



# Bi-weekly Bulletin

July 5, 2004 Volume 17 Number 11

## PROFILE OF THE CANADIAN WHEAT INDUSTRY

Canada is generally the largest producer of high protein milling wheat in the world, although it is only the seventh-largest wheat producing country. Wheat continues to be Canada's largest crop in terms of both area seeded and production. Not only does it support a large Canadian domestic processing industry, it is the single largest earner of export revenue of all agricultural products, with annual exports worth about \$3.8 billion (G). This issue of the *Bi-weekly Bulletin* provides an overview of the Canadian wheat industry. "Wheat" refers to all types of wheat, including durum, unless otherwise specified.

### CANADIAN WHEAT PRODUCTION

Most Canadian wheat is grown in the Prairie provinces of Saskatchewan, Alberta and Manitoba, which produced 48%, 28% and 16% of the total, respectively, over the past five years. The only significant wheat-producing province in eastern Canada is Ontario, which accounted for 7% of the total.

#### Fewer but Bigger Farms

Statistics Canada (STC)'s *Census of Agriculture* reported that 72,778 Canadian farmers produced wheat in 2001, down sharply from 93,545 five years earlier. Wheat was the major source of farm income for 15,249 farmers, compared to 29,526 in 1996. However, average area of wheat per farm has increased from 133 hectares (ha) to 149 ha.

#### Wheat Area has Declined

Wheat seeded area has averaged 10.7 million hectares (Mha) over the past five years, a decline of 23% from the 1989 to 1993 average. Wheat accounted for 37% of annual crop area, down from over 50% a decade ago, due to increases in canola, pulses and special crops. This proportion fell to an all-time low of 36% in 2003, at just 10.6 Mha, and is expected to decline slightly for 2004. However, wheat area remains more than double its closest rivals, canola and barley. Wheat area is expected to remain near current levels over the next decade, with production rising slightly due to higher yields.

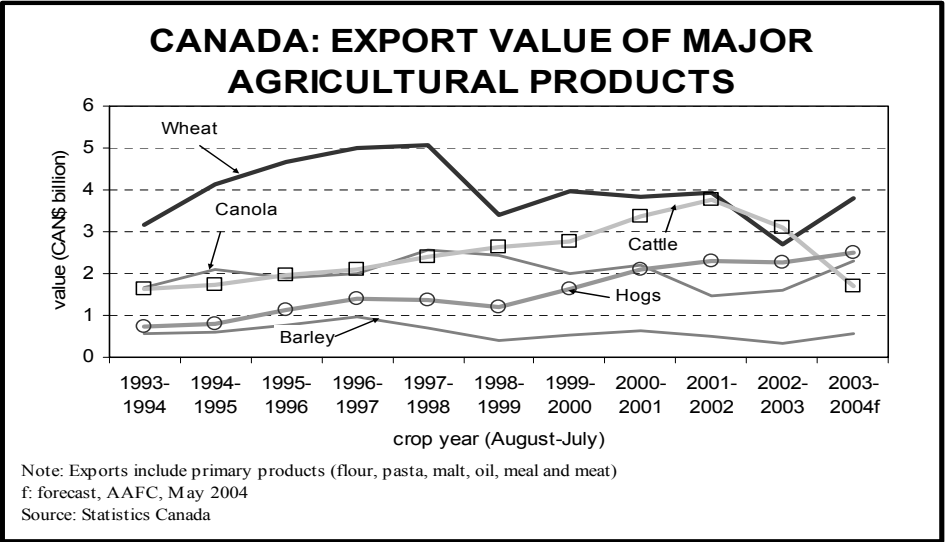
### Low Yields Relative to US and EU

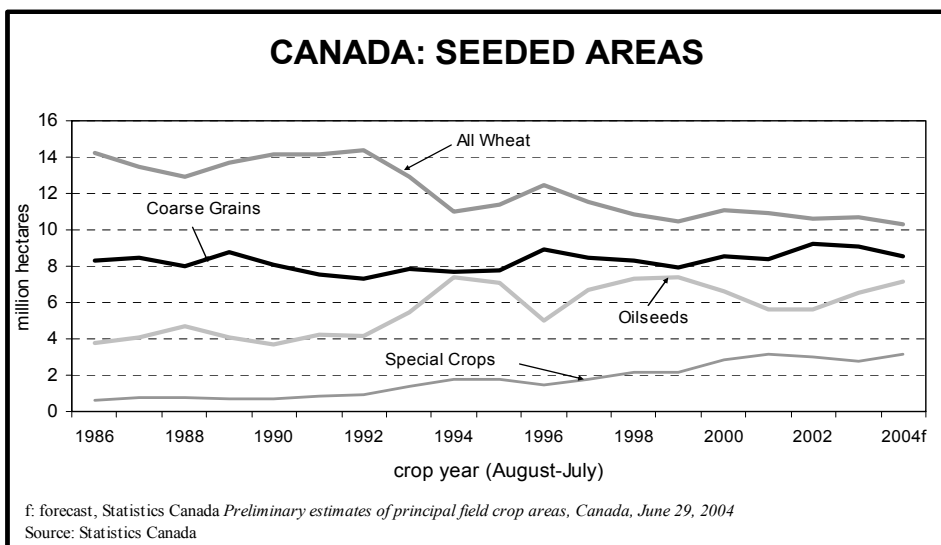
Canadian wheat yields are relatively low compared to many other wheat-producing countries, averaging 2.37 tonnes per hectare (t/ha) [35 bushels per acre (bu/ac)] between 1996 and 2000 (compared to about 33 bu/ac in the early 1990s). This is below the world average of 40 bu/ac, 41 bu/ac in the United States (US) and 84 bu/ac in the European Union-15 (EU-15), although above the Australian average of 27 bu/ac. There are two reasons for this. One is that spring wheat, which tends to be lower-yielding than winter wheat, dominates Canadian production. The other is that the major wheat growing regions of western Canada are semi-arid, with average annual precipitation of only about 15 inches [under 40 centimetres

(cm)] in southern Saskatchewan and Alberta. Very little wheat in Canada is irrigated. Yields vary considerably between regions, from 32 bu/ac in Saskatchewan to 60 bu/ac in Ontario where winter wheat is predominant and rainfall is more plentiful, averaging over 30 inches (75 cm) a year.

### Production has Declined

Total production averaged 23 million tonnes (Mt) over the past five years, about 4% of the world total. This is down from 29 Mt or 5% over a comparable five-year period a decade ago. However, production was below-normal in 2001 and 2002, due to drought in parts of western Canada, and the 1996 to 2000 average was 26 Mt. Of this, non-durum wheat averaged 21 Mt, a decline of 16%





since the early 1990s, while durum production increased by 29% to 5 Mt over this period.

#### Different Classes of Wheat to Serve Customers

In western Canada, wheat production is dominated by Canada Western Red Spring (CWRS) and Canada Western Amber Durum (CWAD) wheat, with smaller production of Canada Prairie Spring (CPS), Canada Western Extra Strong (CWES), Canada Western Red Winter (CWRW), Canada Western Soft White Spring (CWSWS) and Canada Western Hard White Spring Wheat (CWHW)<sup>1</sup>. The classes are distinguished by their different end-use characteristics. Over the past 5 years, western Canadian production consisted of 67% CWRS, 20% CWAD, and 8% CPS. Production of other classes is quite small, at 2% or less each.

Ontario produces mainly winter wheat, with soft red winter (SRW) representing about half of the total production, followed by hard red winter (HRW) and soft white winter (SWW). Spring wheat production is increasing, but makes up less than 10% of production.

All currently registered Canadian wheat varieties have been developed through traditional breeding programs, without genetic modification using recombinant DNA techniques.

#### DOMESTIC WHEAT CONSUMPTION

##### Human Food Use Has Declined in 2003-2004 Due to Low-carbohydrate Diets

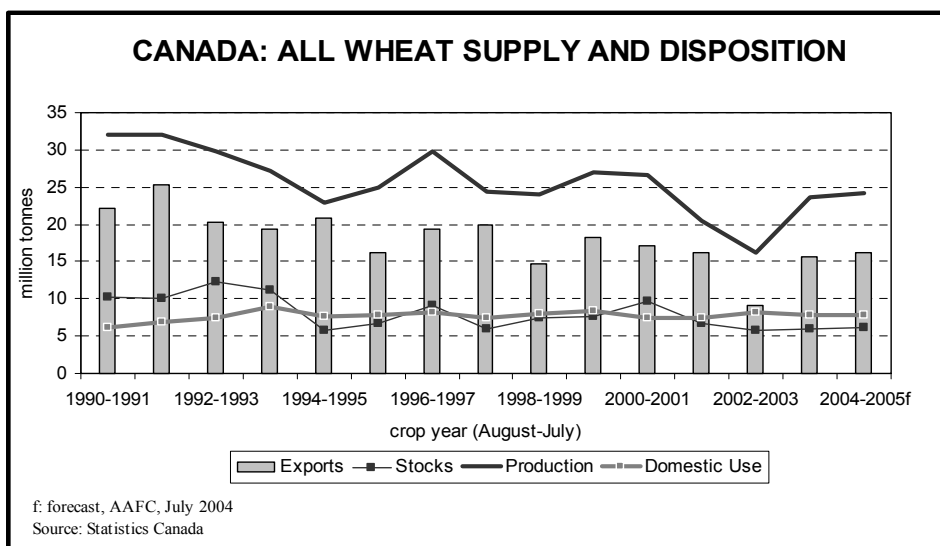
Domestic consumption of wheat for human food, in wheat equivalent, averaged 2.87 Mt between 1998-1999 and 2002-2003, a 30% increase over the equivalent five-year period a decade ago. However, after reaching 2.9 Mt in 2000-2001, domestic consumption of wheat has grown only marginally, and is forecast to decline to about 2.8 Mt for 2003-2004.

Canadian per capita consumption of wheat flour had been increasing until the late 1990s, peaking at just over 70 kilograms (kg) in 1998. This had

declined marginally by 2002, to just under 70 kg, but remained well above the 1992 figure of 61 kg<sup>2</sup>. Wheat flour consumption in Canada is higher than in the USA, where disappearance was 62 kg per capita in 2002, down from a high of 66 kg in 2000. However, Canadian per capita consumption has declined to under 66 kg in 2003. This is largely attributed to the current popularity of high-protein diets, such as the Atkins diet, which feature limited intake of carbohydrates such as bread, pasta and potatoes. Future dietary trends will be a major factor in determining growth in domestic wheat consumption.

##### Feed Use is Expected to Increase

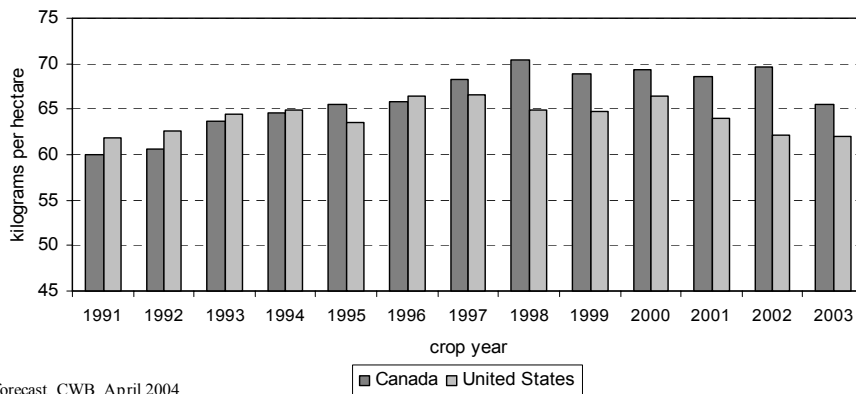
A significant quantity of wheat is used for livestock feed, largely for hogs and poultry. These industries are expanding, and the feed use of wheat is expected to continue to rise. Accurate data on feed use are not available. The only current source of information is the "feed, waste and dockage" (FWD) category in the STC supply-disposition table, which is a residual of all known disposition factors. For wheat, dockage (weed seeds, broken grains, etc.) makes up a significant proportion of the total. However, most dockage is cleaned out and used for feed, so the STC FWD estimate is often used as a proxy for feed use. Total FWD averaged 3.9 Mt over the past five years, compared to the five-year average of 3.2 Mt ten years earlier. Most Canadian wheat is of milling varieties, of which a portion is downgraded to feed quality due to weather and disease each year.



<sup>1</sup> For a detailed description of Canadian wheat classes, see *Bi-weekly Bulletin* Volume 15 Number 6, entitled "Canadian Wheat Classes", released April 26, 2002.

<sup>2</sup> CWB estimate.

## CANADA AND UNITED STATES: PER CAPITA FLOUR CONSUMPTION



f. forecast, CWB, April 2004  
Source: Canadian Wheat Board

However, these feed-quality supplies are less than demand in most years.

Therefore, significant quantities of lower-quality milling wheat, such as CPS, CWRW and No.3 CWRS, are often used for feed.

### Seed Use Has Declined

Over 1 Mt of wheat are used for seed each year, declining from about 1.3 Mt a decade ago due to reduced seeded area. Seed use in Canada averages about 1.4 bu/ac.

### Industrial Use is Expected to Increase

Industrial use of wheat in Canada, mainly for ethanol production, is at present relatively small, but increasing. STC estimates that industrial use over the past five years has averaged 116,000 tonnes (t), up from 36,000 t ten years earlier.

With a projected large increase in ethanol production in western Canada over the next decade, industrial use of wheat will rise significantly, as ethanol production in western Canada is wheat-based. This presents an opportunity for increased winter wheat production, as winter wheat is well suited to ethanol production.

## THE CANADIAN WHEAT PROCESSING INDUSTRY

### Flour Milling has Grown Rapidly

The domestic flour milling industry has been growing rapidly, and is now the single largest market for Canadian milling wheat, larger than any single export market. In 2002-2003, the industry processed 3.2 Mt of wheat, a 33% increase compared to 10 years earlier<sup>3</sup>.

The proportion milled in western Canada is about 30%, relatively unchanged over the past decade. Of the total wheat milled in 2002-2003, about 70% was CWRS wheat, with Ontario winter wheat at 15%, durum wheat at 10%, and other classes making up the remainder.

The trend in the Canadian milling industry has been to larger capacity mills, with the number of facilities remaining

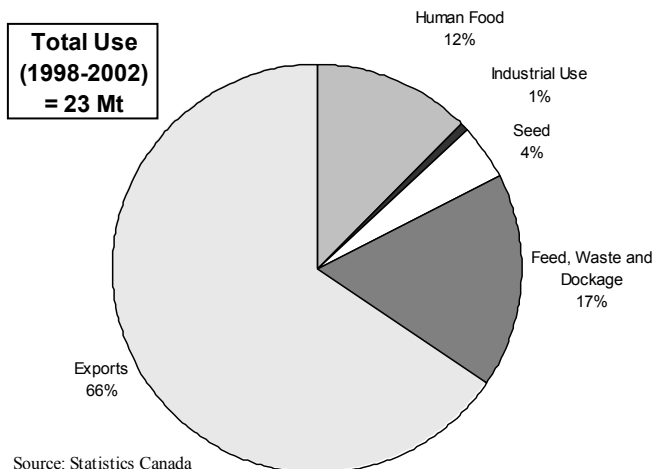
relatively constant. In 2003, there were almost 30 flour milling companies in Canada, operating over 40 mills. The total daily capacity was about 10,400 t<sup>4</sup>, for an average of 254 tonnes per mill (t/mill). Six years earlier, there were about 27 companies and 39 mills, with a daily capacity of 8,489 t, for an average of 218 t/mill. The number of mills with a daily capacity of 500 t or greater rose from five to eight, but the number of companies owning these mills was unchanged at three<sup>5</sup>. In 2003, the largest milling company was Archer Daniels Midland (ADM) with eight facilities and about 40% of total capacity. The other major companies were Robin Hood Multifoods Corporation with 3 mills and about 20% of capacity, and Dover Mills, with 3 mills and under 10% of capacity. In 1996, ADM owned 6 mills, with less than 30% of capacity, while Robin Hood and Maple Leaf/Conagra were in 2<sup>nd</sup> and 3<sup>rd</sup> place, with about 20% of capacity each. The subsequent ADM expansion was largely the result of the purchase of the Maple Leaf/Conagra mills in 1997.

Capacity utilization by the industry has also increased significantly. STC estimates that capacity utilization was over 85% in 2002-2003<sup>3</sup>, compared to only about 75% 10 years earlier. The industry currently has assets estimated at about \$4 billion (G), and employs about 1,800 people. Total product shipments were valued at about \$1.1G in 2000.

### Further Processing is Very Important

In 1999, there were 29 *biscuit manufacturing* establishments in Canada. Most were located in Ontario and Quebec, near the major markets and the supply of soft wheat flour. That year, the industry shipped products valued at \$31.5M. The Canadian *breakfast cereal* industry employed about 2,753 people in 18 plants and had shipments of approximately \$878M in 1999. There were also about 569 *wholesale bakery* establishments, which shipped products valued at nearly \$2.3G. In 1999, Canada's dry pasta industry employed 1,305 people in 40 facilities, with shipments valued at \$216M.

## CANADA: WHEAT USE



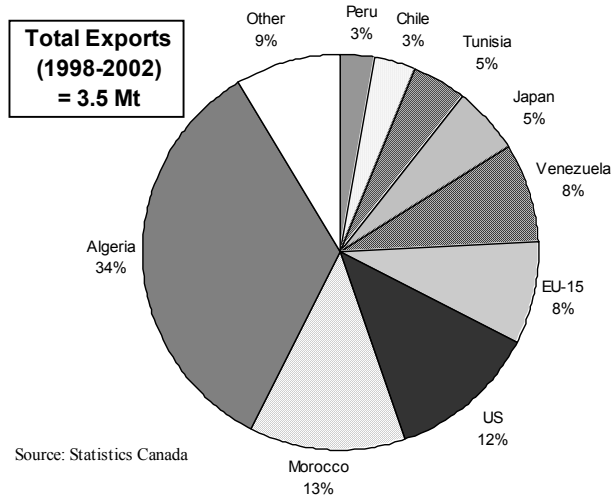
Source: Statistics Canada

<sup>3</sup> STC "Cereals and Oilseeds Review".

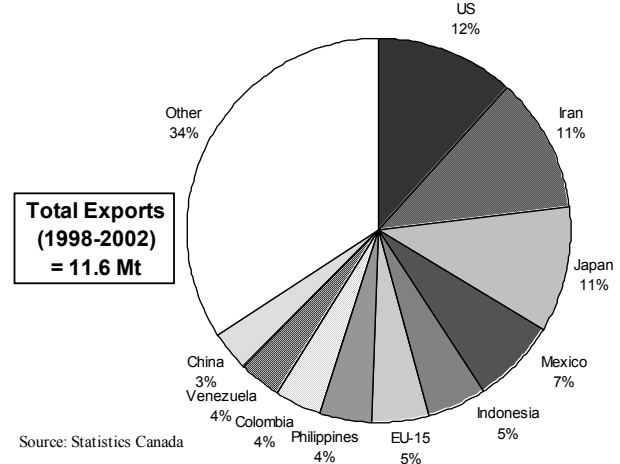
<sup>4</sup> CWB estimate.

<sup>5</sup> Canadian National Millers Association.

## CANADA: DURUM WHEAT EXPORTS



## CANADA: NON-DURUM WHEAT EXPORTS



### WHEAT EXPORTS

#### Export Volumes Have Declined

Canada is one of the world's largest wheat exporters, second only to the US in many years, with exports averaging 15 Mt over the past 5 years. However, this is a sharp decline from over 19 Mt between 1988-1989 and 1992-1993, and Canada's market share has fallen from 18% to 14%. This is partly due to the drought-reduced crops of 2001 and 2002, but Canadian wheat exports have been on a downward trend due to reduced area and increased domestic use. While total wheat exports have declined, exports of durum wheat have risen sharply, averaging 3.5 Mt over the past 5 years, compared to just 2.7 Mt a decade earlier. Canada's world durum market share is currently about 50%, compared to 55% 10 years ago. Wheat flour exports have also increased, averaging 183,000 t over the past five years (equivalent to about 245,000 t of wheat), 14% higher than 10 years earlier.

Canadian wheat exports will be constrained by a stable seeded area and increased domestic use over the next few years. The Canadian Wheat Board (CWB) projects that total exports will rise slightly, but remain between 16 and 17 Mt, with Canada maintaining a 15% share of the world market. Of this, durum exports are expected to remain steady at about 3.65 Mt, giving Canada a 50% world market share.

#### The Major Markets for Non-durum Wheat are the US, Iran and Japan

The three largest export markets for *non-durum wheat* over the past 5 years have

been the US, Iran, and Japan. Other major markets were Mexico, Indonesia, the EU-15, the Philippines, Colombia, and Venezuela. A decade earlier, the major markets were China and the Former Soviet Union (FSU), at 25% and 18% respectively. The US and Mexico were in 7<sup>th</sup> and 11<sup>th</sup> place respectively, accounting for 3% or less of the total. China may re-emerge as a major market in the near future, as wheat production in that country has failed to keep pace with demand. Total Chinese imports are forecast to rise to 8 Mt in 2004-2005, from 3 Mt in 2003-2004, and Canada is expected to capture a significant share of this market.

For 2003-2004, non-durum exports to the US have declined sharply due to the US duties on spring wheat imports from Canada. On October 3, 2003, the US International Trade Commission ruled that imports of Canadian hard red spring (HRS) wheat cause injury to US farmers, and the provisional countervail and anti-dumping duties of 14.15% on HRS wheat were maintained, while those on durum wheat were dropped. This includes CWRS, CWES and CPS Red (CPS-R) wheat. The ruling is being appealed, but as long as it remains in place, CWRS wheat is effectively shut out of the US market. Wheat exports to the US are forecast at about 0.8 Mt in 2003-2004, virtually all being Ontario winter wheat, which is not affected by the duties. Significant CWRS exports are unlikely to resume until the duties are lifted. Exports to the US in 2004-2005 will likely be sharply lower than in 2003-2004, due to reduced Ontario production.

#### Algeria is the Major Market for Durum

For *durum wheat*, the major market between 1999-2000 and 2002-2003 was Algeria, at 34%, followed by Morocco, the US, the EU-15 and Venezuela. Between 1989-1990 and 1992-1993, the major durum market was the FSU, with Algeria in 2<sup>nd</sup> place at 21%.

Durum exports to the US in 2003-2004 are below normal, due to a combination of a good-quality US crop and the provisional duties that were placed on durum imports from May to October 2003. Exports to the US are expected to return to normal levels in 2004-2005.

#### The US is the Major Market for Flour

The major market for *wheat flour* is the US, taking an average of 158,000 t or 85% over the past five years, compared to only 14% or 23,000 t 10 years ago. Other flour markets are Japan, Hong Kong and the Bahamas, taking 3% or less each.

#### Wheat Exports are a Major Contributor to Foreign Exchange

Despite the decline in export volumes, the value of wheat exports remains higher than any other agricultural product, averaging \$3.68G between 1999-2000 and 2001-2002<sup>6</sup>. In addition, \$89M of flour was exported, bringing the total value of wheat and primary product exports to \$3.77G. Including exports of wheat-based processed products such as bread, pastry, cakes, biscuits and pasta would add approximately another

<sup>6</sup> This declined to \$2.4G in 2002-2003 due to the drought, but is expected to recover to a near-normal level for 2003-2004

\$1G. By comparison, exports of canola and its primary products averaged \$1.90G, while barley and malt exports were \$1.77G. Cattle and beef exports averaged \$3.30G, while hog and pork exports were \$2.01G.

Wheat exports are much less dependent on single markets than those of other grains and oilseeds, with wheat and flour being exported to almost 90 different countries. The top five markets account for 43% of the total value. By comparison, almost 95% of canola and its products are exported to just 5 countries, with the top 5 countries making up 84% of barley and malt exports. This makes wheat exports much less subject to factors such as production variations or government policies in a single country.

## WHEAT IMPORTS

### Wheat Imports are Relatively Low

As Canada has a large net wheat surplus, imports are quite small, averaging only 86,000 t over the past 5 years. A Tariff Rate Quota applies to imports of wheat from all countries except the US. Most imports consist of US SRW wheat into Ontario, in years when the Ontario soft winter wheat crop has been insufficient or too low quality to meet domestic milling requirements. In 2002-2003, a record 0.18 Mt were imported, but most of this was feed wheat from Ukraine into Quebec, due to large supplies of low-quality wheat in Ukraine and low world prices that year. This has fallen to zero in 2003-2004, due to crop failure in Ukraine.

Wheat flour imports are also quite small, averaging about 28,300 t, 95% from the US. This is equivalent to about 37,800 t of wheat, with a value of \$10.6M. Imports of processed products, such as bread, pastry, cakes, biscuits and pasta are more significant, averaging \$890 M over the past five years. The US was the source of 69% of product imports, with about 13% from the EU-15.

## CANADIAN WHEAT MARKETING

### The Canadian Wheat Board Region

The CWB Region includes that part of the North American Great Plains that extends into Canada; essentially all of Manitoba, Saskatchewan and Alberta, plus the north-eastern corner of British Columbia. The CWB has a monopoly on the sale of all wheat produced for human consumption in this region, for both domestic use and for export. Feed wheat for domestic consumption can be sold off-Board, but the CWB controls the export of feed wheat, competing with the domestic feed market for supplies.

The CWB was created by federal statute in 1935, and operates under the *Canadian Wheat Board Act*. The CWB was a federal Crown corporation until 1998, when the Act was amended. It is now a "shared governance corporation" controlled by a 15 member Board of Directors, 10 directly elected by farmers, and 5 appointed by the federal government. Changes to the Board's programs can now be made by farmers through their elected Directors. The federal government continues to guarantee the CWB's initial payments,

but the CWB was given the authority to offer cash pricing options in addition to the pool accounts, to close the pools at any time, to make cash purchases of wheat and to provide an early pool cash-out option. The fixed price contracts and early payment options are not guaranteed by the government.

All CWB wheat sales are pooled, through two pool accounts; one for durum and one for all other wheat. The CWB pays the farmer an initial payment at the time of delivery. This initial payment is set at the start of the August-July crop year at 65% to 75% of expected pool returns, and is guaranteed by the federal government, so that if final realized pool returns fall below the initial payment, the Government will cover the deficit. The initial payments may be adjusted upward throughout the year, as sales revenue is received, or if prices rise. After the end of the crop year, when the pool accounts are closed and audited, any remaining funds, net of CWB operating costs, are distributed to farmers as a final payment.

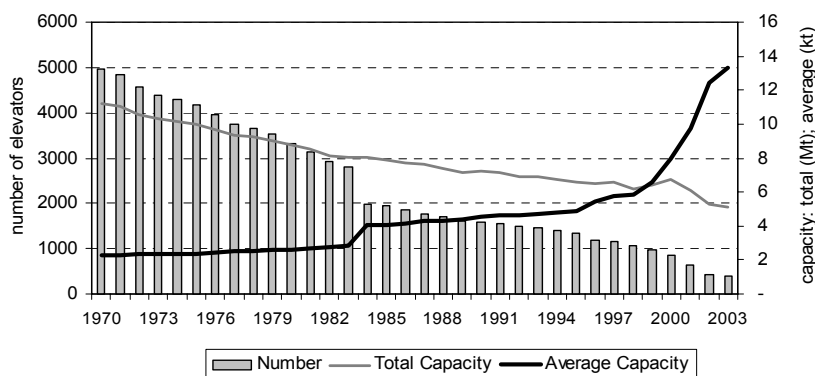
The CWB manages wheat deliveries into the commercial elevator system through a series of delivery contracts and contract calls, in order to utilize available system capacity as efficiently as possible in conjunction with other industry participants. Every farmer has equal delivery opportunity within a crop year and, if he remains in the pool, receives the same average pooled price for wheat of the same grade and protein level, taking into account different transportation charges to Vancouver or St. Lawrence ports.

Starting in 2000-2001, the CWB began offering cash pricing options in addition to pooled returns, including fixed price forward contracts and basis contracts. These options allow a farmer to lock in a fixed price and receive full payment at the time of delivery. Farmers can also use an Early Payment Option (EPO), which provides up to 100% of the expected pool return at delivery, net of a fee to cover risk, costs and time value of money, but allows for further payments if the initial and/or final payments rise above the EPO level.

### CWB Price Determination

Although the CWB is the world's largest wheat exporter, it is essentially a price

## WESTERN CANADA: PRIMARY ELEVATORS NUMBER VERSUS CAPACITY (1970-2003)



Source: Canadian Grain Commission

taker in world markets. World wheat prices are largely determined on the US futures markets, and in most cases the CWB receives prices competitive with export prices of US wheat. Sales into the domestic market are priced on a North American competitive basis guided by the Minneapolis Grain Exchange, so that Canadian millers in all geographic locations pay a price competitive with that paid by US millers.

#### **Wheat Transportation and Handling**

Most western milling wheat is delivered by farmers to a primary elevator, with only small quantities delivered directly to end users or terminal elevators. The number of primary elevators has declined dramatically over the past decade, with 382 facilities in western Canada licensed with the Canadian Grain Commission (CGC) on August 1, 2003, compared to 1,465 in 1993. Total storage capacity has declined to 5.10 Mt, compared to 6.92 Mt a decade earlier. Average storage capacity has increased sharply, however, from 4,724 t in 1993 to 13,353 t in 2003, as traditional wooden elevators have been replaced by concrete high-throughput facilities. As average distances from the farm to the local elevator have increased due to the consolidation, the dependence of farmers on commercial truckers to move wheat from the farm to elevator has increased.

Most western Canadian wheat is moved from the primary elevators by rail. Terminal elevators are located at Thunder Bay (Ontario on Lake Superior) Vancouver and Prince Rupert (British Columbia on the Pacific coast) and Churchill (Manitoba on Hudson Bay). From Thunder Bay, which is linked to the Atlantic Ocean by the St. Lawrence Seaway, the wheat can move by lake freighter to eastern mills or transfer elevators, or by ocean vessel directly to overseas markets. An increasing quantity of wheat is also being railed directly from Prairie elevators to the US or through the US to Mexico and the Caribbean. Smaller quantities of wheat are also moved by rail directly to eastern mills or transfer elevators, particularly during the winter when the Seaway is frozen. This is most significant for durum wheat, as most durum exports are made from St. Lawrence transfer elevators. About two-thirds of durum is exported

from the east, compared to 25% for non-durum wheat.

Exports from the two Pacific ports were 53% of the total over the past 5 years, compared to 59% a decade earlier. Exports from Thunder Bay and eastern terminals accounted for 33%, down from 39% ten years ago. These declines have been offset by increased exports direct from Prairie elevators, now at 11%, compared to only 2% a decade ago, and from Churchill, which rose from 1% to almost 3%.

Canadian wheat production is located the farthest from ocean ports of any major wheat producing country. As a result, total transportation and handling charges are relatively high, ranging from about \$45 per tonne (/t) in Alberta to \$52/t in Saskatchewan in 2003-2004. This represents about 20% to 25% of the 2003-2004 value of the wheat at export position.

#### **Off-Board Wheat Marketing**

Western wheat used domestically for feed can be sold directly to private grain companies or end users, with feed-quality wheat delivered to the CWB largely being exported. Off-Board feed wheat futures are traded on the Winnipeg Commodity Exchange (WCE). The WCE futures price is heavily influenced by US corn prices, as imported US corn can substitute for domestic feed wheat, although domestic feed supplies and expected CWB returns are also factors. Much of the feed wheat bypasses the commercial handling system and is sold directly to end users such as feed mills and livestock feeders. There are no restrictions on the delivery of off-Board feed wheat.

#### **Ontario Wheat Marketing**

Although the Ontario Wheat Producers' Marketing Board (OWPMB) has provincially-legislated monopoly powers, Ontario wheat is now effectively traded in an open market. The decision to allow unrestricted off-Board marketing was made by farmer-elected Directors of the OWPMB. The OWPMB continues to represent Ontario wheat producers, and offers pooling and cash pricing options, but competes directly with the private trade for wheat supplies. Only a small percentage of the crop has been marketed through the pools over the past

several years, although this could change depending on expected prices and crop conditions. Ontario wheat prices are largely based on the Chicago Board of Trade. Export permits for Ontario wheat must be obtained from the CWB, but these are provided at no cost and without restriction.

#### **Wheat Marketing in Other Provinces**

Small quantities of wheat are produced in most other provinces. This is used mainly for feed, although some is sold to local flour mills. Feed wheat prices are based on either the WCE feed wheat futures, or the competitive price of other feed grains such as barley and corn. For milling wheat, flour mills generally pay a price similar to that which they would pay the CWB for similar quality wheat.

#### **CANADIAN WHEAT QUALITY**

Canadian wheat is known not only for its high quality, but for its consistent quality, which is maintained by strict controls on variety registration and grading standards. This has allowed Canada to 'brand' Canadian wheat as one of the cleanest, most uniform quality products on the export market, due to tight export quality standards.

#### **Variety Registration**

The major reason for the consistency of Canadian wheat quality is the control of registration of new varieties. In order to qualify for a particular class, a new variety must possess milling and baking characteristics equal to the minimum standards of that class. Another basic requirement for variety registration is 'kernel visual distinguishability' (KVD). All varieties of western wheat along with eastern white winter wheat must have the same kernel appearance as other varieties of that class, so that the class can be easily visually identified at the time of delivery to facilitate segregation by class.

The decision to register a new variety is made by the Variety Registration Office (VRO) of the Canadian Food Inspection Agency (CFIA). The CFIA will only register wheat varieties that have been recommended by regional committees such as the Prairie Registration Recommending Committee for Grain (PRRCG).

Any variety that does not meet the recommendation committee's quality standards for one of the existing wheat classes will not be recommended for registration for production, and can only be grown for feed. If the KVD requirement is not met, the variety cannot be registered even if the variety has desirable quality or agronomic traits. This prevents, for example, a variety that meets the CPS-R standard but looks like a CWRS variety from being registered. Otherwise, the CPS-R could be inadvertently mixed with CWRS wheat, lowering the milling quality and consistency of the CWRS shipments customers have come to expect from the CWRS brand.

The KVD requirement can unfortunately delay the introduction of new varieties. A recent example is the variety HY644, which is a CPS red wheat with fusarium head blight resistance. This variety was very attractive to producers in the Red River valley where fusarium is a major problem. HY644 was denied registration because it had kernel characteristics similar to hard red spring wheat and would have posed a potential challenge to the handling system as well as jeopardizing the quality of red spring wheat shipments. KVD may eventually be replaced by a 'black-box', which does not yet exist, that can identify a variety by genetic markers at the elevator or by a producer declaration system. KVD is expected to be maintained until a suitable replacement is found.

#### Grading

Canadian wheat grading is based on a numerical system defined by the Canada

Grain Act and Regulations, and is administered by the CGC. The Act provides for the appointment of Eastern and Western Standards Committees, which recommend specifications for grades to the CGC. The Standards Committees are made up of farmers, and members nominated by the CGC, federal government, CWB, processors and exporters. Grade definitions are only changed if there is evidence that it would increase the acceptability of Canadian grain in world markets.

Wheat grades are based on five key grading factors. These are applied to clean grain, after dockage is removed.

**Test weight** is a measure of kernel density, and No.1 CWRS requires a minimum of 75 kilograms per hectolitre (kg/hl) at the primary elevator and 79 kg/hl at export. **Varietal purity** is the percentage of non-registered varieties and other classes in the sample, and ensures that the quality will meet minimum class standards. No.1 CWRS can have no more than 2.3% contrasting classes or other varieties at the primary elevator, or 1.5% for export.

**Vitreousness** is the natural translucent appearance that indicates hardness, with No.1 CWRS requiring a minimum of 65% hard vitreous kernels. **Soundness** refers to the degree of damage due to factors such as frost, immaturity, weathering, diseases and improper storage, with separate numerical tolerances for those factors which can be objectively measured, and a limit on total damage from all factors. **Foreign material** is anything other than grain of the same class remaining after dockage has been removed. There are separate maximum

tolerances for each type of material, such as stones, ergot and other grains, with total foreign material for No.1 CWRS limited to 0.6% at the primary elevator or 0.4% for export.

As noted above, export standards are in some respects tighter than primary standards. This is because of the blending that occurs when wheat is transported from the Prairies to the terminal elevators. Wheat of the same grade from many regions is binned together, averaging out regional quality factors. This quality averaging has been reduced by the increased unit train shipments from high throughput elevators, and as a result, primary grade standards have been tightened to more closely match export standards.

All Canadian grading factors can be quickly assessed by the grain buyer at the time wheat is delivered to a primary elevator, allowing for the efficient segregation of different qualities. Within each of the top grades for CWRS, CWRW, CWES, and durum, the wheat is further segregated on the basis of protein content, as each primary elevator has protein measuring equipment. The wheat is again graded when it arrives at a terminal elevator, and when it is discharged for export, this time by CGC inspectors. Shipments direct from country elevators to the US, Mexico or Caribbean are also inspected by CGC inspectors. This ensures that a shipment of wheat leaving Canada for any destination meets the minimum export grade standards.

### CANADA: MAJOR CWRS WHEAT GRADE DETERMINING FACTORS

Grade	Minimum		Maximum							
	Test Weight (primary)	Hard Vitreous Kernels	Other Wheat Classes or Varieties		Total Foreign Material		Kernels			
			Primary	Export	Primary	Export	Sprouted	Fusarium Damaged	Shrunken and Broken	Heated
	kg/hl		percent							
<b>No.1 CWRS</b>	75.0	65.0	2.3	1.5	0.6	0.4	0.5	0.25	7.0	0.05
<b>No.2 CWRS</b>	72.0	35.0	4.5	3.0	1.2	0.8	1.0	1.00	8.0	0.40
<b>No.3 CWRS</b>	69.0	n/a	7.5	5.0	2.4	1.3	3.0	2.00	9.0	1.00
<b>CW Feed</b>	65.0	n/a	n/a*	n/a*	10.0	5.0	n/a	5.00	15.0	2.50

n/a = not applicable

\* Maximum of 10% Amber Durum

Note: the above table is for illustrative purposes only, and does not include all grade determining factors.

Source: Canadian Grain Commission

## CHALLENGES AND OPPORTUNITIES

### Genetically Modified (GM) Wheat

Monsanto Company had applied for regulatory approval in Canada and the US for a variety of wheat genetically engineered to tolerate the non-specific weed-killing chemical glyphosate, marketed by Monsanto as "Roundup". Monsanto states that Roundup-Ready wheat would be of value to farmers, as weed control would be cheaper and more effective. However, the control of volunteer wheat plants in subsequent crops is an issue that must be addressed. Although Monsanto announced on May 10, 2004 that it was deferring its efforts to introduce Roundup-Ready wheat, the potential remains for this or other GM traits to be introduced into wheat. Monsanto is reported to also be developing GM traits for cold stress and drought tolerance in wheat. However, consumer acceptance of any type of GM wheat is a concern. At present, it appears that most consumers do not want GM wheat, with the CWB estimating that customers representing 87% of its market for Nos. 1 and 2 CWRS grades will not purchase GM wheat if commercialized.

### US Duties

On March 3, 2003, the United States Department of Commerce (DOC) made a preliminary determination of subsidy resulting in provisional countervailing duties being imposed on US imports of both Canadian HRS wheat and durum wheat. On May 1, 2003 the DOC made its preliminary determination of dumping, imposing anti-dumping duties effective May 8, 2003. On August 28, the DOC made affirmative final determinations of subsidy and dumping on both HRS and durum. On October 3, 2003, the US International Trade Commission (ITC) ruled that imports of Canadian durum do not in fact cause injury to US farmers, but that imports of HRS wheat do. As a result, the duties were removed from durum, but are 14.15% for HRS wheat, which includes the CWRS, CWES and CPSR classes. Exports of western

wheat to the US have declined to near-zero in 2003-2004 as a result. The DOC and ITC rulings are being appealed and until the duty is lifted, significant exports to the US are unlikely to resume. The loss of the US milling market, which pays a premium price for CWRS wheat, is a serious issue for the western Canadian wheat producer, as it reduces overall pool returns, unless the CWB is successful in finding alternative markets that offer similar premiums.

### Wheat Breeding Opportunities

Western Canadian wheat and durum producers contribute to wheat and durum research through the Wheat Check-off Fund, administered by the Western Grains Research Foundation. This \$0.20/t check-off, although voluntary, is supported by over 90% of producers, and has generated over \$3 million annually for wheat breeding research. This producer investment has supported the introduction of over 25 new varieties of wheat and durum since 1993-1994.

**Fusarium head blight resistance** is a key target in current breeding, with resistant varieties expected to be released commercially in two to three years. New varieties will also have **improved yield potential**, with the trend of 0.5% increase in yields per year expected to continue for at least the next 10 years. The new class of **hard white wheat**, which targets key Asian markets, is a recent development, and the agronomic and end-use characteristics of varieties in this class will be improved in the future. **Sawfly resistance** in CWRS wheat is also being improved. New **durum varieties** are being developed, with excellent agronomics and adaptation across the durum growing region.

### SUMMARY

Although wheat production in Canada has been declining, area is expected to stabilize near current levels, with production slowly increasing due to improved yields. Wheat will remain the single largest foreign exchange earner of all agricultural products for the

foreseeable future. However, an increasing proportion of the crop will be consumed domestically, supporting a growing value-added industry, with the reliance on exports of raw product declining. The development of high-yielding varieties for the feed and ethanol industries will provide further domestic markets for wheat and enhance the value-added industries dependent on a stable supply of high-energy feedstock. Canada's reputation for quality, the tight controls over variety registration and grading standards and the ability to segregate various qualities in the handling system position Canada well for the provision of high-quality wheat into premium markets.

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