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RYE: SITUATION AND OUTLOOK

World production of rye has decreased significantly over the last several decades, due to a steady decline in food and feed uses. Canadian production and exports of rye have also declined significantly since the early 1980s. For 2006-2007, Canadian farm prices for rye are forecast to increase, due to lower Canadian rye production and higher coarse grain prices. In addition, policy reform for rye in the European Union (EU) has removed some of the incentives to produce rye in the EU, which is expected to support rye prices and improve export opportunities for Canada, particularly in the US and Japan.

Rye is a hardy cereal grain which can endure a variety of climates, surviving even in sub-zero temperatures. It is a tough, drought tolerant crop, hardier than winter wheat and grows well in erosion prone soil, making it useful to prevent erosion. Rye competes well with weeds therefore reducing reliance on herbicides, and also requires fewer inputs than other crops. Area seeded to rye in the world peaked in the 1950s and has trended downward due mainly to declining demand.

World rye production has decreased by nearly 60%, from 35.6 million tonnes (Mt) in 1960-1961 to 14.5 Mt in 2005-2006 due mainly to declining demand of rye for food and feed. This trend reversed to some extent during the 1980s but has accelerated since the 1990s. In Canada, rye production has decreased by over 60% from the peak of 933 thousand tonnes (kt) in 1982-1983, to 359 kt in 2005-2006.

World food and other non-feed uses of rye have declined by over 50%, from 23.2 Mt in 1960-1961 to 10.8 Mt in 2005-2006. During the same period, world feed use for rye has decreased by nearly 60%, from 12.4 Mt to 5.0 Mt. In the EU, rye has recently started to be used in the production of ethanol.

The food processing industry uses rye flour to make bread and other baked products. Rye is generally considered to be inferior to wheat in the industry because the dough made of rye lacks the essential elasticity and has lower gas retention capacity. Rye bread has a shorter shelf life than wheat bread. Rye is also an ingredient in the production of distilled whiskey and vodka. However, distillers tend to only use enough rye to obtain sufficient flavour, while other grains, such as corn, are used as the major source for starch.

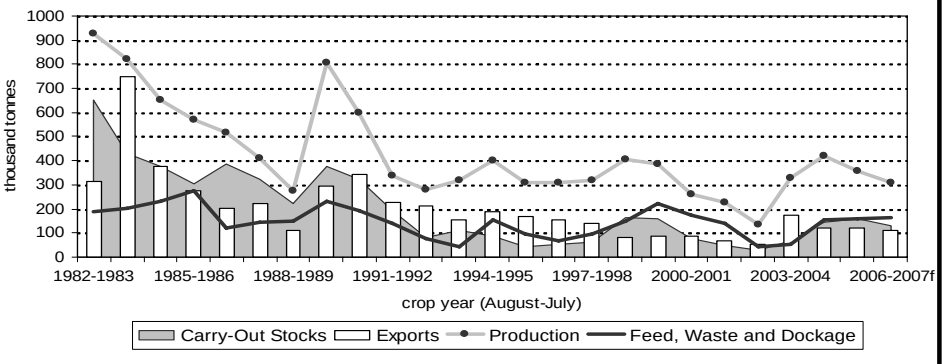
Rye is fed to livestock animals as grain, hay or forage. The livestock industry perceived grain rye as having a lower feed value than other grain, due to the presence of ergot, anti-nutritional effects of *pentosans*, a lack of palatability and reduced feed intake, the vulnerability to test weight losses and sprout and heat damage.

Rye is also planted for forage and silage because of its relatively low input requirements. However, rye is a poor quality forage and part of the decline in the area seeded to rye has been due to increased substitution of triticale (a cross between durum wheat and rye) for rye as forage. Triticale has the hardiness and low input characteristics of rye but is more palatable to livestock as stored forage, dried or as silage.

WORLD PRODUCTION

For 2005-2006, world rye production decreased to 14.5 Mt, from 17.0 Mt in 2004-2005. The EU-25 remains the largest rye producer at 7.7 Mt, or 53% of world production, of which Poland and Germany produced 3.4 and 2.8 Mt, respectively. The elimination of price support may have played a role in lowering EU production. Russia, Belarus Ukraine and China are the other major producers, with production at 3.6 Mt, 1.2 Mt, 1.1 Mt and 0.6 Mt, respectively. Canada is a relatively small producer of rye and production decreased from 418 kt in 2004-2005 to 359 kt in 2005-2006.

CANADA: RYE SUPPLY AND DISPOSITION



f: forecast, AAFC, May 2006
Source: Statistics Canada

Canada

IMPORTERS

World rye imports are forecast to decrease from 973 kt in 2004-2005 to 530 kt in 2005-2006. Japan and the US are the major importers, accounting for 47% and 19% of world imports, respectively. Israel, South Korea, Russia and Turkey are minor importers.

Japan

Japan has been the world's largest and most consistent importer of rye, with most of the imports used as cattle and swine feed. Rye imports are, therefore, strongly influenced by the market situation in domestic livestock industries. In addition, Japanese agricultural policies on other cereal grains, which are substitutes for rye as animal feed, also have a significant impact on Japanese rye consumption and world rye trade.

While imports of wheat and barley into Japan are regulated by the Japanese Food Agency, the Japanese rye market is largely open. As a result, rye prices in Japan reflect world market prices and are, therefore, lower than regulated prices for wheat and barley, making rye an affordable feed ingredient.

Since the early 1990s, Japanese imports from the EU have increased significantly, while imports from Canada decreased correspondingly. Japanese Imports from Canada peaked at 264 kt in 1990-1991 but were almost zero in 2001-2002.

In 2004-2005, Japan imported 261 kt of rye, of which nearly 240 kt, or over 90%, were from Germany. Canada, the second largest exporter, supplied 22 kt. For 2005-2006, total imports by Japan are forecast by the United States Department of Agriculture (USDA) to decrease to 250 kt.

United States

The US plays a minor role in world rye production. Over the past 10 years, US production decreased steadily, from 227 kt in 1996-1997 to 191 kt in 2005-2006. Unfavourable government policies are one of the major factors contributing to rapid decline in domestic supplies.

As domestic production decreases at a more rapid pace than consumption, the US became the second largest rye importer in the world. US rye imports from all origins have averaged about 115 kt over the last decade, of which over 80% are from Canada. For 2005-2006, the US is forecast to import 100 kt of rye versus 174 kt in 2004-2005 and the 10-year average of 115 kt.

US imports of rye from Canada are destined primarily for processing facilities in Minnesota and Kentucky where it is used for milling and distilling, respectively. Steady US food use, as well as declining EU and US production, has helped to support Canadian rye exports. The US has become Canada's largest export market for rye, as the EU displaced Canada in the Japanese market.

EXPORTERS

World rye exports are expected to decrease from a high of 1.5 Mt in 2002-2003 to 530 kt for 2005-2006, of which 57%, or 300 kt, are from the EU. Canada is the second major exporter at 120 kt, or about 23% of world exports. Ukraine and Belarus export 50 kt each, with a combined share of 18% of world exports. Overall, exports from the EU, Ukraine and Canada are expected to decrease from last year.

European Union

Rye was eligible for intervention in the EU under the Common Agriculture Policy (CAP) until the 2004-2005 crop year. Under the EU intervention system, producers were able to sell their rye at the intervention price, which usually was significantly higher than the EU domestic market price. EU exporters have been allowed to purchase rye from intervention storage at prices well below the intervention price. During the 1999-2004 period, the export price was about €40/t, or CAN$60/t, lower than the intervention price.

During the period when rye prices were supported by the EU intervention system, the production of rye in the EU increased from an average of 5.6 Mt during 1993-1998 to an average of 10.1 Mt during 1999-2004. Due to the weak demand in internal and external markets, carry-out stocks of rye increased significantly and large intervention stocks accumulated. For 2003-2004, EU carry-out stocks for rye were 3.8 Mt, of which 3.3 Mt were intervention stocks, all of which was in Germany.

Due to the accumulation of burdensome stocks, rye was excluded from the EU intervention system in 2004-2005. This terminated the support price for rye and the flow of rye into intervention stocks. As a result, EU intervention stocks will soon be depleted. This is expected to lower EU production and exports and support world rye prices. For 2004-2005, despite higher production, total carry-out stocks in the EU decreased by 600 kt from 2003-04 to 3.2 Mt, of which 2.3 Mt were intervention stocks.

For 2005-2006, EU rye production decreased to 7.7 Mt, from 10.0 Mt in 2004-2005. EU exports, for the October – September year, are forecast by the USDA to decrease to 300 kt, from 676 kt in 2004-05, and EU carry-out stocks are expected to decrease to 1.9 Mt.

As of May 21, 2006, total sales of rye from EU intervention stocks have increased to 1.3 Mt for 2005-2006 (July-June), from 0.9 Mt for the same period of 2004-2005. Sales into the EU internal market increased significantly, from 43 kt to 995 kt, including 114 kt for ethanol production, while exports dropped sharply, from 661 kt to 328 kt. As a result, EU intervention stocks decreased from 2.3 Mt to 1.2 Mt.

Strong demand for rye within the EU has supported EU internal prices and reduced export supplies. In comparison to the buy-in price (intervention price) of €101/t (CAN$142/t), sale prices of EU intervention stocks in recent month have been €70/t for exports, €75/t for transfer (from Germany to Spain), €108/t for sales to German domestic market

EU-25: RYE SUPPLY AND DISPOSITION

crop year *July-June*	***2001 -2004****	**2004 -2005**	**2005 -2006f**	**2006 -2007f**
	……thousand tonnes……			
Carry-in Stocks	*5,939*	3,834	3,156	1,937
Production	*9,329*	9,966	7,671	7,502
Imports	*316*	14	10	10
Total Supply	***15,584***	**13,814**	**10,837**	**9,449**
Consumption	*9,393*	10,075	8,600	7,800
Exports	*643*	676	300	400
Total Use	***10,036***	**10,751**	**8,900**	**8,200**
Carry-out Stocks	*5,514*	3,156	1,937	1,249
Intervention Stocks	*4,504*	*2,307*	*1,197*	*500*

* average
f: forecast, USDA and AAFC, May 2006
Source: USDA and International Grains Council.

and €80/t for sales of over 40 kt for bio-fuel production.

CANADA

Production

Historically, about 40% of Canadian rye production is in Saskatchewan, while Manitoba and Alberta each produces about 20%. Small amounts are also produced in eastern Canada, with most of that occurring in Ontario.

In Canada, most of the rye is planted in the fall (winter crop), but spring varieties are also grown. Fall rye has become increasingly important in Canada, as area seeded to spring rye declined from 15% of the total area seeded to rye in 1992-1993 to 7% in 2004-2005. Fall rye winterkill has nearly doubled, from 16% of the seeded area in early 1990s to over 30% in recent years. Fall rye retention rates have remained steady at around 90% of the area surviving the winter, which indicates that there is no significant increase in harvesting for hay or forage. Rye yields were similar to winter wheat until mid-1990s, when yields for winter wheat started to increase more rapidly.

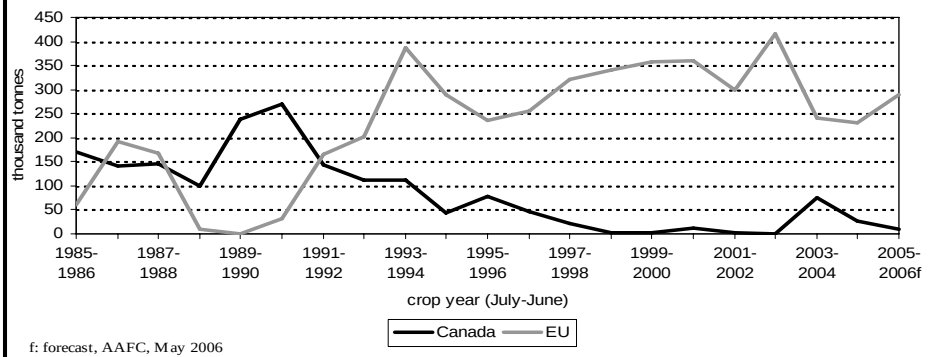
For 2005-06, area seeded to fall rye in Canada decreased to 226 thousand hectares (kha), from 284 kha in 2004-05. Rye production decreased to 359 kt from 418 kt in 2004-2005. This compares to the 10-year average of 351 kt.

CANADA: RYE
SUPPLY AND DISPOSITION

crop year *August-July*	**2004 -2005**	**2005 -2006f**	**2006 -2007f**
Harvested Area (kha)	165	148	135
Yield (t/ha)	2.53	2.42	2.30
	.....thousand tonnes.....		
Carry-in Stocks	68	145	160
Production	418	359	310
Imports	1	1	1
Total Supply	**487**	**505**	**471**
Food & Industrial Use	48	48	48
Feed, Waste & Dockage	155	160	156
Seed and Other Use	17	17	17
Total Domestic Use	**220**	**225**	**221**
Exports	122	120	110
Carry-out Stocks	**145**	**160**	**140**
Average Farm Price, Saskatoon ($/t)	69	80	80-100

f: forecast, AAFC, May 2006
Source: Statistics Canada

JAPAN: RYE IMPORTS
FROM CANADA AND THE EUROPEAN UNION



f: forecast, AAFC, May 2006
Source: International Grains Council

Distilling

Canadian whiskey is well known for using rye for its starch and flavour. The distilling market is the largest commercial market for rye in Canada. Distillers tend to only use enough rye to obtain sufficient flavour for their products, and use other grains as the major source for starch. In some cases, the corn to rye ratio could reach 90:10. Alberta Distiller's Limited is the largest consumer of rye in Canada, while a few other distillers also use rye in smaller amounts. Industrial use for rye decreased from 55 kt in 1999-2000 to around 30 kt recently.

Milling

The other premium market for rye is the flour milling industry. However, this market is small, as only about 12 kt of rye are used as food in Canada. Rye is believed to have some positive health effects as it contains fibrous complex carbohydrates called *pentosans*, which may reduce certain types of cancer and heart disease. Research on the health benefits to humans is ongoing. Furthermore, based on USDA guidelines, rye is an excellent source of Iron, Magnesium, Selenium, Riboflavin and Folate.

Feed

The use of rye for feed has varied over the last 10 years, declining to the lowest level in 2002-2003 at 42 kt, due to a shortage of supply. Feed use increased to 155 kt in 2004-2005 and is forecast to increase to 160 kt in 2005-2006, due to large supplies.

The nutritional value of rye grain is similar to that of barley, wheat, corn, and triticale. Research on the pentosans of rye notes that they affect different classes of livestock in different ways. Enzymes may need to be used to help livestock digest pentosans contained in rye. Broiler chicks can tolerate no rye with or without the addition of hydrolytic enzymes. Laying hen can tolerate and can also benefit from the use of rye in the diet. Rye is a perfectly good and complementary ingredient to barley in swine diets. A second concern with rye is its susceptibility to ergot infection. The ergot fungus produces toxins that reduce feed conversion, or produce other symptoms that are even worse, if present in sufficient amounts. However, there are tolerances for various uses. In most rye samples ergot contamination is quite small.

Exports

Canada's role in world rye markets has decreased significantly since the early 1980s when Canada exported an average of over 400 kt of rye annually. Coinciding with the build up of EU intervention stocks, Canadian exports decreased to 235 kt in the late 1980s and 175 kt in the 1990s.

Throughout the 1990s, Canadian exports of rye to Japan decreased steadily while Japanese imports from the EU increased. The decrease in Canada's market share in Japan is largely attributable to the availability of low-priced, subsidized rye form the EU, and the general decrease in rye production in Canada.

Canadian exports were at very low levels during the 1998-1999 to 2002-2003 period and reached the lowest level of 53 kt in 2002-2003. Exports have since recovered to around 150 kt in the last few years.

For 2005-2006, Canadian rye exports are forecast to decrease to 120 kt, with 110 kt to the US and 10 kt to Japan. As of March 2006, Canada exported 78 kt of rye to the US and 7 kt to Japan.

PRICES

In western Canada, rye prices generally follow closely barley prices, as barley is the dominant coarse grain in the region. Rye is usually priced at a discount to barley, which, according to some in the industry, is not fully justified by the difference in feed values. Less consistency in both quantity and quality and lower efficiency in the market (high transaction costs and low liquidity) may have contributed to the discount in rye prices. The discounts have been very large in those years when rye supplies were abnormally high. Since the food and industrial use of rye is inelastic, most of the additional supply has to be absorbed, sooner or later, by the feed industry. Over the last 13 years, the average price for No.1 CW rye at Saskatoon was $5/t below No.1 CW barley, ranging from a discount of $33/t in 1998-1999 to a premium of $27/t in 1996-1997. For 2005-2006, the average price for No.1 CW rye is forecast at $80/t at Saskatoon.

Internationally, rye prices in 2005-2006 have been fairly strong as consumption outpaced production and world carry-out stocks have been steadily decreasing. In addition, lower interventions stocks in the EU may have also provided support to prices.

2006-2007 OUTLOOK

World
World rye production is forecast by the USDA to decrease by 9% from 2005-2006 to 13.2 Mt, mainly due to significantly lower production in Russia and Ukraine, as a result of poor growing conditions. Production in the EU and Canada is also expected to decrease. US production is forecast to increase to 213 kt from 191 kt in 2005-2006.

World trade is expected to increase by 7% from 2005-2006 to 565 kt, with imports by Japan decreasing slightly while imports by the US remain the same as 2005-2006. Imports by Russia and Ukraine are expected to increase. Exports by the EU are forecast to increase, despite lower supplies, as the EU endeavours to deplete intervention stocks of rye. The increase in EU exports is expected to go to other European countries.

Canada
Area seeded to fall rye declined by 8%, from 226 kha in 2005-2006 to 207 kha in 2006-2007 because of increased competition from alternative crops. Yields are forecast to be lower than 2005-2006. As a result, Canadian rye production is forecast to decrease to 310 kt in 2006-2007, from 359 kt in 2005-2006. Due to lower production, supply in Canada is forecast to decrease by 7% in 2006-2007. Exports are forecast to decrease to 110 kt. Domestic use is expected to decrease due to lower feed use.

Prices
Lower intervention stocks in the EU may continue to provide some support for world rye prices. Higher expected US corn prices, lower barley production in Canada and the US, and lower rye production in Canada are expected to support rye prices in western Canada. The farm price for rye is forecast to average $80-$100/t, for No.1 CW rye at Saskatoon, $10/t higher than in 2005-2006.

MEDIUM-TERM OUTLOOK

Rye production in Canada is not expected to decrease significantly from the 2006-2007 level, given its agronomic characteristics, relatively low input cost and the inelastic demand from food and industrial processing sectors in North America. These small food markets can be viewed as an opportunity for Canadian growers who are able to consistently produce high quality rye, and who can develop close relationships with buyers.

The increasing awareness of proper nutrition and a healthy diet in everyday life should help support consumer preferences for specialty products and healthy foods which subsequently might help to support demand.

With the removal of rye from the EU intervention system, rye production in the EU is expected to continue to decrease which will support world rye prices. However, the impact of the policy change is constrained by the ability of EU rye producers to shift away from rye to other crops. This is especially the case for those growers who operate on marginal crop-land where alternative crops are very limited.

For Canada, less competition from the EU is expected to provide opportunities to regain market share in Japan and expand exports to the US. In addition, Canadian producers are expected to benefit from higher prices. However, the expansion of the industry will depend on new research and development activities in improving the agronomic and quality characteristics and end use performance of the crop.

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