



Bi-weekly Bulletin

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MUSTARD SEED: SITUATION AND OUTLOOK

Canada is the dominant exporter and it is normally the second largest producer of mustard seed in the world. The value of Canadian mustard seed exports averaged about \$80 million during the past five years. For 2005-2006, Canadian seeded area, production and supply are expected to decrease significantly from 2004-2005 for all types of mustard seed, yellow, brown and oriental, however, exports and average prices are expected to increase. This issue of the *Bi-weekly Bulletin* examines the situation and outlook for mustard seed.

WORLD

Production and Trade

India produces the bulk of world mustard seed. However production data for India, as well as two other significant producers, Pakistan and Bangladesh, is not available since these countries combine the production data for mustard seed and rapeseed. Unofficial estimates for mustard seed production in these countries are about 2.5 million tonnes (Mt) for India and about 150,000 tonnes (t) each for Pakistan and Bangladesh. Mustard seed produced in India, Pakistan and Bangladesh, as well as in most other Asian countries, is mainly crushed for oil. Excluding these three countries, mustard seed production has been variable, but with a slight upward trend during the past ten years.

Mustard seed exports have also been variable, but with a slight upward trend, peaking at 294,000 t in 2003, the latest year for which world trade statistics are available. Canada dominates world mustard seed exports, accounting for about 65% of total world exports if re-exports are excluded. The only other significant exporters are Russia, Ukraine, the Czech Republic and Hungary. Exports from Germany, Netherlands and Belgium are re-exports of imported seed. The top five importing countries, Bangladesh, the United States (US), Germany, France and Netherlands, account for about 70% of world imports.

CANADA

Production

The three types of mustard seed

produced in Canada are yellow (*Sinapis alba*), brown, and oriental (both *Brassica juncea*). Mustard seed can be grown on most soil types, but is best adapted to the brown and dark brown soils. Soils prone to crusting and dry, sandy soils are not recommended. All mustard seed types tolerate drought conditions better than canola. Mustard seed fits well in a rotation with cereal grains. Yellow mustard seed requires 90-92 days to mature, brown 85 days and oriental 86-88 days. Seedlings are quite tolerant of frost. Therefore, early seeding is recommended to avoid flowering during the hottest part of the summer, thereby improving yields. The Canadian mustard seed harvest normally occurs from mid-August to late September.

Canadian mustard seed production has been variable during the past 10 years, ranging from a low of 105,000 t in 2001-2002 to a high of 306,000 t in 1999-2000. For 2001-2002, 2002-2003 and 2003-2004, average yields were lower than normal and abandonment rates were higher than normal due to drought and other weather related problems in most growing areas. Production recovered in 2004-2005 due to higher seeded area and higher yields. Saskatchewan dominates Canadian

mustard seed production with 82% of the production in 2004-2005, followed by Alberta at 17% and Manitoba at 1%.

Production by type varies from year to year depending on price prospects for each type of mustard seed. The yields of brown and yellow mustard seed are about 5% and 20% lower than oriental, respectively. Since the costs of production are similar for all types, prices for brown mustard seed have to be about 5% higher and for yellow mustard seed about 25% higher compared to oriental mustard seed to encourage production of the brown and yellow types rather than the oriental type.

World Mustard Seed Production (partial)					
	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006f
Harvested Area (000 ha)	558	777	1,024	1,020	925
Average Yields (t/ha)	0.66	0.65	0.68	0.77	0.67
.....thousand tonnes.....					
Canada*	105	154	226	305	180
Nepal	132	135	133	135	130
Czech Republic	19	32	60	112	90
Russia	28	35	86	75	70
Ukraine	8	27	69	50	45
Myanmar	30	34	35	35	35
USA **	19	52	35	26	25
China	13	13	15	15	15
Romania	4	6	15	15	12
Slovakia	2	3	6	7	6
Germany	4	4	4	4	4
Other	7	7	9	9	8
Total World	371	502	693	788	620

Note: India, Pakistan and Bangladesh are important producers, but mustard seed production data for these countries is not available as it is combined with rapeseed production data.
Source: FAO, except *Statistics Canada, **USDA - May 2005
f: AAFC forecast, May 2005

The quality of the 2004-2005 crop was lower than normal. According to a survey conducted by Saskatchewan Agriculture and Food, about 45% of the mustard seed in that province graded 1 Canada (normally 78%), 28% graded 2 Canada (16%), 12% graded 3 Canada (4%) and 15% graded 4 Canada and Sample (2%).

Uses

Mustard seed is a nutritious food ingredient. Its high protein content of 28-36% is of particular interest when used in processed meats. The volatile oil in mustard seed inhibits growth of certain yeasts, molds and bacteria, which enables mustard seed to function as a natural preservative and extends the shelf life of finished foods.

Yellow mustard seed is suitable for a wide range of applications, including dry milling for flour, wet milling for mustard pastes, and whole ground seed for spice mixes, meat processing and other food products. It is the type of mustard seed used for processing into the familiar North American hot dog mustard, which uses the whole seed for a milder product. In processed meats, it is used as a binder and a protein extender, and to enhance the flavour. It is also used in mayonnaise and salad dressings. Dry milled flour is used for condiments and as an ingredient in compounded products. The extracted seed hulls are used for thickening and stabilization in mustard and other prepared foods. Mucilage is a gummy substance found in the seed coat of yellow mustard seed. It absorbs water, keeps meat dry and is a binding and thickening agent in meat and soup. Since there are several varieties of yellow mustard seed grown in Canada, there is a range of mucilage contents available, allowing processors to blend varieties to reach a standard viscosity. Yellow mustard seed can also be ground for use as an ingredient for the prepared meat industry, where it contributes to total protein. As well, the gelling of the mucilage increases water absorption into the product, which provides enhanced economy and improved efficiency in the smooth molding of shaped products. Heat inactivated (spice heat removed) whole ground seed is used as an ingredient in many food products providing colour, flavour, viscosity and emulsification. The oil content of yellow mustard seed is about 27%.

Brown mustard seed is ground into flour which is used to produce a hot

mustard used in European products. The flour is also used in mayonnaise, salad dressing and sauces. The oil content of brown mustard seed is about 36%. The fixed oil content of Canadian brown mustard seed gives no separation problems and the volatile oil content has long been the standard in formulations. Fixed oil is the oil obtained in crushing the seed, whereas volatile oil is a breakdown product from glucosinolates. Volatile oil gives mustard the spicy taste.

Canadian oriental mustard seed varieties have been bred for specific levels of oil and volatility to meet alternative market requirements. High volatility, high oil content oriental mustard seed varieties are suitable for the oilseed demand in the Indian sub-continent, while low volatility, low oil content mustard seed varieties are suitable for dry milling purposes. Stronger flavoured oriental mustard seed varieties are also available if the miller or processor requires it. The average oil content of oriental mustard seed is about 39%.

Marketing

All of the mustard seed produced in Canada is sold on the open market to dealers. There are about twenty dealers across the Prairie provinces who buy, clean, and ship mustard seed to domestic and export markets.

Mustard seed is shipped both bulk and in containers, depending on the volume shipped and the destination. Deliveries to domestic and US customers are in bulk in trucks or in containers which are carried by trucks or trains. Some mustard seed is grown under production contracts, which guarantee a price for part of the production, and the rest is sold on the spot market.

The Canadian Special Crops Association (CSCA) (www.specialcrops.mb.ca) establishes trade rules for domestic trade

and serves as a forum for exporters, dealers and brokers involved in the industry of trading Canada's pulse and special crops, including mustard seed. The CSCA's website includes a section where buyers can submit a request for prices.

The Canadian Grain Commission (CGC) administers quality control standards for mustard seed. There are four grades for each type of mustard seed. In addition, mustard seed can be graded "Sample" if it does not meet the specifications for any of the four grades. Top grades of mustard seed are obtained when seeds are well matured, have good colour with minimal damage, and are free of seeds from volunteer canola plants and weeds such as cow cockle. For further information, or to access the Official Grain Grading Guide, please visit the CGC website: (www.grainscanada.gc.ca)

Domestic Use

Canadian domestic use, which includes food, seed, dockage and waste, accounts for about 25% of the total

World: Mustard Seed Exports					
Calendar Year	1999	2000	2001	2002	2003
thousand tonnes.....				
Canada**	159	159	152	148	122
Russia	3	26	10	13	42
Ukraine	0	0	1	6	36
Czech Republic	23	34	17	18	24
Germany*	7	11	11	17	14
Netherlands*	11	9	7	13	13
India	1	0	7	11	10
Hungary	13	15	8	12	9
United States	3	2	3	10	5
Belgium*	3	2	0	1	4
Romania	3	3	4	3	3
Other	2	4	7	10	12
Total	228	265	227	262	294
* re-exports					
Source: FAO, except **Statistics Canada - May 2005					
World: Mustard Seed Imports					
Calendar Year	1999	2000	2001	2002	2003
thousands tonnes.....				
Bangladesh	52	57	53	41	54
United States	47	51	49	42	49
Germany	40	46	42	40	42
France	30	31	31	27	30
Netherlands	14	16	16	16	14
Belgium	0	4	4	2	11
Japan	10	9	8	7	8
Nepal	6	4	2	6	9
Austria	6	5	4	5	5
Poland	5	6	4	4	2
Other	31	28	35	46	37
Total	241	257	248	236	261
Source: FAO - May 2005					
The difference between imports and exports is partly attributed to the timing of delivery.					

use. There is some processing of mustard seed in Canada, concentrating on milling seed for its flour and for condiments. Most of the mustard seed processed in Canada is the yellow type; however some brown and oriental types are also milled mainly to be blended with yellow mustard flour for customers who want a spicier product. Statistics on domestic use are not available. Therefore, domestic use is calculated as a residual after deducting exports and carry-out stocks from total supply.

Exports

Canadian mustard seed exports are mainly in the bulk, unprocessed form. Europe (mainly Belgium, Netherlands, Germany, France and United Kingdom), Asia (mainly Bangladesh, India, Japan, Thailand and South Korea), and the US account for the majority of the exports. Europe imports mainly brown mustard seed, Asia mainly oriental and the US mainly yellow.

For 2004-2005, Canadian exports are expected to increase from 2003-2004 due to higher total supply.

In addition to seed exports, some of the mustard seed flour produced in Canada is exported to the US and other markets.

Prices

Canadian prices are determined on an export basis because Canada exports about 75% of its production. Therefore, they are highly sensitive to the value of the Canadian dollar in foreign markets. Prices of the yellow type are usually higher than for the brown and oriental types. However, since yields of the yellow type are usually lower, earnings per hectare tend to be similar for all three types over the long-term. Since there is no futures market for mustard seed, prices are negotiated directly between the producer, dealer, and customer based on supply and demand factors for each type of mustard seed. The prices negotiated could be for immediate delivery or for delivery at some future date.

For 2004-2005, prices for No.1 grade of all types of mustard seed are expected to average lower than in 2003-2004, because of higher supply.

OUTLOOK

World: 2005-2006

World mustard seed production

(excluding India, Pakistan, and Bangladesh) is forecast to decrease by 21% from 2004-2005 to 620,000 t, due mainly to lower production in Canada.

Canada: 2005-2006

Area seeded is estimated to decrease by 26% from 2004-2005 due to expected high carry-in stocks and relatively low prices.

Assuming normal abandonment rates and normal precipitation during the growing season, production is forecast to decrease by 41% to 180,000 t.

Production is expected to decrease for all three types. Assuming normal growing and harvest conditions, average quality is expected to return to normal. Total supply is forecast to decrease by 9%, as lower production is partly offset by higher carry-in stocks. Carry-in stocks are expected to include a large portion of low quality seed. Exports are forecast to increase because of stronger demand and carry-out stocks are forecast to decrease.

The lower supply is expected to support prices, with average prices

Canada: Supply and Disposition of Mustard Seed					
	2001- 2002	2002- 2003	2003- 2004	2004- 2005f	2005- 2006f
<i>Aug - July crop year</i>					
Seeded Area (000 ha)	166	289	340	317	233
Harvested Area (000 ha)	158	255	328	304	226
Yield (t/ha)	0.66	0.60	0.69	1.00	0.80
thousand tonnes.....				
Carry-in stocks	105	33	60	92	185
<i>Production:</i>					
<i>Yellow</i>	51	79	124	126	80
<i>Brown</i>	21	38	67	92	50
<i>Oriental</i>	33	37	35	87	50
Total Production	105	154	226	305	180
Imports	3	9	2	2	2
Total Supply	213	196	288	399	367
<i>Exports:</i>					
United States	46	41	53	55	55
Europe	70	47	45	50	55
Asia	52	23	18	25	35
South and Central America	2	2	3	3	3
Africa and Middle East	1	1	2	2	2
Total Exports	171	114	121	135	150
Total Domestic Use	*9	22	75	79	77
Total Use	180	136	196	214	227
Carry-out Stocks	33	60	92	185	140
Stocks-to-use ratio	18%	44%	47%	86%	62%
Seeded Area (000 ac)	410	714	840	783	576
Harvested Area (000 ac)	390	630	810	751	558
Yield (lbs/ac)	589	535	616	892	714
Average producer price**					
Yellow	\$/t 1,058	694	386	309	342
	\$/lb 0.48	0.315	0.175	0.14	0.155
Brown	\$/t 474	672	386	309	320
	\$/lb 0.215	0.305	0.175	0.14	0.145
Oriental	\$/t 342	430	419	309	320
	\$/lb 0.155	0.195	0.190	0.14	0.145

Source: Statistics Canada and AAFC
f: Agriculture and Agri-Food Canada forecast, May 2005
*Note: Domestic use is calculated residually. For 2001-02, based on export and carry-out stocks data, it appears Statistics Canada's production estimate may be low or carry-out stocks high resulting in a very low residual.
**Saskatchewan, No.1 CAN grade

increasing for all three types. The price spreads between grades are expected to decrease, assuming a return to normal quality.

The main factor to watch is precipitation during the growing and harvest periods.

Canada: longer-term

There is strong and growing demand for mucilage and plant breeders have responded by developing yellow mustard seed varieties with higher mucilage levels. Three newer varieties, Viscount, Ace and Andante, have mucilage levels which are about 30% higher than traditional varieties. Work is continuing on developing additional varieties. Higher mucilage levels are expected to increase demand for yellow mustard seed, as marketers promote the value of the product to end users. Producers could only receive premiums for growing varieties with high mucilage levels through segregation and identity preservation because there is no way to measure mucilage levels at the plant. However, premiums for high mucilage may not always occur even with segregation and identity preservation if the price of yellow mustard seed is too high, because users of mucilage may switch to substitute products, such as guar gum. There could be one side benefit of increased mucilage levels. Since

mucilage draws water into the seed, it might help germination.

Demand for mustard seed is expected to increase during the next decade due to increased population, increased use of spices and increased demand for other uses such as mucilage.

A potential additional use of mustard seed could be for biodiesel. Oil crushed from mustard seed can be used in the production of biodiesel, a fuel for compression-ignition engines coming from biological sources. However, the mustard seed oil price would have to be competitive with alternative sources, such as soyoil and canola oil. Therefore, biodiesel might become a market for low quality mustard seed.

Demand is expected to grow from end users for identity preservation (IP) to ensure specific quality characteristics. IP systems ensure traceability of product from the end-user back to the producer. It involves documentation for each step of production, handling and processing, as well as production, handling and processing standards, and auditing. Although there will be extra cost in an IP system, it will be an important marketing tool for Canadian mustard seed. The mustard seed industry is examining how the CGC's Canadian Identity Preserved

Recognition System (CIPRS) can assist the industry in the marketing and delivery of special product characteristics. CIPRS certifies companies selling products through identity preserved programs that have effective quality management systems for the production, handling and transportation of several crops, including mustard seed

For periodic updates on the situation and outlook for mustard seed, visit the Market Analysis Division Website for "Canada: Pulse and Special Crops Outlook."

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US FARM SECURITY AND RURAL INVESTMENT ACT OF 2002 (FSRIA)

Under the previous FAIR Act, the national **loan rate** for "minor oilseeds" which included mustard seed was US\$0.093/lb. Under the FSRIA, a separate loan rate was established for mustard seed at US\$0.0988/lb for 2002-2003 and this was scheduled to increase to US\$0.1019/lb for 2003-2004. However, in 2003-2004 a single rate was re-established for all "minor oilseeds", including mustard seed, at US\$0.096/lb. For crop years 2004-2007, the loan rate was lowered to US\$0.093/lb. These rates are for the top grade and there are discounts for lower quality seed. The loan rate varies by county and is highest in North Dakota. The loan rate provides a floor return because if the price is lower than the loan rate, the producer is eligible for a loan deficiency payment. Mustard seed production in the US is mainly in North Dakota and Montana and nearly all of the production is the yellow type. Although average prices paid to producers were above the loan rate during crop years 2002-03 to 2004-05 and producers did not receive a loan deficiency payment, the loan program supports mustard seed production because it provides a floor return in years when prices are low.

Mustard seed is also eligible for the minor oilseeds **direct payment** of US\$0.008/lb. However, this is based on historical seeded area and yields and is theoretically decoupled from the area seeded during the year of the payout. Mustard seed is eligible for the "minor oilseeds" **counter-cyclical** support based on the **target price** of US\$0.098/lb for crop years 2002 and 2003, and US\$0.101/lb for crop years 2004 to 2007. However, in calculating a counter-cyclical payment, the direct payment is first deducted from the target price. Therefore, since the target price minus the direct payment is less or equal to the loan rate or market price, no counter cyclical payment is expected for mustard seed.

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