% in 2023), while linoleic acid content and iodine value increased (18.4% in 2024 versus 17.9% in 2023 and 111.9 units in 2024 versus 111.3 units in 2023, respectively) (Table 1, Figure 20, Figure 22 and Figure 23). However, this year, the observed decrease in oil content was associated with an increase in total unsaturation of the oil, which appears to be inconsistent with the environmental growing conditions. Hot and dry growing conditions lead to low oil content and lower total unsaturation of the oil with higher oleic acid content and lower linoleic acid and α -linolenic acid contents. This suggests that, as in 2023, the increase in the total unsaturation of the oil was likely due to genetic factors and not the environmental growing conditions. In 2024, L340PC canola represented 25.2% of the insured commercial acres (20.6% in 2023 and 17.1% in 2022), L356PC canola, at 9.8%, was the second most represented variety (6.1% in 2023 and 2.8% in 2022) and L345PC canola, at 6.5%, was the third most represented (6.2% in 2023 and 9.7% in 2022). In 2024, these three varieties represented 41.5% of the insured commercial acres, versus 32.9% in 2023 and 29.6% in 2022. This change in variety representation was likely the genetic factor that affected the fatty acid composition, indicating that the growing conditions were not solely responsible.

The fatty acid composition of the 2024 harvest samples corresponded well with the fatty acid composition of the August to December 2024 export samples (Table 4).

Figure 19 Erucic acid content (% in oil) for Canola, No. 1 Canada

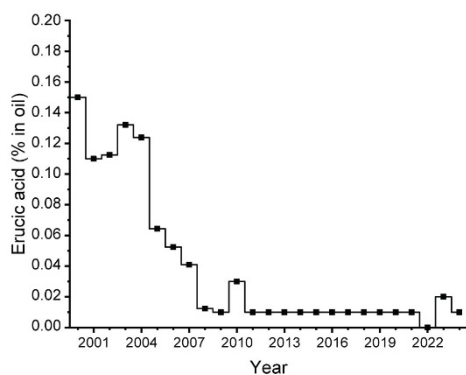


Figure 20 Alpha-linolenic acid content (% in oil) for Canola, No. 1 Canada

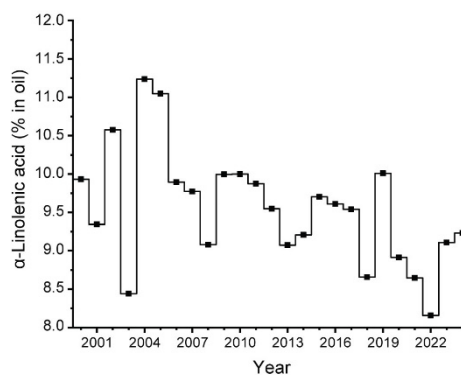


Figure 21 Oleic acid content (% in oil) for Canola, No. 1 Canada

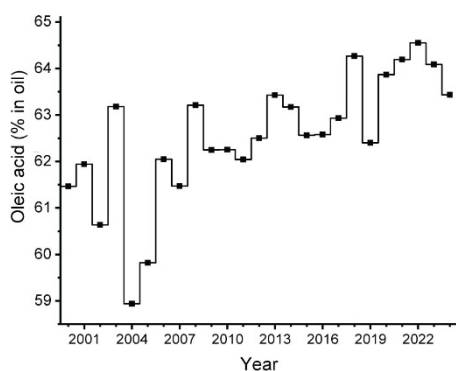


Figure 22 Linoleic acid content (% in oil) for Canola, No. 1 Canada

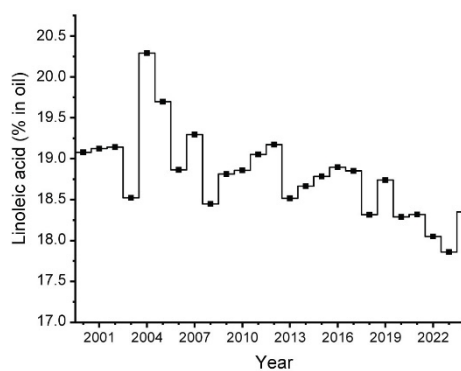


Figure 23 Iodine value (units in oil) for Canola, No. 1 Canada

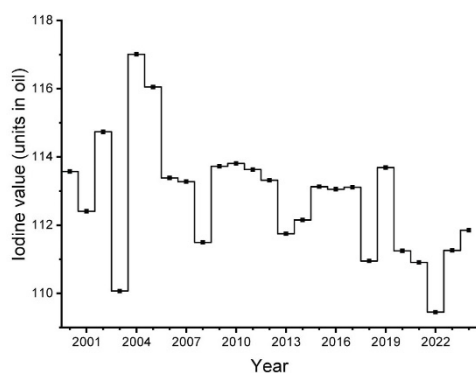


Figure 24 Saturated fatty acid content (% in oil) for Canola, No. 1 Canada

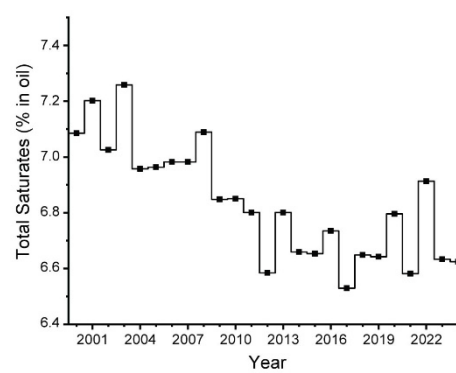


Table 2 Oil, protein, chlorophyll, total glucosinolate and free fatty acid content for 2024 canola harvest samples according to grade and province

Grade	Location	Number of samples	Oil content ¹ , %			Protein content ² , %			Chlorophyll content ³ , mg/kg ⁴			Glucosinolate content, µmol/g ⁵			Free fatty acid content, %
			Mean	Min ⁶	Max ⁶	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Canola, No. 1 Canada	Québec	4	44.6	43.6	46.1	21.9	18.6	21.7	7	6	10	11	3	9	0.75
	Ontario	27	43.6	41.5	46.5	20.8	17.7	23.4	3	4	18	10	4	9	0.41
	Manitoba	335	42.1	38.5	50.0	22.2	15.5	27.2	7	< 3	30	11	3	16	0.43
	Saskatchewan	687	42.2	32.5	49.1	23.0	17.5	30.2	7	< 3	37	13	4	26	0.19
	Alberta-Peace River ⁷	547	43.1	35.6	49.8	23.3	17.4	29.1	10	< 3	40	14	3	18	0.28
	Canada⁸	1600	42.4	32.5	50.0	22.9	15.5	30.2	8	< 3	40	13	2	26	0.25
Canola, No. 2 Canada	Manitoba	25	40.8	39.1	43.7	23.5	19.6	25.8	18	4	44	13	6	16	1.21
	Saskatchewan	21	42.8	37.9	46.5	22.7	19.8	28.0	16	5	41	15	7	19	0.40
	Alberta-Peace River	67	42.4	37.6	48.1	24.1	17.6	28.4	20	< 3	75	16	6	19	0.44
	Canada	113	42.2	37.6	48.1	23.6	17.6	28.4	19	< 3	75	14	6	19	0.57
Canola, No. 3 Canada	Manitoba	9	41.4	39.6	43.9	23.4	20.7	24.6	22	6	66	13	7	15	0.95
	Saskatchewan	3	41.4	40.4	42.7	22.6	22.0	22.9	27	5	61	12	9	13	0.35
	Alberta-Peace River	27	42.4	37.1	46.8	24.6	20.5	28.1	29	< 3	68	15	7	30	0.29
	Canada	39	42.0	37.1	47.0	24.1	20.5	28.1	27	< 3	68	14	7	30	0.42
Canola, Sample Canada	Canada	19	42.2	38.9	47.5	23.7	19.1	27.4	10	< 3	31	13	7	18	0.48

¹ 8.5% moisture basis.

² Calculated from nitrogen (N) content using N x 6.25 on an 8.5% moisture basis.

³ As-is moisture basis.

⁴ mg/kg = milligrams per kilogram.

⁵ µmol/g = micromoles per gram.

⁶ Min = minimum, Max = maximum.

⁷ Includes part of the Peace River area located in British Columbia.

⁸ Values are weighted averages based on provincial production estimates from Statistics Canada

Table 3 Main fatty acid composition, total SFA¹, MUFA² and PUFA³ content and iodine value of oil in 2024 canola harvest samples according to grade and province

Grade	Location	Relative fatty acid composition of oil (%)										Iodine value ⁴ (units)					
		Oleic acid			Linolenic acid			Alpha-linolenic acid			Erucic acid	SFA ¹	MUFA ²	PUFA ³			
		Mean	Min ⁵	Max ⁵	Mean	Min	Max	Mean	Min	Max	Mean	Mean	Mean	Mean	Mean	Min	Max
Canola, No. 1 Canada	Québec	62.4	60.3	64.7	18.8	17.3	20.9	9.6	9.1	10.1	0.00	6.8	63.9	28.5	112.7	110.9	114.8
	Ontario	65.0	63.5	66.5	17.7	16.6	18.8	8.3	8.1	9.7	0.01	6.8	66.5	26.0	109.4	108.2	112.2
	Manitoba	63.5	58.7	66.7	18.4	16.1	20.9	8.9	7.3	11.4	0.00	6.8	65.1	27.4	111.1	107.6	117.5
	Saskatchewan	63.5	57.1	67.5	18.4	16.2	21.9	9.0	5.6	12.5	0.02	6.7	65.1	27.5	111.5	103.6	119.9
	Alberta- Peace River ⁶	63.2	58.0	66.1	18.2	16.4	21.0	9.8	7.0	12.5	0.02	6.4	64.9	28.1	113.0	107.5	119.6
	Canada⁷	63.4	57.1	67.5	18.4	16.1	21.9	9.2	5.6	12.5	0.01	6.6	65.0	27.6	111.9	103.6	119.9
Canola, No. 2 Canada	Manitoba	62.8	58.2	66.0	19.0	16.8	21.6	8.8	7.7	11.3	0.00	6.9	64.4	27.9	111.2	107.9	117.3
	Saskatchewan	62.8	59.5	64.6	18.8	16.8	20.3	9.5	8.7	11.6	0.00	6.5	64.3	28.4	112.8	110.2	117.4
	Alberta- Peace River	62.0	56.1	69.5	18.8	16.5	21.1	10.3	6.0	13.8	0.06	6.3	63.7	29.2	114.4	104.6	123.3
	Canada	62.3	56.1	69.5	18.9	16.5	21.6	9.8	6.0	13.8	0.03	6.5	64.0	28.7	113.4	104.6	123.3
Canola, No. 3 Canada	Manitoba	63.8	60.6	64.1	18.4	17.8	19.5	8.4	8.2	11.0	0.01	6.8	65.5	26.9	110.2	110.2	115.7
	Saskatchewan	62.4	61.0	62.9	18.7	18.0	18.9	10.0	9.5	11.4	0.00	6.5	64.0	28.8	113.6	111.8	115.8
	Alberta-Peace River	62.0	58.3	64.1	19.2	17.7	20.5	10.3	9.5	12.7	0.01	6.1	63.6	29.6	114.9	112.2	120.5
	Canada	62.4	58.3	65.6	19.0	17.7	20.5	9.9	8.0	12.7	0.01	6.3	64.0	29.0	113.9	109.1	120.5
Canola, Sample Canada	Canada	62.4	56.3	65.2	19.0	15.6	19.9	10.0	9.2	13.9	0.01	6.2	64.0	29.1	114.1	110.6	123.1

¹ SFA = saturated fatty acids. Total SFA is the sum of lauric (C12:0), myristic (C14:0), palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0) and lignoceric (C24:0) acids.

² MUFA = monounsaturated fatty acids. Total MUFA is the sum of palmitoleic (C16:1), oleic (C18:1), eicosenoic (C20:1), erucic (C22:1) and nervonic (C24:1) acids.

³ PUFA = polyunsaturated fatty acids. Total PUFA is the sum of linoleic (C18:2), alpha-linolenic (C18:3) and eicosadienoic (C20:2) acids.

⁴ Calculated from fatty acid composition.

⁵ Min = minimum, Max = maximum.

⁶ Includes part of the Peace River area located in British Columbia.

⁷ Values are weighted averages based on provincial production estimates from Statistics Canada.

Table 4 Comparison of quality data from 2024 harvest samples and recent export shipments for Canola, No. 1 Canada

Quality parameter	2024 Harvest Sample Program	Commercially clean exports			Not commercially clean exports
		December 2024	August to November 2024	2023-2024 shipping season	August to December 2024
Oil content ¹ , %	42.4	41.8	42.2	42.4	41.8
Protein content ² , %	22.9	23.3	22.8	22.1	22.5
Oil-free meal protein content ³ , %	41.1	41.3	40.7	40.7	39.8
Chlorophyll ¹ , mg/kg of seeds ²	8	10	10	11	11
Total glucosinolates ¹ , µmol/g of seeds ³	13	10	10	9	9
Free fatty acids (% in oil, as oleic acid)	0.25	0.28	0.31	0.27	0.46
Erucic acid, % in oil	0.01	0.03	0.02	0.02	0.03
Oleic acid, % in oil	63.4	63.5	64.0	64.1	63.6
Alpha-linolenic acid, % in oil	9.2	9.4	9.2	9.2	9.2
SFA ⁴ , % in oil	6.6	6.5	6.5	6.6	6.6
Iodine value ⁵ , units in oil	111.9	112.2	111.6	111.4	111.9
MUFA ⁶ , % in oil	65.0	65.2	65.7	65.7	65.3
PUFA ⁷ , % in oil	27.6	27.7	27.2	27.1	27.6
Distinctly green (DGR) seed, %	0.5	0.4	0.4	0.4	0.4
Dockage, %	n/a ¹¹	1.8	1.2	1.2	2.9
Loading moisture, %	n/a	7.7	7.5	7.5	7.7
Number of export samples	n/a	15	102	160	9
Tonnage, metric tonnes	n/a	517,257	3,689,321	6,219,405	248,883

¹ 8.5% moisture basis.

² Protein content of seeds calculated using nitrogen x 6.25, on an 8.5% moisture basis.

³ Protein content calculated using nitrogen x 6.25, on a 12% moisture basis.

¹ As-is moisture basis.

² mg/kg of seeds = milligrams per kilogram of seeds.

³ µmol/g of seeds = micromoles per gram of seeds.

⁴ SFA = saturated fatty acids. Total SFA is the sum of lauric (C12:0), myristic (C14:0), palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0) and lignoceric (C24:0) acids.

⁵ calculated from fatty acid composition.

⁶ MUFA = monounsaturated fatty acids. Total MUFA is the sum of palmitoleic (C16:1), oleic (C18:1), eicosenoic (C20:1), erucic (C22:1) and nervonic (C24:1) acids.

⁷ PUFA = polyunsaturated fatty acids. Total PUFA is the sum of linoleic (C18:2), alpha-linolenic (C18:3) and eicosadienoic (C20:2) acids.

¹¹ n/a = not applicable.

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