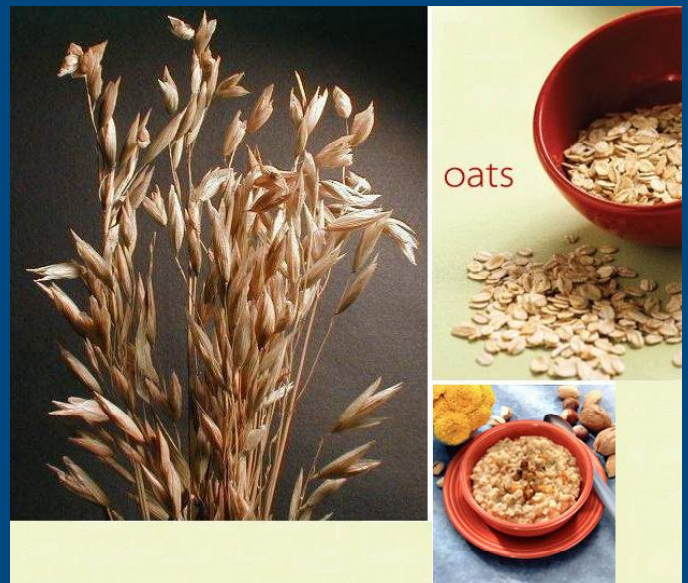


# A Case Study of the Canadian Oat Market

The Evolution from the  
Central Desk System to the  
Open Market

## Economics & Competitiveness



**A Case Study of the Canadian Oat Market:  
The Evolution from the Central Desk System to the Open Market**

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## Executive Summary

Oats were removed from the mandate of the Canadian Wheat Board in 1989. The objective of this case study is to document the evolution of the Canadian oat market under the open market system. This report discusses the structural changes that have occurred over the past 15 years in oat production and commerce. An analysis of the performance of the Canadian oat market is completed using industry interviews, previous studies and quantitative analyses.

Many industry experts agree that the removal of oats from the CWB mandate was a good decision. Since 1989, the open market has contributed to many positive developments in the Canadian oat industry. Some of these developments include: increased exports of oat grain and oat products, increased market share in the US milling market, increased primary processing, and improved financial viability of oats for western Canadian producers.

These developments were not the result of deregulation alone. Other structural changes that have influenced the Canadian oat industry include: the removal of the Western Grain Transportation Act, the introduction of the Canada-United States Trade Agreement and North American Free Trade Agreement, the oat bran craze, the decline in US oat production and the advances in oat germ plasm and further processing. The oat market that has emerged in Canada over the past 15 years is a synthesis of all these changes.

Under the open market, the Canadian oat industry has become more flexible and responsive to market forces. One of the most important outcomes of the marketing change has been the ability to forward contract. Many industry experts believe forward contracting has been responsible for increasing Canadian oat exports to the United States. Other important outcomes include: the increased importance of the futures market, the development of marketing expertise within grain companies and producers, the development of marketing options and risk management tools, greater communication among market participants, and the transmission of clearer market signals to producers. These outcomes have increased the efficiency of the Canadian oat market, making Canada the largest exporter of oats in the world.

The marketing change has been beneficial for the whole industry. The commercial importance of oats has increased. Based on the total farm cash receipts for oats, Western Canadian producers appear to have gained higher revenues under the open market. Grain traders, processors and end users have also benefited from increased communication and direct interaction with producers. The results have been improved logistics and grading standards, better translation of price signals, and the ability to source oats and specify quality attributes.

This case study on oats provides some valuable insights about how an industry responds to a structural change in marketing. It is difficult to predict whether other industries like wheat and barley would experience the same transition, as the dynamics of the oat industry are different. Nevertheless, oats are a good example of how the open market is more effective at responding to market forces.

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## Introduction

In 1949, the Canadian Wheat Board (CWB) took over the marketing of oats in western Canada. The CWB maintained exclusive control of oat exports and domestic milling markets for forty years. Oat marketing in the domestic feed industry was re-opened to private trade in 1974. By the 1980's, oats were considered a specialty crop and the volume traded by the CWB had significantly decreased. In 1989, oats were taken off the CWB and were re-opened to private trade.

The objective of this case study is to document the Canadian oat market after its was removed from the CWB in 1989. An examination of the Canadian oat market from 1970-2004 is conducted to understand the market's evolution from a single desk system to an open market system. This report identifies and discusses the structural changes that have occurred over the past 15 years in oats production and commerce. An analysis of the performance of the Canadian oat market is also completed.

In this report, the performance of the Canadian oat market was analyzed using a variety of primary and secondary data sources. A literature review was conducted of previous academic studies on oats, as well as articles gathered from news and media. Interviews with processors, producers and other industry participants were conducted to obtain first hand accounts of the oat industry during its transition from central desk to open market systems of marketing. This study does not attempt to develop a quantitative model of the Canadian oat markets. Instead, the report tries to incorporate quantitative analyses on producers' revenues and price effects with qualitative industry accounts to describe and evaluate the performance of the oat market since 1989.

Some of the important elements that will be examined in the document include:

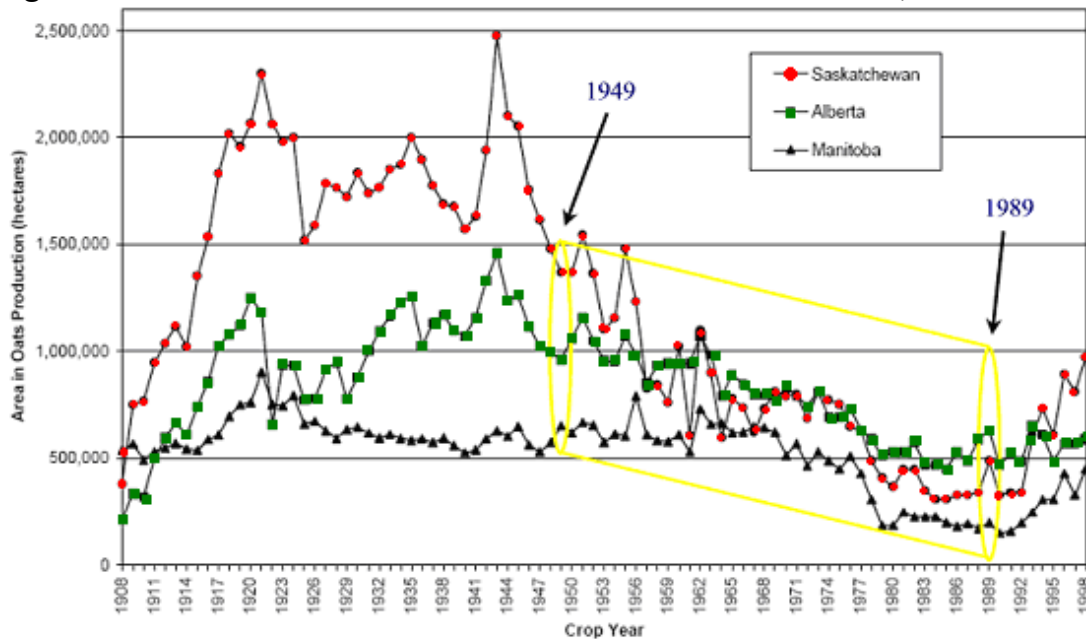
- Production
- Markets
- Exports
- Processing and Value Added
- Industry Collaboration
- Research and Development
- Market Performance
- Impacts on Industry Participants

**1.0. History of Oats and the Canadian Wheat Board**

Oats is one of the first crops to be grown in Alberta and considered a foundation for agriculture in the 20<sup>th</sup> century. On August 1<sup>st</sup>, 1949 the Canadian Wheat Board (CWB) took control of marketing oats and barley. The decision to switch control to the CWB was driven by the political will in charge at the time (Peat Marwick Consulting Group, 1989). Supporters of CWB marketing of coarse grains included both the western grain producers and eastern livestock feeders. Each group was interested in the stabilization of coarse grain prices through a centralized marketing agency. In 1974, oat marketing to the domestic feed industry was re-opened to private traders. For 40 years the CWB maintained a presence in both marketing oats for human consumption and the feed industry.

The change in monopoly control in 1974 hinted at the decreasing effectiveness that the CWB had in marketing oats. Two major problems that exacerbated the issue was the pooling of oats into one category and CWB pricing policies that lacked the ability to transfer market signals. The situation continually got worse over the years as production of oats in the Prairies decreased until it started to become a niche crop (refer to Figure 1.1 for a breakdown of acreage in oats production between 1908-1998).

**Figure 1.1: Prairie Province Seeded Area of Oat Production, 1908-1998**



Source: Aitken, D., Unterschultz, J., & Jeffrey, S. 1998. Case Study: Value Added in the Oats Industry in Alberta and Western Canada 1998.

**Oats removed from the boards mandate**

On January 19<sup>th</sup>, 1989, Grain and Oilseeds Minister Charlie Mayer announced that effective August 1<sup>st</sup>, 1989 the marketing of oats would be handled solely through an open

market. The reason for the removal of oats from the CWB mandate was widely debated. The government of Canada stated that oats had progressed from a mainstream commodity into a specialty crop, and therefore, it did not benefit from the CWB's marketing abilities. Others like the Family Farm Foundation were skeptical about the CWB's effectiveness in oat pricing. Critics stated that oats were not as important compared to the CWB's other pools for wheat and barley.

The CWB controlled oats from 1949-1989 and during this period both the production and price of oats declined steadily (Aitken et. al, 1998). When the CWB relinquished control, the marketing of processed oats was underachieving and there were almost no exports of oats or processed oat products. The CWB was criticized for not garnering price incentives for high quality oats, and its ability to respond to market opportunities was called into question.

### **Performance of oats since privatization**

Several changes have occurred in the oat industry since private traders took over. The first change has been a significant expansion in the oat processing industry. In Alberta, three new processors opened and began trading pony oats in the American and Japanese markets. Plant expansion and construction has also occurred elsewhere, most notably the expansion of the Popowich Milling<sup>1</sup> plant in Yorkton, Saskatchewan and the construction of Can-Oats<sup>2</sup> plants in Portage La Prairie, Manitoba and Saskatoon, Saskatchewan.

Oat exports to the United States, Japan, and South America have significantly increased since 1989 (Morrissey, 1996). The most dramatic increase occurred with oatmeal and rolled oats, which had little or no exports prior to 1989. By 1994, exports of processed oats climbed from 5,000 metric tonnes in 1990 to 50,000 metric tonnes.

Another change is a better aligned trading relationship with the United States. The US and Canadian oat industries have become more integrated, and exports of both unprocessed and processed oats to the US have increased. One issue that helped expand exports is the harmonization of Canadian oat grades to US grading standards. This expansion in exports also led to a change in competitive advantage of growing oats. Before 1989, Alberta was the province that grew the most oats. Since then, production has shifted to Manitoba and Saskatchewan (refer to Figure 1.1). The main reason for the shift is Manitoba and Saskatchewan's close proximity to major markets like Minnesota and Nebraska.

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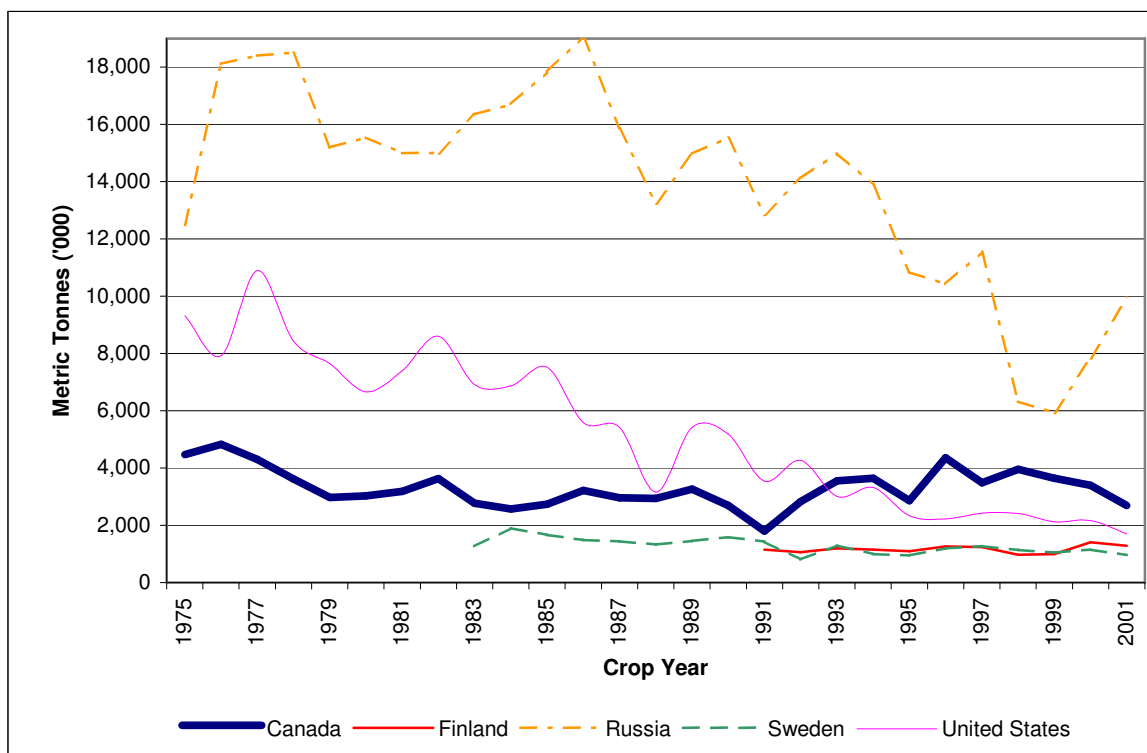
<sup>1</sup> In 2000, Grain Millers purchased Popowich Milling and doubled the capacity of the plant by adding new equipment.

<sup>2</sup> Can Oats is a subsidiary of the Saskatchewan Wheat Pool.

## 2.0. Oat Production

Oat production in Canada has followed world trends. Since the advent of mechanized farming, there has been a decrease in oat acreage worldwide. The key players in the global oat market include Canada, United States, Russia, Sweden, Finland, Australia, Germany, and Poland. As seen in Figure 2.1, Russia is the largest producer of oats in the world. Russia does not compete with Canada for export markets, due to high domestic consumption and Canada’s relative distance to Russian markets. With improvements in agriculture, such as transport modernization and research, Russia could become a competitor with Canada in the future.

**Figure 2.1: Global Oat Production, 1975–2001**



Source: Canada Grains Council. 2005. Statistical Handbook.

Two Scandinavian countries with a significant stake in world oat trade include Sweden and Finland. Both have similar production levels and markets for their oats. Most oats exported from the European Union (EU) go to the United States (US), specifically being used by the southern states. Typically the EU would not be able to export oats to the US because of high ocean freight rates. The Common Agriculture Policy (CAP) subsidizes exports of oats from the EU. When oat prices are high, no export subsidies are required. This subsidy affects the ability of processors in Alberta to capture a higher price for their product, thereby capping the farm gate price. EU exports are also shipped to Asia where they compete with oats from Alberta and Australia.

The United States in the 1950's was the largest producer of oats. Since that time, profit per acre has drastically declined along with support from the US Farm Bill. This has led to a significant reduction in oat production making the US the third largest oat producer. In the early 1950's, planted acres for oats ranked fourth among principal crops (Economic Research Service, 2002). By 2002, oats ranked thirteenth for net revenue per-acre in North Dakota (Sparks Companies Inc., 2002). The decreasing production of oats was an indication of its decreasing value brought on by reduced demand from fewer horses being used on-farm and millers preference for higher quality Canadian and Scandinavian oats. Another disadvantage is the US Farm Bill for 1985 and 2002, which ranked oats behind wheat, barley, and corn for direct and countercyclical payments (Sparks Companies Inc., 2002).

The major oat producing states in the US include North Dakota, Minnesota, Wisconsin, South Dakota, and Iowa. A significant amount of oats is also grown in Texas, California and Montana, where 10-20% of production is harvested as grain with the remaining used as green feed.

### **Western Canadian Oat Production and Harvested Acreage**

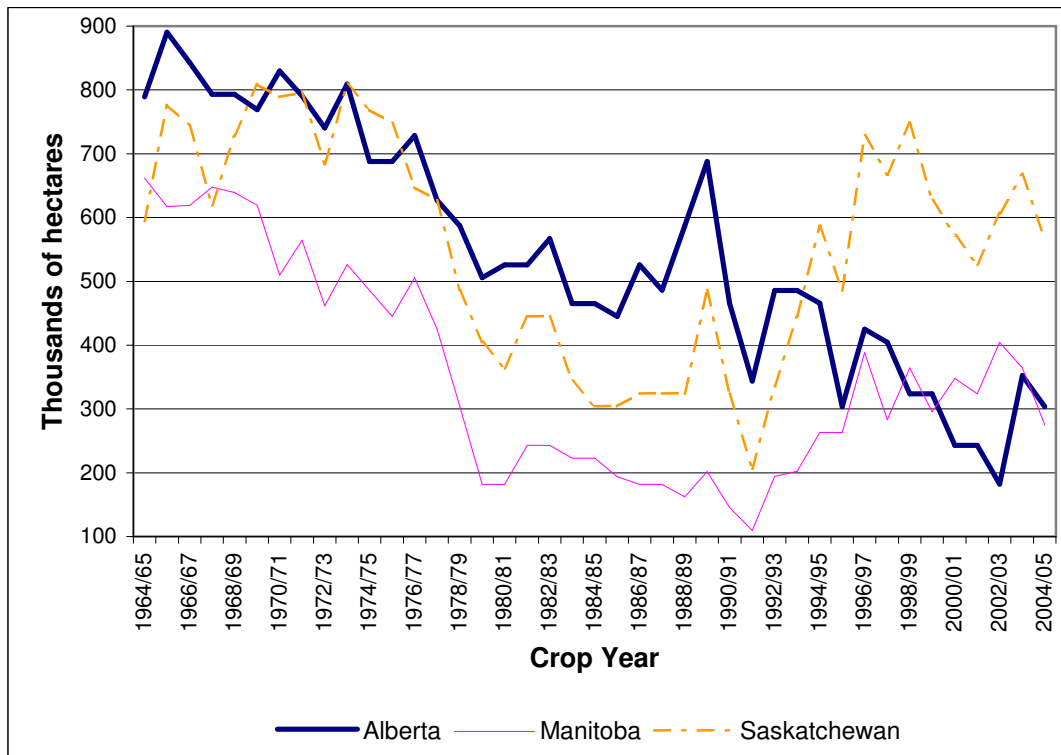
Western Canadian oat production and harvested acreage has been dynamic over the last forty years, as several provinces have shifted their production in response to policy changes. Figure 2.2 and Figure 2.3 show harvested oat acreage and production for the three Prairie Provinces from 1964-2004. From the graphs, it is evident that Alberta was historically the largest grower of oats in western Canada. Alberta led the country in oat production and harvested acreage for a majority of the time until 1994/95, when Saskatchewan surpassed it. Currently, Alberta has similar production and acreage levels to Manitoba (this does not include green feed). Saskatchewan is now the leader in oat production.

The overall trend for oat acreage and production is decreasing with Alberta and Manitoba not harvesting as much as they did in the 1960's. Several factors have contributed to the reduction in harvested oat acreage over the last forty years. First, less oats are being fed to livestock, and higher energy alternatives such as barley and silage have replaced oats. Second, oats are a bulky product to transport, meaning that any long distance shipments are at a low margin. Third, the new markets created as a result of recent developments in the extraction and use of oat beta-glucans in functional foods has not significantly expanded oat demand.

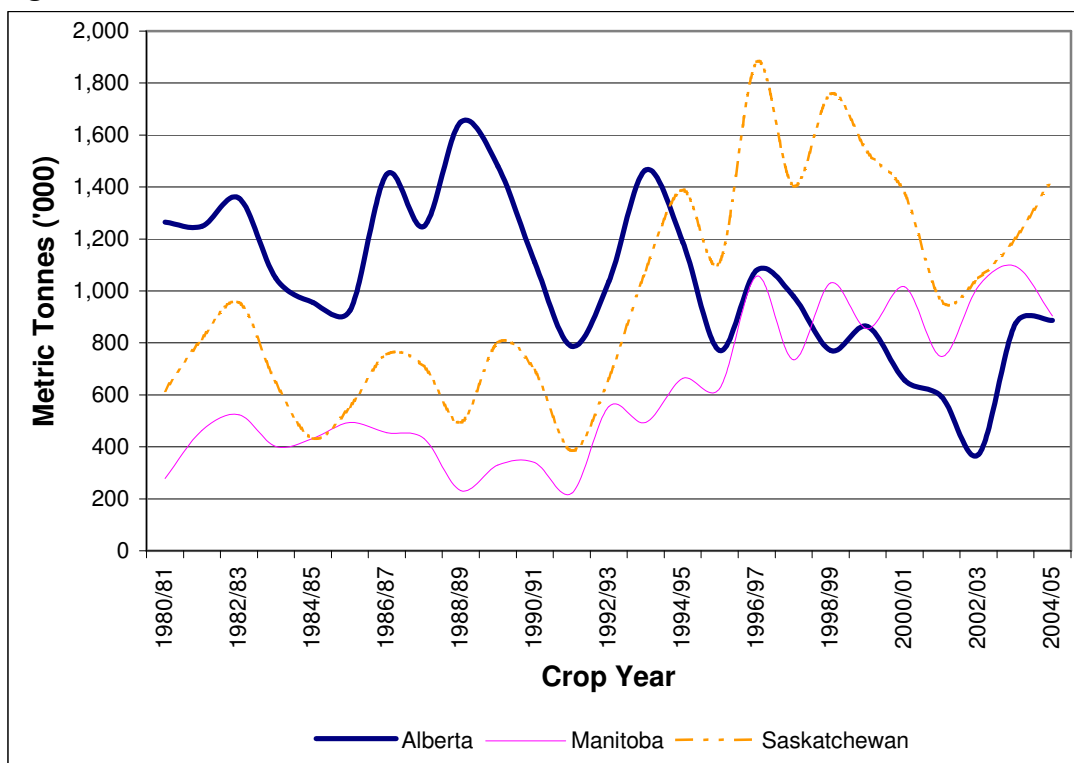
The removal of oats from the CWB in 1989 did not impact oat acreage as significantly as the removal of the Western Grain Transportation Act (WGTA) in 1995. Without the transportation subsidy, Manitoba and Saskatchewan had a competitive advantage over Alberta. Their close proximity to the US milling market made oats grown in these areas more price competitive than oats grown in Alberta. After 1995, Saskatchewan emerged as the leader in harvested oat acreage, while acreage in Alberta significantly declined.

In the late 1980's and early 1990's, harvested oat acreage was highly variable. Some of the factors that have contributed to production changes include: an increase in demand associated with the oat bran craze in the late 1980's, production problems associated with drought in 1988 and 2001-2002; and production problems in other feedgrains such as corn and barley. The emergence of *Fusarium Graminearum* in Manitoba and eastern Saskatchewan also encouraged producers to grow crops that have a higher resistance to the disease. Of the main three cereal crops, oats has the highest resistance to *Fusarium Graminearum*. This effect of *Fusarium Graminearum* would have been noticed throughout the 1990's.

**Figure 2.2: Western Canadian Oats Harvested Acreage, 1964-2004**



Source: Statistics Canada. 2005. Field Crop Reporting Series. Catalogue 22-002

**Figure 2.3: Prairie Oat Production, 1980-2005**

Source: Statistics Canada. 2005. Field Crop Reporting Series. Catalogue 22-002.

### Production Changes

Hypothesis testing was done to determine whether production changes since 1989 are statistically significant. For each province, a two-sample t-test assuming equal variances was done using data from the crop years 1970-1989 (period 1) and crop years 1990-2004 (period 2). The two time periods were treated as independent samples and their means were compared. It is important to note that crop years 2001-2002 and 2002-2003 were excluded because of drought related production problems in all three provinces. Refer to Appendix 2 for the results and the methodology used for the hypothesis testing.

The results of the analysis indicate that the decrease in oat production in Alberta has been statistically significant. Despite considerable increases in oat production in Manitoba and Saskatchewan since 1989, hypothesis testing indicates that these changes have not been statistically significant. The two-sample t-test was also done for western Canada as a whole, and the t-statistic obtained was not statistically significant. This result suggests that western Canada has maintained overall production levels since 1989, but has shifted production from Alberta to Saskatchewan and Manitoba.

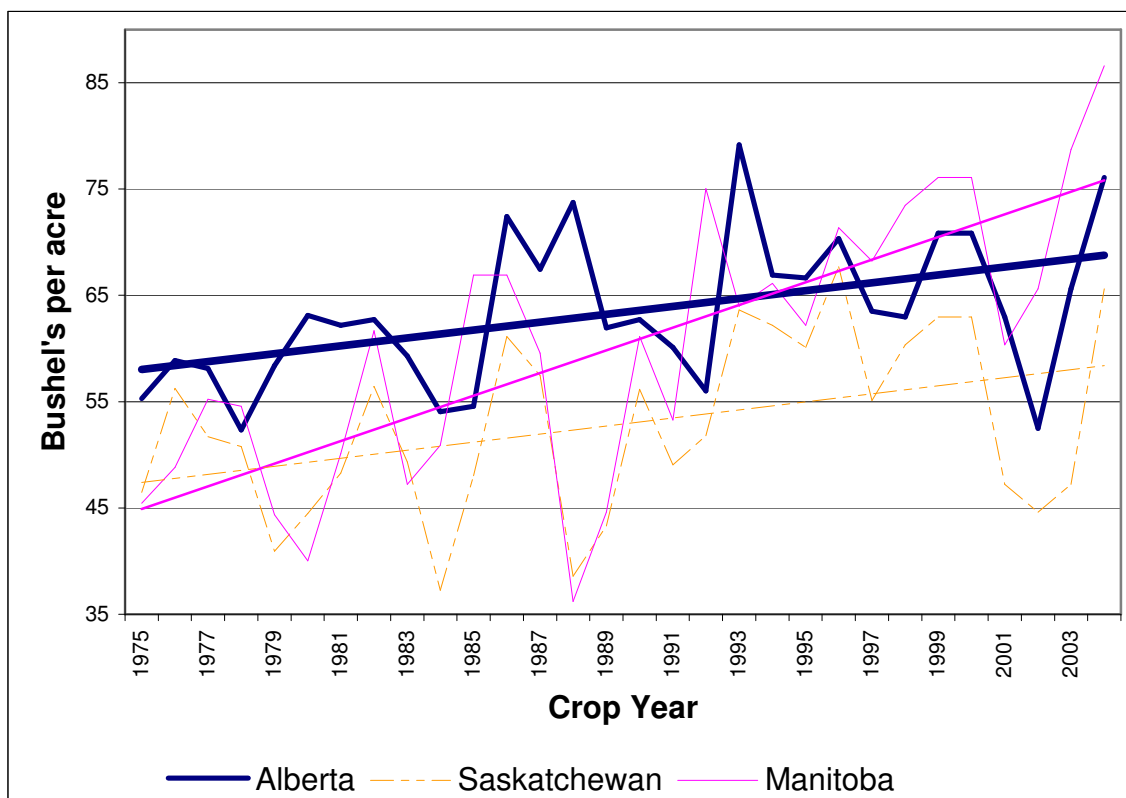
A similar analysis was done for harvested oat acreage and similar results were obtained. Changes in harvested acreage for Alberta were found to be statistically significant, while changes in Manitoba, Saskatchewan and western Canada as a whole were not. Please refer to Appendix 2 for complete results.

### Oat Yields

Figure 2.4 shows oat yields from 1975-2004 for the Prairies. Historically, Alberta has had a yield advantage over Manitoba and Saskatchewan (Morrissey, 1996). Since the marketing change in 1989, Manitoba has made significant gains in oat yields. Manitoba currently has a 7.9 bushel/acre yield advantage over Alberta. Saskatchewan has kept pace with Alberta’s yield gains, but still yields 10.5 bushel/acre less than Alberta.

Manitoba’s improvement in yields can be related to two separate issues. The Cereal Research Centre (CRC), located in Manitoba, has continually supported the improvement of high yielding varieties of oats. Currently, CRC varieties represent 85% of the total oat acreage in Manitoba (Mitchell-Fetch, 2003). Over the past 20 years, the financial viability of oats has increased in Manitoba, and producers have been encouraged to become more knowledgeable in growing oats. Their improved management knowledge in growing oats has increased yields in Manitoba.

**Figure 2.4: Prairie Oat Yield, 1975-2004**



Source: Canada Grains Council. 2005. Online Statistical Handbook.

### Cost and Return for Oats in the Prairies

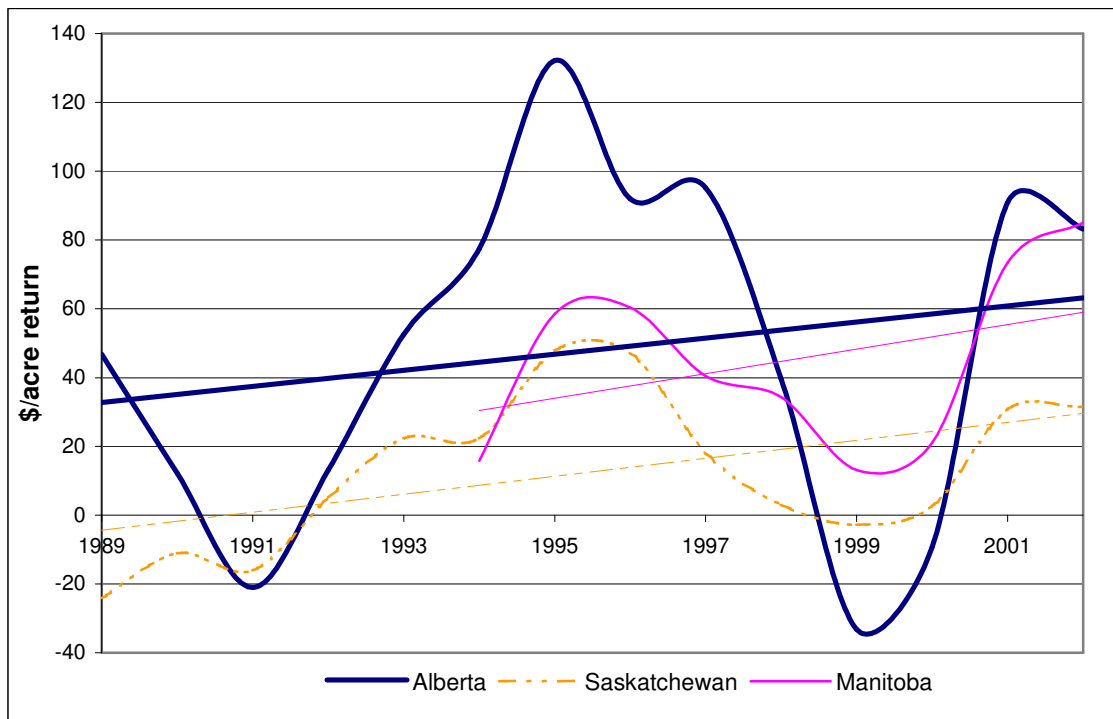
An examination of the costs and returns for oats in the Prairies was conducted using surveyed grower data from Alberta and agronomist estimates combined with historical prices and yields from Saskatchewan and Manitoba. The data has some weaknesses when

compared on a specific year, but when averaged out, as in the trend lines, the information has validity. The aim of the analysis is to provide a snapshot of what a producer faces when growing oats, particularly examining some of the changes experienced after 1989. Refer to Appendix 1 for an explanation of the methodology used. Figure 2.5 shows the results of the variable cost and return data for oats.

An important outcome is the similar growth in dollars per acre return for all three provinces, as illustrated by the trend lines in Figure 2.5. Based on trend line growth, Alberta and Saskatchewan have been growing at a similar level over the last thirteen years, \$2.54/year and \$2.83/year respectively. Manitoba shows the best growth rates at \$5.83/year, but in absolute terms, these returns are still lower than Alberta.

Manitoba’s high growth rates could correlate to their yield improvements, which have significantly grown since 1989. It could also be a reflection of the improvement in price, since oats were taken off the CWB’s mandate. The addition of one of Canada’s largest oat processors, Can-Oats, into western Canada has also been a factor in improving the gross margin of farmers. The steady growth in the oat market means that the marketing change did not inhibit producer’s ability to profitably grow oats.

**Figure 2.5: Predicted Producer Returns after Variable Costs, Oats on Black Soil, 1989-2001**

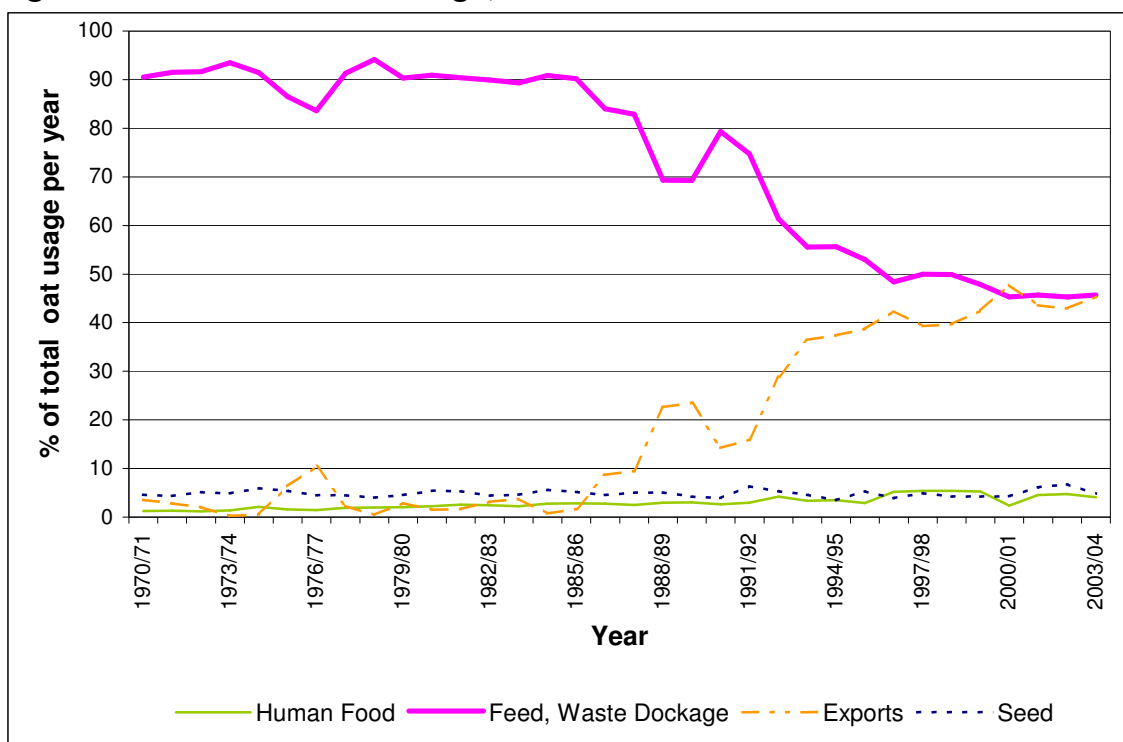


### 3.0. Oat Markets

Oats have traditionally been used to feed horses and livestock on farms. In the last century, the development of fossil fuel powered machinery in agriculture has replaced the need for draft horses, and eliminated substantial feed demand for oats. Refer to Figure 3.1 for an illustration of Canadian Oat Usage from 1970-2004.

In the late 1980's, domestic feed usage dramatically fell. During the same time period, exports of oat grain and oat products increased considerably. The percentage of oats consumed domestically as human food has remained steady at less than 6% of total oat usage. Seed usage has also remained constant at less than 7%. Total oat usage per year is comprised of total production, imports and starting stocks less carry over stocks for the next period.

**Figure 3.1: Canadian Oat Usage, 1970-2004**



Source: Statistics Canada. 2005. Cereals and Oilseeds Review. Catalogue 22-007.

### Oat Markets

The three main markets for oats include: performance feed oats, milling oats and feed oats. Oats are generally segregated into these three different end use markets according to quality (AAFRD, 2003). Higher quality oats are used in the performance oats and milling oat market. The Canadian Grain commission (CGC) provides a guideline for oat grades, but buyers may demand specific quality attributes. Oats entering the performance or milling market are usually sold on a sample basis. Table 3.1 summarizes the quality attributes demanded for each market.

**Table 3.1: Quality Attributes for Oats**

	<b>Performance Oats</b>	<b>Milling Oats</b>	<b>Feed Oats</b>
Grades	#1CW	#1CW, #2CW, #3CW	#3CW, #4CW
Bushel Weight	40lb/bushel	38lb/bushel	-
Protein Content	High protein	High protein	-
Appearance	Bright white and plump kernels	Uniform kernel size	-

Source: Agriculture and Agri-Food Canada. 2004. Finland and Sweden: Oats. Bi-weekly Bulletin, April 23, 2004, Volume 17, Number 7.

The performance oat market demands the highest quality oats. Race horses and pleasure horses in the US and Canada are fed high protein, heavy test weight oats that are plump and bright white (AAFC, 2004). In the last few years, drought conditions in western Canada have increased the price of oats to such a degree that Southern US horse feeders have substituted pelleted feed for oats (White, 2005). It is uncertain whether this market can be regained.

The milling oat market looks for oats that have heavy test weight and meet stringent purity requirements (AAFC, 2004). Uniform kernel size is an important factor (AAFC, 2004). Milling oats are graded #1CW, #2CW and occasionally, #3CW (AAFRD, 2003). There are typically no substitutes for oats in the human food market.

The feed oat market is small relative to other feed grains such as barley and corn. Despite having the highest protein content of all grains, the high fiber content of oats decreases its nutrient value and price. For livestock producers, oats increases the time and cost required to bring livestock to slaughter weight. Instead, oats are fed to breeding cattle and younger livestock. The lowest value of oats is sold in this market, where kernel size, test weight, colour and purity is not as important (AAFC, 2004).

In recent years, the market for hullless oats has emerged for pig and poultry rations. Hullless oats have been bred to have very loose hulls that fall away from the oat groat during harvest. Hullless oat varieties have excellent feed and food value, but they require drier storage conditions. These oats are usually grown under contract (Candlish, 1998).

Specialty markets for oats do exist and these include organic and pesticide free, and birdseed. Other smaller markets for oats are the functional food and nutraceutical market, the cosmetic market and industrial food processes. Advances in science and biotechnology<sup>3</sup> have made further processing of oats possible. The use of fractionation technology has enabled some biotech companies to extract beta glucan from oats to be

<sup>3</sup> Biotechnology is the application of science and engineering in the direct or indirect use of living organisms or parts or products of living organisms in their natural or modified forms. This broad definition encompasses organisms developed through traditional breeding methods and newer technologies such as genetic engineering. It is important to note that there are no genetically modified oats. Biotechnology research in oats has focused on breeding new varieties and extracting functional components such as beta-glucans, proteins, and antioxidants.

used as an ingredient in functional foods and cosmetics. Beta-glucans are a water-soluble fibre that has been linked to a reduction in the risk of heart disease, diabetes and cancer (Whole Health MD, 2005). Other oat components such as gluten, protein, and antioxidants can be used as a stabilizer, emulsifier, and food extender in industrial food processes (Candlish, 1998).

### **Structure of Oat Market**

Prior to 1989, the structure of the oat market in western Canada was illustrated by Figure 3.2. The CWB controlled the marketing of milling oats and all oat exports. The domestic feed market was opened up to private trade in 1974, and producers were able to trade oats locally and across provincial borders. In the domestic feed market, ownership of oats was transferred upon delivery and the domestic cash price for oats prevailed (Morrissey, 1996).

Under the central desk selling system, the CWB took ownership of all oats delivered to the primary elevator companies (Morrissey, 1996). The CWB was responsible for marketing and pooling oats, and redistributing the returns. Quotas were issued when the CWB required oat deliveries, and an initial payment based on the expected final pooled price for oats was paid to producers. The CWB was responsible for the transportation, elevation, handling, and cleaning costs (Morrissey, 1996). These costs were subtracted from the final payment issued to producers in addition to administrative, marketing, storage, and lake shipping costs.

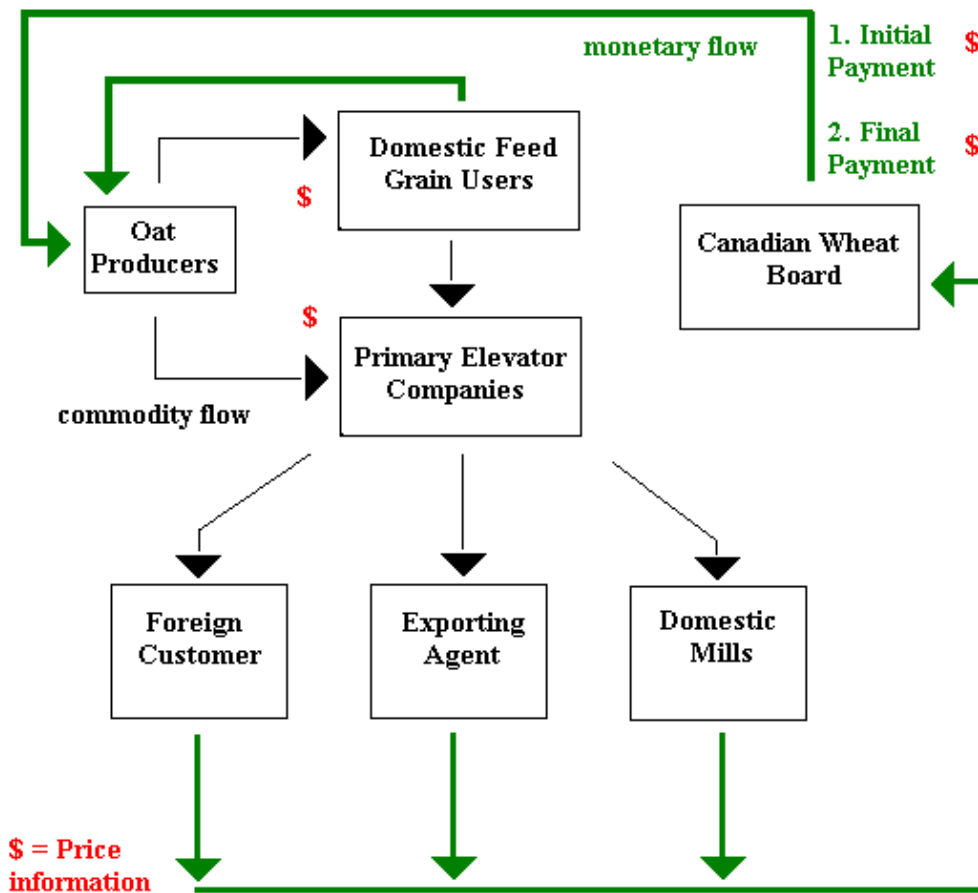
In the domestic food market, the board acted as a broker between the domestic mills, the primary elevator companies and the producers (Peat Marwick Consulting Group, 1989). The export market was more complex, and the CWB marketed oats through two processes: (1) sales were arranged between the CWB and foreign buyers, and (2) sales were arranged between foreign buyers and accredited agents of the CWB (Morrissey, 1996).

In the 1980's, a great deal of oat marketing to the United States was done by private firms and cooperative companies acting as agents of the CWB (Aitkin et. al, 1998). The marketing agents were responsible for pursuing customers and discussing terms of sale (Peat Marwick Consulting Group, 1989). The final sale price had to be confirmed by the CWB before any arrangements were finalized. These agents often had difficulty sourcing oats to meet their customers' quality specifications, which exceeded the Canadian Grain Commission standards (Peat Marwick Consulting Group, 1989).

The CWB managed both the monetary flow and commodity flow of oats entering the domestic food market and the export market. The Board also transferred market information through its various supply chains. Unlike the domestic feed market where price information was readily available, price signals in the domestic food and export markets were not as clear. Producers were able to obtain price and quality information from the primary elevator companies and through their initial and final payments; however, price pooling distorted this information. The CWB was heavily criticized for not providing clearer price signals and rewarding producers for high quality oats.

In August 1981, the CWB responded to the criticism and initiated two oat pools – a designated oats pool for milling oats and a feed oats pool (Morrissey, 1996). The “Designated oats” pool brought producers significantly higher payments than oats not accepted in this account. The Canadian Wheat Board also initiated other reforms in its procedure for marketing oats. Interim payments were introduced in the 1980’s to provide producers with clearer price signals. Greater flexibility in oat origination and selection was also introduced during this time. These reforms were the CWB’s response to criticisms that it was not responsive to oat customers demands for price flexibility and changing quality attributes.

**Figure 3.2: Market Structure for Western Canadian Oat Prior to 1989**



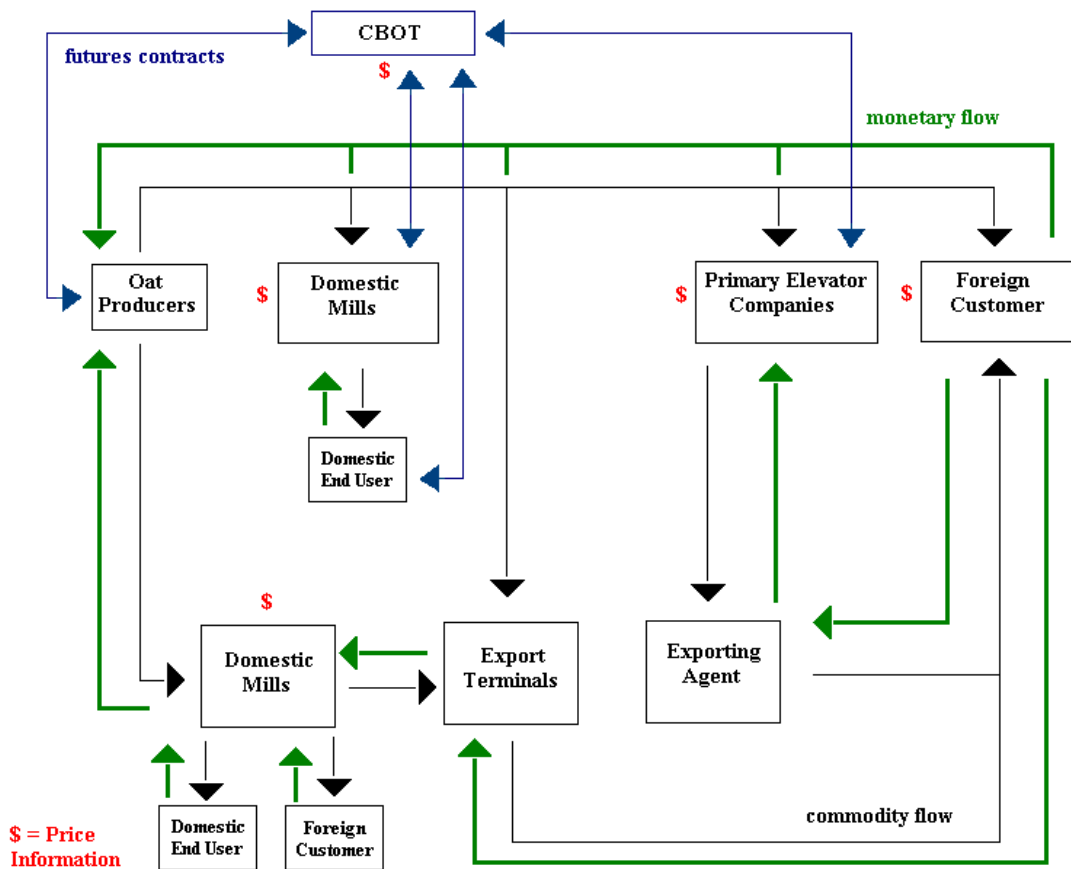
By 1989, the federal government saw no strong rationale for continued CWB involvement in the oat market. The reason stated for deregulation was that oats had become a specialty crop and that private trade was the most effective method of marketing a specialty crop. After the central desk system was removed on August 1, 1989, the western Canadian oat market resembled Figure 3.3.

Under the open market system, producers are free to sell their oats to domestic feed and food mills, inland terminals, primary elevators, or directly to foreign customers. They have more control over their production and marketing decisions. At each stage of the

supply chain, the ownership of oats is transferred from one chain participant to the next in exchange for monetary payment.

Price information is available from the spot market and the futures market at the Chicago Board of Trade (CBOT). The CBOT is used for price discovery and hedging. Producers, primary elevators, processors and end-users may use futures contracts to hedge against price risks. Oat futures prices are mainly discovered at the CBOT, while the cash market for milling oats is determined in Minneapolis, Minnesota.

**Figure 3.3: Market Structure of Western Canadian Oat Market after 1989**



### Market Changes

Since 1989, the western Canadian oat market has been operating under a dynamic environment, which has influenced the demand and supply of oats. Between 1989-2004, there were developments in demand, supply, trade policy, marketing standards and regulations, transportation, and science for oats. In order to understand and evaluate the performance of the western Canadian oat market after 1989, these developments must be considered.

## Demand Changes

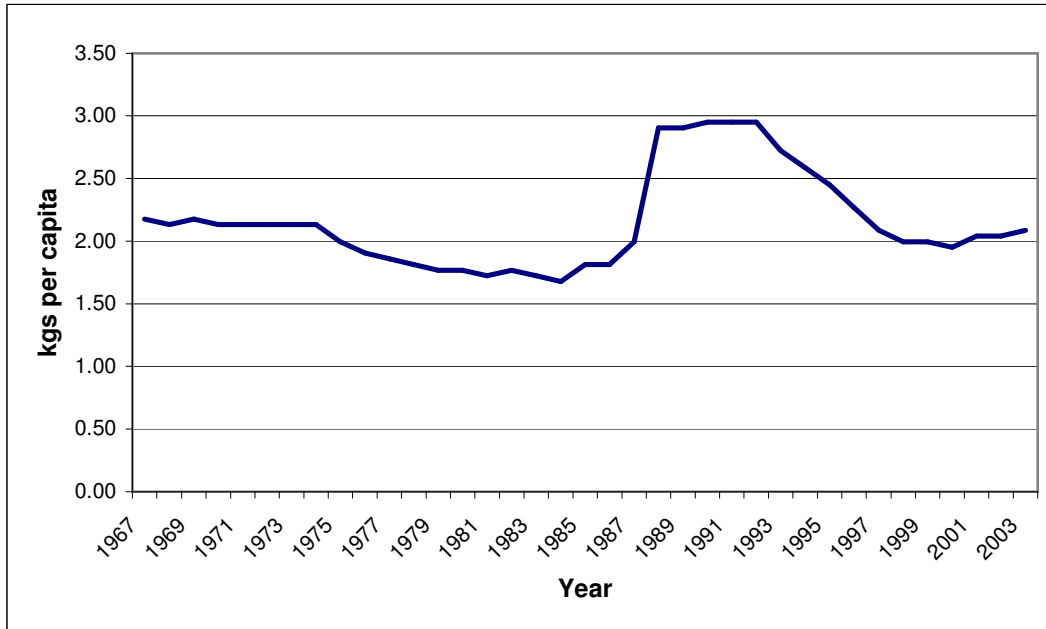
In the late 1980's, the human demand for oats began to rise. This increase in oat demand was referred to as the "oat bran craze" in the media. During the craze, oat consumption in the United States rose dramatically. Per capita consumption of oat products increased from 1.68 kg in 1984 to 2.95 kg in 1990 (USDA, 2004). Oat bran was added to numerous food products such as muffins and cookies, and food companies even boldly labeled high fat foods such as donuts and potato chips as containing oat bran (Shield, 1997). The craze quickly faded in the early 1990's, when studies found that oat bran only modestly reduced blood cholesterol and that other foods such as fruits and vegetables also contain the soluble fibre responsible for lowering cholesterol (Engel, 2005).

Consumers quickly lost interest in oat bran. In 1995, oats re-emerged in the media when the Quaker Oats Company made a proposal to the FDA to allow health claims on oat products. The health claim was approved in 1997 and the following statement was allowed, "Soluble fibre from oatmeal, as part of a low saturated fat, low cholesterol diet, may reduce the risk of heart disease" (Shield, 1997). Food products that carry this label must meet the following criteria: (1) it must contain  $\frac{3}{4}$  gram of soluble fibre per serving or  $\frac{1}{4}$  of the 3 grams a day, (2) it must meet the requirements for a food labeled as low in saturated fat and cholesterol, (3) it must list the Nutrition Facts Panel, and (4) it must state the benefits of eating oats come only with a diet that is low in saturated fat and cholesterol (Shield, 1997).

When the health claim was approved in 1997, there was speculation that another oat bran craze would emerge; however, this has not been the case. The strict criteria imposed by the FDA have prevented food companies from labeling any products that contain oat bran with the health claim. By examining the US per capita consumption of oats in the last 10 years, it is clear that the oat bran craze of the late 1980's will not be recaptured. Figure 3.4 shows per capita consumption of oat products in the United States from 1967-2003. The graph shows that US per capita consumption of oat products peaked in the early 1990s and has been steadily declining since 1992.

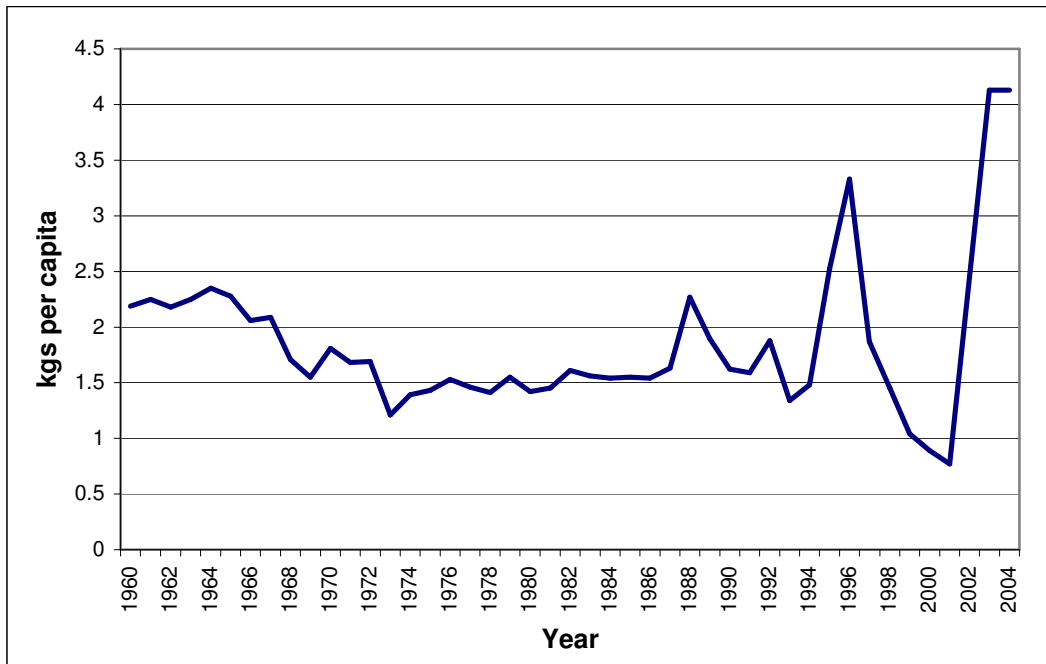
In Canada, the per capita consumption of oat products has been more dynamic than the United States. Oat consumption began to rise in the early 1990's, but was not significant until 1996/1997, when per capita consumption of oat products increased to 3.33 kg per capita. The consumption of oat products dropped dramatically to 0.77 kg per capita in 2001. In recent years, oat consumption in Canada has been increasing, and in 2004, consumption was at 4.13 kg per capita.

**Figure 3.4: Per Capita Consumption of Oat Products<sup>4</sup> in the United States, 1967-2003**



Source: USDA/Economic Research Service. Last updated Dec. 21, 2004.

**Figure 3.5: Per Capita Consumption of Oat Products<sup>5</sup> in Canada, 1960-2004**



Source: Statistics Canada. 2005. Apparent per capita food consumption in Canada, annual (Kilograms per year unless otherwise noted). Table 002-0011.

<sup>4</sup> Oat products include rolled oats, ready-to-eat oat cereals, flour, and bran and excludes quantities used in alcoholic beverages and fuel. Calculated from unrounded data.

<sup>5</sup> Oat products include oatmeal and rolled oats, retail weight

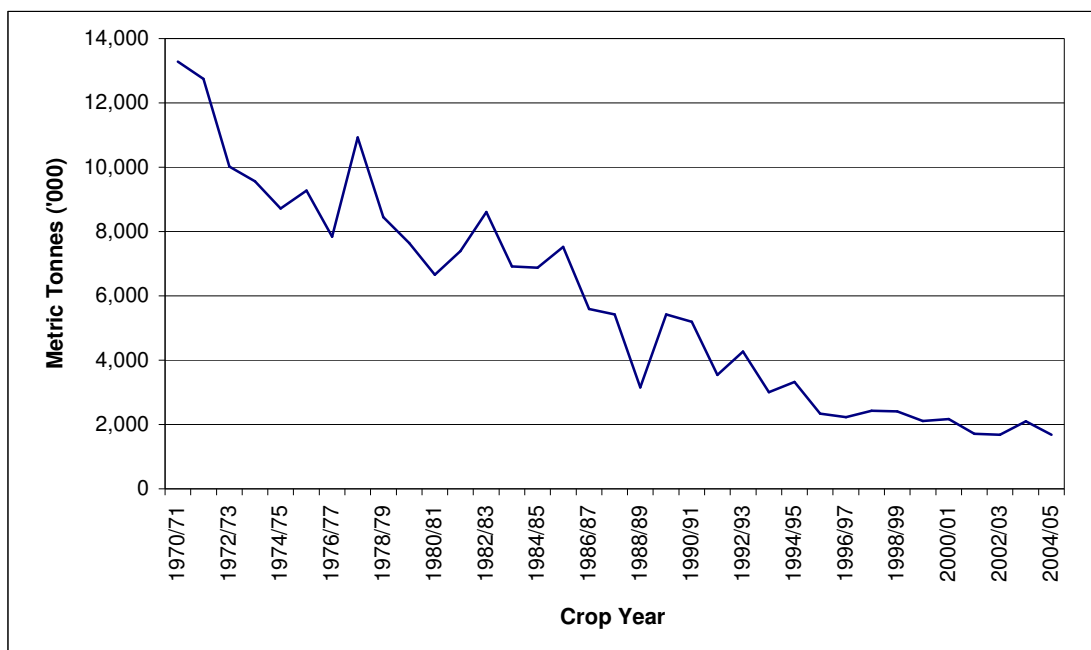
Supply Changes

US production and Farm Bill

The production of oats in the United States has been declining since the 1950s and oat yields have remained stagnant due to lack of research investment. Figure 3.6 illustrates the fall in US oat production from 1970-2004.

US government programs have been partly to blame for the decline in oat production. The US Farm Bills of 1985 and 2002 introduced more favorable commodity loan rates for corn, wheat, barley and soybeans. As a consequence, oat acreage began to shift from oats to barley, corn, and soybeans in the 1980's. Oats have enjoyed indirect price supports, as well as direct price and income supports from the federal government. Producer participation in these programs has been relatively small and government outlays for oats have been minor.

**Figure 3.6: Oat Production in the United States, 1970-2004**



Source: FAOSTAT. 2005.

Scientific Advances

Over the past tens years, scientific advances in fractionation technology has led to new processing opportunities in oats. Fractionation technology is defined as a process that isolates and extracts valuable components from crops for a variety of uses (Kaye, 2005). For oats and barley, fractionation technology can be used to extract beta glucan for use in heart healthy products. Other extraction processes have been able to isolate proteins, colloidal extracts, starches, and oils from oats.

In Canada, fractionation and other extraction technologies have been developed by researchers in private biotechnology companies, universities, and government sponsored research facilities. Provincial and federal governments along with industry provide the funding for this type of research.

#### Policy Changes

##### *Oat Grades*

Prior to 1989, Canadian grades for oats were not in line with the United States. The Canadian Grain Commission (CGC) responded to private industry requests and aligned the characteristics of Canadian oat grades with US oat grades. The new quality standards were designed to reflect end-use qualities. For example, an attribute such as hull colour was de-emphasized, while an attribute such as percentage of sound groats became a more important determinant of grade (Canadian Grain Commission, 1995). In addition to changes to moisture requirements, foreign material tolerances and damage tolerances, the test weight requirements of #3CW and #4CW were increased to reflect more accurately the quality of grades (Canadian Grain Commission, 1995). These changes allowed Canadian producers to more effectively capture price premiums associated with quality.

##### *Western Grain Transportation Act*

The WGTA was repealed on August 1, 1995. The main benefit of the WGTA was the Crow Benefit, which subsidized rail shipments of grain from the Prairies to Thunder Bay and Vancouver. The WGTA was removed for four main reasons: (1) to comply with new global trading rules that established limits on export subsidies and volumes, (2) to create an environment in which a more efficient grain transportation and handling system could evolve, (3) to eliminate freight rate impediments to commodity diversification and processing, and (4) to help reduce government spending and the deficit (Prentice et. al, 1999).

The impact of the removal of WGTA was examined by Prentice, Wang, and Morrissey in 1999 for the Canadian Transportation Forum. The distribution of export volume by route has changed dramatically since 1995. An analysis of the border crossing data for the period 1993-94 shows that Duluth, Minnesota was the dominant route for exports, accounting for more than 60%. Less significant border crossings were Cleveland, Ohio (12%), Pembina, North Dakota (12%), Great Falls, Montana (4.2%) and Seattle, Washington (4.2%). Oats traveling from Northern Alberta were often hauled eastward to Thunder Bay and over the US border at Duluth.

After the policy change, Pembina replaced Duluth as the largest border crossing for oat exports in 1996 and 1997. Prairie border crossings like Pembina became more competitive (the Pembina border is shared by Emerson, Manitoba). The average annual oat traffic at Pembina increased from less than 0.12 million tonnes to 0.55 million tonnes for 1996-1997. Pembina's share of total exports increased from 12% to 40%, while Duluth experienced a 7% decline in exports during the same period. Border crossings such as Great Falls and Cleveland experienced a 100% and 60% increase respectively.

The flexibility of the open market facilitated the development of the most cost efficient routes for oats. As previously discussed, the removal of the WGTA gave producers in Saskatchewan and Manitoba a competitive advantage in milling oats over producers in Alberta. Ultimately, Alberta grown oats were not as price competitive in the US milling market, and Alberta producers and processors were required to pursue alternative markets such as the southern US horse market and international markets in South America.

Another result of the removal of the WGTA was the development of primary processing facilities in the Prairies. With little commercial value, oat hulls account for 35-40% of the volume of oats. Primary processing of oats removes the hull and cleans the oats, thus reducing the transportation costs substantially by creating a denser product. The removal of the WGTA resulted in the loss of eastern millers who were unable to afford the high freight costs associated with oat shipments. Primary processing has ultimately shifted from eastern Canada to western Canada.

Finally, the elimination of the WGTA has facilitated the expansion of the livestock industry in western Canada and encouraged the use of oats for greenfeed and silage (AAFC, 2002). In the absence of transportation subsidies, livestock production in the western Canada became more competitive, because of readily available feed sources. In Alberta, the amount of oats harvested as grain decreased from 70% in 1990 to 20% in 2002-2003 (AAFC, 2002). It is important to note that drought conditions during 2001-2002 also contributed to the decrease in harvested oats in Alberta.

#### *CUSFTA and NAFTA*

The Canada US Free Trade Agreement (CUSFTA) came into effect on January 1, 1989. The aim of the agreement was to facilitate trade and lead to economic integration of the two countries. Import barriers on oats, barley, and wheat were removed in Canada and the US after the implementation of the agreement. Tariffs on oat products were about \$18 per tonne in 1988 (AAFC, 2002). As CUSFTA was implemented, these tariffs were gradually reduced to zero.

In 1994, CUSFTA was expanded to include Mexico and became known as the North American Free Trade Agreement (NAFTA). In 2003, Canadian oats gained duty free access in the Mexican market and showed a growth of 1,391% (Canadian Embassy, Mexico, 2004). Prior to trade liberalization, Canadian oat imports were subject to import barriers in Mexico.

Canadian oat products have gained from the implementation of CUSFTA and NAFTA. The removal of these tariffs made Canadian oat products more attractive to buyers in the US and encouraged oat processing in Canada.

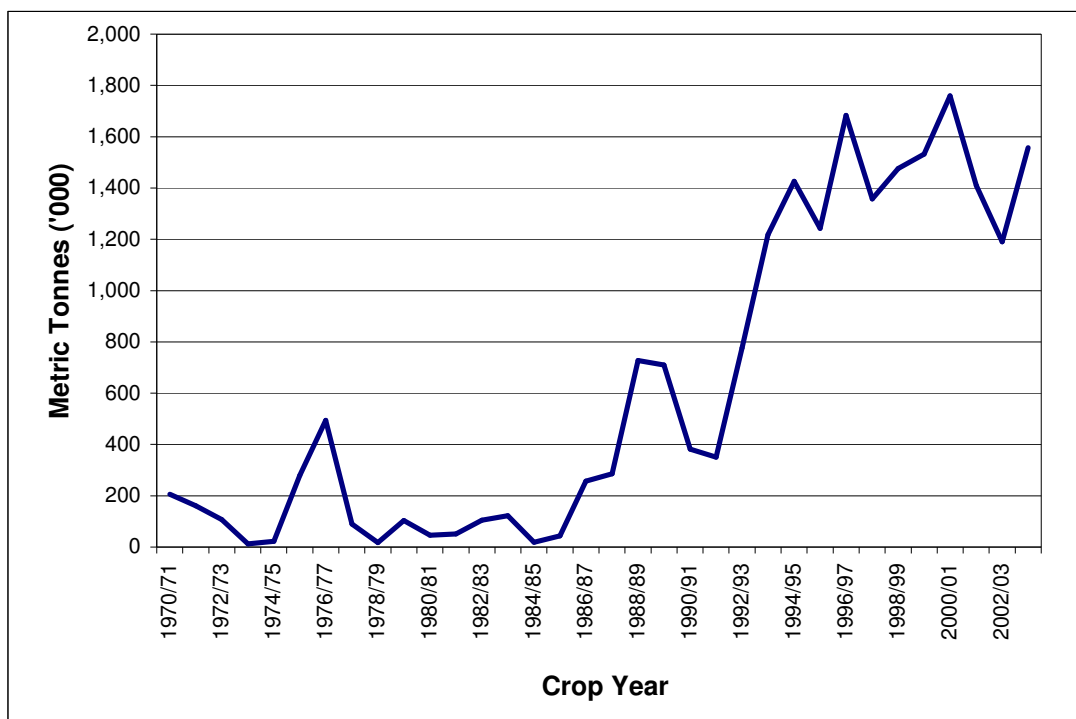
### 4.0. Exports

World oat trade is small with approximately 2 million tonnes traded annually (AAFC, 2002). This amount represents only 7% of world oat production (AAFC, 2004). The United States imports the majority of oats in the world, accounting for 80-85% of world imports (AAFC, 2002 & 2004). Japan, Mexico, and the EU make up the remainder of world oat demand (AAFC, 2002).

Canadian exports of oats and oat products have increased considerably since the late 1980's. Accounting for 50-70% of world trade, Canada is the largest exporter of oat grain and oat products in the world (AAFC, 2002). Over the past 10 years, average oat exports from Canada have been close to 1.5 million tonnes. Figure 4.1 summarizes Canadian Oat Grain and Oat Product Exports for 1970-2004.

The European Union holds the second largest share, with 20-30% of world oat trade (AAFC, 2002). Major European producers of oats are Finland, Germany, Sweden, Spain, and the United Kingdom (AAFC, 2004). Competition from the EU has increased in last 10 years with the introduction of oat export subsidies. These subsidies are paid to Sweden and Finland, which make up the bulk of EU exports. EU subsidies will be discussed later in this section.

**Figure 4.1: Canadian Oat Grain and Oat Product Exports, 1970-2004**



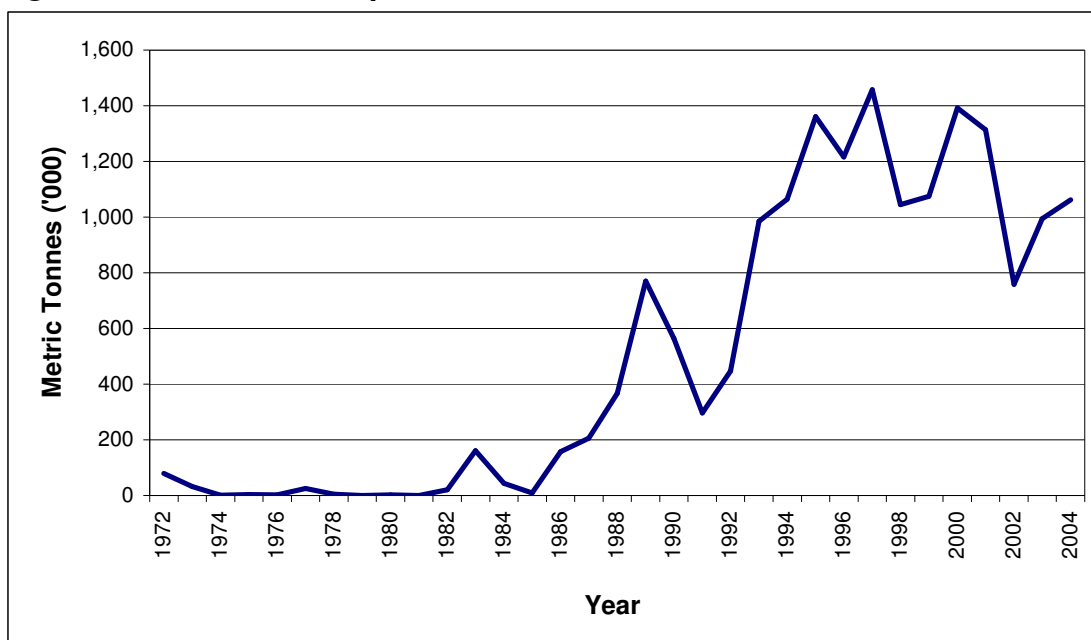
Source: Statistics Canada. 2005. Cereals and Oilseeds Review. Catalogue 22-007.

Australia is the third largest exporter of oats in the world, with a share of 5-10% of the world market (AAFC, 2002). Australian oat exports increased significantly in 1997-1998

when the US removed its ban on Australian oats (AAFC, 2000). In previous years, Australian oats were banned from the US because of concerns over possible disease transmission through grain shipments.

Canadian oat exports to the US have been growing steadily since the early 1980's, and they represent a large portion of total oat exports. Please refer to Figure 4.2. This rise in exports may be explained by declining US oat production, increasing demand associated with the Oat bran craze, and the liberalization of trade between Canada and the US. The marketing change in 1989 has also facilitated the growth of exports by increasing the ability of Canadian exporters to respond to market opportunities in the US. The rise in total Canadian oat exports has increased the financial viability of oats for many producers, particularly growers in Saskatchewan and Manitoba.

**Figure 4.2: Canadian Exports of Oats to the United States, 1972-2004**

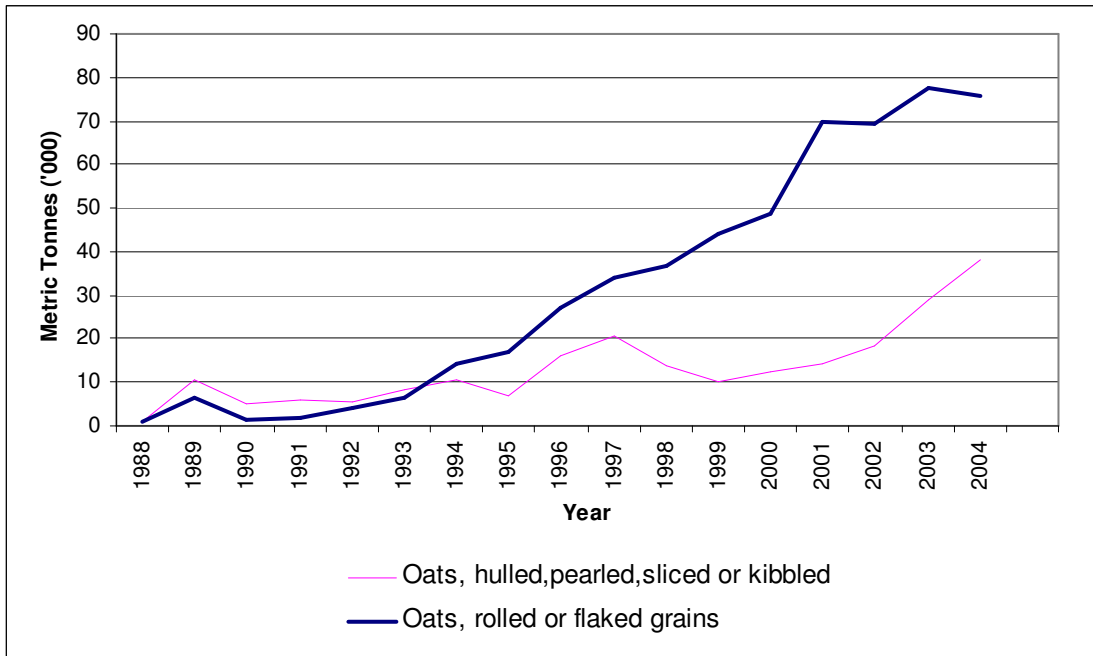


Source: Statistics Canada. 2005. Exports of grains, by final destination. Table 001-0015. Cansim.

The majority of Canadian oat exports are destined for the northeastern US states - Minnesota, Iowa, Wisconsin, and Ohio (AAFC, 2002). Approximately 95% of Canadian exports are used in the milling industry in this region, with some exports being redirected to the Midwest feed market (AAFC, 2002). The horse markets in the Southern US is mainly serviced by the EU, which benefits from relatively low transportation costs via Gulf ports (AAFC, 2000).

The nature of Canadian oat exports to the US has changed since 1989. There has been a dramatic increase in the level of processed oat products, particularly rolled and flaked oats. Please refer to Figure 4.3.

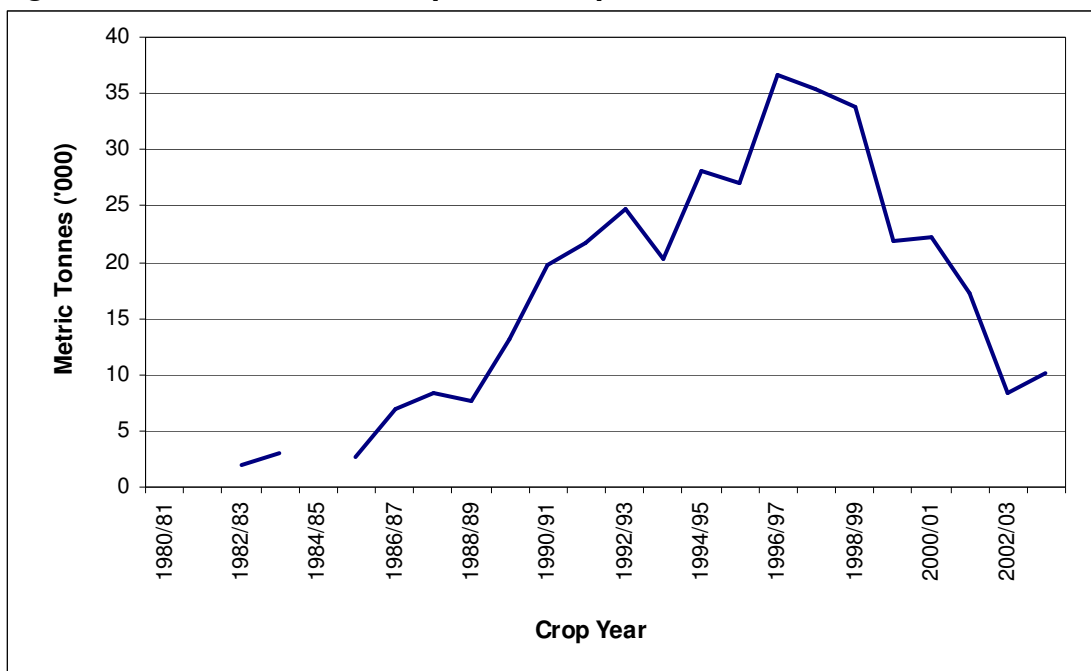
**Figure 4.3: Canadian Exports of Processed Oat Products to the US, 1988-2004**



Source: Statistics Canada. 2005. Supply and disposition of food in Canada. Table 002-0010.

Historically, Japan has been a dependable market for Canadian oats. Small volumes of oats are exported to Japan each year; however, in 1996/97 Canadian oat shipments to Japan began to decline. During the same time period, Australian oat hay exports to Japan increased from 170,000 tonnes in 1997 to almost 400,000 tonnes in 1999 (Rural Industries Research and Development Corporations, 2001). Australia currently supplies the majority of oat exports to Japan. Figure 4.4 shows Canadian oat exports to Japan from 1980-2004.

Opportunities for future oat exports are possible through the liberalization of trade between Canada and Mexico. As of January 1, 2003 duty free access to the Mexican market has enabled oat exports to grow by 1,391% (Canadian Embassy, Mexico, 2004). In the past, Mexico has imported oats from the United States.

**Figure 4.4: Canadian Oat Exports to Japan, 1980-2004**

Source: Canada Grains Council. 2005. Online Statistical Handbook.

## Oat Prices

The world oat market is strongly influenced by the market for coarse grains, particularly the US market for corn. The price of oats is typically determined on the CBOT. CBOT oat prices normally track the CBOT corn prices, with corn selling at a premium to oats due to its higher energy content. Only during periods of low oat supply have CBOT oat prices displayed a premium to CBOT corn. In the crop years 2001/02 and 2002/03, oat supplies were severely limited due to drought conditions in western Canada. During these crop years, oat producers received more favourable prices than corn. On average, the price differential between oats and corn is a discount of Cdn\$10 per tonne (AAFC, 2000).

Minneapolis, Minnesota is the main pricing point for milling oats. The cash prices for oats determined in this market are usually at a slight premium to CBOT prices for oats. Minneapolis prices that have been adjusted for transportation costs and local supply and demand conditions usually determine the western Canadian price for oats.

Oat prices in the US are affected by EU subsidies. The availability of subsidized European oats puts downward pressure on US prices, and in turn, reduces the returns received by Canadian producers. By offering export subsidies in the spring, the European Commission can also influence the price of forward contracts. The uncertainty over the level of EU subsidies granted each year places ongoing pressure on the international price of oats.

## EU Subsidies

EU oat subsidies were introduced after Sweden and Finland joined the EU in 1995. Oats in the EU are not supported by intervention prices or stocks, unlike other grains like wheat, barley, and rye. Because of the relative importance of oats to Sweden and Finland, special provisions were made by the European Commission in the form of oat export subsidies to encourage continued oat production. The European Commission wanted to prevent oat acreages in Sweden and Finland from being converted to barley acreages. A surplus in barley would require the EU to make costly intervention arrangements.

Subsidies are granted through a weekly tendering process, and each bid may be accepted or rejected. The factors that determine the eligibility of oat export subsidies include: (1) the intervention price of barley, (2) the CBOT oat futures prices, (3) the €/US\$ exchange rates, (4) transportation costs, and (5) the cash basis level in the US south (AAFC, 2004). During the first year that oat subsidies were introduced, 1997/98, a total of 771,000 tonnes of European oats were subsidized (AAFC, 2004). On average the EU subsidizes 452,000 tonnes of oats per year (AAFC, 2004). In the 2003/04 crop year, the EU granted subsidies on a total of 444,550 tonnes of oats. Table 4.1 shows the average subsidy applied each year and the volume of subsidized oats. The subsidy is calculated using the following exchange rate: 1€ = 1.3US\$.

**Table 4.1: Average EU subsidy and volume of subsidized oats per year**

Crop Year	Average Refund (US\$/t)	Volume (t)
1997-1998	33.80	771,000
1998-1999	66.90	524,000
1999-2000	41.30	475,000
2000-2001	32.20	673,000
2001-2002	3.40	45,000
2002-2003	8.10	214,000
2003-2004	24.10	445,550

Source: Oleson, Fred. 2004. Oat Trade and European Export Subsidies. Presentation to the Prairie Oat Growers Association. Agriculture and Agri-food Canada

An example of how EU subsidies are calculated:

Cost:	EU oats	90€/t
	Handling and transportation	10€/t
	Fobbing <sup>6</sup>	8€/t
	Ocean Freight	30€/t
	<b>Total Cost</b>	<b>138€/t</b>

Using the following exchange rate, 1€ = 1.3US\$, 138€/t = 180US\$/t

Revenue:	CBOT oat price	US\$1.60/bu or US\$110/t
	Basis to Gulf	US\$0.50/bu or US\$ 35/t
	<b>Total Revenue</b>	<b>US\$145/t</b>

<sup>6</sup> Fobbing is the cost of moving grain from in-store at terminal to Free On Board the vessel.

Subsidy required: Revenue (US\$145) – Cost (US\$180) = - US\$35/t

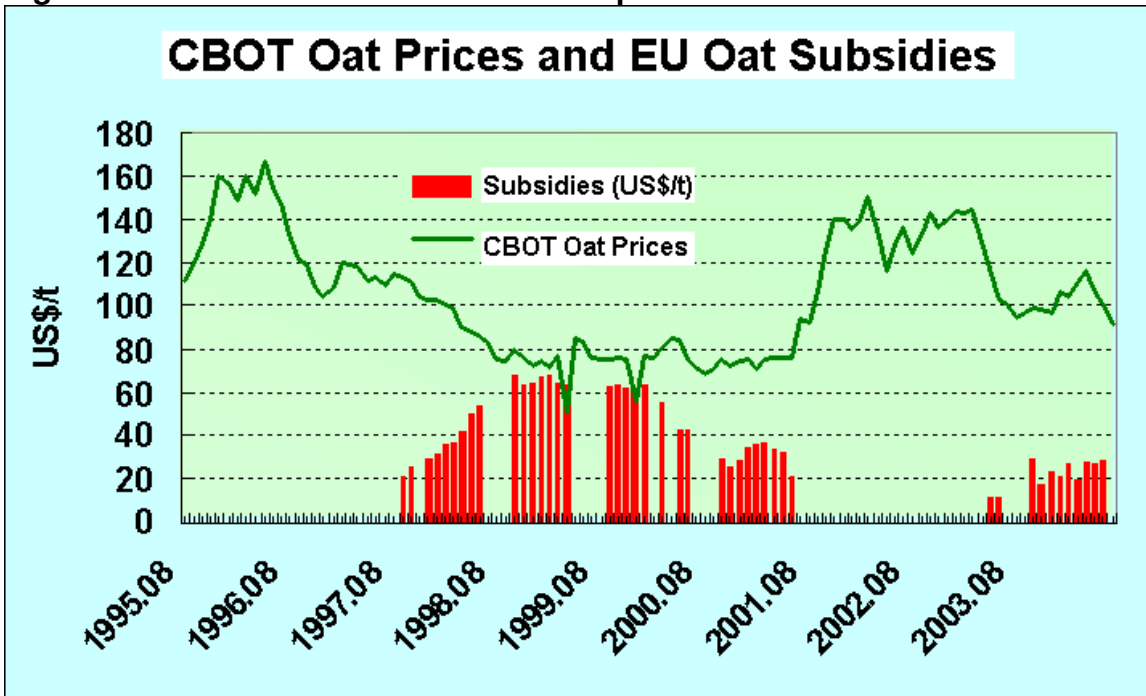
A recent study by Agriculture and Agrifood Canada found that EU oat subsidies have the following effect:

- Reduce CBOT oat prices by US\$0.10-0.20/bu
- Cost the EU about US\$20 million a year
- Reduce Canadian returns by Cdn\$10-20/acre
- Reduce Canadian exports to the US
- Returns reduced by Cdn\$20-30 million

The Canadian government continues to negotiate the removal of EU subsidies through the World Trade Organization. The removal of these subsidies will likely result in an increase in CBOT oat prices, and an increase in the market for 300,000 to 400,000 tonnes of oats. The implications of these changes may result in the development of other feed grains, changes in US varieties of oats, changes in US support policies, and new opportunities for Canada and other exporters from Eastern Europe and Australia.

It is important to note that the removal of EU subsidies will not prevent oats from Sweden and Finland from entering the American market when prices are sufficiently high to cover the cost of freight, handling and exchange rates. EU subsidies are set according to the CBOT futures prices. The level of EU subsidy in a given year is conversely proportional to the CBOT oat futures prices. When prices are high, EU subsidies are low. In 2002, there were no EU subsidies applied to oat exports because the price of oats was high enough to cover the transportation costs. Figure 4.5 illustrates the relationship between EU subsidies and oat prices on the CBOT.

Figure 4.5: EU subsidies and CBOT oat prices

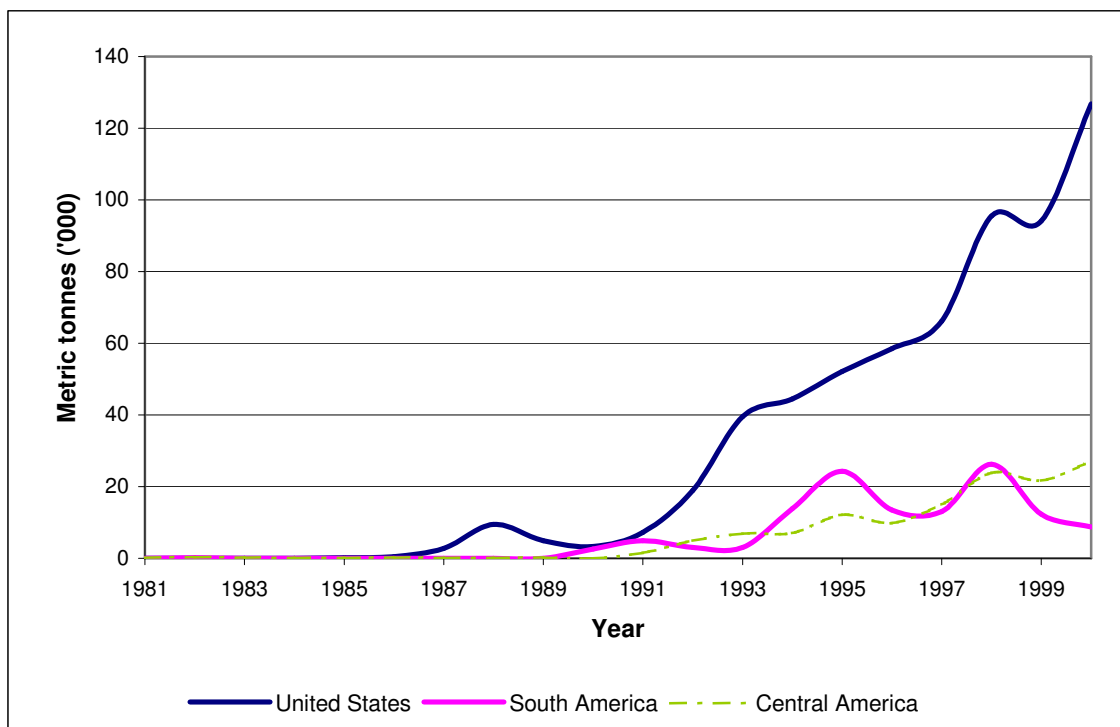


Source: Oleson, Fred. 2004. Oat Trade and European Export Subsidies. Presentation to the Prairie Oat Growers Association. Agriculture and Agri-food Canada

**5.0. Processing and Value-Added<sup>7</sup>**

The oat processing industry has experienced tremendous change since privatization. The emergence of a better aligned trading relationship with the United States has been one of the most significant developments. Exports of processed oat product into the US have increased considerably since 1989 - refer to Figure 5.1. South America and Central America also show growth in imports of processed Canadian oats, after 1989.

**Figure 5.1: Canadian Oatmeal and Rolled Oats exports by destination, 1981-1999**



Source: Statistics Canada. 1981-2000. Grain Trade of Canada.

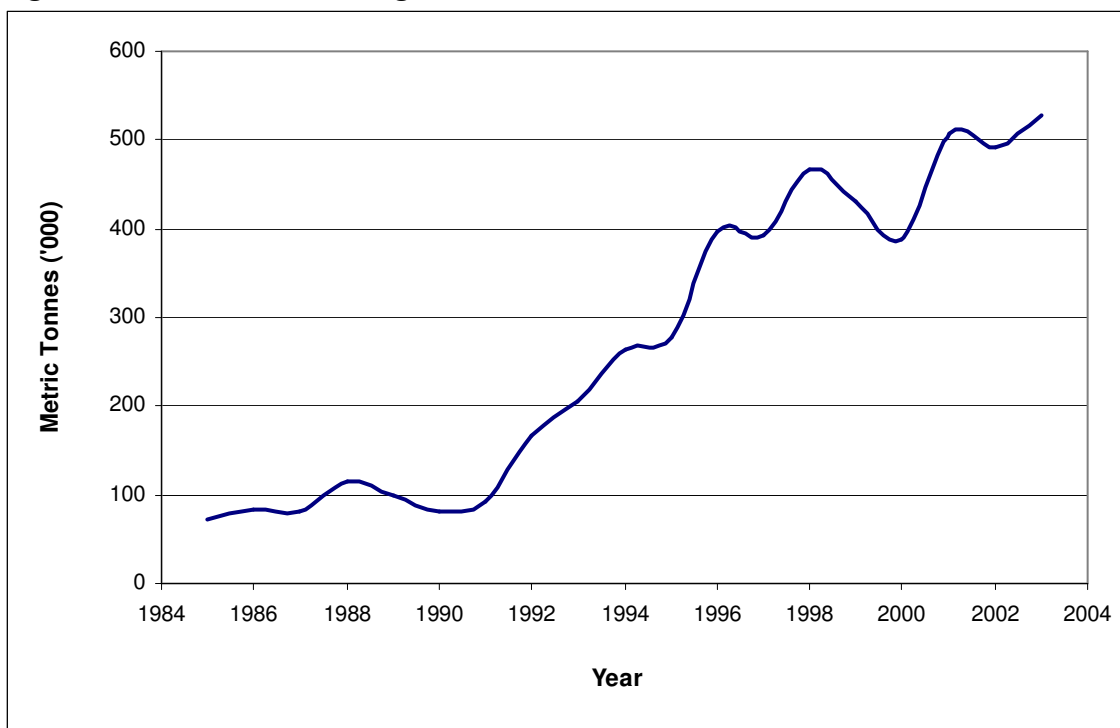
**Expansion of Oat Processing Capacity in Western Canada**

Before 1989, value-adding opportunities were being lost, as a large amount of oat exports were unprocessed. The cost inefficiencies associated with shipping unprocessed oats were also reducing exports. A positive outcome of deregulation was increased investment in oat processing capacity (refer to Figure 5.2). Several plants were built in the late 1980’s and early 1990’s, significantly changing the oat market. The plants that were built after 1989 include Westglen Milling (1989), Alberta Oats (1989), Champion Oat Processors (1995), Can-Oat Manitoba (1991), Can-Oat Saskatchewan (1997), and Grain Millers (late eighties, since 2000 has doubled capacity). These plants represent the five largest oat processors in

<sup>7</sup> Various points made within this section came from consultation with industry. Due to the sensitive nature of some of the issues, no direct references will be made to a specific company.

western Canada. Refer to Appendix 4 for a profile of the major oat processors in Alberta and western Canada.

**Figure 5.2: Oat Processing in Canada, 1985-2003**



Source: Statistics Canada. 2005. Supply and Disposition of Principal Grains.

According to interviews with processors, the expansion in oat processing was driven by the oat bran health fad. Growth occurred rapidly over two years, subsequently, resulting in a significant over capacity problem when the Oat bran craze faded. Over capacity in the industry has been somewhat offset by the emergence of exports in processed oats to US, Central America, and South America. However, many industry participants believe that rationalization in the industry is inevitable, and that only more modern and aggressive plants will survive.

### Processing Markets and Challenges

The oats processing industry serves two major markets, the milling market and the pony oat market. The milling industry processes oats for human consumption, and typically produces items such as oat groats, rolled oats, oat flour, oatmeal, oat bran, and oat shorts. The pony oat market supplies feed for horses. Most processing plants produce one product, because separate production lines are required for producing both products. The only plant in Alberta involved in both markets is Alberta Oats.

One shortcoming of the oats processing industry in western Canada is its lack of production in finished products. This market is mainly controlled by the US, which uses Canadian product for ~90% of their inputs. All the human food processors interviewed felt

that this was a significant limit to their profits. Not only do they ship a highly dense product long distances, but this product is subject to inelastic price demand. This leads to a highly dynamic market. For many processors, the profit margins are very tight. These margins are further eroded by increasing ocean freight and an appreciation of the Canadian dollar. The main barrier that most western Canadian oat processors face in trying to add value to their product is a lack of equity to support the required investment.

Expansion in the oat processing industry is not expected for the next five years. At current capacity, the industry needs to consolidate before any value-added expansions will occur. Companies in the best financial position include processors whose markets are in the US with buyers such as Kellogg's<sup>®</sup>, General Mills<sup>®</sup>, Quaker<sup>®</sup>, and Kraft<sup>®</sup>.

Companies that are more dependent on Central and South America will be under more pressure to maintain their buyers. In Central and South America, the main competitor is Chile. Its close proximity to these markets make oats grown in Chile more price competitive. In a good crop year, Chile can take up to 75% of orders that would otherwise be serviced by Canadian plants. In the future, processors will be forced to find new markets or utilize their existing markets to the best efficiency. The processors who succeed in those two areas will lead the consolidation of the industry.

### **Opportunities for Processors**

The number one opportunity, referred to by all processors, was establishing a market overseas in China. Currently, little oats is consumed in China; however, the one advantage for oats is that Chinese consumers view the product as a premium health food. If oat consumption were to blossom in China, many individuals in the industry see it as a valuable opportunity.

The one barrier that may restrict entry would be competition from Australia; but this can be overcome with inexpensive container freight out of Vancouver. Western Canada is in a good position to be competitive in China, especially Alberta. Alberta's close proximity to western ports gives producers a competitive advantage over Saskatchewan and Manitoba. Currently, there are no oat processing facilities in China. In order to capitalize on the opportunity, processors should supply a more finished product than oat groats or flakes. Partnerships or alliances with Chinese firms would be a good strategy for entering the market.

Value-added opportunities also exist with beta-glucan extraction. Research in this area has been occurring since the mid-1980's. The technology developed has been successfully commercialized and several companies are involved in beta-glucan extraction. The most notable in Alberta is Ceapro. The market for beta glucan is new and so far global demand for the product has been disappointing. In 2004, Ceapro reported lower than expected sales for beta glucan extracts. New formulations of the product are expected to boost Ceapro's sales of the product in 2005.

## 6.0. Industry Collaboration and Research and Development

The open market system for oats has encouraged more industry collaboration in marketing and research. Producer organizations formed after 1989 to address concerns in production and marketing. Information exchange tools were also developed by the industry to aid price discovery and disseminate news. During this time, funding agreements between industry, government, universities and research institutions also emerged to address oat research issues. As the role of the federal government in oat research continues to decline, the oat industry is deeply aware of the need to invest in research to ensure the sustainability of oats in the future.

### Industry Collaboration

The Oat Producers Association of Alberta emerged after deregulation to represent producers' interests in Alberta (Strychar, 1994). The association later amalgamated its activities with growers in Saskatchewan and Manitoba and became the Prairie Oat Growers Association (POGA) in 1998 (POGA, 2005). The POGA represents the interests of oat producers. It keeps producers informed about production, marketing, regulatory and research issues. The group meets annually and a newsletter entitled "The Oat Scoop" is published and distributed monthly. Other forms of industry collaboration include: trade shows, focus groups, conventions, and symposiums. These events are organized for members of the industry to exchange ideas, establish business connections and strategically plan the industry's future.

Greater communication between producers, processors and end users has occurred (Strychar, 1994). Under the control of the CWB, information flow in the industry was limited. An example of poor information flow is the differences in grading standards between the US and Canada. Canadian grading standards did not reflect quality attributes demand by US end users, who represented a majority of Canadian oat exports. The open market facilitated greater communication between the US and Canadian oat industries, and resulted in the Canadian industry's request to the CGC to better align grading standards between the two countries.

Deregulation has also resulted in greater information exchange through pay websites such as OatInsight. These websites specialize in providing members with price discovery tools and oat industry news. Access to the websites is through yearly membership subscriptions offered to growers and other industry members. The cost of accessing OatInsight for growers is \$150 Cdn.

### Research and Development

Active oat breeding programs were operated by Agriculture Canada in Alberta, Saskatchewan, and Manitoba in the 1980's. These programs addressed different regional agronomic challenges. For example, Manitoba breeding programs often focused on disease resistance, particularly rust and smut problems prevalent in the Eastern Prairies

(Peat Marwick Consulting Group, 1989). Alberta breeding programs were more concerned with obtaining higher yields.

During the late 1980's, there was particular interest in hulless varieties of oats or naked oats. The advantages of hulless oats are their lighter weight, decreased bulkiness, and higher energy content (Peat Marwick Consulting Group, 1989 and Aitkin et. al, 1998). Hulless oats are often used in pig rations.

In Alberta, there were no significant breakthroughs in the production of hulless oats despite licensed varieties in the province. Prior to 1989, the CWB was criticized for not encouraging the adoption of hulless oat varieties through their pricing policy; however, the open market system has not been successful at offering a premium price for hulless oat varieties. There appears to be a lack of awareness of hulless oats and their benefits in processing.

Currently, oat breeding in western Canada is undertaken by the provincial and federal governments, universities and agricultural colleges, and private companies. Agriculture and Agri-Food Canada has seven research centers in western Canada. The CRC in Winnipeg is best known for its work in wheat and oats. The Lacombe and Beaverlodge Research Center in Alberta also conducts oat research.

### **The Prairie Oat Consortium**

In 1995, a review of the oat breeding program at the CRC recommended that the program be discontinued. The federal government felt that oat breeding was still relevant for the eastern prairies and asked industry to contribute to the research. Through a Matching Investment Initiative (MII) with the federal government and industry, the Prairie Oat Consortium was formed in 1996 (AAFC, 2003). The MII partners include: Can-Oat Milling, Emerson Milling, Quaker Oat Company Ltd., General Mills, Malt-O-Meal, Cargill Seed, Value Added Seeds, SeCan Association, and Pioneer Hi-Bred (AAFC, 2003).

Initial funding provided through the Consortium enabled the CRC to expand its breeding program in 1996 and employ an additional full time breeder. Industry contributions have totaled \$500,000 since the Consortium was formed and the CRC has been able to do three times the research that was occurring in 1995 (AAFC, 2003). The new oat varieties that are developed by the CRC are marketed by the seed companies in the Consortium.

The goal of the Consortium is to contribute to the stability and international competitiveness of oat production in Canada. The Consortium has been a successful partnership between industry and government researchers. All members of the Canadian oat supply chain are benefiting from the research generated. Table 6.1 is a summary of the oat varieties developed at CRC since 1996.

**Table 6.1: Oat varieties developed by the CRC since 1996**

<b>Crop Variety</b>	<b>Traits</b>
AC Medallion, 1996	White hulled, crown rust resistant gene
AC Rebel, 1996	Higher protein
AC Pinnacle, 1998	White hulled, crown rust resistant gene, improved lodging resistance,
AC Ronald, 2000	Strong straw, semi dwarf, excellent lodging resistance, resistant to rust, smut and BYDV, 3.5% yield advantage
AC Gwen, 2000	Hulless, 10% yield advantage over AC Belmont, resistant to new strains of crown rust
AC Furlong, 2003	Suitable for black soil zone, good milling qualities

Source: Agriculture and Agrifood Canada. 2003. Cereal Research Centre.

### **The Crop Development Center**

The Crop Development Center (CDC) at the University of Saskatchewan is another institution active in oat research. Since 1983, the center has released nine oat varieties for milling. The most recent varieties released include CDC Dancer and CDC Orrin. The center is focused on research into oat disease, oat genome, milling quality, and field yield.

The research at the CDC is supported by QTC Canada Inc, the company that operates Quakers Oats in Canada, and Cargill Ltd. In 2003, QTC Canada announced that it plans to contribute \$850,000 over the next five years to work aimed at improving oat varieties, while Cargill pledged \$285,000 (University of Saskatchewan, 2003). These funding contributions are part of a 30-year commitment by QTC Canada and a 10-year commitment by Cargill to crop research at the CDC.

### **The Western Grains Research Foundation**

Some research in oats is funded through the Western Grains Research Foundation (WGRF). This organization was established in 1981 by 12 agricultural organizations (WGRF, 2005). The foundation was set up to manage the Endowment Fund, a nest egg of \$9 million in producer funds. The Endowment fund was created after the Prairie Farm Assistance Act was discontinued in 1983. The WGRF supports a broad range of crop research with an annual endowment of \$4 to \$5 million. It is Canada's example of farmer-funded research. The WGRF has provided over \$17.5 million in support for close to 200 crop research projects.

Today, the WGRF includes the Wheat and Barley Check-off Funds, which were added in 1993-1994. The POGA is one of eighteen agricultural organizations that currently supports the WGRF and serves on the Board of Directors. All three Prairie provinces are represented by the organization, as well as the Peace River areas of British Columbia.

The research on oats funded by the WGRF has concentrated on:

- 1992-04, Breeding aluminum tolerant oat cultivars for the grey wooded soils of western Canada. Dr. S. Kibite, AAFC, Lacombe, 1992-1994, \$78,000
- 1995-06, Feasibility studies on value-added oats for western Canada. Dr. S. Kibite, AAFC, Lacombe, 1995-1997, \$105,000
- 2005-08, Researchers take aim at Fusarium in oats. Dr. Andy Tekauz, Agriculture and Agri-Food Canada, Winnipeg, \$127,500

### **Prairie Oat Growers Association - Producer Check-Offs**

In recent years, the federal government's support for oat breeding has begun to dwindle (Bell, 2005). The CRC in Winnipeg is scheduled to close in April 2007. Although AAFC claims that research will continue elsewhere, oat producers are worried that the federal government will withdraw its support of oat breeding entirely and allow industry to continue the research. According to the POGA, the number of plant breeders in Canada has decreased from 4 ½ to 1 ½ in the last two years and most agronomic research on oats in the prairies has ceased (Bell, 2005). This decline represents a North American trend that could result in oats lagging behind other crops in terms of yield and disease resistance.

Currently, the POGA is trying to set up a check-off to raise money for research and market development. In order for the check-off to be successfully implemented in western Canada certain criteria must be met. In Saskatchewan and Alberta, a government agency determines whether a producer check-off is recommended based on a survey of producers' views (POGA, 2004). In Manitoba, a government supervised plebiscite is required with at least 60% of producers voting in favour of the check-off (POGA, 2004 and Bell, 2005). Once approved, a check-off in Alberta, Saskatchewan, and Manitoba could raise \$800,000 annually (Friesen, 2005). Seventy-five percent of the money would be directed towards research (Bell, 2005).

In recent years, oat producers in Saskatchewan and Manitoba have been asked to approve a proposed check-off of \$0.50/tonne on oats sold. Each individual contribution would be capped at \$250 per year and producers may request a refund if they wish (Bell, 2005). In Manitoba, the check off proposal was rejected for a second year with 53% of producers in favour and 47% opposed (Bell, 2005).

### **Advanced Research**

Advanced research in oats has been occurring for the past 10-15 years. Universities and private companies have been perfecting previous techniques in fractionation and developing industrial processes that are able to extract beta glucan and other functional components from oats and barley. Various companies have moved towards commercializing the technology and producing a high quality product for food and non-food markets.

*Ceapro Inc.*

Established in 1997 as single public entity, Ceapro is a company most known for its technology in extracting colloidal oat extract and beta glucan (Ceapro, 2005). The company's three markets are active ingredients, veterinary therapeutic products, and AccuScreen diabetes testing.

Ceapro's first product was Dr. Redmond's Oat Shampoo for animals, which was released in Japan in 1998. In 1999, the company was challenged to develop a new, more efficient extraction process that would increase the output of colloidal oat extract by tenfold. The impetus for the research was a contract with a German based distributor, Symrise. The contract with Symrise led to Ceapro's growth and expansion. The company continues to improve its colloidal oat extraction process. The new process can produce 20,000 times the amount of colloidal oat extract as the previous processes.

In the late 1990's, Ceapro controlled Canamino Inc., a subsidiary that produced oat extracts for cosmetics and personal care products. Canamino was the first commercial plant to successfully use advanced fractionation.<sup>8</sup> In May 1998, the Saskatchewan Government Growth Investment Fund seized control of Canamino when Ceapro failed to complete the buy out of the firm. In 1999, the plant was purchased by the Saskatchewan Opportunities Corporation (SOCO) for \$1,230,000 and renamed the Innovation Place Bioprocessing Centre (Innovation Place, 1999). Ceapro has relocated its manufacturing facilities to Leduc, Alberta.

*Cevena Bioproducts Inc.*

In 2002, University of Alberta professors Vasathan and Temelli established a spin off company called Cevena Bioproducts. These researchers have been working on fractionation in barley and oats for 10 years. Their research covers three areas: (1) the development of cost efficient technologies for beta glucan extraction from oats and barley, (2) the use of beta glucan as a food ingredient, and (3) the food and non-food applications for the by-products of oat and barley fractionation process once the beta glucan has been removed (Kaye, 2005). The research was made possible by the Alberta Agriculture Research Institute and the Alberta Barley Commission, which financed a great deal of the research.

Funding for the commercialization venture was provided by Foragen Technologies Management Inc. and AVAC Ltd. The company produces a highly viscous, beta glucan concentrate called Viscofiber<sup>TM</sup>. This product has 13 times more fiber than oat bran. It is positioned as an ingredient for the Dietary Supplement and Functional Food markets. An interesting by-product of the beta glucan extraction process results in an oat and barley product that may be a more efficient animal feed product (Kaye, 2005).

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<sup>8</sup> The fractionation process used by the Canamino plant was based on work by Burrows et. al. in 1984. The technology was further refined in 1992 by Collins and Paton. In collaboration with POS Pilot Plant Corporation and its business arm Nuvotech Ventures International, Paton developed the technology that was later licensed to Canamino. The plant was originally founded by John Schaw.

The company is currently running its operation from a temporary plant in Saskatoon. As its market share in the functional food market increases, the company plans to build a \$50 million processing facility in Alberta (WGRF, 2004). The market for cholesterol lowering agents is estimated to be worth \$171 million when sold as dietary supplements and \$387 million when sold as functional food ingredients (WGRF, 2004).

#### *International Competitors*

There are three other advanced oat processors in the world: Avena Oat Ingredients in Finland, Swedish Oat Fiber in Sweden, and Nurture Inc. in the US. Each of these companies produce and market fractionated oat products under the following brand names: Avena Oat Ingredients, Natureal<sup>®</sup>, Swedish Oat Fibre, “OatWell<sup>®</sup> Oat Bran” and Nurture Inc., OatAdvantage<sup>®</sup>.

## 7.0. Market Performance

In this report, the performance of the Canadian oat market was analyzed using a variety of primary and secondary data sources. A literature review was conducted of previous academic studies on oats, as well as articles gathered from news and media. Interviews with processors, producers and other industry participants were conducted to obtain first hand accounts of the oat industry during its transition from central desk to open market systems of marketing. This study does not attempt to develop a quantitative model of the Canadian oat markets. Instead, the report tries to incorporate quantitative analyses on producers' revenues and price effects with qualitative industry accounts to describe and evaluate the performance of the oat market since 1989.

### Predictions

In 1989, various predictions were made about the outcome of deregulation. A study by the Peat Marwick Consulting Group for Alberta Agriculture in February 1989 makes the following predictions about the future of the Canadian oat market:

- Visible price signals and oat futures contract value in Winnipeg and Chicago will be enhanced.
- More trade of futures will improve the responsiveness of oat contracts to market supply and demand forces.
- There will be changes in the oat futures contracts at the Winnipeg Commodity Exchange (WCE) to reflect market demand.
- There will be relatively little change in on-farm and feed oat marketing, which is 85% of oat production. Only oats entering commercial export channels will be affected.
- Oat marketing companies may offer deferred delivery contracts.
- Large licensed grain dealers will control the majority of oat trade, however, more participants will enter the market (e.g. feed mills, pedigreed seed dealers, etc.). These companies will compete aggressively and there will be relatively high margins in oats.
- Oats will remain a niche market product that is dependent on high quality and cost competitive logistics for success.

The report also identified some concerns expressed by industry participants about the proposed marketing change. These concerns include:

- Difficulty securing adequate supplies of high quality oats by Canadian millers. The millers were skeptical about the ability of western oat producers and grain marketers to respond competitively to price signals.
- Canadian producers were concerned about their return on oat sales. They questioned whether their returns under the open market would be as high. Some producers feared that the many oat sellers would create competition and drive the price of oats down.
- Some farmers, farm organizations and agricultural business representatives felt that the removal of oats from the CWB would lead to the eventual demise of the Board.

Were these predictions and concerns accurate? In the past 20 years, various analyses of have been done of the Canadian oat market. In 1996, Robert Morrissey analyzed the performance of the Canadian oat market after deregulation in his thesis, "Economic impacts of privatizing the marketing of Canadian oats." The thesis presents a thorough analysis of the production and marketing changes that have occurred in Canadian oats from 1989 to 1996. Some of the methodology used in Morrissey's thesis has been adopted for this report. The conclusions drawn from the study have been incorporated in the following market performance analysis. Other qualitative and quantitative analyses done by Randy Strychar and Agriculture and Agri-Food Canada have also provided valuable insights on the market performance of Canadian oats since deregulation.

### **Structural Changes**

The Canadian oat market has undergone considerable change over the past 15 years. The most significant structural changes have been deregulation in 1989 and the removal of the WGTA in 1995. Other changes include the implementation of CUSFTA and NAFTA, the oat bran craze, and advances in oat germ plasm and further processing. The US Farm Bill in 1985 and 2001 and the implementation of EU subsidies are all examples of structural changes that have affected the market.

The oat market that has emerged in Canada is the synthesis of all these changes, and it is difficult to isolate each individual effect. The impact of deregulation was significant, but it was not the sole factor in stimulating developments in the Canadian oat market. For this analysis, an attempt was made to identify the market developments that may have been caused by deregulation.

#### *Central Desk System*

By the 1980's, oat commerce in the United States had evolved into specification merchandising that demanded flexibility and quick responses (Prentice et. al, 1998). US customers, in both the milling and feed markets, were demanding low volume shipments of oats that met specific requirements in protein content, test weight, sound count, foreign matter content, and moisture level. In addition, oat trading had become highly fragmented and good logistics was required. It became increasingly important for oat marketers to originate and select oats that fit the market's requirements, as well as adjust prices according to market forces.

Under the central desk system, marketing inefficiencies began to emerge. Foreign competitors such as Sweden and Argentina were gaining market share and Canadian oat exports were performing poorly (Peat Marwick Consulting Group, 1989). Critics questioned whether oats were a priority for the CWB, because the volume and revenues attributed to oats was miniscule in relation to wheat and barley. For the period between 1986-1989, the percentage of CWB revenue attributed to oats was only 1.02% to 3.51% (refer to Table 7.1). There was also concern about the CWB's approach to oat marketing and whether it was a good fit with the export marketplace.

**Table 7.1: The Importance of the Oats to the CWB**

	1986-87	1987-88	1988-89
<b>Total CWB Revenue (\$CDN; millions)</b>	3,208.31	2,862.95	4,278.98
Oats Revenue	25.4	33.38	104.69
Designated Oats Revenue	7.18	10.47	45.69
<b>Total Oats Revenue</b>	<b>32.58</b>	<b>43.85</b>	<b>150.38</b>
% Oats of all Revenue	0.79%	1.17%	2.45%
% Designated Oats of all Revenue	0.22%	0.37%	1.07%
<b>% Oats Revenue of CWB Revenue</b>	<b>1.02%</b>	<b>1.53%</b>	<b>3.51%</b>

Source: AAFRD, 2005.

During the same time period, buyers in the United States developed a false perception that Canadian oats were poor quality. These quality concerns were a result of logistic problems at the Thunder Bay terminals, which were unable to maintain grade standards. US buyers complained that oat shipments from Thunder Bay were low in protein and high in foreign matter content. Barley was often found in oat shipments because of its similar size. The pre-mill cleaning process was unable to remove barley and the sound count of shipments from Thunder Bay was often 90%. High foreign content was not a problem for carlot shipments that bypassed Thunder Bay and went directly to US buyers. These shipments had sound counts of 97-99% (Morrissey, 1996).

The second issue was low protein content in Canadian oat shipments. This was a problem because the CWB sourced a large supply of oats from Northern Alberta, which grew large, plump oat kernels that were low in protein (Morrissey, 1996). The CWB was purchasing oats according to appearance and not according to protein content, which the market also desired. The ample supply of oats from Alberta and the Crow rate subsidy encouraged the CWB to source oats from the region. Producers in Saskatchewan and Manitoba did not face problems with maintaining high protein content, and grew oats with 16% protein (Morrissey, 1996). Pooling of oats by the CWB resulted in a degradation of protein quality, and US buyers assumed all Canadian oats were low in protein.

The large infrastructure of the CWB was called into question, as its massive logistic system became inappropriate for the highly fragmented, low volume transactions associated with oats. Short-term market opportunities were being lost because of the Board's inability to respond to specific demand requests. The CWB was also criticized for not adequately transferring quality information to producers through its system of initial payments and price pooling. This dilution of communication between producers and end-users resulted in slow adjustments to quality specifications, and further reinforced US buyers' perceptions that Canadian oats were low quality.

These market inefficiencies resulted in a loss of competitiveness and market share. Oat industry participants began to demand a change in the marketing of oats. On August 1, 1989 their wishes were granted and oats were taken off the CWB's mandate.

*Transition Period*

In discussions with market participants, the transition period from the central desk to open market system lasted approximately 2-3 years. For many participants, this period was not negative or difficult, but a period of learning. The open market facilitated the exchange of quality information between US end users and Canadian oat growers and processors. During this time, US buyers traveled to Canada and made direct visits to growers and processors. This direct interaction with the Canadian industry dispelled US misconceptions of Canadian oats, and encouraged the Canadian industry to push for grading standards that were more in line with the US.

During the transition, Canadian oat prices started to move in line with outside forces. In Morrissey's thesis, oat futures prices were examined from 1983-1995. Prior to 1989, the Chicago Board of Trade (CBOT) futures paid a substantial premium against WCE futures. Under the open market system, Canadian oat futures prices showed an increase and a convergence with US futures prices (Morrissey, 1996). This result suggests that producers and oat market participants were able to arbitrage between the two markets.

An examination of the cash grain market yields similar results. The ratio of WCE cash prices to US cash prices increased and stabilized under the open market system (Morrissey, 1996). An intervention analysis was done by Morrissey to test the significance of the market change in 1989. The analysis showed that the increases in oat price ratios for the futures and cash markets were statistically significant and most likely caused by the change in marketing structure. It is important to note that the 1989 free trade agreement between Canada and the US may also be a factor in increasing price ratios.

*Open Market System*

The removal of the CWB improved the flow of information, money and product throughout the oat supply chain. The Canadian oat market became more efficient and responsive to supply and demand conditions through the use of forward contracts, deferred pricing contracts and futures market contracts. Interviews with grain dealers in 1996 by Carter and Loyns found that grain handling charges associated with oats had decreased by as much as 30%. For many industry participants, the removal of the CWB has meant less paperwork and less regulatory procedure, which often created a barrier to capitalizing on short-term market opportunities.

Under the open market system, Canadian producers have been able to take advantage of both niche and volume opportunities in oats (Wronko, 1994). By removing the pooling system, which made it difficult to originate and select oats, producers and grain handlers were able to meet and maintain specific market requirements. Deregulation also enabled the entrance of oat traders and dealers, and resulted in the development of specialized oat marketing capabilities within grain companies and within producers. The commercial importance of oats has increased for Canadian producers, especially for growers in the Eastern Prairies.

The open market system also allowed greater flexibility in the management of oats on the farm (Carter and Lyons, 1996). The bulky nature of oats makes it a high volume product that incurs high on-farm storage costs. The ability to move oats early and in large volumes after harvest reduces storage costs and increases cash flow. Manitoba producers have benefited from this development, as oats is quickly moved off the farm directly after harvest. In Manitoba, oats take advantage of lower shipping costs in early October.

### **Forward Contracting**

A majority of the market participants interviewed for the study believe forward contracting has been the most important result of deregulation. Under the CWB, forward contracting was restricted to selling two to three months in advance and failed to capture the premiums of contracting 6-12 months into the future. Prior to 1989, Scandinavian countries and other foreign competitors were using forward contracts (Strychar, 1994). These countries benefited through increased market share and better pricing opportunities. Another advantage of forward contracting is that forward exchange rates are substantially higher than nearby rates, and generally results in foreign exchange premiums.

Forward contracting has contributed to the growth of Canadian oat exports, as US producers are able to secure a supply of oats in Canada despite declining production in the US. Producers are able to sell #2, #3, and #4 CW grades through forward contracts. In an average year, approximately 95% of what a producer grows is available for sale through forward contracts (Strychar, 1994). Canadian producers have been able to capture good premiums during high production years with the ability to forward contract when prices are high (Oatinsight, 2005).

### **Futures Market**

As the Peat Marwick Consulting Group predicted, trading oat futures have gained in importance and have allowed the market to become more responsive to supply and demand conditions. Producers, processors and other end users use the futures market for two purposes: price discovery and hedging. Currently most grain companies base their prices on the CBOT oat futures and/or the Minneapolis cash oat market (AAFRD, 2003). Prior to 2001, oats futures were also traded on the WCE. This futures contract is no longer available on the WCE due to the low volume of trade.

### **Marketing Skills**

The open market has required producers to acquire strong marketing skills through experience and interactions with millers and processors. Many producers have developed proper sampling and testing procedures, and are using equipment such as a Cox funnels and screens to test their oats. Producers have become proficient at converting between the

Avery and Winchester bushel units<sup>9</sup>, and are informed about what qualities their customers desire.

Western Canadian oat producer have learned how to time their oat marketing on the spot market. Under the open market system, they have the choice of withholding oats until better prices are available. The processors interviewed for the study described the need to provide price incentives for producers to bring in oats during certain time periods. These incentives secure the supply of oats and increase the efficiency of the operations.

Many industry participants mentioned that a direct result of deregulation has been clearer market signals to producers. Better price translation has enabled producers to respond to market opportunities with increased flexibility. The Internet has increased access to information for producers of all agricultural commodities. Oat producers and market participants may access websites such as OatInsight, which are devoted to oat price discovery. The Internet also provides information about potential buyers. Many grain companies and processors have their own websites, and provide information on procurement, products and contacts. A final point is producers can observe changes in the futures market and even make trades over the Internet.

### **Market Participants**

Oats have continued to remain a niche product. The demand for oats in the human food market is not likely to exceed population growth, and the demand in the feed market has remained steady. The trend towards specification purchasing has intensified, and one industry observer believes identity preservation and complete traceability to the farm of origin will be the next evolution of the oat industry.

These characteristics of the oat market have resulted in a relatively small industry with a few key players. Large licensed grain dealers such as Agricore United and Saskatchewan Wheat Pool and processors such as Can-Oats, Grain Millers and Westglen Milling control the majority of oat trade. Since 1989, there have been several new entrants in the market, particularly in primary processing. Feed mills, seed cleaners and producer cooperatives represent some of the new entrants who were attracted by initial high returns experienced during the Oat bran craze.

Rapid expansion and intense competition in the milling and feed market for oats has since eroded margins. According to industry sources, it has been a “dogfight” for firms to stay in business. Excess capacity in processing will likely result in some mills being rationalized out in the near future.

The companies that have been able to obtain higher margins have entered into lucrative long-term contracts with multinational end users such Kellogs and Kraft. These contracts

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<sup>9</sup> The US and Canadian markets use different definitions for bushel weight. The US market uses the Winchester Bushel (0.8035 of a cubic foot), while the Canadian market uses the Avery bushel (0.7786 of a cubic foot).

have been difficult to establish. A good supply reputation with these companies is built through years of samples, lab tests, and lengthy approval processes. The stakes are high when dealing with large multinational companies, as the consequences of food recalls are costly for both the supplier and the end user.

The Canadian oat industry fails to produce consumer ready products. Many of the grain handlers and processors are engaged in primary processing and supply the raw materials for breakfast companies and bakeries in the United States and South America. The development of viable secondary industries has not occurred. Some industry participants interviewed for the study felt that the development of finished oat products would contribute to the sustainability of their operations. The capital cost involved with investing in these products has been a prohibiting factor.

### **Producer Returns**

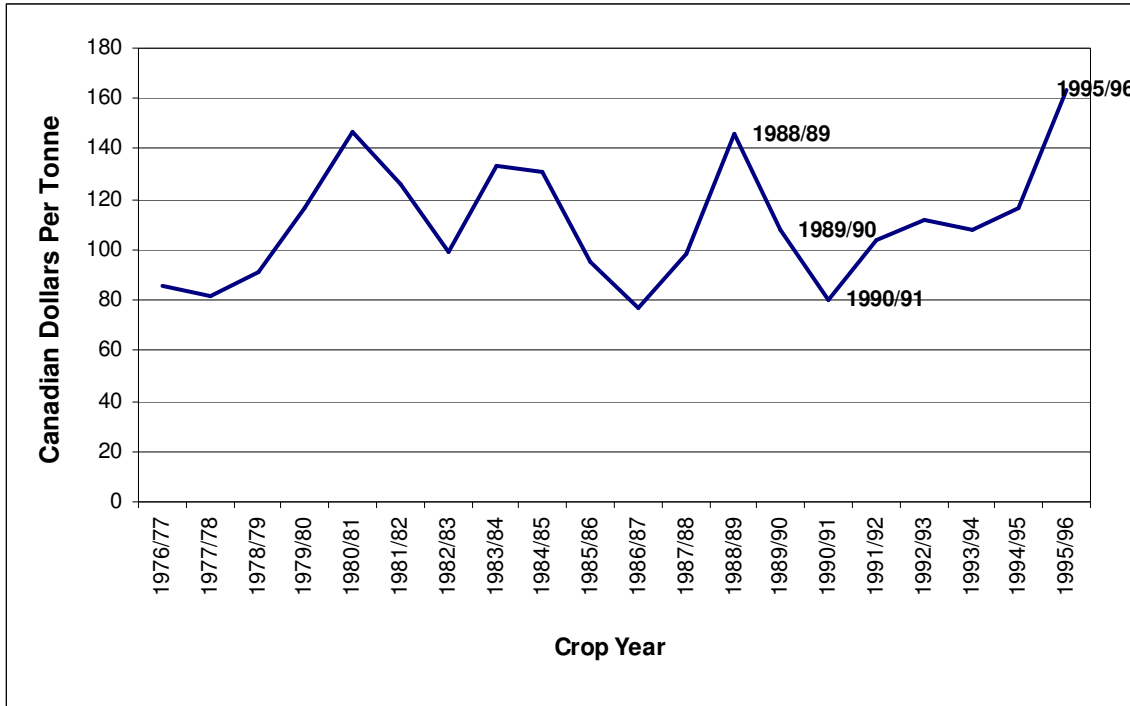
One concern raised by producers during the debate prior to deregulation was that producer returns under the open market system would not be as high under the CWB. Some producers feared that the entrance of many oat sellers would create competition and drive the price of oats down. An examination of the WCE and CBOT cash grain price of oats does indicate that oat prices fell in the 1989/90 crop year; however, this event was not a result of the marketing change. Refer to Figure 7.1 and Figure 7.2

Drought conditions in Canada and the United States in 1988 drove oat prices up, and subsequently resulted in increased oat plantings for the following year. This increased supply of oats in the market for 1989/90 resulted in considerably lower oat prices. In addition to these production problems, the Oat bran craze was gaining popularity in 1988.

Oat prices continued to decline after 1989 until 1990 due to increased supplies and stabilizing demand. In the early 1990's oat prices started to trend upwards and peaked in 1995/96 because of shortages in corn in the US. Corn is generally preferred as a feed source, but in times of shortage oat and barley may be substituted.

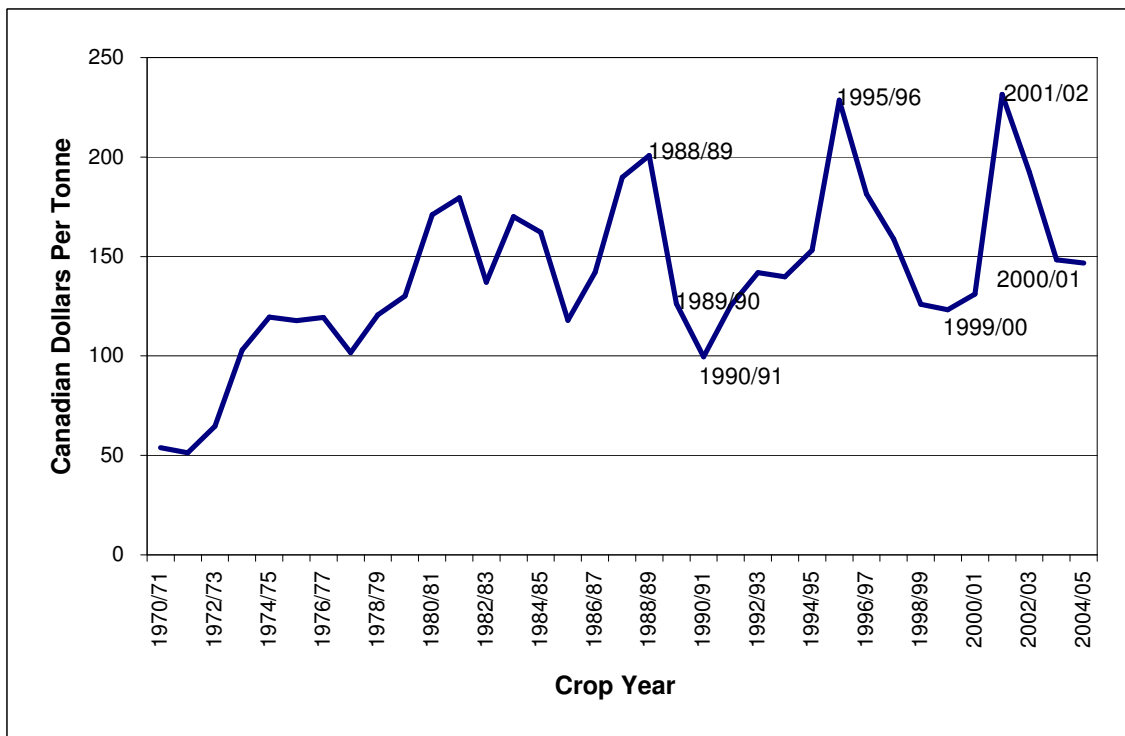
Oats are normally traded as a feedgrain; however, in 1999 oats divorced itself from the feedgrain market and began trading as a food grain. In 2000-2002, western Canadian oat producers began experiencing production problems related to drought and other weather problems. The price of oats rose dramatically from 1999 and peaked in 2001/02. The highest premium on oats was in 2002, when prices increased to \$76 per tonne over corn (White, 2005). In the past four years, oats has been trading at a premium to other feedgrains because of production problems (OatInsight.com, 2005).

**Figure 7.1: WCE Cash Grain Price of No. 1 CW Oats, 1976/77 - 1995/96**



Source: Winnipeg Commodity Exchange. 1976-1996. Cash Grain Prices, monthly closing prices.

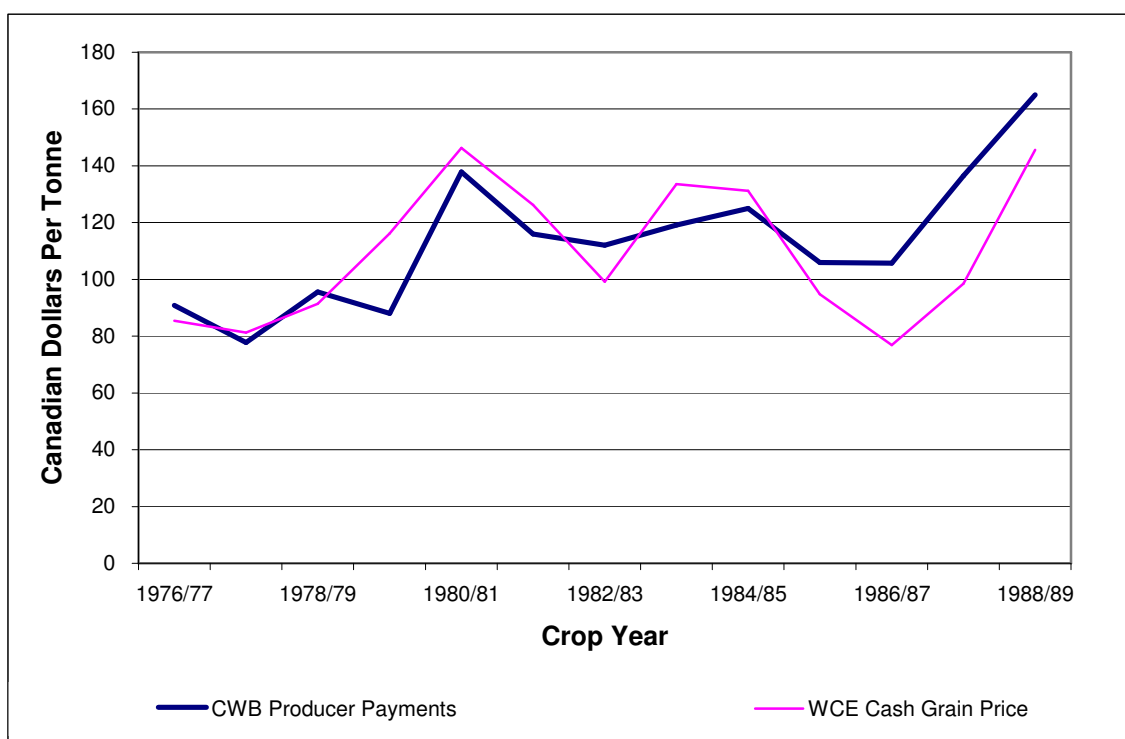
**Figure 7.2: CBOT Average Yearly Cash Grain Price of Oats, 1970/71 - 2003/04**



Source: Chicago Board of Trade. 1970-2004. Cash Grain Prices, monthly closing prices.

Did the CWB obtain higher prices for western Canadian Producers? Figure 7.3 compares the CWB producer payments for oats with the cash grain prices for oats on the WCE. Monthly closing prices were used to calculate the yearly average for cash grain prices on the WCE. The total producer payments reported by the CWB were used in the comparison.

**Figure 7.3: CWB Payments vs. WCE No. 1 CW Oats, 1976/77-1988/89**

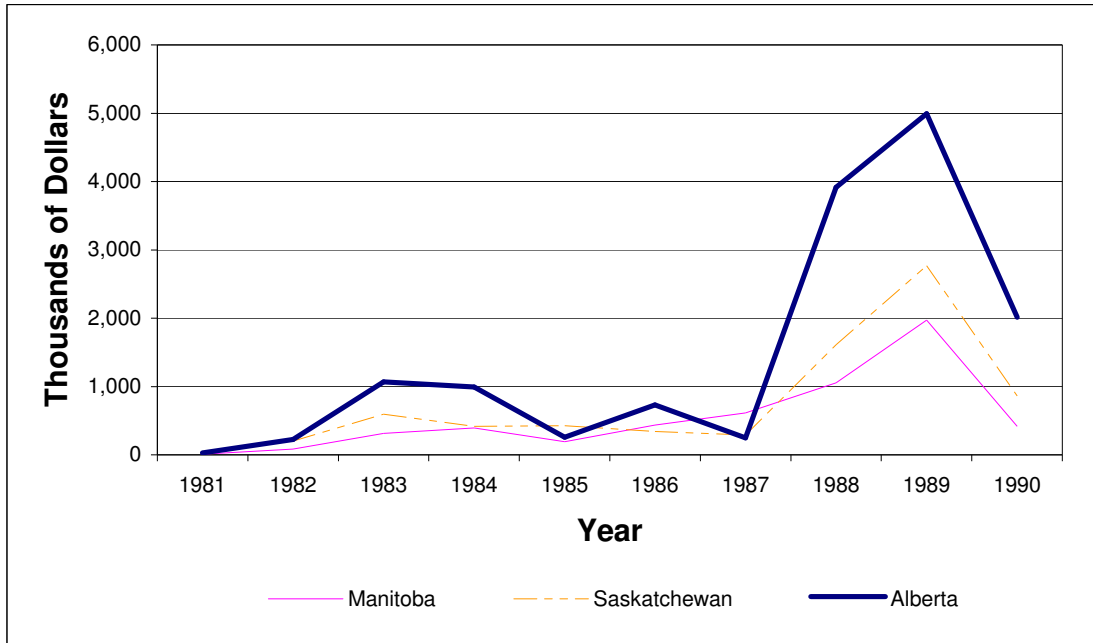


Source: Winnipeg Commodity Exchange. 1976-1989. Cash Grain Prices, monthly closing price. Canadian Grains Council. 1976-1989. CWB total producer payments on Non-Designated Oats. Statistical Handbook.

For the time period examined, crop years 1976/77 – 1988/89, the CWB did not consistently pay higher prices to western Canadian oat producers relative to the WCE. For the crop years 1985/86 and 1988/89 when the CWB did pay higher prices, the CWB ran deficits of \$6.9 million and \$32.4 million respectively (Morrissey, 1996). Total CWB payments for 1981-1989 are displayed in Figure 7.4.

Morrissey conducted a similar analysis in 1996; however, he adjusted CWB producer payments to account for the time value of money. He discounted final producer payments by a rate of 5% per annum over an average six months to account for the time value of money. Morrissey’s findings were similar to the results presented above.

Figure 7.4: CWB payments for oats for 1981-1990

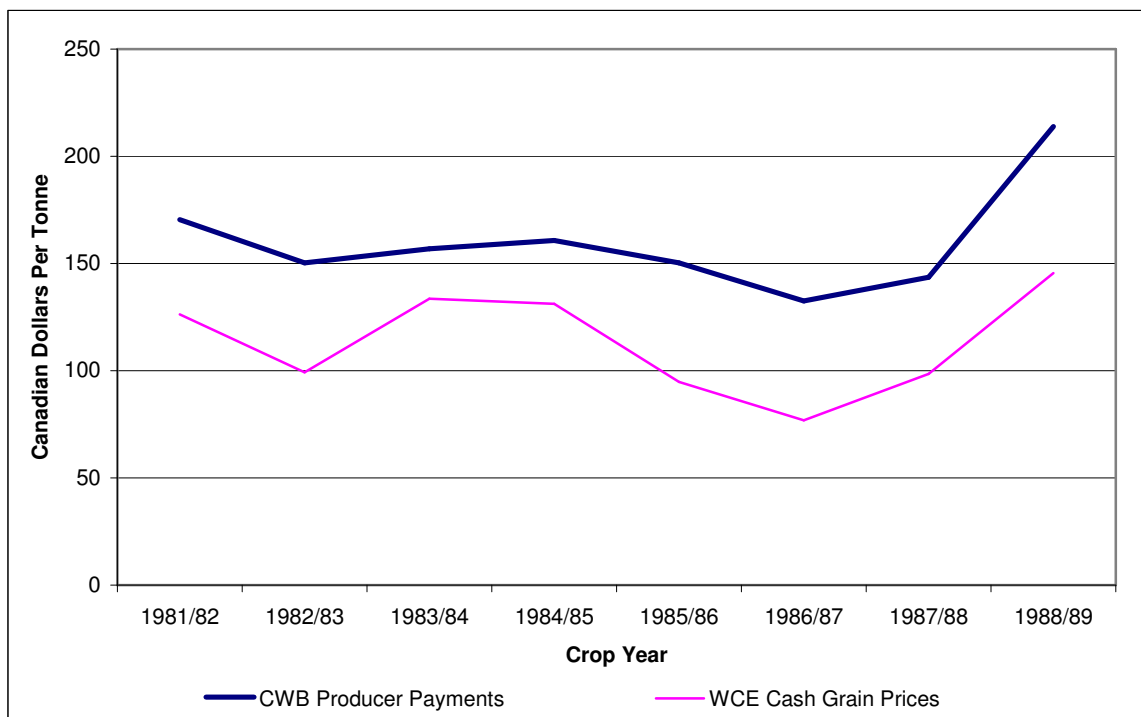


Source: Statistics Canada, 2005. Farm Cash Receipts, Agricultural Economic Statistics, May 2005. Catalogue No. 21-011-XIE .

In 1981, the CWB introduced a designated oat pool that rewarded producers for higher quality oats. Because of quality differences between the CWB designated oats and the lower grades of oats sold on the WCE, it is expected that producer payments from this pool would outperform cash grain prices from the WCE. The designated oat pool was in effect from 1981/82 – 1988/89. Refer to Figure. 7.5.

It is important to note that US processors also experienced quality issues with the designated oats. Because of high foreign matter content and low protein, US customers offered lower prices for the designated oats (Morrissey, 1996). Even though the designated oat pool was a good attempt by the CWB to reward producers for higher quality oats, western Canadian producers continued to receive prices based on lower grades of oats. The selection process used by the CWB for designated oats sent the wrong signals about what quality attributes the market desired.

**Figure 7.5: CWB Producer Payments vs. WCE & CBOT Cash Grain Prices for Designated Oats, 1981/82 - 1988/89**



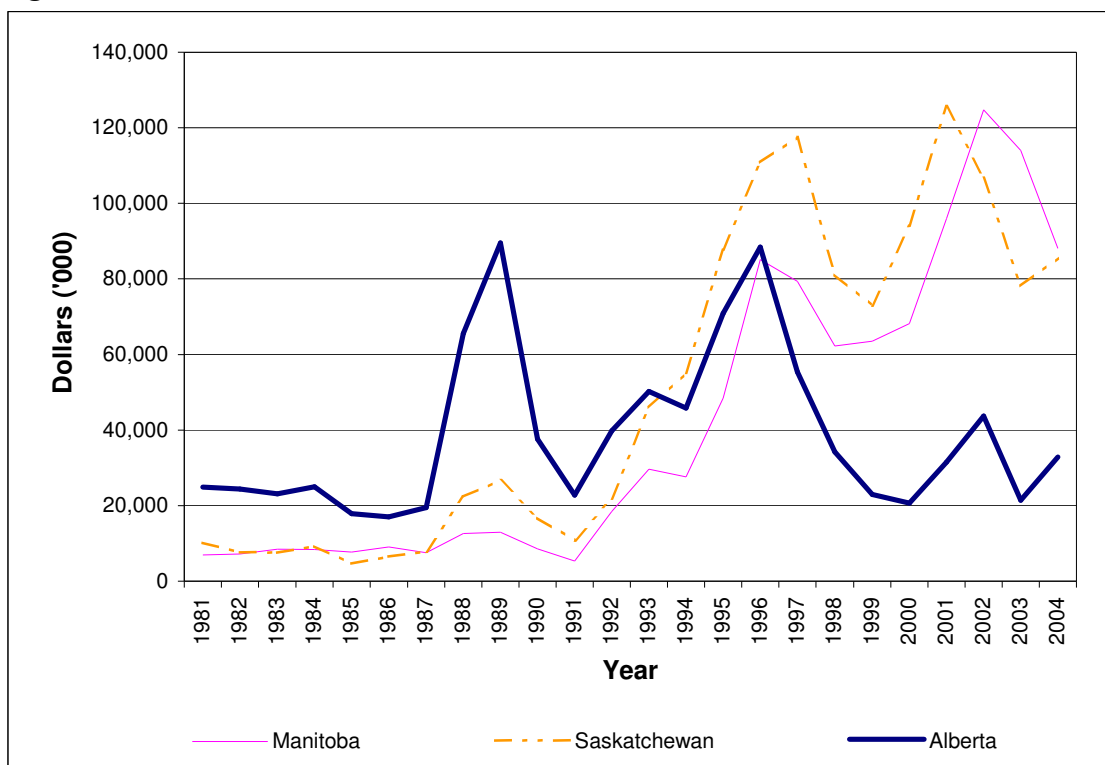
Source: Winnipeg Commodity Exchange. 1976-1989. Cash Grain Prices, monthly closing price. Canadian Grains Council. 1976-1989. CWB total producer payments on Designated Oats. Statistical Handbook

The results of the previous analysis indicate that the CWB was not entirely successful at extracting higher prices for western Canadian oats. Although the designated oat pool paid out higher payments than the WCE, the oats that did not qualify under the pool did not perform as well. To see whether producers have benefited under the open market system, farm cash receipts<sup>10</sup> were examined for 1981-2004 for all three provinces. Refer to Figure 7.6. Total producer revenues prior to 1989 were calculated by adding the CWB payments on oats with farm cash receipts from oats.

Figure 7.6 shows that oat revenues have increased for producers in Manitoba and Saskatchewan since 1991. Despite some lower revenues in 1996-2000, Manitoba and Saskatchewan producers have received increasing revenues on oats. In Alberta, oat revenues have been more variable. Although all three provinces experienced a downward trend in revenue for 1996; the decline in Alberta was more dramatic. Since 1996, Alberta revenues on oats have been considerably less than Manitoba or Saskatchewan. These lower revenues from oats correspond to decreasing oat acreage in the province and reflect changes in producers’ cropping decisions.

<sup>10</sup> Farm cash receipts measure the gross revenue of farm businesses in current dollars. They include sales of crops and livestock products (except sales between farms in the same province) and program payments. Receipts are recorded when the money is paid to farmers before any expenses are paid.

**Figure 7.6: Total Producer Revenues on Oats from 1981-2004**



Source: Statistics Canada. 2005. Farm Cash Receipts. Agricultural Economic Statistics, May 2005. Catalogue No. 21-011-XIE.

Hypothesis testing reveals that the increases in producer revenues for Saskatchewan and Manitoba were statistically significant, but not for Alberta. The same test was performed for western Canadian oat producers as a whole. Producer revenues for western Canada have increased since 1989 and this increase has been statistically significant. Refer to Appendix 3 for the results of the hypothesis on producer revenues.

**Predictions and Concerns**

The predictions made by the Peat Marwick Consulting Group were fairly accurate. Visible price signals and the value of oat futures contract in Winnipeg and Chicago gained in importance. After the marketing change, industry participants began to use the futures market for price discovery and hedging. Unfortunately, in the late 1990’s the low volume of trade in oat futures on the WCE resulted in the de-listing of oat futures. Despite revisions to the WCE oat contracts in 1996, which changed the basis from Thunder Bay to Minneapolis; Canadian market participants continued to use the more liquid US contracts available in Chicago (WCE, 2001).

In addition to increased futures trade in oats, the development of various marketing options for producers increased the responsiveness of the oat market to supply and demand conditions. Grain marketers and producers have embraced the use of forward contracts.

Many industry participants believe this development has contributed significantly to the growth of oat exports.

As predicted, the Canadian oat industry has remained a niche market that is dependent on high quality and cost competitive logistics. The industry is small with a few key players and competition is fierce. The margins for grain handlers and processors have not been as high as predicted. Although there was initial growth in oats after 1989 (largely stimulated by the Oat bran craze), any excess profits have since been eroded by rapid expansion and increased competition.

For producers, the revenue on oats from the open market has increased and exceeded the revenue received under the central desk system. Although other factors such as free trade and decreased US oat production have been equally responsible for increasing producer revenues the open market system has allowed producers to capitalize on the available opportunities with more flexibility. After an initial learning period, western oat producers have been able to respond competitively to price signals.

### **Impacts on the Industry**

The overall consensus in the oat industry is that deregulation has been a positive change. The Canadian oat industry has undergone a process of expansion and evolution. Oat exports have increased considerably, and primary processing of oats has shifted from the US and Eastern Canada to the Prairies. These market developments are not solely attributed to deregulation, but they have been facilitated by the flexibility of the open market system. All industry participants interviewed believe that there have been no real losers in deregulation. All players – farmers, grain handlers, processors and end users have benefited from the marketing change.

#### *Producers*

Western Canadian producers have gained marketing skills and knowledge under the open market system. They have experienced increased revenues, and greater flexibility and choice in marketing oats. The distribution of benefits has not been equitable and producers in Saskatchewan and Manitoba have gained relative to Alberta producers. This result is attributed to the removal of the Crow Benefit and changes in the relative viability of other crops like wheat, barley and canola. Overall, oats have increased in commercial importance to western Canadian producers.

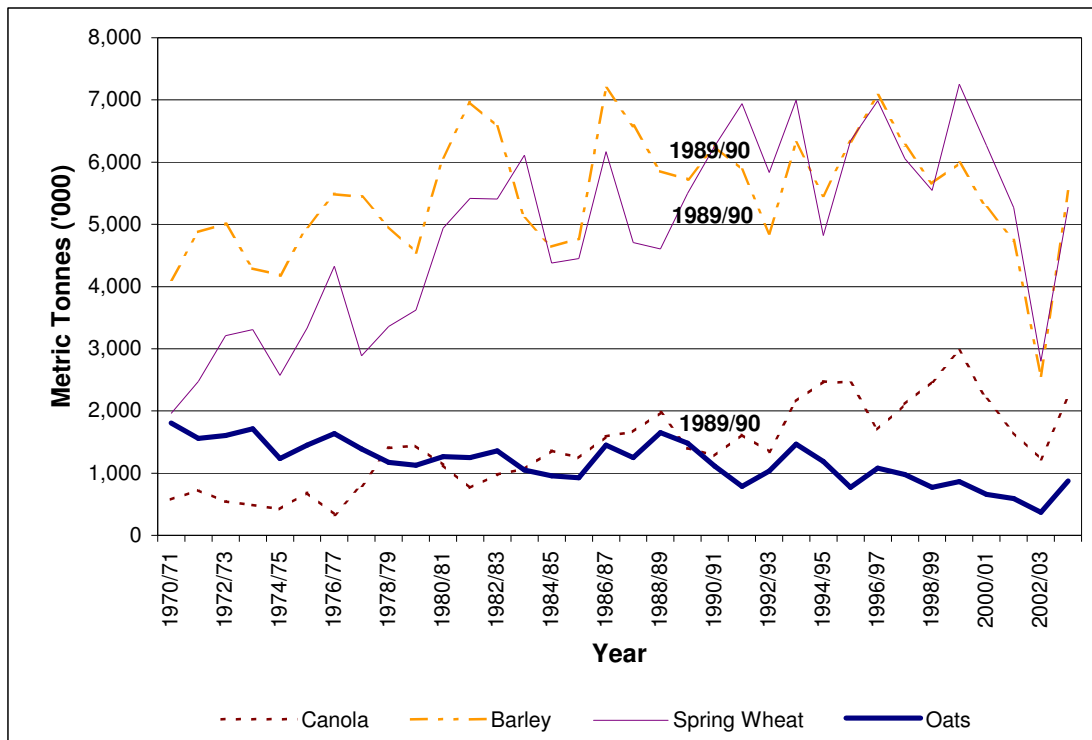
Alberta oat producers have felt the impact of the removal of the WGTA in 1995. For Alberta producers, the subsidy was both beneficial and constraining. Some producers felt the Crow Benefit prevented them from fully exploiting the US market, as oat shipments were often delayed from Thunder Bay. Companies like General Mills began to question the reliability of Canadian oat exports (Jones, 1994). Prior to 1995, some Alberta producers were critical of the Crow Benefit and felt that a lower cost delivery system was possible (Jones, 1994).

Ten years later, the elimination of the Crow Benefit has caused a shift in oat production from the western Prairies to the eastern Prairies. For Alberta producers, the high cost of shipping oats to the US milling market has made oats less profitable. Alberta pony oats, destined for the Southern US horsing racing markets, are still viable; however, there is intense competition from countries such as Sweden and Finland.

Alberta producer revenues from oats have been below Saskatchewan and Manitoba since 1996/97, and oat production has lagged behind Saskatchewan and Manitoba since 1999/2000. Does this decrease in production and revenue imply that Alberta oat producers have not benefited from the marketing change? No.

One industry observer suggests that Alberta oat producers have simply substituted oats with more viable crop alternatives. Alberta’s spatial proximity to west coast ports has made wheat and barley more attractive, and the emergence of canola as a viable rotation crop has also been cited as a possible factor in decreasing oat production and acreage in Alberta. In addition, the growth in Alberta’s livestock industry encouraged the use of oats for greenfeed and silage. Please refer to Figure 7.7.

**Figure 7.7: Alberta Crop Production, 1970/71- 2003/04**



Source: Statistics Canada. 2005. Field Crop Reporting Series. Catalogue 22-002.

Alberta’s Peace Region is an ideal location for growing high quality oats, yet its distance from the US milling market puts producers at a disadvantage. This shift in production from the western to eastern Prairies suggests that having a physical advantage in regards to growing conditions does not guarantee a dominant market position. Although some industry observers claim that the lower protein content in Alberta oats is less desirable, this

characteristic can easily be met by growing high protein varieties suitable for Alberta. The comparative advantage of Saskatchewan and Manitoba lies primarily in their proximity to the US milling market and secondly in their ability to provide the required specifications demanded by customers.

#### *Processors and Grain Handlers*

For grain handlers and processors, deregulation has been positive. The ability to interact directly with producers and end users has meant the clear and direct transmission of price signals and quality information. Forward contracts have increased the firms' flexibility in responding to market opportunities, as well as decreasing the uncertainty regarding supply.

For western Canada, the open market system has contributed to the growth in primary processing. For some processors, the open market for oats has played a part in their decision to invest in a processing facility. The deregulation of oats has resulted in less perceived barriers to entry, as potential new entrants were concerned about dealing with the CWB. There was a fear among new entrants that the CWB could set arbitrarily high prices for oats. In addition, the open market system allows grain handlers and processors to originate the source of oats and to freely control the logistics of their operations.

#### *End Users*

The open market system in Canada has enabled US end users to source oats affordably despite declining oat production in the United States. The increased interaction with Canadian producers and processors has improved supply logistics and the CGC's revisions in grading standards have also made it easier for end users to procure oats. Originating and selecting oats by quality specifications has been easier under the open market system.

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## 8.0. Conclusion

It has been close to 15 years since oats were removed from the CWB mandate and industry experts agree that the move from the central desk system to the open market was a good decision. By the late 1980's, the oat market in North America had evolved into low volume, specification merchandising. The structure of the CWB had become incompatible with the evolution of the oat market. The CWB had tried unsuccessfully to respond to some of these market changes, but the low volume of trade in oats, which was insignificant compared to wheat and barley, was an indication that the central desk system was not working for the Canadian oat industry.

In 1988/89, the last year the CWB was in control of oats, less than 10% of the total oats grown in western Canada was marketed under the central desk system (Aiken et. al, 1998). Some industry experts have argued that the CWB lacked the expertise to market oats. Others have argued that the CWB did not devote enough resources to oat marketing, which was being handled under the barley desk. Whatever the reason, there was mounting concern about the CWB's effectiveness in marketing oats. In January 1989, the federal government no longer believed there was a rationale for the CWB to continue oat marketing.

The decision to remove oats from the CWB mandate was largely supported by industry. Since 1989, the open market has contributed to many positive developments in the Canadian oat industry. Some of these developments include: increased exports of oat grain and oat products, increased market share in the US milling market, increased primary processing, and improved financial viability of oats for western Canadian producers

These developments were not the result of deregulation alone. Other structural changes that have influenced the Canadian oat industry include: the removal of the WGTA, the introduction of CUSFTA and NAFTA, the Oat bran craze, the decline in US oat production and the advances in oat germ plasm and further processing. The oat market that has emerged in Canada over the past 15 years is the synthesis of all these changes.

Under the open market, the Canadian oat industry has become more flexible and responsive to supply and demand conditions. One of the most important outcomes of the marketing change has been the ability to forward contract. Many industry experts believe forward contracting has been responsible for increasing Canadian oat exports to the United States. Other important outcomes include: the increased importance of the futures market, the development of marketing expertise within grain companies and producers, the development of marketing options and risk management tools, greater communication among market participants, and the transmission of clearer market signals to producers. These outcomes have increased the efficiency of the North America oat market and have made Canada the largest exporter of oats in the world.

Over the past 15 years, there have been changes in oat production and harvested acreage in western Canada. These changes have largely been a result of the removal of the WGTA. Oat production and harvested acreage has shifted from the western Prairies to the eastern

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Prairies in response to changes in competitive advantage. Due to their proximity to the US milling market, the removal of the Crow transportation subsidy renewed Manitoba and Saskatchewan's competitive advantage over Alberta. Alberta producers and processors have responded by pursuing new markets or adopting other viable crop alternatives such as wheat, barely or canola.

The open market has been beneficial for the whole industry. In this report, an analysis of producer revenues under the open market was examined and compared with the producer revenues under the CWB. Although the distribution of benefits has not been equal, western Canadian producers appear to have gained higher revenues under the open market. Since 1989, oats have gained in commercial importance and the human food and export markets for oats have become further developed. Grain traders, processors and end users have also benefited from increased communication and direct interaction with producers. The results have been improved logistics and grading standards, better translation of price signals, and the ability to source oats and specify quality attributes.

This case study on oats provides some valuable insights about how an industry responds to a structural change in marketing. The oats experience identifies some important lessons that can be applied to other industries experiencing the transition from the central desk system to the open market:

- ***For oats, the transition period lasted approximately 2-3 years. This period was characterized by intense learning through increased communication and interaction.*** The transition period can be facilitated by improving information exchange and access to information. The development of public and private sources of information for price discovery, production, marketing and risk management are important to ensuring a smooth transition for all market participants.
- ***The open market has allowed oat producers to acquire strong skills in marketing and risk management.*** This process can be facilitated during the transition period by educating producers about risk management tools and marketing options.
- ***Under the open market, the oat futures market became an important tool for price discovery and hedging.*** During the transition, education and awareness on the futures market should be provided to all market participants.
- ***The open market helped identify problems with Canada's oat grading standards, which impeded further oat trade the United States.*** Government grading standards should be reviewed and if necessary, revised in cooperation with industry. It is important to consider harmonizing grading standards with Canada's largest export markets to ensure that market opportunities are not lost.
- ***The marketing change and the removal of the WGTA changed the competitive advantage of producers in Manitoba and Saskatchewan with respect to producers in Alberta.*** It is important to understand the nature of competitive advantage of producers in regards to production and logistics. This knowledge can be used to assist producers in pursuing markets that exploit their competitive advantage.

- ***Cost competitive logistics are important to pursuing markets and gaining market share in oats.*** Facilitating the development of cost efficient shipping alternatives for producers is necessary.
- ***Primary processing in oats is a low margin business.*** The development of a viable secondary processing sector should be facilitated to ensure continued growth and/or maintain sustainability of oat production and primary processing.

The Canadian oat industry has adopted the open market system with relative ease. It is difficult to predict whether other industries like wheat and barley would experience the same transition. Oats is a specialty market with a handful of end users in the milling market and many low volume purchasers in the performance and feed markets. The global trade in oats is minuscule and the largest importer the US, represents 85% of the demand. These factors should all be considered when applying the oats experience to other industries. Nevertheless, oats is a good example of how the open market is more efficient and effective at responding to the forces of supply and demand.

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**Appendix 1 - Cost and Return for Oats in the Prairies**

All data was collected for Black Soil zones except in Manitoba where cost and return data is not broken down into soil zones. Direct seeded stubble was used to try and avert any differences in seeding preference. Revenues for Saskatchewan and Manitoba came from historical numbers on oat yield and price. Alberta revenues came from what producers reported their income to be. In terms of cost, there are some categories, which are directly comparable such as seed, fertilizer and pesticide costs. However, categories like labour and repairs needed to be aggregated to make a catch all category. This then made the comparison a lot more feasible. Table 1 contains a breakdown of which costs were used and what comparisons were made between the provinces.

Saskatchewan’s data was collected from the annual “Crop Planning Guide”. Manitoba’s data was collected from the annual “Guidelines for Estimating Crop Production Costs”. Alberta’s data was collected from the annual “AgriProfit\$: Cost and Return Profiles for Selected Crops”.

Table 1: Comparison of categories used for each province to calculate variable costs.

Manitoba	Saskatchewan	Alberta
Seed	Seed	Seed
Fertilizer	Fertilizer	Fertilizer
Chemicals	Chemicals	Chemicals
Fuel	Fuel	Fuel, Trucking and Marketing
Land Taxes, Other Costs	Prop. Taxes, Utilities, Insurance	Utilities, Taxes, Insurance
Machinery Op. Costs	Machinery Repairs	Machinery Repairs
Labour Costs	Custom Work and Labour	Paid and Unpaid Labour, Custom Work
Operating Interest	Operating Interest	Operating Interest

Novak, Joe. (1989-2002). Crop Planning Guide: Black Soil Zone. *Saskatchewan Agriculture, Food and Rural Development*.

Kyle, Keith. (1994-2002). Guidelines for Estimating Crop Production Costs. *Manitoba Agriculture and Food*.

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## Appendix 2 – Production and Harvested Oat Acreage Changes

### Hypothesis testing – Production and Harvested Oat Acreage

A two-sample t-test was used to test the significance of the changes in oat production and harvested acreage since 1989. For this hypothesis test, the following assumptions must be made: the populations have normal probability distributions and (2) the variances of the populations are equal.

The aim of the t-test is to assess whether the average production and acreage for oats from 1970-1989 is significantly different from the average production and acreage from 1990-2004 for each of the provinces. Observations made from 1970-1989 were treated as a separate population from observations made from 1990-2004. If there is no significant difference between the two populations, their means should be equal.

The hypothesis test can be stated as follows:

$$\begin{aligned} \text{Null Hypothesis:} & \quad \mu^1 = \mu^2 \text{ or } (\mu^1 - \mu^2) = 0 \\ \text{Alternative Hypothesis:} & \quad \mu^1 \neq \mu^2 \text{ or } (\mu^1 - \mu^2) \neq 0 \end{aligned}$$

With  $\mu^1$  = mean of oat production or harvested acreage from 1970-1989  
 $\mu^2$  = mean of oat production or harvested acreage from 1990-2004

For  $\mu^2$ , the crop years 2001-2002 and 2002-2003 were excluded because of severe drought conditions, which decreased production.

The sample size is less than 30 observations, so the t-statistic is used. The t-test is defined as follows:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{s^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Table 1: Summary of T-Statistics for oat production changes

	Two Sample T-Test, $\mu^1 = 1970-1989$ , $\mu^2 = 1990-2004$		
	Alberta	Saskatchewan	Manitoba
t-statistic	3.83	-1.24	-0.75
Critical t-statistic, two tailed	$\pm 2.04$	$\pm 2.04$	$\pm 2.04$
Statistical significance	$3.83 > 2.04$ , Statistically significant	$-2.04 < -1.24$ , Not statistically significant	$-2.04 < -0.75$ , Not statistically significant

The two-tailed critical t-statistic is  $\pm 2.04$  with a 0.05 level of significance. In order for production changes to be statistically significant, the t-statistic obtained for each province must be greater than 2.04 or less than -2.04. The t-statistic obtained for Alberta is 3.83, which means production changes have been statistically significant. The positive value of the t-statistic suggests that the average production in period 1 (1970-1989) is greater than the average production in period 2 (1990-2004). Oats production in Alberta has been decreasing since 1989.

For Manitoba and Saskatchewan, the t-statistics were  $-0.75$  and  $-1.24$  respectively. Both t-statistics are greater than  $-2.04$ , the critical t-statistic. The negative value of the t-statistics means that average production in period 1 is less than average production in period 2. These results suggest that production in Manitoba and Saskatchewan have increased, but are not statistically significant.

The results of the hypothesis testing for production are presented below:

Table 2: Alberta

	<i>Variable 1</i>	<i>Variable 2</i>
<b>Mean</b>	1359.5789	1004.9231
<b>Variance</b>	65849.056	67025.327
<b>Observations</b>	19	13
<b>Pooled Variance</b>	66319.564	
<b>Hypothesized Mean Difference</b>	0	
<b>df</b>	30	
<b>t Stat</b>	3.8261308	
<b>P(T&lt;=t) one-tail</b>	0.0003072	
<b>t Critical one-tail</b>	1.6972604	
<b>P(T&lt;=t) two-tail</b>	0.0006143	
<b>t Critical two-tail</b>	2.0422704	

Table 3: Saskatchewan

	<i>Variable 1</i>	<i>Variable 2</i>
<b>Mean</b>	987.82105	1175.4077
<b>Variance</b>	164114.18	198038.31
<b>Observations</b>	19	13
<b>Pooled Variance</b>	177683.83	
<b>Hypothesized Mean Difference</b>	0	
<b>df</b>	30	
<b>t Stat</b>	-1.2363785	
<b>P(T&lt;=t) one-tail</b>	0.1129553	
<b>t Critical one-tail</b>	1.6972604	
<b>P(T&lt;=t) two-tail</b>	0.2259106	
<b>t Critical two-tail</b>	2.0422704	

Table 4: Manitoba

	<i>Variable 1</i>	<i>Variable 2</i>
<b>Mean</b>	617.34737	693.52308
<b>Variance</b>	71293.598	90227.22
<b>Observations</b>	19	13
<b>Pooled Variance</b>	78867.047	
<b>Hypothesized Mean Difference</b>	0	
<b>df</b>	30	
<b>t Stat</b>	-0.7536023	
<b>P(T&lt;=t) one-tail</b>	0.2284811	
<b>t Critical one-tail</b>	1.6972604	
<b>P(T&lt;=t) two-tail</b>	0.4569623	
<b>t Critical two-tail</b>	2.0422704	

A two-sample t-test was also done for western Canada. The results suggest that oats production in western Canada has not change significantly. The t-statistic obtained for western Canada was 0.31. Western Canada has maintained overall production levels, but has shifted production for the Alberta to Saskatchewan and Manitoba. Results from the two-sample t-test are presented in Table 4.

Table 5: Western Canada

	<i>Variable 1</i>	<i>Variable 2</i>
<b>Mean</b>	3023.2684	2935.8769
<b>Variance</b>	735146.91	465537.84
<b>Observations</b>	19	13
<b>Pooled Variance</b>	627303.28	
<b>Hypothesized Mean Difference</b>	0	
<b>df</b>	30	
<b>t Stat</b>	0.3065518	
<b>P(T&lt;=t) one-tail</b>	0.3806511	
<b>t Critical one-tail</b>	1.6972604	
<b>P(T&lt;=t) two-tail</b>	0.7613021	
<b>t Critical two-tail</b>	2.0422704	

### Harvested Oat Acreage

A two-sample t-test was also done for harvested acreage in Alberta, Saskatchewan and Manitoba. Harvested acreage changes were significant for Alberta, but not for Saskatchewan and Manitoba. Alberta harvested acreage has been decreasing since 1989. The two-tailed critical t-statistic is  $\pm 2.04$  with a 0.05 level of significance.

Table 6: Summary of T-Statistics for harvested oat acreage changes

	<b>Two Sample T-Test, <math>\mu^1 = 1970-1989, \mu^2 = 1990-2004</math></b>		
	Alberta	Saskatchewan	Manitoba
t-statistic	4.62	-0.09	1.27
Critical t-statistic, two tailed	$\pm 2.04$	$\pm 2.04$	$\pm 2.04$
Statistical significance	4.62 > 2.04, Statistically significant	-2.04 < -0.09, Not statistically significant	2.04 < 1.27, Not statistically significant

The results of the hypothesis testing for harvested acreage are as follows:

Table 7: Alberta

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	609.8842	408.4154
Variance	15763.71	13081.03
Observations	19	13
Pooled Variance	14690.64	
Hypothesized Mean Difference	0	
df	30	
t Stat	4.618075	
P(T<=t) one-tail	3.42E-05	
t Critical one-tail	1.69726	
P(T<=t) two-tail	6.83E-05	
t Critical two-tail	2.04227	

Table 8: Saskatchewan

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	523.1158	529.3846
Variance	38351.01	27972.34
Observations	19	13
Pooled Variance	34199.54	
Hypothesized Mean Difference	0	
df	30	
t Stat	-0.09418	
P(T<=t) one-tail	0.462797	
t Critical one-tail	1.69726	
P(T<=t) two-tail	0.925594	
t Critical two-tail	2.04227	

Table 9: Manitoba

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	443.8789	263.3154
Variance	253458.8	7870.05
Observations	19	13
Pooled Variance	155223.3	
Hypothesized Mean Difference	0	
df	30	
t Stat	1.273284	
P(T<=t) one-tail	0.106348	
t Critical one-tail	1.69726	
P(T<=t) two-tail	0.212696	
t Critical two-tail	2.04227	

Table 10: Western Canada

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	1603.679	1226.5
Variance	416677.2	58101.21
Observations	19	13
Pooled Variance	273246.8	
Hypothesized Mean Difference	0	
df	30	
t Stat	2.004672	
P(T<=t) one-tail	0.027048	
t Critical one-tail	1.69726	
P(T<=t) two-tail	0.054096	
t Critical two-tail	2.04227	

## Appendix 3 – Producer Revenues

### Hypothesis testing – Producer Revenues

A two-sample t-test was used to test the significance of the changes in produce revenues from oats since 1989. For this hypothesis test, the following assumptions must be made: the populations have normal probability distributions and (2) the variances of the populations are equal.

The aim of the t-test is to assess whether the producer revenues from 1981-1989 are significantly different from the producer revenues for 1990-2004 for each of the provinces. Observations made from 1981-1989 were treated as a separate population from observations made from 1990-2004. The observations made from 1981-1989 include CBW producer payments, while observations made from 1990-2004 only include farm cash receipts from oats. If there is no significant difference between the two populations, their means should be equal.

The hypothesis test can be stated as follows:

$$\begin{array}{ll} \text{Null Hypothesis:} & \mu^1 = \mu^2 \text{ or } (\mu^1 - \mu^2) = 0 \\ \text{Alternative Hypothesis:} & \mu^1 \neq \mu^2 \text{ or } (\mu^1 - \mu^2) \neq 0 \end{array}$$

With  $\mu^1$  = mean of producer revenues from 1981-1989  
 $\mu^2$  = mean of producer revenues from 1990-2004

The sample size is less than 30 observations, so the t-statistic is used. The t-test is defined as follows:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{s^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

The two-tailed critical t-statistic is  $\pm 2.07$ . In order changes in producer revenues to be statistically significant, the t-statistic obtained for each province must be greater than 2.07 or less than -2.07.

Table 1: Summary of T-Statistics for Producer Revenues

	<b>Two Sample T-Test, <math>\mu^1 = 1970-1989, \mu^2 = 1990-2004</math></b>		
	Alberta	Saskatchewan	Manitoba
t-statistic	-0.78	-5.01	-4.14
Critical t-statistic, two tailed	$\pm 2.07$	$\pm 2.07$	$\pm 2.07$
Statistical significance	-0.78 > - 2.07, Not statistically significant	-2.07 > -5.01, Statistically significant	-2.07 > -4.14, Statistically significant

The results of the hypothesis testing for producer revenues are presented below:

Table 2: Manitoba Producer Revenues

	<b>Variable 1</b>	<b>Variable 2</b>
Mean	8987.111	61291.07
Variance	5078763	1.41E+09
Observations	9	15
Pooled Variance	8.99E+08	
Hypothesized Mean Difference	0	
df	22	
t Stat	-4.1384	
P(T<=t) one-tail	0.000215	
t Critical one-tail	1.717144	
P(T<=t) two-tail	0.00043	
t Critical two-tail	2.073875	

Table 3: Saskatchewan Producer Revenues

	<b>Variable 1</b>	<b>Variable 2</b>
Mean	11393.22	74081.2
Variance	58914379	1.35E+09
Observations	9	15
Pooled Variance	8.82E+08	
Hypothesized Mean Difference	0	
df	22	
t Stat	-5.00721	
P(T<=t) one-tail	2.59E-05	
t Critical one-tail	1.717144	
P(T<=t) two-tail	5.18E-05	
t Critical two-tail	2.073875	

Table 4: Alberta Producer Revenues

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	34099.67	41208
Variance	6.52E+08	3.66E+08
Observations	9	15
Pooled Variance	4.7E+08	
Hypothesized Mean Difference	0	
df	22	
t Stat	-0.7777	
P(T<=t) one-tail	0.222514	
t Critical one-tail	1.717144	
P(T<=t) two-tail	0.445028	
t Critical two-tail	2.073875	

Table 5: Western Canadian Producer Revenues

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	54480	176580.3
Variance	1.24E+09	5.9E+09
Observations	9	15
Pooled Variance	4.2E+09	
Hypothesized Mean Difference	0	
df	22	
t Stat	-4.46679	
P(T<=t) one-tail	9.65E-05	
t Critical one-tail	1.717144	
P(T<=t) two-tail	0.000193	
t Critical two-tail	2.073875	

The t-statistic for western Canadian producer revenues is - 4.14, which is less than the critical t-statistic of - 2.07. This result is statistically significant and indicates that Western Canadian oat producers have obtained higher revenues during period 2 (1990-2004) than period 1. Overall, producer revenues have increased for Western oat producers since 1989.

## Appendix 4 – Profile of Processors

**Westglen Milling; Div. Of ConAgra Foods**

Employment Size: 22 employees

Location: Barrhead, AB.

Tel.: 780-674-3960

Toll free: 1-800-328-4819

Website: <http://www.conagra.com/>

Manager: Dave Horner

Plant Manager: Michael (Mick) Noel

Established: 1989

Product(s): Processed oats (flakes, flour, groats, steel cut oats, oat bran). Processed barley (flakes, flour, pot and pearl).

Westglen Milling is registered as an international exporter.

Markets for oat products: United States, Central America, China.

Major Competitors: Chile, Finland, Sweden.

Annual Production: 44,900,000 lbs/year or 20,367 tonnes/ year

Shipments: bulk, sack.

Storage Capacity: oats 162,500 bushels and barley 12,800 bushels

Shipment packaging includes a 50 lb. bag or 2,000 lb. totes or rail car.

Can produce kosher products or kosher versions. Has experience in organic processing

Notes:

The business is characterized with low margins and high output, operating 24/7, 345 days/year. They are significantly involved in promoting worker safety. They have become HACCP approved. Westglen is the third largest oat mill in North America.

Supported deregulation of the industry due to the enhanced ability to search for new markets and expansion of the industry.

Currently do not have an operational rail line near their facility due to rail line abandonment by Canadian National Railway, in 2000. Have tried to dispute the decision with the Canadian Transportation Agency; but, did not overturn the decision.

**Alberta Oats Milling Ltd.**

Employment Size: 10 employees

Location: Namao, AB.

Tel: 780-973-2335

Website: <http://www.albertaoats.com/>

President & General Manager: Kerry Keating

Plant Manager: Brad Spence

Established: 1989; Pony oats production line constructed afterwards.

Product(s): Milling oats (Oat groats, steel-cut groats, steel-cut groat chips) and Pony oats. Feed by-products include double-cleaned, single-cleaned heavy feed, oat hulls.

Alberta Oats is a registered international exporter.

Markets: South America, Central America, Japan, and the United States

Major Competitors: Chile, the European Union, and various pony oat processors in Alberta.

Capacity: 120,000 tonne

Shipments: bulk, sack

Storage: 10,500 tonne

Packaging: 2,000 lb. totes, 88 lb. bag, bulk railcar, inter-model and vessel container.

Notes:

John Bokenfohr started the operation. John was in charge of the operation until August 21, 2003 when the company filed for bankruptcy. The receiver was Price Waterhouse Coopers. Since then, the plant has re-organized and is fully operational.

The plant is not HACCP approved, but that is due to most of their customers not requiring HACCP compliance. They did indicate that HACCP approval would not be a difficult process to get approved.

The company sees deregulation as being a beneficial change for the industry. They prefer buying and selling from several competitors rather than just one.

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**Can-Oats Milling; a subsidiary of the Saskatchewan Wheat Pool**

Employment Size:

Location(s): Portage la Prairie, Manitoba                      Martensville, Saskatchewan  
Tel.: (204) 857-9700    Tel.: (306) 975-0083  
Website: <http://www.can-oat.com/>

President: Karl Gerrand    Manager: Dave Thiessen  
Manager of oat procurement: Dennis Galbraith

Established: Manitoba est. 1990    Saskatchewan est. 1997

Product(s): Milling oats (rolled oats, oat bran, steel cut oat groats, whole oat flour, and whole bran flour).

Can-oats Milling is registered as an international exporter.

Markets for oat products: United States, Mexico, Central America, the Carribean, South America, and Australia.

Major Competitors: Grain Millers and Con Agra.

Capacity: 100,000 tonnes  
Shipments: bulk, sack.  
Storage Capacity: 10 days

The company has experience in processing organic oats.

Notes:

Can-Oats Milling research and development is done in-house through their own department that is owned by the Saskatchewan Wheat Pool. They are also involved in funding the Prairie Oat Consortium, and research at AAFC Lacombe, the Crop Development Centre in Saskatoon, Indian Head Research, and the University of Manitoba.

Most of the oats procured comes from both Saskatchewan and Manitoba. The Martensville plant does source product from North Eastern Alberta.

The company has found that deregulation has been positive for the oat industry.

**Grain Millers; formerly Popowich Milling Corp.**

Employment Size:

Location(s): Yorkton, Saskatchewan  
Tel.: (306) 783-2981  
Website: <http://www.popowichmilling.com/>

President: Rick Schwein  
Manager: Ian Slimmon  
Manager of oat procurement: Terry Tyson

Established: 1983; 1997 they built a new plant; taken over by Grain Millers 2001; increased capacity 2002

Product(s): Milling oats (oat flour, oat bran, and oat groats), finished oats (instant oatmeal, quick oats, hand held oats [such as granola bars]), and organic oats.

Grain Millers milling is registered as an international exporter.  
Markets for oat products: United States, Canada, Mexico, overseas.

Major Competitors: Can-Oat Milling, Quaker Oats, and General Mills.

Capacity: 60,000 tonnes  
Shipments: bulk, sack.

Notes:

The company is the most significant processor of Canadian organic oats. They have 2 mills, one of which is solely dedicated to organic processing.

The company involvement in research includes being a part of the Prairie Oat Consortium.

Organic oats are procured from all over western Canada, including Peace River to the eastern Prairies. Conventional oats are sourced from local growers and a little from northern Alberta.

Grain Millers believe deregulation was positive for the industry noting its significant growth 3-4 years after deregulation. They also mentioned that deregulation helped promote Canada's quality to international buyers.