

ISSN 1927-8225

Quality of Canadian food-type soybeans 2025

Dr. Ning Wang

Program Manager, Pulse and Food Soybean Research

Tel.: 204-983-2154

Fax: 204-983-0724

Email: ning.wang@grainscanada.gc.ca

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



Canadian Grain
Commission

Commission canadienne
des grains

Canada 

Table of Contents

Introduction.....	3
Growing and harvesting conditions.....	3
Harvest samples	4
Quality of 2025 Canadian food-type soybeans	6
Protein and oil content.....	6
Canadian generic food-type soybeans	6
Canadian natto-type soybeans.....	6
Acknowledgements	7

Tables

Table 1 Mean protein content (g/100 g dry matter) for 2025 Canadian food-type soybeans by grade and growing region	8
Table 2 Mean oil content (g/100 g dry matter) for 2025 Canadian food-type soybeans by grade and growing region	8
Table 3 Quality data for 2025 Canadian generic food-type soybean composites	9
Table 4 Quality data for 2025 Canadian natto-type soybean composites	9

Figures

Figure 1 Origin of 2025 food-type soybean samples received by the Canadian Grain Commission's Harvest Sample Program	5
--	---

Introduction

This report presents information on the quality of food-type soybeans grown in Canada in 2025. The Canadian Grain Commission analysed soybean samples collected from processors, producers and grain companies across the Prairies, Ontario, Quebec and Prince Edward Island through the Harvest Sample Program.

Growing and harvesting conditions

In Manitoba, soybeans were seeded between early May and June. Precipitation varied across regions during the growing period, and in some areas, drought stress affected crop growth. Timely rainfall in August boosted yield potential, while early frosts in September resulted in some damage to late-maturing varieties. Harvest began in late September and was largely completed by late October. Yields were generally good, but were lower in areas with limited moisture.

In Ontario, most soybeans were seeded during May. Early-seeded soybeans were slow to emerge due to cold temperatures. During the summer, moisture stress affected large parts of the province, particularly central and eastern Ontario, which accelerated crop development and reduced yields. Some fields experienced complete crop failure. In contrast, crops in southwestern Ontario received adequate moisture, developed normally and achieved good yields.

In Quebec, cool and wet conditions caused some seeding delays for soybean crops. Hot temperatures and a lack of rain during the summer negatively affected yields. Harvest was largely completed by mid-October under favourable conditions.

Harvest samples

Through the Harvest Sample Program, the Canadian Grain Commission received 202 generic food-type and 19 natto-type soybean samples. The geographic distribution of the samples was as follows:

- 172 from Ontario
- 44 from Quebec
- 4 from the Prairie region
- 1 from the Atlantic region

All samples were graded by Canadian Grain Commission inspectors and had a grade of Soybean, No. 2 Canada or higher.

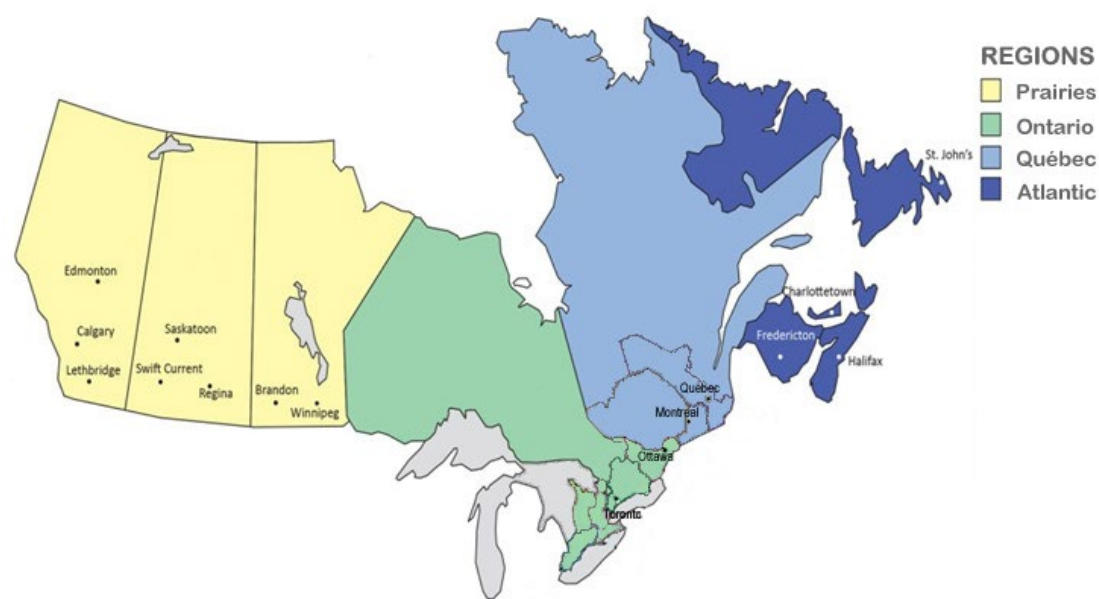
Composite samples were prepared for each of the regions shown in Figure 1. All composite samples were analysed for:

- 100-seed weight
- water absorption capacity/water uptake factor
- protein content
- oil content
- sugar content (sucrose and total oligosaccharides)
- total isoflavone content

Protein and oil content were determined using a near-infrared spectrometer (NIRS) which was calibrated and verified using the appropriate laboratory reference methods. Sugars and isoflavones were analysed by high performance liquid chromatography (HPLC).

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

Figure 1 Origin of 2025 food-type soybean samples received by the Canadian Grain Commission’s Harvest Sample Program



Quality of 2025 Canadian food-type soybeans

Protein and oil content

The protein content of 2025 Canadian food-type soybeans ranged from 34.5 to 48.5 grams (g) per 100 g dry matter (Table 1). The mean protein content was 40.7 g per 100 g dry matter, which is lower than in 2024 (42.1 g per 100 g dry matter). The mean protein content of food-type soybeans from the Prairies, Ontario and Quebec was 41.7 g, 40.6 g and 41.0 g per 100 g dry matter, respectively.

The oil content of 2025 Canadian food-type soybeans ranged from 16.5 to 22.8 g per 100 g of dry matter (Table 2). The mean oil content was 20.8 g per 100 g of dry matter, which is slightly higher than the 2024 value (20.4 g per 100 g dry matter). The mean oil content in food-type soybeans from the Prairies, Ontario and Quebec was 18.7 g, 20.8 g, and 20.6 g per 100 g of dry matter, respectively.

Canadian generic food-type soybeans

Table 3 contains the quality data for 2025 Canadian generic food-type soybeans used for making tofu, soymilk and miso. The mean 100-seed weight was 18.8 g, which is lower than in 2024 (19.4 g). The water absorption capacity was 1.21 g of water per g of seeds and the water uptake factor was 2.21 g of soaked seeds per g of seeds, both of which are higher than the 2024 values. Seed size and water uptake are important quality characteristics of food-type soybeans used to produce tofu, soymilk and miso.

The mean protein content in 2025 Canadian generic food-type soybeans was 41.0 g per 100 g of dry matter, which is lower than the 2024 value (42.3 g per 100 g of dry matter). The mean oil content in 2025 generic food-type soybeans was 20.7 g per 100 g of dry matter, which is slightly higher than in 2024 (20.4 g per 100 g of dry matter).

The mean sucrose content in 2025 generic food-type soybeans was 56.1 g per kilogram (kg) of dry matter, which is lower than in 2024 (63.7 g per kg of dry matter). The mean total oligosaccharide content in 2025 generic food-type soybeans was 49.4 g per kg of dry matter, which is higher than the 2024 value (40.9 g per kg of dry matter).

The mean total isoflavone content in 2025 Canadian generic food-type soybeans was 4.2 g per kg of dry matter, which is slightly higher than in 2024 (4.0 g per kg of dry matter).

Canadian natto-type soybeans

Table 4 contains the quality data for 2025 Canadian natto-type soybeans used for making a traditional Japanese fermented dish. The mean 100-seed weight of 2025 natto-type soybeans was 8.3 g, which is lower than in 2024 (8.8 g). The water absorption value was 1.25 g of water per g of seeds and the water uptake factor was 2.25 g of soaked seeds per g of seeds, both of which are similar to the 2024 values.

The mean protein content of 2025 Canadian natto-type soybeans was 38.4 g per 100 g of dry matter, which is slightly higher than in 2024. The mean oil content was 20.3 g per 100 g of dry matter, which is lower than the 2024 value (21.1 g per 100 g of dry matter). The mean sucrose content of 2025 Canadian natto-type soybeans was 51.9 g per kg of dry matter, which is lower than in 2024. The mean total oligosaccharide content was 57.0 g per kg of dry matter, higher than the 2024 value. The mean total isoflavone content was 4.6 g per kg of dry matter, which is similar to the 2024 value.

Acknowledgements

The Grain Research Laboratory acknowledges the cooperation of the soybean processors, producers and grain companies from eastern and western Canada for supplying the samples of newly harvested food-type soybeans. We are also grateful to the following groups within the Canadian Grain Commission: Industry Services for grading the samples; Pulse and Food Soybean Research Program staff for technical assistance; and Digital and Creative Communications for their help in preparing this document.

Table 1 Mean protein content (g/100 g dry matter) for 2025 Canadian food-type soybeans by grade and growing region ¹

		2025			2024
		Number of samples	Mean	Range	Mean
Prairies	Soybean, No. 1 Canada	1	42.7	42.7 to 42.7	41.0
	Soybean, No. 2 Canada	3	41.4	35.5 to 45.2	44.9
	All grades	4	41.7	35.5 to 45.2	43.6
Ontario	Soybean, No. 1 Canada	101	40.5	35.8 to 45.2	42.3
	Soybean, No. 2 Canada	73	42.8	37.0 to 46.5	42.0
	All grades	174	40.6	35.8 to 46.5	42.1
Quebec	Soybean, No. 1 Canada	21	41.1	37.1 to 47.7	41.5
	Soybean, No. 2 Canada	27	41.0	34.5 to 48.5	42.2
	All grades	48	41.0	34.5 to 48.5	41.9
Canada	Soybean, No. 1 Canada	123	40.6	35.8 to 47.7	42.1
	Soybean, No. 2 Canada	103	40.9	34.5 to 48.5	42.1
	All grades	226	40.7	34.5 to 48.5	42.1

Table 2 Mean oil content (g/100 g dry matter) for 2025 Canadian food-type soybeans by grade and growing region ²

		2025			2024
		Number of samples	Mean	Range	Mean
Prairies	Soybean, No. 1 Canada	1	18.0	18.0 to 18.0	18.7
	Soybean, No. 2 Canada	3	18.9	17.5 to 21.4	18.0
	All grades	4	18.7	17.5 to 21.4	18.2
Ontario	Soybean, No. 1 Canada	101	20.9	18.8 to 22.8	20.5
	Soybean, No. 2 Canada	73	20.7	18.4 to 22.7	20.4
	All grades	174	20.8	18.4 to 22.8	20.5
Quebec	Soybean, No. 1 Canada	21	20.7	17.9 to 22.5	20.9
	Soybean, No. 2 Canada	27	20.5	16.5 to 22.5	20.2
	All grades	48	20.6	16.5 to 22.5	20.4
Canada	Soybean, No. 1 Canada	123	20.9	17.9 to 22.8	20.6
	Soybean, No. 2 Canada	103	20.6	16.5 to 22.7	20.3
	All grades	226	20.8	16.5 to 22.8	20.4

¹ Protein content (Nitrogen x 6.25) is determined by near-infrared measurement calibrated against the Combustion Nitrogen Analysis reference method and is expressed on a dry basis.

² Oil content is determined by near-infrared measurement calibrated against the ISO 10565:1992(E) reference method and is expressed on a dry basis.

Table 3 Quality data for 2025 Canadian generic food-type soybean composites ¹

Category	Quality parameter	Number of samples	2025	2024
Physical characteristic	100-seed weight, g/100 seeds	202	18.8	19.4
	Water absorption, g H ₂ O/g seeds	202	1.21	1.18
	Water uptake factor, g soaked seeds/g seeds ²	202	2.21	2.18
Chemical composition, g/100 g ³	Protein content	202	41.0	42.3
	Oil content	202	20.7	20.4
Sugar content, g/kg DM ⁴	Sucrose	202	56.1	63.7
	Raffinose	202	8.9	8.5
	Stachyose	202	39.5	32.2
	Verbascose	202	1.0	0.3
	Total oligosaccharides ⁵	202	49.4	40.9
Isoflavone content, g/kg DM	Total isoflavones ⁶	202	4.2	4.0

Table 4 Quality data for 2025 Canadian natto-type soybean composites ¹

Category	Quality parameter	Number of samples	2025	2024
Physical characteristic	100-seed weight, g/100 seeds	19	8.3	8.8
	Water absorption, g H ₂ O/g seeds	19	1.25	1.22
	Water uptake factor, g soaked seeds/g seeds ²	19	2.25	2.22
Chemical composition, g/100 g ³	Protein content	19	38.4	38.1
	Oil content	19	20.3	21.1
Sugar content, g/kg DM ⁴	Sucrose	19	51.9	59.6
	Raffinose	19	8.3	8.2
	Stachyose	19	47.1	38.4
	Verbascose	19	1.6	0.5
	Total oligosaccharides ⁵	19	57.0	47.1
Isoflavone content, g/kg DM	Total isoflavones ⁶	19	4.6	4.7

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

² g soaked seeds/g seeds = grams of soaked seeds per gram of seeds.

³ Results are expressed on a dry basis.

⁴ g/kg DM = grams per kilogram of dry matter.

⁵ Sum of raffinose, stachyose and verbascose.

⁶ Sum of isoflavone aglycones (daidzein, genistein and glycitein), glucosides, malonyl glucosides and acetyl glucosides.