

# Potash

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## **Michel Prud'homme**

*The author is with the Minerals and Metals Sector,  
Natural Resources Canada.  
Telephone: (613) 992-3733  
E-mail: mprudhom@nrcan.gc.ca*

**T**he term "potash" refers to a group of potassium-bearing minerals and chemicals. Potash includes potassium chloride (sylvite), potassium-magnesium chloride (carnallite), potassium sulphate, potassium-magnesium sulphate, and potassium nitrate. The dominant potash product is potassium chloride or KCl, a naturally occurring pink salty mineral for which Canada is the leading world producer and exporter.

The main use of potash is in the agricultural sector where it is used as a plant nutrient for its potassium content, which is the third major nutrient after nitrogen and phosphate. Potash plays an important role in the regulation of plant physiological functions; it supports plant growth, and primarily enhances the efficiency of plants in the uptake of other nutrients, boosting their nitrogen and phosphate absorption. Industrial potash is used in the manufacture of potassium-bearing chemicals, as an alternative to de-icing salt, and as a water conditioner. Other end uses include detergents, ceramics, chemicals and pharmaceuticals.

## **WORLD OVERVIEW**

Following a year of sustained recovery in the global potash marketplace in 1995, there were strong expectations for 1996 as key agricultural indicators pointed to a further increase in global demand for fertilizers. However, world demand and trade were weaker than expected, despite a 4% increase in potash consumption. Potash demand rose to about 22.6 Mt K<sub>2</sub>O, of which 94% was for fertilizer potash. Industrial potash consumption was estimated at 1.4 Mt K<sub>2</sub>O. World potash trade declined by 6% to 17.7 Mt due to a massive carry-over of inventories accumulated from imports at the end of 1995. Major exporting countries were affected, notably Canada and the C.I.S., which absorbed most of the decline in offshore trade

by reducing their total production through shut-downs during the summer and fall of 1996.

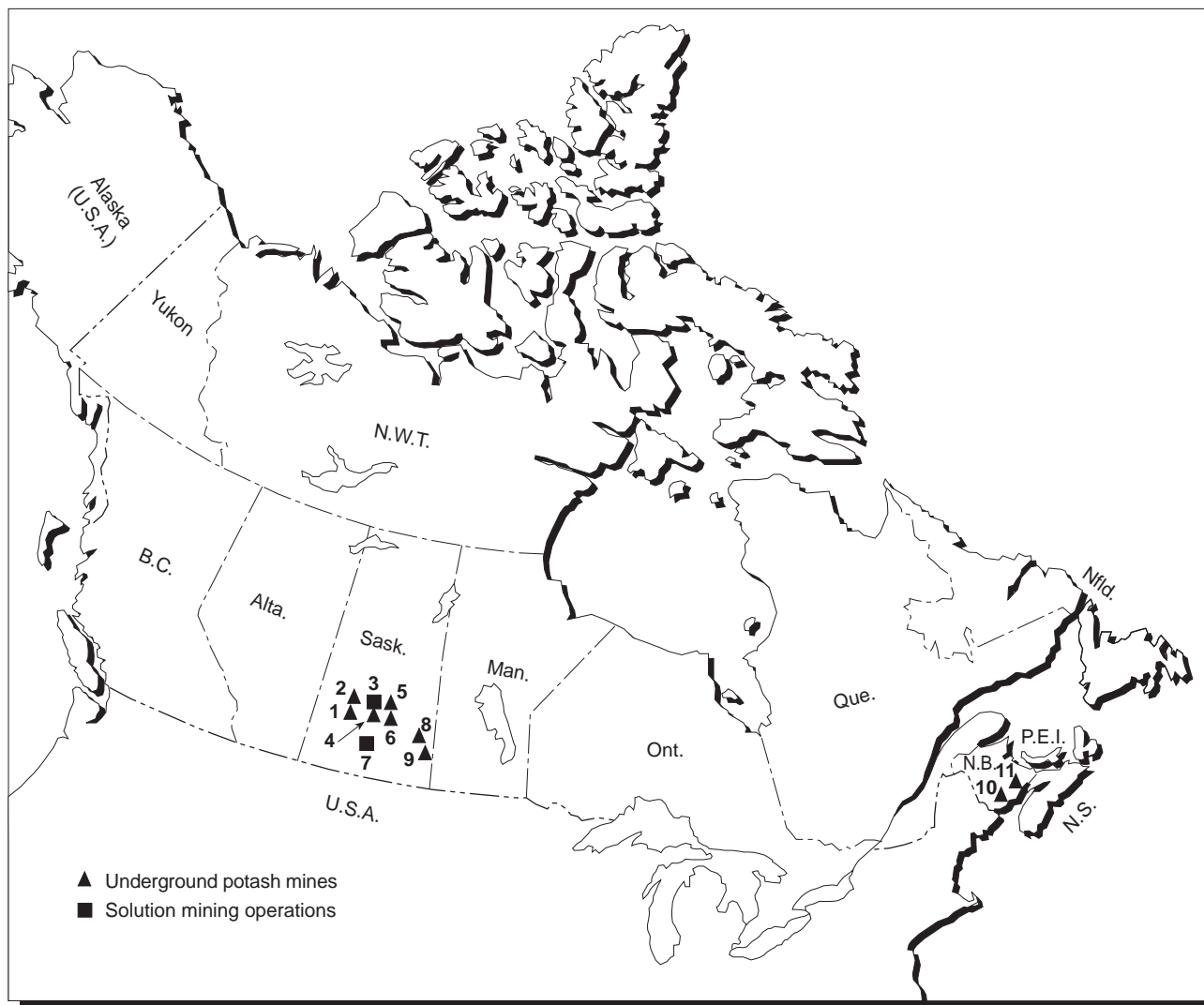
Potash consumption in Asia, which accounted for 30% of world potash consumption, rose by 2%.

- In China, the central government continued its decentralization by transferring crop production and distribution responsibilities to regional provinces and shifting its grain self-sufficiency policy to limited sufficiency, thereby encouraging higher fertilizer imports and usage. Potash imports in 1996 dropped 33% due to the high level of imports during 1995 and the important inventory carry-over. Overall potash consumption in China would have marginally increased from 1995. The nitrogen-to-potash ratio still remained deficient at 11:1, compared to a government-quoted target of 5:1.
- Potash sales in India declined, reflecting high fertilizer prices and delays in the announcement of potash subsidies after the election of a new national government. In mid-year 1996, the Indian government extended for another fertilizer year its ad-hoc subsidy on potash fertilizers with a 50% increase in the subsidy with the objective of restoring the nutrient balance. Potash imports declined by 33% in 1996.

Potash usage in Europe and the C.I.S. demonstrated a sustained recovery.

- In Western Europe, potash sales, which accounted for 25% of world consumption, increased marginally to 5.4 Mt K<sub>2</sub>O as the result of a 2% reduction in the mandatory set-aside rate for arable lands. Improved farm income and higher cereal prices provided sufficient incentives for a small increase in fertilizer demand.
- Potash sales to the C.I.S. and Central Europe, together accounting for 10% of world consumption, continued to register some recovery. In the C.I.S., the Russian and Belarus governments provided financial support to farmers through decrees for subsidies to the agricultural sector, including specific provisions for fertilizer purchases; central governments provided payment support to farmers and cooperatives as well as credit guarantees to fertilizer suppliers. In Central Europe, potash

**Figure 1**  
**Location of Potash Mines and Operations in Canada, 1996**



Numbers refer to locations on map above.

### UNDERGROUND POTASH MINES

1. Agrium Inc., Vanscoy, Saskatchewan
2. Potash Corporation of Saskatchewan Inc., Cory Division, Saskatoon, Saskatchewan
4. Potash Corporation of Saskatchewan Inc., Allan Division, Allan, Saskatchewan
5. IMC Central Canada Potash Inc., Colonsay, Saskatchewan (IMC Kalium)
6. Potash Corporation of Saskatchewan Inc., Lanigan Division, Lanigan, Saskatchewan
8. International Minerals & Chemical Corporation (Canada) Global Limited (K1 and K2 mines), Esterhazy, Saskatchewan
9. Potash Corporation of Saskatchewan Inc., Rocanville Division, Rocanville, Saskatchewan (IMC Kalium)
10. Potacan Mining Company, Sussex, New Brunswick
11. Potash Corporation of Saskatchewan Inc., New Brunswick Division, Sussex, New Brunswick

### SOLUTION MINING OPERATIONS

3. Potash Corporation of Saskatchewan Inc., Patience Lake Division, Patience Lake, Saskatchewan
7. IMC Kalium Canada Limited, Belle-Plaine, Saskatchewan (IMC Kalium)

consumption showed a modest increase as national economies continued to improve, especially in Poland and the Czech Republic.

Potash sales in the Americas grew by 6% in 1996 due to higher crop prices and favourable economic conditions for farmers.

- Potash sales in Latin America, amounting to 10% of world consumption, rose by 7% with Brazil accounting for three quarters of the potash consumed in the region. In 1996, the economic situation improved in Brazil, allowing for an easing in credit assistance to farmers. Soybean plantings were higher in 1996, as were major crop prices, which led to higher demand for, and imports of, potash.
- Potash sales in the United States, accounting for 25% of world consumption, rose by 2%. Fertilizer demand in the spring of 1996 was stable despite a 0% rate dictated to the 1996 Acreage Reduction Program (ARP) by the U.S. Department of Agriculture, largely in response to a low grain inventory. The 0% ARP level, down from 7.5% in 1995, led to an 11% increase in corn acreage. The relatively cold and wet weather conditions in the growing season inhibited high fertilizer application. Potash shipments were weak in early spring, but picked up in mid-summer with positive expectations for higher potash consumption and sustained grain prices in 1997. Potash consumption for fertilizer in the United States grew 4% to 4.9 Mt K<sub>2</sub>O, of which 60% was consumed in the Corn Belt states.

World potash production in 1996 was estimated at 23.2 Mt K<sub>2</sub>O, a 4% decrease compared to the previous year. Decreases in production were recorded in almost all major exporting countries, with Canada and the C.I.S. accounting for 80% of the decline. Small increases were reported in Israel, Brazil, Chile, Spain and the United Kingdom. Globally, potash producers ran at an overall capacity rate of 65%, compared to 68% in 1995. Canadian operations ran at 60% of capacity and those in the C.I.S. at 47%, while all other major world producers operated at levels above 85%, with the exception of France at 65%.

In 1996, potash suppliers responded to fluctuating market conditions by curtailing production in order to reach a better balance between supply and demand. In 1996, global capacity surplus rose by 1.2 Mt to reach 13 Mt K<sub>2</sub>O, of which Canada and the C.I.S. contributed 90%. The global surplus increased due to a combination of reduced production and capacity additions in the Americas. World capacity grew marginally to 36.1 Mt/y as expansions and new capacity in Chile, Canada and Brazil offset closures and reductions in Germany, Spain and the United States.

## THE CANADIAN INDUSTRY

The potash industry in Canada is comprised of four companies that together employ more than 3800 workers. Production occurs at eight underground mines and two solution mining operations in Saskatchewan, and in two underground mines in New Brunswick, with the latter accounting for 10% of Canadian capacity. The potash industry in Canada was first developed in the early 1960s with the opening of potassium chloride mines in Saskatchewan. As a result of a series of expansions in the 1970s and 1980s, the Canadian potash industry now ranks as the world's largest producer and exporter of potash.

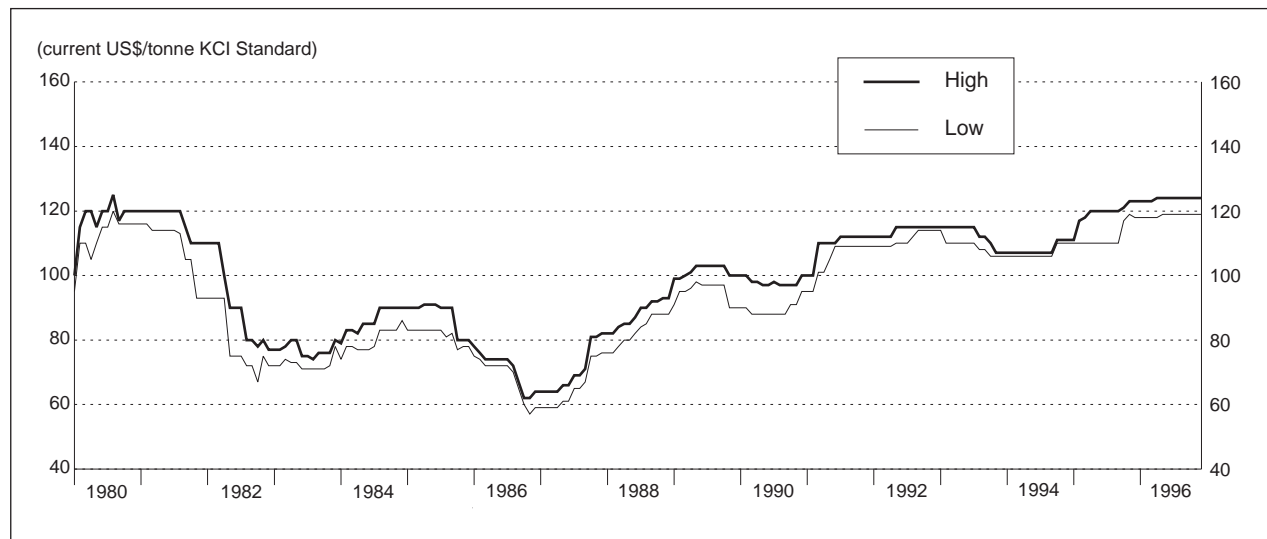
### Major Developments

In 1996, Canadian production decreased by 11% to 8.05 Mt K<sub>2</sub>O. Decreases in output were reported mostly in Saskatchewan. New Brunswick's potash production accounted for about 13% of total Canadian output in 1996. Canadian potash shipments declined as a result of lower sales to offshore markets, which totally offset some gains registered in the North American market. In offshore markets, sales were stable in almost every market with the notable exception of China, Canada's major offshore market. Sales to China declined as local requirements were mostly met from port inventories and by imports from both Canada and the C.I.S. High levels of imports were sourced from the C.I.S.; however, at least 0.3 Mt K<sub>2</sub>O of C.I.S. imports into China were re-exported within the Pacific Rim, affecting both C.I.S. and Canadian direct sales to other Asian countries. Canada's total potash sales were estimated at \$1.26 billion in 1996, compared to \$1.42 billion in 1995. Canadian inventories decreased by 0.1 Mt to 1.4 Mt K<sub>2</sub>O. In 1996, total mine shut-downs for inventory control and maintenance amounted to 123 mine-weeks, a 68% increase over 1995. Most of these shut-downs occurred in Saskatchewan; Potash Corporation of Saskatchewan Inc. accounted for 63% of these temporary closures.

In 1996, Canadian potash capacity was estimated at 13.3 Mt, of which about 1.5 Mt K<sub>2</sub>O consisted of idle milling units at the Cory, Lanigan and Patience Lake operations in Saskatchewan. New Brunswick accounted for slightly less than 1.3 Mt K<sub>2</sub>O, or 10% of Canada's total capacity. In 1996, the Canadian potash industry had the immediate capability to produce about 11 Mt K<sub>2</sub>O, or 18 Mt KCl.

In 1996, the average unit value of potash shipped by Canadian producers was C\$94.62/t KCl (f.o.b. mines), a C\$4/t decrease from the previous year, mostly as the result of depressed prices in North America during the peak of the consuming period in the spring of 1996. In 1996, potash exports totalled 13 Mt KCl valued at about C\$1.55 billion.

**Figure 2**  
**Canada, Offshore Potash Price Quotations, 1980-96**  
 f.o.b. Vancouver Contract



Source: Compiled by Natural Resources Canada from trade magazines and specialized subscriptions.

In March 1996, the International Trade Administration of the U.S. Department of Commerce extended for another year the suspension agreement between U.S. and Canadian potash producers. During 1996, investigations continued into allegations of price-fixing in North America by several U.S. and Canadian potash exporters. In June 1996, the U.S. Department of Justice ended a three-year grand jury investigation without further action. During the year, the anticipated trial of the anti-trust class-action lawsuit was postponed several times. In early January 1997, a U.S. District Judge in Minnesota dismissed the lawsuit, following the recommendation of a Magistrate Judge in September 1996 for dismissal by summary judgement due to a lack of evidence.

## Saskatchewan

Saskatchewan produced about 87% of Canada's potash in 1996. During the year, several temporary shut-downs were carried out by mine operators in Saskatchewan for inventory control and, to a lesser extent, for maintenance and vacation. The major thrust for potash companies in 1996 was for mega-mergers, which consolidated potash operations and integrated other nutrient-producing facilities. By the end of 1996, there were only three potash companies in Saskatchewan, down from a total of six in 1992.

Potash Corporation of Saskatchewan Inc. (PCS Inc.) is the largest publicly held potash producer in the world. In 1996, PCS Inc. operated five mines in Saskatchewan and one in New Brunswick. PCS Inc. also owns reserves at Esterhazy, which are mined by International Minerals & Chemical Corporation

(Canada) Global Limited (IMC Kalium) under a long-term agreement that entitles PCS Inc. to 25% of production. All PCS Inc. mines, except the Patience Lake solution mine, use conventional underground mining techniques. In 1996, potash production from all of PCS Inc.'s operations in Saskatchewan, including tonnage on PCS Inc.'s account from IMC Kalium, was estimated at 5.3 Mt KCl, a 6% decrease from 1995. PCS Inc.'s operating rate declined to 46% in 1996, compared to 49% in 1995. Throughout 1996, PCS Inc. continued to pursue its policy of strict inventory control with intermittent shut-downs at all of its operations. PCS Inc.'s production capacity is estimated at 7.4 Mt/y  $K_2O$ , equating to 56% of Canada's total potash capacity. During 1996, PCS Inc. extended for another year its offshore marketing agreements with three U.S. potash producers in New Mexico. Also in 1996, PCS Inc. continued on its acquisition path: late in August, PCS Inc. entered into an agreement with BASF AG of Germany to purchase its 51% interest in the German publicly traded company Kali und Salz AG, the company that controls the German potash industry which operates under the name of Kali und Salz GmbH. Also included in the agreement is BASF's 50% ownership in Potacan Mining Company, the French-German joint potash operation based in New Brunswick. At the beginning of 1997, the deal was still under review by regulatory agencies in Germany and Canada. PCS Inc. also announced another major acquisition in early September by reaching a definitive agreement to acquire Arcadian Corporation for US\$1.7 billion; Arcadian is a major nitrogen fertilizer producer in the United States. Through this latter acquisition, to be finalized in January 1997, PCS Inc. will become the world's largest integrated fertilizer producer.

In the spring of 1996, the US\$1.3 billion stock-for-stock merger between IMC Global Inc. and Vigoro Corporation was concluded, creating the third largest potash producer with a 13% share of the world market. The new company restructured its fertilizer business into four units, creating IMC Kalium for managing its potash assets. IMC Kalium manages four potash operations in Canada: the two interconnected underground mines, K1 and K2, at Esterhazy in southeastern Saskatchewan; one large potash solution mine at Belle-Plaine, west of Regina; and a conventional underground mine located at Viscount in the Saskatoon area (Central Canada Potash, which was purchased from Noranda Inc. in 1995). Altogether, IMC Kalium's Canadian potash capacity is close to 4 Mt/y  $K_2O$ , or 30% of Canada's total potash capacity. In 1996, IMC Kalium's production declined by 12% to 5.3 Mt KCl, and its overall operating rate was 88%, compared to 90% in 1995. During the year, IMC Kalium continued to manage its recurring water inflows at the K2 mine where inflow rates have been steadily creeping up in the last three years. Late in 1996, the company indicated that alternative mining options were being set aside and that a new grouting and supporting system will be tested at K2 during 1997.

Agrium Inc. produced 0.9 Mt KCl at its Vanscoy mine in 1996, a 33% decrease from 1995, because the operation had been shut down during the May-to-September period due to a labour dispute that affected 280 workers. For the entire year, the potash operation ran at 55% of capacity, compared to 90% in 1995. During 1996, Agrium pursued its \$32 million expansion to increase its production of coarse and granular grades of potash by 1997. Late in 1996, the company completed a major C\$1.3 billion merger with Viridian Inc., an important phosphate and nitrogen fertilizer producer in western Canada.

Big Quill Resources Inc. produced potassium sulphate from sodium sulphate brine from Big Quill Lake and from purchased potassium chloride. The company, located in Wynyard, has a production capacity of 14 000 t/y of potassium sulphate ( $K_2SO_4$ ). In 1996, Big Quill completed an expansion project that raised its capacity to 30 000 t/y. Another expansion is expected during 1997 that will enable its total capacity to reach 50 000 t/y. Potassium sulphate products are used in the fertilizer, chemical and wall-board sectors.

In 1996, Canpotex Limited started the construction of a new potash terminal at Portland, Oregon. The US\$50 million project, a joint venture with Hall-Buck Marine, Inc., will have an ultimate handling capacity of 5 Mt/y of products. Potash shipments will be initiated through direct loading from railcars to vessels in March 1997. The construction of a 100 000-t KCl storage warehouse and handling facilities will be completed during the summer, and the terminal is expected to be fully operational by the third quarter

of 1997. Operations at the new terminal will lead to a reduction in potash tonnage being handled in the Vancouver area.

## New Brunswick

In New Brunswick, potash was mined at two underground operations located in the Sussex area of Kings County. Potash products for export are hauled 60-80 km from the Sussex area to the Barrack Point potash terminal in Saint John. The terminal, which is operated by Furncan Marine, has a storage capacity of 165 000 t of potash. The shipping port, equipped with a 2700-t/h shiploading facility, can accommodate cargo sizes between 3000 and 50 000 t.

The New Brunswick division of PCS Inc. operated the Penobsquis underground mine about 5 km east of Sussex. Production in 1996 was stable at 700 000 t KCl. The mine operated throughout the year at high capacity on a seven-day-per-week schedule. Mining is carried out by cut-and-fill along with the use of a room-and-pillar layout. Salt tailings, slimes and excess brine are stored underground as part of an integrated closed loop mining system.

Potash production by Potacan Mining Company (PMC) remained stable in 1996. The operation ran at 80% of capacity during the year. The company extracted potash at the Cloverhill mine located 20 km southeast of Sussex. PMC is owned by Potash Company of Canada Limited, which in turn is owned jointly by *Entreprise Minière et Chimique (EMC)* of France and *Kali und Salz AG (K&S)* of Germany. The ownership structure of the joint venture is likely to be affected by the conclusion of the PCS Inc.-BASF business deal.

In 1996, the government of New Brunswick and IMC Global signed an exploration agreement for the mining rights of the Millstream potash deposit near Sussex. IMC Global is expected to spend C\$0.6 million on a three-year exploration program that will include seismic surveys, a feasibility study and a geological reassessment. In the 1980s, initial research identified reserves at 250 Mt of potash grading 20.6%  $K_2O$ .

## Manitoba

In 1996, the government of Manitoba pursued its promotional activities for selling to private companies its 49% interest in the Manitoba Potash Corporation, a joint venture with EMC of France. The joint venture holds the rights to a sylvinitic deposit in the Russell-Binscarth area adjacent to the Manitoba-Saskatchewan border. Proven mineable ore reserves were estimated at 120 Mt of potash grading 24.5%  $K_2O$ . Initial development plans in the 1980s called for a 1.2-Mt/y  $K_2O$  potash mine. Further technical and economical studies were initiated in 1996.

## CANADIAN POTASH TRADE

Canada is the world's largest potash exporter with a 40% share of international trade. The C.I.S. is the second largest exporter, followed by Germany. Canada exports potash to more than 35 countries, although only 6 countries account for close to 80% of Canada's total potash exports.

In 1996, Canadian potash was shipped mostly to the United States (60%) and Asia (22%), with the remainder being sent to Latin America (12%), Europe (4%) and Oceania (3%). Exports to Latin America and Western Europe originated mostly from New Brunswick. Saskatchewan accounted for more than 95% of Canada's exports to Asia, the United States and Oceania.

In 1996, data compiled by Statistics Canada indicated that Canadian potash exports were valued at C\$1.55 billion with tonnages totalling 13 Mt KCl (or 7.9 Mt K<sub>2</sub>O), a 6% decrease compared to the previous year. The United States remained the dominant destination with exports at 7.7 Mt KCl, of which 90% was for agriculture. Offshore sales declined by 6% to 5.3 Mt KCl.

Canadian potash exports to almost every region increased in 1996, with the notable exception of Asia. Exports to Asia dropped by 40% due to a drastic decline in sales to China, which accounted for 20% of all offshore potash exports from Canada. Shipments to Taiwan, India, Japan and Korea also decreased, while some improvements were reported in Indonesia, the Philippines and Vietnam. Shipments to Latin America continued to grow, increasing by 10% in 1996. Brazil, which accounted for 77% of Canadian sales in this region, registered a major increase that more than offset declines in Cuba, Costa Rica and Chile. Sales to Europe rose by 40% due to significantly higher shipments to Belgium, Denmark and France.

## INTERNATIONAL DEVELOPMENTS

In 1996, world production of potash registered a marked decrease as producers adjusted to over-capacity, weakening prices and lower trade, with total production declining by 4% to about 23.2 Mt K<sub>2</sub>O. Most of the 1.1-Mt decrease occurred in Canada (70%) and the C.I.S. (20%). North America was the major producing region with a 41% share of world potash output; Canada contributed 35% to world production in 1996. The C.I.S. was second with a 23% share, followed by Western Europe (22%) and the Middle East (10%).

### Americas

In Argentina, the option agreement between CRA Limited of Australia and Potasio Rio Colorado S.A., a

subsidiary of Minera Tea S.A. of Buenos Aires, was terminated in April 1996. Plans for this potash project in the northern Mendoza Province were expanded from the original 300 000-t/y KCl solution mine to a 2.0-Mt/y KCl operation, but were then cancelled following a detailed economic evaluation. In 1996, Minera Tea completed a high-resolution seismic program that confirmed proven reserves at 52 Mt KCl.

In Brazil, Companhia Vale do Rio Doce (CVRD) produced 360 000 t of K<sub>2</sub>O, a 60% increase over 1995. In 1996, CVRD continued its expansion, raising its annual capacity to 0.36 Mt/y K<sub>2</sub>O; a further expansion is planned at the Sergipe mine for a capacity increase to 0.42 Mt/y K<sub>2</sub>O by 1997. During the year, the Brazilian government tabled preliminary plans to sell its 76% stake in CVRD and privatize the state-owned mining holding in 1997.

In Chile, potash production doubled to 0.1 Mt K<sub>2</sub>O following the completion of a new solar potash operation with a capacity of 300 000 t/y KCl in northern Chile. This first phase of the Minsal potash project is wholly dedicated to the manufacture of potassium nitrate by Sociedad Quimica y Minera de Chile S.A. (SQM). In the second phase, construction of a 250 000-t/y potassium sulphate plant is expected to be completed in 1998. SQM is also contemplating another expansion of its current KCl capacity to reach 500 000 t/y by 1998. In 1996, Kap Resources Ltd. of Vancouver continued the construction of a new 360 000-t/y potassium nitrate facility at Yumbes in northern Chile. The facility is expected to be commissioned in mid-1997 and the potassium nitrate plant is to be operated by Minera Yolanda S.A.; potash feedstock will be supplied by Canpotex under a long-term agreement, while PCS Sales will be handling offshore sales of potassium nitrate products. It was also reported that Boron Chemicals International Ltd. of Vancouver plans to build a chemical complex that would include a 70 000-t/y potassium nitrate facility at Aguas Blancas in northern Chile.

In the United States, potash production in 1996 declined by 7% to 1.38 Mt K<sub>2</sub>O. According to the U.S. Geological Survey, the value of production of marketable potash in 1996 was about US\$265 million. Potassium sulphate and potassium-magnesium sulphate together accounted for 25% of U.S. potash production, with the remainder being potassium chloride. Apparent consumption was estimated at close to 5.8 Mt K<sub>2</sub>O, of which 4.8 Mt were imported. In 1996, the U.S. potash industry ran at 86% of capacity, compared to 91% in 1995. During the year, IMC Kalium began an expansion program at its pilot solution mine in Hersey, Michigan; the expansion will triple the mine's current capacity to 90 000 t/y K<sub>2</sub>O by mid-1997. Close to 0.3 Mt of salt will be recovered annually. Mississippi Chemical Corporation acquired the potash operations of New Mexico Potash Corporation and Eddy Potash Inc. from Trans-Resources Inc. for US\$45 million; the two mines,

located in Carlsbad, New Mexico, have a combined capacity of about 0.5 Mt/y  $K_2O$ . In mid-1996, North American Chemical Corp. stopped producing potash and potassium sulphate at its 100 000-t/y  $K_2O$  facility at Trona, California, while a sister company, Great Salt Lakes Minerals & Chemicals Corporation, announced plans to expand production and introduce new potash grades at its solar potash facilities in Ogden, Utah, where capacity will be expanded to 255 000 t/y  $K_2O$  by 1998. Reilly Wendover Chemical Inc. continued its expansion project at Wendover, Utah, where its potassium chloride capacity will reach 85 000 t/y  $K_2O$  in 1997.

## Commonwealth of Independent States

Potash production in the C.I.S. in 1996 was estimated at 5.3 Mt  $K_2O$ , a 5% decrease compared to 1995. The operating rate in the C.I.S. was close to 47% of capacity, compared to 49% in 1995. Russian potash production declined 7% with an overall operating rate of 40%; potash there was produced by Uralkali Ltd. and Silvinit Ltd. Lower potash extraction was registered at Uralkali's facilities due to weaker export sales. In Belarus, potash production dropped by 3%, and PO Belaruskali operated at 50% of capacity. Total C.I.S. potash deliveries decreased by 4% in 1996 due to lower offshore exports. Domestic deliveries rose by 20% to reach close to 1.2 Mt  $K_2O$  in 1996, marking a sharp recovery from the declining consumption levels of the previous seven years.

Total C.I.S. exports declined by 9% to 3.9 Mt in 1996. Export levels were maintained in most regions, with the exception of Latin America (Brazil) and some countries in Southeast Asia, where re-exports from China affected sales levels. Sales to China expanded in 1996, but in net terms would have been relatively stable. Exports were mostly shipped from the Port of Venstpils (Latvia) and, in part, from the Russian Port of St-Petersburg, the Ukrainian ports of Ilyichevsk and Nikolaev on the Black Sea, and the Port of Klaipeda (Latvia). Future potash shipments from the new Russian terminal in Murmansk are being evaluated. As in 1995, the government of Russia tentatively applied export measures with the establishment of export quotas on fertilizers (including potash) in March 1996, but these were abolished later in April due to a conflict related to constitutional laws. In mid-1996, the Russian government shifted its rouble stabilization policy from the currency corridor program to an inclined rate program, setting daily rates within compulsory limits. These adjustments have been favourably received by Russian exporters.

## Europe

The Commission of the European Union pursued its assessment of existing anti-dumping measures against the C.I.S. Canada was selected as a surrogate potash-producing country. Natural Resources

Canada was approached by the Commission to cooperate in the administrative review by providing public information on the characteristics of the potash industry in New Brunswick and Saskatchewan. Results of the review are expected in the second quarter of 1997.

In France, potash production in 1996 decreased 6% to 0.75 Mt  $K_2O$ , the fourth successive annual decline in French potash output in line with its declining capacity. According to the Société commerciale des Potasses et de l'Azote, the two remaining French mines are forecast to close in the early 2000s, with the Marie-Louise mine shutting down in 2002 and the Amélie mine closing in 2004.

In Germany, potash production was stable at 3.3 Mt  $K_2O$ . Kali und Salz GmbH continued its expansion at Zielitz and closed the Niedersachsen-Riedel mine. Overall German potash capacity is now estimated at 3.7 Mt/y  $K_2O$ , of which 75% is dedicated to potassium chloride.

Italian potash operations have remained idle since 1993. In early 1996, the Industrial Department of the Sicilian Region invited bids of interest for reactivating the two potassium sulphate operations in Sicily with the possible privatization of its 51% share in the Societa Italiana Sali Alcalini ITALKALI S.p.A.

In Spain, potash production rose 5% to 0.68 Mt  $K_2O$ . Overall Spanish potash capacity is expected to fall to 0.76 Mt/y  $K_2O$  in 1997 with the anticipated closure of the 0.2-Mt/y  $K_2O$  Subiza mine in Navarra. A new 150 000-t/y compaction unit was installed at Llobregat, increasing its production capacity of high-quality granular-grade potash by 25%.

In the United Kingdom, Cleveland Potash Ltd. (CPL) produced 0.6 Mt  $K_2O$ , a 4% increase over 1995. In 1996, CPL applied for planning permission to extend its underground mining area at Boulby in northeast England. According to the company, existing mineable reserves are reported to be sufficient for about 15 years at the current production rate.

## Middle East

In Israel, Dead Sea Works Ltd.'s (DSW) production rose 13% to 1.5 Mt  $K_2O$  in 1996. The company initiated an important program to remove salt pillars in its solar evaporation ponds for improving overall carnallite recovery. In 1996, Haifa Chemicals Ltd. was reported to have started construction for doubling the capacity of its potassium nitrate plant at Mishor Rotem by mid-1998.

In Jordan, potash production by the Arab Potash Company Ltd. (APC) was stable at 1.05 Mt  $K_2O$ . According to APC, another capacity expansion at its Safi facilities is being developed and is expected to add 0.24 Mt/y  $K_2O$  by the end of 1999. Other projects under study by APC include a new KCl-derived



potassium sulphate plant at Aqaba with a capacity of 75 000 t/y  $K_2SO_4$ . A cooperation agreement between APC and DSW is still being studied for the distribution and export of potash as well as the construction of additional potassium products plants.

## Asia

In China, potash production from carnallitic brines at Qinghai was estimated at 100 000 t  $K_2O$ . During the year, there were reports of progress in the development of the Chinese-Israeli joint venture to construct a new 480 000-t/y  $K_2O$  potash operation near Golmund in the northwestern Qinghai Province. The facility will use DSW's cold crystallization technology to extract potash from shallow carnallite brines. It is reported that completion of the US\$550 million project is being projected to take three years. In 1996, the project received strong support from the Chinese government after its explicit insertion into China's ninth Five-Year Plan for agriculture.

In northeastern Thailand, the Asean Potash Mining Co. (APMC) initiated contract work for the construction of a decline drift into salt formations above the carnallite orebody. Completion of the extension of the 950-m-long decline is expected in the fall of 1997. In the early 1980s, construction of an access ramp was stopped after crossing a water-bearing horizon at a depth of 50 m. APMC's current development plan calls for salt extraction and recovery starting in February 1997; its salt production is projected at 0.5 Mt/y. Ultimately, the company envisions the construction of a 1.0-Mt/y KCl underground potash mine with a projected total cost of US\$500 million to be completed by 2001. In northern Thailand, Asia Pacific Potash Corporation (APPC) continued its exploration program at the Udon Thani potash concession and completed the first phase of a feasibility study for a 2.0-Mt/y KCl potash operation in the nearby Somboon area. APPC is jointly owned by Asia Pacific Resources of Vancouver (62.5% interest), Metro Resources Ltd. of Bangkok (27.5%), and the government of Thailand (10%). According to Asia Pacific Resources, the potash orebody consists of sylvinitic ore grading 24-26%  $K_2O$ ; mineable reserves in the Somboon field are estimated at 203 Mt of sylvinitic. Preliminary results in the Udon field indicated potash resources of close to 1.0 billion t. Late in 1996, APPC contracted out its second-phase feasibility study for attracting adequate financing; the company expects the bankable feasibility study to be completed by mid-1997 and the project to begin production after the year 2000.

## PRICES

The price of potash quoted on a free on board (f.o.b.) Vancouver basis (in U.S. dollars) is considered to be the major pricing indication for most Canadian international offshore sales. In many markets, prices are also quoted on a delivered basis, CFR (cost and

freight) and c.i.f. (cost, insurance and freight) foreign ports. Canpotex Limited, representing all Saskatchewan potash producers, sells both f.o.b. Vancouver or c.i.f. foreign ports, or out of warehouses in Southeast Asia.

Offshore potash price quotations rose by 1% in 1996, consolidating the increase realized late in 1995. Entering 1996, f.o.b. Vancouver potash prices were quoted at between US\$118 and \$123/t KCl for standard grade. During the first quarter of the year, a US\$1/t price increase was achieved in a few Asian markets due to the expectation of a tight market emerging for 1996. In early spring, offshore demand softened as imports in major Asian countries were falling short of expectations. The notable absence of heavy contracts with China dampened support for any increase in 1996. By the end of the year, price quotations were steady at US\$118-\$124/t, with some pressure for weaker prices at the beginning of 1997. In offshore business, C.I.S. potash prices were quoted at US\$75-\$90/t for standard potash f.o.b. Baltic in the first half of 1996, and registered some decline in mid-year to US\$70-\$90/t, triggering C.I.S. potash re-exports out of China. Late in 1996, C.I.S. exporters announced an upward pricing readjustment to US\$78-\$90/t.

In North America, quotations f.o.b. Midwest on coarse-grade potash started at US\$96-\$105/short ton (st) in January 1996 with the anticipation of strong potash movements during the U.S. spring season. Unfavourable weather affected fertilizer demand, and depressed offshore sales led potash suppliers to seek some improvement in their respective position within the North American market. The combination of these factors led to a gradual price decline totalling close to US\$3/st to reach US\$93-\$101/st by September. In the third quarter of 1996, potash demand in the United States resumed in line with high crop prices, the higher crop acreage to be planted in 1997, and the resulting increase in demand for fertilizers; potash prices rose to US\$98-\$108/st, recovering to the level that prevailed at year-end 1995. However, the prospect for a further increase in the North American price has been improving for 1997. On average, Midwest price quotations were relatively low in 1996, thereby depressing the aggregate unit value of all Canadian potash sales.

## OUTLOOK

Strong expectations in the potash marketplace were projected for 1996; however, while most of these expectations were met, lower trade levels and flat prices accentuated the influence of China and India on the world potash market. Key agricultural indicators for 1997 offer the same fundamental rationale for accrued fertilizer consumption as they did in 1996. World grain inventories are still low despite a good harvest in 1996; in fact, world grain inventories



rose to 272 Mt, but the 15% ratio of inventory over consumption in 1996 is considered to be at the threshold level for minimum food security.

For 1997, the potash industry will likely be subjected to the cyclical attributes of the fertilizer sector. While high crop prices induce higher acreage, strong fertilizer prices attract industry-wide capacity expansion and greenfield projects. Entering the second phase of the fertilizer cycle in 1996/97, a likely reversal in crop prices would dictate some pricing consolidation and operational readjustment for potash producers through a combination of structural changes, market differentiation, and supply management practices. Potash sales will likely expand in 1997, but the benefits could be counterbalanced by lower returns if strategies to regain market share lead to lower prices.

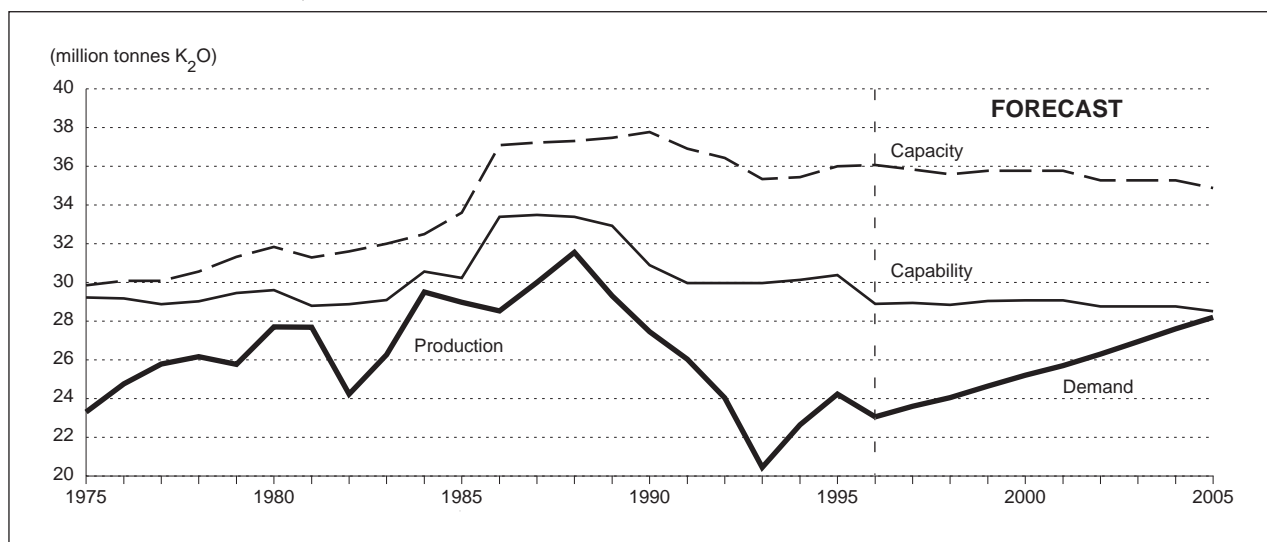
Total world demand for potash in 1997 is projected at 23.6 Mt  $K_2O$ . World demand for fertilizer potash is forecast to increase by 2% to 21.2 Mt  $K_2O$  in 1997. Most of the increase will be registered in the United States, while some recovery in potash fertilizer consumption is expected to continue in Central Europe and the C.I.S. Marginal growth is projected in Latin America due to a strong performance in Brazil during 1996.

In the short term, potash demand in North America should register some positive growth with the implementation of the New Farm Bill in the United States that allows for increased flexibility in crop plantings. U.S. consumption of fertilizer potash is forecast to grow to 5 Mt  $K_2O$  in calendar year 1997. In Western Europe, potash consumption will benefit again in 1997 from an extension of a reduction in the set-aside

rate for arable lands; however, the prospect for higher potash consumption after 1997 will depend on the outcome of future discussions on the Common Agricultural Policy, whose five-year program ends in May 1997. In Latin America, potash demand in Brazil will increase in line with the higher usage of fertilizers in the production of exportable and basic crops. In Asia, focussed agricultural and economic policies will facilitate access to fertilizers in order to achieve higher crop harvests through balanced fertilization and better yield. Also in Asia, China is expected to continue its goal of limited-sufficiency for grain production in agriculture driven by adequate support to farmers, increases in crop acreages, and higher rates of fertilizer application. Improvements in the potash utilization rate will be needed to redress the nutrient imbalance and raise crop yields.

In the long term, world fertilizer potash demand is expected to continue to grow. According to the International Fertilizer Industry Association (IFA), fertilizer potash demand for the period 1996-2000 is forecast to grow at an annual rate of 3% to around 23.3 Mt by 2000. Most of the 2.6-Mt increase will be registered in Asia (40%), followed by the Americas (25%) and the C.I.S. and Central Europe (20%). Some small consuming countries are offering long-term strong growth: Argentina, Colombia, Cuba, Mexico and Venezuela in Latin America; and Bangladesh, the Philippines, Sri Lanka and Vietnam in Asia. According to the IFA, world demand for industrial potash is forecast to reach 1.6 Mt/y  $K_2O$  in 2000. Taking into account growing industrial uses and fertilizer consumption, as well as distribution losses, total world demand for potash is projected to reach close to 25.2 Mt/y  $K_2O$  by 2000.

**Figure 3**  
**World Potash Balance, 1975-2005**



Source: Natural Resources Canada.

On the supply side, current potash capacity will be more than sufficient to meet world demand for the rest of the decade. Further rationalization and closures are anticipated in Western Europe, the United States, and possibly the C.I.S. Additional capacity is expected from several potash-producing countries through debottlenecking or incremental expansion projects in Canada, Latin America (Brazil and Chile), and the Middle East. However, it is expected that closures will offset any additional expansion or new capacity that will come on stream between 1996 and 2000; consequently, world potash production capacity is forecast to decrease by 0.3 Mt to 35.7 Mt/y K<sub>2</sub>O by 2000.

Between 1996 and 2000, the world potash demand/supply balance will continue to face a resilient but declining surplus. Based on capacity projections and demand forecasts, this surplus is expected to decline from 13 Mt K<sub>2</sub>O in 1996 to 10.5 Mt by the year 2000. This surplus will still be held by Canada (40%) and the C.I.S. (48%). However, the accessibility of the current surplus in the C.I.S. is subject to speculation; a portion of this surplus will probably not be accessible in the medium term if the C.I.S. continues to operate at rates below 50%.

A better measure of world balance is obtained with the concept of capability (which refers to achievable marketable production capacity when considering technical and logistical constraints). Current world capability is estimated by Natural Resources Canada (NRCAN) at 28.9 Mt K<sub>2</sub>O for a current marketable surplus of 5.8 Mt K<sub>2</sub>O. By 2000, world potash capability is projected to be about 29 Mt with a marketable surplus of 3.9 Mt K<sub>2</sub>O.

Over the last few years, the prospects of recovering and growing demand, and positive price movements have generated several new projects, led by incentives dictated by economies of scale, product differentiation, market share, and potentially attractive rates of return. Established producers have been fairly active to expand capacity over the last few years. Now the marketplace has been attracting newcomers with mega-projects scheduled to come on stream after

the year 2000. Additional capacity of close to 2.0 Mt/y K<sub>2</sub>O (equating to 5% of world capacity) may come from projects being evaluated in Thailand, China and Argentina. Prospective projects for development post-2000 also include mines in Canada and Thailand. The incremental capacity from these latter projects would result in another 3.0 Mt/y, adding about 8% to the world's capacity.

Many of these projects are concurrent and may compete against each other. Moreover, their completion may not be synchronized with forecast increases in potash demand. Some of these new projects are being developed in major consuming regions while others are being considered in producing countries to either offset diminishing production or to expand overall production. However, only a few of the projects possess the basic determining requirements of proven mineable and economic reserves of high-quality potash ore and access to growing markets.

A long-term forecast by NRCAN indicates a potential for some tightness in the supply/demand balance closer to 2004/2005 when the marketable surplus is projected to be below 2.0 Mt without the introduction of new capacity after 2001 and with a modest sustained growth in demand. This lower surplus could signal a potential shortfall in production capability or an inability to absorb annual variations in demand and anomalies in trade levels, as was the case in 1995. Historical data show that when the surplus falls below 15% of production, additional capacity is commissioned in the following years in response to an anticipated tighter market.

*Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 70. (2) Information in this review was current as of January 31, 1997.*

## TARIFFS

Item No.	Description	Canada			United States
		MFN	GPT	USA	Canada
3104.20	Potassium chloride	Free	Free	Free	Free
3104.30	Potassium sulphate	Free	Free	Free	Free
3104.90.00.10	Magnesium-potassium sulphate	Free	Free	Free	Free
3104.90.00.90	Other	Free	Free	Free	Free

Sources: Customs Tariff, effective January 1997, Revenue Canada; Harmonized Tariff Schedule of the United States, 1997.

TABLE 1. CANADA, POTASH PRODUCTION, SHIPMENTS AND TRADE, 1995 AND 1996

Item No.	1995		1996P		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
<b>PRODUCTION, Potassium Chloride</b>					
Gross weight	14 782 618	..	13 169 220	..	
K <sub>2</sub> O equivalent	9 065 604	..	8 050 244	..	
<b>SHIPMENTS</b>					
K <sub>2</sub> O equivalent	8 854 690	1 424 344	8 164 842	1 263 763	
<b>IMPORTS, Fertilizer Potash</b>					
3104.20	Potassium chloride, in packages weighing more than 10 kg				
	United States	5 023	685	12 006	1 793
	France	335	44	265	34
	United Kingdom	35	4	39	5
	Germany	259	34	8	1
	Total	5 652	767	12 318	1 833
3104.30	Potassium sulphate, in packages weighing more than 10 kg				
	United States	10 268	3 250	9 316	2 918
	Germany	5	13	14	34
	Chile	-	-	20	13
	United Kingdom	2	5	1	3
	Other countries	-	-	...	1
	Total	10 275	3 268	9 351	2 969
3104.90.00.10	Magnesium-potassium sulphate				
	United States	51 526	8 572	64 165	13 020
	Guyana	23	5	-	-
	Total	51 549	8 577	64 165	13 020
3104.90.00.90	Other potassic fertilizer				
	United States	1 151	604	2 289	944
	Israel	-	-	2	1
	Mexico	95	58	-	-
	Other countries	206	145	-	-
	Total	1 452	807	2 291	945
<b>Potash Chemicals</b>					
2815.20	Potassium hydroxide (caustic potash)	15 003	9 183	16 091	9 204
2834.21	Potassium nitrate	6 239	3 948	6 185	3 708
2835.24	Potassium phosphates	808	865	1 179	1 239
2836.40	Potassium carbonates	2 346	1 702	2 460	1 705
2839.20	Potassium silicates	1 197	714	1 039	542
	Total potash chemicals	25 593	16 412	26 954	16 398
<b>EXPORTS, Fertilizer Potash<sup>1</sup></b>					
3104.20	Potassium chloride, in packages weighing more than 10 kg				
	United States	7 529 936	863 742	7 662 083	801 460
	People's Republic of China	2 090 598	307 194	1 131 101	164 819
	Brazil	834 906	108 418	1 087 510	141 324
	Japan	616 722	94 901	503 601	76 426
	Malaysia	495 498	72 859	470 362	68 540
	South Korea	418 728	61 732	351 990	51 358
	Australia	286 146	42 021	227 262	33 099
	New Zealand	197 795	29 164	184 007	26 861
	Indonesia	144 268	21 063	171 668	25 014
	Taiwan	215 207	32 250	142 825	21 257
	Belgium	80 273	11 505	127 293	18 568
	France	99 408	11 914	153 683	18 133
	Cuba	165 650	21 345	123 335	13 914
	Philippines	39 606	5 951	73 319	10 623
	Thailand	60 191	8 826	58 700	8 523
	United Kingdom	50 106	6 450	57 072	7 545
	Spain	15 872	1 780	48 900	5 548
	Colombia	38 020	4 541	42 310	5 003
	Italy	34 495	2 929	37 157	4 869
	Guatemala	18 000	1 976	32 500	4 145
	Chile	78 957	11 860	26 538	3 883
	Vietnam	502	75	24 650	3 585
	Denmark	15 750	1 738	31 527	3 468

TABLE 1 (cont'd)

Item No.	1995		1996p		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
<b>EXPORTS (cont'd)</b>					
Fuji	4 181	627	9 985	2 362	
Honduras	11 000	908	18 298	2 207	
Ecuador	21 951	2 498	14 800	1 708	
India	93 559	13 680	10 500	1 537	
El Salvador	—	—	13 000	1 460	
Ireland	7 000	883	9 855	1 436	
Ivory Coast	17 850	2 184	12 000	1 430	
South Africa	9 000	1 319	9 639	1 380	
Mexico	13 200	1 489	11 413	1 237	
Nigeria	—	—	10 000	1 158	
Costa Rica	42 553	6 150	7 662	1 119	
Dominican Republic	7 100	829	5 500	654	
Venezuela	—	—	4 900	608	
Martinique	—	—	5 000	590	
Ghana	—	—	3 673	582	
Jamaica	17 210	2 073	4 843	578	
Argentina	14 089	2 060	3 500	513	
Cameroon	—	—	1 080	449	
Pakistan	108	74	18	12	
Singapore	5 534	925	—	—	
Uruguay	4 000	589	—	—	
Oman	480	127	—	—	
Iran	21	7	—	—	
Surinam	23	3	—	—	
Total	13 795 493	1 760 659	12 925 059	1 538 985	
3104.30	Potassium sulphate, in packages weighing more than 10 kg				
	United States	5 306	2 659	6 598	2 823
	Australia	200	72	—	—
	France	71	64	—	—
	Paraguay	20	25	—	—
Total		5 597	2 820	6 598	2 833

Sources: Natural Resources Canada; Statistics Canada.

— Nil; . . Not available or not applicable; . . . Amount too small to be expressed; p Preliminary.

1 Countries are ranked in descending order of value, based on 1996 data.

Note: Numbers may not add to totals due to rounding.

**TABLE 2. CANADA, POTASH PRODUCTION AND TRADE, FERTILIZER YEARS ENDED JUNE 30, 1976/77-1995/96**

	Production <sup>2</sup>	Imports <sup>1</sup>	Exports <sup>1</sup>
(tonnes K <sub>2</sub> O equivalent)			
1976/77	4 803 015	24 289	4 175 473
1977/78	6 206 542	26 095	5 828 548
1978/79	6 386 617	21 819	6 256 216
1979/80	7 062 996	20 620	6 432 124
1980/81	7 336 973	35 135	6 933 162
1981/82	6 042 623	25 437	5 400 662
1982/83	5 378 842	21 846	4 864 219
1983/84	7 155 599	17 934	6 730 733
1984/85	7 283 509	17 396	6 784 178
1985/86	6 519 777	12 837	6 479 678
1986/87	7 031 586	12 122	7 100 135
1987/88	7 839 625	14 486	7 315 318
1988/89	8 088 748	18 604	7 075 122
1989/90	6 773 019	20 714	6 387 857
1990/91	7 520 235	23 714	6 727 678
1991/92	7 011 915	22 437	6 464 897
1992/93	7 286 620	27 581	6 450 457
1993/94	7 260 773	24 375	6 866 310
1994/95	9 087 262	21 978	8 351 584
1995/96	8 080 988	24 908	7 979 405

Sources: Natural Resources Canada; Statistics Canada; Potash and Phosphate Institute; Canadian Fertilizer Institute.

<sup>1</sup> Includes potassium chloride, potassium sulphate, potassium-magnesium sulphate, except that contained in mixed fertilizers. <sup>2</sup> Potassium chloride only.

**TABLE 3. CANADA, POTASH PRODUCTION AND SALES IN 1995 AND BY QUARTER, 1996**

	Total 1995	1996				Total
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
(000 tonnes, K <sub>2</sub> O equivalent)						
Production	8 950.0	2 374.1	1 986.5	1 331.0	2 350.3	8 041.9
Sales						
North America	4 947.3	1 176.3	1 400.9	1 128.0	983.2	4 688.4
Offshore	3 756.6	947.7	729.7	763.2	838.5	3 279.1
Total	8 703.9	2 124.0	2 130.6	1 891.2	1 821.7	7 967.5
Ending inventories						
Mine site	845.7	844.6	847.1	434.5	700.4	n.a.
Off site	697.4	912.4	761.9	595.6	720.4	n.a.
Total	1 543.1	1 757.0	1 609.0	1 030.1	1 420.8	n.a.

Source: Potash and Phosphate Institute.  
n.a. Not applicable.

**TABLE 4. CANADA, POTASH SALES BY PRODUCT AND AREA, 1994 AND 1995**

Destination		Agricultural				Total	Industrial			Total Sales
		Standard	Coarse	Granular	Soluble		Standard	Soluble	Total	
(tonnes K <sub>2</sub> O)										
British Columbia	1994	–	850	4 688	886	6 424	399	44	443	6 867
	1995	–	1 659	3 902	1 129	6 690	174	177	351	7 041
Alberta	1994	15	4 163	35 455	2 362	41 995	1 778	448	2 226	44 221
	1995	–	4 608	22 132	14 161	40 900	1 426	763	2 189	43 089
Saskatchewan	1994	259	2 492	11 952	297	14 999	7 007	2 961	9 968	24 967
	1995	5	2 442	8 188	4 811	15 445	7 928	1 994	9 922	25 367
Manitoba	1994	3 722	4 531	20 880	1 282	30 416	375	20	395	30 811
	1995	176	4 493	21 981	1 496	28 146	53	93	145	28 291
Ontario	1994	–	89 564	77 862	–	167 426	6 627	1 072	7 700	175 125
	1995	–	70 605	75 369	116	146 090	3 338	773	4 111	150 201
Quebec	1994	–	4 136	58 748	2 110	64 994	1 814	276	2 090	67 084
	1995	–	9 266	49 858	1 584	60 707	1 039	288	1 328	62 035
New Brunswick	1994	–	9 380	6 045	37	15 463	–	–	–	15 463
	1995	–	5 828	5 440	–	11 269	5	–	5	11 273
Nova Scotia	1994	–	3 476	1 286	–	4 762	–	–	–	4 762
	1995	–	3 019	1 241	–	4 260	–	15	15	4 275
Prince Edward Island	1994	–	4 078	10 147	–	14 224	–	–	–	14 224
	1995	–	2 599	10 948	4	13 551	–	13	13	13 563
Newfoundland	1994	–	–	410	–	410	–	–	–	410
	1995	–	–	266	–	266	–	–	–	266
Total	1994	3 997	122 669	227 473	6 974	361 113	17 999	4 821	22 820	383 933
	1995	180	104 519	199 325	23 300	327 325	13 962	4 114	18 077	345 401

Source: Potash and Phosphate Institute.  
– Nil.

**TABLE 5. CANADA, POTASH INVENTORY, PRODUCTION, DOMESTIC SALES AND EXPORT SALES, 1996**

Month	Beginning Inventory	Production	Domestic Sales			U.S. Sales			North American Sales	Offshore Exports	Total Sales
			Agriculture	Non-Agriculture	Total	Agriculture	Non-Agriculture	Total			
(000 tonnes K <sub>2</sub> O)											
January	1 543.1	764.5	7.1	2.1	9.2	273.6	46.9	320.5	329.7	339.6	669.3
February	1 619.4	769.2	12.8	1.9	14.7	440.6	33.6	474.2	488.9	304.8	793.6
March	1 594.3	840.4	12.6	1.9	14.5	309.3	33.9	343.2	357.7	303.4	661.1
Subtotal, 1st quarter		2 374.1	32.5	5.9	23.9	1 023.5	114.4	1 137.9	1 176.3	947.7	2 124.0
April	1 757.0	835.9	35.6	2.0	37.6	528.9	42.1	571.0	608.6	176.6	785.2
May	1 795.3	569.1	153.2	1.7	154.9	388.9	37.3	426.2	581.1	263.4	844.5
June	1 520.3	581.6	23.6	1.5	25.1	145.5	40.6	186.1	211.2	289.7	500.9
Subtotal, 2nd quarter		1 986.5	212.4	5.2	217.6	1 063.3	120.0	1 183.3	1 400.9	729.7	2 130.6
July	1 609.0	311.5	9.1	2.4	11.4	156.7	42.2	198.9	210.3	252.2	462.5
August	1 443.9	344.1	12.1	2.2	14.2	531.2	47.9	579.1	593.4	253.6	847.0
September	931.9	675.4	27.4	2.0	29.4	254.4	40.5	295.0	324.3	257.4	581.7
Subtotal, 3rd quarter		1 331.0	48.5	6.5	55.0	942.4	130.6	1 073.0	1 128.0	763.2	1 891.2
October	1 030.1	839.2	17.1	2.5	19.6	327.8	51.8	379.6	399.2	232.6	631.8
November	1 206.7	820.1	9.6	2.7	12.3	252.3	44.5	296.8	309.1	351.7	660.8
December	1 292.9	691.0	11.5	2.2	13.7	202.8	58.4	261.2	274.9	254.2	529.1
Subtotal, 4th quarter		2 350.3	38.2	7.4	45.6	782.9	154.7	937.6	983.2	838.5	1 821.7
<b>Total</b>		<b>8 041.9</b>	<b>331.6</b>	<b>25.1</b>	<b>356.6</b>	<b>3 812.1</b>	<b>519.7</b>	<b>4 331.7</b>	<b>4 688.4</b>	<b>3 279.1</b>	<b>7 967.5</b>

Source: Potash and Phosphate Institute.

– Nil.

Note: Reported stocks at year-end total 1432.0 Mt.



**TABLE 6. WORLD POTASH PRODUCTION, 1990-96**

	1990	1991	1992	1993	1994	1995	1996 <sup>e</sup>
(000 tonnes K <sub>2</sub> O)							
Brazil	98	101	85	173	242	223	360
Canada	7 002	7 405	7 270	6 850	8 182	9 065	8 050
Chile	20	38	35	35	52	52	105
China	46	60	60	60	90	100	100
C.I.S.	9 126	8 510	6 948	4 667	5 112	5 605	5 330
France	1 292	1 129	1 141	890	870	802	750
Germany	4 850	3 902	3 525	2 860	3 286	3 278	3 300
Israel	1 311	1 270	1 296	1 309	1 259	1 326	1 500
Italy	68	31	86	—	—	—	—
Jordan	841	818	808	822	930	1 068	1 050
Spain	686	585	594	661	684	650	680
United Kingdom	488	494	530	555	580	582	605
United States	1 654	1 692	1 658	1 525	1 400	1 480	1 375
Total	27 452	26 035	24 036	20 407	22 687	24 231	23 205

Sources: Natural Resources Canada; International Fertilizer Industry Association Ltd.; U.S. Geological Survey.  
C.I.S. Commonwealth of Independent States.  
— Nil; <sup>e</sup> Estimated.

**TABLE 7. CANADIAN POTASH, CURRENT SITUATION, 1989-96, AND FORECAST, 1997**

	Actual								Forecast
	1989	1990	1991	1992	1993	1994	1995 <sup>r</sup>	1996 <sup>p</sup>	1997 <sup>e</sup>
(000 tonnes K <sub>2</sub> O)									
Capacity	12 045	12 045	12 045	12 180	12 180	12 235	13 220	13 310	13 400
Production	7 333	7 002	7 402	7 270	6 850	8 182	9 065	8 050	8 440
Capacity utilization (%)	61	58	61	60	56	67	69	60	63
Sales	7 124	7 190	7 056	7 025	6 863	8 517	8 635	7 970	8 460
of which: Domestic	315	396	350	370	356	385	345	355	360
United States	3 886	3 630	3 610	3 945	4 048	4 560	4 495	4 335	4 550
Offshore	2 923	3 164	3 096	2 710	2 459	3 535	3 795	3 280	3 550
Year-end stocks	1 596	1 272	1 585	1 785	1 726	1 285	1 545	1 420	1 400
World production	29 310	27 452	26 035	24 036	20 407	22 687	24 231	23 205	24 600
World capacity <sup>r</sup>	37 480	37 765	36 905	36 432	35 345	35 445	36 000	36 080	35 840
Canada/world									
Production ratio (%)	25.0	25.5	28.4	30.2	33.6	36.1	37.4	34.7	34.3
Capacity ratio (%)	32.1	31.9	32.6	33.4	34.5	34.5	37.0	36.9	37.4

Sources: Natural Resources Canada; Phosphate and Potash Institute.  
<sup>e</sup> Estimated; <sup>p</sup> Preliminary; <sup>r</sup> Revised.

**TABLE 8. CANADA, POTASH MINES, CAPACITY PROJECTIONS, 1988-98**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(000 tonnes K <sub>2</sub> O)										
Potash Corporation of Saskatchewan Inc.											
Allan	575	575	960	960	960	960	960	1 150	1 150	1 150	1 150
Cory	830	830	830	830	830	830	830	830	830	830	830
Esterhazy (25% of IMC)	580	580	580	580	580	580	580	580	580	580	580
Lanigan	2 090	2 090	2 090	2 090	2 090	2 090	2 090	2 335	2 335	2 335	2 335
Patience Lake <sup>2</sup>	—	—	—	—	—	630	630	630	630	630	630
Rocanville	1 160	1 160	1 160	1 160	1 160	1 160	1 160	1 400	1 400	1 400	1 400
Subtotal, PCS Inc.	5 235	5 235	5 620	5 620	5 620	6 250	6 250	6 925	6 925	6 925	6 925
Agrium Inc.											
Vanscoy	815	815	815	815	830	830	830	930	1 020	1 110	1 110
International Minerals & Chemical Corporation (Canada) Global Limited K1 and K2, Esterhazy (75%)	1 745	1 745	1 745	1 745	1 745	1 745	1 745	1 745	1 745	1 745	1 745
IMC Kalium Canada Ltd.											
Belle-Plaine	1 245	1 245	1 245	1 245	1 245	1 245	1 300	1 410	1 410	1 410	1 410
IMC Central Canada Potash Inc.											
Colonsay	—	—	—	—	—	—	830	930	930	930	930
Subtotal, IMC Kalium	2 990	2 990	2 990	2 990	2 990	2 990	3 875	4 085	4 085	4 085	4 085
Central Canada Potash (a division of Noranda Inc.) <sup>1</sup>											
Colonsay	830	830	830	830	830	830	—	—	—	—	—
Potash Company of America, Inc. <sup>2</sup>											
Patience Lake	630	630	630	630	630	—	—	—	—	—	—
Saskterra Fertilizers Ltd. <sup>3</sup>											
Allan (40%)	385	385	—	—	—	—	—	—	—	—	—
Total Saskatchewan	10 885	10 885	10 885	10 885	10 900	10 900	10 955	11 940	12 030	12 120	12 120
Potacan Mining Company											
Clover Hill (Sussex)	780	780	780	780	810	810	810	810	810	810	810
Potash Corporation of Saskatchewan Inc. – New Brunswick Division											
Penobsquis (Sussex)	—	—	—	—	—	470	470	470	470	470	470
Potash Company of America, Inc. <sup>2</sup>											
Penobsquis (Sussex)	380	380	380	380	470	—	—	—	—	—	—
Total New Brunswick	1 160	1 160	1 160	1 160	1 280	1 280	1 280	1 280	1 280	1 280	1 280
Total Canada	12 045	12 045	12 045	12 045	12 180	12 180	12 235	13 220	13 310	13 400	13 400

Source: Natural Resources Canada.

— Nil.

<sup>1</sup> Sold to Kalium Chemicals Company Limited in 1994. <sup>2</sup> Sold to Potash Corporation of Saskatchewan Inc. in 1993. <sup>3</sup> Sold to Potash Corporation of Saskatchewan Inc. in 1990.

Note: Capacity means "rated" capacity; under normal conditions, Canadian mines can operate comfortably at about 95% of their rated capacity.