

NEW!

The Nutrient Value of Canadian Beef

Updated Data and Practice Tips for:

- ✓ Nutrition education
- ✓ Menu planning
- ✓ Dietary analysis
- ✓ Communications
- ✓ Recipe analysis

Updated Nutrient Values for Canadian Beef

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Health professionals and Canadians want up-to-date nutrition information for the foods we consume in Canada. Recognizing this, the Beef Information Centre embarked on a process to update the nutrient data for Canadian beef.

The Beef Information Centre consulted with Health Canada to develop the study protocol. Then, an independent laboratory conducted extensive nutrient analyses on a representative sample of Canadian steaks and roasts, from 1999 to 2004.

This resource provides an overview of the updated nutrient values for Canadian beef, based on these analyses. It explains how to use this new data for your:

- ✓ **Nutrition education**
- ✓ **Menu planning**
- ✓ **Dietary analysis**
- ✓ **Communications**
- ✓ **Recipe analysis**

Why update the nutrient values for beef?

Nutrient values for Canadian beef were last updated in the 1980's. Since that time, in the early 1990's, the Canadian beef grading system changed to identify different levels of marbling. Marbling refers to the very fine flecks of fat in beef. AAA grade beef has more marbling than AA beef, which in turn has more marbling than A beef. The recent nutrient analyses were conducted to provide current and reliable information on the nutrient content of Canadian beef.

How were the nutrient analyses done?

The study sample was designed to represent the Canadian beef supply. Analyses were conducted over a 5-year period with samples from all four seasons throughout the year. Comprehensive nutrient analyses were conducted on a total of 26 different beef cuts, including 14 steaks and 12 roasts.

At least 12 samples per grade were analysed for each cut. Nutrient data were compiled for both raw and cooked samples from all 3 grade levels, for 3 different trim levels.

YOU MAY WONDER

Are there updated nutrient values for ground beef?

Nutrient values for ground beef were released in 2001 based on nutrient analyses conducted in 1998 and 1999. Visit the 'Health Professional Resources' section of the 'Resource Order Centre' at www.beefinfo.org to order a copy of *Canadianized Ground Beef Data*.

Canadian Beef – A Nutritious Choice

A cooked 100 g lean only serving of Canadian beef is a source of 14 essential nutrients including high quality protein.

Table 1 highlights the key nutrients in 100 g cooked, lean only Canadian beef based on composite nutrient values. These values were calculated based on the weighted average for cuts on the carcass and the market share of the three grades based on Canadian beef production levels. Thus composite values represent the beef supply available for consumption in Canada. Lean only includes lean muscle tissue and marbling.

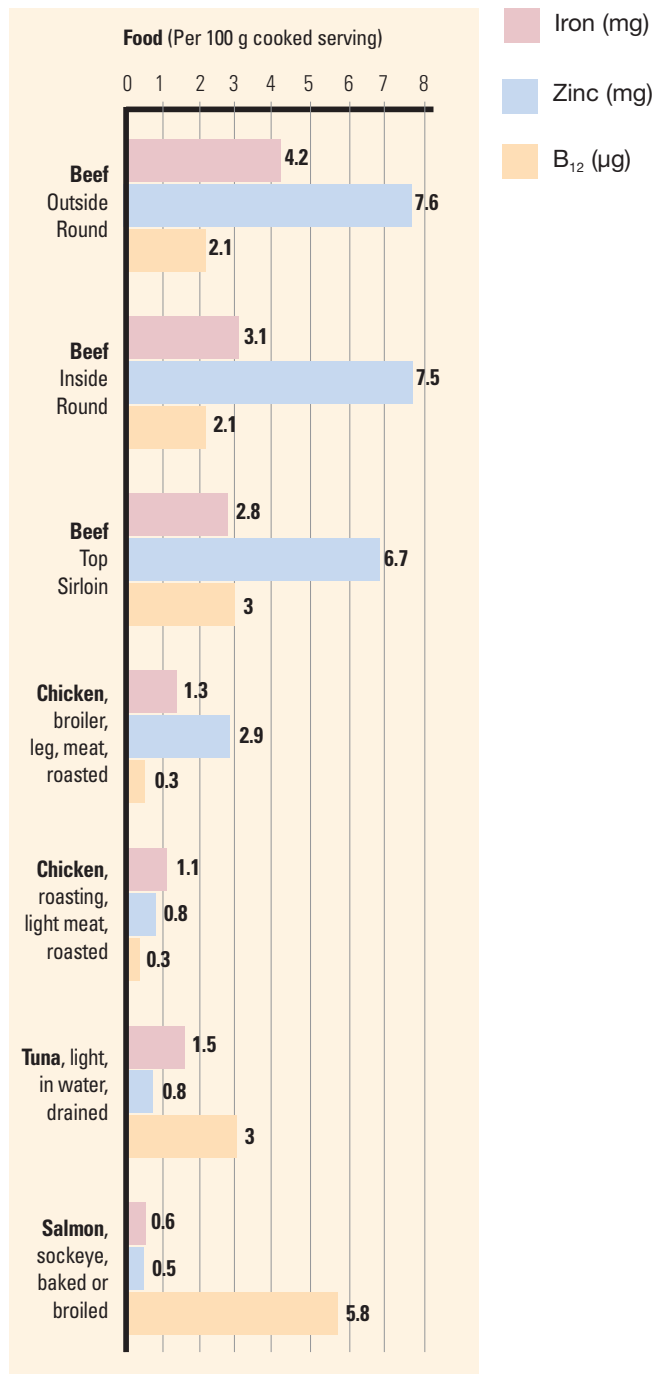
Table 1 - Composite nutrient values for 100 g cooked, lean only Canadian

Energy and Nutrients	Amount
Energy	213 Cal
Protein	34.6 g
Carbohydrate	< 1 g
Total fat	8.8 g
Saturates	3.6 g
Monounsaturates	4.1 g
Polyunsaturates	0.40 g
Trans	0.28 g
Cholesterol	82.4 mg
Calcium	10 mg
Iron	3.3 mg
Magnesium	26 mg
Phosphorus	207 mg
Potassium	294 mg
Sodium	55 mg
Zinc	8.6 mg
Selenium*	27 µg
Niacin	14 NE
Pantothenate	1.0 mg
Riboflavin	0.32 mg
Thiamine	0.07 mg
Vitamin B ₆	0.27 mg
Vitamin B ₁₂	2.6 µg
Vitamin D*	0.79 µg

- Excellent Source
- Good Source
- Source

* Selenium and Vitamin D were not included in the analyses; these values are from the 2005 Canadian Nutrient File.

Beef, One of Nature's Best Sources of Iron, Zinc and B₁₂



YOU MAY WONDER

When should I use composite values?

You can use the composite values to communicate about the nutrient content of beef in general. Composite values are also useful for assessing an individual's or a population's nutrient intakes when you do not know which specific cuts were consumed.

Canadian Beef – A Lean Choice

Lean beef compares favourably to chicken without the skin

Food (per 100 g cooked, lean only)	Fat g
Chicken breast	2.1
Beef eye of round	3.3
Beef inside round	4.0
Chicken, light meat	4.1
Beef top sirloin	5.6
Beef sirloin tip	5.8
Beef outside round	6.5
Beef strip loin	7.0
Chicken thigh	7.0
Beef tenderloin	7.2
Beef cross rib	7.3
Chicken, dark meat	9.7

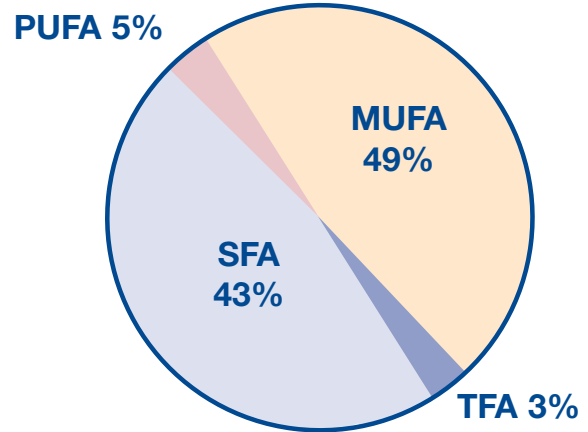
Did you know? The above 8 cuts have on average: 8 x the vitamin B₁₂, 3 x the iron, and 4 x the zinc, found in the chicken.

What about the types of fat?

About half of the total fat in beef is in the form of monounsaturated fatty acids (MUFA). About 30% of the saturated fatty acids (SFA) in beef are in the form of stearic acid, which does not raise LDL blood cholesterol.^{1,2}

Fatty acid profile of beef

Based on composite values for cooked, lean only beef.



Lean beef compares favourably to fish

Food (per 100 g cooked, lean only)	Fat g
Fillet of sole	1.5
Tuna, white, in water, drained	3.0
Beef eye of round	3.3
Beef inside round	4.0
Beef top sirloin	5.6
Beef sirloin tip	5.8
Trout, rainbow, wild	5.8
Beef outside round	6.5
Beef blade	6.7
Beef strip loin	7.0
Beef tenderloin	7.2
Beef cross rib	7.3
Salmon, pink, canned	7.4
Beef Rib	7.5
Beef Tri Tip	7.5
Beef flank	9.8
Salmon, Atlantic, farmed	12.4
Beef T-bone	12.5
Beef rib eye	14.9
Mackerel, Atlantic	17.8

Did you know? The above 14 cuts have on average: 4 x the iron, and 13 x the zinc, found in the fish.

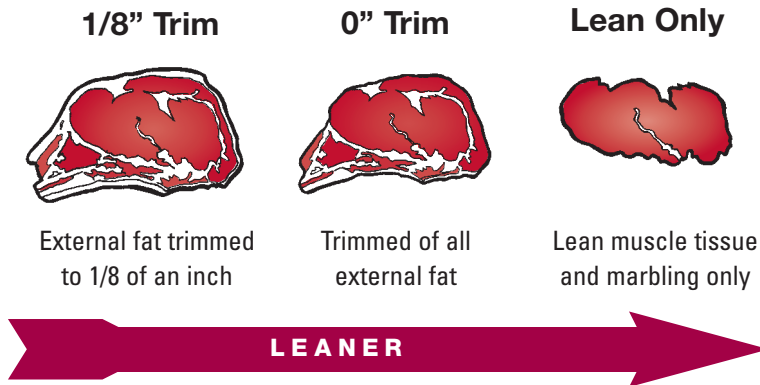
- 85% of the MUFA in beef is oleic acid, the main fatty acid in olive oil.
- About 30% of the SFA in beef is stearic acid, which does not raise LDL blood cholesterol levels.
- Beef contains a small amount of Omega 3 and Omega 6 polyunsaturated fatty acids (PUFA).
- Beef contains a small amount of naturally occurring trans fatty acids (TFA).

1. Kris-Etherton PM and Yu S. Am J Clin Nutr, 1997; 65(Suppl):1628S-44S.
2. Yu, S et al. Am J Clin Nutr, 1995; 61(5):1129-39.

Trimming makes a difference!

Trimming has a major impact on the fat content of both raw and cooked cuts. The updated nutrient values are available for three different trim levels. Figure 1 shows these trim levels and how they are defined in the Canadian Nutrient File. Fat was trimmed after cooking, the way many consumers trim meat.

Figure 1 - Trim Levels



How does trimming impact fat content?

These two examples illustrate how trimming reduces the fat content of a cut.

Example 1 - Reducing the fat content of 100 g RAW Outside Round steak

This example shows how consumers can reduce the fat content of a raw cut by trimming well before cooking for recipes such as stir-fries or stews.



Example 2 - Reducing the fat content of 100 g COOKED Sirloin steak

This example shows how consumers can reduce the fat content of a cooked steak or roast by trimming it before eating.



YOU MAY WONDER

Do most Canadians trim their beef?

Almost 80% of Canadians report that they trim visible fat from beef either before and/or after cooking.

Based on consumer research conducted for the Beef Information Centre in 2005.

YOU MAY WONDER

Can well marbled AAA beef be lean?

Many well marbled AAA grade cuts of beef qualify as lean when cooked and trimmed of visible fat. These include: cross rib, eye of round, inside round, outside round, sirloin tip, strip loin, tenderloin and top sirloin steaks and roasts.

Nutrient Data and Grade – AAA, AA, A

The nutrient values provided in this resource were calculated based on a weighted average of the data for the three different grades of beef (AAA, AA and A). This weighted average, represents the ‘market share’ of the three grades based on beef production in Canada. Beef grading takes into account factors such as maturity, meat texture, meat and fat colour as well as marbling.

Why is market share used?

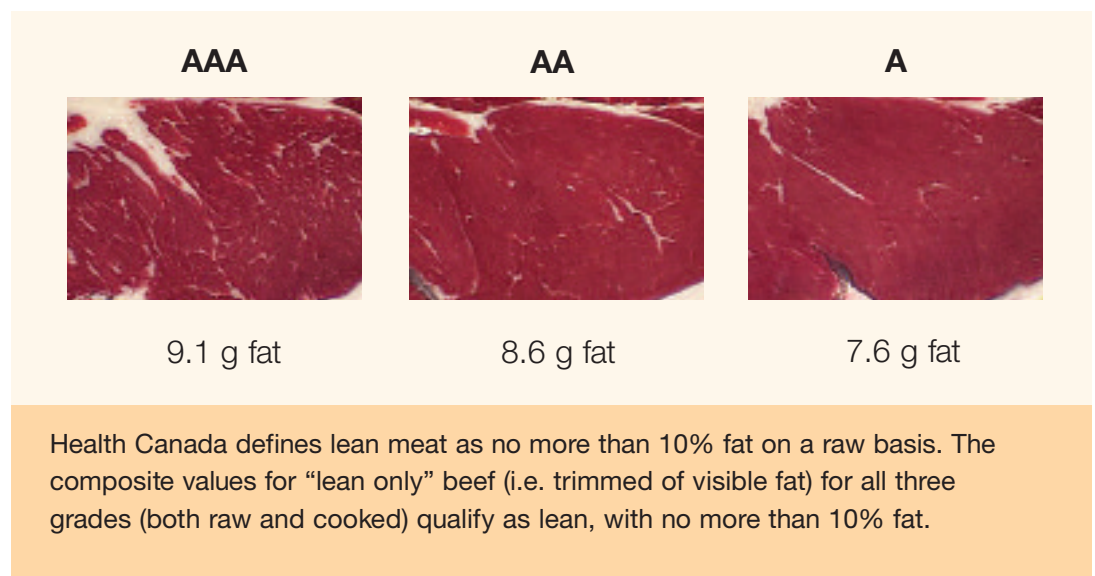
Consumers generally are unaware of the grade of beef they are buying or eating. The mix of grades at retail stores varies from store to store and from day to day. In most cases, Canadians purchase a mixture of AA and AAA grade beef at grocery stores. Only about 3% of the beef sold in Canada is grade A. The market share for the three grades would also be representative of beef purchased at food service (unless they state that they use a specific grade).

Does the fat content differ between grades?

There is a small difference in fat content between the different grades as shown in Figure 2. A 100 g serving of AAA grade beef has only 1.5 g more total fat than a serving of A grade beef based on a composite for each grade, raw and cooked. This is true for Lean Only, 0" and 1/8" trim levels.

Figure 2 - Fat Content by Grade

Per 100 g cooked lean only beef, based on composite values.



You may also wonder

Will these data be used in the Canadian Nutrient File?

These data have been submitted for verification and inclusion in the next release of the Canadian Nutrient File (CNF), anticipated with the release of the revised version of *Canada's Food Guide to Healthy Eating*. The CNF is Canada's reference food composition database maintained at Health Canada. The CNF lists the nutrient values of nationally representative, generic foods and is used to provide Canadian data for computer nutrient analysis software, for national and provincial nutrition surveys and to model proposed nutrition policy. Since the CNF contains very little data on product specific brand name foods or food ingredients it is not suitable for certain applications such as nutrition labelling. To access the CNF visit: www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index_e.html

How do the updated data apply to nutrition labelling?

Fresh beef cuts sold at retail (without any added ingredients) are exempt from mandatory nutrition labelling. Retailers who choose to sell beef with a Nutrition Facts table must provide nutrient values on the **raw** product as sold. While data from the same nutrient analyses will be used for calculating the numbers for use in the Nutrition Facts tables, those values may differ from those in this resource because a different set of regulations govern the nutrition labelling of foods. For example, specific rounding rules apply to the values on Nutrition Facts tables. Thus, the nutrient data provided in this resource are not intended for nutrition labelling. See the *2003 Guide to Food Labelling and Advertising* for labelling regulations at: <http://www.inspection.gc.ca/english/fssa/labeti/guide/toce.shtml>

Do Canadian beef nutrient values differ from US values?

Just like earlier values, the updated nutrient values for Canadian beef differ from the nutrient values for US beef. It's best to use the updated Canadian values.

What about the data in nutrient analysis programs?

If you use computer software for nutrient analysis, ensure that your program includes the updated Canadian data for accurate calculations.

How does cooking impact yields and nutrient retention?

Due to loss of moisture and fat, average cooking yields are about 64%. This means that you need about 150 grams of raw beef to yield 100 grams cooked. On average, about 45% of water and 30% of fat is lost in cooking. Yields and the retention of nutrients vary depending on the cooking method used. Dry heat methods, such as roasting or broiling, tend to increase nutrient retention compared to moist heat cooking methods, such as braising or roasting in liquid.

Where else can I find these updated nutrient values?

- See pages 8 to 11 of this resource for nutrient value charts for raw and cooked beef cuts.
- Visit www.beefinfo.org for an interactive nutrient database for beef cuts as well as ground beef.

Nutrient data for 100 g Lean Only Raw Beef

Based on a weighted average of the 3 grades (steaks and roasts combined)

		Blade	Cross rib	Eye of round	Flank	Inside round	Outside round
Calories	Cal	148	153	121	164	119	147
Protein	g	20.5	22.4	23.3	21.7	22.7	22.5
Carbohydrate	g	< 1	< 1	< 1	< 1	< 1	< 1
Total Fat ^(a)	g	6.8	6.3	2.2	7.9	2.3	4.9
Total Fat ^(b)	g	6.7	6.3	2.4	8.0	2.4	5.6
Saturates	g	2.7	2.5	0.96	3.4	0.96	2.1
Monounsaturates	g	3.1	2.9	1.0	3.7	1.1	2.8
Polyunsaturates	g	0.29	0.32	0.17	0.28	0.19	0.29
Trans fatty acids	g	0.20	0.25	0.08	0.25	0.07	0.11
CLA	g						0.02
Cholesterol	mg	58	50	47	47	51	60
Calcium	mg	10.6	5.7	5.6	5.7	4.9	5.5
Iron	mg	2.0	2.2	1.6	1.8	2.1	2.1
Magnesium	mg	21	24			26	
Phosphorus	mg	170	188			196	
Potassium	mg	304	336			345	
Sodium	mg	72	64	60	64	61	71
Zinc	mg	6.7	5.3	4.4	6.1	5.3	4.1
Selenium ^(c)	µg	17	17	21		21	21
Folacin	µg	5.1					
Niacin	mg	5.2	6.8	6.1	6.8	7.4	6.7
Niacin	NE	10	12	11	12	12	12
Pantothenate	mg	0.81	1.04	0.95	0.70	0.78	0.94
Riboflavin	mg	0.23	0.28			0.23	
Thiamine	mg	0.10	0.11			0.13	
Vitamin B ₆	mg	0.23	0.30	0.35	0.24	0.36	0.38
Vitamin B ₁₂	µg	2.5	3.0	1.6	2.5	2.0	2.3
Vitamin D ^(c)	µg	0.6	0.6	1.0	0.4	0.7	0.6

(a) Canadian Nutrient File - total fat includes mono-, di- and triglycerides

(b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides

(c) Values for selenium and vitamin D are from the 2005 Canadian Nutrition File

Note: A blank indicates that this nutrient was not tested for in that cut.

Rib	Rib eye	Sirloin tip	Strip loin	T-bone	Tenderloin	Top sirloin	Tri tip
161	170	119	134	182	138	132	164
21.9	22.4	21.4	22.5	21.7	21.7	22.5	22.4
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
7.2	8.2	2.9	4.2	10	4.8	4.0	7.3
7.5	8.3	3.1	4.2	9.9	5.0	4.0	7.5
3.2	3.5	1.3	1.8	4.2	2.1	1.6	3.1
3.4	3.8	1.4	1.9	4.6	2.2	1.8	3.5
0.29	0.27	0.22	0.19	0.33	0.27	0.25	0.32
0.22	0.29	0.09	0.14	0.33	0.18	0.12	0.22
							0.03
50	49	52	48	51	53	53	51
9.4	6.4	4.9	6.7	19.3	5.4	5.8	5.9
1.7	2.2	2.1	2.2	2.0	2.7	2.4	1.7
						25	
						195	
						339	
76	56	59	59	65	62	59	59
5.7	5.7	5.2	4.4	4.0	3.8	5.1	4.5
17	17	20	18	18	18	20	
6.2	6.9	6.0	8.1	7.3	5.7	6.1	6.5
11	12	11	13	12	10	11	11
0.94	0.70	0.81	0.96	0.76	1.38	0.98	0.92
						0.26	
						0.14	
0.30	0.32	0.30	0.37	0.41	0.27	0.39	0.39
2.3	1.7	1.4	11.8	2.2	2.0	2.5	1.8
0.6	0.5	1.0	0.6	0.8	0.6		

Nutrient data for 100 g Lean Only Cooked Beef

Based on a weighted average of the 3 grades (steaks and roasts combined)

		Blade	Cross rib	Eye of round	Flank	Inside round	Outside round
Calories	Cal	269	227	188	234	191	217
Protein	g	33.8	37.8	36.9	34.0	36.4	37.1
Carbohydrate	g	< 1	< 1	< 1	< 1	< 1	< 1
Total Fat ^(a)	g	13.7	6.9	2.9	9.4	3.7	6.1
Total Fat ^(b)	g	13.8	7.3	3.3	9.8	4.0	6.5
Saturates	g	5.6	2.8	1.4	4.2	1.6	2.4
Monounsaturates	g	6.6	3.4	1.5	4.4	1.8	3.2
Polyunsaturates	g	0.52	0.48	0.26	0.34	0.29	0.39
Trans fatty acids	g	0.47	0.21	0.10	0.30	0.10	0.18
CLA	g						
Cholesterol	mg	95	92	74	70	80	87
Calcium	mg	23.9	5.6	6.2	5.8	4.8	5.5
Iron	mg	3.4	3.5	2.3	2.9	3.1	4.2
Magnesium	mg	24	27			27	
Phosphorus	mg	190	215			217	
Potassium	mg	257	304			310	
Sodium	mg	64	67	51	61	58	57
Zinc	mg	11.4	8.9	6.9	10.2	7.5	7.6
Selenium ^(c)	µg	26.7	26.7	26.7		28.1	27.4
Folacin	µg	5.8					
Niacin	mg	5.0	6.1	6.2	6.7	7.5	7.1
Niacin	NE	12	14	14	14	15	15
Pantothenate	mg	0.85	1.04	0.85	0.70	0.91	1.17
Riboflavin	mg	0.30	0.34			0.31	
Thiamine	mg	0.04	0.06			0.09	
Vitamin B ₆	mg	0.19	0.22	0.29	0.18	0.33	0.27
Vitamin B ₁₂	µg	3.0	2.6	2.0	2.9	2.1	2.1
Vitamin D ^(c)	µg	1.0	0.9	0.6	0.5	0.6	1.0

(a) Canadian Nutrient File - total fat includes mono-, di- and triglycerides

(b) Nutrition labelling - total fat is total lipid fatty acids expressed as triglycerides

(c) Values for selenium and vitamin D are from the 2005 Canadian Nutrition File

Note: A blank indicates that this nutrient was not tested for in that cut.

Rib	Rib eye	Sirloin tip	Strip loin	T-bone	Tender-loin	Top sirloin	Tri tip
245	260	209	201	249	200	175	246
33.1	29.4	36.7	32.3	32.0	31.8	29.1	33.2
< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
10.8	14.9	5.2	6.7	12.6	6.6	5.6	11.3
11.5	14.9	5.8	7.0	12.5	7.2	5.6	11.5
5.1	6.4	2.2	2.9	5.4	3.1	2.3	4.7
5.1	6.9	2.7	3.1	5.7	3.2	2.5	5.5
0.39	0.40	0.41	0.29	0.36	0.30	0.28	0.35
0.35	0.49	0.17	0.26	0.45	0.24	0.17	0.36
							0.05
73	69	85	70	70	73	70	76
16.3				27.7	5.8	6.2	7.0
2.6	3.4	3.9	2.7	3.1	3.8	2.8	2.9
						27	
						218	
						343	
79				71	66	59	70
8.9	7.9	10.0	6.7	6.3	6.4	6.7	7.3
22.4	21.9	27.6		22.8	23.7	32.9	
7.1	7.4	6.4	8.7	7.8	6.7	7.0	7.0
14	14	14	16	15	14	13	14
1.07	0.94	1.16	1.00	1.00	1.57	1.15	1.12
						0.31	
						0.14	
0.30	0.30	0.25	0.31	0.45	0.29	0.40	0.33
2.6	2.2	2.5	2.3	2.7	3.0	3.0	2.7
0.8	0.6	0.7	0.6	0.7	0.9	0.3	

Nutrient Analysis:

The nutrient analyses for this project were conducted by an independent laboratory, Silliker Laboratories Inc., and supported by a grant from the Canadian Adaptation and Rural Development Program (CARD).

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