Grains & Oilseeds

Handling, Marketing, Processing

Fifth Edition

Canada: Crop Production, Consumption and Exports

Agriculture and Agri-Food Canada
Market Analysis Division

Canadian International Grains Institute

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I. INTRODUCTION

This chapter provides a brief overview of the production, consumption and exports of grains, oilseeds, pulses and special crops in Canada. The country's population, geography and climate largely determine the nature of Canada's grain industry. The population of Canada is about 31 million people, of which 90 percent live within 160 kilometres (km) of the border between Canada and the United States (U.S.). It is about 7400 km from the Atlantic Ocean to the Pacific Ocean. The total area of Canada is 10 million square kilometres.

A. Agriculture

In 2002, Canadian farmers' cash receipts from the sale of crops and livestock were $32.3 billion. About 44 percent of the receipts came from the production of grains, oilseeds, pulses and special crops, with 56 percent coming from the production of livestock. Based on 2001 census data, Canada has about 247 000 farms located on 68 million hectares (Mha) of land with an average farm size of 274 hectares (ha). About 36 Mha of the total farm area was cultivated in 2001, with the remainder consisting of native hay and pasture land, woodlots and other uncultivated areas. A high level of productivity and low population enables Canada to export about 30 million tonnes (Mt) of grains, oilseeds, pulses and special crops each year, representing approximately 50 percent of total production.

In 2002, Canada exported more than $25.9 billion worth of food products that accounted for 6.5 percent of total Canadian exports. Canadian exports of grains, oilseeds and related products were valued at $9 billion.

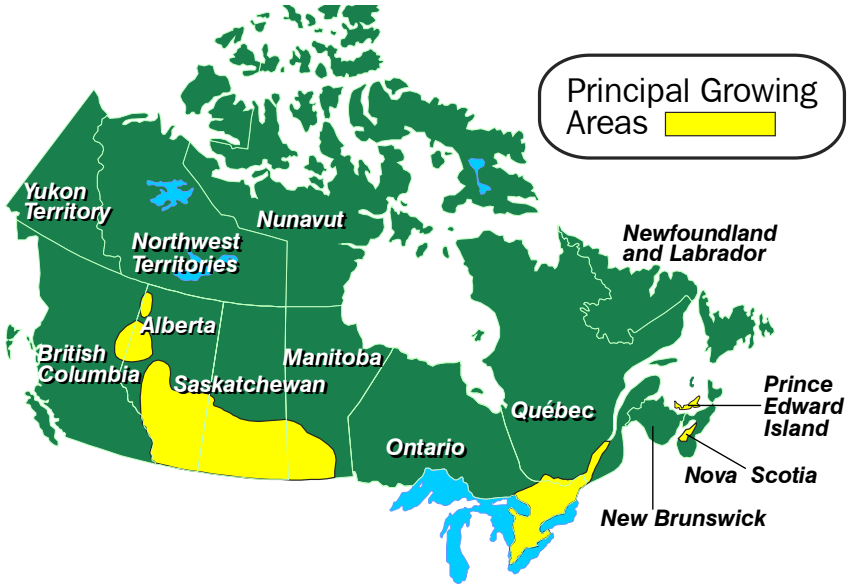


Figure 1. Agricultural regions of Canada.

B. Agricultural Regions

Agriculture production in Canada is concentrated in two major regions (see Figure 1). The largest is the Prairie region of Western Canada located between the Canadian Shield to the east and north, the U.S. border to the south, and the Rocky Mountains to the west. It is shaped in the form of a large right hand triangle with the largest area located in Saskatchewan. The second region is located in the southern areas of Ontario and Quebec and is

shaped like an elongated circle. It is bounded to the north by the Canadian Shield and to the south by either the Great Lakes or the U.S. border. Some agriculture production occurs in the Maritime provinces with grain and livestock production centred in the Annapolis valley of Nova Scotia and in the province of Prince Edward Island.

Historically, Canadian farmers have concentrated on grain, livestock and dairy production. Due to the small population and large land area in Western Canada, these farms have tended to be larger, and focussed on growing crops for export. By comparison, in Eastern Canada, the agricultural region is smaller and the population is larger. As a result, grain production in this region has concentrated on supplying the domestic market.

The production of wheat, durum, barley, oats, canola, flaxseed and dry peas is concentrated in the three Prairie provinces (Alberta, Saskatchewan and Manitoba), where most of Canada's grain for export originates. The production of corn, soybeans and winter wheat is concentrated in Ontario and Quebec.

Livestock production is centred in Alberta, Ontario, Quebec, Saskatchewan and Manitoba. Dairy farms are found in greatest number in Quebec and Ontario. Production of crops such as fruits, vegetables and tobacco is concentrated in British Columbia, Ontario, Quebec and the Maritime provinces.

C. Climate

Western Canada is colder and drier than Eastern Canada. The climate consists of very cold winters with an average temperature of -15°C in January. In summer, the average July temperature rises to 18°C. The average annual precipitation is 408 millimetres (mm), with an average of 112 mm of snow and 296 mm of rain. Most precipitation is received through snowstorms in wintertime or by thundershowers during summer. The growing season is very short, limiting the types of crops that can be grown. On average, the Prairie provinces experience 1544 Effective Growing Degree Days (EGDD) above 5°C, but this ranges from as low as 1207 EGDDs to as high as 1802 EGDDs. Due to the short growing season and the drier climate, wheat, barley, oats, canola, dry peas and flaxseed are the principal crops. Many other pulses and special crops are grown in smaller quantities (see Section VI).

In general, Eastern Canada is warmer and more moist than Western Canada. The milder winter provides an average temperature of -8°C in January, while the average July temperature rises to 21°C. The average annual precipitation is 915 mm, with an average of 176 mm of snow and 741 mm of rain. The growing season is longer and an average of 1984 EGDDs above 5°C are experienced. EGDDs range from a minimum of 1609 to a maximum of 2423 EGDDs. As a result of the relatively mild and moist growing conditions, the major crops grown in Eastern Canada are corn, soybeans and winter wheat.

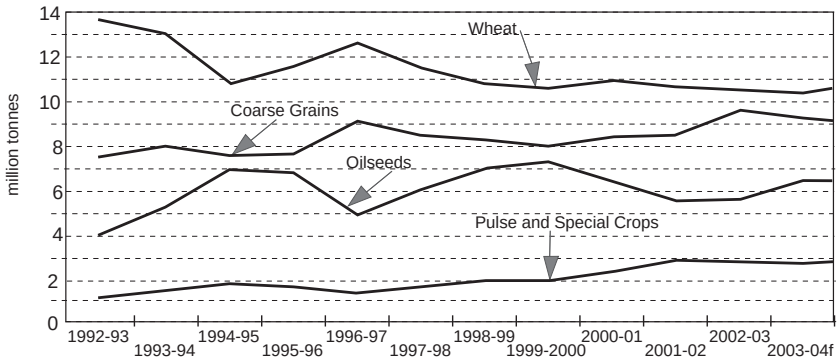
D. Droughts in 2001–02 and 2002–03

During the 1990s, weather conditions and average yields in Canada were generally normal. However, two consecutive droughts in Western Canada in 2001–02 and 2002–03 sharply reduced crop production, exports and stock levels. In 2002–03, farmers in Western Canada experienced one of the worst production seasons in the past 25 years. Weather, disease and pestilence reduced yields and downgraded quality for those producers who were fortunate to have a crop to harvest. Eastern Canada, by comparison, had a normal growing season with adequate precipitation and average yields.

E. Production and Exports for 2003–04

For 2003–04, the area seeded to oilseeds in Western Canada increased due to strong prices in 2002–03, while wheat, coarse grain, special crop and summer fallow areas decreased (see Figure 2). Production of grains, oilseeds, pulses and special crops in Western Canada increased by 51 percent, to 47.6 Mt, due to reduced abandonment and higher yields compared to the drought-reduced 2002–03 crop. In Eastern Canada, area seeded to wheat increased significantly due to high prices in the fall of 2002, while the area seeded to corn and soybeans decreased. Production of grains, oilseeds, pulses and special crops in Eastern Canada increased by 7 percent to 15.6 Mt.

Total production of grains, oilseeds, pulses and special crops in Canada increased significantly from the drought-reduced 2002 crop. The higher production was partly offset by low carry-in stocks, but exports of grains, oilseeds, pulses and special crops are forecast by Agriculture and Agri-Food Canada (AAFC) to increase by 61 percent from 2002–03 to 27.5 Mt.



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Source: Statistics Canada

Figure 2. Canada: Seeded areas.

II. STRUCTURAL CHANGE

The area seeded to crops has remained static but dramatic structural changes have occurred in the Canadian agricultural industry that reflect the growth and diversity in world trade and changes in consumer diet and taste. These changes have been driven by increased globalization; trade liberalization and international trade agreements [such as the World Trade Organization (WTO) and North American Free Trade Agreement (NAFTA)]; policy changes in the major importing and exporting countries; expansion of grain and oilseed production in many regions of the world; strong economic growth resulting in growing Asian demand for food; the collapse of the Former Soviet Union (FSU) in the early 1990s; diminished imports of grain by FSU countries; increased exports by the non-traditional exporters, such as Russia, Ukraine and India; and research and development efforts which have resulted in new varieties and genetically modified grains and food products.

A. Increased Livestock Production and Domestic Consumption of Feed Grains

Historically, livestock production in Western Canada, especially beef cattle and hogs, has been used by producers to offset the cyclical downturns in grain prices. In 1995, the transportation subsidy under the *Western Grain Transportation Act* (WGTA) was removed to comply with WTO rules that established limits on export subsidies and volumes. This decreased the on-farm value of grains and oilseeds in Western Canada, especially in Manitoba and eastern Saskatchewan, and provided economic incentives to expand livestock production. The improved market access for further processed agricultural products under WTO and NAFTA opened doors for meat exports to many countries. As a result, agricultural production in Western Canada diversified during the 1990s with the red meat industry growing rapidly and many large agricultural industry organizations undergoing significant changes. For example, the feedlot sector in Alberta expanded quickly to take advantage of lower cost feed grains, location to newly constructed packing plants, and expansion of the retail markets in the Pacific region of North America and Asia. During the second half of the 1990s, Manitoba expanded its production of hogs and a new hog processing plant was constructed to export surplus pork meat to markets in the U.S. and Asia.

B. Increased Production of Canola, Pulses and Special Crops

Traditionally, the Prairie provinces and the Peace River district in British Columbia have been referred to as the “bread basket” of Canada due to the amount of wheat produced. Wheat is still the predominant crop, but since

1990, farmers have diversified their production away from wheat into canola, pulses and special crops. Production of peas and lentils, in particular, has increased significantly as producers searched for alternative crops to improve net returns and manage risk.

C. Increased Exports of High-Valued Commodities and Processed Products

The elimination of the WGTA subsidy encouraged the expansion of agri-food processing in Western Canada. Low statutory grain rates for transporting grain to port, under the WGTA, artificially increased grain prices on the Prairies and decreased the competitiveness. Since the removal of the subsidy, the mix of agricultural exports has changed from lower-value crops, such as feed barley, to higher-value crops and semi-processed or processed products. For example, exports of canola, malting barley, malt, canola oil, canola meal and meat have increased significantly while exports of feed barley have decreased.

D. Farm Structure

As a result of low farm income and high operating costs, there was a significant increase in the average farm size and the importance of off-farm income. In addition, the financial structure of the farming operation shifted away from individual owner-operators to multi-person enterprises.

III. WHEAT

Canadian wheat production is concentrated in the Prairie provinces. Saskatchewan is the largest producing province. In Eastern Canada, Ontario is the major wheat producing province.

The major types of wheat are the common (non-durum) wheats and durum wheat (see Figure 3). All of the world's commercially grown common wheat production is of one species, *Triticum aestivum*, while durum is a separate species, *Triticum durum*. Common wheat can be subdivided into a number of classes, depending on the colour of the bran, the hardness of the kernel, and the milling and baking characteristics. Each of the classes can be either fall sown (winter wheat) or spring sown (spring wheat). Canada currently produces three types of hard red spring (HRS) wheat; Canada Western Red Spring (CWRS), Canada Prairie Spring Red (CPSR) and Canada Western Extra Strong (CWES). Canada also produces hard red winter (HRW) wheat, durum wheat, soft white winter (SWW) wheat, soft white spring (SWS) wheat and soft red winter (SRW) wheat. In response to the growing demand for medium protein white wheat for the Asian noodle market, Canada Prairie Spring White (CPSW) wheat was introduced in 1989. It evolved through breeding programs and many years of research, develop-

ment and commercial evaluation. Canada Western Hard White (CWHW) wheat, a spring wheat with milling characteristics similar to CWRS wheat, has also been developed and was introduced into commercial production in 2003.

Durum semolina is mainly used for pasta and couscous production, while common wheat flour is used for a range of products including different types of breads, cakes, crackers, frozen dough, mixes and oriental-style noodles.

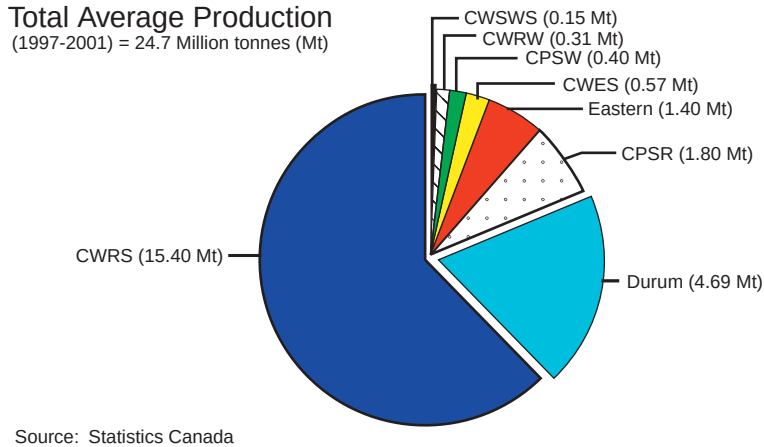


Figure 3. Canadian wheat production by class.

A. Western Canadian Non-Durum Wheat

Canadian non-durum wheat production has been trending downward, due to the increased production of oilseeds and special crops (see Figure 4). Seeded area has declined from an average of 10.5 Mha during the period 1992–96 to 8.7 Mha during 1997–2001. Production of non-durum wheat decreased by about 14 percent from 1992–96, to an average of 19.8 Mt during 1997–2001. Domestic milling of wheat for flour has been growing gradually, tracking Canadian population growth. Although per capita consumption has been generally increasing, declines have been recently noted due to the popularity of low carbohydrate diets. Milling of wheat for flour increased by 14 percent from 1992–96 to an average of 2.9 Mt during 1997–2001. Included in these totals is flour milled for export, which averaged 192 300 tonnes (t) (in wheat equivalent) during 1997–2001. The domestic milling industry is the single largest market for Canadian wheat, accounting for 14 percent of production during 1997–2001. Another 801 000 t were used for seed and about 3.4 Mt were used for livestock feed, on average, in the latter half of the 1990s. Wheat exports have been declining due to the lower production, and averaged 13.5 Mt in the latter half of the decade, versus 15.9 Mt in the previous five-year period.

1. Canada Western Red Spring (CWRS) wheat

CWRS is the major wheat class grown in Canada, with virtually all of it produced in the three Prairie provinces. CWRS production averaged 15 Mt during 1997–2001, with Saskatchewan accounting for 50 percent of the total. CWRS wheat has excellent milling and baking properties and is used around the world for a wide variety of flour applications. In some cases it is used as a blending wheat to improve the bread-making performance of poorer quality imported or locally grown wheat. In Canada, CWRS wheat is used almost exclusively in the production of flour. CWRS exports averaged 11.6 Mt in the latter half of the 1990s, comprising 88 percent of total non-durum wheat exports. Major markets in the late 1990s were Japan, Iran, the U.S., Indonesia, the European Union (EU), Mexico and Colombia. China was a major market in the early 1990s, but had declined to under 100 000 t by 2000–01.

2. Canada Western Extra Strong (CWES) wheat

CWES is a red spring wheat, the production of which averaged 570 000 t during the 1997–2001 period, with 45 percent produced in Alberta, 36 percent in Saskatchewan and 18 percent in Manitoba. CWES wheat is used as a blending wheat due to its extra strong gluten characteristics. CWES exports averaged 219 000 t in the latter half of the 1990s. The U.S. remains the major market for CWES wheat, accounting for about one-half of total exports in the late 1990s, although exports to the U.S. have been declining because little CWES is now grown in the U.S. catchment basin. Disease pressure has pushed CWES production into the more westerly regions of Western Canada. Other markets are Italy, Indonesia, and several Latin American countries.

3. Canada Prairie Spring (CPS) wheat

CPS wheat consists of two distinct classes; Canada Prairie Spring Red (CPSR) and Canada Prairie Spring White (CPSW). These are medium hard, medium gluten strength, medium protein wheats that compete in world markets with medium quality wheats such as U.S. HRW and Australian Standard White. Total production averaged 2.2 Mt during 1997–2001. Domestic livestock feeding is a major use of CPSR wheat, as it is a high yielding wheat, and western Canadian feed prices are competitive with world prices for medium quality wheat, once transportation costs from the Prairie production area are taken into account. While exact feed use figures are unavailable, very little CPSR wheat is milled for flour in Canada and exports average only 28 percent of production, indicating that feed use likely exceeds 1 Mt annually. Total CPS exports averaged 618 000 t in the latter half of the 1990s, with CPSR wheat accounting for 58 percent of the total. Major export markets for CPSR wheat are in Latin America and East Asia, with Indonesia and Mexico the largest importers in the late 1990s. For CPSW wheat, the

major markets are in South Asia, East Asia and the Middle East, with Pakistan, the United Arab Emirates and Malaysia the largest importers.

4. Canada Western Red Winter (CWRW) wheat

CWRW production averaged 322 000 t during 1997–2001, with Manitoba and Saskatchewan the major producers. Most CWRW wheat is used domestically for feed, with only small quantities milled for flour or exported. CWRW exports averaged 58 000 t in the latter half of the 1990s. Due to the small volume, there are no clear major markets for CWRW, although Thailand has consistently accounted for a large portion of total exports. A Canadian Wheat Board (CWB) CWRW Select Program is in place to encourage production of varieties with improved milling and baking properties.

5. Canada Western Soft White Spring (CWSWS) wheat

CWSWS production is concentrated in southern Alberta, where it is grown under irrigation. Production averaged 147 000 t during 1997–2001, compared to 453 000 t in the early 1990s. The decline is attributed to low wheat prices compared to alternative crops that can be grown under irrigation. Domestic milling of CWSWS averages about 100 000 t annually. Exports averaged 64 000 t in the latter half of the 1990s, with the Philippines and Chile as the major markets.

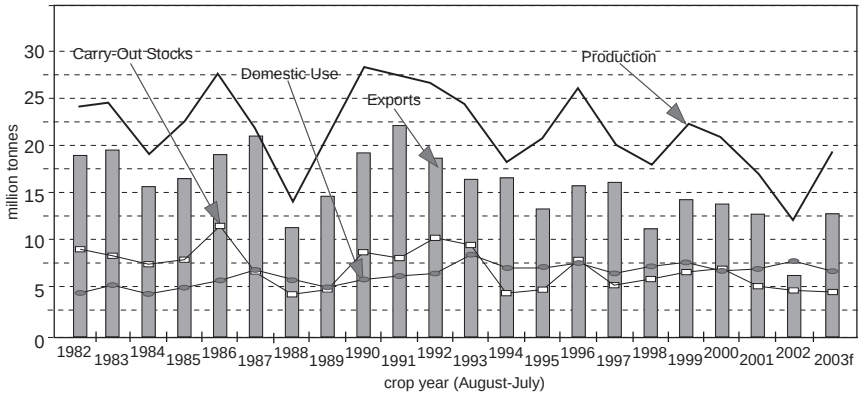
6. Canada Western Hard White (CWHW) wheat

Canada Western Hard White is a new class of spring wheat developed for production in Western Canada, with milling and baking characteristics similar to CWRS. Reduced visible bran specks at higher flour extraction rates, combined with a milder flavour of the whole wheat flour, are expected to give CWHW an advantage over CWRS in certain markets, particularly for Asian noodle production. The flour will also appeal to bakers looking for a lighter coloured whole wheat bread. It will also allow Canada to compete more directly with white wheat from Australia. Commercial production of CWHW began in 2003 when the first of two registered varieties was grown under contract by Western Canadian wheat producers on about 200 000 acres, resulting in production of about 0.2 Mt.

B. Eastern Canadian Wheat

Wheat production in Eastern Canada averaged 1.4 Mt during 1997–2001, with 90 percent produced in Ontario. Between 1997–98 and 2000–01, the wheat marketed by the Ontario Wheat Producers' Marketing Board averaged 43 percent Soft White Winter (SWW), 29 percent Soft Red Winter (SRW), and 13 percent Hard Red Winter (HRW), with the proportion of SRW rising steadily over this period. About 500 000 t of Ontario wheat is milled domestically, with the surplus exported. Exports over the latter part of the

1990s averaged 400 000 t, with the U.S. as the major market, particularly for SWW wheat, which accounted for more than one-half of all exports in the late 1990s. South Asian countries such as Pakistan, Bangladesh and Iran have been the most consistent overseas markets, although sporadic sales have also been made to Morocco, Mexico, Yemen and Egypt. A major market for eastern feed wheat in recent years has been South Korea. A significant portion of the overseas milling wheat exports have been used for food aid.



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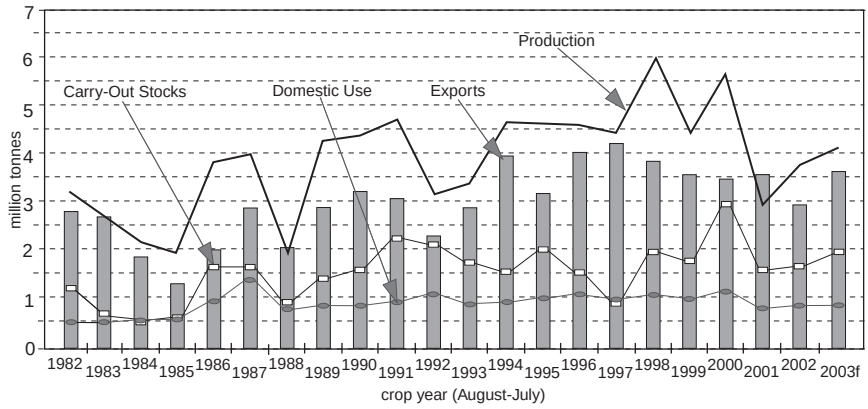
Source: Statistics Canada

Figure 4. Canada: Wheat (except durum) supply and disposition.

C. Canada Western Amber Durum (CWAD) Wheat

Southern Saskatchewan normally accounts for about 80 percent of the total Canadian durum production because durum requires hot dry growing conditions. The area seeded to durum wheat on the Prairies increased from 1.9 Mha in the 1992–96 period to 2.4 Mha during 1997–2001, while production rose from 4.1 Mt to 4.7 Mt during the same period (see Figure 5). Domestic milling of durum averages about 286 000 t annually, representing only about 6 percent of the average production during the late 1990s. Seed use averages about 229 000 t annually. Due to increased production, exports of durum rose from 3.3 Mt during 1992–96 to 3.8 Mt in the latter half of the 1990s. Canadian durum is used for pasta production in most markets, except for North Africa, where most is consumed as couscous. The single largest Canadian durum market is in North Africa, particularly Algeria and Morocco. Other major importing regions are Latin America, particularly Venezuela, Peru and Chile; and the EU, particularly Italy and Belgium. The U.S. is also a major market for Canadian durum. Japan is the only significant durum market in Asia.



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Source: Statistics Canada

Figure 5. Canada: Durum supply and disposition.

D. Future Wheat Trends

Rising world demand for oilseeds and special crops will maintain competitive pressure for land resources on Canadian non-durum wheat, the area of which is expected to remain near the 1997–2001 average over the next decade. Yield increases are forecast to result in an 8 percent growth in production over this period. Rising domestic consumption, particularly for feed, will constrain exports which are unlikely to rise above the 1997–2001 average over the next 10 years. Durum area and production are forecast to decline marginally over the next decade, due to increased export competition from other producing countries and falling durum price premiums over spring wheat. Although world durum trade is expected to rise by more than 10 percent over the next 10 years, Canadian exports are projected to decline marginally from the 1997–2001 average.

IV. COARSE GRAINS

In Canada, the area seeded to coarse grain increased by 5 percent from 1992–96 to about 8.4 Mha during 1997–2001. Coarse grain production increased by approximately 4 percent to about 25 Mt during 1997–2001. Barley and oats represent 75 percent and 20 percent of coarse grain production in Western Canada, with smaller amounts of rye and corn also produced. In Eastern Canada, corn represents about 80 percent of coarse grain production but small amounts of barley and oats are produced as well. The majority of the coarse grain produced in Canada is used for domestic livestock feed but significant amounts are also exported or processed domestically.

A. Barley

Barley represents about 50 percent of total coarse grain production in Canada, most of which is produced on the Prairies. Alberta, Saskatchewan and Manitoba respectively accounted for about 44 percent, 36 percent, and 12 percent of total barley production in Canada during 1997–2001.

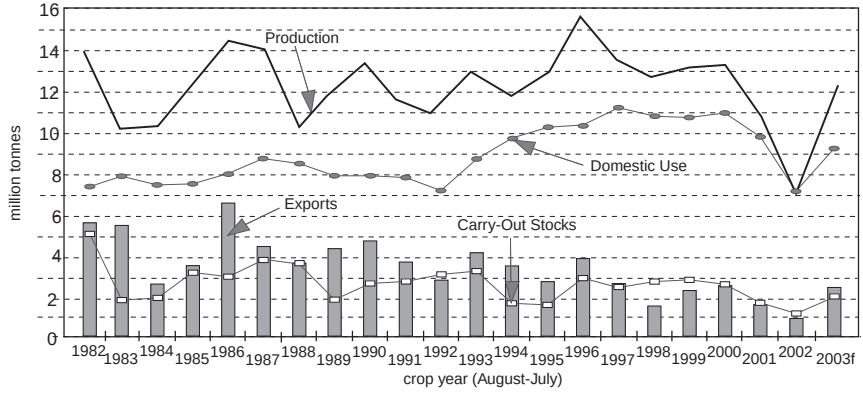
The area seeded to barley increased by about 4 percent from 1992–96 to an average of 4.8 Mha during 1997–2001, largely due to the strength of the domestic livestock feed market. Total barley production decreased by about 1 percent from 1992–96, to an average of 12.7 Mt during 1997–2001 (see Figure 6). The decline in the average is due in large part to the drought reduced production in 2001–02.

About 70 percent of the barley produced in Western Canada is used domestically for livestock feed, 15 percent is processed domestically or exported as malting barley, with a small portion used for the Canadian food market.

Generally 60 to 70 percent of the area seeded to barley in Western Canada is seeded to malting barley varieties as producers attempt to capture the premium for malting barley relative to feed barley. The remaining 30 to 40 percent is seeded to varieties suitable for livestock feed only. Two-row varieties are seeded on two-thirds of the malting barley area in Western Canada, while six-row varieties are seeded on the remaining one-third.

The amount of barley actually selected for malting purposes depends on demand and the quality of the crop. Malting barley exports, including exports of malt (in barley equivalent) averaged about 1.4 Mt during 1992–96 and 1.8 Mt during 1997–2001. About 70 percent of Canada's malting barley exports are two-row varieties while 30 percent are six-row. China is the major importer of two-row barley while the U.S. is the major importer of six-row.

The removal of the WGTA subsidy in August 1995 increased the cost to the farmer of exporting barley from the Prairies. This reduced barley exports from



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Source: Statistics Canada

Figure 6. Canada: Barley supply and disposition.

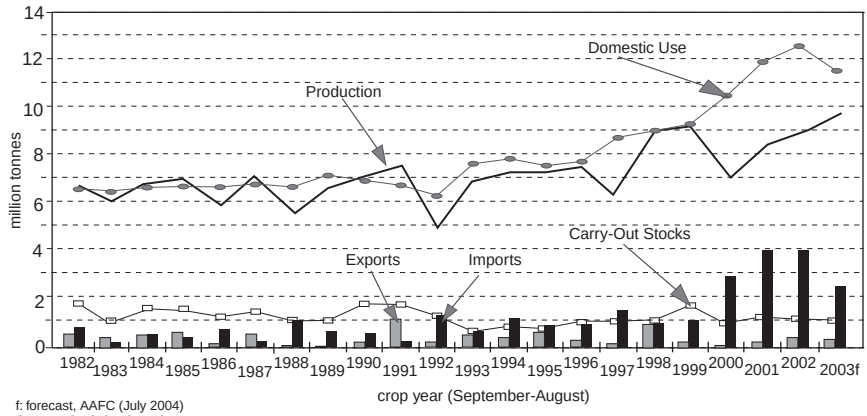
the Prairies, especially from the eastern Prairies, and increased the utilization of barley for feed. The on-farm price of barley decreased, especially in Manitoba and eastern Saskatchewan, encouraging a significant expansion in hog, and to a lesser extent, cattle production.

B. Corn

Corn represents about 30 percent of the total coarse grain production in Canada. About 65 percent of the corn is grown in Ontario, with 32 percent in Quebec and the balance in Manitoba, Alberta and Nova Scotia. The area seeded to corn during 1997–2001 was 10 percent higher than during 1992–96 at about 1.2 Mha. However, corn production increased by about 20 percent to 8.1 Mt due to higher yields, which rose to 7.2 tonnes per hectare (t/ha) due to new varieties and improved harvesting techniques (see Figure 7).

About 42 percent of the corn area in Ontario was seeded to genetically modified (GM) varieties in 2003, with Bt corn at 40 percent and Round Up® Ready corn at 2 percent. About 30 percent and 60 percent of the corn area in Quebec and Manitoba respectively was seeded to GM corn in 2003.

Most corn is used for livestock feed, but domestic use for food processing and ethanol production is significant and increasing. Eastern Canada is generally a net corn importer with imports increasing during the latter part of the crop year after domestically produced supplies have been consumed. About 5 to 10 percent of the corn is exported. In Western Canada, due to an insufficient number of heat units, only small volumes of corn are produced, mainly in Manitoba and, to a lesser extent, Alberta. Some corn produced in Manitoba is used for alcohol production but most is used as feed for dairy cattle, poultry and hogs. Imports of U.S. corn into Western Canada for feed use increased significantly in 2001–02 and 2002–03, due to the drought-diminished barley crop in that region.



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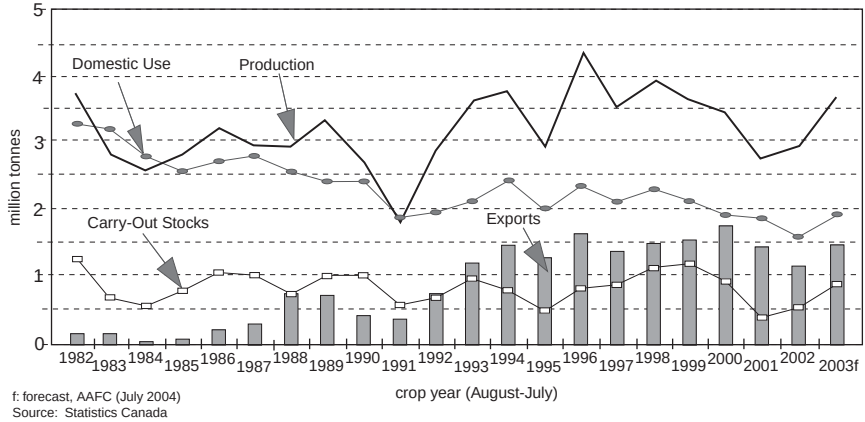
Source: Statistics Canada

Figure 7. Canada: Corn supply and disposition.

C. Oats

The area seeded to oats increased by 8 percent from 1992–96 to 1.9 Mha during 1997–2001. Production decreased slightly from 1992–96 to an average of about 3.4 Mt during 1997–2001, with the decline due to the drought in 2001–02 (see Figure 8). Saskatchewan, Alberta and Manitoba respectively accounted for about 41 percent, 23 percent and 26 percent of total oat production in Canada during 1997–2001. During this period there was a shift in oat production from Alberta to eastern Saskatchewan and Manitoba. This shift is partly attributable to the removal of the WGTA subsidy and the eastern location of the major U.S. export markets in Minnesota and Wisconsin. About 25 percent of Alberta oats are forage crop. Less than 15 percent of commercially marketed oats come from Alberta.

About 600 000 t of Canada's oats are processed domestically and about 50 percent of the processed product is exported, almost entirely to the U.S. During 1997–2001, about 40 percent of the oats produced in Canada were exported to the U.S. The importance of the U.S. market for food oats increased significantly during the 1990s, with Canadian exports more than doubling over the decade. The growth in exports coincided with the decline in U.S. oat production as processors switched to Canadian oats, due to economic reasons and a preference by some processors for the physical characteristics of Canadian oats.



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Source: Statistics Canada

Figure 8. Canada: Oats supply and disposition.

D. Rye

The area seeded to rye decreased by 4 percent from 1992–96 to an average of 214 000 ha during 1997–2001. Production averaged about the same during 1997–2001 as in 1992–96, at 321 000 t, as the lower seeded area was partly offset by higher average yields. Saskatchewan is the main producer of rye,

with Manitoba, Alberta and Ontario producing smaller quantities.

Rye is used primarily for livestock feed, but its importance has decreased due to the greater availability and more consistent supply of alternative feed grains, such as barley.

E. Future Coarse Grain Trends

Growth in world population, income and urbanization are expected to increase the demand for meat. This in turn will increase the demand for coarse grains to produce feed for livestock and poultry.

The future trends for specific coarse grains are as follows:

Barley: Canadian production is expected to be supported by the domestic market for livestock feed, and by increasing international demand for malt and malting barley because of increased global beer consumption. Production is expected to increase by about 20 percent from the 1997–2001 average. Exports of feed barley are likely to remain historically low due to the strong domestic market for feed barley, while malting barley exports are expected to grow by more than 30 percent due to strong growth in global malt demand.

Corn: Production is expected to remain strong, supported by livestock feed demand. The domestic use of corn for the production of ethanol is also projected to increase as environmental considerations play an increasingly important role in fuel production.

Oats: Production is expected to remain strong, at near current levels, due to the strength of the market for oats in the U.S. where oat production is expected to remain low. As a result, continued strong U.S. import demand for high quality oats from Canada is likely.

Rye: Production is expected to decrease slightly and continue the downward trend established in the 1990s.

V. OILSEEDS

In Western Canada, canola and flaxseed represent about 88 percent and 10 percent of oilseed production respectively. In Eastern Canada, soybeans and canola represent 97 percent and 3 percent of oilseed production respectively.

Over the decade from 1992–2001, the production of oilseeds increased as a percent of total Canadian production of grains, oilseeds, pulses and special crops. Area seeded to the three major oilseeds in Canada increased by 16 percent from 1992–96 to average 6.7 Mha in 1997–2001.

About one-half of the oilseeds in Canada are exported as seed, while the other half is crushed domestically for oil and meal. Roughly one-half of the oil is processed in Canada, while the other half is exported. Although some meal is exported, Canada is a net importer of protein meal.

A. Canola

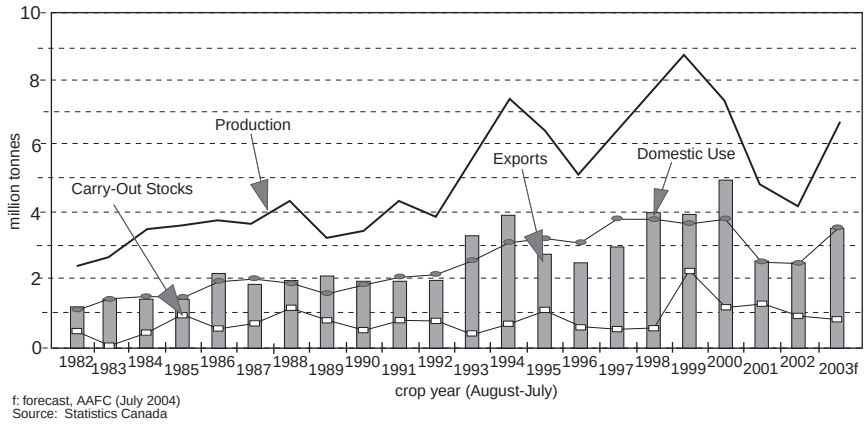
Canola is the third largest crop in terms of production in Western Canada. Canola accounted for about 67 percent of total oilseed production in Canada during 1997–2001, of which production in Saskatchewan, Alberta and Manitoba represented 44 percent, 32 percent, and 22 percent, respectively. A small amount of canola is grown in British Columbia, Ontario and Quebec. The area seeded to canola increased by 12 percent from 1992–96 to an average of 4.9 Mha during 1997–2001, largely due to the low returns for wheat and the need for producers to diversify into crops with higher returns. The introduction of higher yielding hybrid varieties with better disease resistance was also a significant factor.

GM canola was introduced commercially in the mid-1990s, and by 2002 accounted for 64 percent of the total seeded area, largely due to the popularity of Round Up® Ready canola, which reduced the cost of controlling weeds. It is estimated that about 68 percent of the canola area in Canada in 2003 was seeded to GM canola, with Round Up® Ready canola at 45 percent and Liberty canola at 23 percent.

Canola production increased by 24 percent from 1992–96 to an average of 7.0 Mt during 1997–2001 (see Figure 9). The majority of the canola produced is the Argentine variety (95 percent), although Polish canola production is concentrated in regions with short growing seasons. Canada is the second largest producer of canola in the world and the largest exporting country.

About half of the canola crop is crushed in Canada. During processing, seeds are crushed to extract the oil and to make meal. Each seed contains about 42 percent oil. Canola oil is recognized for its nutritional attributes as it contains the lowest level of saturated fat of any vegetable oil. Canola oil is used in salad oils, shortening, margarine, coffee whiteners, cookies, breads and fried snacks. It is also used in a number of inedible applications such as cosmetics and printing inks. Canola meal is used as a feed for livestock, poultry and pets and as a fertilizer. About 70 percent of the canola oil and 62 percent of the canola meal are exported, with the U.S. as the major destination.

The other half of the canola crop is exported as seed for crushing in destination markets. In the late 1990s, the largest markets were Japan, China and Mexico.



f: forecast, AAFC (July 2004)
Source: Statistics Canada

Figure 9. Canada: Canola supply and disposition.

B. Soybeans

Soybeans are the second largest oilseed crop produced in Canada. The area seeded to soybeans increased by 33 percent from 1992–96 to an average of 1.0 Mha during 1997–2001 due to relatively strong prices compared to corn and wheat in Eastern Canada. The adoption of zero-till production practices and the introduction of new lower heat unit varieties were also factors. Soybeans are grown mostly in Ontario, followed by Quebec, Manitoba and the Maritimes. Production in the more northern and eastern regions of Ontario and Quebec increased during the 1990s as the new varieties required less heat units and had improved disease and weed tolerance. Soybean production increased by 24 percent from 1992–96 to an average of 2.52 Mt during 1997–2001 (see Figure 10).

About two-thirds of the soybeans are crushed in Canada for the production of soybean meal and soybean oil. Most of the oil and meal is consumed in Canada. About one-third of the soybeans are exported, mostly to South Asia, Western Europe and the U.S. Exports are focussed on food quality soybeans and largely consist of clear hilum and specialty varieties.

GM soybeans were commercially introduced in the mid-1990s. The adoption of GM soybeans has proceeded quickly, and by 2002, approximately 45 percent of the soybean area was seeded to Round Up® Ready soybeans. It is estimated that about 50 to 55 percent of the soybean area in Canada was seeded to GM soybeans in 2003. Due to the good premium for organic, clear hilum and non-GM soybeans, Canadian producers have also aggressively pursued these niche markets. A significant portion of the exports are marketed using Identity Preserved (IP) handling and transportation, allowing marketers to provide soybeans with the specific characteristics desired by the customer and consumer.

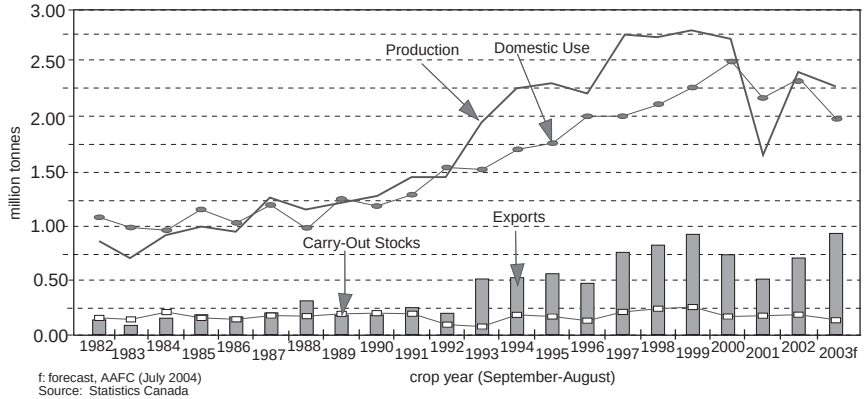


Figure 10. Canada: Soybean supply and disposition.

C. Flaxseed

Flaxseed accounts for about 9 percent of the total oilseed production in Canada. Area seeded to flaxseed increased by 22 percent from 1992–96 to an average of 738 000 ha during 1997–2001 due to good prices for flaxseed relative to cereal crops. Production of flaxseed (see Figure 11) increased by 17 percent from 1992–96 to an average of 0.91 Mt during 1997–2001 due to higher seeded area. Saskatchewan, Manitoba and Alberta respectively accounted for 65 percent, 32 percent and 3 percent of total flaxseed production in Canada during 1997–2001.

Most flaxseed is exported to the EU and the U.S. where it is crushed to produce linseed oil. Linseed oil is largely used in paints, solvents and to produce linoleum flooring. Because it is used in industrial products, flaxseed and linseed oil tend to follow the prices of crude oil, rather than vegetable oils.

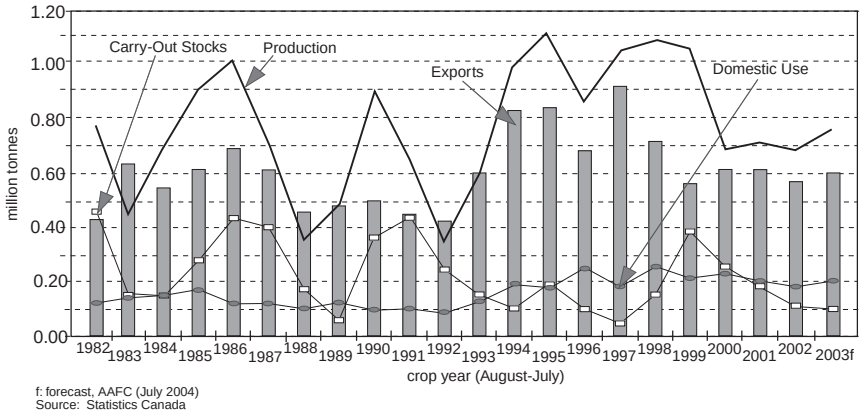


Figure 11. Canada: Flaxseed supply and disposition.

Whole flaxseed is also used in baking and in livestock rations because it provides health benefits for humans. For example, by feeding full-fat flaxseed in hen laying rations, producers have created an Omega-3 fatty acid-enriched egg which helps reduce cholesterol levels in humans. The food market is a small, but growing market as people increasingly become concerned about health issues. Canada is the world's largest producer and exporter of flaxseed.

D. Future Oilseeds Trends

Growth in world population, income and urbanization are expected to increase the demand for vegetable oil and meat, which will increase the demand for oilseeds. Projected higher meat consumption will increase the demand for protein meals for feeding livestock and poultry. The industrial use of vegetable oil as biodiesel is expected to increase.

The future trends for specific oilseeds are as follows:

Canola: Production is expected to increase due to the growing demand for oilseeds in Asia, the development of new varieties with speciality oil traits, and the reputation of canola oil as a healthy food.

Soybeans: Production is expected to increase in Canada due to the introduction of new varieties and higher world demand for vegetable oils and protein meals. Soybeans are a good fit in crop rotations and tend to yield well in zero-till or minimum tillage systems. Exports are expected to increase, supported in part by identity-preserved marketing to niche markets.

Flaxseed: Production is expected to remain near current levels as world demand remains stable. Demand for flaxseed could increase if a new use was found for linseed oil or if people become more concerned about their health. Flaxseed remains a popular crop for use in rotation because it can be grown with low fertilizer and pesticide use and because it is tolerant of autumn frosts. Canada is expected to continue as the world's largest producer and exporter of flaxseed.

VI. PULSES AND SPECIAL CROPS

The production of pulses and special crops in Canada is very diversified. Although more than 20 crops are produced, four pulse crops (dry peas, lentils, dry beans and chickpeas) and four special crops (mustard seed, canary seed, sunflower seed and buckwheat) account for more than 95 percent of the production. Other special crops produced are fababeans, caraway seed, coriander seed, borage seed, safflower seed, hemp, millet, dill seed, spelt, kamut and quinoa. Canadian pulse and special crops production is concentrated in the Prairie provinces and Ontario, with Saskatchewan being the largest producing province.

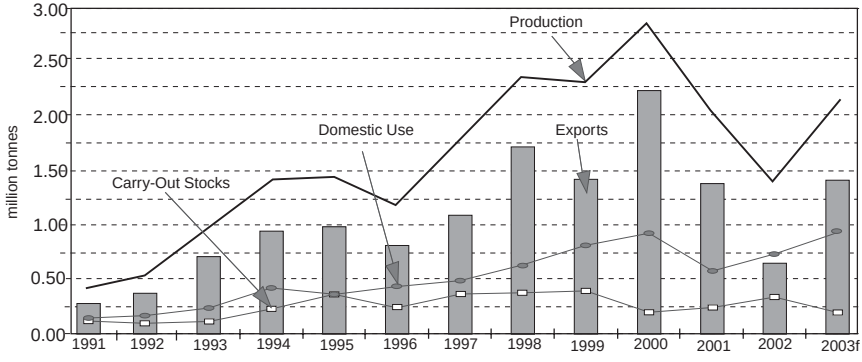
The area seeded to the eight major pulse and special crops in Canada increased from an average of 1.4 Mha during the period 1992–96 to an average of 2.4 Mha during 1997–2001. Most of the seeded area increase was due to the large increase for dry peas. During the 1990s, Canadian researchers helped to expand pulse and special crops production with the development of varieties suitable for Canadian growing conditions. Commercial production of chickpeas, for example, started in 1995.

Canadian production of the eight major pulse and special crops increased from an average of 2.1 Mt during 1992–96 to an average of 3.8 Mt during 1997–2001. The increase in pulse and special crops production has proven to be valuable for rotations with other crops, since it helps to control weeds, diseases and insects and improve soil texture and fertility.

Total exports increased from an average of 1.5 Mt during 1992–96 to an average of 2.7 Mt during 1997–2001. In addition to exports of seed, some processed products are also exported.

A. Dry Peas

Dry pea seeded area increased from an average of 0.6 Mha during 1992–96 to an average of 1.1 Mha during 1997–2001. Dry pea production increased from an average of 1.1 Mt during 1992–96 to an average of 2.3 Mt from 1997–2001 (see Figure 12). Production is concentrated in Saskatchewan, followed by Alberta and Manitoba. The majority of dry peas produced are yellow, although green pea production is also large. In addition, some maple, small yellow, Austrian winter, and green marrowfat peas are also produced. Most dry peas are consumed by the livestock feed industry, both in Canada and in export markets, mainly Europe. The hog industry is the single largest consumer. Food markets are primarily in Asia and Latin America. Canada is the largest producer and the largest exporter of dry peas in the world. Canadian dry pea exports doubled from an average of 0.8 Mt during 1992–96 to an average of 1.6 Mt during 1997–2001.



f: forecast, AAFC (July 2004)
Source: Statistics Canada

Figure 12. Canada: Dry peas supply and disposition.

B. Lentils

Lentil seeded area increased from an average of 320 000 ha during 1992–96 to an average of 520 000 ha during 1997–2001. Production increased from an average of 395 000 t during 1992–96 to an average of 615 000 t during 1997–2001 (see Figure 13). Lentil production is largely centred in Saskatchewan, although some are also produced in Alberta and Manitoba. Most of the lentils produced are the green type. This type includes the large-seed size Laird, Sovereign, Grandora, Sedley, Plato and Glamis varieties, the medium-seed size Richlea and Vantage varieties, and the small-seed size Eston, Viceroy and Milestone varieties. The growth in red lentil production has enabled Canada to compete in the markets preferring red lentils. In addition, some dark green speckled and brown lentils are also produced. Lentils are generally used for food and are largely exported. Export destinations are mainly Latin America, Europe, the Middle East, northern Africa, and southern Asia. Canada accounts for most of the world's lentil exports. Canadian lentil exports increased from an average of 270 000 t during 1992–96 to an average of 435 000 t during 1997–2001.

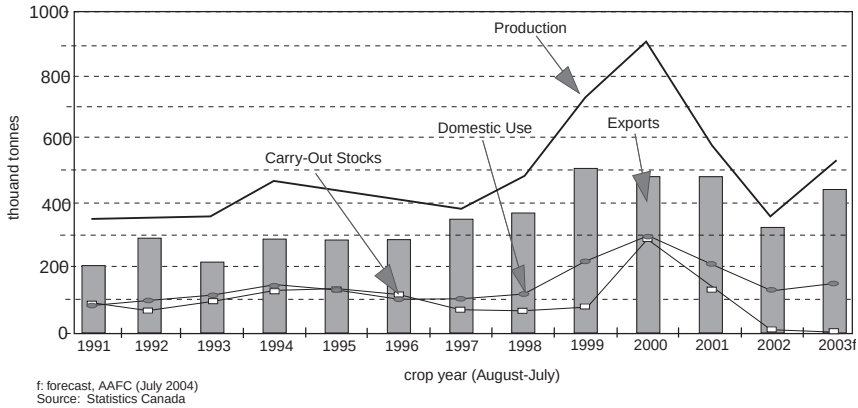


Figure 13. Canada: Lentils supply and disposition.

C. Dry Beans

The area seeded to dry beans in Canada increased from an average of 85 000 ha during 1992–96 to an average of 140 000 ha during 1997–2001. Production increased from an average of 140 000 t during 1992–96 to an average of 245 000 t during 1997–2001. Manitoba is the largest producer, followed by Ontario and Alberta. Some dry beans are also produced in Quebec and Saskatchewan. At the beginning of the 1990s, white pea (navy) beans accounted for the bulk of Canadian production. By the end of the decade, its share of Canadian dry bean production slipped to below 50 percent. Therefore, the main growth was for other dry beans, commonly referred to as

coloured, such as dark and light red kidney, cranberry, black, pinto, Great Northern, small red, and pink. Dry beans are used for food and are mostly exported, with Europe and countries in North and South America being the main destinations. Canadian dry bean exports increased from an average of 120 000 t during 1992–96 to an average of 215 000 t during 1997–2001.

D. Chickpeas

Commercial production of chickpeas in Canada started in 1995 and grew rapidly during the remainder of the decade. During 1997–2001, an average of 195 000 ha were seeded to chickpeas, with an average of 225 000 t produced. Desi chickpea production is recommended for the brown soil zones in southwestern Saskatchewan and southeastern Alberta. Production of the kabuli type (also known as garbanzo beans) is recommended for the warmer and drier areas of the brown soil zone because it is more susceptible to disease damage and needs more frost-free days and heat to mature. Saskatchewan is the dominant producer of chickpeas, although some are also produced in Alberta. Chickpeas are generally used for food and are mostly exported. The desi type is exported primarily to Asia, where they are typically split or milled into flour. The flour is used in various food preparations. The kabuli type is mainly consumed as whole seed. Some are used in Canada, but most are exported, mainly to countries in North and South America and Europe. Canadian chickpea exports grew, in line with production, to an average of 90 000 t during 1997–2001.

E. Mustard Seed

Although Canada is the second largest producer of mustard seed in the world, it is the dominant exporter. Area seeded to mustard seed rose from an average of 230 000 ha during 1992–96 to an average of 250 000 ha during 1997–2001. Production decreased from an average of 230 000 t during 1992–96 to an average of 220 000 t during 1997–2001. Very poor yields during the drought of 2001 are the reason for the decline. Production is concentrated in Saskatchewan, with smaller volumes in Alberta and Manitoba. Three types of mustard seed are produced in Canada; yellow, brown and oriental. The yellow type is mainly used in Canada or exported to the U.S. Yellow mustard seed is used as a condiment and in processed meats as a binder, protein extender and flavour enhancer. Brown mustard seed is mostly exported to Europe to produce a hotter condiment mustard. Oriental mustard seed is primarily exported to Asia, where it is used as a condiment and the oil is used for cooking. Canadian mustard seed exports decreased from an average of 180 000 t during 1992–96 to an average of 165 000 t during 1997–2001.

F. Canary Seed

Canada is the dominant producer and exporter of canary seed in the world. The seeded area averaged 165 000 ha during both the 1992–96 and 1997–2001 periods. Production decreased from an average of 185 000 t during 1992–96 to an average of 160 000 t during 1997–2001. The reason for the decrease was unusually high yields in 1992 and very low yields in 2001 due to the drought. Production is concentrated in Saskatchewan, with smaller volumes in Manitoba and Alberta. Canary seed is used in birdseed mixtures. Canario is a glabrous, or hairless, type of canary seed developed in Canada, with commercial production starting in 1997. Canario is easier to combine and process because the problem with dust and itching is eliminated. In addition, processing cost is reduced because the oiling and polishing steps are not needed. Canadian canary seed is mostly exported to Europe and countries in North and South America. Canadian canary seed exports increased from an average of 125 000 t during 1992–96 to an average of 145 000 t during 1997–2001.

G. Sunflower Seed

The area seeded to sunflower seed increased from an average of 60 000 ha during 1992–96 to an average of 70 000 ha during 1997–2001. Canadian production of sunflower seed is mainly in Manitoba, followed by Saskatchewan and Alberta. There has also been a shift in production from the oilseed type, after the crushing of sunflower seeds in Canada ended in 1995, to the confectionery type. There has been a significant growth in the confectionery and birdseed processing industries. Exports of seed are mostly to the U.S., with the balance going primarily to Europe. Most of the confectionery sunflowers are sold as roasted whole sunflower seeds or dehulled and used for snack food and baking. Some are also sold into the birdseed market. The oilseed sunflowers are mostly sold into the birdseed markets, with some exported to crushing plants in the U.S. Canadian exports increased from an average of 45 000 t during 1992–96 to an average of 60 000 t during 1997–2001.

H. Buckwheat

Canadian buckwheat seeded area and production has been stagnant during both the 1992–96 and 1997–2001 periods with an average of 15 000 ha seeded and 15 000 t produced. Production is mostly in Manitoba, followed by Ontario and Quebec. A significant portion of the buckwheat produced is certified organic, especially in Eastern Canada. There is some processing in Canada, but most of the buckwheat is exported, mainly to Japan, with smaller volumes going to the U.S. and Europe. Buckwheat is used for food, milled into flour or processed into groats and grits. Canadian buckwheat exports averaged 8000 t during both periods.

I. Future Pulse and Special Crops Trends

Canadian seeded area and production of pulse and special crops is expected to continue trending upwards during the first decade of the 21st century. The level of the increase will depend on returns from pulse and special crops relative to grains and oilseeds. Most of the growth is expected to be in Saskatchewan, due to its large land base and the continuing development of varieties suitable for production in that province. Most of the production growth is likely to result from increased seeded area, but average yields are also expected to continue increasing.

The future trends for specific pulse and special crops are as follows:

Dry peas: Canadian production is expected to increase significantly, as demand is growing in both feed and food sectors and because of the development of improved varieties. An additional incentive for increased dry pea production is their fit in rotations with other crops. Canada is expected to continue to be the largest producer and exporter of dry peas in the world.

Lentils: Canadian production is expected to trend upwards with increased world demand, a large area of land suitable for lentil production in the Prairie provinces, especially in Saskatchewan, and the development of improved varieties. Canada is expected to be one of the largest producers of lentils in the world and continue to dominate exports.

Dry beans: Production is expected to keep increasing in Canada, with most of the growth in Saskatchewan and Manitoba. Saskatchewan is expected to become one of the main dry bean producing provinces as shorter season varieties become available. The increase in production is expected to be mainly in the coloured types. Canada's share of world exports is anticipated to grow, in line with the increased production.

Chickpeas: Canadian production is expected to depend on the development of shorter season and more disease resistant varieties, which will enable the crop to be grown over a larger area and with lower risk for producers. Research is under way to develop such varieties.

Mustard seed: Canadian production is projected to increase because of growing demand and Canada is expected to continue to be the dominant exporter.

Canary seed: Canadian production is expected to increase slowly, unless other uses for canary seed are developed to increase demand. Research is under way to establish markets for canary seed as a human food and for industrial uses, such as cosmetics. If the research efforts are successful, the demand for canary seed will increase faster and lead to larger growth in production.

Sunflower seed: Canadian production of confectionery seed is expected to grow moderately in line with the growth in demand. Oilseed sunflower production is also expected to grow but the rate of growth will depend on the price for vegetable oil, as well as the growth in demand for birdseed. An additional factor is the increase in demand for NuSun, a mid-oleic sunflower, which has a low saturated fat profile. NuSun production has been expanding rapidly in the U.S. because of a strong demand for NuSun oil. NuSun growers receive a price premium over conventional sunflower seeds. A continuing strong increase in demand for NuSun oil and attractive prices would result in a faster increase in Canadian oilseed sunflower production.

Buckwheat: Canadian production is expected to grow slowly until new higher yielding and more frost tolerant varieties are commercially available. This development is expected to encourage larger production. Research is being carried out to develop uses for buckwheat in the pharmaceutical and nutraceutical industries. This potential is expected to increase the demand for buckwheat.

For current information on Canadian wheat, coarse grains, oilseeds, and pulse and special crops, please visit Agriculture and Agri-Food Canada's (AAFC) Market Analysis Division online at the AAFC web site, "www.agr.gc.ca/mad-dam/".

CHAPTER INDEX
Canada: Crop Production, Consumption and Exports