Canadian Grain Commission
Commission canadienne des grains

Quality of western Canadian canola 2002

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Canada

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Table of contents

Tables

Figures

Figures (continued)

Quality of western Canadian canola 2002

Introduction

This report presents quality data and information based on the Canadian Grain Commission (CGC) 2002 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

Western Canadian canola tested in the 2002 harvest survey is slightly below average in oil content but well above average in protein content. While the oil content is 0.4% below the 10-year mean, protein content is 2.6% higher.

Compared to 2001, average oil content, 42.5%, is 0.3% lower while average protein content, 23.2%, is 0.9% higher. Average chlorophyll content for No. 1 Canada canola is 13 mg/kg, significantly lower than the 17 mg/kg in 2001.

The 2002 survey shows lower average oleic acid content, 60.6%, and higher average linolenic acid content, 10.6%. Total average saturated fatty acids content, 7.0%, is 0.2% lower than in 2001. The average iodine value of 115 units, calculated from the fatty acid composition, is higher than the 2001 survey.

The average erucic acid, 0.11%, and the average total seed glucosinolates, 12 µmoles/gram, are both similar to average values from 2001.

Table 1 • No. 1 Canada canola
Quality data for 2002 harvest survey

Quality parameter	2002	2001	1992–2001 Mean
Oil content[1], %	42.5	42.8	42.9
Protein content[2], %	23.2	22.3	20.6
Oil-free protein content[2] %	43.3	41.8	43.3
Chlorophyll content, mg/kg in seed	13	17	14
Total glucosinolates[1], µmol/g	12	11	12
Free fatty acids, %	0.35	0.35	0.25
Erucic acid, % in oil	0.11	0.11	0.32
Linolenic acid, % in oil	10.6	9.4	10.2
Oleic acid, % in oil	60.6	61.9	60.2
Total saturated fatty acids[3], % in oil	7.0	7.2	6.9
Iodine value	115	112	115

[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

The Weather and Crop Surveillance department of the Canadian Wheat Board provided the weather review for the 2002 harvest survey (http://www.cwb.ca/en/growing/weather/crop_issues.jsp)

Seeding

The extremely dry conditions, combined with cooler than normal weather in April and May, delayed seeding of cereal and oilseed crops. Planting in Western Canada was only 75 per cent complete by the end of May. Heavy rains fell in the southern areas of Saskatchewan and Alberta during the first week of June, further delaying planting in those regions. Seeding continued into the third week of June in those areas that received heavy rains. Northern and central growing areas of Saskatchewan and Alberta remained dry and crops were planted into dust. Germination was quite uneven in these regions, with some crops not emerging until rains fell in July. Seeding progressed rapidly in eastern Saskatchewan and Manitoba, with planting in these areas finishing during the first week of June.

Growing conditions

Cool weather during May and early June slowed crop growth and development across the Prairies. Heavy rains in the southern Prairies did improve soil moisture conditions, especially in Alberta and Saskatchewan. The heavy rains caused some flooding in all three provinces resulting in some reseeding, especially in southern Alberta. Warmer than normal temperatures during the second half of June increased crop stress, especially in the parched regions of northern Alberta and Saskatchewan. The dry conditions caused uneven emergence in canola crops, with many fields having three to four stages of development.

The warmer than normal weather continued through July, which caused severe stress to all crops. Yield potential for canola crops declined rapidly under the stressful conditions. The rainfall pattern of the spring continued into July, with the heaviest rainfall reported in the southern Prairies. Northern regions reported minimal amounts during the month, with only isolated areas reporting enough rainfall to improve crop prospects. Even in the regions that had received adequate moisture during the spring, severe heat stress began to take a toll on production prospects.

The warm temperatures accelerated crop development, especially in eastern areas of the Prairies. A cool, wet weather pattern settled over the Prairies during the first week in August, bringing significantly above normal rainfall to the dry areas in Saskatchewan. A significant frost during the first week of August damaged the crops in northern and central areas of Saskatchewan and Alberta. The rains brought a flush of secondary growth in the drought regions and delayed maturity in southern areas.

Harvest conditions

The harvest started in southern Manitoba and southeastern Saskatchewan in the third week of August. Frequent rains during the last week of August and first two weeks of September resulted in a reduction in grade pattern of the mature crops in the eastern Prairies. Severe frost was reported by the middle of the month in Saskatchewan and Alberta, which brought an end to the growing season in most areas. Harvest during the last half of September continued to be plagued by frequent light to heavy showers. In eastern growing areas, significant harvest progress was made during the last two weeks of September, while

western areas continued to struggle with poor drying conditions. The uneven growth of crops in Alberta and Saskatchewan continued to slow harvest activity into October. Frequent rainfall combined with cooler than normal temperatures delayed further progress. Snow during the last two weeks of October brought an end to harvest activity. The Manitoba canola harvest was completed by the end of October while the Saskatchewan canola crop was estimated to be only 65% harvested as of October 15th. In Alberta, the harvest was delayed by wet weather and as of October 15th only 40-50% of their canola crop was harvested. As with most crops grown in western Canada, a portion of the 2002 canola crop may not be harvested until the spring of 2003.

Production and grade information

Western Canadian farmers planted 3.86 million hectares of canola in 2002, which is a slight increase from last year's area (Table 2). The final 2002 yield estimate of 1200 kg/ha is less than the 1300 kg/ha reported in 2001and about ten percent below the 10-year mean of 1363 kg/ha.

With less harvested area and a drop in yield, total canola production in western Canada is down 28 percent to 3.52 million tonnes according to estimates by Statistics Canada reported in *Field Crop Reporting Series No. 8*, December 5, 2002. The largest proportion of 2002 production, 40 percent, was grown in Manitoba. Saskatchewan accounted for 37percent while Alberta and British Columbia accounted for 23 percent.

Initially, there was concern for canola that was shriveled, underdeveloped and green due to the extreme drought in many regions. In some of the drought areas there were also reports of germination within the canola pods once rainfall arrived in late summer and early fall. In some areas, as a result of inadequate weed and pest control, canola samples were downgraded due to the presence of higher admixture levels. The grade pattern of the 2002 crop was further affected by the cool, wet conditions experienced after August. Sprouted, immature, heated, and weathered kernels were evident in many areas in northern Alberta and Saskatchewan where the harvest was delayed due to wet and cold weather.

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.

Grades and chlorophyll content relationships are based on long-term data.

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

Composite samples are used for free fatty acids and fatty acid composition analyses. Composites are prepared by combining No. 1 Canada samples by provincial crop district and No. 2, and No. 3, and Sample grade samples by province.

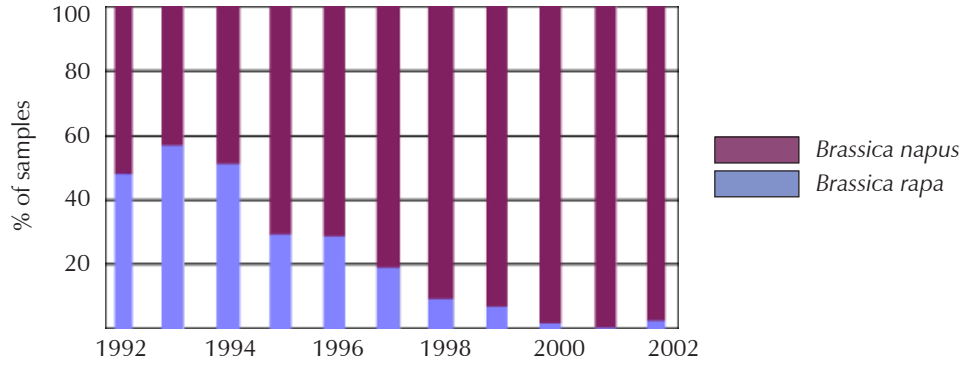
This year's harvest survey included 1,371 canola samples compared to 1,334 in 2001. Specialty oil samples such as high oleic acid, low linolenic acid, and high erucic acid, were excluded from this report. Saskatchewan contributed 604 samples, Manitoba 455 samples, and Alberta and British Columbia 312 samples during the survey period, August 15 to December 30, 2002. 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 2002 provincial production estimates in Statistics Canada's *Field Crop Reporting Series No. 8*, December 5, 2002. Factors used to calculate grade distributions are taken from crop reports published by the line elevator companies.

Table 2 • Seeded area and production for western Canadian canola

	Seeded area[1] thousand hectares		Production[1] thousand tonnes		Average production[2] thousand tonnes
	2002	2001	2002	2001	1992–2001
Manitoba	890	769	1406	1123	1319
Saskatchewan	1760	1922	1304	2098	2721
Alberta[3]	1210	1117	810	1667	2178
Western Canada	**3861**	**3808**	**3520**	**4888**	**6218**

[1] Source—*Field Crop Reporting Series*, *No. 8*, December 5, 2002, Statistics Canada
[2] Source—*Field Crop Reporting Series*, revised final estimates for 1992–2001
[3] Includes the part of the Peace River area that is in British Columbia

Figure 2 • 2002 harvest survey
Proportion of samples identified as *Brassica rapa* and *Brassica napus*



Quality of 2002 canola

Tables 3, 4 and 5 show detailed information on the quality of western Canadian canola harvested in 2002. 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 line elevator companies. To calculate western Canadian averages for each grade, provincial averages are weighted by the Statistics Canada production estimate and the estimate of grade distribution.

Table 3 • 2002 harvest survey
Canola quality data by grade and province

	Number of samples	Oil content[1]			Protein content[2]			Chlorophyll content		
		%			%			mg/kg		
		Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
No. 1 Canada										
Manitoba	399	42.5	37.9	47.6	23.0	17.8	27.1	12	2	25
Saskatchewan	396	42.8	36.1	49.5	23.0	16.7	28.1	15	0	26
Alberta[3]	165	42.1	35.9	46.8	24.0	17.8	28.1	17	0	25
Western Canada[4]	**960**	**42.5**	**35.9**	**49.4**	**23.2**	**16.7**	**28.1**	**13**	**0**	**26**
No. 2 Canada										
Manitoba	42	41.4	38.4	44.4	23.8	20.9	27.1	22	5	44
Saskatchewan	134	41.3	35.4	48.0	23.8	18.1	28.4	29	0	45
Alberta[3]	104	41.1	35.3	45.4	24.5	19.1	28.0	33	14	45
Western Canada[4]	**280**	**41.2**	**35.3**	**48.0**	**24.1**	**18.1**	**28.4**	**29**	**0**	**45**
No. 3 Canada										
Manitoba	9	41.7	39.6	45.8	24.2	21.3	25.8	29	7	83
Saskatchewan	47	40.2	35.6	45.4	24.4	19.1	28.6	44	0	91
Alberta[3]	34	40.2	32.2	43.3	24.6	19.9	28.1	57	21	98
Western Canada[4]	**90**	**40.3**	**32.2**	**45.8**	**24.4**	**19.1**	**28.6**	**46**	**0**	**98**
Sample Canada										
Manitoba	5	40.6	38.4	41.9	24.2	22.1	25.8	15	7	32
Saskatchewan	27	40.3	32.5	46.4	23.8	20.1	26.9	69	5	212
Alberta[3]	9	41.3	32.5	44.2	22.5	19.1	25.3	110	26	184
Western Canada[4]	**41**	**40.4**	**32.5**	**46.4**	**23.7**	**19.1**	**26.9**	**69**	**5**	**212**

[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 • 2002 harvest survey
Canola quality data by grade and province

	Number of samples[1]	Glucosinolates[2] µmol/g			Free fatty acids %
		Mean	Min.	Max.	
No. 1 Canada					
Manitoba	399	12	7	21	0.40
Saskatchewan	396	13	6	25	0.30
Alberta[2]	165	14	7	32	0.28
Western Canada[3]	**960**	**12**	**6**	**32**	**0.35**
No. 2 Canada					
Manitoba	42	12	7	18	0.74
Saskatchewan	134	14	5	28	0.45
Alberta[2]	104	14	8	31	0.38
Western Canada[3]	**280**	**14**	**5**	**31**	**0.48**
No. 3 Canada					
Manitoba	9	13	9	17	0.87
Saskatchewan	47	15	6	25	0.82
Alberta[2]	34	15	9	22	0.56
Western Canada[3]	**90**	**15**	**6**	**25**	**0.76**
Sample Canada					
Manitoba	5	13	9	17	2.19
Saskatchewan	27	15	5	22	1.03
Alberta[2]	9	15	13	17	0.68
Western Canada[3]	**41**	**15**	**5**	**22**	**1.07**

[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 5A • 2002 harvest survey
Fatty acid composition by grade and province •No. 1 Canada and No. 2 Canada

	Fatty acid composition, %[1]								
	C16:0	C16:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2
No. 1 Canada									
Manitoba	4.0	0.3	1.9	61.1	19.2	10.1	0.7	1.4	0.1
Saskatchewan	3.9	0.3	1.9	60.4	19.1	10.8	0.7	1.4	0.1
Alberta[4]	3.7	0.3	1.8	59.8	19.1	11.6	0.6	1.5	0.1
Western Canada[5]	**3.9**	**0.3**	**1.9**	**60.6**	**19.1**	**10.6**	**0.7**	**1.4**	**0.1**
No. 2 Canada									
Manitoba	3.9	0.3	2.0	60.6	19.5	10.2	0.7	1.4	0.1
Saskatchewan	3.9	0.3	1.9	60.1	19.4	10.7	0.7	1.4	0.1
Alberta[4]	3.7	0.3	1.9	59.2	19.1	11.7	0.7	1.6	0.1
Western Canada[5]	**3.8**	**0.3**	**1.9**	**59.9**	**19.3**	**11.0**	**0.7**	**1.5**	**0.1**

	Fatty acid composition, %[1]				Total saturates[2]	Iodine value[3]
	C22:0	C22:1	C24:0	C24:1		
No. 1 Canada						
Manitoba	0.4	0.1	0.2	0.3	7.1	114
Saskatchewan	0.4	0.1	0.2	0.3	7.0	115
Alberta[4]	0.4	0.2	0.1	0.3	6.7	117
Western Canada[5]	**0.4**	**0.1**	**0.2**	**0.3**	**7.0**	**115**
No. 2 Canada						
Manitoba	0.4	0.1	0.2	0.3	7.2	114
Saskatchewan	0.4	0.1	0.1	0.2	7.0	115
Alberta[4]	0.4	0.3	0.1	0.3	6.8	117
Western Canada[5]	**0.4**	**0.2**	**0.1**	**0.3**	**7.0**	**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), gadoleic (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 5B • 2002 harvest survey
Fatty acid composition by grade and province •No. 3 Canada and Sample Canada

	Fatty acid composition, %[1]								
	C16:0	C16:1	C18:0	C18:1	C18:2	C18:3	C20:0	C20:1	C20:2
No. 3 Canada									
Manitoba	3.9	0.3	1.9	60.9	19.4	10.1	0.7	1.4	0.1
Saskatchewan	3.9	0.3	1.9	59.1	20.0	10.7	0.7	1.5	0.1
Alberta[4]	3.9	0.3	2.0	59.9	18.9	11.1	0.7	1.5	0.1
Western Canada[5]	**3.9**	**0.3**	**1.9**	**59.4**	**19.7**	**10.7**	**0.7**	**1.5**	**0.1**
Sample Canada									
Manitoba	4.0	0.3	2.1	60.4	20.2	9.1	0.7	1.3	0.1
Saskatchewan	4.2	0.3	1.9	58.5	19.7	10.9	0.7	1.5	0.1
Alberta[4]	3.9	0.3	1.9	58.6	19.3	11.3	0.7	1.6	0.1
Western Canada[5]	**4.2**	**0.3**	**1.9**	**58.6**	**19.7**	**10.8**	**0.7**	**1.5**	**0.1**

	Fatty acid composition, %[1]				Total saturates[2]	Iodine value[3]
	C22:0	C22:1	C24:0	C24:1		
No. 3 Canada						
Manitoba	0.4	0	0.2	0.2	7.1	114
Saskatchewan	0.4	0.1	0.2	0.3	7.2	115
Alberta[4]	0.4	0.1	0.2	0.3	7.2	115
Western Canada[5]	**0.4**	**0.1**	**0.2**	**0.3**	**7.2**	**115**
Sample Canada						
Manitoba	0.4	0.0	0.2	0.3	7.5	112
Saskatchewan	0.4	0.2	0.2	0.3	7.4	115
Alberta[4]	0.4	0.3	0.2	0.4	7.2	116
Western Canada[5]	**0.4**	**0.2**	**0.2**	**0.3**	**7.4**	**115**

[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), gadoleic (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 • No. 1 Canada canola
Comparison of 2002 harvest survey quality data with recent export shipments

Quality parameter	2002 survey	November 2002 exports		2001–02 exports	
		Thunder Bay[1]	Vancouver	Thunder Bay[1]	Vancouver
Oil content[1], %	42.5	40.9	41.7	41.7	42.2
Protein content[2], %	23.2	23.0	22.7	22.5	21.7
Oil-free protein content[2], %	43.3	41.6	41.7	41.3	40.2
Chlorophyll, mg/kg in seed	13	19	22	23	26
Total glucosinolates, zmol/g	12	13	13	12	12
Free fatty acids, %	0.35	0.88	0.52	0.88	0.71
Erucic acid, % in oil	0.11	0.07	0.19	0.04	0.15
Linolenic acid, % in oil	10.6	10.0	10.5	9.4	9.9
Oleic acid, % in oil	60.6	61.1	60.6	61.7	61.1
Total saturated fatty acids[3],% in oil	7.0	7.2	7.0	7.4	7.2
Iodine value	115	114	115	112	113

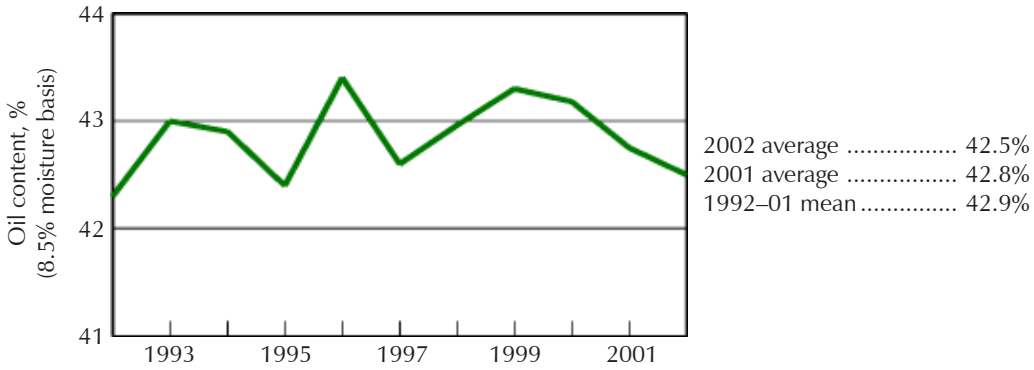
[1] 8.5% moisture basis
[2] N x 6.25; 8.5% moisture basis
[3] Total saturated fatty acids are the sum of palmitic (C16:0), stearic (C18:0), arachidic (C20:0), behenic (C22:0), and lignoceric (C24:0).

Oil content

The average oil content of 42.5% for No. 1 Canada canola from the 2002 harvest survey is lower than both the 42.8% in 2001 and the 10-year mean of 42.9% (Table 1). The Saskatchewan oil content of 42.8% is higher than the 42.5% and 42.1% for Manitoba and Alberta respectively. Compared to 2001, mean oil contents have decreased by 0.5, 0.1, and 0.1percentage units for Alberta, Saskatchewan, and Manitoba respectively. The oil content of No. 1 Canada canola from producers in western Canada varied from 35.9% to 49.4%. The average oil contents decreased significantly in the lower grades of canola.

The oil content of canola exports from Vancouver was 41.7% in November 2002, about 0.5% lower than the 2001-02 mean of 42.2% (Table 6). The oil content of the remaining Vancouver exports in the 2002-03 shipping season will likely remain below 42% on an 8.5% moisture basis. The oil content of Thunder Bay exports in November decreased to below 41% on an 8.5% moisture basis.

Figure 3 • No. 1 Canada canola
Oil content of harvest survey samples, 1992–2002

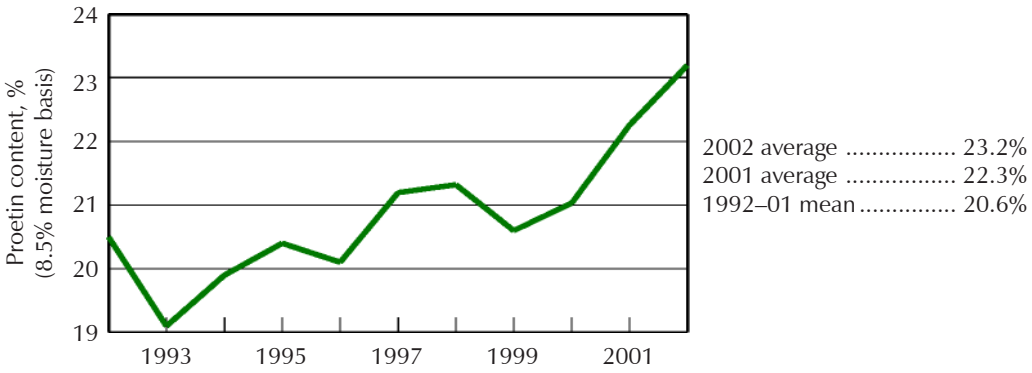


Protein content

The average seed protein content of 23.2% for No. 1 Canada canola from the 2002 harvest survey is significantly higher than both the 22.3% in 2001 and the 10-year mean of 20.6% (Table 1). The 2002 protein content calculated on an oil-free, 8.5% moisture basis is 43.3% compared to 41.8 % in 2001. The Alberta protein content of 24.0% is higher than the 23.0% in Manitoba and Saskatchewan. Compared to 2001, mean protein contents increased by 1.8, 0.9, and 0.6 percentage units respectively in Alberta, Manitoba and Saskatchewan. The protein content of No. 1 Canada canola from producers in western Canada varied from 16.7% to 28.1%. The average protein contents increased in the lower grades of canola.

The protein content of No.1 Canada canola exports from Vancouver averaged 22.7% in November 2002 compared to 21.7% during the 2001-02 shipping season. The protein content in Vancouver exports should remain near this level for the remainder of the 2002-03 shipping season. Protein content of November 2002 Thunder Bay canola shipments averaged 23.0%, a 0.5% increase from the 2001-02 mean of 22.5%.

Figure 4 • No. 1 Canada canola
Protein content of harvest survey samples, 1992–2002



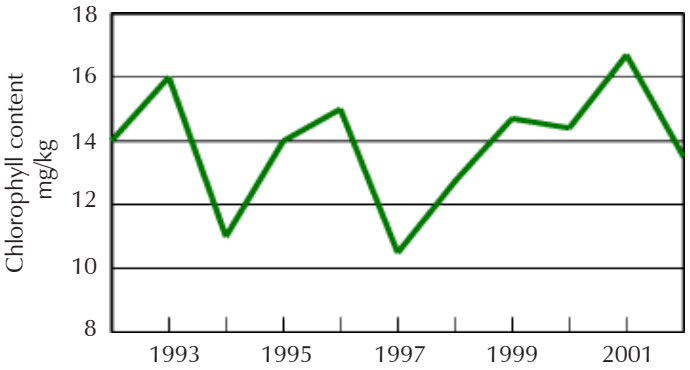
Chlorophyll content

Harvest survey samples of No. 1 Canada canola averaged 13 mg/kg chlorophyll in the 2002 survey, lower than the 17 mg/kg in the 2001 harvest (Table 2). The chlorophyll level of 12 mg/kg for Manitoba seed was significantly lower than the 17 mg/kg for Alberta and the 15 mg/kg for Saskatchewan. Chlorophyll levels for No. 2 Canada canola averaged 29 mg/kg, similar to the 32 mg/kg for No. 2 Canada canola seed in 2001. Some of the No. 2 and No. 3 Canada samples were assigned those grades due to grading factors such as sprout damaged rather than just immaturity (distinctly green seed).

Based on discussions with producers and processors, high distinctly green seed (DGR) levels remains a degrading factor in several canola-growing areas but it appears to be less widespread than in 2001. In those areas where canola was swathed under hot, dry conditions there was insufficient opportunity for chlorophyll to degrade naturally. In other areas, delays in spring planting and uneven germination resulted in a late-harvested crop with higher levels of green seed.

The November 2002 shipments of canola leaving Vancouver and Thunder Bay had average chlorophyll levels of 22 and 19 mg/kg respectively. Both of these November values were slightly lower than the average chlorophyll levels in the 2001-02 exports. However, the levels of chlorophyll in Vancouver and Thunder Bay No. 1 Canada export shipments are expected to remain similar to 2001-02 values (Table 6).

Figure 5 • No. 1 Canada canola
Chlorophyll content of harvest survey samples, 1992–2002

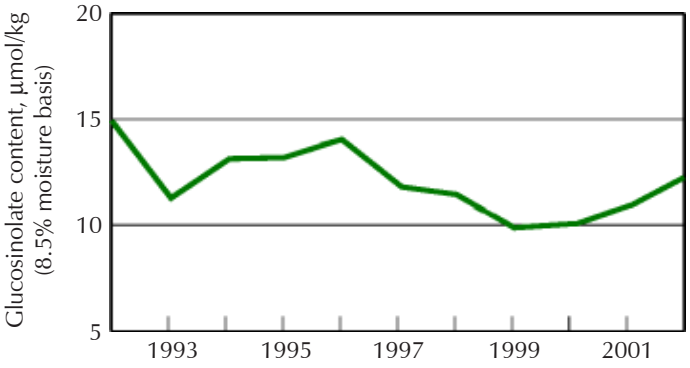


2002 average ..... 13 mg/kg
2001 average ..... 17 mg/kg
1992–01 mean ..... 14 mg/kg

Glucosinolate content

The 2002 total glucosinolate level of 12 micromoles per gram is slightly higher than the 11 µmol/g in 2001. The large proportion of *Brassica napus* samples in the 2002 crop contributed to the overall low glucosinolate levels for the entire crop. In 2002, drought caused a slight increase in some areas and in addition, the proportion of *Brassica rapa* samples from Alberta increased. *Brassica rapa* varieties, particularly some of the older varieties, have higher intrinsic glucosinolate levels. The average level of total seed glucosinolates, 13 µmol/g, in the November 2002 Vancouver and Thunder Bay canola exports indicates glucosinolate levels in exports should remain similar to those in the 2001-02 shipping season.

Figure 6 • No. 1 Canada canola
Total seed glucosinolate content of harvest survey samples, 1992-2002



2002 average ..... 12 µmol/kg
2001 average ..... 11 µmol/kg
1992–01 mean ..... 12 µmol/kg

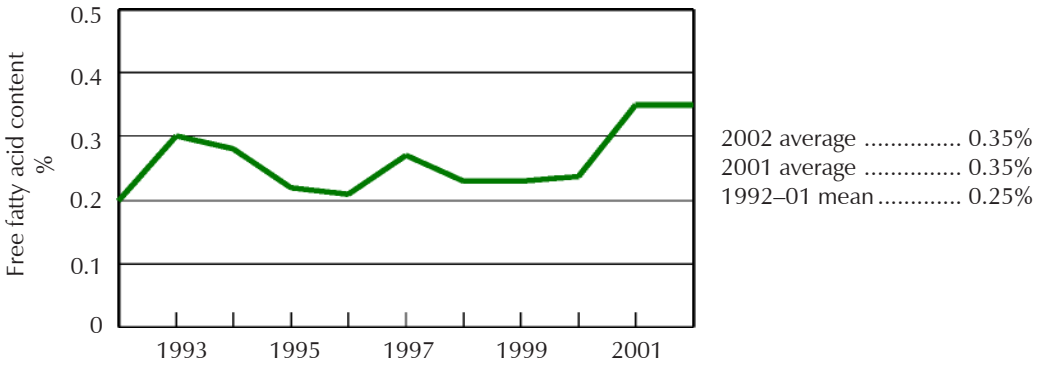
Free fatty acid content

The 2002 harvest survey of No. 1 Canada canola had an average free fatty acid (FFA) content of 0.35%. This level is similar to the 2001 value of 0.35% but higher than the long-term mean of 0.25%. The FFA content of 0.40% for Manitoba seed is higher than the 0.30% in Saskatchewan samples and the 0.28% in Alberta samples. Individual producer samples from some areas are notably higher in FFA than the reported Western Canada mean of 0.35%. FFA levels for 2002-03 No. 1 Canada exports are expected to be around 0.70% (Table 6).

In some areas, swathed canola underwent varying degrees of sprouting as a result of significant rainfall followed by warm temperatures. Also, in some of the drought areas there were reports of germination within the canola pods once rainfall arrived in late summer and early fall. As a result, there were significantly higher FFA levels in the lower grade canola samples (Table 4).

The GRL initiated a study in 2000 to examine in detail the relationship between various quality parameters and the incidence of sprouted seed. Sprouted samples from the 2001 and 2002 surveys have also been added to the study. In general, sprouting does result in reduced oil contents and higher FFA values. However, our initial results on the relationship between FFA and percentage sprouting suggest that FFA alone is not a reliable predictor of "% sprout damage" in canola seed.

Figure 7 • No. 1 Canada canola
Free fatty acid content of harvest survey samples, 1992–2002



Fatty acid composition

The average iodine value of the canola oil from 2002 harvest survey samples was 115 units compared to 112 units in 2001 (Table 1). The average linolenic acid was 10.6% in 2002, which was higher than both the 9.4% in 2001 and the 10-year mean of 10.2%. At 11.6%, the linolenic acid in Alberta was higher than in Saskatchewan, 10.8%, and Manitoba, 10.1%. The linolenic acid content of No. 1 Canada canola from producers in western Canada varied from 6.0% to 15.2%. The average oleic acid content of the 2002 crop decreased to 60.6% from 61.9% in 2001. The oleic acid content of No. 1 Canada canola from producers in western Canada varied from 54.7% to 68.1%. Samples from the GRL harvest survey indicate the 2002 crop was comprised of 97% *Brassica napus* types compared to 98 % in 2001. However, in Alberta, the percentage of *Brassica rapa* increased to 12% from 6% in 2001.

The average level of erucic acid in the 2002 crop was 0.11%, similar to the 0.11% in 2001 and well below the 10-year mean of 0.32%. The mean level of saturated fatty acids is 7.0% in 2002, slightly lower than the 2001 value of 7.2% and significantly lower than the record high of 7.4% in 1998. The levels of saturated fatty acids are lower in Alberta, 6.7%, than in Saskatchewan, 7.0%, and Manitoba, 7.1%. The saturated fatty acid content of No. 1 Canada canola from producers in western Canada varied from 5.2% to 8.1%.

Based on the November 2002 data, the linolenic acid content for Vancouver No. 1 Canada canola exports increased by 0.6% from the 2001-02 level of 9.9%. The linolenic acid content of the November 2002 Thunder Bay exports increased by 0.6% to 10.0%. At 115 units, the iodine value for Vancouver canola exports increased by 2 units from the 2001-02 levels. The iodine value for November Thunder Bay canola exports also increased by 2 units from the 2001-02 levels. The level of saturated fatty acids in November 2002 Vancouver canola exports was 7.0%, 0.2% lower than the 2001-02 exports. Thunder Bay November 2002 exports were 7.2% in saturated fatty acids, a decrease of 0.2% from 2001-02 levels. The levels of erucic acid in all canola exports during the 2002-03 shipping season will remain under 0.2%.

Figure 8 • No. 1 Canada canola
Erucic acid content of harvest survey samples, 1992–2002

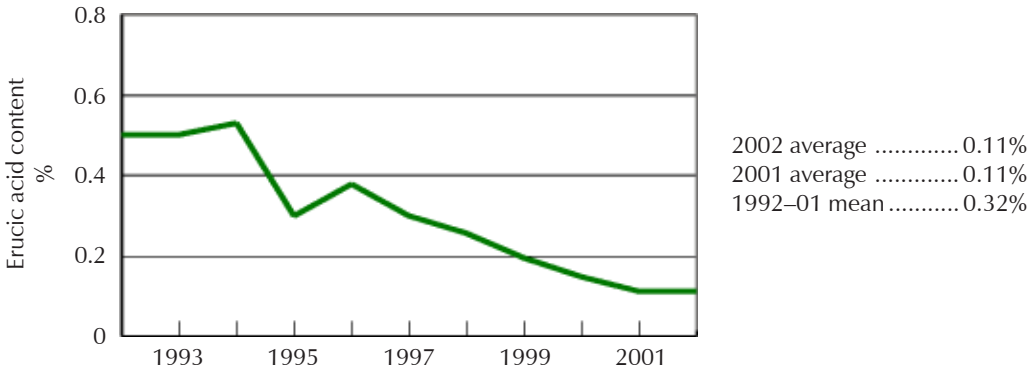


Figure 9 • No. 1 Canada canola
Linolenic acid content of harvest survey samples, 1992–2002

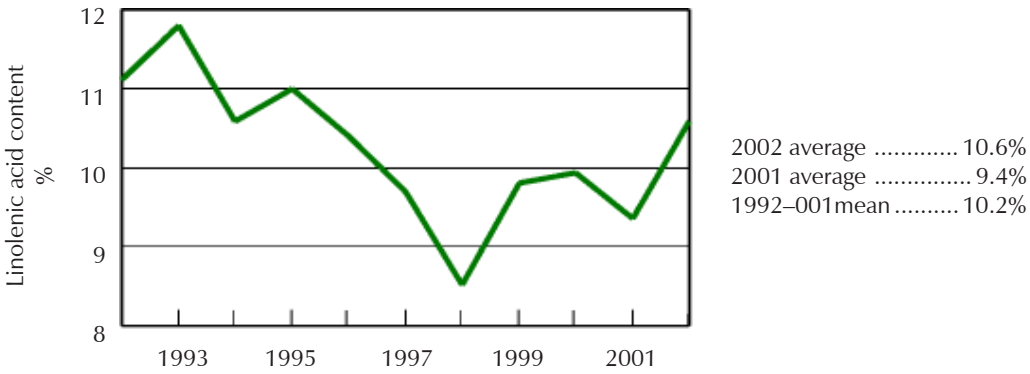
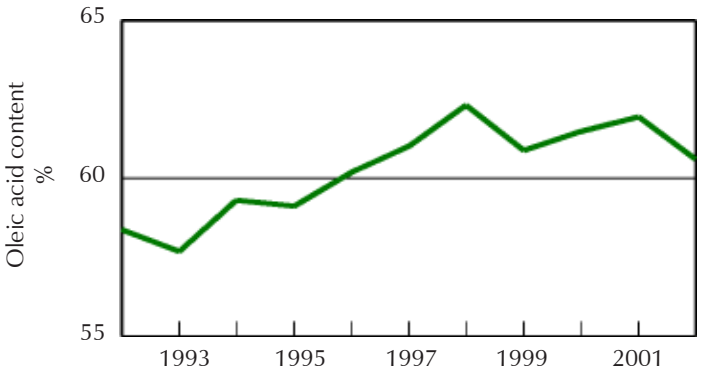
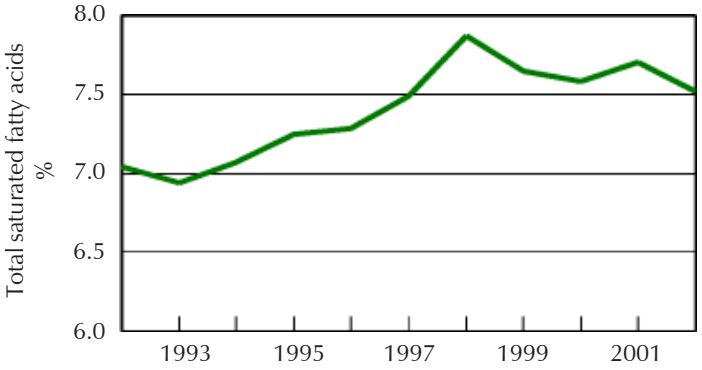


Figure 10 • No. 1 Canada canola
Oleic acid content of harvest survey samples, 1992–2002



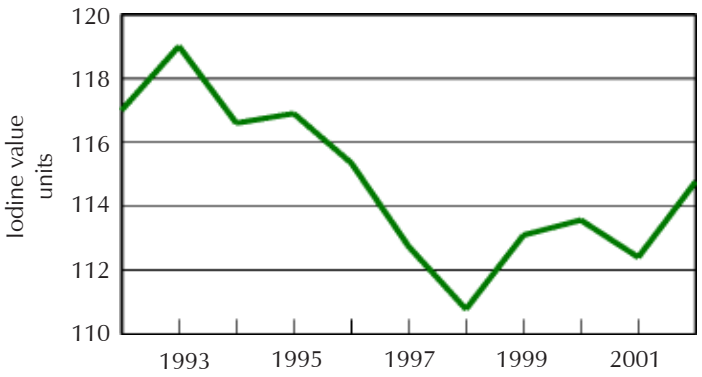
2002 average 60.6%
2001 average 61.9%
1992–01 mean 60.2%

Figure 11 • No. 1 Canada canola
Total saturated fatty acids of harvest survey samples, 1992-2002



2002 average 7.0%
2001 average 7.2%
1992–01 mean 6.9%

Figure 12 • No. 1 Canada canola
Iodine value of harvest survey samples, 1992-2002



2002 average 115
2000 average 112
1992–01 mean 115