Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

# Bi-weekly Bulletin

*February 23, 2007 Volume 20 Number 3*

## FLAXSEED: SITUATION AND OUTLOOK

**Canada is the world's largest producer and exporter of flaxseed with annual exports valued at CAN$150-180 million (M). As a result, market conditions in Canada have a significant impact on global flaxseed prices. For 2006-2007, Canadian supply increased by 22% due to large carry-in stocks and above-average production levels and exports are expected to increase by 21%. Flaxseed prices in Canada for 2006-2007 are forecast to average CAN$275 dollars per tonne (/t) in-store Thunder Bay, similar to 2005-2006. For 2007-2008, flaxseed production in Canada is projected to fall sharply, but exports are expected to remain strong as are average flaxseed prices. This issue of the *Bi-weekly Bulletin* examines the situation and outlook for flaxseed.**

### Background

Humans have consumed flaxseed, commonly referred to as linseed in most countries outside of North America, for thousands of years. Over the centuries the production of flaxseed spread across Europe, Africa and finally to North America where it was the first oilseed to be widely grown in western Canada.

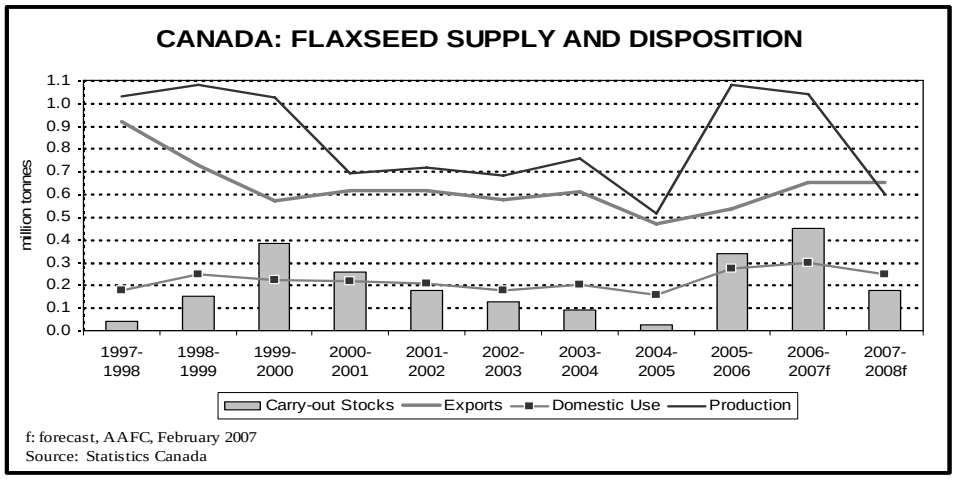
The blue-flowering plant grows best in cool climate regions with long periods of daylight (where oil content and iodine values are optimized). Flaxseed has unique properties which differentiate it from other oilseeds in the industrial, human food, and livestock feed markets.

### Uses

Flaxseed, *Linum usitatissimum*, is grown primarily for seed with fibre production as a bi-product.

The seed has nutritional benefits which can be introduced into the diet through flaxseed oil, milled flaxseed, or products containing the Omega-3 fatty acid, Alpha-Linolenic Acid (ALA), such as eggs and pork, produced by including flaxseed in feed rations. Flaxseed has the highest plant source of this fatty acid. The seed itself contains about 46% oil on a dry matter basis, and of that, about 57% is ALA. Research continues on how flaxseed could be incorporated into rations for dairy cattle to create products such as Omega-3 enriched milk and cheese. Flaxseed processing plants also produce natural flaxseed oil and meal, which can be utilized by food producers to include Omega-3 fatty acids in their products.

Flax straw contains long, tough stem fibres that decay slowly over time. This makes it difficult to incorporate flax straw into the soil after harvest.




f: forecast, AAFC, February 2007
Source: Statistics Canada

New developments are focusing on using flax straw as an alternative fuel. Flax straw has a per tonne heating value similar to soft coal and thus has a heating value greater than other crop residues. Furthermore, it is a carbon neutral method of producing heat. The carbon released from combustion of the straw, is the same carbon that was absorbed from the air, by the flaxseed plant, to form the straw during growth. This is unlike the combustion of conventional fuels, which adds carbon to the air.

Large scale burners for flax straw are being developed that incorporate automated feeding systems for flax bales. With this system, flax straw could be used as a fuel source for commercial users of heat such as greenhouses, alfalfa dehydration plants, hog barns, and potash mines. Flax is also grown for its fibrous qualities. Flax fibre is used in the paper and pulp industry as a "pulp sweetener" to strengthen recycled paper, geotextiles, absorbent products, insulation and in textiles (e.g. linen blend products).

### Demand Considerations

Over the last century, flaxseed has experienced major shifts in demand. Technological developments since the 1950s, such as the increased use of water based paints and petroleum based floor coverings, has reduced industrial demand for flaxseed. In the late 1990s however, the trend towards environmentally friendly and health oriented products began to open new opportunities for the flaxseed industry. The non-allergenic and biodegradable characteristics of linoleum, along with quality improvements, have led to a

Canada

resurgence of demand for linoleum in some parts of Europe.

The awareness of flaxseed as a beneficial food and feed has been increasing among the North American population. Over the last decade in North America, the use of flaxseed in breads, bagels and other baked goods has tripled the demand for flaxseed in the food industry. Some other niche markets for flaxseed include premium pet foods, which improve the overall health and appearance of cats, dogs and horses. The majority of flaxseed in North America is consumed as feed; while in China and India it is mostly consumed as food.

**SITUATION: 2006-2007**

**WORLD**

**Production**

World production of the 10 major oilseeds (soybeans, cottonseed, canola, rapeseed, peanuts, sunflower seed, palm kernels, copra, sesame seed, flaxseed and castorseed) is estimated at 393.4 million tones (Mt) for 2006-2007, an increase of 4.0 Mt from 2005-2006. Production of flaxseed, at 2.7 Mt, represents about 0.7% of world output. Production decreased by 8% from 2005-2006 due to a lower average yield, of 0.86 tonnes per hectare (t/ha) compared to 0.91 t/ha in 2005-2006, and a 3% decrease in harvested area.

World flaxseed production has ranged between 2.0 Mt and 3.0 Mt over the last 10 years, peaking in 2005-2006. Canada is the largest producer of flaxseed in the world, representing about 40% of world production. China, the United States (US), and India, together account for 40% of world production. Within the European Union (EU), the main producers of flaxseed are Germany, the United Kingdom and France. Production has remained relatively stable in China, India, and the EU over the last decade.

**Trade**

World trade in flaxseed is forecast at 0.9 Mt for 2006-2007, up 8% from last year, largely associated with strong crude oil prices and large supply. Canada is the dominant exporter, accounting for 80% of the world export market. The EU is the largest import market, accounting for about 65% of world trade. Within the EU, Belgium-Luxembourg is the largest consumer, followed by Germany. The US is the second largest import market, with about 15% of world trade. Egypt has recently emerged as the third largest importer, surpassing Japan in 2005-2006. Since 2002-2003, imports into Egypt have increased by 372%, resulting from higher vegetable oil consumption and lower domestic oilseed production.

**Crush**

Recently, flaxseed processing has been trending upwards on support from new demand as a functional food, increased industrial use, and higher production levels. The oil/meal content of flaxseed is about 46/54% compared to about 42/58% for canola and 18/82% for soybeans.

World flaxseed crush is expected to increase by 5%, to a 10-year high of 2.2 Mt in 2006-2007. This is primarily due to increased crush in China and the EU.

For 2006-2007, world flaxseed meal production is forecast at 1.4 Mt, up slightly from 2005-2006. In the past 5 years world production has ranged from 1.1 to 1.4 Mt. Exports for 2006-2007 are projected at 89 thousand tonnes (kt), a 12 kt increase from last year. The EU and the US are the largest import markets of flaxseed meal.

Production of flaxseed oil is expected to rise by 5% to 0.7 Mt in 2006-2007 due to increased crush. About 18% or 131 kt of this year's production was traded. The major import markets were the EU, followed by Japan, then China.

Canada and the US export the majority of flaxseed meal and flaxseed oil. Since 2004-2005, Argentina has emerged as the third largest net exporter of both products.

**WORLD: FLAXSEED SUPPLY AND DISPOSITION**

| | 2005 -2006 | 2006 -2007e | 2007 -2008f |
|---|---|---|---|
| | …million tonnes…… | | |
| Carry-in Stocks | 0.09 | 0.53 | 0.70 |
| Production | | | |
| Canada* | 1.08 | 1.04 | 0.60 |
| China | 0.48 | 0.48 | 0.45 |
| United States | 0.48 | 0.35 | 0.23 |
| India | 0.23 | 0.21 | 0.21 |
| EU | 0.18 | 0.18 | 0.17 |
| C.I.S. | 0.10 | 0.10 | 0.10 |
| Bangladesh | 0.05 | 0.05 | 0.05 |
| Argentina | 0.05 | 0.05 | 0.04 |
| Other | 0.20 | 0.21 | 0.28 |
| **Total Production** | **2.85** | **2.67** | **2.13** |
| **Total Supply** | **2.94** | **3.20** | **2.83** |
| Crush | 2.09 | 2.19 | 2.15 |
| Other | 0.32 | 0.31 | 0.35 |
| **Total Use** | **2.41** | **2.50** | **2.50** |
| **Carry-out Stocks** | **0.53** | **0.70** | **0.33** |
| Trade | 0.80 | 0.86 | 0.86 |

e: estimate, Oil World, December 14, 2006
f: forecast, AAFC, February 2007
Source: Oil World, except *which is Statistics Canada

**FLAXSEED CRUSH**

The EU has the largest domestic crushing sector, followed by the US and China. The processing sector results in two products: flaxseed oil and flaxseed meal. Flaxseed cake has a higher oil content than meal.

Flaxseed in North America is typically processed by depress solvent extraction (the same way that rapeseed is crushed). Flaxseed oil obtained through this method is used for industrial purposes. To obtain flaxseed oil suitable for human consumption, flaxseed is first cold pressed. A later hot press yields additional oil to be used for industrial purposes.

EU flaxseed crush was historically driven by the demand for flaxseed oil in the production of linoleum, paints and other industrial products. In recent years, the demand for non-genetically modified protein meal is driving the crush and overall, the production of flaxseed oil in the EU is rising. Flaxseed meal is fed to livestock, primarily in Western Europe, while surplus flaxseed oil is sold to distant markets such as China and North Africa. Research has indicated that flaxseed in hog rations improves fertility, and in cattle, helps boost the immune systems of calves. Ongoing research regarding the benefits of flaxseed meal in animal rations will prove to be beneficial to the flaxseed crushing sector.

A limiting factor in flaxseed crush however is competition from the rising biodiesel industry in Europe. The demand for biodiesel in the EU is increasing, and rapeoil, not flaxseed is the primary ingredient. Since it is more profitable to crush rapeseed for biodiesel, EU crushing plants are reducing their flaxseed crush in favor of oilseeds more suitable for biodiesel. Flaxseed is not suitable for biodiesel production due to its unstable nature.

In 2006-2007, it is projected that Argentina will export 91% and 73% of its flaxseed oil and meal production, respectively.

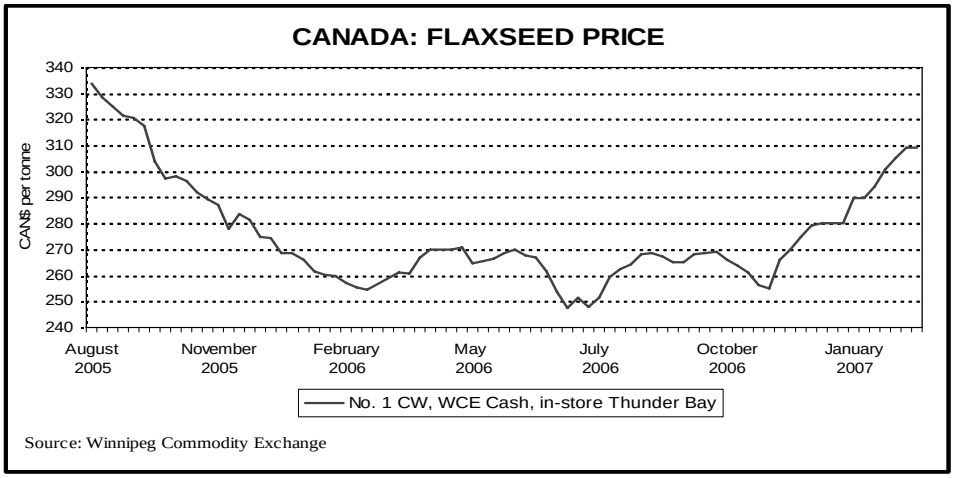
**CANADA**

Virtually all of the flaxseed grown in western Canada is destined for the export market. Saskatchewan, on average, produces four times as much as Manitoba, and has been the largest producing province since 1993-1994.

Prolonged periods of hot, dry weather plagued the 2006-2007 growing season. For 2006-2007, production was 1.0 Mt, only 4% lower than last year. Production in Saskatchewan, Manitoba and Alberta was 805 kt, 193 kt and 43 kt, respectively. Yields decreased by 10% in Saskatchewan and rose by 15% in Manitoba. Overall, the 6% decrease in yield to 1.26 tonnes per hectare (t/ha) was partly offset by a 3% increase in harvested area, most of which occurred in Manitoba. Total seeded area remained at 842,000 hectares (ha).

In Canada, only a relatively small amount of flaxseed is crushed for oil. Flaxseed is ground for the inclusion in baked goods and is fed to livestock, especially poultry. Food use is expected to expand as nutritional awareness increases. For 2006-2007 total domestic use is forecast at 0.3 Mt.

The demand for flaxseed oil increased in the late 1990s, due to the emerging market for environmentally friendly and health-oriented products. As a result, Canadian exports rose significantly, peaking at 0.9 Mt in 1997-1998.



Source: Winnipeg Commodity Exchange

For 2006-2007, exports are estimated at 0.7 Mt, up by 21% from 2005-2006. About 65% of Canada's exports are destined to the EU, particularly Belgium-Luxembourg, where it is crushed for flaxseed oil and meal. The US is the second largest importer of Canadian flaxseed, followed by Japan, accounting for approximately 20% and 4% of Canada's exports, respectively. Nearly two-thirds US imports are processed in Minnesota and North Dakota. Exports to Japan peaked at 90 kt in 1995-1996, and have decreased over the last decade, falling to 15 kt in 2005-2006.

Canada also exports flaxseed oil, flaxseed meal, and flax fibre. Flaxseed oil exports have been stable at 5 kt since 1998-1999, and reached 13.8 kt in 2004-2005. Flaxseed oil exports in 2005-2006 were 13 kt and are expected to remain unchanged for 2006-2007. Historically, almost all flaxseed oil was exported to the US, however, in 2004-2005 Japan surpassed the US as the largest importer and maintained that position in 2005-2006.

Flaxseed meal exports totaled 16.7 kt or CAN$2.5M in 2005-2006, and virtually 100% was destined to the US. For 2006-2007, flaxseed meal exports are expected to remain around 17 kt. Flax fibre exports were 42.8 kt or CAN$16.9M in 2005-2006, with the major market being the US followed by Belgium-Luxembourg. Flax fibre exports have averaged 52 kt per year in the last 10 years, and are expected to remain unchanged for 2006-2007.

**Prices to Increase**

Flaxseed prices generally follow the major oilseed crops, although, a strong correlation does not exist because of differences in end use demand. Industrial products using flaxseed oil compete with petroleum-based substitutes; therefore the price of crude oil also influences flaxseed prices. Other primary factors affecting prices include Canadian supply, EU crush and to a smaller extent the US crush demand.

Canadian flaxseed prices (No.1 CW, cash, in-store Thunder Bay) reached record highs in the first six months of 2005, and have trended downward since then. Eastern European flaxseed has been competing with Canadian flaxseed in the Northern European market. Canadian prices have been pressured for a longer period after the harvest compared to canola and other oilseeds. For 2006-2007, prices are forecast at CAN$285/t, slightly higher than 2005-2006 due to increased exports.

**OUTLOOK: 2007-2008**

**World**

For 2007-2008, world production is projected to decrease by 20% to 2.1 Mt in 2007-2008, due primarily to decreased production in Canada. Total supply is forecast to fall by 12% to 2.8 Mt as lower production more than offsets higher carry-in stocks. World production of flaxseed oil is expected to increase marginally to 0.8 Mt supported by increased industrial use. Flaxseed meal production is forecast to remain unchanged at 1.4 Mt.

World trade is forecast to remain at about 0.9 Mt supported by increased EU crush and limited by decreased US production. World crush is anticipated to decrease slightly.

**CANADA: FLAXSEED SUPPLY AND DISPOSITION**

| *August-July* *crop year* | **2005 2006** | **2006 2007e** | **2007 2008f** |
|---|---|---|---|
| | .....thousand tonnes..... | | |
| Seeded Area (Kha) | 842 | 842 | 520 |
| Harvested Area (kha) | 803 | 826 | 495 |
| Average Yields (t/ha) | 1.35 | 1.26 | 1.21 |
| Carry-in stocks | 24 | 336 | 450 |
| Production | 1,082 | 1,041 | 600 |
| Imports | 38 | 20 | 20 |
| **Total Supply** | **1,144** | **1,397** | **1,070** |
| Exports | 537 | 650 | 650 |
| Total Domestic Use | 272 | 297 | 245 |
| **Total Use** | **809** | **947** | **895** |
| **Carry-out Stocks** | **336** | **450** | **175** |
| Price* CAN$ per tonne, In-store, Thunder Bay | 276 | 265 -305 | 300 -340 |

*No. 1 CW, Winnipeg Commodity Exchange, cash
e: estimate, f: forecast, AAFC – February 19, 2007
Source: Statistics Canada

**United States**
Most flaxseed in the US is grown in North Dakota, where high quality wheat can also be grown. The ongoing wheat shortage in the US and strong demand for corn and for ethanol production is supporting US wheat and corn prices. Therefore, US flaxseed production is expected to decrease due to an expected 30-40% fall in seeded area.

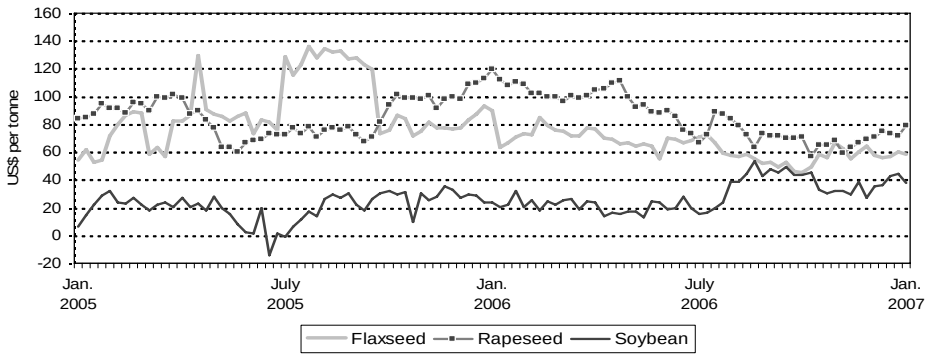
**European Union**
The EU also has a rising biofuel industry as environmental policy become increasingly supported by member countries. Biodiesel demand for rapeseed is leading to competition for seeded area as rapeseed crush margins increase relative to flaxseed crush margins. As a result, EU flaxseed production is expected to decline in 2007-2008 to 0.2 Mt. As long as flaxseed crush margins remain competitive with rapeseed, EU imports are projected to remain strong. Rapeseed crush margins surpassed flaxseed crush margins in early October 2005. However, Rapeseed has maintained an average premium of US$20/t over flaxseed. Rapeseed crush margins are anticipated to increase in the future with the expansion of the biodiesel industry. Due to relatively high net returns for rapeseed, EU flaxseed production is forecast to decrease and expected to result in strong EU flaxseed import demand.

**Canada**
For 2007-2008, Agriculture and Agri-Food Canada (AAFC) projects a 38% decrease in seeded area, from 842,000 ha to 520,000 ha, as flaxseed returns are expected to be weaker than most other grains and oilseeds. Coupled with projected trend yields of 1.21 t/ha, production is forecast at 0.6 Mt, down 42% from 2006-2007. If realized, this would be the second lowest level of production in the last 10 years (the lowest occurring in 2004-2005).

For 2007-2008, supply is expected to decrease by 23%, to 1.1 Mt, similar to the 10-year average. The sharp fall in production is expected to more than offset large carry-in stocks.

Despite lower supply, exports are forecast to remain unchanged for 2006-2007, at 0.65 Mt. Flaxseed demand will be supported by increased EU crush, which ultimately depends on EU crush margins, and decreased production in both the EU and the US. Another factor to watch for is

**EUROPEAN UNION : CRUSH MARGINS**




Source: Oil World

Eastern European exportable supply, which competes with Canadian flaxseed. Prices are forecast to increase by 12% to CAN$320/t, due to lower supply and carry-out stocks. The weather during the 2007-2008 growing season will be a major factor to watch.

**MEDIUM-TERM OUTLOOK**

By 2015, flaxseed consumption will rise on support from increased nutritional awareness, including a larger consumption of whole grains and healthy oils. Furthermore, the rapid 4.5% average growth rate of developing nations (China and India showing the strongest growth) will provide new demand for both food and industrial uses of flaxseed. Flaxseed use will also be supported by rising world environmental safety. This will present flaxseed industrial products as a viable, environmentally friendly alternative to petroleum-based products.

Two limiting factors in the outlook for flaxseed are crude oil prices and the prospect of the biofuel industry. The expanding biofuel industry in key producing (including crush) countries, also affected by crude oil prices and further supported by increasing concern over the environment, can further limit flaxseed production. Higher crude oil prices provide strong support for biofuel production which increases crush margins for other grains and oilseeds, such as canola, wheat and corn, relative to flaxseed. The biofuel industry is expected to continue to expand over the medium-term.

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**Electronic version available at www.agr.gc.ca/mad-dam/**

ISSN 1207-621X
AAFC No. 2081/E

Bi-weekly Bulletin is published by the:
**Market Analysis Division,**
**Research & Analysis Directorate**
**Strategic Policy Branch**
**Agriculture and Agri-Food Canada.**
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Issued also in French under title:
*Le Bulletin bimensuel*
ISSN 1207-6228
AAFC No. 2081/F



*While the Market Analysis Division assumes responsibility for all information contained in this bulletin, we wish to gratefully acknowledge input from the following:*
Flax Council of Canada, Saskatchewan Flax Development Commission, Market and Industry Services Branch (AAFC)