



FERTILIZER REPORT

FOR

THE CANADIAN FERTILIZER INDUSTRY

PREPARED BY
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1.0 INTRODUCTION

Temple Scott Associates is pleased to present this report of the fertilizer industry. The company was mandated to find the following information:

- Contribution annually to the Canadian economy and industry employment
- Industry Annual Farm Gate Sales
- Production (volume)
- Annual Shipments (\$CAD and volume)
- Amount of Fertilizer Exported Annually (\$CAD and volume)
 - Percentage of production exported
- Amount of Fertilizer Imported Annually (\$CAD and volume)

2.0 CONTRIBUTION ANNUALLY TO THE CANADIAN ECONOMY

In 2010, potash had a value of \$5.7 billion to the Canadian economy¹. With a national Gross Domestic Product of \$1,577,040,082,218, it alone represented .36% of Canada's GDP².

Canada also shipped \$2,983,187,000 of fertilizer product in 2010³, representing .19% of Canada's GDP. This statistical figure does not account for employee earnings and industry investments, indicating that the contribution to GDP is likely statistically more significant.

Statistic Canada provides statistics for various NAICS industry groups, the most relevant one being NAICS 32531- Fertilizer Manufacturing. This Industry Group comprises of establishments primarily engaged in manufacturing nitrogenous or phosphoric fertilizer materials and mixing these ingredients into fertilizers; and in purchasing ingredients and mixing them into fertilizers. Establishments engaged in the manufacture of phosphoric acid, urea, ammonia and nitric acid, whether or not for use as a fertilizer material, are included⁴. This industry does not, however, including those involved in mining and processing potash.

¹ <http://www.nrcan.gc.ca/statistics-facts/minerals/902>

² <http://databank.worldbank.org/data/views/reports/tableview.aspx#>

³ https://www.ic.gc.ca/app/scr/tdst/tdo/crtr.html;jsessionid=000105c094loqEpYxKTB7RVGUby:13B5VVUVLE?toFromCountry=C DN&grouped=INDIVIDUAL&runReport=true¤cy=CDN&productType=NAICS&searchType=KS_CS&hSelectedCodes=%7C32531%7C212396&reportType=DS&timePeriod=5%7CComplete+Years

⁴ <http://stds.statcan.gc.ca/naics-scian/2007/cs-rc-eng.asp?criteria=32531>

From a manufacturing perspective, it can be seen that Canada employed a total of 3,473 individuals in the fertilizer manufacturing industry in 2010⁵, while the potash industry has a work force of more than 4000 employees as of 2009⁶. This means that over 7,000 Canadians are employed directly in the manufacturing of fertilizers and in potash mining, but the fertilizer industry also employs retailers and distributors – meaning that the quantity of Canadians employed is much higher than Statistics Canada’s indication.

Year	Production Employees	Administrative Employees	All Employees
2007	2,339	1,147	3,486
2008	2,464	1,270	3,734
2009	2,370	1,332	3,702
2010	2,213	1,260	3,473

3.0 INDUSTRY ANNUAL FARM GATE SALES

Agriculture Canada⁷ reports that nitrogen fertilizers were the largest nutrient used in agricultural production in 2010, accounting for 72% of total fertilizer usage, or about 4.2 million tonnes, with urea representing the largest volume used. Phosphate fertilizers accounted for 18% of total fertilizer usage, or about 1.1 million tonnes. Potash fertilizer accounted for 10% of total usage, or about 0.6 million tonnes.

Farm fertilizer expenses include all costs associated with the purchase of fertilizer and lime, including application if it is included in the price paid by a farmer. In Canada, when the price and usage changes are considered together, fertilizer expenses reached **\$4.4 billion in 2011**, an increase of 32% over 2010 and greater than the **2006-2010 average annual expenses of \$3.4 billion**. Fertilizer expenses in 2012 were forecast to rise to \$4.8 billion.

⁵ <http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic32531tabe.html>

⁶ <http://www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/2009-review/4286>

⁷ http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_04_01_2012-03-00

4.0 PRODUCTION

The following chart outlines Canadian fertilizer production, by product type and fertilizer year, cumulative data annual (metric tonnes x 1,000):

Fertilizer product type	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Ammonia (NH ₃) 82-0-0-0	1,194	1,023	962	1,086	1,093
Urea 46-0-0	880	728	870	787	859
Urea ammonium nitrate (UAN) 28-0-0-0	270	215	234	303	179
Ammonium nitrate/calcium ammonium nitrate (AN/CAN) 34-0-0-0	101	66	16	x	x
Ammonium sulphate (AS) 20-0-0-24	204	223	191	230	230 ^r
Monoammonium phosphate (MAP) 11-52-0	x	x	x	x	x
Diammonium phosphate (DAP) 18-46-0	0	0	0	0	0
Potash 0-0-60-0	3,740	1,465	2,712	3,878	x
Other fertilizer products	x	x	x	x	x
Symbol legend: x- Suppressed to meet the confidentiality requirements of the Statistics Act r- Revised Source: Statistics Canada. <i>Table 001-0067 - Canadian fertilizer production, by product type and fertilizer year, cumulative data, annual (metric tonnes), CANSIM (database).</i>					

5.0 ANNUAL SHIPMENTS

The value of potash shipments in 2011 totalled \$8 billion, ranking potash first among all minerals produced in Canada.⁸

With fertilizer prices for urea (46-0-0) at \$620/Tonne in 2008, the shipments valued at \$287,060,000.

Phosphaste was valued at \$650/Tonne in 2008, meaning that the combined value of MAP and DAP shipped was \$195,650,000⁹.

In 2009 ammonia prices were at a low of \$400/Tonne¹⁰, valuing shipments at approximately \$10,200,000.

From a fertilizer manufacturing perspective, Canada shipped \$2,983,187,000 of product in 2010¹¹.

The following chart outlines fertilizer shipments to Canadian agriculture and export markets, by product type and fertilizer year, cumulative data - annual (metric tonnes x 1,000)¹².

Fertilizer product type	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Ammonia	25	26	31	31	41
Urea (46-0-0)	463	431	345	380 ^r	542 ^r
Urea ammonium nitrate	210	223	194	205 ^r	146 ^r
Ammonium nitrate/calcium ammonium nitrate	27	8	13	47	11 ^r
Ammonium sulphate	93	82	89	90	116
Monoammonium phosphate (MAP) 11-52-0	284	256	178 ^r	321	238 ^r

⁸ <http://www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/2011/4584>

⁹ Fertilizer Price Volatility, Risk and Risk Management Strategies Final Report, Prepared by James F. Oehmke, Beth Sparling, and Larry Martin in May 2008

¹⁰ http://www.agr.gc.ca/pol/mad-dam/pubs/rmar/pdf/rmar_04_01_2012-03_eng.pdf

¹¹ https://www.ic.gc.ca/app/scr/tdst/tdo/crrr.html;jsessionid=000105c094IoqEpYxKTB7RVGUbY:13B5VVUVLE?toFromCountry=C DN&grouped=INDIVIDUAL&runReport=true¤cy=CDN&productType=NAICS&searchType=KS_CS&hSelectedCodes=%7C32531%7C212396&reportType=DS&timePeriod=5%7CComplete+ Years

¹² <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0010068&pattern=fertilizer&tabMode=dataTable&srchLan=-1&p1=1&p2=-1>

Fertilizer product type	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013
Diammonium phosphate	17	5	16	22	4
Potash	55	12	75	124	110
Other fertilizer products	20	29	52	105 ^r	77

Footnotes:

1. Historical annual shipments data are available in terminated CANSIM table 001-0064.
2. Fertilizer shipments include Canadian producers, wholesale distributors and retail distributors.
3. Data are compiled on a fertilizer year basis starting July 1 and ending June 30 the following year.
4. The Canada shipments amount excludes British Columbia.
5. Metric tonnes for some fertilizer products have been converted to the standard categories published.
6. Other fertilizer products includes ammonium polyphosphate, phosphate and sulphur solutions, mixed fertilizer materials, elemental sulphur fertilizers and all other fertilizer products not included in the other product categories.

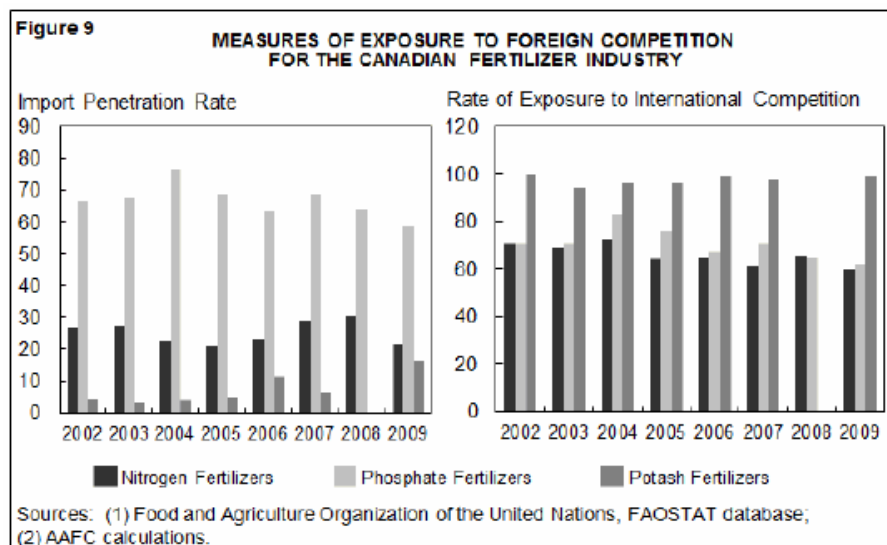
5.0 ANNUAL EXPORTS

Statistics Canada classifies fertilizer under the industry group *Fertilizer, pesticide and other chemical products*, a group which does not include potash. With the manipulation of Table 228-0059 of CANSIM, we can determine the exports of the two industry groups on a customs basis annual (dollars x 1,000,000). Canada exports more than 95% of its potash output, making it a significant contributor to Canada's GDP¹³.

North American Product Classification System (NAPCS)	2008	2009	2010	2011	2012	2013
Potash	524.7	303.2	431.5	558.5	504.0	N/A
Fertilizer, pesticide and other chemical products	316.0	249.0	255.6	302.6	323.4	N/A

¹³ <http://www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/2009-review/4286>

In 2009, Canadian fertilizer exports represented 85% of production while imports accounted for 31% of domestic fertilizer consumption. The largest portion of Canadian fertilizer exports are destined for the US while most of the fertilizer imports are also from the US. With increasing globalization and market liberalization, Canadian fertilizer production targeted at domestic markets experiences competition from imports¹⁴. In 2011, Canada exported \$6.7 billion worth



of potash to countries with either agriculture-based economies or large agricultural sectors such as the United States, China, Brazil and India¹⁵.

The import penetration rates¹⁶ demonstrate the quantity of consumption supplied by Canadian producers. It shows the high magnitude of foreign competition within the domestic market faced by Canadian phosphate fertilizer producers. Meanwhile, Canadian nitrogen fertilizer producers confronted relatively little foreign competition, and potash producers faced almost no foreign competition as the domestic market was supplied almost exclusively by domestic production. The graph to the right however shows the global market and contrasts this data to demonstrate the levels of competition faced by fertilizer producers within international markets. It demonstrates that Canadian potash producers were exposed to the highest level of foreign competition, followed by phosphate fertilizer producers.

¹⁴ http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_04_01_2012-03-00

¹⁵ <http://www.nrcan.gc.ca/media-room/news-release/2012/6427>

¹⁶ Import Penetration Rate = imports/consumption×100.

Product	2012		2011		2010	
	Quantity: (TNE or KGM)	Value: (CAN\$)	Quantity: (TNE or KGM)	Value: (CAN\$)	Quantity: (TNE or KGM)	Value: (CAN\$)
Diammonium phosphate, in packages weighing > 10 kg	121,581	50,043	12,000	32,113	103,000	73,250
Monoammonium phosphate & mx thereof, with diamonium phosphate, in pack > 10 kg	77,182,045	49,440,106	78,109,186	53,457,646	80,013,429	37,936,179

The following chart outlines the percentage of individual products exported in relation to production.

Products	2008	2009	2010
	% of Trade	% of Trade	% of Trade
Ammonia	39.53 %	32.27%	36.36 %
Potassium hydroxide (caustic potash)	0.09 %	0.01 %	0.01 %
Potassium carbonates	--	--	0.01 %
Urea	46.24 %	51.31 %	47.71 %
Ammonium sulphate	5.50 %	6.94 %	5.94
Ammonium nitrate	8.00%	8.01 %	6.67 %
Ammonium nitrate mixed with calcium carbonate	0.02%	0.01 %	0.27%
Diammonium phosphate	--	0.01 %	0.08 %
Monoammonium phosphate and mixtures with diammonium phosphate	0.62%	1.44 %	2.93 %

6.0 ANNUAL IMPORTS

The chart below outlines Canada's imports separated by product type back until 2010.

Product	2012		2011		2010	
	Quantity: (KGM)	Value: (CAN\$)	Quantity: (KGM)	Value: (CAN\$)	Quantity: (KGM)	Value: (CAN\$)
Anhydrous ammonia	27,665,592	17,846,565	21,543,753	11,820,364	15,523,468	7,680,483
Potassium hydroxide (caustic potash)	29360563	20839840	27743626	19804138	22233248	18647295
Urea, whether or not in aqueous solution, in packages weighing more than 10 kg	903,317,162	442,980,446	637,294,099	312,463,743	569,403,251	212,414,634
Ammonium sulphate, in packages weighing more than 10 kg	129,003,070	57,358,144	100,669,200	37,265,239	61,982,514	17,455,510
Ammonium nitrate, whether or not in aqueous solution, in pack weighing > 10 kg	296,538,756	78,870,629	222,025,440	59,037,162	259,399,050	62,216,187
Ammonium nitrate mixed with cal carb or non-frt subts, in pack weighing	89,012,221	26,210,209	83,948,916	29,323,015	25,791,109	8,871,588
Diammonium phosphate, in packages weighing > 10 kg	133,355,058	59,064,343	87,122,909	49,718,773	84,250,277	42,772,365
Monoammonium phosphate & mx, with diamonium phosphate, in pack > 10 kg	845,083,333	465,227,866	925,777,368	558,668,166	681,957,589	280,493,967