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Quality of western Canadian lentils 2025

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Table of Contents

Introduction.....	3
Growing and harvesting conditions.....	3
Production	6
Harvest samples	7
Quality of 2025 western Canadian lentils	8
Protein content.....	8
Green lentils	8
Red lentils	9
Acknowledgements	10

Tables

Table 1 Production statistics for 2025 western Canadian lentils	6
Table 2 Protein content (% dry basis) for 2025 western Canadian green lentils by grade	11
Table 3 Protein content (% dry basis) for 2025 western Canadian red lentils by grade	12
Table 4 Mean protein and starch content (% dry basis) for 2025 western Canadian green lentils by crop region	14
Table 5 Mean protein and starch content (% dry basis) for 2025 western Canadian red lentils by crop region..	15
Table 6 Quality data for 2025 western Canadian green lentil composites by size	16
Table 7 Seed size distribution of 2025 western Canadian green lentils	17
Table 8 Quality data for 2025 western Canadian red lentils '	18
Table 9 Seed size distribution of 2025 western Canadian red lentils '	19

Figures

Figure 1 Mean temperature difference from normal in the Prairie region from June 1 to June 30, 2025.....	3
Figure 2 Mean temperature difference from normal in the Prairie region from July 1 to July 31, 2025.....	4
Figure 3 Total precipitation in the Prairie region from April 1 to October 31, 2025.....	4
Figure 4 Origin of 2025 lentil samples received by the Canadian Grain Commission's Harvest Sample Program ..	7
Figure 5 Mean protein content (% dry basis) of western Canadian lentils from 2014 to 2025	13
Figure 6 Crop regions in western Canada.....	14

Introduction

This report presents harvest quality data for green and red lentils grown in western Canada in 2025. Lentil samples were submitted to the Canadian Grain Commission’s Harvest Sample Program by producers and grain companies. Quality data are compiled from the results of [analytical tests](#) performed in the Grain Research Laboratory.

Growing and harvesting conditions

Figure 1 and Figure 2 show the monthly mean temperature differences from normal in the Prairie region during the 2025 growing season (June and July). Figure 3 shows the total precipitation in the Prairie region from April 1 to October 31, 2025.

Figure 1 Mean temperature difference from normal in the Prairie region from June 1 to June 30, 2025

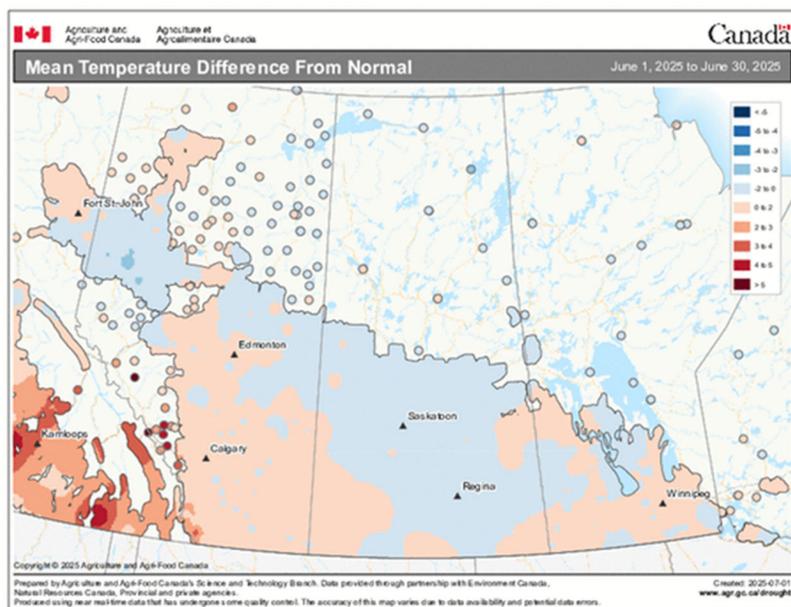


Figure 2 Mean temperature difference from normal in the Prairie region from July 1 to July 31, 2025

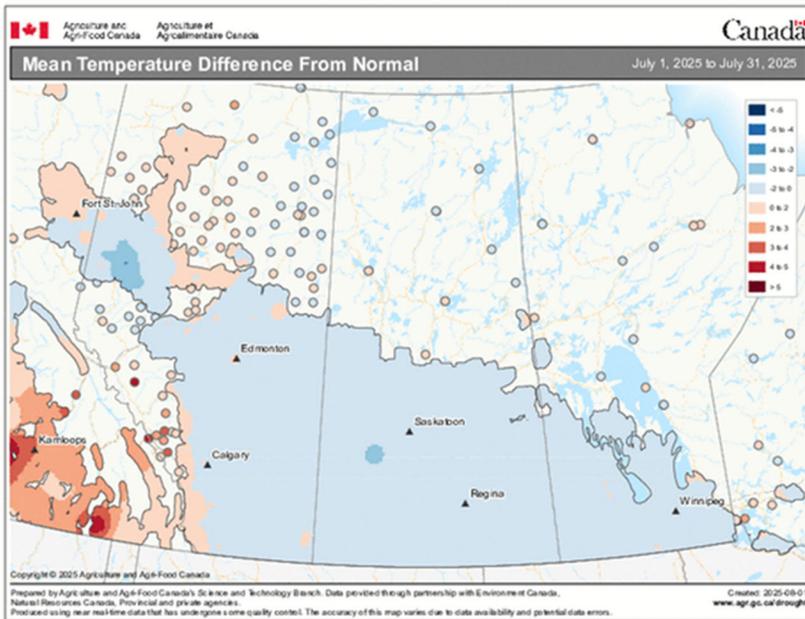
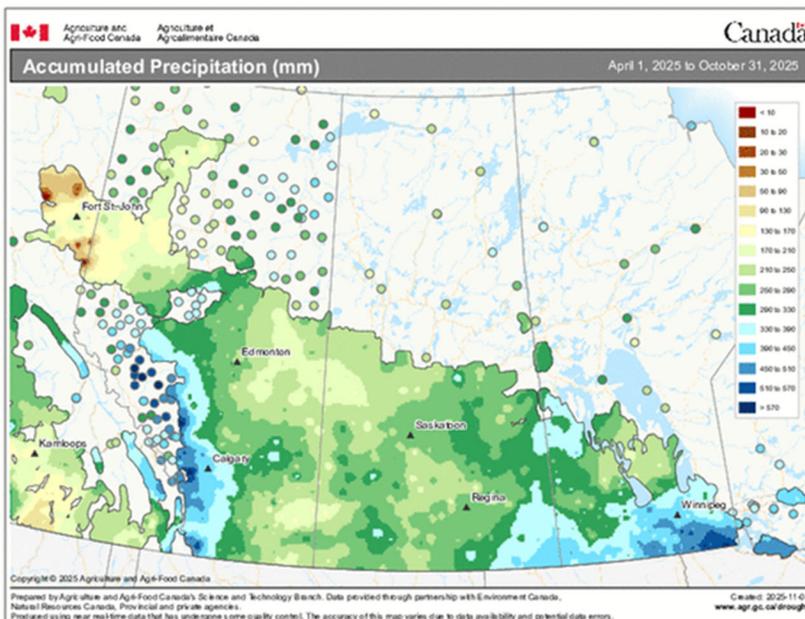


Figure 3 Total precipitation in the Prairie region from April 1 to October 31, 2025



In Alberta, seeding started in early May and was completed by early June. Warm temperatures advanced plant growth, but cool temperatures later in the season delayed crop maturity in northern areas and the Peace region (Figure 1 and Figure 2). Rainfall was also limited throughout the growing season in these areas (Figure 3). Overall, crop growing conditions were below the 5-year-average in the Peace region but were above average for other areas. The lentil harvest began in early August and was completed by mid-September under good conditions.

In Saskatchewan, seeding started between late April and early May and was completed by mid-June. Conditions were dry early in the growing season, but later in the season timely rains helped crops develop. The lentil harvest began in late July and early August and was finished by early October. Due to low moisture levels (Figure 3) and agronomic challenges, crop yields in the southwest and northwest were lower than average. In other areas, yields were average to above average. Many lentils were in the top two grades.

Production

Lentil production in 2025 was estimated to be 3.4 million tonnes, which is 38.2 % higher than in 2024 and 40.6 % higher than the 10-year average of 2.4 million tonnes (Table 1). The higher production is due to a 34.3 % increase in yield and a 2.9 % increase in harvested area compared to 2024. Saskatchewan continues to dominate lentil production in western Canada, accounting for 86.2 % of production, while Alberta accounts for 13.8 %.

Table 1 Production statistics for 2025 western Canadian lentils¹

Location	Harvested area (thousand hectares)		Production (thousand tonnes)		Yield (kg/ha) ²		Mean production (thousand tonnes)
	2025	2024	2025	2024	2025	2024	2015 to 2024
Manitoba	no data	no data	no data	no data	no data	no data	no data
Saskatchewan	1,514	1,467	2,895	2,112	1,911	1,441	2,124
Alberta ³	226	225	463	316	2,047	1,406	264
Western Canada	1,741	1,692	3,357	2,429	1,929	1,436	2,388

¹ Source: Statistics Canada.

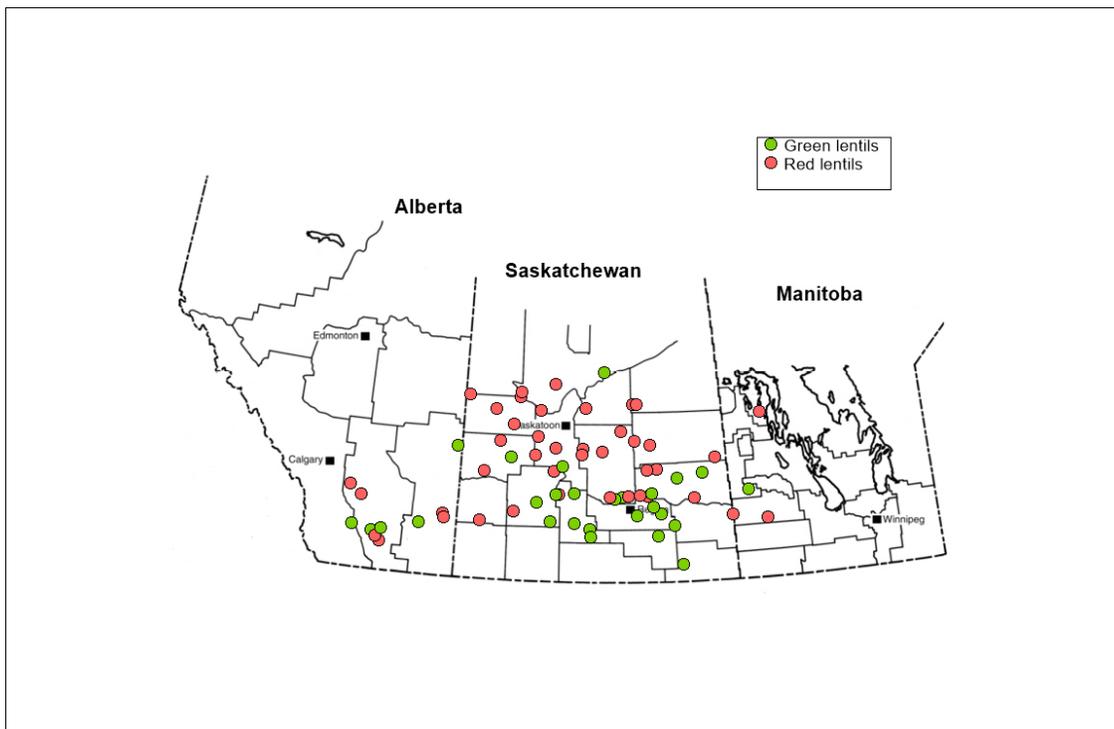
² kg/ha = kilograms per hectare.

³ Includes the Peace River area of British Columbia.

Harvest samples

Samples were submitted to the Canadian Grain Commission's Harvest Sample Program by lentil producers and grain companies across western Canada (Figure 4). The program received 382 lentil samples, consisting of 222 green lentil samples and 160 red lentil samples.

Figure 4 Origin of 2025 lentil samples received by the Canadian Grain Commission's Harvest Sample Program



All samples were graded and analyzed for protein content and seed size distribution. Seed size (small, medium and large) was determined using image analysis. Composites prepared for green lentils (No. 1 and No. 2 Canada combined) were based on seed size and crop region. Composites prepared for red lentils (No. 1 and No. 2 Canada combined) were based on crop region and variety.

The composite samples were tested for:

- moisture content
- protein content
- starch content
- total dietary fiber content
- crude fat content

- ash content
- mineral content
- 100-seed weight
- water absorption per gram of seeds

The dehulling quality characteristics of red lentils were also evaluated.

The reported number of samples by grade does not necessarily represent the actual distribution of grades across western Canada.

Quality of 2025 western Canadian lentils

Protein content

The protein content for green lentils (Table 2) ranged from 20.8% to 29.6% and for red lentils (Table 3) it ranged from 24.2% to 29.4%. The mean protein content was lower for green lentils (26.0%) and red lentils (26.9%) compared to 2024. The mean protein content for green and red lentils combined was lower than the 10-year mean of 27.0% (Figure 5). Table 4 and Table 5 contain the mean protein and starch values for green and red lentils, respectively, according to the applicable crop region (Figure 6).

Green lentils

Table 6 contains the 2025 quality data for green lentil composites according to seed size. Compared to 2024, small green lentils were lower in protein (26.3%) and total dietary fiber (13.0%) but higher in crude fat (0.83%) and starch (45.2%). Large green lentils showed similar trends in protein (26.0%), starch (45.8%), total dietary fiber (12.7%) and crude fat (0.96%) when compared to 2024. The values for ash content in small and large green lentils were similar to those in 2024.

Potassium was the most abundant macroelement present in green lentils, followed by phosphorus, magnesium and calcium. Among the microelements, iron was the most abundant, followed by zinc, manganese and copper. Compared to 2024, calcium and manganese increased while phosphorus and zinc decreased in small and large green lentils. Iron also decreased in large green lentils in 2025.

For small green lentils, the 100-seed weight was greater and the water absorption per gram of seeds was lower than in 2024. For large green lentils, the 100-seed weight was greater than in 2024, but the seed water absorption had a similar value.

Image analysis was used to determine the seed size distribution of green lentils (Table 7). The reported results may differ from those obtained by conventional sieving techniques. For small green lentils, 68.4% were 4.5 millimetres (mm) or larger in diameter, which is higher than in 2024 (24.6%). For large green lentils, 72.6% were 6.0 mm or more in diameter, which is higher than 2024 (58.9%).

Red lentils

Table 8 contains the 2025 quality data for red lentils. Compared to 2024, red lentils were lower in protein (27.0%), total dietary fiber (14.4%) and crude fat (0.67%) but similar in starch (44.5%). Ash content showed little change from 2024. The calcium, iron and manganese contents of red lentils were higher, while other elements were lower than in 2024. The 100-seed weight (3.8 grams per 100 seeds) was higher, but the water absorption (0.89 grams water per gram of seeds) was lower than in 2024.

Compared to 2024, the dehulling efficiency (76.1%) was lower but the percentages of powder (5.0%), un-dehulled whole seeds (2.9%) and broken seeds (3.3%) were higher (Table 8). The colour of dehulled red lentils was measured using a Hunterlab LabScan XE spectrophotometer with the CIE L*, a* and b* colour scale. Whole red lentils and splits had a higher brightness (L*) value but lower redness (a*) and yellowness (b*) values than in 2024. A higher portion of red lentils (38.6%) were 5.0 mm or greater in diameter compared to 2024 (26.8%) (Table 9).

Acknowledgements

The Grain Research Laboratory acknowledges the cooperation of western Canadian pulse processors, producers and grain companies in supplying the samples of newly harvested lentils. We also are grateful to the following groups within the Canadian Grain Commission: Industry Services for assistance with grading samples; the Pulse Research Program staff for technical assistance; the staff of the trace elements unit for mineral analysis; and Digital and Creative Communications for their assistance in the publication of this document.

Table 2 Protein content (% dry basis) for 2025 western Canadian green lentils by grade¹

Location	Grade	Number of samples	2025			2024
			Mean	Minimum	Maximum	Mean
Saskatchewan	Lentils, No. 1 Canada	43	26.4	24.2	28.3	28.4
	Lentils, No. 2 Canada	120	26.0	20.8	29.6	27.4
	Lentils, Extra No. 3 Canada	22	25.4	23.5	28.0	28.0
	Lentils, No. 3 Canada	11	26.1	24.2	28.8	28.4
	All grades	196	26.0	20.8	29.6	27.8
Alberta	Lentils, No. 1 Canada	1	28.1	28.1	28.1	27.7
	Lentils, No. 2 Canada	20	25.3	23.9	27.3	27.2
	Lentils, Extra No. 3 Canada	1	26.2	26.2	26.2	no data
	Lentils, No. 3 Canada	no data	no data	no data	no data	no data
	All grades	22	25.5	23.9	28.1	27.3
Western Canada	Lentils, No. 1 Canada	44	26.4	24.2	28.3	28.4
	Lentils, No. 2 Canada	140	25.9	20.8	29.6	27.3
	Lentils, Extra No. 3 Canada	23	25.4	23.5	28.0	27.5
	Lentils, No. 3 Canada	11	26.1	24.2	28.8	28.1
	All grades	218	26.0	20.8	29.6	27.8

¹ Protein content (Nitrogen x 6.25) is determined by near-infrared measurement calibrated against the Combustion Nitrogen Analysis reference method.

Table 3 Protein content (% , dry basis) for 2025 western Canadian red lentils by grade ¹

Location	Grade	Number of samples	2025			2024
			Mean	Minimum	Maximum	Mean
Saskatchewan	Lentils, No. 1 Canada	114	26.8	24.2	29.4	27.7
	Lentils, No. 2 Canada	15	27.3	25.1	29.4	27.9
	Lentils, Extra No. 3 Canada	7	26.8	25.2	27.8	27.6
	Lentils, No. 3 Canada	4	27.3	26.1	27.9	no data
	All grades	140	26.9	24.2	29.4	27.7
Alberta	Lentils, No. 1 Canada	14	27.0	25.7	28.4	28.0
	Lentils, No. 2 Canada	2	26.7	26.1	27.4	no data
	Lentils, Extra No. 3 Canada	no data	no data	no data	no data	no data
	Lentils, No. 3 Canada	no data	no data	no data	no data	no data
	All grades	16	26.9	25.7	28.4	28.0
Western Canada	Lentils, No. 1 Canada	128	26.8	24.2	29.4	27.7
	Lentils, No. 2 Canada	17	27.2	25.1	29.4	27.9
	Lentils, Extra No. 3 Canada	7	26.8	25.2	27.8	27.6
	Lentils, No. 3 Canada	4	27.3	26.1	27.9	no data
	All grades	156	26.9	24.2	29.4	27.7

¹ Protein content (Nitrogen x 6.25) is determined by near-infrared measurement calibrated against the Combustion Nitrogen Analysis reference method.

Figure 5 Mean protein content (% dry basis) of western Canadian lentils from 2015 to 2025

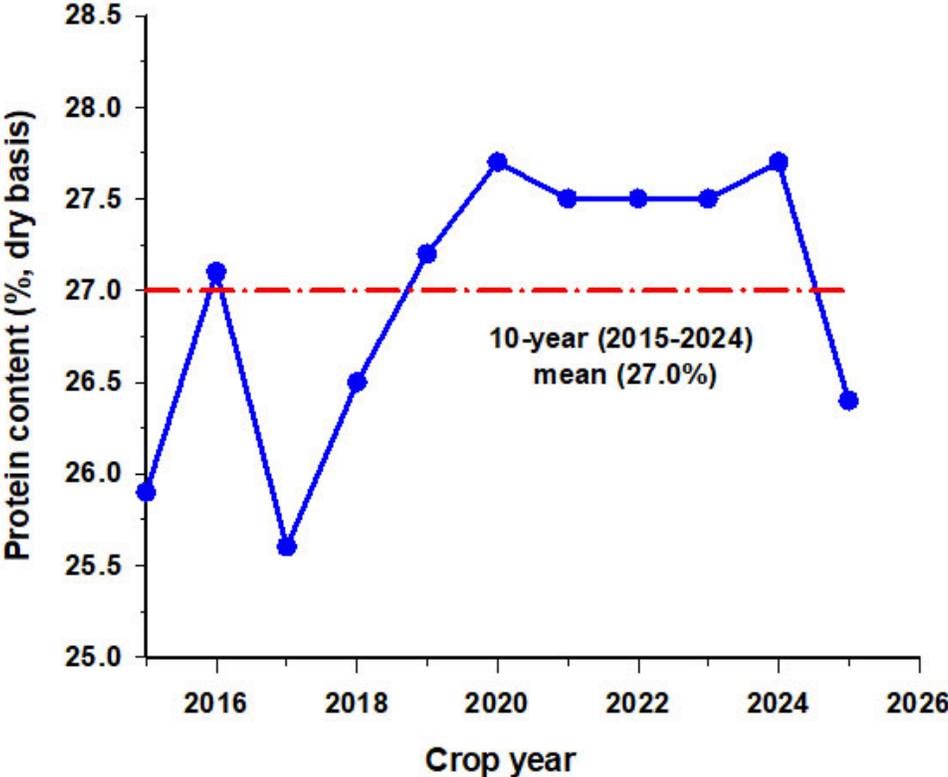


Figure 6 Crop regions in western Canada

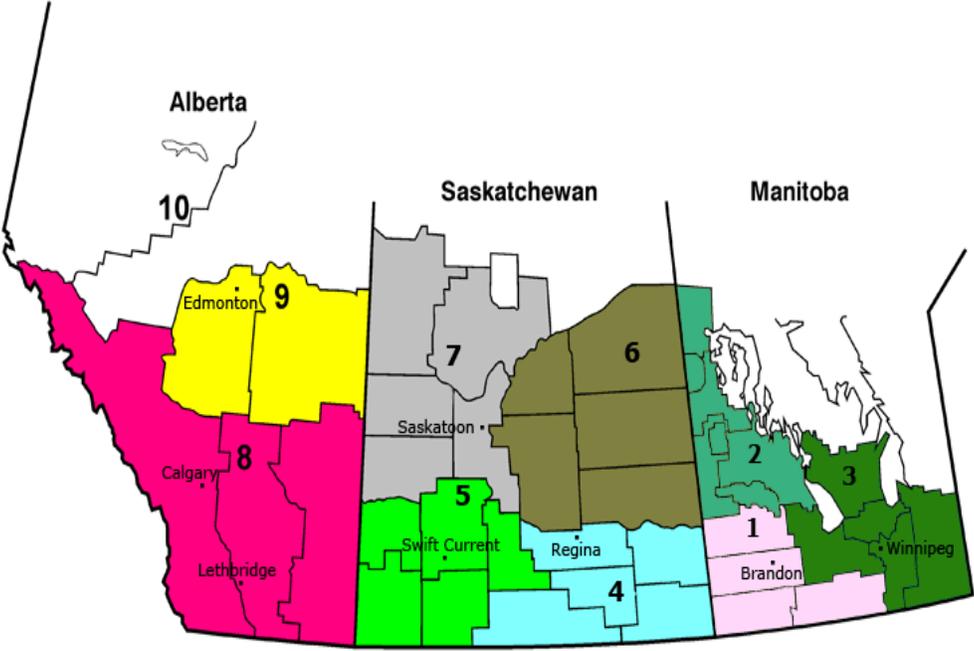


Table 4 Mean protein and starch content (% dry basis) for 2025 western Canadian green lentils by crop region

Crop region	Protein content		Starch content	
	2025	2024	2025	2024
4	26.3	28.2	44.9	43.8
5	26.2	27.6	46.3	44.2
6	26.9	27.2	44.0	45.1
7	23.1	27.4	48.4	43.9
8	25.6	27.3	45.4	45.2

Table 5 Mean protein and starch content (% , dry basis) for 2025 western Canadian red lentils by crop region

Crop region	Protein content		Starch content	
	2025	2024	2025	2024
4	27.7	27.9	43.8	44.2
5	26.6	27.4	44.9	44.5
6	26.9	27.8	46.4	43.7
7	27.6	27.2	42.0	45.0
8	27.1	28.1	44.6	44.9

Table 6 Quality data for 2025 western Canadian green lentil composites by size ¹

Category	Quality parameter	2025			2024		
		SL ²	ML ³	LL ⁴	SL	ML	LL
Chemical composition	Moisture, %	10.3	no data	10.4	10.1	no data	10.5
	Protein, %, dry basis	26.3	no data	26.0	29.0	no data	27.3
	Starch, %, dry basis	45.2	no data	45.8	43.2	no data	44.4
	Total dietary fiber, %, dry basis	13.0	no data	12.7	15.4	no data	15.0
	Crude fat, %, dry basis	0.83	no data	0.96	0.74	no data	0.89
	Ash, %, dry basis	2.7	no data	2.8	2.9	no data	2.9
Mineral content ⁵	Calcium, mg/100 g sample ⁶	66.3	no data	76.8	59.0	no data	61.1
	Copper, mg/100 g sample	0.9	no data	0.9	1.0	no data	0.9
	Iron, mg/100 g sample	8.8	no data	7.8	8.2	no data	14.0
	Potassium, mg/100 g sample	1,058.6	no data	1,103.1	1,100.5	no data	1,119.6
	Magnesium, mg/100 g sample	114.0	no data	123.5	113.9	no data	123.5
	Manganese, mg/100 g sample	1.8	no data	2.1	1.4	no data	1.6
	Phosphorus, mg/100 g sample	389.7	no data	403.5	454.3	no data	446.3
	Zinc, mg/100 g sample	3.6	no data	3.8	4.0	no data	4.2
Physical characteristics	100-seed weight, g/100 seeds ⁷	3.2	no data	6.1	2.6	no data	5.6
	Water absorption, g H ₂ O/g seeds ⁸	0.84	no data	0.99	0.92	no data	0.99

¹ Lentils, No. 1 Canada and Lentils, No. 2 Canada combined.

² SL = small lentils, includes CDC Invincible, CDC Jimini, CDC Kermit and Eston.

³ ML = medium lentils, includes CDC Richlea.

⁴ LL = large lentils, includes CDC Greenstar, CDC Improve, CDC Lima, CDC Grimm and Laird.

⁵ On a dry matter basis.

⁶ mg/g 100 g sample = milligrams per 100 grams of sample.

⁷ g/100 seeds = grams per 100 seeds.

⁸ g H₂O/g seeds = grams of water per gram of seeds.

Table 7 Seed size distribution of 2025 western Canadian green lentils ¹

Seed size distribution	2025		2024	
	SL ²	LL ³	SL	LL
<3.5 mm, %	0.3	0.1	4.2	0.1
3.5 to 4.0 mm, %	5.6	0.2	22.8	0.2
4.0 to 4.5 mm, %	25.7	0.3	48.4	0.8
4.5 to 5.0 mm, %	49.0	1.4	23.3	3.2
5.0 to 5.5 mm, %	18.4	6.0	1.3	9.9
5.5 to 6.0 mm, %	0.7	19.4	0.0	27.0
6.0 to 6.5 mm, %	0.1	40.3	0.0	43.3
6.5 to 7.0 mm, %	0.1	28.2	0.0	14.8
7.0 to 7.5 mm, %	0.1	4.1	0.0	0.8
>7.5 mm, %	0.0	0.0	0.0	0.0

¹ Seed size includes all grades and is determined using image analysis.

² SL = small lentils, includes CDC Invincible, CDC Jimini, CDC Kermit and Eston.

³ LL = large lentils, includes CDC Greenstar, CDC Improve, CDC Lima, CDC Grimm and Laird.

Table 8 Quality data for 2025 western Canadian red lentils ^{1, 2}

Category	Quality parameter	2025	2024		
Chemical composition	Moisture, %	10.5	10.3		
	Protein, %, dry basis	27.0	27.6		
	Starch, %, dry basis	44.5	44.5		
	Total dietary fiber, %, dry basis	14.4	14.8		
	Crude fat, %, dry basis	0.67	0.84		
	Ash, %, dry basis	2.6	2.7		
Mineral content ³	Calcium, mg/100 g sample ⁴	67.5	65.3		
	Copper, mg/100 g sample	0.9	1.0		
	Iron, mg/100 g sample	8.1	7.7		
	Potassium, mg/100 g sample	1,022.9	1,066.4		
	Magnesium, mg/100 g sample	113.3	118.9		
	Manganese, mg/100 g sample	1.8	1.4		
	Phosphorus, mg/100 g sample	384.1	429.5		
	Zinc, mg/100 g sample	3.7	4.2		
Physical characteristics	100-seed weight, g/100 seeds ⁵	3.8	3.4		
	Water absorption, g H ₂ O/g seeds ⁶	0.89	0.96		
Dehulling quality	Dehulling efficiency, %	76.1	78.2		
	Powder, %	5.0	3.2		
	Broken seeds, %	3.3	3.2		
	Un-dehulled whole seeds, %	2.9	2.2		
Colour of dehulled seeds ⁷		Whole	Splits	Whole	Splits
	Brightness, L*	61.1	63.0	60.6	62.7
	Redness, a*	29.1	30.1	30.3	30.6
	Yellowness, b*	38.1	39.5	40.1	41.3

¹ Lentils, No.1 Canada and Lentils, No.2 Canada combined.

² Red lentils include CDC Dazil, CDC Imax, CDC Impact, CDC Impulse, CDC King Red, CDC Maxim, CDC Nimble, CDC Proclaim, CDC Redmoon and CDC Simmie.

³ On a dry matter basis.

⁴ mg/100 g sample= milligrams per 100 grams of sample.

⁵ g/100 seeds = grams per 100 seeds.

⁶ g H₂O/g seeds = grams of water per gram of seeds.

⁷ L* = darkness (0) to brightness (+); a* = greenness (-) to redness (+); b* = blueness (-) to yellowness (+).

Table 9 Seed size distribution of 2025 western Canadian red lentils ^{1,2}

Seed size distribution	2025	2024
<3.5 mm, %	0.2	1.0
3.5 to 4.0 mm, %	3.7	6.7
4.0 to 4.5 mm, %	17.8	25.5
4.5 to 5.0 mm, %	39.7	40.1
5.0 to 5.5 mm, %	26.1	20.1
5.5 to 6.0 mm, %	10.9	6.4
6.0 to 6.5 mm, %	1.4	0.3
6.5 to 7.0 mm, %	0.1	0.0
>7.0 mm, %	0.1	0.0

¹ Seed size includes all grades and is determined using image analysis.

² Red lentils include CDC Dazil, CDC Imax, CDC Impact, CDC Impulse, CDC King Red, CDC Maxim, CDC Nimble, CDC Proclaim, CDC Redmoon and CDC Simmie.