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Quality of western Canadian canola 2005

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Quality Innovation Service

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Acknowledgments

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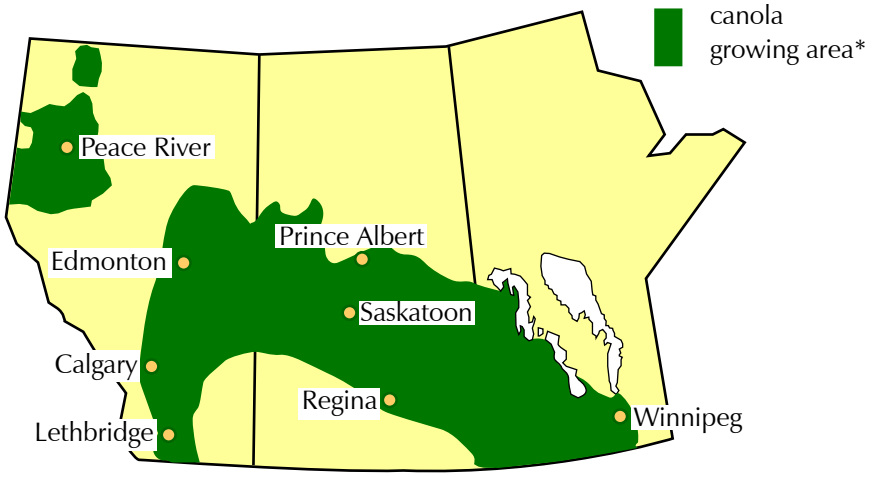
Seed images on cover courtesy of Grain Biology, Grain Research Laboratory, Canadian Grain Commission, Winnipeg MB.

Introduction

This report presents quality data and information based on the Canadian Grain Commission (CGC) 2005 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 2005 western Canadian canola crop is significantly above average in oil content and below average in protein content. Compared to 2004, the mean oil content of Canola, No.1 Canada is 1.1% higher at 44.4%, while the mean protein content, 20.5%, is 1.0% lower. Compared to the 10-year means, the oil content is 1.6% higher while the protein content is 1.0% lower. The mean chlorophyll content for Canola, No.1 Canada is 14 mg/kg, significantly lower than the 17 mg/kg in 2004. The 2005 canola crop is higher in oleic acid content, 59.8%, and slightly lower in linolenic acid content, 11.0%. For Canola, No.1 Canada seed, the total saturated fatty acid content remained at 7.0%. This results in oil with a slightly lower mean iodine value of 116 units. The erucic acid, 0.1%, and the total seed glucosinolates, 9 μmoles/gram, are similar to last year and well below canola specifications. The free fatty acid (FFA) levels in Canola, No.1 Canada seed are notably lower than those in the 2004 crop.

Table 1 – Canola, No. 1 Canada
Quality data for 2005 harvest survey

Quality parameter	2005	2004	1995-2004 Mean
Oil content[1], %	44.4	43.3	42.8
Protein content[2], %	20.5	21.5	21.5
Oil-free protein[2] content, %	39.8	40.8	40.4
Chlorophyll content, mg/kg in seed	14	17	14
Total glucosinolates[1], μmol/g	9	9	11
Free fatty acids, %	0.11	0.19	0.25
Erucic acid, % in oil	0.06	0.12	0.21
Linolenic acid, % in oil	11.0	11.2	9.9
Oleic acid, % in oil	59.8	58.9	61.0
Total saturated fatty acids[3], % in oil,	7.0	7.0	7.1
Iodine value	116	117	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 2005 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 were the heavy rainfalls during the spring followed by moderate temperatures throughout the growing season. In Saskatchewan, June 2005 is tied with June 1953 for the wettest month on record in the last 90 years. The Weather and Crop Surveillance department of the Canadian Wheat Board provided the majority of the detailed weather review for the 2005 crop year.

Seeding

Precipitation from the beginning of April to the end of May 2005 was normal to above-normal in the Prairie region. Planting progress during the spring was dependent on location; the general trend saw western regions planted more rapidly than the eastern growing areas. The overall planting pace in western Canada was two to five days ahead of normal during the first three weeks of May, but rains slowed progress in the latter half of the month. Heavy rains in June delayed the completion of oilseed crop planting and caused some crop area to be left unseeded.

Growing conditions

Persistent heavy rains throughout the southern Prairies in June caused flooding losses in Alberta and southern Manitoba. Manitoba was hardest hit by the wet conditions, with unseeded and drowned-out areas exceeding two million total crop acres. The rest of the Prairies received normal to above-normal amounts of precipitation during the June period, which helped increase crop yield potential. Precipitation during July was mostly normal across the Prairie region, with temperatures slightly below normal in western regions and above normal in the east. The moderate temperatures boosted crop growth, without causing stress to the crop. Crop development was significantly ahead of last year in most regions, due to the warmer temperatures received throughout the growing season. Cooler temperatures and frequent rainfall slowed crop development in Alberta and western Saskatchewan in August. The cooler weather also resulted in a number of locations in northwestern Saskatchewan and northern Alberta reporting spotty frost events in the first two weeks of the month. Eastern regions reported warmer-than-normal temperatures, which increased stress to crops in the late filling stage. Warm temperatures also boosted crop development in eastern Saskatchewan and Manitoba.

Harvest conditions

Southeastern areas of the Prairies began harvesting in the middle of August. The last week of August and the first two weeks of September were unseasonably wet, with heavy downpours falling across southern Alberta and into northeastern Saskatchewan. Crops in the regions that received the heaviest rainfall were downgraded. Weather conditions in the southern Prairies were better, with most of the harvest in Manitoba and the southern areas of Saskatchewan complete by the end of September. Harvesting in the northern areas of Saskatchewan and Alberta stretched into October.

Production and grade information

Western Canadian farmers planted 5.5 million hectares of canola in 2005, which is a 6 percent increase from last year's area (Table 2). Statistics Canada's Field Crop Reporting Series No. 8 reported that the 2005 western Canada mean yield of 1800 kg/ha was higher than the 1600 kg/ha reported for 2004 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 9.6 million tonnes, well above the 10-year average of 6.4 million tones. According to Statistics Canada's December 7th, 2005 estimate of provincial production, Manitoba, Saskatchewan, and Alberta/B.C. accounted for 13%, 48% and 39% respectively of the total canola production.

The grade pattern of the 2005 canola crop was considerably better than in 2004. Overall, distinctly green seed (DGR) levels were less of a degrading factor than in the frost-affected 2004 crop. For the 2005 Saskatchewan canola crop, Saskatchewan Agriculture, Food and Rural Revitalization Report Number 32 estimated the portion of Canola, No.1 Canada to be 85% compared to only 35% in 2004 and 74% for the ten-year mean. Poor harvest weather in September and October resulted in some regional downgrading in northern areas of Saskatchewan and Alberta.

Table 2 – Seeded area and production for western Canadian canola

	Seeded area[1]		Production[1]		Average production[2]
	2005	2004	2005	2004	1995–2004
	thousand hectares		thousand tonnes		thousand tonnes
Manitoba	1012	1093	1261	1778	1479
Saskatchewan	2671	2428	4633	2903	2741
Alberta[3]	1774	1647	3715	2970	2298
Western Canada	**5457**	**5168**	**9609**	**7651**	**6418**

[1] Source: *Field Crop Reporting Series, No. 8*, December 7, 2005; Statistics Canada
[2] Source: *Field Crop Reporting Series*, revised final estimates for 1995–2004
[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 other visible damage.

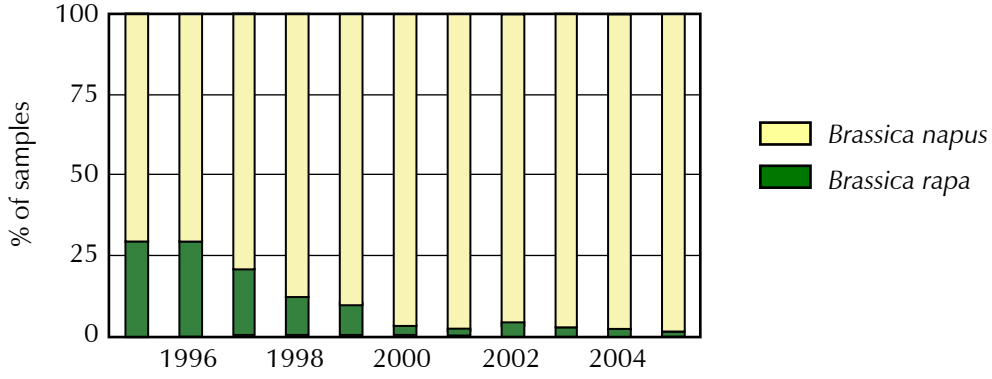
Grades and chlorophyll content relationships are based on long-term data relating the chlorophyll content and green seed content of canola and the chlorophyll level of top quality crude canola oil as established in Canadian standards.

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.

This year's harvest survey report included 2,112 canola samples, slightly more than the 1,846 in 2004. Specialty oil samples such as high oleic acid, low linolenic acid, and high erucic acid, were excluded from this report. Saskatchewan contributed 1,096 samples, Alberta and British Columbia 488, and Manitoba 528 samples during the survey period, August 20 to November 10, 2005. 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 2005 provincial production estimates in Statistics Canada's Field Crop Reporting Series No. 8, December 7, 2005. Factors used to calculate grade distributions are taken from crop reports published by grain companies and provincial agriculture departments.

Figure 2 – 2005 harvest survey
Proportion of samples identified as *Brassica napus* and *Brassica rapa*



Quality of western Canadian canola 2005

Tables 3, 4 and 5 show detailed information on the quality of western Canadian canola harvested in 2005. 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 2005 crop means that the moisture content of 2005-06 exports is likely to be higher than the moisture content of 2004-05 exports. The moisture content of canola exports from Vancouver was 8.5% in October 2005, 0.3% higher than the 2004-05 mean of 8.2% (Table 6). The moisture content of the Thunder Bay canola exports in October 2005 was also 8.5%, notably higher than the 2004-05 mean value of 7.8%. 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.

Recent exports of commercially cleaned canola from Thunder Bay and Vancouver contained 2.3% and 1.7% dockage respectively, which will affect quality factors such as oil content, chlorophyll and FFA. Canola exports containing over 2.5% dockage are considered not commercially clean (NCC) and will have even greater reductions in measured quality components.

Table 3 – 2005 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.	mean	min.	max.
Canola, No. 1 Canada										
Manitoba	454	43.4	37.7	48.2	21.6	17.1	27.1	14	1	25
Saskatchewan	1030	44.5	36.5	49.7	20.3	15.2	27.7	13	0	25
Alberta[3]	391	44.7	38.3	49.7	20.2	15.5	27.6	16	0	25
Western Canada[4]	**1875**	**44.4**	**36.5**	**49.7**	**20.5**	**15.2**	**27.7**	**14**	**0**	**25**
Canola, No. 2 Canada										
Manitoba	25	41.6	39.4	44.1	22.7	20.5	25.5	33	26	45
Saskatchewan	50	43.1	37.9	46.3	21.4	17.5	25.1	32	7	45
Alberta[3]	109	44.2	38.2	47.8	20.8	16.7	26.2	32	26	44
Western Canada[4]	**184**	**43.6**	**37.9**	**47.8**	**21.1**	**16.7**	**26.2**	**32**	**7**	**45**
Canola, No. 3 Canada										
Manitoba	4	40.5	37.8	44.4	22.5	19.8	23.8	36	16	54
Saskatchewan	15	42.1	37.9	45.1	21.3	19.4	23.2	54	16	78
Alberta[3]	28	43.2	36.8	48.6	21.2	17.5	25.8	55	40	81
Western Canada[4]	**47**	**42.3**	**36.8**	**48.6**	**21.4**	**17.5**	**25.8**	**52**	**16**	**81**
Canola, Sample Canada										
Western Canada[4]	**6**	**37.2**	**34.7**	**42.6**	**23.4**	**21.0**	**24.2**	**33**	**11**	**39**

[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.

Table 4 – 2005 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	454	9	6	14	0.25
Saskatchewan	1030	9	6	19	0.07
Alberta[2]	391	9	6	28	0.09
Western Canada[3]	**1875**	**9**	**6**	**28**	**0.11**
Canola, No. 2 Canada					
Manitoba	25	11	8	15	0.36
Saskatchewan	50	11	8	22	0.22
Alberta[2]	109	10	7	29	0.25
Western Canada[3]	**184**	**10**	**7**	**29**	**0.24**
Canola, No. 3 Canada					
Manitoba	4	11	9	13	1.14
Saskatchewan	15	12	9	18	0.35
Alberta[2]	28	11	8	19	0.37
Western Canada[3]	**47**	**11**	**8**	**19**	**0.47**
Canola, Sample Canada					
Western Canada[3]	**6**	**15**	**9**	**19**	**0.69**

[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.

Table 5 – 2005 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	4.0	0.2	1.9	60.3	19.8	10.5	0.7	1.3	0.1
Saskatchewan	4.0	0.2	1.9	60.0	19.7	10.8	0.7	1.3	0.1
Alberta[4]	3.9	0.2	1.8	59.3	19.6	11.7	0.6	1.4	0.1
Western Canada[5]	**3.9**	**0.2**	**1.8**	**59.8**	**19.7**	**11.0**	**0.7**	**1.3**	**0.1**
Canola, No. 2 Canada									
Manitoba	4.1	0.3	1.9	58.6	20.8	10.7	0.7	1.4	0.1
Saskatchewan	4.0	0.3	1.8	58.8	20.4	11.3	0.7	1.4	0.1
Alberta[4]	3.9	0.3	1.7	58.4	20.1	11.9	0.6	1.5	0.1
Western Canada[5]	**3.9**	**0.3**	**1.8**	**58.5**	**20.3**	**11.6**	**0.7**	**1.4**	**0.1**
Canola, No. 3 Canada									
Manitoba	4.3	0.3	2.0	58.3	20.8	10.5	0.7	1.3	0.1
Saskatchewan	4.0	0.3	1.8	57.4	21.2	11.6	0.7	1.4	0.1
Alberta[4]	4.0	0.3	1.7	57.1	20.7	11.9	0.7	1.7	0.1
Western Canada[5]	**4.1**	**0.3**	**1.8**	**57.4**	**20.9**	**11.5**	**0.7**	**1.5**	**0.1**
Canola, Sample Canada									
Western Canada[5]	**4.0**	**0.3**	**1.8**	**58.6**	**20.7**	**10.7**	**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	0.1	0.2	0.2	7.1	115
Saskatchewan	0.4	0.0	0.1	0.2	7.0	116
Alberta[4]	0.4	0.1	0.1	0.2	6.8	117
Western Canada[5]	**0.4**	**0.1**	**0.1**	**0.2**	**7.0**	**116**
Canola, No. 2 Canada						
Manitoba	0.4	0.1	0.2	0.3	7.3	116
Saskatchewan	0.4	0.1	0.1	0.2	7.0	117
Alberta[4]	0.4	0.1	0.1	0.3	6.9	118
Western Canada[5]	**0.4**	**0.1**	**0.1**	**0.3**	**7.0**	**117**
Canola, No. 3 Canada						
Manitoba	0.4	0.0	0.2	0.2	7.7	115
Saskatchewan	0.4	0.2	0.2	0.3	7.0	118
Alberta[4]	0.4	0.3	0.2	0.3	7.1	118
Western Canada[5]	**0.4**	**0.2**	**0.2**	**0.3**	**7.1**	**118**
Canola, Sample Canada						
Western Canada[5]	**0.4**	**0.1**	**0.2**	**0.3**	**7.1**	**116**

[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 2005 harvest survey with data for recent export shipments

Quality parameter	2005 survey	October 2005 exports		2004–05 exports	
		Thunder Bay	Vancouver	Thunder Bay	Vancouver
Oil content[1], %	44.4	43.4	43.5	40.9	42.0
Protein content[2], %	20.5	21.0	20.7	21.3	21.9
Oil-free protein content[2], %	39.8	39.9	39.5	38.5	40.5
Chlorophyll, mg/kg in seed	14	18	20	27	29
Total glucosinolates, µmol/g	9	10	10	12	12
Free fatty acids, %	0.11	0.42	0.40	0.56	0.54
Erucic acid, % in oil	0.1	0.1	0.1	0.1	0.2
Linolenic acid, % in oil	11.0	10.8	11.2	11.6	11.2
Oleic acid, % in oil	59.8	60.0	59.6	57.7	59.1
Total saturated fatty acids[3], % in oil	7.0	7.1	7.0	7.3	6.8
Iodine value	116	116	116	118	117
Loading moisture, %	n/a[4]	8.5	8.5	7.8	8.2
Number of export samples	n/a[4]	3	15	3	96

[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

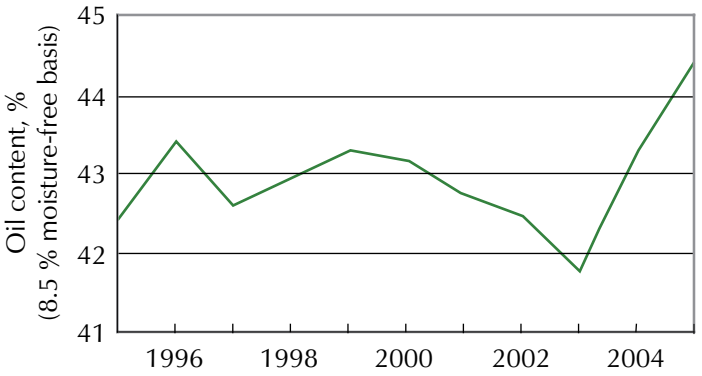
Oil content

The 2005 average oil content of 44.4% for Canola, No.1 Canada is only 0.5% below the CGC survey record high of 44.9% from the 1980 crop. The 2005 average is 1.1% higher than the 2004 mean (43.3%) and 1.6% above the ten-year (1995-2004) mean of 42.8%. The average oil content in Manitoba (43.4%) is lower than in Saskatchewan (44.5%) and Alberta (44.7%). Compared to 2004, average oil contents have increased by 0.5%, 0.9% and 1.4% respectively for Manitoba, Saskatchewan and Alberta. The oil content of Canola, No.1 Canada from producers across western Canada ranged from 36.5% to 49.7%. The average oil contents for Canola, No.2 and Canola, No.3 Canada are significantly lower than for Canola, No.1 Canada.

The increased oil contents seen in the 2005 survey are a result of the generally good growing conditions, i.e. moderate temperatures and ample moisture, in much of the Saskatchewan and Alberta regions of the canola growing area. In Manitoba there was a high proportion of late seeded canola that tends to lower oil contents. In general, cool growing conditions at flowering tend to produce canola seed with higher oil contents but lower protein content. Weather summary maps of the 2005 growing season can be found at: http://www.agr.gc.ca/pfra/drought/drmaps_e.htm.

The oil content of canola exports from Vancouver was 43.5% in October 2005, 1.5% higher than the 2004-05 mean of 42.0% (Table 6). The mean oil content of the remaining Vancouver exports in the 2005-06 shipping season should remain around 43% on an 8.5% moisture basis. The mean oil content of the Thunder Bay exports in October 2005 increased to 43.4% from the 2004-05 mean value of 40.9%.

Figure 3 – Canola, No. 1 Canada
Oil content of harvest survey samples, 1995–2005



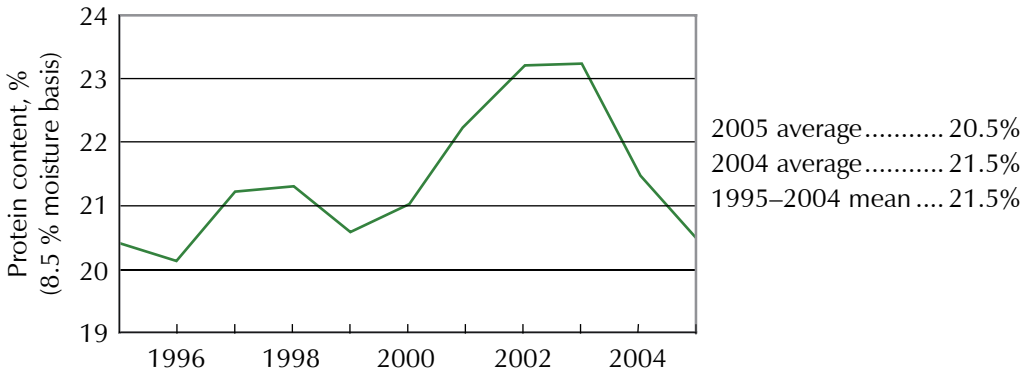
2005 average..... 44.4%
2004 average..... 43.3%
1995–2004 mean 42.8%

Protein content

The 2005 average protein content of 20.5% is 1% lower than both the 2004 average (21.5%) and the ten-year mean value of 21.5%. The 2005 protein content calculated to an oil-free, 8.5% moisture basis is 39.8% compared to 40.8 % in 2004. In Manitoba, protein contents (21.6%) are notably higher than in Saskatchewan (20.3%) and Alberta (20.2%). The seed protein content of Canola, No.1 Canada from producers across western Canada ranged from 15.2% to 27.7%. The average protein contents increased in the lower grades of canola.

The protein content of canola exports from Vancouver averaged 20.7% in October 2005, 1.2% lower than the 2004-05 mean of 21.9% (Table 6). The protein content in Vancouver exports should remain near this level for the remainder of the 2004-05 shipping season. The average protein content of the October 2005 Thunder Bay canola shipments was 21.0%, a 0.3% decrease from the 2004-05 mean of 21.3%.

Figure 4 – Canola, No. 1 Canada
Protein content of harvest survey samples, 1995–2005



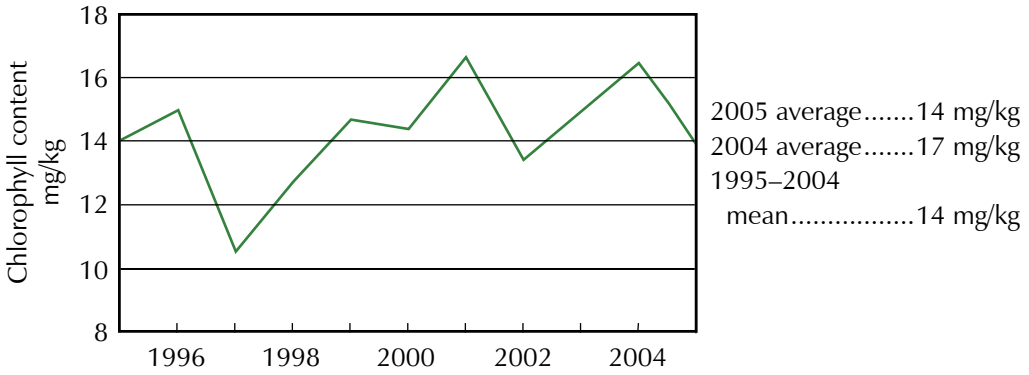
Chlorophyll content

Producer samples of Canola, No.1 Canada averaged 14 mg/kg chlorophyll in the 2005 survey, notably lower than the 17 mg/kg in the 2004 harvest. The chlorophyll level of 16 mg/kg for Alberta is higher than the 13 mg/kg for Saskatchewan and the 14 mg/kg for Manitoba. Chlorophyll levels for Canola, No.2 Canada average 32 mg/kg, significantly lower than the 42 mg/kg for Canola, No.2 Canada seed in 2004. In 2005 some of the lower grade samples were assigned those grades due to admixture or other damage factors rather than just immaturity (distinctly green seed).

Based on discussions with producers and processors, distinctly green seed (DGR) levels were less of a degrading factor than in the frost-affected 2004 crop. Overall, the relationship between chlorophyll and green seeds was similar to 2003 - a low chlorophyll year. However, in some areas of Manitoba, delays in spring planting and uneven germination resulted in a late-harvested crop with higher levels of green seed. In addition, wet and cool conditions in the fall hindered the maturing of the 2005 canola crop in parts of northern Alberta and northern Saskatchewan, resulting in higher seed chlorophyll levels from those regions.

The October 2005 shipments of canola leaving Vancouver and Thunder Bay had average chlorophyll levels of 20 and 18 mg/kg respectively. Both of the October values were significantly lower than the average chlorophyll levels in the 2004-05 exports. The levels of chlorophyll in Vancouver and Thunder Bay export shipments are expected to remain lower than the 2004-05 mean values (Table 6).

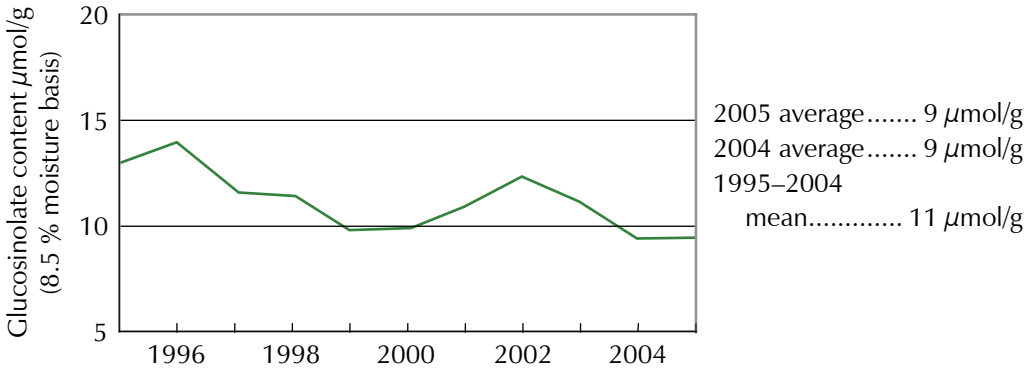
Figure 5 – Canola, No. 1 Canada
Chlorophyll content of harvest survey samples, 1995–2005



Glucosinolate content

The 2005 total seed glucosinolate level of 9 micromoles per gram is similar to the 9 micromoles per gram in 2004. The large proportion of *Brassica napus* samples in the 2005 crop contributed to the overall low glucosinolate levels for the crop. The average level of total seed glucosinolates in the October 2005 Vancouver and Thunder Bay canola exports indicates glucosinolate levels in exports will be slightly lower than those in the 2004-05 shipping season.

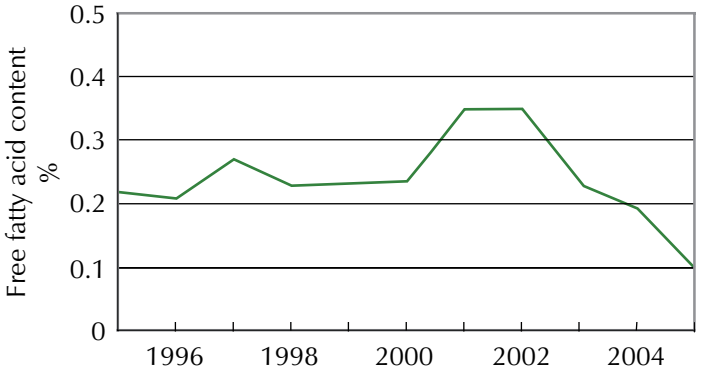
Figure 6 – Canola, No. 1 Canada
Total seed glucosinolate content of harvest survey samples, 1995–2005



Free fatty acid content

The 2005 harvest survey samples of Canola, No.1 Canada have an average free fatty acid (FFA) content of 0.11%. This level is significantly lower than both the 2004 value of 0.19% and the long-term mean of 0.25%. However, FFA levels may be elevated in seed that was subject to very wet harvest conditions. Individual producer samples from some areas are notably higher in FFA (e.g. 0.7% to 1.0%) than the reported W. Canada mean of 0.11% for canola, No.1 Canada. For initial 2005-06 exports, FFA levels are expected to be around 0.5% for Canola, No.1 Canada exports (Table 6). Because FFA's tend to increase over time, the measured FFA's towards the end of the 2005-06 shipping season will likely be higher than the values seen in October shipments (Table 6).

Figure 7 – Canola, No. 1 Canada
Free fatty acid content of harvest survey samples, 1995–2005



2005 average..... 0.11%
2004 average..... 0.19%
1995–2004 mean 0.25%

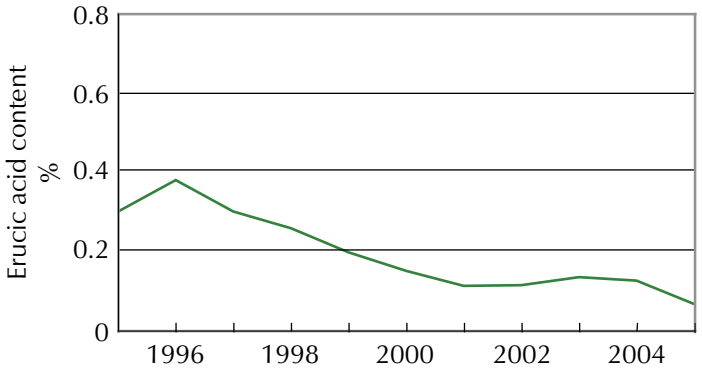
Fatty acid composition

The average iodine value of the oil from the Canola, No.1 Canada survey samples is 116 units in 2005 compared to 117 units in 2004. The linolenic acid is 11.0% in 2005, which is slightly lower than the 11.2% in 2004 but well above the 10-year mean of 9.9%. At 11.7%, the linolenic acid in Alberta is higher than in Saskatchewan, 10.8%, and Manitoba, 10.5%. The average oleic acid content of the 2005 crop increased to 59.8% from 58.9% in 2004.

The average level of erucic acid in the 2005 crop is 0.1%, similar to the 0.1% in 2004 and below the 10-year mean of 0.2%. The average level of saturated fatty acids is 7.0% in 2005, similar to the 2004 value of 7.0%. The levels of saturated fatty acids are slightly lower in Alberta (6.8%) than in Manitoba (7.1%) and Saskatchewan (7.0%). The GRL harvest survey samples were comprised of 99% *Brassica napus* types, similar to the 98% in 2004.

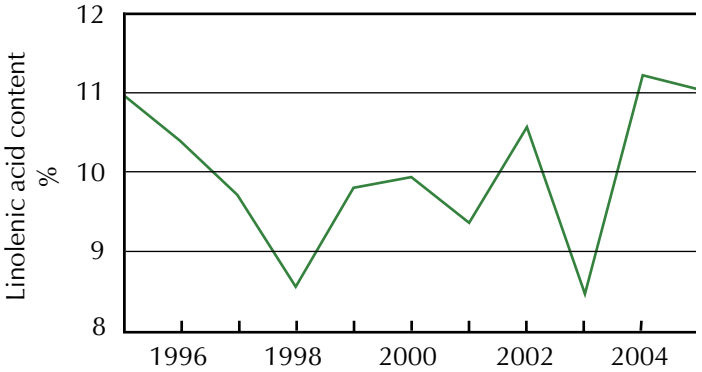
Based on the October 2005 data, the average linolenic acid content for Vancouver exports of Canola, No.1 Canada remains similar to the 2004-2005 shipments at 11.2% (Table 6). The October 2005 Thunder Bay exports decreased by 0.8% to an average value of 10.8% linolenic acid content. At 116 units, the iodine value for October Vancouver canola exports decreased by 1 unit from the 2004-05 levels. The iodine value for the October Thunder Bay canola exports decreased by 2 units from the 2004-05 levels. The level of saturated fatty acids in October 2005 Vancouver canola exports was 7.0%, slightly higher than the 2004-05 exports. The Thunder Bay October 2005 exports were 7.1% in saturated fatty acids, a decrease of 0.2% from 2004-05 levels. The levels of erucic acid in all exports during the 2005-06 shipping season will likely remain near 0.1%.

Figure 8 – Canola, No. 1 Canada
Erucic acid content of harvest survey samples, 1995–2005



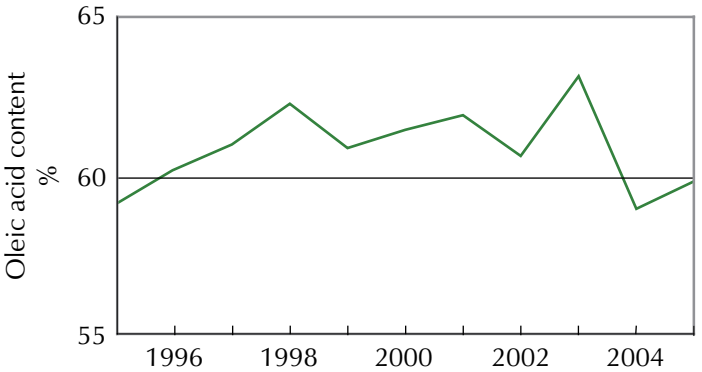
2005 average..... 0.06%
2004 average..... 0.12%
1995–2004 mean 0.21%

Figure 9 – Canola, No. 1 Canada
Linolenic acid content of harvest survey samples, 1995–2005



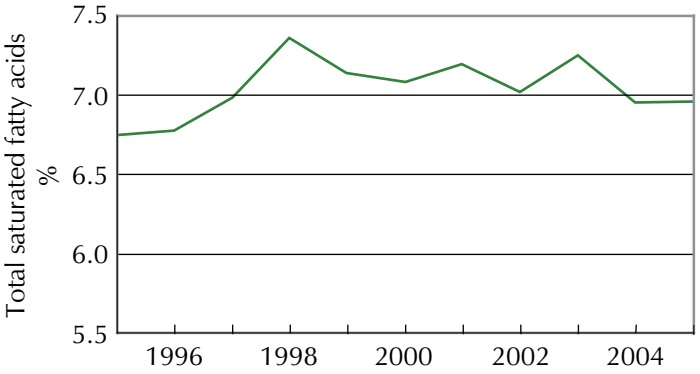
2005 average..... 11.0%
2004 average..... 11.2%
1995–2004 mean 9.9%

Figure 10 – Canola, No. 1 Canada
Oleic acid content of harvest survey samples, 1995–2005



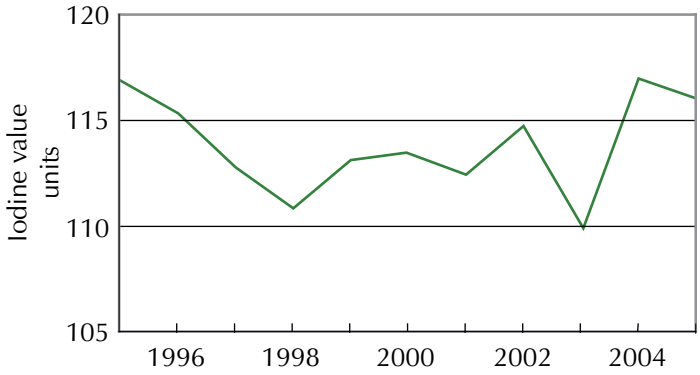
2005 average..... 59.8%
2004 average..... 58.9%
1995–2004 mean 61.0%

Figure 11 – Canola, No. 1 Canada
Total saturated fatty acids of harvest survey samples, 1995–2005



2005 average..... 7.0%
2004 average..... 7.0%
1995–2004 mean 7.1%

Figure 12 – Canola, No. 1 Canada
Iodine value of harvest survey samples, 1995–2005



2005 average.....116
2004 average.....117
1995–2004 mean 114

Oilseed methods

Chlorophyll content

Chlorophyll content is determined by International Organization for Standardization method reference number ISO 10519:1997 (E), Rapeseed—Determination of chlorophyll content—Spectrometric method. Results are expressed as milligrams per kilogram (mg/kg), seed basis.

Fatty acid composition

Fatty acid composition is determined by the International Organization for Standardization methodreference number ISO 5508:1990 (E), Animal and vegetable fats and oils—Analysis by gas chromatography of methyl esters of fatty acids. A 15m by 0.32mm column with a 0.25μm Supelcowax 10 coating is used. Major and important fatty acids are reported although samples may also contain as much as 1% of other minor fatty acids which are included in the calculations.

Free fatty acid content

Free fatty acid content is determined by a method adapted from the procedure of Ke et al, Analytica Chemica Acta 99:387–391 (1978), and is expressed as a percentage by weight of oleic acid in the oil. Oleic acid with a molecular weight of 282 is used as the fatty acid for the expression of the results.

Glucosinolate content

Glucosinolate content is determined by International Organization for Standardization method reference number ISO 9167–1:1992(E), Rapeseed—Determination of glucosinolate content—Part 1: Method using high performance liquid chromatography. Results are total seed glucosinolates expressed as micromoles per gram (μmol/g), calculated to an 8.5% moisture basis for canola or on a dry matter basis for all mustard seeds.

Iodine value

Iodine value is a measure of unsaturation calculated from the fatty acid composition according to AOCS Recommended Practice Cd 1c-85, revised 1995 and re-approved 1997, Calculated Iodine Value.

Oil content

Oil content is determined by nuclear magnetic resonance (NMR) according to the International Organization for Standardization, reference number ISO 10565:1992(E) Oilseeds—Simultaneous determination of oil and moisture contents—Method using pulsed nuclear magnetic resonance spectroscopy. A Bruker NMS 110 Minispec NMR Analyzer calibrated with appropriate oilseed samples extracted with petroleum ether is used. Results are reported as a percentage, calculated to a specified moisture basis. Canola is calculated to an 8.5% moisture basis, and flaxseed, solin, soybean and all mustard seeds are calculated on a dry matter basis.

Protein content

Protein content is determined by the AOCS Official Method Ba 4e-93, revised 1995 and re-approved 1997, Combustion method for determination of crude protein, using a LECO FP-428 Nitrogen and Food Protein Determinator. Results are reported as a percentage, N x 6.25, calculated to specified moisture basis. Canola is calculated to an 8.5% moisture basis, and flaxseed, solin, soybean and all mustard seeds are calculated on a dry matter basis.