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Quality of western Canadian canola 2004

Douglas R. DeClercq
Program Manager, Oilseeds Services

Contact: Douglas R. DeClercq
Program Manager, Oilseeds Services
Tel: 204 983-3354
Email: ddeclercq@grainscanada.gc.ca
Fax: 204 983-0724

Grain Research Laboratory
Canadian Grain Commission
1404-303 Main Street
Winnipeg MB R3C 3G8
www.grainscanada.gc.ca

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Quality Innovation Service

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Acknowledgments

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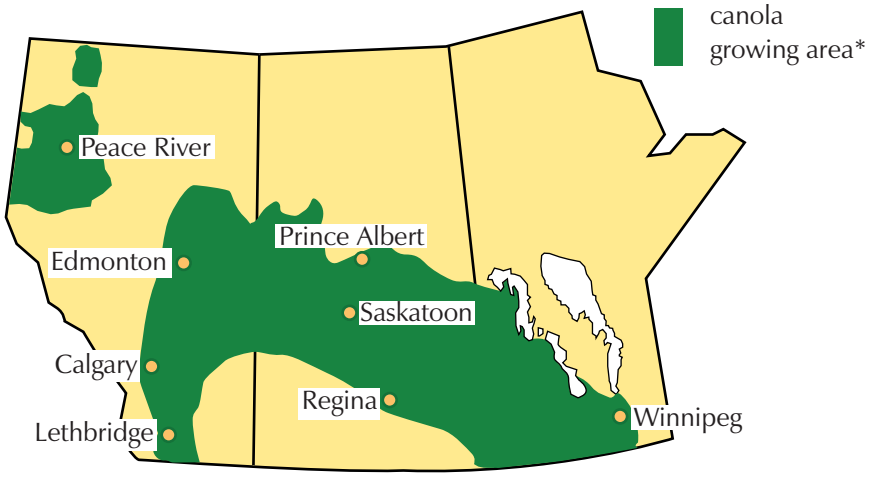
Seed images on cover courtesy of Grain Biology, Grain Research Laboratory, Canadian Grain Commission, Winnipeg MB.

Introduction

This report presents quality data and information based on the Canadian Grain Commission (CGC) 2004 harvest survey of western Canadian canola. Quality parameters included are the contents of oil, protein, chlorophyll, glucosinolates and free fatty acids, and the fatty acid composition of harvest samples. Quality data are from analyses of canola samples submitted to the CGC throughout the harvest period by producers, grain companies and oilseed crushing companies. The map shows the traditional growing areas for canola in western Canada.

Figure 1 – Map of western Canada showing traditional growing area for canola



* Source: Canola Council of Canada

Summary

The 2004 western Canadian canola crop is above average in oil content and close to average in protein content. Compared to 2003, the mean oil content of Canola, No. 1 Canada is 1.5% higher at 43.3%, while the mean protein content, 21.5%, is 1.8% lower. Compared to the 10-year means, the oil content is 0.5% higher while the protein content is 0.2% higher. The mean chlorophyll content for Canola, No. 1 Canada is 17 mg/kg, higher than the 15 mg/kg in 2003. The 2004 canola crop is lower in oleic acid content, 58.9%, and higher in linolenic acid content, 11.2%. For Canola, No. 1 Canada seed, the total saturated fatty acid content decreased by 0.3% to 7.0%. This results in an oil with a higher mean iodine value, 117 units. The erucic acid, 0.1%, and the total seed glucosinolates, 9 µmoles/gram, are lower than last year and well within canola specifications. The free fatty acid (FFA) levels in Canola, No. 1 Canada seed are similar to those in the 2003 crop.

However, the 2004 canola crop does contain significantly higher proportions of lower grade seed that are significantly lower in oil content and higher in chlorophyll and FFA.

Table 1– Canola, No. 1 Canada
Quality data for 2004 harvest survey

Quality parameter	2004	2003	1994-2003 Mean
Oil content[1], %	43.3	41.8	42.8
Protein content[2], %	21.5	23.3	21.3
Oil-free protein[2] content, %	40.8	42.9	40.0
Chlorophyll content, mg/kg in seed	17	15	14
Total glucosinolates[1], µmol/g	9	11	12
Free fatty acids, %	0.19	0.23	0.26
Erucic acid, % in oil	0.12	0.13	0.25
Linolenic acid, % in oil	11.2	8.4	9.8
Oleic acid, % in oil	58.9	63.2	61.0
Total saturated fatty acids[3], % in oil,	7.0	7.3	7.0
Iodine value	117	110	114

[1] 8.5% moisture basis
[2] N x 6.25, 8.5% moisture basis
[3] Total saturated fatty acids are the sum of palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0), and lignoceric (C24:0)

Weather and production review

Weather review

Temperature and precipitation patterns for the 2004 western Canadian growing season can be found on the PFRA web site (http://www.agr.gc.ca/pfra/drought/drmaps_e.htm). Of particular note this growing season was the cooler than normal weather along with a series of mid-season frosts. The Weather and Crop Surveillance department of the Canadian Wheat Board provided the majority of the detailed weather review for the 2004 crop year.

Seeding

Extremely low soil moisture levels were present in Alberta and Saskatchewan at the beginning of the 2004 growing season. The dry soils delayed fieldwork in many areas of both provinces, until significant precipitation arrived in May. Planting of crops began in early May across the Prairies and advanced rapidly in the western growing areas. Cool temperatures and frequent frosts in the eastern growing areas slowed progress, particularly in southeastern Saskatchewan and the Red River Valley of Manitoba. General rains and snow in the third week of May slowed planting but provided much needed moisture for germination. The cool temperatures and frequent rains persisted in eastern areas well into June, resulting in late planting of some oilseed crops. Seeding was complete by mid-June, although some fields were not planted due to the wet conditions in parts of Manitoba and eastern Saskatchewan.

Growing conditions

Cool, wet weather persisted through the month of June in the eastern Prairies, which delayed crop growth. The May through June period was one of the coolest on record in the eastern Prairies. Although western areas of the Prairies were warmer, below normal temperatures were also reported in Alberta and western Saskatchewan. Crop development was generally two to three weeks behind normal in the eastern Prairies by the end of June, while crops in the west were only one week behind normal. Temperatures improved in the month of July, allowing crops to develop rapidly. Western growing areas received the warmest temperatures, with most locations normal or slightly above normal for the month. Temperatures also improved in eastern areas, but the region still reported below normal temperatures for the month. Rainfall during July was close to normal across the Prairies, which encouraged good crop growth. Yield potential for most crops was above average due to the adequate rainfall and lack of heat stress. Sclerotinia stem rot was the greatest disease concern in canola. Temperatures in August returned to dramatically below normal levels, further delaying crop development. Freezing temperatures during the third week of August caused significant damage to immature crops in parts of Saskatchewan and Manitoba. The cool temperatures persisted into September, resulting in delayed maturity of most crops. Growing season temperatures for May through August during the 2004 season were among the coolest reported in over 100 years.

Harvest conditions

Persistent rains in late August and early September delayed harvest progress across the Prairie region. Only 41% of the Saskatchewan canola harvest was completed by the first week of October 2004 compared to 99% in 2003. The rains caused quality damage to most crops, especially in northern areas of the Prairies. Drier, milder weather in late September and early October resulted in rapid harvest progress. The Manitoba and Saskatchewan canola harvest was 95% completed by November 15th while the Alberta crop was estimated to be 90% harvested at that time. Heavy snow in the northwest and Peace River regions of Alberta left those regions with only 80% of the harvest completed. Attempts may be made to harvest some of the canola in the spring of 2005.

Production and grade information

Western Canadian farmers planted 5.3 million hectares of canola in 2004, which is a 12 percent increase from last year's area (Table 2). Statistics Canada's *Field Crop Reporting Series No. 8* reported that the 2004 western Canada mean yield of 1600 kg/ha was higher than the 1400 kg/ha reported for 2003 and well above the 10-year mean of 1372 kg/ha.

With the increases in yield and harvested area, total canola production in western Canada rose to 7.6 million tonnes, well above the 10-year average of 6.4 million tonnes. According to Statistics Canada estimates, Alberta and the Peace River area of British Columbia accounted for 39 percent of western Canadian canola production while Saskatchewan and Manitoba had 38 percent and 23 percent respectively.

The grade pattern of the 2004 canola crop was negatively affected by an overall delayed maturity of the canola crop along with a major frost in the third week of August. In addition, poor harvest weather in September resulted in additional downgrading. As a result, significant numbers of samples from many regions were assigned to lower grades because of damage factors such as frost or sprout damage in addition to immaturity (distinctly green seed). This year, many of the lower grade samples were found to contain both frost damaged and immature seeds. According to provincial crop reports, it was estimated that only 35% of the Saskatchewan crop would grade Canola, No.1 Canada compared to the 10-year average of 79%.

However, as is discussed below, the extremely cool weather in 2004 increased the final seed oil content and produced oil with lower than normal amounts of saturated fatty acids, both desirable quality traits in canola.

Table 2 - Seeded area and production for western Canadian canola

	Seeded area[1]		Production[1]		Average production[2]
	2004	2003	2004	2003	1994–2003
	thousand hectares		thousand tonnes		thousand tonnes
Manitoba	1147	1012	1778	1769	1450
Saskatchewan	2489	2307	2903	2676	2768
Alberta[3]	1647	1386	2970	2261	2154
Western Canada	**5283**	**4705**	**7651**	**6706**	**6372**

[1] Source: *Field Crop Reporting Series, No. 8*, December 8, 2004; Statistics Canada
[2] Source: *Field Crop Reporting Series*, revised final estimates for 1994–2003
[3] Includes the part of the Peace River area that is in British Columbia

Harvest survey samples

Samples for the Canadian Grain Commission canola harvest survey are collected from producers, crushing plants and grain handling offices across western Canada. The samples are cleaned to remove dockage prior to testing. Harvest survey samples are analyzed for oil, protein, chlorophyll and total glucosinolates using a NIRS 6500 scanning near-infrared spectrometer. Grain Research Laboratory staff assign grade level based on chlorophyll content. Industry Services grain inspectors grade samples if they show significant levels of visible damage. This year, many of the lower grade samples were found to contain both frost damaged and immature seeds.

Grades and chlorophyll content relationships are based on long-term data relating the chlorophyll content and green seed content of canola and the chlorophyll level of top quality crude canola oil as established in Canadian standards. It is notable that the relationship for 2004 crop indicated that considerable more chlorophyll per green seed was found.

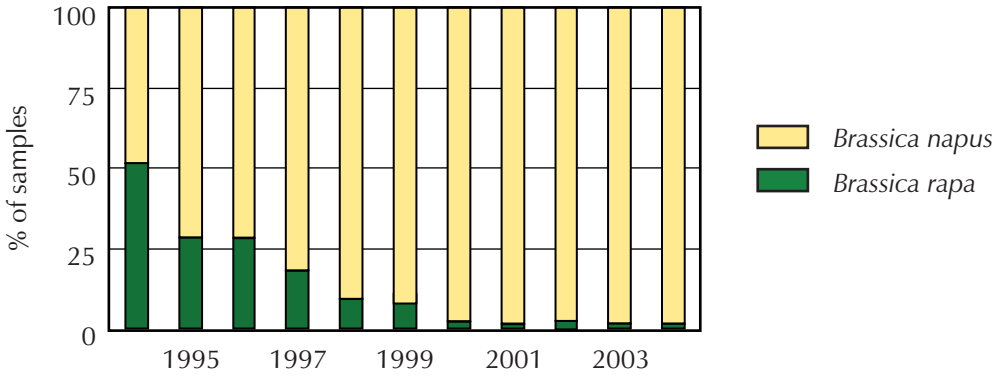
Canola, No. 1 Canada..... 25 mg/kg or less
Canola, No. 2 Canada.....26 to 45 mg/kg
Canola, No. 3 Canada.....46 to 100 mg/kg

Composite samples are typically used for free fatty acids and fatty acid composition analyses. Composites are prepared by combining Canola, No. 1 Canada samples by provincial crop district; Canola, No. 2 and No. 3 Canada samples by province, and Canola, Sample Canada samples by western Canada. Due to the presence of heavily frosted seed in many of the lower grade samples, the ISO reference method was used to validate and report the chlorophyll levels in the 2004 composite samples.

This year's harvest survey report included 1846 canola samples, slightly less than the 2156 in 2003. Specialty oil samples such as high oleic acid, low linolenic acid, and high erucic acid, were excluded from this report. Saskatchewan contributed 872 samples, Alberta and British Columbia 549, and Manitoba 425 samples during the survey period, August 20 to November 10, 2004. Weighting factors used to calculate provincial and

western Canadian means were derived from the previous five years average production for each crop district and the 2004 provincial production estimates in Statistics Canada's *Field Crop Reporting Series No. 8*, December 8, 2004. Factors used to calculate grade distributions are taken from crop reports published by grain companies and provincial agriculture departments.

Figure 2 – 2004 harvest survey
Proportion of samples identified as *Brassica napus* and *Brassica rapa*



Quality of western Canadian canola 2004

Tables 3, 4 and 5 show detailed information on the quality of Canola, Canada western harvested in 2004. Table 6 compares the quality of recent canola exports. The numbers of samples in each grade or province may not be representative of the total production or grade distribution. However, there were sufficient samples to provide good quality information for each province. Provincial means were calculated from results for each crop district, weighted by a combination of five-year average production by crop district, and an estimate of grade distribution from crop reports. To calculate western Canadian averages for each grade, provincial averages are weighted by the Statistics Canada production estimate and the estimate of grade distribution.

All oil and protein content values discussed below are presented using the CGC's historical 8.5% moisture basis in order to permit annual and regional comparisons. The wet weather associated with the harvest of the 2004 crop means that the moisture content of 2004-05 exports is likely to be higher than the moisture content of 2003-04 exports. The moisture content of canola exports from Vancouver was 8.6% in October 2004, 1.0% higher than the 2003-04 mean of 7.6% (Table 6). The moisture content of the single Thunder Bay export in October 2004 was 9.5%, significantly higher than the 2003-04 mean value of 6.8%. Moisture contents of the harvest survey samples are not discussed in this report, as there may have been significant changes during mailing and storing of the survey samples.

Table 3 - 2004 harvest survey
Canola quality data by grade and province

	Number of samples tested	Oil content[1] %			Protein content[2] %			Chlorophyll content mg/kg
		mean	min.	max.	mean	min.	max.	
Canola, No. 1 Canada								
Manitoba	263	42.9	38.7	47.4	21.5	17.3	24.7	13
Saskatchewan	465	43.6	37.1	49.1	20.9	16.3	25.3	18
Alberta[3]	417	43.3	35.9	49.5	21.9	16.2	27.8	17
Western Canada[4]	**1145**	**43.3**	**35.9**	**49.5**	**21.5**	**16.2**	**27.8**	**17**
Canola, No. 2 Canada								
Manitoba	114	40.6	34.7	45.8	22.3	19.1	25.8	37
Saskatchewan	289	41.2	35.6	49.7	21.2	16.7	25.2	44
Alberta[3]	109	42.9	36.7	46.0	22.2	19.0	26.8	42
Western Canada[4]	**512**	**41.6**	**34.7**	**49.7**	**21.8**	**16.7**	**26.8**	**42**
Canola, No. 3 Canada								
Manitoba	38	39.9	34.8	46.3	22.5	19.4	25.5	74
Saskatchewan	101	39.8	31.9	45.8	21.5	18.3	24.6	83
Alberta[3]	23	41.8	36.7	46.0	22.3	19.1	24.6	73
Western Canada[4]	**162**	**40.2**	**31.9**	**46.3**	**21.9**	**18.3**	**25.5**	**78**
Canola, Sample Canada								
Manitoba	10	39.5	33.5	45.6	22.2	18.9	26.0	n/a[5]
Saskatchewan	17	41.2	35.1	47.5	20.9	17.7	23.0	n/a[5]
Western Canada[4]	**27**	**40.5**	**33.5**	**47.5**	**21.5**	**17.7**	**26.0**	**74**

[1] 8.5% moisture basis
[2] N x 6.25; 8.5% moisture basis
[3] Includes part of the Peace River area that is in British Columbia
[4] Values are weighted averages based on production by province as estimated by Statistics Canada.
[5] n/a - not applicable; composites were prepared by western Canada for Canola, Sample grades.

Table 4 - 2004 Harvest survey
Canola quality data by grade and province

	Number of samples tested	Glucosinolates[1] mol/g			Free fatty acids %
		mean	min.	max.	
Canola, No. 1 Canada					
Manitoba	263	9	4	14	0.21
Saskatchewan	465	9	3	15	0.19
Alberta[2]	417	10	4	31	0.19
Western Canada[3]	**1145**	**9**	**3**	**31**	**0.19**
Canola, No. 2 Canada					
Manitoba	114	12	1	18	0.23
Saskatchewan	289	12	4	19	0.46
Alberta[2]	109	11	7	31	0.21
Western Canada[3]	**512**	**12**	**1**	**31**	**0.33**
Canola, No. 3 Canada					
Manitoba	38	13	7	19	0.32
Saskatchewan	101	15	9	26	1.04
Alberta[2]	23	12	9	19	0.34
Western Canada[3]	**162**	**14**	**7**	**26**	**0.71**
Canola, Sample Canada					
Manitoba	10	14	6	24	n/a[4]
Saskatchewan	17	14	7	19	n/a[4]
Western Canada[3]	**27**	**14**	**6**	**24**	**1.90**

[1] 8.5% moisture basis; total glucosinolates
[2] Includes part of the Peace River area that is in British Columbia
[3] Values are weighted averages based on production by province as estimated by Statistics Canada.
[4] n/a - not applicable; composites were prepared by western Canada for Canola, Sample grades.

Table 5 - 2004 Harvest survey
Fatty acid composition by grade and province

	Fatty acid composition[1], %								
	C16:0	C16:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2
Canola, No. 1 Canada									
Manitoba	4.1	0.3	1.7	57.7	21.0	11.6	0.7	1.4	0.1
Saskatchewan	4.0	0.3	1.7	58.7	20.3	11.4	0.6	1.4	0.1
Alberta[4]	3.9	0.3	1.7	59.7	20.0	10.9	0.6	1.5	0.1
Western Canada[5]	**4.0**	**0.3**	**1.7**	**58.9**	**20.3**	**11.2**	**0.6**	**1.4**	**0.1**
Canola, No. 2 Canada									
Manitoba	4.4	0.3	1.9	56.7	21.5	11.2	0.7	1.5	0.1
Saskatchewan	4.3	0.3	1.8	57.0	20.9	11.5	0.7	1.5	0.1
Alberta[4]	3.9	0.3	1.6	57.7	20.6	11.8	0.6	1.7	0.1
Western Canada[5]	**4.2**	**0.3**	**1.8**	**57.1**	**20.9**	**11.5**	**0.7**	**1.6**	**0.1**
Canola, No. 3 Canada									
Manitoba	4.3	0.3	1.9	57.7	20.8	10.8	0.7	1.5	0.1
Saskatchewan	4.6	0.4	1.9	55.4	21.8	11.1	0.7	1.5	0.1
Alberta[4]	4.2	0.3	1.7	56.8	21.3	11.8	0.6	1.5	0.1
Western Canada[5]	**4.4**	**0.4**	**1.9**	**56.3**	**21.4**	**11.2**	**0.7**	**1.5**	**0.1**
Canola, Sample Canada									
Western Canada[5]	**4.4**	**0.4**	**1.9**	**57.6**	**21.2**	**9.7**	**0.7**	**1.4**	**0.1**

	Fatty acid composition[1], %				Total saturates[2]	Iodine value[3]
	C22:0	C22:1	C24:0	C24:1		
Canola, No. 1 Canada						
Manitoba	0.4	0.0	0.2	0.3	7.2	118
Saskatchewan	0.4	0.1	0.2	0.3	7.0	117
Alberta[4]	0.4	0.2	0.2	0.2	6.8	116
Western Canada[5]	**0.4**	**0.1**	**0.2**	**0.3**	**7.0**	**117**
Canola, No. 2 Canada						
Manitoba	0.5	0.1	0.3	0.4	7.8	117
Saskatchewan	0.5	0.1	0.2	0.3	7.6	117
Alberta[4]	0.4	0.4	0.2	0.3	6.7	118
Western Canada[5]	**0.4**	**0.2**	**0.2**	**0.3**	**7.4**	**117**
Canola, No. 3 Canada						
Manitoba	0.5	0.1	0.3	0.4	7.8	116
Saskatchewan	0.5	0.1	0.3	0.4	8.1	117
Alberta[4]	0.4	0.1	0.2	0.4	7.2	119
Western Canada[5]	**0.5**	**0.1**	**0.3**	**0.4**	**7.8**	**117**
Canola, Sample Canada						
Western Canada[5]	**0.5**	**0.1**	**0.2**	**0.5**	**7.8**	**114**

[1] Percentage of total fatty acids including: palmitic (C16:0), palmitoleic (C16:1), stearic (C18:0), oleic (C18:1), linoleic (C18:2), linolenic (C18:3), arachidic (C20:0), eicosenoic (C20:1), eicosadienoic (C20:2), behenic (C22:0), erucic (C22:1), lignoceric (C24:0), nervonic (C24:1)

[2] Total saturated fatty acids are the sum of palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0), and lignoceric (C24:0)

[3] Calculated from fatty acid composition

[4] Includes part of the Peace River area that is in British Columbia

[5] Values are weighted averages based on production by province as estimated by Statistics Canada.

Table 6 - Canola, No. 1 Canada
Comparisons of quality data for 2004 harvest survey with data for recent export shipments

Quality parameter	2004 survey	October 2004 exports		2003–04 exports	
		Thunder Bay	Vancouver	Thunder Bay	Vancouver
Oil content[1], %	43.3	40.4	42.4	40.8	41.3
Protein content[2], %	21.5	21.8	22.0	23.0	23.2
Oil-free protein content[2], %	40.8	38.9	41.0	41.6	42.3
Chlorophyll, mg/kg in seed	17	17	25	15	20
Total glucosinolates, µmol/g	9	12	13	13	13
Free fatty acids, %	0.2	0.5	0.5	0.6	0.6
Erucic acid, % in oil	0.1	0.1	0.1	0.1	0.2
Linolenic acid, % in oil	11.2	12.1	11.2	8.4	9.5
Oleic acid, % in oil	58.9	57.0	59.2	63.0	62.0
Total saturated fatty acids[3],% in oil	7.0	7.2	6.7	7.4	7.1
Iodine value	117	119	117	110	112
Loading moisture ,%	n/a[4]	9.5	8.6	6.8	7.6
Number of export samples	n/a[4]	1	10	7	107

[1] 8.5% moisture basis

[2] N x 6.25; 8.5% moisture basis

[3] Total saturated fatty acids are the sum of palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0), and lignoceric (C24:0).

[4] n/a - not available

Oil content

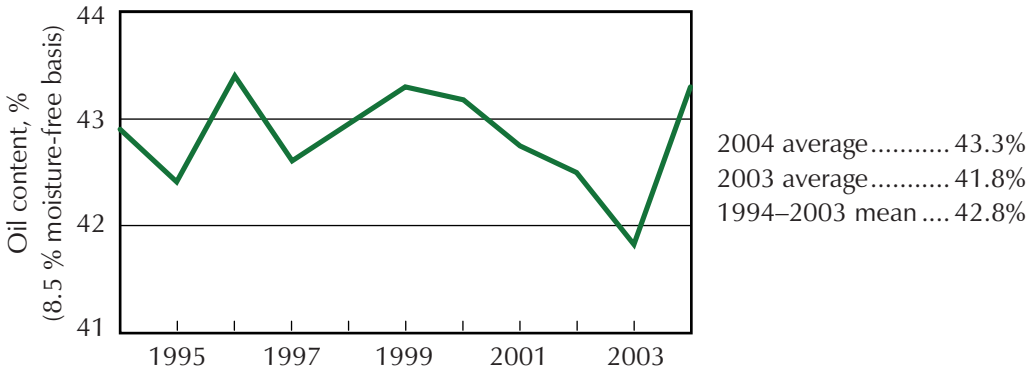
For Canola, No. 1 Canada, the 2004 mean oil content (43.3%) is 1.5% higher than the 2003 mean (41.8%) and 0.5% above the ten-year (1994-2003) mean of 42.8%. The mean oil content in Manitoba (42.9%) is lower than in Saskatchewan (43.6%) and Alberta (43.3%). Compared to 2003, mean oil contents have increased by 0.6%, 1.1% and 2.5% respectively for Alberta, Manitoba and Saskatchewan. The oil content of Canola, No. 1 Canada from producers across western Canada ranged from 35.9% to 49.5%.

The increased oil contents seen in the 2004 survey are a result of the cool, wet growing conditions that affected large parts of the canola growing area. In general, cool growing conditions tend to produce canola seed with higher oil contents but lower protein content. Weather summary maps of the 2004 growing season can be found at: http://www.agr.gc.ca/pfra/drought/drmaps_e.htm.

The oil contents for Canola, No. 2 and Canola, No. 3 Canada is significantly lower than Canola, No. 1 Canada (Table 3). While lower oil contents would be expected in Canola, No. 2 and Canola, No. 3 Canada, the magnitude of the oil content decrease, about 3% lower for Canola, No. 3 Canada, is noteworthy.

The oil content of canola exports from Vancouver was 42.4% in October 2004, 1.1% higher than the 2003-04 mean of 41.3% (Table 6). The mean oil content of the remaining Vancouver exports in the 2004-05 shipping season should remain around 42.0% on an 8.5% moisture basis. The oil content of the single Thunder Bay export in October 2004 did not change significantly from the 2003-04 mean value of 40.8%.

Figure 3 – Canola, No. 1 Canada
Oil content of harvest survey samples, 1994–2004

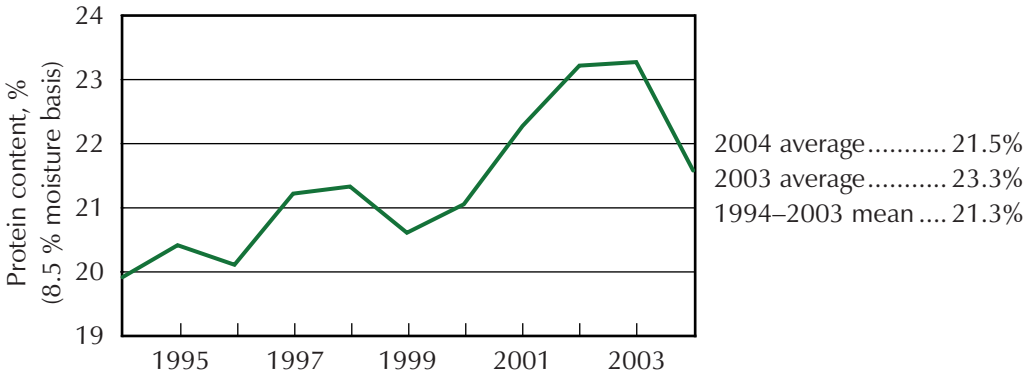


Protein content

The 2004 mean protein content (21.5%) is significantly lower than that in 2003 (23.3%) but similar to the ten-year mean value of 21.3%. The 2004 protein content calculated to an oil-free, 8.5% moisture basis is 40.8% compared to 42.9 % in 2003. In Saskatchewan, protein contents (20.9%) are lower than in Manitoba (21.5%) and Alberta (21.9%). Canola, No. 1 Canada samples from producers across western Canada varied in protein content from 16.2% to 27.8%. The mean protein contents increased slightly in the lower grades of canola.

The protein content of canola exports from Vancouver averaged 22.0% in October 2004, 1.2% lower than the 2003-04 mean of 23.2% (Table 6). The protein content in Vancouver exports should remain near this level for the remainder of the 2004-05 shipping season. The protein content of the October 2004 Thunder Bay canola shipment was 21.8%, a 1.2% decrease from the 2003-04 mean of 23.0%.

Figure 4 – Canola, No. 1 Canada
Protein content of harvest survey samples, 1994–2004



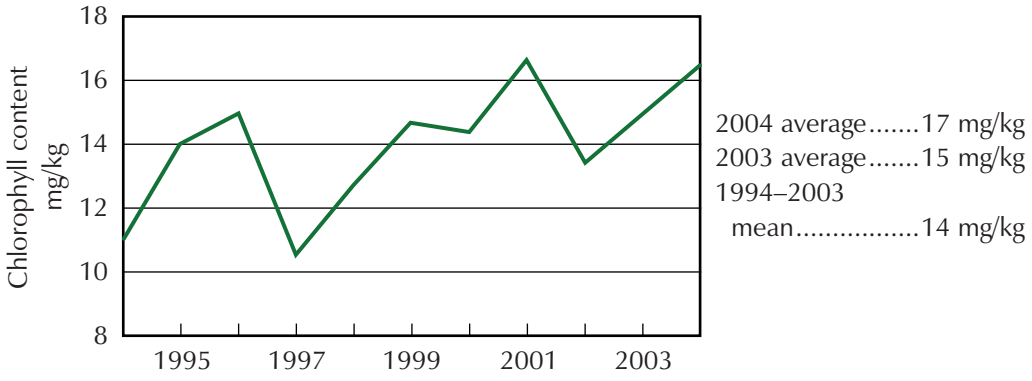
Chlorophyll content

Producer deliveries of Canola, No. 1 Canada averaged 17 mg/kg chlorophyll in the 2004 survey, higher than the 15 mg/kg in the 2003 harvest (Table 1). The chlorophyll level of 13 mg/kg for Manitoba is lower than the 18 mg/kg for Saskatchewan and the 17 mg/kg for Alberta. Chlorophyll levels for Canola, No. 2 Canada average 42 mg/kg, significantly higher than the 33 mg/kg for Canola, No. 2 Canada seed in 2003. Some of the lower grade samples were assigned those grades due to grading factors such as frost or sprout damage in addition to immaturity (distinctly green seed).

Based on discussions with producers and processors, high distinctly green seed (DGR) levels were a major degrading factor in many canola-growing areas, particularly areas of Saskatchewan hit by an August 20, 2004 frost. In other areas, delays in spring planting and uneven germination resulted in a very late-harvested crop with higher levels of green seed. In addition, very wet and cool conditions in the fall further hindered the maturing of the 2004 canola crop. Overall, the green seed count and the amount of chlorophyll per green seed is higher than in the 2003 crop.

The October 2004 shipments of canola leaving Vancouver and Thunder Bay had average chlorophyll levels of 25 and 17 mg/kg respectively. Both of the October values were higher than the average chlorophyll levels in the 2003-04 exports. The levels of chlorophyll in Vancouver and Thunder Bay export shipments are expected to remain significantly higher than the 2003-04 mean values (Table 6).

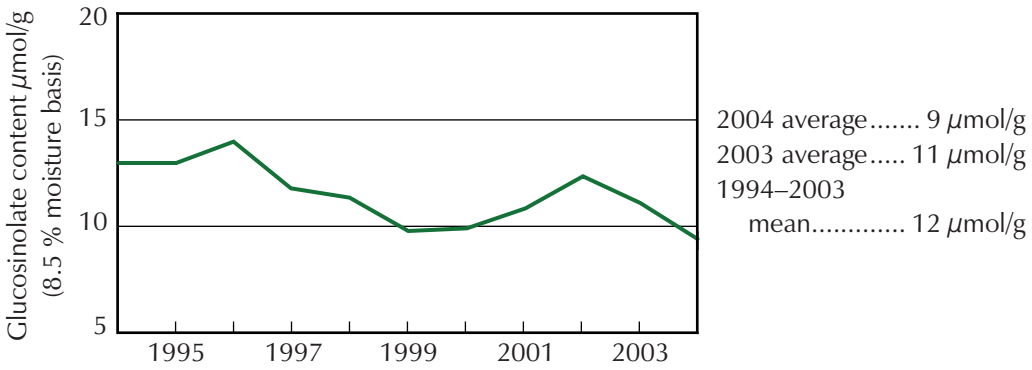
Figure 5 – Canola, No. 1 Canada
Chlorophyll content of harvest survey samples, 1994–2004



Glucosinolate content

The 2004 total seed glucosinolate level of 9 micromoles per gram is slightly lower than the 11 micromoles per gram in 2003. The large proportion of *Brassica napus* samples in the 2004 crop contributed to the overall low glucosinolate levels for the crop. For 2004, cooler growing conditions likely caused a slight decrease in some areas. The average level of total seed glucosinolates in the October 2004 Vancouver and Thunder Bay canola exports indicates glucosinolate levels in exports should remain similar to those in the 2003-04 shipping season.

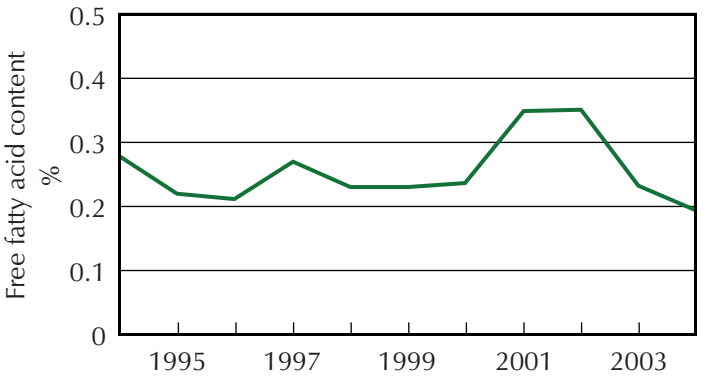
Figure 6 – Canola, No. 1 Canada
Total seed glucosinolate content of harvest survey samples, 1994–2004



Free fatty acid content

The 2004 harvest survey of Canola, No. 1 Canada has a mean free fatty acid (FFA) content of 0.19%. This level is lower than both the 2003 value of 0.23% and the long-term mean of 0.26%. However, individual producer samples from some areas are notably higher in FFA (e.g. 0.6% to 1.0%) than the reported means for Canola, No. 1 Canada. In those growing areas that received heavy frosts there will be elevated FFA levels in the lower grade seed. Compared to last year, FFA levels are significantly higher in the lower grade canola samples, particularly those from Saskatchewan (Table 4). For 2004-05 exports, FFA levels are expected to be around 0.5% for Canola, No.1 Canada (Table 6).

Figure 7 - Canola, No. 1 Canada
Free fatty acid content of harvest survey samples, 1994–2004



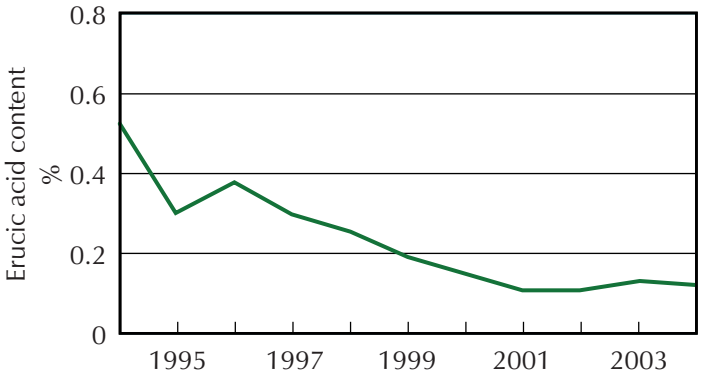
Fatty acid composition

The mean iodine value of the canola oil from 2004 harvest survey samples is 117 units compared to 110 units in 2003 (Table 1). The linolenic acid is 11.2% in 2004, which is significantly higher than both the 8.4% in 2003 and the 10-year mean of 9.8%. At 10.9%, the linolenic acid in Alberta is slightly lower than in Saskatchewan, 11.4%, and Manitoba, 11.6% (Table 5). The oleic acid content of the 2004 crop decreased to 58.9% from 63.2% in 2003.

The average level of erucic acid in the 2004 crop is 0.1%, similar to the 0.1% in 2003 and well below the 10-year mean of 0.3%. The mean level of saturated fatty acids is 7.0% in 2004, lower than the 2003 value of 7.3%. The levels of saturated fatty acids are slightly higher in Manitoba, 7.2%, than in Saskatchewan, 7.0%, and Alberta, 6.8%. The GRL harvest survey samples were comprised of 98% *Brassica napus* types, similar to the 98 % in 2003.

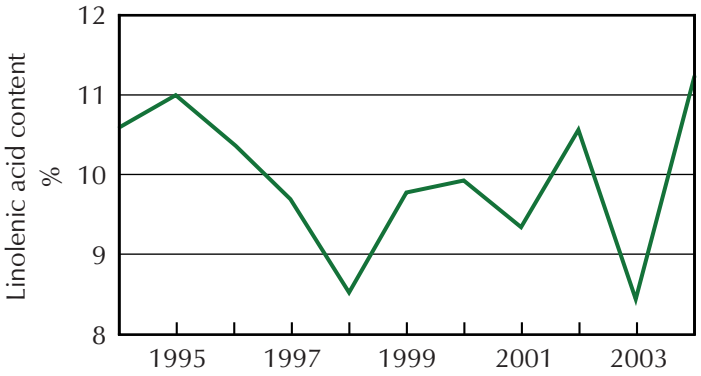
Based on the October 2004 export data, the mean linolenic acid content for Vancouver Canola, No. 1 Canada exports increased by 1.7% to 11.2% (Table 6). The single October Thunder Bay export increased by 3.7% to a mean value of 12.1% linolenic acid content. At 117 units, the iodine value for Vancouver canola exports increased by 5 units from the 2003-04 levels. The iodine value for the October Thunder Bay canola export increased by 9 units from the 2003-04 levels. The level of saturated fatty acids in October 2004 Vancouver canola exports was 6.7%, lower than the 2003-04 exports. The Thunder Bay October 2004 export was 7.2% in saturated fatty acids, a decrease of 0.2% from 2003-04 levels. The levels of erucic acid in all exports during the 2004-05 shipping season will likely remain near 0.1%.

Figure 8 – Canola, No. 1 Canada
Erucic acid content of harvest survey samples, 1994–2004



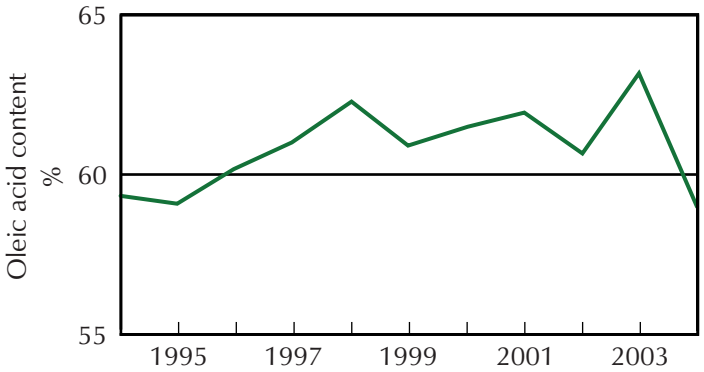
2004 average..... 0.12%
2003 average..... 0.13%
1994–2003 mean 0.25%

Figure 9 - Canola, No. 1 Canada
Linolenic acid content of harvest survey samples, 1994–2004



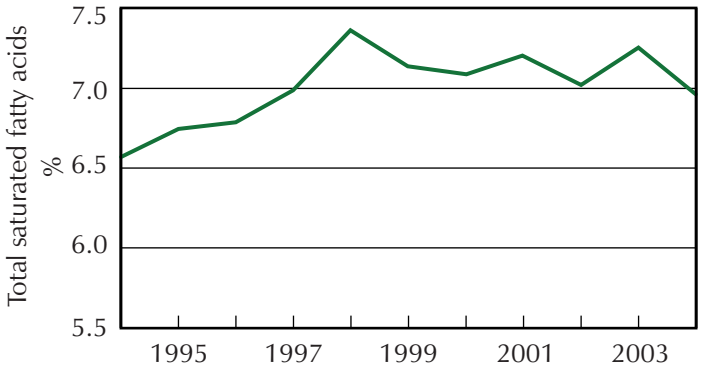
2004 average..... 11.2%
2003 average..... 8.4%
1994–2003 mean 9.8%

Figure 10 – Canola, No. 1 Canada
Oleic acid content of harvest survey samples, 1994–2004



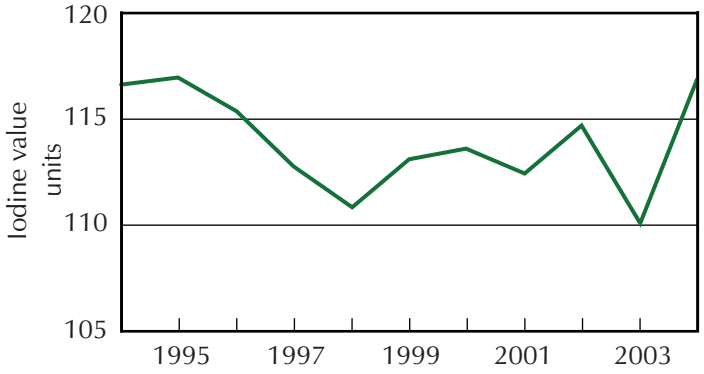
2004 average..... 58.9%
2003 average..... 63.2%
1994–2003 mean 61.0%

Figure 11 – Canola, No. 1 Canada
Total saturated fatty acids of harvest survey samples, 1994–2004



2004 average..... 7.0%
2003 average..... 7.3%
1994–2003 mean 7.0%

Figure 12 – Canola, No. 1 Canada
Iodine value of harvest survey samples, 1994–2004



2004 average.....117
2003 average.....110
1994–2003 mean 114