The Canadian Barley Industry in Transition:

A Study for Alberta Agriculture, Food and Rural Development

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SPARKS COMPANIES INC.

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Executive Summary

The purpose of this analysis is to take a detailed and critical look at the Western Canadian barley industry in view of many recent changes, as well as anticipated trends and changes yet to come. Trends in global and North American markets and policies are featured as well as Canadian domestic production and policy trends. Both feed and malting industries are reviewed in these terms.

This report has three main components found in six sections (plus appendices). The major components are: (1) Global and North American market overview and outlook; (2) Canadian competitiveness issues, and; (3) Canadian Wheat Board issues. Although clearly there are some over-arching issues between these categories, an attempt is made to deal with each individually.

Due to the significant involvement of the Canadian Wheat Board (CWB) in the barley industry in Western Canada, this report includes a detailed assessment of the CWB's activities in barley markets. However, this analysis does not address the philosophical debate concerning the relative benefits of a central-desk selling agency or the open market. Rather it considers relevant and accessible data as well as input from practitioners within the grain trade in order to assess the ability of the current CWB system to perform and to provide benefit.

A summary of the key findings and conclusions of this study follows.

Market Overview and Outlook

- Canadian feed barley exports peeked at 6.25 million tonnes (mmt) in 1986-87 when domestic feed consumption was estimated to be 7.14 mmt. Since then, exports of feed barley have dwindled to virtually insignificant amounts – total feed barley exports in the 2001-02 crop year were about 30,000 tonnes – while domestic feed consumption has risen to the 10 mmt tonne area.
- Countries of the FSU, which had once been large buyers of Canadian barley, are now poised to be major exporters of barley, Russia and Ukraine in particular. These countries are better positioned to supply the major feed barley markets of North Africa and the Middle East, which are expected to as such as demand in those regions continues to grow. At best, Canada will be a residual supplier.

- Whereas Japan at one time bought all feed barley imports through the Ministry of Food (the Japanese Food Agency), increasingly it is adopting procedures that allow for private, commercial transactions. Moreover, our research determined that Japan favours barley from Australia over all other sources.
- Malt and malting barley usage in Asian markets is projected to increase by 2.5 mmt through to 2010. China is expected to account for over 60% of this increase, itself doubling in malt demand from 1.6 mmt to 3.2 mmt. Indeed, the CWB has announced that it sees China as the most important malting barley market for Canada and expects to develop this market for Canadian malting barley. Secondarily, North and South America are seen as important markets for Canadian malting barley and malt.
- With the exception of certain localized demand for feed barley (such as in the Pacific North West and California), current and recent trends indicate that barley acreage in the US is primarily for malt. Growth in US brewing demand is projected to be in line with population growth. Mexican malt demand is expected to increase about 5% over the next few years, generating increased import demand from either the US or Canada.
- Canadian barley production is expected to increase from the "normal" production in 2000 of 13.2 mmt to about 15.2 mmt in 2010 due to a relatively stable seeding area and assuming trend yields. Total Canadian domestic consumption is expected to be relatively flat, going from 11.6 mmt in 2000 to 12.0 mmt in 2010. There is some variability to these forecasts due to the uncertainty regarding trade issues with the US. Although there remains uncertainty about the timing of normalization of trade between Canada and the US, it is expected that cattle populations will move lower over the forecast period with increases seen only toward the end of the forecast period. Hog projections in the forecast period also remain uncertain. Based on the assumption that MCOOL will not go through, Canadian hog numbers are forecast to grow albeit at a slower pace than in the last decade.
- With respect to malting varieties, the trend in both countries has been toward increased area of two-row barley and reduced area of six-row barley. After years of being dominated by six-row, US malting barley acres are trending toward a more even split between the two types, due to problems with disease, particularly fusarium; two-row area is increasing as maltsters in the western states are contracting more in that area, where two-row does better. In Canada, six-row area has also suffered due to disease while two-row has enjoyed increased demand from offshore markets.

Competitiveness Issues

Malting

- There have been three recent announcements regarding substantial investment in malting capacity in the US totaling about 30 million bushels of capacity. By locating in the US, maltsters can source local barley production while also sourcing imported barley from Canada; the ability to contract with various sources – including farmers – is an important

logistical factor when operating any processing facility. These recent additions to US capacity has meant an estimated loss to the Canadian industry of US$40 million in initial investment and US$30 million in annual operating expenditures.

- Western Canada should actually be a more attractive location as malt manufacturing costs are estimated to be in the range of US$35.00 to US$40.00 per tonne of malt produced, while US costs are more in the range of US$45.00 to US$55.00 per tonne. According to industry sources, the CWB's position as the sole source of malting barley in Canada has discouraged capital investment in the malting industry in Canada, regardless of the cost factors.
- Once the capacity goes to the US, local contracting of malt barley to supply those malt plants will occur (it has started already). The Canadian malting barley industry loses on two fronts; the domestic maltster loses US export business therefore requiring less from the Canadian farmer, and the CWB (farmer) loses business as the US maltster encourages, retains, and nurtures captive malt barley acreage where possible.
- The US system is expected to develop through value propositions to individual farmers, grain merchandisers and handlers including contract growing, paying toll fees for elevation and segregations and possibly joint ventures. There is expected also increasing pressure for sophisticated identity preserved systems as brewers, in the interests of food safety, will begin to require traceability. Demand for these traceability and IP programs will find resistance in the CWB price pooling system in Canada.
- Unless Canadian maltsters can operate in similar fashion, it will be increasingly difficult to compete in the US, a key market for Canadian malt. Since most of the Canadian maltsters are US based, there is the risk that the US parent companies will favour operations which they can operate most freely; Canadian malt houses could be phased out of the US market, forcing them to rely on Canadian domestic and offshore business.

Brewing

- The Canadian malt industry is protected by the application of a Tariff Rate Quota (TRQ) on malt, which allows into the country only 19,131 tonnes of barley malt per year before punitive tariffs apply. The Canadian brewing industry, using about 275,000 tonnes of barley malt annually, is therefore forced to source its malt from the Canadian malting industry.
- The CWB aims to extract a premium from sales of malting barley meant to produce malt for domestic brewers. This is possible due to the lack of competition from imports due to the TRQ on malt. Although it could be said that the malting industry does not suffer from this policy as it is the brewers that pay the premium price, this is a shortsighted position.

- Through the pricing actions of the CWB, the Canadian brewers are paying higher prices for malt than their US counterparts. When the Canadian brewers are considering upgrading and/or replacing their aging facilities, the decision process would be expected to possibly evaluate relocating to the US. Despite patriotic and sovereign issues, the attraction will be compelling. (Labatt's is owned by Interbrew, the large multi-national based in The Netherlands – loyalty to Canadian soil may not be as strong as one might assume for a "Canadian" beer maker.) Locating in the US provides a choice of buying malt from either US or Canadian maltsters, at more competitive prices than they are seeing currently in Canada. If located in Canada, they are restricted (by the TRQ) to buying from only Canadian maltsters via the CWB marketing system.

Canadian Wheat Board Issues

General

- The level of involvement by the Federal Government is a unique administrative impediment to the CWB's ability to respond to market changes. For example, procedures to increase the Initial Payment can take many days (reportedly over 60 days at times) due to the requirement of getting federal government approvals. In the barley markets, this inability to react quickly to rising prices by providing higher payments can result in (1) lost sales due to the inability to attract fresh deliveries and (2) farmers not being able to benefit from strong markets (because they are unaware of them).
- Through the application of government guarantees, the CWB provides farmers with Initial Payments that serve as a form of minimum price guarantee. In the event that the final prices realized by the CWB in a crop year are less than the Initial Payment, the federal government covers this deficit. Although occurring infrequently, managing these revenue deficits in this manner creates a situation whereby the CWB sells grain in export markets at prices less than what the farmer is being paid for it. It can be argued that this fits the definition of dumping.

Inventory Management

- It is not just possible, but probable, that the treatment of unsold inventories has a material effect on the ultimate value of the pool which impacts the concept of equity among farmers participating in the CWB pools. For example, if 100,000 tonnes of feed barley is valued at year end by the CWB at $100 per tonne, is carried forward into the second pool and subsequently sold for $120 per tonne, there is revenue of $20 per tonne, or $2 million, in the second pool generated through means other than the sale of the grain being physically delivered into the second pool. If physical deliveries in the second pool totaled 50,000 tonnes, the treatment of inventory will have added $40 per tonne to the

pool return for those making those deliveries[1]. In other words, those participating in the second pool will gain at the expense of those participating in the first pool.

Net Interest Revenue Allocation

- The CWB earns interest revenue from two main sources; (1) through the management of accounts receivable on credit sales and (2) interest earned on positive pool account balances which are the product of the delay in distributing all sales proceeds owing to farmers until after the pool period. The vast majority of the interest revenue comes from credit sales made in previous years; practically speaking, interest generated in the current feed barley pool (between $7 and $8 million) is from sales made during the late 70's and 80's.
- The CWB must take into consideration the size of the pool before it can estimate the PRO since the lump-sum interest revenue allocation makes the per-tonne interest revenue inversely proportional to the size of the pool. With the exceptionally small 2001-02 feed barley pool at just over 54,000 tonnes, interest revenue allocation of $7.9 million equated to $145.54 per tonne. Allocating this full amount to the pool would have raised the price substantially and dramatically; therefore it was adjusted to $14.69 per tonne by a decision by the CWB board of directors to transfer the equivalent of $130.85 per tonne ($7.1 million) to a contingency fund.
- The allocation of interest revenues from previous credit sales creates inequities among barley farmers. Farmers currently participating in the CWB pools are clearly benefiting financially from sales they did not make. A few Western Canadian farmers are the beneficiaries of a government-sponsored program (guarantee) that contributes to or supports the prices received via the CWB pools.
- A more equitable approach to interest revenues would pay interest earned from a particular pool period to those farmers delivering to that pool, even in the years following the actual sales. Interest revenues would then be matched to the farmers that contributed barley to the credit sales in the first place; some would still be receiving interest revenue today and the interest revenue would not be a distortion to pool prices.

Pool Return Outlooks

- The CWB first released the Pool Return Outlook (PRO) in early 1993 as an effort to assist producers with seeding, marketing and financial decisions with the intention of providing a better sense of what to expect as a total return from CWB grains.
- Analysis indicates that the CWB is somewhat better at projecting wheat prices than it is projecting barley prices, especially malt barley; the total return for both types of

[1] 100,000 tonnes of inventory is carried into the second pool valued at $100 per tonne and sold for $120 per tonne, for a profit in the second pool of $20 per tonne or $2,000,000. Allocating this revenue to the 50,000 tonnes of deliveries into the pool adds $40 per tonne of revenue (2,000,000 / 50,000 = $40).

designated barley averaged more than $25.00 per tonne over the April PRO while the average for wheat is about $11.00 per tonne over the April PRO. The net result of this is that the Western Canadian farmer gets poor price signals from the CWB at seeding time, particularly on malting barley.

CWB Producer Payment Options

- Since the 1998 amendments to the Canadian Wheat Board Act, the CWB is able to offer a variety of payment options aimed at providing increased flexibility for producers, collectively referred to as Producer Payment Options (PPOs). In 2003-04, the CWB offered the following for barley: (1) a Guaranteed Delivery Contract (GDC), (2) an Early Payment Option (EPO) applied to the GDC, and (3) a Fixed Price Contract (FPC).
- These contracts do more for delivery access for feed barley than they do for pricing flexibility. As they are tied to the PRO and not related to specific downstream buying interest, they do not reflect true marketable value and are as flawed as the PRO.
- Entering into a FPC forces an early commitment at a time in the crop cycle (spring/early summer) when most farmers are uneasy about making sales commitments. In addition, over the last three years, committing to an FPC would have proven to be a poor decision relative to staying in the pool.

CWB Sales Performance

- According to data from the Japanese Ministry of Finance, the CWB does not appear to capture premium prices over the other suppliers, nor does it sell as much as other suppliers. Australia dominates this market with the US taking second place most often. Japanese traders consider Australian barley as superior to U.S. and Canadian barley in both quality and consistency. (This is known in the Japanese trade as the "Australian premium".)[2]
- The CWB's average sales prices in any given year (in all markets – feed, two-row and six-row malting barley) tend to lie below (at times, significantly below) the average of market prices for the crop year. In addition, CWB average returns from feed barley sales consistently result in net returns lower than the lowest recorded domestic prices in both Alberta and Manitoba, by margins of between $10 and $40 per tonne. In Saskatchewan, CWB feed barley sales prices were either below the domestic prices by as much as $15 per tonne, or, at best, in the lower end of the range of domestic prices seen over each crop year.
- It has been suggested by sources within the trade that the CWB will materially discount prices on sales of large quantities of malting barley. Assuming that this is true, it helps to explain the low sales prices relative to the offers. However, it appears that these

[2] Source: US Embassy in Tokyo.

discounts are non-trivial and in aggregate, are greater than premiums that the CWB might capture due to its status as a single desk seller. Moreover, discounting in this manner appears to go against the notion that the strength of the CWB's single desk selling is in holding grain off the market in order to force the buyers to bid higher for the grain.

2002-03 – An Exceptional Year

- During crop year 2002-03, the CWB was not able to attract malting barley deliveries and was unable to assure the maltsters that it could source their requirements. This prompted two maltsters to import malting barley from Europe, resulting in more than 100,000 tonnes of European malting barley to be imported at an estimated price in excess of C$300 per tonne (C$6.53 per bushel). This produced the absurd situation where maltsters were buying malting barley from offshore at extremely high prices, while western Canadian farmers that had barley meeting malt quality requirements sold it into the domestic feed channels (at prices below what the maltsters were paying) because of the perception that the malt market was not competitive.
- The CWB's marketing process and the PRO interfered with the maltster providing to farmers a relevant price. It can be argued that, had the maltsters been able to deal directly with farmers, the maltsters would have done all they could have to obtain the best barley available before going offshore for supplies. It is conservatively estimated that the CWB system's inability to respond to the industries needs – both farmer and maltsters – cost the industry in the neighbourhood of C$30 million dollars.

Alternatives

The following options would contribute to a more functional system:

1. Much shorter CWB pooling periods. Many of the problems identified with the CWB marketing system in barley are directly related to its inability to provide market-relevant prices to farmers through Initial Payments and PROs. Since the return (pooled price) of a specific, short pool will not likely get diluted with low priced sales over time nor will it necessarily vary much from the current market, the CWB could provide more timely and competitive prices to farmers. Problems that would remain include the overhead costs of the CWB and the market distorting impact of interest revenue (particularly in feed barley). Also, it is not clear that shorter pool periods could be effective in allowing the CWB to improve its sales performance relative to market opportunities.
2. No CWB pooling. The CWB could continue as the sole exporter of barley, simply operating as a monopoly grain exporter, selling feed and malting barley offshore (or to the US) at market prices, providing cash bids to farmers or grain merchandisers and offers to buyers. The CWB would be able to provide meaningful prices on the basis of export markets and WCE futures, effectively arbitraging export and domestic markets. The CWB would be forced to manage interest revenue quite differently. Problems that would remain include the overhead costs of the CWB. Also, it is not clear that cash

trading would allow the CWB to improve its sales performance relative to the market opportunities. Under a no-pooling regime, there is no apparent benefit for the CWB to be involved in the domestic malting barley market.

3. Marketing Choice / Voluntary CWB. A third option would be to make the CWB a voluntary or optional merchandiser of feed and malting barley, regardless of the end destination. Market price signals would be current, competitive and relevant; both buyers and sellers could respond to these prices according to their needs. Farmers would be free to sell their barley to anyone they wished, for any use. Buyers would source barley from whichever farmer, firm or organization provided the best mix of price, service and quality. The CWB would act as a merchandiser of any barley that was sold to it; it could use traditional pooling, shortened pool periods, or no pooling. The CWB would be forced to manage interest revenue quite differently as not all barley growers would be marketing their barley through the services of the CWB. Also, it is not clear that the CWB could improve its sales performance relative to market opportunities.

4. No CWB involvement in barley markets. If the CWB system was eliminated from the barley market altogether, the grain industry would effectively arbitrage feed and malt values in both export and domestic markets. In times of surplus, barley would clear to export markets only as the market dynamics would allow; in times of tight supplies, barley would not be exported. The impediments to proper price signals (pooled prices, interest revenue allocation and Initial Payments) would no longer interfere with the market, particularly important to the domestic malting industry. The domestic malting industry would be able to deal directly with farmers and grain merchandisers, providing meaningful pricing at all times. Moreover, the overhead cost of the CWB would no longer be a burden to the farm community.

- With competition in the export market, it is expected that the marketed export values of barley would improve, as competition between the CWB (if still present) and the grain companies would not allow discounted sales. Contrary to the position often presented by the CWB, it is our view that elimination of the CWB will not depress prices due to farmers and/or grain companies competing with each other to sell grain. Competition between exporters will ensure that export sales are not made without assurances that the grain can also be originated (bought) at prices that will provide a return to the exporter.

- The CWB recognizes this market dynamic as it has tried to market export feed barley while trying to compete with the domestic feed market. The CWB has stated that unless it can be assured it will receive the barley stocks required to satisfy a sale (or has the inventory to draw from), it will not make the sale. Exporters take a similar approach; they do not "undercut" or discount market prices to make sales; rather they work diligently to reduce their own marketing, transportation and handling costs and then market (sell) aggressively at prices at which they are confident will allow them to provide competitive prices to farmers.

Summary of Key Findings on CWB Involvement in the Barley Market

Generally speaking, there are substantial opportunities being presented to the Western Canadian barley industry. Unimpeded, the industry could see improved arbitrage between offshore, US and domestic markets, fostering exports only as market forces require, keeping barley at home when needed and importing only as required. With good market signals, the feeding industry would be better equipped to compete with US and foreign markets. Although some new malting capacity has been lost, the malt industry could see additional capacity and increased exports of malting barley and malt.

The main impediment to this scenario is the presence of the federally mandated CWB marketing system in the barley market. Although it is beyond the scope of this report to determine a net cost or benefit of the CWB, this research has indicated that the CWB does not bring value to the barley sector; rather it exacts a significant cost in lost opportunities, high administrative costs and poor marketing results.

On the basis of this research and analysis, there is no configuration or re-working of the CWB and its policies that would provide as much benefit to the Western Canadian barley industry as would either removing the CWB's monopoly on barley (often referred to as the marketing choice option), or the complete removal of the CWB system from the barley industry. Even if its pricing regime was changed in order for the CWB to be more market-responsive, the CWB still brings with it an overhead cost that is unnecessary and market price distortions. The main causes of the CWB's apparent poor sales performance remain unclear and there is no evidence to suggest that this would change with changes to the CWB system.

The CWB has been shown to be ineffective in the feed barley export market, unable to compete with the dominant domestic feed industry most of the time and in most regions of Western Canada. This analysis has shown that CWB feed barley prices to farmers can at times be as much a function of interest revenue allocation as market prices. Moreover, net prices received from sales have been shown to be in the low end of market values and below domestic values in most areas much of the time. It can be argued that farmers, merchandising through the services of the private grain trade, would easily be able to achieve higher revenues through obtaining even average market prices and avoiding the overhead cost of the CWB.

In the malt sector, the CWB has been shown to be an impediment to both current malt commerce and to the further expansion of the malt industry in Western Canada. Notwithstanding the fact the Canadian malt industry has expanded somewhat in the past few years, the Western Canadian industry would actually be much larger if the capacity being built in the Northern Plains of the US had been built in Canada. Also, as in the feed barley sector, the CWB sales prices appear to be lower than one would expect given the market

opportunities presented; if there is value in the single desk in terms of better prices and more sales, it is not apparent from the analysis provided here.

Further key findings regarding the CWB in the barley market are as follows:

- Interest revenue allocation to the various pool accounts distorts CWB prices. Managing the pool account by managing the volume of sales to mitigate the impact of the interest allocation creates situations where the CWB has incentives to sell below the price paid to the farmer, simply to get sales on the books to mitigate the interest impact.
- Pool account management of inventories can have a substantial impact on pool prices and creates inequity among participants.
- CWB contracts are a far cry from traditional open market contracts that have more to do with delivery access than to pricing or price risk management.
- Farmers will often consider moving as much grain as possible in a crop year in order to make room for the new crop but also to satisfy cash flow and financing needs. However, the CWB PRO system provides incentives to the CWB to stop selling in the event that further sales will dilute the pool value (lower it), counter to the needs of the CWB constituents. Managing the PRO in this fashion goes counter to farmers' needs.
- The CWB system has been proven to be impotent in the malting barley market under extreme market conditions, such as those seen in 2002-03.
- The CWB system has been proven to be impotent in the export feed barley market most of the time due to its inability to compete with the domestic market.

The Canadian Barley Industry in Transition:

A Study for Alberta Agriculture, Food and Rural Development

Preamble

The western Canadian barley market has changed dramatically over recent years. At one time, exports played a more significant role in the Canadian barley market than currently. Feed barley exports peeked at 6.25 million tonnes (mmt) in 1986-87 when domestic feed consumption was estimated to be 7.14 mmt. Since then, exports of feed barley have dwindled to virtually insignificant amounts – total Canadian Wheat Board (CWB) feed barley exports in the 2001-02 crop year were about 30,000 tonnes – while domestic feed consumption has risen to the 10 mmt tonne area.

The feed barley trade has also shifted on the global stage. Whereas once Russia and other FSU countries were net importers of barley, these countries are now significant competition for more traditional exporters such as Canada and Australia. Although Japan remains as a significant feed barley importer, it has become increasingly difficult for Canada to be competitive in the major consumption areas in North Africa and the Middle East. In the malting barley sector, both Australia and the European Union (EU) are tough competitors.

When exports were more robust, the domestic feed market often would arbitrage to export market values and the CWB Initial Payment played a role as market floor as farmers tended to withhold selling into the domestic feed market at prices below CWB initials. However, in the past decade, the domestic feed market has grown to the point where the CWB has acknowledged that it has become exceedingly difficult for the CWB to compete with the domestic feed barley market; moreover, the CWB has recently sold into the domestic feed market some of the feed barley delivered to it. Feed barley delivered to the CWB typically comes from farmers in areas remote from the main feeding areas of southern Alberta and southern Manitoba; the domestic market dominates all other areas with barley moving into Southern Alberta from as far away as the Peace River region, Northeastern Saskatchewan and Western Manitoba.

The mainstay of Canadian barley exports is now malting barley and malt as it appears that the CWB is able to sell into the export feed barley market only when the major exporters – the EU, Australia and increasingly Russia and Ukraine – have crop production problems. Moreover, while the North American malt market has been growing in the past few years, the fact that major malt players have shown a preference to expand in the US rather than in

Canada has caused concern within the Canadian industry. These issues demand closer examination.

In 2002-03, domestic prices rose substantially due to poor crops, attracting imports of US barley and corn, while also rationing export demand. Although price will always remain an important factor, some have indicated that even at premiums to local barley prices, they will consider using US corn in the future. However, there is still a widespread resistance to corn due to final product quality concerns and relative cost of gain measures. Notwithstanding, there is concern over the long-term competitiveness of the Alberta livestock industry in the event that the industry is forced to rely on imported feedstocks.

Industry participants have become increasingly concerned with the CWB's ability to provide price, price signals, and movement for the barley industry. In response, the CWB has initiated a series of pricing contracts for farmers. While some of these contracts work within the CWB pools, others provide farmers with prices that effectively take them out of the pools.

Taken in aggregate, these changes to the barley market are having significant implications to the whole agricultural sector but specifically the livestock and malting sectors in Western Canada. This study addresses many of these issues in the context of medium term outlooks for feedgrains, livestock and malt. Specific outlooks of the feed and malting barley markets and an assessment of the role and effectiveness of the CWB in the Western Canadian barley market are noteworthy focuses of this report.

It should be noted that this analysis does not address the philosophical debate concerning the relative benefits of a central desk selling agency compared to the open market. Rather it considers relevant and accessible data and input from practitioners within the trade in order to assess the ability of the current CWB system to perform and provide benefit.

This study is presented in six main sections. Section 1 provides an overview and medium term outlook of the global barley market, focusing on global barley production and trade in feed barley, malting barley and barley malt. In addition, a review of relevant policies in major exporting and importing countries and an assessment of their impacts on the Western Canadian barley sector is provided. Section 2 provides an overview and medium term outlook of the North American coarse grain sector looking at trends in US corn and barley, Canadian barley, as well as Canadian livestock and malt industries. Section 3 takes a look at issues related to the competitiveness of Western Canadian barley – both in the feeding complex and the malt industry. Section 4 provides a look at the role and practices of the CWB in the barley industry, while Section 5 assesses the performance of the CWB in both the feed barley and malting barley markets and provides insights into its impact. Section 6 provides conclusions and possible alternatives to some of the issues addressed in the earlier sections.

Section 1 Global Barley Overview and Outlook

1.1 Production

World barley area has declined significantly in recent years; total world barley area dropped 30% from 78.5 million hectares (mha) in 1987 to 55.1 mha in 2002. Although virtually every region in the world experienced a decline – albeit for different reasons – the largest and most significant decline occurred in the Former Soviet Union (FSU), where barley area dropped from 30.7 mha to 17.9 mha – a decline of about 42%.

World barley production averaged 145.1 mmt in the ten years from 1993 through 2002; since 1998, the average dropped to 134.3 mmt. In the last five years, the European Union (EU) was the largest producing region at an average of 49.9 mmt; next is the Former Soviet Union (FSU) at a 5-year average of 28.3 mmt (Russia alone averaged 14.5 mmt and the Ukraine averaged 7.9 mmt). North America is the third largest producing region with a 5-year average of 17.6 mmt (Canada at 11.4 mmt and the US at 6.2 mmt), followed by Central Europe at 9.4 mmt, Turkey at 7.2 mmt, and Australia at 5.9 mmt. See Table A1.1 in Appendix A-1 for a complete listing of regional production.

1.2 Consumption

Barley consumption is focused in two main areas – as an animal feed and for the production of malt. Proportionately, malt is the lesser of the two uses; annual global consumption of barley for the purposes of malt production is in the neighbourhood of 19 mmt, of which an estimated 18 mmt is used for the production of beer. Much more barley is used globally for feed than for malt with total global feed barley consumption in the neighbourhood of 117 mmt annually, favoured over other feed grains in a few regions of the world.

Until just recently, of all beer producing countries of the world, the US was the most important. However, in 2002, China became the world's largest beer producer for the first time, manufacturing 235.8 million hl, (16.4% of global production), just ahead of the US at 234 million hl, an increase of 5% over the previous year and up from 155 million hl in 1995. Germany is third largest followed by Brazil and then Russia, which took over fifth place from Japan, with Russian production gaining from the growing defection of Russians to beer from vodka.

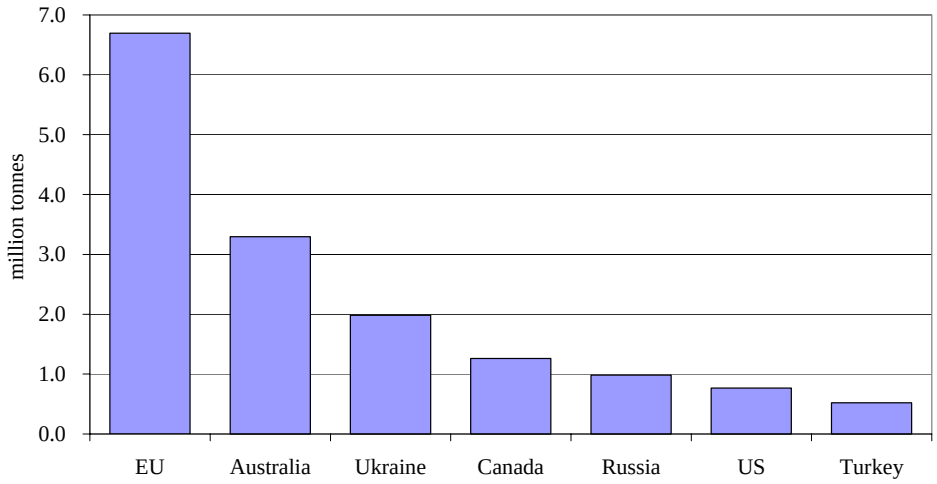
Germany, the third largest beer consumer on a per capita basis (after Ireland and the Czech Republic), has been experiencing falling beer consumption since 1995, a trend that has been attributed to an increasingly health-conscious public, high unemployment and the sluggish economy. North American consumption is stagnant as well, for the same reason.

1.3 Barley Trade

Averaging 14.6 mmt, total annual world barley trade has ranged from 12.6 mmt to 16.2 mmt since 1999-2000, roughly 9% to 12% of total annual barley consumption. In the same time frame, malting barley trade accounted for an estimated average of 4.2 mmt, about 29% of the total barley trade in that period.

The major exporters of barley are (with their 5-year average exports in parentheses) the EU (6.69 mmt), Australia (3.30 mmt), Ukraine (1.98 mmt)[3], Canada (1.26 mmt), followed by Russia (0.98 mmt). See Chart 1.1 below. Russia and Ukraine are currently considered emerging major exporters, as until recently, they were net importers of feedgrains. Based on the 5-year averages, the three majors are responsible for about 77% of the total global barley trade (excluding internal trade within the EU); the top five account for about 92%.

Chart 1.1 Major Barley Exporters – (5-Year average: 1998-99 to 2002-03)



Although all major exporters sell feed barley, in recent years the EU, Russia, and Ukraine have dominated that market; all three of these exporters have a geographic advantage over Canada and Australia with respect to the sizable feed barley markets in the Middle East and North Africa. Australia's key markets are China for malting barley and Japan and Saudi Arabia for feed barley. Due to intense competition from the domestic feed market and CWB sourcing issues, Canada has all but disappeared as a feed barley exporter in recent years. Australia, Canada and EU-15 account for 90% of global malting barley exports, with Australia the largest, followed by Canada and the EU.

Accounting for 59% of the barley trade, the top five barley importers are Saudi Arabia with 5-year average imports of 5.2 mmt, China at 1.94 mmt, Japan at 1.43 mmt, Morocco at 0.62 mmt, the US at 0.54 mmt, and Iran at 0.48 mmt. Regionally measured, the largest importing

[3] Three year average.

region is the Middle East with a 5-year average of 6.22 mmt followed by Asia with 5.55 mmt and then by North Africa at 1.6 mmt.

Table A1.2 in Appendix A1 is a barley trade matrix that shows relative trade volumes between exporters and importers in the last few years; this matrix makes no distinction between feed and malting barley.

Feed Barley

With a 5-year average of 13.3 mmt, the feed sector makes up about 75% of the world barley trade. This is down from about 85% about a decade ago due primarily to the increase in malting barley trade. Although the EU and Australia have dominated the export side of the feed barley trade, Ukraine, Russia and Eastern Europe have all become "emerging" exporters; in crop year 2001-02, these countries accounted for 6.2 mmt, or 47% of the global feed barley trade.

The feed barley import market is dominated by the Middle East and North Africa. Saudi Arabia, the largest barley importer in the world took an average of 4.2 mmt over the last five years, all of which was feed barley. Other Middle Eastern countries account for an additional 3.2 to 3.7 mmt[4]. As a region, North Africa is the second largest feed barley importer taking in the range of 1.7 to 2.2 mmt annually. Japan is the second largest single country importer of feed barley taking about 1.3 mmt annually. The remaining importers combine to account for about 1.5 to 2.0 mmt annually.

Malting Barley

Since 1994-95, world malting barley trade has increased from 3.2 mmt to 4.6 mmt in 2001-02, an increase of 44%. China and the US account for about 60% of all malting barley trade; at 2.4 mmt, China alone accounted for 50% in 2001-02 while the US was at 11%, importing 525,000 tonnes[5]. Other major importers (with their 01-02 imports in brackets) include Eastern Europe (0.2 mmt), Columbia (0.2 mmt), Brazil (0.175 mmt), Russia (0.125 mmt) and Mexico (0.075 mmt).

China is known to exploit its position as a major malting barley importer, leveraging the considerable competition between Australia, the EU and Canada by taking advantage of the harvest pressures during the different harvest periods of each major importer. For this reason it is often considered to be amongst the most competitive and, therefore, lowest returning destinations in the world (under typical conditions). In times of surpluses among the major exporters, competition becomes fierce into China and with Chinese buyers responding well to price, a scenario that tends to depress values into China relative to other destinations.

Chinese buyers are very sensitive to price and so do not refuse competitive price offerings from any of the major suppliers. With a proportionately smaller growing region, Australian

[4] Source: Canadian Wheat Board, CWB Barley Outlook, *Grain*World 2002, February 2002.

quality and yield variability are proportionately higher in a given year than Canada. However, Australia exports in the range of 90% of its production, which makes it a very aggressive seller into China.

China is also well known for importing good quality cheap EU feed barley (graded as "Fair Average Quality") for use as malt. This is fully dependent on price but underscores China's sensitivity to price over quality.

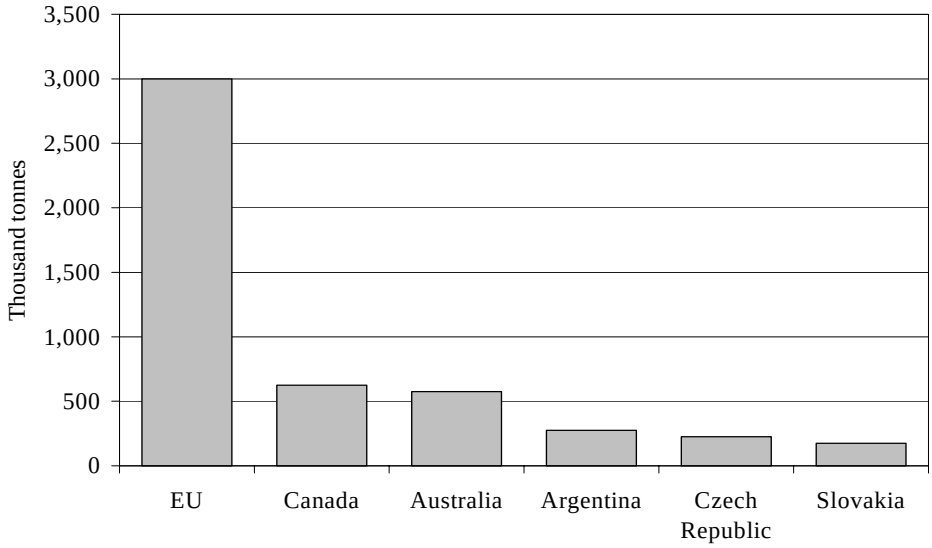
Malt

The most important malt producing countries of the world are those that have local access to ample supplies of quality malting barley; as such, malt is only produced in about one-third of all countries that brew beer. Of the estimated 19.5 mmt world malting barley processing capacity, 42% is within Europe, 21% in the US, 18% in Asia, 6% in Canada, 6% in Eastern Europe and Russia, 5% in Australia and 2% in South America.

Malt production is relatively concentrated, with 66% of the world's malt being produced by 10 countries alone, the largest of which is the US. Despite this dominant position, some 94% of U.S. output is used in the domestic market, and its participation in world trade in minimal.

The EU is by far the largest malt exporter, holding a 5-year average of 3.0 mmt (which includes roughly 1 mmt of internal trade among EU member countries). Canada is next with 625,000 tonnes followed closely by Australia with 575,000 tonnes. These top three are responsible for roughly 86% of the global malt trade. See Chart 1.2 below.

Chart 1.2 Major Malt Exporters (5-Year Averages)



The largest single player in the international malt industry is Cargill with 1.4 mmt of malting capacity. Groupe Soufflet is second with 1.3 mmt of production capacity in eight countries,

[5] Source: Canadian Wheat Board, CWB Barley Outlook, *Grain*World 2002, February 2002.

mostly Europe and the FSU. Third is ConAgra with 1.25 mmt of production capacity in four countries. See Table 1.1 below for a full listing of malting companies.

Table 1.1 Commercial Malting Companies (Production capacity in thousands of tonnes)

Thousand tonnes	United States	Canada	Asia	Oceania	Europe	South America	E. Eur/ Russia	Total
Cargill	592	245	65		425	90		1,417
Groupe Soufflet					686		637	1,323
ConAgra / Tiger Oats	300	470		221	261			1,252
Groupe Malteurop			56		963	23	100	1,142
Lesaffre / ADM	772	95		96	105			1,068
Greencore Group					605			605
Anheuser Busch	603							603
Rahr Malting	385	140						525
Weissheimer Malt					395		125	520
Boortmalt			40		348		50	438
AusMalt				412				412
Guangdong Enterprises			400					400
Schill / Global Malt					330			330
Viking Malt Companies					328			328
COFCO - Dalian			300					300
Coors Brewing Company	251							251
Durst Malt					236			236
IREKS Worldwide					221			221
JP Simpson					220			220
Muntons					191			191
Crisp Malting Group					186			186
Franco Suisse					160			160
Bavaria Maltings					120			120
Grupo Modelo SA	107							107
Raisio Group					105			105
Rhein - Main - Malt					101			101
Agromalte						90		90
C Thywissen					90			90
Malteria Do Vale						70		70
Briess Malting Company	54							54
Total	**3,064**	**950**	**861**	**729**	**6,076**	**273**	**912**	**12,865**

Source: Industry contacts

Although there are approximately 30 countries worldwide that are involved in exporting malt, 75% of world trade is accounted for by just seven countries. Of all the regions that export malt, the EU is by far the most significant – specifically France. Some of France's success can be attributed to the fact that it supplies both two-row and lower quality six-row malts; the latter is particularly attractive to developing countries with limited hard currency to finance imports.

Of the 4.8 mmt of malt that were traded globally in 2001-02, the EU was responsible for exporting about 2.87 mmt to 135 countries. This figure however, includes internal trade within the EU, which itself amounted to 1.15 mmt.

Table 1.2 Canadian Malt Exports (tonnes; in order of size in 2002/03)

Destination	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Japan	196,652	175,598	182,002	226,809	227,282	168,062
United States	32,215	42,978	114,416	106,331	128,345	158,953
Mexico	21,913	21,449	41,094	34,210	36,658	72,841
Dominican Republic	402	1,154	273	279	1,050	18,003
Korea, South	29,169	17,112	5,241	22,728	19,047	15,256
South Africa	15,032	33,579	34,266	22,583	46,182	15,140
Chile	500	250	9,991	10,591	4,606	5,001
Guatemala	3,000	8,451	8,839	6,000	7,600	4,502
Costa Rica	6,508	10,338	3,288	3,750	3,000	3,018
China	256	620	214	5,259	2,844	1,747
Thailand	-	-	-	-	3,138	1,068
Nicaragua	762	-	-	-	-	1,024
Vietnam	2,081	2,136	-	-	1,523	979
Ecuador	-	2,934	-	-	687	595
Jamaica	-	453	-	-	175	367
Jordan	-	-	-	-	-	300
Russia	-	-	-	691	477	268
Belize	631	-	-	-	-	36
Trinidad & Tobago	-	-	-	0	0	0
Australia	2,289	-	-	-	-	-
Brazil	100,776	105,785	89,497	71,357	16,692	-
Colombia	20,948	5,929	-	3,109	-	-
Congo	-	-	68	-	-	-
El Salvador	5,810	2,474	3,000	2,770	-	-
Haiti	804	375	450	-	-	-
Hong Kong	-	-	589	1,171	-	-
India	-	228	-	-	-	-
Indonesia	-	771	-	-	-	-
Italy	-	-	-	374	-	-
Korea, North	-	-	-	-	572	-
Malaysia	2,393	2,978	1,740	300	-	-
Panama	3,906	-	-	-	-	-
Peru	-	100	-	-	-	-
Philippines	10,281	6,842	2,955	3,528	16	-
Singapore	1,921	1,530	409	2,125	473	-
Slovakia	-	-	-	300	-	-
Taiwan	-	-	-	351	-	-
Togo	-	-	-	-	325	-
United Kingdom	-	-	-	-	6,000	-
Venezuela	30,347	4,000	-	2	-	-
Total Exports	**488,597**	**448,063**	**498,330**	**524,619**	**506,693**	**467,159**

Source: Statistics Canada

Canadian Malt

Canada is the largest exporter of malt outside Europe with about 10-12% market share in recent years. Canadian exports of malt are highly concentrated with five destinations accounting for about 90% of all malt exports from Canada. Japan is Canada's largest malt customer with about 40% of all Canadian malt export in the last five years; second is the US with 22.5% over the last five years, and up to 34% of 2002-03 exports. Considering the last five years, Brazil is the third largest destination with 12%; however, this has tapered off recently and Brazil took no malt from Canada in 2002-03. See Table 2.1 above.

South America is a key malt importing region, despite the fact that countries such as Brazil, Peru, Chile, Colombia and Argentina produce malt locally. With the exception of Argentina, however, most are reliant on imports of malting barley, primarily from outside the region. The growth in imports in this region has been less smooth than that experienced in Asia, as demand for malt has fluctuated in line with the economic fortunes of each country.

The effect of increasing beer production around the world, particularly the growth experienced in non-malt producing countries, is reflected in the total volume of malt traded worldwide. This has increased from 2.56 mmt in 1985 to reach 5.2 mmt in 2001.

1.4 Relevant Policies as They Relate to Barley

The dynamics of the world barley markets is heavily influenced by political interventions and agricultural policy in some of the key barley producing regions of the world; the Common Agricultural Policy in the EU and the Farm Security and Rural Investment Act of 2002 (the Farm Bill) in the US are significant examples covered below. The CWB will be covered in more detail in following sections.

EU Common Agricultural Policy Reform and EU Enlargement

The countries of the EU have operated a strongly interventionist Common Agricultural Policy (CAP) with common agricultural markets since the 1960s. The CAP has maintained high and stabilized internal prices for unlimited quantities of most significant commodities produced within the EU. As the CAP led to large surpluses of grain the EU developed an elaborate trade policy to promote grain exports; export restitutions (subsidies) are used so that EU grain exports are competitive in world markets. Essentially, the difference between the EU world market price and the EU internal price is the export restitution, which is paid by the government. Similarly, imports are excluded through a variable levy, which bridges the difference between low world prices and high internal prices.

EU commitments under the Uruguay Round Agreement on Agriculture impose limits on the EU's ability to support its agricultural sector, raise barriers to imports, and subsidize exports. Agenda 2000, adopted in March 1999 in preparation for EU enlargement[6], cut price supports

[6] Enlargement of the EU to include Poland, Hungary, the Czech Republic, Slovenia, and Estonia is planned for the mid-2000s. Other Eastern European countries including Bulgaria, Cyprus, Latvia, Lithuania, Malta, Romania, Slovakia, and Turkey, will be considered for EU membership at a later date.

for grains and beef and reduced payments to oilseed producers through 2006, continuing a policy shift away from price support to income support. The principal reforms are: reduced intervention prices (Agenda 2000 required a 15% drop in the cereal intervention price); modified direct income support (Direct Payments for cereal producers were increased by 9 euros per tonne to compensate for half of the decline in support due to intervention price cuts), and; reduced default land set-aside rate.

Accession of large agricultural countries through enlargement could cause serious problems for the CAP in its current form and reforms posed by Agenda 2000, providing impetus for additional policy changes to further reduce price and budget support levels. On June 26, 2003, EU farm ministers adopted a fundamental reform of the CAP, completely changing the way the EU supports its farm sector beginning in 2004. The new CAP provides that the majority of subsidies will be decoupled from the volume of production. In addition, a further 5% reduction in intervention prices is proposed along with an increase in direct payments in order to compensate 50% of the intervention price reduction.

WTO limits on coarse grain export subsidies are applied to the aggregate rather than to individual coarse grains. Due to the declines in intervention prices and the weak euro in the mid to long term, projected domestic (EU) and world prices indicate that EU barley will likely be exported without subsidy throughout the forecast period; subsidies will therefore be freed for use on other coarse grains, chiefly rye and oats.

These reforms are expected to have a greater impact on barley than other grains. EU farmers are expected to be more willing to remove coarse grains, particularly barley, from production because their yields are lower than those common for wheat. EU barley acreage and production is expected to be relatively flat over the next few years. (See Tables A1.1 and A1.3 in Appendix A-1.)

US Farm Security and Rural Investment Act of 2002

Under the 2002 farm legislation (the Farm Security and Rural Investment Act of 2002), the primary government programs affecting feed grain markets are direct payments, counter cyclical payments and the marketing assistance loan program. Feedgrain farmers also benefit from subsidized crop and revenue insurance, trade promotion programs, P.L. 480 food aid, and export credit guarantees and, in recent years, emergency market loss assistance payments. The Conservation Reserve Program is also continued.

Direct Payments

Direct Payments under the 2002 Farm Bill are based on fixed payment rates on a per unit basis for the entire life of the act. Total payments for all of the feedgrains are fixed and allocated to farmers based on historical production. Since direct payments are decoupled from current market prices they do not have a direct effect on a producer's cropping decisions. Table 1.3 below provides actual Direct Payment rates compared to the previous program's rates.

Table 1.3 Direct Payment Rates Under the 2002 Farm Bill (Compared to PFC Payment Rates Under the 1996 Farm Bill)

	PFC Payment Rates		***Direct Payment Rates***
	Dollars per bushel		
Commodity	***96-02 (avg)***	***2002***	***2002-07***
Wheat	$0.62	$0.46	$0.52
Corn	$0.32	$0.26	$0.28
Barley	$0.26	$0.20	$0.24
Oats	$0.028	$0.022	$0.024
Soybeans	n.a.	n.a.	$0.44

Countercyclical Payments

Countercyclical Payments (CCPs) provide price-dependent benefits for covered commodities whenever the effective price for the commodity is less than its target price[7]. Table 1.4 below indicates the current target prices under the 2002 Farm Bill. This program was developed to replace most ad hoc market loss assistance payments that were provided during 1998-2001. Payments are based on historical area and yields and are not tied to current production of the commodity.

The new legislation establishes a target price for each covered crop. When the higher of the loan rate or the season average price plus the direct payment rate is below a target price (set by the legislation), a CCP is made, at a rate equal to the difference.

Table 1.4 Target Prices under the 2002 Farm Bill

Commodity	***Unit***	***2002-03***	***2004-07***
		USD per unit	
Wheat	Bu	3.86	3.92
Corn	Bu	2.60	2.63
Grain Sorghum	Bu	2.54	2.57
Barley	Bu	2.21	2.24
Oats	Bu	1.40	1.44
Soybeans	Bu	5.80	5.80

[7] Source: Economic Research Service/USDA: *"The 2002 Farm Act: Provisions and Implications for Commodity Markets/AIB-779"*.

Conservation Programs

Conservation and environmental programs provide cost-share, rental, and/or other direct payments to producers in return for using specified environmentally beneficial farming practices or for setting aside land in conserving uses. The 2002 Farm Act continues and in most cases expands almost every existing agri-environmental program. Under the voluntary Conservation Reserve Program (CRP), farmland owners submit bids to retire environmentally sensitive cropland from production for 10-15 years. Farmers receive a cost-share payment to establish a permanent cover crop and annual rental payments for retiring land and maintaining specified conservation practices. To date there is about 3 million barley acres that have been set aside under this program.

Marketing Loans

Marketing Loans are non-recourse loans to eligible producers with the crop used as collateral. Producers settle the loan by either forfeiting the collateral to the Commodity Credit Corporation (CCC) at maturity with no penalty or repay in full at the repayment rate (loan rate plus interest or the posted county price, whichever is lower). Marketing loan provisions take effect when commodity prices fall below local loan rates. The amount of this difference multiplied by the quantity repaid is called a marketing loan gain (MLG). Producers may also forgo taking out a loan and receive a loan deficiency payment (LDP) equal to the difference between the commodity price and local loan rate multiplied by the quantity eligible for loan. Table 1.5 below shows the marketing loan rates for the major grains.

Table 1.5 Marketing Assistance Loan Rates Under the 2002 Farm Bill Compared to 2001 Loan Rates Under the 1996 Farm Bill

	2001	***2002-03***	***2004-07***
Commodity	***Dollars per bushel***		
Wheat	$2.58	$2.80	$2.75
Corn	$1.89	$1.98	$1.95
Barley	$1.65	$1.88	$1.85
Oats	$1.21	$1.35	$1.33
Soybeans	$5.26	$5.00	$5.00

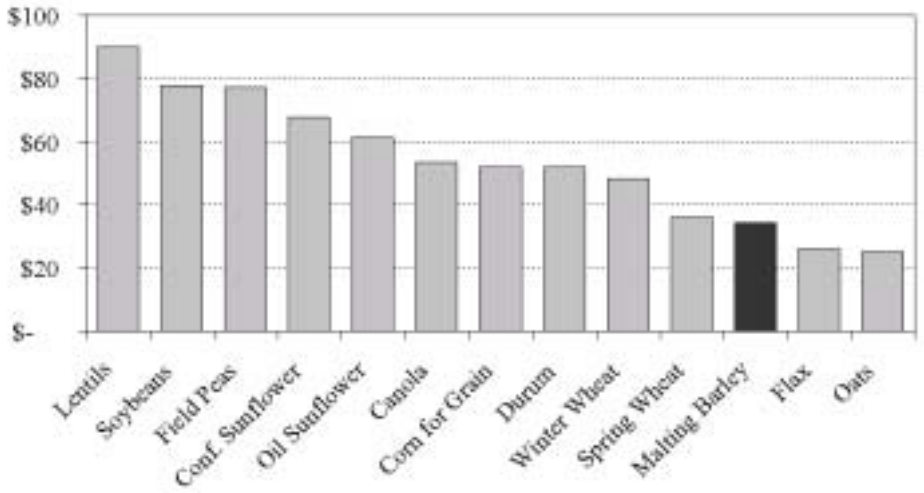
In the simplest approach to using marketing loans, a producer receives per-unit revenues equal to the loan rate by taking the marketing loan benefit and immediately selling the crop, assuming the sales price equals the posted county price. The marketing loan benefit augments the market price to provide an effective floor price at the loan rate. The total per-unit revenue comes partly from the marketplace and partly from the government.

In practice, farmers use a two-step process that has resulted in average per-bushel revenues that exceed loan rates. In the first step, the farmer decides when to take the marketing loan benefit (LDP or marketing loan gain, if the crop is placed under loan). In the second step, the farmer decides when to sell the crop. Farmers tend to take the marketing loan benefit when

prices are seasonally low and sell the crop at a later date when market prices have risen. Because of the seasonality of prices this two-step marketing procedure often results in marketing loans providing per-bushel revenues that on average exceed the loan rates.

Acreage decisions for individual crops reflect the effects of marketing loan benefits on absolute and relative net returns among cropping alternatives. In some cases, these cross-commodity effects reduce acreage of crops receiving relatively low or no marketing loan benefits.

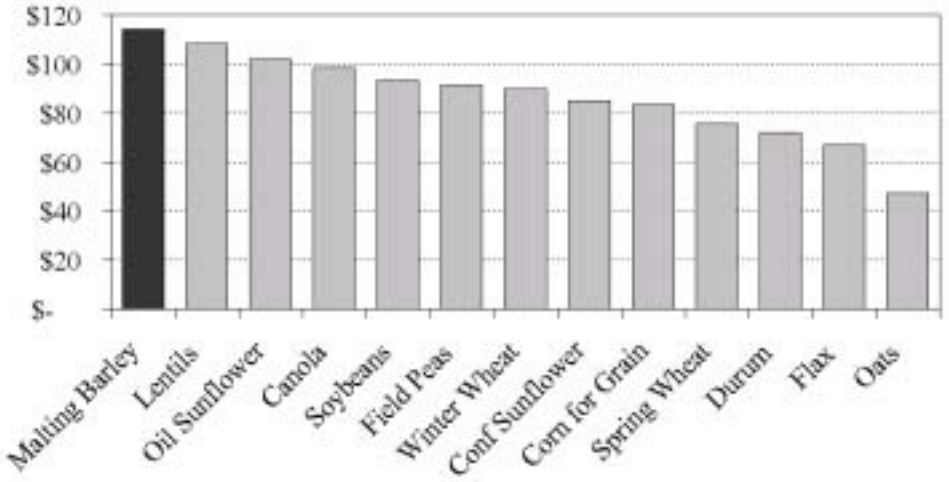
Chart 1.3 Net Per-Acre Revenue in North Dakota by Crop
Using 2002 Loan Rates



Source: Sparks analysis

Malting barley in North Dakota is presented as an example. Chart 1.3 above shows the relative net per-acre revenue comparisons for North Dakota using 2002 loan rates. Malting barley revenue is quite low in comparison to most other crops, including major crops such as wheat, corn and soybeans. However, Chart 1.4 below shows the same comparisons for the same crops in North Dakota using the November 2002 cash market prices in the calculations instead of loan rates. On this basis, malting barley provides the best net per-acre revenue of all the crops considered. This leads to the conclusion that loan economics plays less of a role in barley than it would for other crops. (Interestingly, data indicate that barley producers experience among the highest returns over the loan rate of all eligible crops using the two-step process outlined above.)

Chart 1.4 Net Per-Acre Revenue by Crop Using Nov 2002 Cash Prices



Source: USDA; Sparks analysis

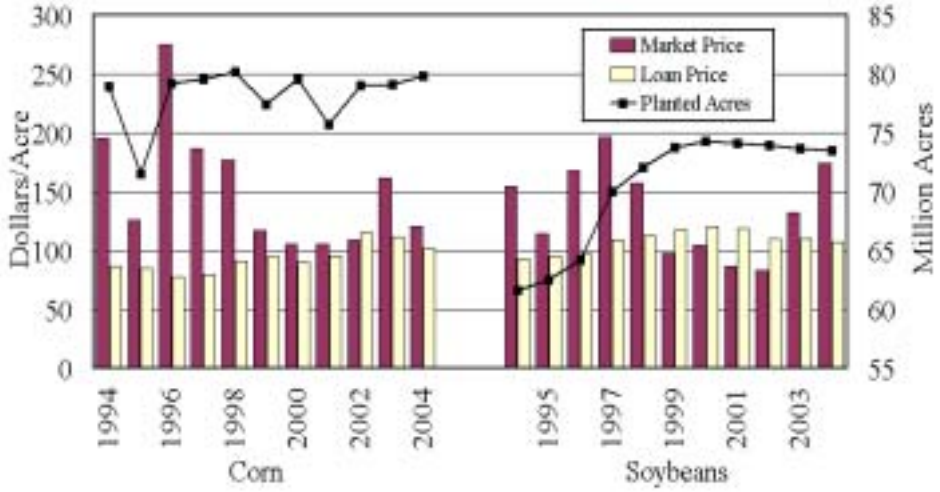
US Loan Economics on Corn Production

There has been concern voiced that the marketing loan provisions in the 1996 and 2002 US Farm Bills have promoted the over-production of corn in the US. which in turn, favours domestic US livestock production through low prices. The issue becomes one of Canadian livestock industry competitiveness with the US.

Prior to the 1996 Farm Bill, certain government programs, which applied to wheat and corn, did not apply to soybeans (the Acreage Reduction Program (ARP) and the target price/deficiency payment program). The absence of these programs for soybeans artificially favoured corn. The 1996 Farm Bill removed the ARP, eliminated target prices and introduced, or increased focus on, marketing loan rates, the LDP program and production flexibility contracts. At this time, the soybean loan rate increased relative to wheat and corn, a major factor leading to substantial expansion of area seeded to soybeans. The marketing loan provisions in the 2002 Farm Bill has not changed the relative economics materially; soybeans remain an attractive alternative to corn based on loan economics.

Chart 1.5 below shows the net per-acre return for both corn and soybeans – based on both loan economics and market prices. The chart also shows the increase in soybean acres, particularly in the late 1990's, following the 1996 Farm Bill. It should be noted that although soybean acres grew in the time period shown, corn acres were relatively stable.

Chart 1.5 Net Return for Corn and Soybeans



Source: USDA; Sparks analysis

The US farm legislation has not favoured corn production. Rather, considering both market and loan economics and valid assumptions regarding production costs, the relative factors favour the production of soybeans over corn. The result of this has been demonstrated in the relative stability in corn acres as compared to the significant growth in soybean acres, particularly in the late 90's.

Japan's Barley Policy

Barley was an important source of energy in the Japanese diet following World War II. Although 80% of barley consumption in Japan is now as animal feed, the Ministry of Agriculture, Forestry and Fisheries (MAFF) still treats it as a "staple food", along with wheat and rice, for import purposes[8].

Barley may be imported into Japan in one of three ways:

1. MAFF's Food Department Purchases Based on Industry Requests

   There is a tariff rate quota (TRQ) on the amount of barley that can be imported with 0% tariff for both feed and food, depending on supply and demand projections, and the availability of domestic barley. Under the TRQ MAFF's Food Department imports barley duty-free on behalf of licensed processors.

2. Simultaneous Buy and Sell (SBS) System.

   The Simultaneous Buy and Sell (SBS) System was introduced in 2002 to allow buyers and sellers to communicate directly without going through the Food Department. Limited by quota, 800,000 tonnes of barley was imported through five

[8] Source: USDA Foreign Agricultural Service, GAIN Report Number JA3058, August 22, 2003.

SBS tenders in 2002 – 60% of all imports. (The quota has been expanded to 850,000 for 2003.) There is usually a spread between the buy-price and the sell-price of about ¥3,000 (about C$35) per tonne, which goes to the Food Department to cover expenses. The Japanese feed manufacturing industry has been pressuring MAFF to allow all feed barley imports through the SBS system.

3. Commercial Imports.

   Barley imports were tariffied during the Uruguay Round, with an applied rate (rate applied outside of TRQ) of ¥39 per kilogram (about C$480 per tonne). Consequently, commercial imports are very limited.

Since the current system tracks free market principles fairly closely, there appears to be little reason for Japan to defend continued state trading of barley. However, barley has traditionally been an important alternative crop under the rice land diversion program, and farmers who produce barley on rice paddy land receive subsidies of ¥830,000 per hectare (about C$4,000 per acre). MAFF is concerned that even with these high subsidies, domestic barley production would fall if the market were opened, because imported barley is cheaper and of better quality than domestic barley. On the other hand, MAFF wants to maintain duty-free barley imports to keep feed costs low for cattle producers.

By 2008, the government plans to phase out the government-controlled rice land diversion program and replace it with decoupled direct subsidies designed to support permanent production of wheat and barley. Once this occurs, the pressure on MAFF to maintain control of barley imports may be eased. As the subsidies are removed, however, barley production could shrink dramatically since, without subsidies, domestic barley will not be competitive in either price or quality.

Even if barley trade were liberalized, total demand for barley would not increase because Japan's livestock industry is shrinking, while demand for barley for food use is stable. Under a free trade scenario, imports would eventually displace most of domestic production, of about 200,000 tonnes.

Dissolution of the USSR and Related Reforms

In the late 1970's and 80's, the Soviet government placed a high priority on increasing the supply of meat products, a strategy pursued until the dissolution of the USSR in 1992. In the drive to increase per capita meat consumption, Soviet livestock herds expanded to such an extent that domestic grain production could not satisfy the increased feed demand. The USSR and Eastern European satellite countries began to import substantial quantities of grain for feed. In 1992, just as the reforms began, net feed grain imports (imports minus exports) for Russia and Ukraine were 21.7 mmt, about 10% of total world imports.

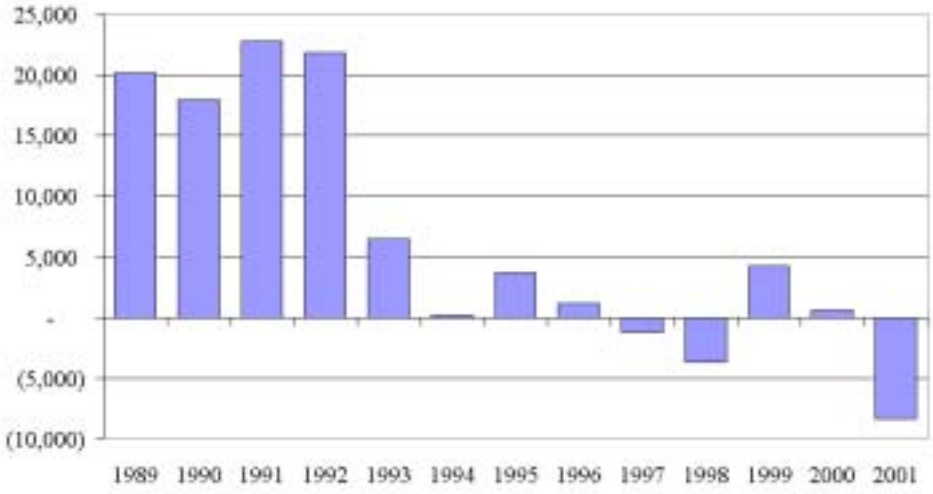
The livestock expansion policy also led to increasing agricultural subsidies. By 1989, total subsidies in the USSR amounted to 13.5% of GDP, of which subsidies to agriculture

accounted for 11% of GDP. The policy did indeed raise per capita meat consumption, which in 1990 was equal to or higher than that in the United Kingdom, despite the fact that per capita income in the United Kingdom was over two times that of the USSR.

Following reforms in 1992, the subsidies supporting expanded livestock inventories were removed, affecting both livestock and feed grain production. Livestock inventories fell dramatically in all countries of the FSU and Eastern Europe; between 1992 and 2000, cattle inventories in Russia and Ukraine fell from 78 to 38 million head. Average grain production in Russia and Ukraine declined from 145 mmt in 1988-90 (about 8.7% of total world grain production) to 78 mmt in 1998-2000, a 46% decline.

These large structural changes had a significant impact on agricultural trade in Russia and Ukraine. The fall in livestock inventories led to a fall in demand for feedgrain resulting in diminished feed grain imports (and increased feed grain exports). In 2000, net feed grain imports for Russia and Ukraine were less than 1 mmt; in 2001 these two countries were a net exporter to the tune of about 8.3 mmt. (See Chart 1.6 below – negative numbers indicate exports.)

Chart 1.6 Russian and Ukraine Net Feed Grain Imports



Source: USDA

The net result of these reforms is that Russia and Ukraine are now net exporters of feed grains, notwithstanding the drop in overall productivity.

Section 2 Coarse Grain Overview and Outlook

2.1 Global Outlook

Corn

Based on trend yields and demand, Sparks' medium term forecast projects world production of corn to increase by 19% to reach 712 mmt by 2010 due to a 28.5% increase in corn production in the US, as well as a 12.8% increase elsewhere[9]. World consumption is forecast to increase by about 14.5% due to increased available supplies, continued strong livestock feed demand and increased use of corn for ethanol production.

Corn will remain the dominant feed grain in the world, and the US will remain the dominant factor in global corn. Current projections are optimistic with respect to livestock feeding in Asia, which will contribute support to global demand for feed grains. Additionally, Mexico is expected to increase imports of corn to satisfy the demand for corn tortillas by the growing Mexican population.

Harvested corn acreage is forecast to grow to 68.6 million acres in 2010, from the current (2003) level of about 65.8 million acres. Combining the increasing area with trend yields provides a US corn production forecast of 11.6 billion bushels (294 mmt) by the year 2010. This increase in production is expected to keep pace with the growth in domestic feed and industrial demand resulting in a stable exportable surplus. U.S. net corn exports (exports minus imports) are forecast to increase from 1.587 billion bushels (40.3 mmt) in 2002 to 2.264 billion bushels (57.5 mmt) in 2010. Most of the growth in world demand for corn is expected to come from Asia.

In China, the world's second largest corn producer, corn production is forecast to grow to 141 mmt by 2010, up from an estimated 121 mmt in 2002, representing an increase of 16.5%. Domestic use is forecast to increase as a result of increased livestock production, leading to a drop in China's net corn exports over the forecast period to about 3.7 mmt on a net (exports minus imports) basis.

Domestic use in the US is forecast to increase, as feed and industrial use is projected to expand, and ethanol production is expected to continue to grow as new plants begin production. Exports are forecast to increase from current levels due to increased supplies, although competition from China is expected to remain, albeit on a smaller scale.

Sorghum, barley and oats are expected to continue to lose ground to corn in the coarse grain mix; cultivation of these crops has declined over the years as farmers have switched to corn, soybeans and other oilseeds that offer higher returns. Research has led to greater yield advances in corn, which have averaged about 149.9 bushels per acre over the past five years.

[9] Unless otherwise stated, all medium term projections are based on Sparks' analysis.

US exports to Canada will continue to grow, particularly in the east where planned expansion of the ethanol industry in Ontario and Quebec will force an increased reliance on imported US corn. In Western Canada, it is projected that Canadian barley production will keep pace with relatively flat livestock feeding requirements and modest growth in malting barley requirements; other than some limited specialty requirements, US corn will be imported only as needed to fill gaps in domestic supplies in times of low production. By 2010, it is projected that the US will export 1.8 mmt of corn to Canada annually, mostly to Eastern Canada.

Barley

Between 1990 and 1999, world barley production dropped 28%, from 178.5 mmt to a low of 127.9 mmt; in the years since 1999, production has merely stabilized with 2002 production at 132.6 mmt. This dramatic drop in production was due mainly to the FSU-15 countries backing off production from 53.3 mmt in 1990 to 22.4 mmt in 1999 – a drop of 58%. This shift was a direct result in the economic meltdown in this region in the early 1990's, which led to reduced consumer demand for meats, which translated into smaller herds and lower feed grain needs. (See Section 1.4 above.)

The FSU –15 will continue to be the main story in the barley sector as world barley area in 2010 is projected to be about 5% higher at 60.8 mha than in 2003 (57.7 mha), based solely on the anticipated 16% growth in area in the FSU-15. All other barley production regions are expected to remain flat. At 155.8 mmt, world barley production in 2010 is expected to be 17.5% higher than the 132.6 mmt in 2002, but still not back to the levels of the early 1990's.

In the EU, barley production is expected to increase slightly from 48.3 mmt in 2002 to about 50.5 mmt in 2010 with increased productivity countering the impact of lower seeded area. Russia and Ukraine are expected to become increasingly competitive with the EU in export markets, which may discourage some EU farmers from planting the crop. While the EU represented 36.5% of the global barley production in 2002, this figure is expected to drop to 32.4% by 2010.

Global barley consumption has also dropped dramatically since 1990-91. In the past ten years or so, barley consumption has fallen 40 mmt, almost all of which is accounted for by economic collapse in the countries of the FSU in the early 1990's. Although expected to grow at an annual rate of about 1.9%, total world barley consumption is not expected to reach the same levels as the early 1990's within the forecast period (2010). Total global barley trade is projected to grow to about 21 mmt in 2010, up from 18 mmt in 2003, in line with both increased livestock and malt demand. (The CWB projections are very similar: the CWB projects world trade in barley to reach 21.6 mmt by 2011[10].)

[10] The Canadian Wheat Board: *"Grain trade forecast to 2011-12"*.

Feed Barley

Feed demand growth is expected to occur in the major barley markets on North Africa and the Middle East, a function of domestic demand based on population growth and local production which can be quite variable; Saudi Arabia's import demand (about 53% of world trade) is expected to remain firm through the forecast period, in part due to the removal of producer subsidies. Geographically, the EU, Eastern Europe and the FSU, are best positioned to supply the Middle East and North Africa with their feed barley requirements. As a result, the only significant exports Canada could expect to make into this region are when the traditional suppliers have a poor crop and Canada has a surplus crop. For this reason, growth in feed barley exports from Canada is not expected and would only occur from time to time, particularly considering the growth in exports from Ukraine and Russia.

Japan accounts for about 15% of world feed barley imports with nearly 90% of its barley requirements dependent on imports. For the last few years, however, Japanese barley imports have dropped by nearly 20%, attributed to a 12% downsizing of its barley consumption, partly related to bovine spongiform encephalopathy (BSE) problems, and, to a lesser degree, higher domestic production. Current weak demand for barley may also be attributed to the economic slowdown in Japan. Demand from Japan is expected to remain flat throughout the forecast period.

Over the forecast period, the growing domestic livestock industry in Australia is expected to constrain its exportable surplus of feed barley, especially in New South Wales, which will leave Western and South Australia as the major exporting regions.

Malting Barley

Malt usage in Asian markets is projected to increase by 2.5 mmt through to 2010. China is expected to account for over 60% of this increase, itself doubling in malt demand from 1.6 mmt to 3.2 mmt. Japan is expected to show a steady increase in malt usage of some 32%.

Of any area, China offers the best potential for increased beer consumption and as a result increased malting barley imports. Rising personal disposable income (Chinese GDP running strongly at 7% or so), a young population in the most populous country in the world, and a lagging per capita beer consumption pace (25% to that of the US) leaves China as a growth market. Moreover, China shows its preference to support its domestic malting industry through an import tariff on malt of 10% (as of Jan 2002, down from 34% in 1996) and only 3% on malting barley, making the importation of malting barley more economical.

Exports from the EU, Australia and Canada are expected to increase, as demand from China is forecast to remain strong. Although malting barley imports into Asia (primarily to China) are expected to increase from a 5-year average of 2.065 mmt to 3.665 mmt in 10 years, increased competition into Chinese malting barley markets, primarily from Australia, may limit growth of Canada's exports to that market. (See Tables 2.1 and 2.2 below.)

Table 2.1 World Malting Barley Exports by Country

(thousand tonnes)	Average	Projections	
	1997 – 2001	2006	2011
Australia	1,350	1,875	2,100
Canada	1,144	1,700	2,025
EU	1,081	1,400	1,500
US	186	175	190
Others	274	425	560
World Total	**4,035**	**5,575**	**6,375**

Source: Canadian Wheat Board: *"Grain trade forecast to 2011-12"*.

Table 2.2 World Malting Barley Imports by Region

(thousand tonnes)	1997 – 2001	Projections	
	Average	2006	2011
Western Europe	85	140	140
Eastern Europe	260	275	275
CIS and Baltics[11]	210	325	250
Africa	160	260	275
Middle East	10	25	30
Asia-Pacific	2,065	3,050	3,655
Latin America	685	885	1,060
Others	560	615	690
World Total	**4,035**	**5,575**	**6,375**

Source: Canadian Wheat Board: *"Grain trade forecast to 2011-12"*.

2.2 North American Outlook

Canadian barley production is expected to increase from the "normal" production in 2000 of 13.2 mmt to about 15.2 mmt in 2010 due to a relatively stable seeding area and assuming trend yields[12].

Feed Barley

Total Canadian domestic consumption is expected to be relatively flat, going from 11.6 mmt in 2000 to 12.0 mmt in 2010. However, there is some variability to these forecasts due to the uncertainty regarding trade issues with the US. In terms of feed demand, the reaction of the beef industry to the closing of the US market to Canadian cattle and beef due to the BSE event has actually increased cattle populations. At the time of writing, there remains some uncertainty about the timing of normalization of trade between Canada and the US. At this

[11] Includes intra-trade among the countries of the CIS and Baltics.

[12] Crop year 2000 is used here as a comparison since the following years – 2001 and 2002 – are atypical due to drought.

time, it is expected that cattle populations will move lower over the forecast period with increases seen only toward the end of the forecast period. (See Appendix A-2 for full analysis on livestock outlook.)

Hog projections in the forecast period also remain uncertain; the ultimate conclusion of the Mandatory Country of Origin Labeling (MCOOL) legislation in the US will have a substantial impact on the Canadian hog industry[13]. Based on the assumption that MCOOL will not go through, Canadian hog numbers are forecast to grow albeit at a slower pace than in the last decade. In the event that MCOOL is accepted, the size of the Canadian industry, both east and west, would be expected to decline, with proportionately a slightly larger decline in the west as some producers exit the business. Eventually the industry would stabilize at a lower level of production.

If we assume a slight decline in cattle numbers and a slight increase in hog numbers, over the forecast period, feed barley consumption would be expected to be relatively flat with a slight bias to limited growth. Moreover, feed use of barley in Western Canada is expected to continue to dominate over imported corn, as the productive base will provide for this demand.

Demand for barley from the feed industry in the US has waned over the past number of years, with the industry moving more to corn, sorghum and other inputs. With the exception of certain localized demand for feed barley (such as in the Pacific North West and California, where barley can still be competitive with corn), current and recent trends indicate that barley acreage in the US is primarily for malt.

Malting Barley and Malt

The US domestic brewing market represents about 87% of the demand of the US malt industry; exports represent about 10% and the balance is domestic food and distilling. Growth in US brewing demand is projected to be in the neighbourhood of 1.3% per year over the forecast period, based on the assumption that the per-capita consumption of beer in the US remains flat while beer demand is expected to grow in line with population growth. In addition, Mexican malt demand is expected to increase about 5% over the next few years, generating increased import demand from either the US or Canada as the Mexican per-capita consumption grows in line with the growth in the economy. Domestic malt demand within Canada, similar to the US, is also dependant upon population growth.

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[13] Recent Country of Origin Labelling (COOL) legislation passed in the US demands all livestock products must be born, raised and slaughtered in the US to carry the USDA's quality stamp; all imports must be labelled with the country of origin. Although currently voluntary, this program is set to become mandatory as of October 2004 (MCOOL). The USDA rules outline specific criteria that must be met to use the label "United States Country of Origin"; many other countries feel that this distinction will create an unfair marketing advantage for American goods and may be in breach of WTO rules.

Canadian exports of malt to the US have increased over the last few years to satisfy the growing US demand and to replace US malt production destined for the Mexican market. However, additional malting capacity is being built in the US and once these facilities are online, malt exports from Canada are expected to taper off.

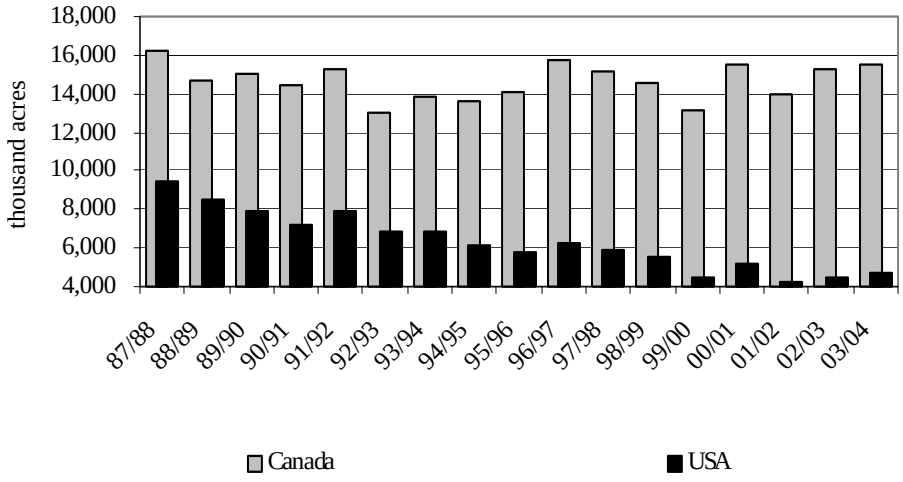
Offshore demand of both malting barley and malt is expected to grow, specifically in Asia (led by China) and South America. (See Section 2.1 above.) Exports to the US are expected to increase somewhat due to the shift from malt to malting barley albeit moderated as US maltsters increase local production through contracting programs. On balance, the US market for Canadian malting barley is expected to show only limited growth.

Barley Production Trends

The expansion of the livestock industry over the past decade or so has played a supporting role in the malting industry. Although the strong domestic feed industry increases the amount of competition for Canadian barley supplies, the expanding livestock industry is generally supportive of barley production through demand and prices. Assuming that area seeded to barley increases as livestock production increases, then maltsters will have more high quality barley to select from and may have improved selection quality.

The two distinct types of barley used for the production of malt (two-row and six-row) differ in agronomic properties (yield, disease resistance) and in their production areas in North America. Montana and much of Western Canada grow primarily two-row barley while North Dakota, Minnesota and the eastern part of the Canadian prairies grow six-row barley. Two-row barley yields more malt per bushel, but it is more prone to disease.

Chart 2.1 Barley Acres – Canada and US



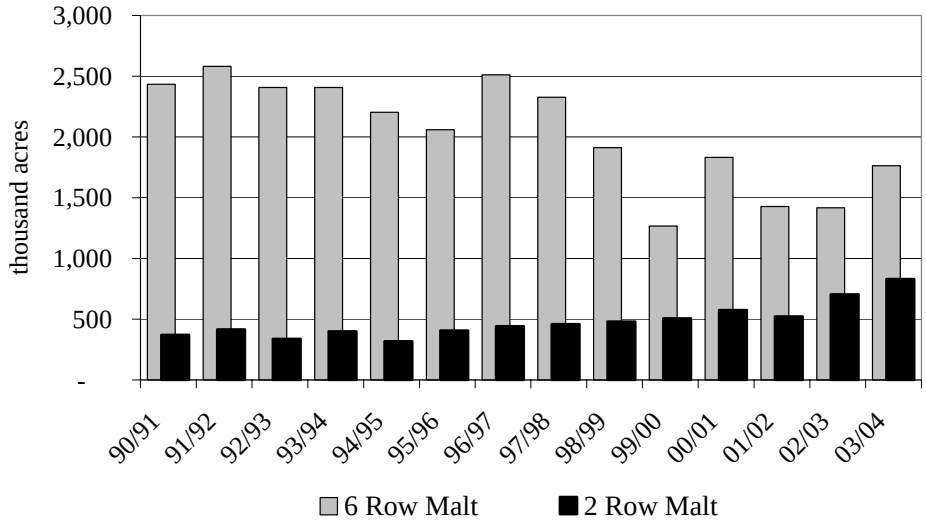
Source: USDA and Statistics Canada

In the U.S., barley grown for malt is expected to increase while barley grown for feed will remain flat or decrease. The trend in the US has been toward lower total barley acres due to a continual erosion of demand from the feed sector, countered somewhat by firm demand from the malting sector. See Chart 2.1 above.

In Canada, barley acres have trended relatively flat. As demand has grown from the feed sector, exports dropped off; therefore, growth in demand has not created demand for more acres.

With respect to malting varieties, the trend in both countries has been toward increased area of 2-Row and reduced area of 6-Row. Charts 2.2 and 2.3 below show the annual acreages in each country by 2-Row and 6-Row.

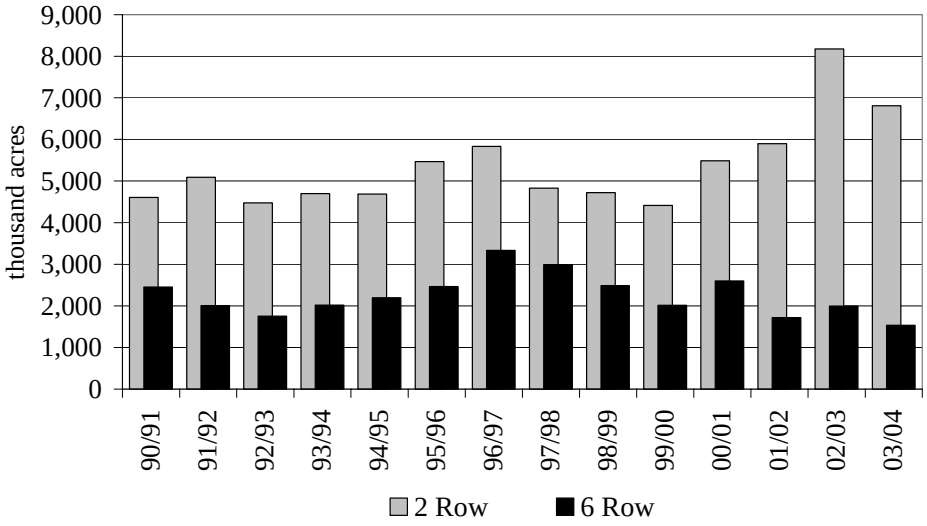
Chart 2.2 US Malting Barley Acreage – 2-Row and 6-Row



After years of being dominated by 6-Row barley, US malting barley acres are trending toward a more even split between the two types. Minnesota and North Dakota, significant 6-Row producing areas, have seen 6-Row acres dropping due to the problems with fusarium. (See below.) Meanwhile, 2-Row area is increasing as maltsters in the western states are contracting more in that area, where 2-Row does better.

In Canada, 6-Row area has also suffered due to disease while 2-Row has enjoyed increased demand from offshore markets.

Chart 2.3 Canadian Malting Barley Acreage – 2-Row and 6-Row



The Fusarium Factor

Wheat and barley, primarily in eastern Saskatchewan, Manitoba's Red River Valley and North Dakota have been affected by a fungal disease known as Fusarium Head Blight - also referred to as "tombstone" kernels or, in the US, as "scab." The value of grain containing fusarium depends on the fusarium content and the options for cleaning and blending it with fusarium-free grain. (Fusarium damaged wheat or barley has been traded within Western Canada depending upon its fusarium content and which livestock sector can make the best use of grain with a specific level of fusarium damage. Cattle are more tolerant of fusarium than hogs.) Feed barley from Manitoba and Saskatchewan with fusarium content that exceeds the threshold for hogs has been shipped to Alberta's cattle sector, while barley from Alberta is shipped to Manitoba hog producers.

The North American malting industry is seriously concerned with fusarium, which produces toxins that render barley unsuitable for brewing. Some new varieties have been developed (primarily two-row) which have somewhat better resistance to fusarium than earlier varieties, placing even greater preference toward two-row varieties. However, even these new varieties are susceptible to fusarium and research is continuing. More immediately, the US malting industry is focusing more on production areas west of North Dakota in an effort to avoid fusarium.

Section 3 Western Canadian Barley Competitiveness

In the wake of recent large imports of corn from the US, there has been concern voiced over the ability of the livestock industry in Western Canada to compete with its counterpart in the US. The question is; how can Western Canada livestock interests compete with the US if they have become reliant on imported corn from the US, when the US livestock sector is using the same input but at lower cost?

For the purposes of this report, competitiveness is defined as the ability of the barley industry to be sustainable while providing reasonable returns on investment. Additionally, for the Western Canadian barley industry to be considered competitive, it would be required to maintain and increase market share in markets for its ultimate end-products (livestock and malt) which would also require attractive opportunities for new investment in the industry.

Western Canada has not, nor is it expected to become, reliant on US corn imports. In non-drought years with typical barley production, Western Canada will produce ample supplies of feed barley; in addition, the price relationship between imported corn and local barley is not expected to sway in favour of corn. A full analysis of this issue is provided in Appendix A-3.

Although Western Canadian malt production has grown over the years, recent announcements of expansion in the US (after Western Canadian locations were considered) have caused the Canadian industry to question its future viability and ability to grow. This section considers the factors that differentiate the Western Canadian malting industry from that in the US, specifically those factors that would sway investors to build in the US rather than Canada.

3.1 CWB Malting Barley Pricing Policy and Behaviour

The CWB pricing policy for malting barley is rather simple, based on appropriate benchmark prices for each market. In addition, CWB prices depend to a great deal on who the end customer is for the malt.

Export Malting Barley (Offshore)

The CWB benchmarks offshore malting barley sales to the current EU FOB price for malting barley; according to industry sources, the CWB price quoted for FOB Vancouver sales is typically within only a few dollars per tonne from the EU price, once the currency is converted. (The EU is the largest exporter of malting barley and therefore is considered as a vital market center. There are two ports used for malting barley – Creil and Rouen, both in France. The price spread between them on any given day is considered to be minor; moreover, trade in malting barley can, at times, be very thin and prices from either port are used to reflect European prices.)

However, the CWB has indicated that it attempts to price discriminate, depending on the buyer and so some price adjustments are made from the EU benchmark. Considering that the EU is considered to have the best malting barley quality in the world, any adjustments the CWB makes to its price would be expected to be discounts to the EU benchmark. For example, since China is a very competitive market, CWB offer prices would tend toward

discounts to the EU. (China has been known to buy EU feed barley for use as malting barley; this in itself would tend to pressure Chinese values.) In this market environment, the CWB must be considered a "price taker", not able to extract premiums on the strength of its single desk status.

Export Malt (Offshore)

For sales of malting barley used by a domestic maltster to produce malt for export, the CWB uses EU FOB prices for malting barley as a benchmark for a FOB Vancouver equivalent. The maltster pays this FOB Vancouver equivalent for malting barley, "backed-off" by freight and handling to its inland location. In this fashion, the CWB is selling at prices that are competitive on the world market, thus allowing the Canadian maltster to be competitive on that stage.

Domestic Brewers Malt

The CWB pricing policy for barley for domestic malting (serving the domestic brewers) is more complex. The CWB starts with price indications for "negative DON"[14] six-row basis track Minneapolis; however, this is a very thin market and no longer provides a true reflection of the US malting barley market. Increasingly, US maltsters are contracting directly with farmers, offering prices that are quite unrelated to the Minneapolis market (usually higher). Therefore, the CWB also reviews current cash market business as communicated through US cash brokers, to gain a better insight into the current cash market in the US. From this "informal" indication for the US market, the CWB adds a "Freight Adjustment Factor" (currently $6.00 per tonne) to get to a Thunder Bay equivalent. The CWB asking price for two-row barley is simply the six-row price plus $12.00 per tonne. These prices are released publicly on a daily basis by the CWB, often referred to as the CWB "card prices". (This is discussed in more detail in the section on CWB performance.)

Exports to the US and Mexico (Malting Barley and Malt)

Sales to the US or Mexico are based on the same market indications as used for domestic brewers' malt (as above) for customers in the Midwest and on price indications from Montana and Idaho for customers in the west. From these market indications (from which the CWB card prices are derived), the CWB negotiates sales prices on behalf of farmers. Periodically, in the event that a US maltster is negotiating for a large volume, the CWB has been known to discount prices substantially.

Even though CWB prices for Canada and the US Midwest are supposedly based on the same market indicators, pricing evidence (both CWB offer and sales data from the CWB and anecdotal input from trade sources) indicates that on most days, the Canadian domestic maltster is offered barley at around $25 per tonne more than its US counterpart for the same

[14] DON is short for the *mycotoxin deoxynivalenal* (vomitoxin) caused by mold growth from *fusarium graminearum.* "Negative DON" refers to barley with 0.5 ppm or less fusarium.

barley. This is the only market in which it appears that the CWB can command a premium in any of the barley markets reviewed. This is discussed in more detail in the section on CWB sales performance.

3.2 Where to Add or Replace Capacity: Western Canada or the US Northern Plains

There have been three recent announcements regarding substantial investment in malting capacity in the US. International Malting Co. (IMC) announced a 16 million bushel facility in Great Falls, Montana; Grupo Modelo, Mexico's largest brewing company, has begun construction of a new 6.4 million bushel malt house in Idaho Falls, and; Anheuser-Busch announced the expansion of its Idaho Falls malt plant, doubling the capacity to 16 million bushels. See Table 3.1 below.

Table 3.1 North American Malting Facilities

Company	Location	Capacity (mbu)
Canadian Locations		
Westcan Malting	Alix, AB	8.4
Con Agra	Calgary, AB	15.5
Gambrinus Malting	Armstrong, BC	0.4
Dominion Malting	Winnipeg, MB	5.5
Con Agra	Thunder Bay, ON	7.8
Con Agra	Montreal, PQ	4.8
Prairie Malt Ltd	Biggar, SK	14.6
US Locations		
Coors Brewing Company	Golden, CO	15.0
Con Agra	Pocatello, ID	6.0
Froedtert Malt	Chicago, IL	8.4
Busch Ag (BARI)	Moorhead, MN	6.7
Rahr Malting Co.	Shakopee, MN	22.6
Froedtert Malt	Winona, MN	6.7
Ladish Malting Co.	Spiritwood, ND	16.8
Con Agra	Vancouver, WA	11.8
Briess Malting Co.	Chilton, WI	1.0
Ladish Malting Co.	Jefferson Junction, WI	11.3
BARI	Manitowac, WI	13.3
Froedtert Malt	Milwaukee, WI	15.0
Briess Malting Co.	Waterloo, WI	2.2
New Capacity		
Busch Ag (BARI)	Idaho Falls, ID	16.0[15]
InterMalt (IMC)	Great Falls, MT	16.0
Grupo Modelo SA	Idaho Falls, ID	6.4

[15] Capacity of previous facility doubled.

Interestingly, this is happening at a time when the Canadian malt industry capacity is under-utilized. Moreover, many in the Canadian industry are concerned that this investment was not made in Canada. Evidence suggests that Western Canada should actually be a more attractive location; various factors support this:

- Based on information from various industry sources and our own estimates, malt manufacturing costs are estimated to be lower in Canada than in the US[16]. At or near, full production, Canadian operating costs are estimated to be in the range of US$35.00 to US$40.00 per tonne of malt produced, while US costs are more in the range of US$45.00 to US$55.00 per tonne[17]. The most significant factors are labour, natural gas and electricity.
- Based on relative freight rates for malting barley and for malt, it is more costly to ship barley than malt. For this reason, the malt plants in the US Midwest (east of Minneapolis), are now considered to be out of position. This not only supports the strategy of the new capacity being built in the west, close to the barley production, it supports increased capacity (and capacity utilization) in Western Canada, closer to a much larger production base.

The US malting industry is attracting investment and jobs with about 600,000 tonnes of new capacity scheduled to come on line in 2004-05. This activity will bring over US$400 million in initial capital, US$30 million in annual operating costs, taxes at various levels, future capital expansions and spin off benefits to local communities.

- Increased levels of fusarium in North Dakota have reduced interest in drawing from that area by US maltsters (this factor places Midwest plants further out of position as they now draw from further away, including from Canada and the more western states of Montana and Idaho).
- The Canadian malt industry is somewhat protected by the application of a Tariff Rate Quota (TRQ) on malt which allows into the country only 19,131 tonnes of barley malt per year (referred to as an access commitment). Quantities above this amount are allowed but subject to punitive tariffs. Most of the malt imported under the TRQ access commitment is specialty malt for specialty European style beers. The Canadian brewing industry, using about 275,000 tonnes of barley malt annually, is forced to source its malt from the Canadian malting industry.

[16] These costs include plant administration, production and maintenance labour, maintenance, insurance and property tax, water treatment, natural gas and electricity. They do not include depreciation or the cost of barley.

Other factors in the malting industry suggest why the new capacity is not being built in Canada:

- The North American malt industry has increasingly high quality requirements. At times, a single maltster may have requirements for two or more quality standards, requiring the ability to select and price on the basis of these different quality specifications. The CWB pricing system does not provide for this. US maltsters can achieve this pricing and origination flexibility but Canadian maltsters buying through the CWB cannot. (However, there are recent indications that the CWB is proposing new grading specifications that may allow for pricing on tighter specifications)
- One trend in the malt industry is toward maltsters differentiating themselves to farmers and customers alike on the basis of proprietary malt origination and increasingly sophisticated IP supply chain management. In Canada, the CWB currently allows maltsters to offer and manage a proprietary contracting or IP program within the CWB pooling system (similar to the Warburtons wheat program); however, adherence to pooling removes much of the potential incentives maltsters are willing to offer farmers for participation. These incentives include premium pricing, hedging mechanisms (that can provide minimum prices for contracted barley that does not make malt specifications, possibly indexed to WCE Western Barley futures) and agronomic support.
- There is a trend toward specialty malts for specialty beers, requiring strict varietal and quality control. This requires working closely and directly with farmers via contracting programs, agronomic support, and pricing, sometimes on fairly small quantities. Again, as with the IP trend above, CWB pricing and pooling interferes with the execution of these types of programs.
- Perhaps a key ingredient in the decisions to build capacity in the US, the position of the CWB as the sole source of malting barley in Canada has discouraged capital investment in the malting industry in Canada. By locating in the US, maltsters can source local barley production while also sourcing imported barley from the CWB; the ability to contract with various sources – including farmers – is an important logistical factor when operating any processing facility.
- In times of tight supplies of malting quality barley and rising prices – such as 2002-03 – the CWB system interferes with the efforts of Canadian maltsters to attract the required quality and quantity of malting barley. Although the maltsters may be willing to pay higher (sometimes substantially higher) prices to get the quality they need, the pooling concept does not use price as a means of attracting deliveries and so the important price

[17] Currency exchange rates will affect these cost relationships since Canadian costs are in Canadian dollars and have been converted to US for comparison. The recent strength in the Canadian dollar has moved Canadian costs toward the upper end of this range.

signals do not get out to the farmer. In 2002-03, farmers sold malt quality barley to the feed market as it appeared to be the better market.

3.3 Where Will the Canadian Brewing Industry Go?

The CWB policy on domestic brewer's malt aims at extracting a premium from sales of malting barley to produce malt for domestic brewers. As mentioned before, this is possible due to the lack of competition from imports due to the TRQ on malt. Although it could be said that the malting industry does not suffer from this policy, this is a shortsighted position.

Through the pricing actions of the CWB, the Canadian brewers are paying higher prices for malt than their US counterparts. When the Canadian brewers are considering upgrading and replacing their aging facilities, the decision process would be expected to evaluate relocating to the US. Despite patriotic and sovereign issues, the attraction will be compelling. (Labatt's is owned by Interbrew, the large multi-national based in The Netherlands – loyalty to Canadian soil may not be as strong as one might assume for a "Canadian" beer maker.) Locating in the US provides a choice of buying malt from either US or Canadian maltsters, at more competitive prices than they are seeing currently in Canada. If located in Canada, they are restricted (by the TRQ) to buying from only Canadian maltsters via the CWB marketing system.

Hypothetically, in the event that Canada loses a substantial part of its brewing industry, the malt industry will suffer. For business that was once in their backyard, the Canadian maltsters would have to compete with state-of-the-art malt plants in the US that have much more operational flexibility. Regardless of the impact on the malting industry, the Western Canadian farmer loses. He would no longer obtain the "premiums" the CWB is capturing currently from domestic business and would have to compete with US farmers for that volume.

3.4 Observations and Conclusions

- Potential investments in value added opportunities have been lost to the Canadian malting industry in part due to the federally mandated CWB grain marketing system.
- Once the capacity goes to the US, local contracting of malt barley to supply those malt plants will occur (it has started already). The extension of this is that the Canadian malting barley industry loses on both fronts; the domestic maltster loses US export business to the new US maltsters therefore requiring less from the Canadian farmer and the CWB (farmer) loses business to the US maltster as they encourage, retain, and nurture captive malt barley acreage where possible. Also, the Canadian farmer loses the "premiums" the domestic maltster is paying for barley to produce domestic brewers malt. Attempts at making up the lost tonnage would be aimed at lower priced offshore demand, such as China.

- Although Canada has the natural characteristics that would make it the most favourable location for North American malting, the involvement of the CWB negates these pluses. CWB rigidity on pooling and interfering with direct involvement between maltsters and farmers is clearly been an impediment to growth in the industry. As the processing industry moves to the US, the general economy of Western Canada loses significant commercial and economic activity.
- The US system is expected to develop through value propositions to individual farmers, grain merchandisers and handlers including contract growing, paying toll fees for elevation and segregations and possibly joint ventures. There is expected also increasing pressure for sophisticated identity preserved systems as brewers, in the interests of food safety, will begin to require traceability. Demand for these traceability and IP programs will find resistance in the CWB price pooling system.
- Commercial maltsters, particularly in the US will increasingly differentiate themselves through proprietary malt barley origination and sophisticated IP supply management. Unless Canadian maltsters can operate in similar fashion, it will be increasingly difficult to compete in the US, a key market for Canadian malt. Since most of the Canadian maltsters are US based, there is the risk that the US parent companies will favour operations which they can operate freely; Canadian malt houses will be phased out of the US market, relying on Canadian domestic and offshore business.

Section 4 The Role of the CWB in the Canadian Barley Industry

This section reviews the role of the CWB in the barley industry, both feed and malt, in domestic and export markets. Through interviews with key players in the domestic malt industry and analysis of the domestic feed barley market and publicly available CWB prices, conclusions regarding the impact of the CWB on the Western Canadian barley industry are developed and presented. This section begins with an assessment of price pooling in the barley pools and the use of Initial and Interim Payments. This is followed by assessments of: the CWB practice of allocating interest revenue from past credit sales into the barley pools; a review of the effectiveness of the PRO; and an assessment of CWB pricing options.

4.1 Price Pooling

One of the foundations of the CWB, price pooling refers to the process whereby revenues from all sales within a predetermined time period are allocated to one of four pool accounts, depending on the grain being sold: wheat, durum, feed barley and designated (malting) barley. (Typically these periods cover deliveries made during a whole crop year (August to July), however the CWB has the authority to set shorter pool periods[18].) It should be noted that, in any given year, the amount of farmer-deliveries into a pool does not equal the sales made to customers in that same year. The CWB considers inventory that is carried from one crop year to the next as being "sold" to the following pool; in this way, for the purposes of pool accounting, all grain that is delivered is considered as sold in that crop year. Whenever reference is made to the size of a particular pool (in tonnes), it refers to the number of tonnes delivered to the CWB during the crop year. (More detail on the accounting of pool accounts is found in Appendix A-4.)

Within each pool, the CWB pays farmers the average achieved price, adjusted for the actual grade delivered, after deducting operating and other expenses that have been allocated to the pool. This is aimed at ensuring that all farmers are treated equitably, regardless of when their grain is sold during the pool period. All farmers receiving the same grade for their wheat or barley receive the same return at the end of the crop year, net of elevator and terminal handling fees and transportation.

Payments

When farmers deliver grain to an agent of the CWB, they are paid an Initial Payment representing a portion (roughly 65-75%) of the total return that the CWB expects for that grade of grain in that crop year. A simple way to look at this is to consider the Initial Payment as a down payment.

[18] Although the CWB has the authority to establish shorter pool periods, at the time of writing, it has not used this authority. For the purposes of this discussion, pool periods will be assumed to be full crop years.

During the crop year and when market conditions and sales progress warrant, the CWB may recommend an adjustment to the Initial Payment, called an Adjustment Payment.. In addition, after the pools are closed for the crop year but before the Final Payment is made, the CWB may provide an Interim Payment if there is a substantial gap between the payments made and the expected total for the crop year. Following the conclusion of the crop year, the CWB pays the remainder of the net pool return – the Final Payment – to the farmer.

Based upon recommendations made by the CWB that take into consideration world market conditions for each grain, Initial, Adjustment and Interim Payments are guaranteed by the Federal Government.. This government involvement is due to the fact that these payments are fixed and irrevocable.

A fundamental outcome of the pooling process and the employment of Initial Payments is that price is not used by the CWB as the primary mechanism to attract farmer deliveries. This arises from the fact that the Initial Payment is fixed for the entire pool period (crop year). The price paid to farmers can only increase through a crop year through the provision of an Adjustment Payment and only when the total payment (Initial plus Adjustment) would not likely end up higher than the total return by the end of the pooling period.

This level of involvement by the Federal Government is a unique administrative impediment to the CWB's ability to respond to market changes. For example, procedures to increase the Initial Payment can take many days (reportedly over 60 days at times) due to the requirement of getting federal agreement. In the barley markets, this inability to react quickly to rising prices (by providing higher Initial Payments through Adjustment Payments) can result in (1) lost sales due to the inability to attract fresh deliveries and (2) farmers not being able to benefit from strong markets (because they are unaware of them). To help counter this impediment, the CWB has initiated various early payment options; these are covered in more detail in Section 4.4 below.

Deficits

If the total return in a pool is less than the Initial Payment (therefore, a shortfall or deficit in the pool), the Federal Government pays to the CWB an amount to make up the deficit. For example, if the Initial Payment is set at $120 per tonne, but the average sales level for the crop year is $100 per tonne (after accounting for CWB expenses), the CWB has paid out through Initial Payments to farmers, $20 per tonne more than it received on sales. The Federal Government pays the CWB an amount equal to the deficit as the CWB maintains no cash reserves upon which to draw for this scenario.

Since 1960, there have been five deficits in the wheat pool, two in the durum pool and seven in the feed barley pool. The most recent deficit occurred in 2002-03 when the wheat pool had a deficit totaling about $85 million.

Calculating the Final Pool

The final pool price is influenced by a number of factors. The most important are sales levels, volumes and costs – including both administrative and operating costs. Moreover, there are two additional factors that can have a significant impact on the final return in the pool. Firstly, the treatment of inventory carried forward from one pool period to another can have a substantial impact on both pools; this issue is connected to the performance issue concerning total sales volumes. Secondly, interest revenue from past credit sales has become a major component of revenue in the feed barley pool. (Appendix A-4 provides a detailed description of the various factors that contribute to the final pool return.)

Carrying Inventories From One Pool to the Next

In practice, not all grain bought by the CWB during a given pool period is sold in that crop year. Every year, varying amounts of grain are carried from one pool period into the next, either as grain that has been sold but not yet shipped or as grain not yet sold. Potentially significant factors in the pool calculation – and therefore the net return to farmers in a particular pool – are the amount of unsold grain brought forward from the previous pool, the amount carried forward into the next pool account and the values attached to either. Appendix A-4 provides a more detailed description of inventory treatment between pools.

It is not just possible, but probable, that the treatment of unsold inventories has a material effect on the ultimate value of the pool which impacts the concept of equity among farmers participating in the CWB pools. For example, farmers who participated in one pool but not in the following pool could forfeit some of the revenue from the sale of their grain. If a substantial amount of unsold grain is carried from one pool into the following pool and subsequently sold at a higher price than the price assigned to the grain being transferred[19], farmers contributing grain to the first pool will not capture that higher sale price since it will contribute to the following pool.

Conversely, a farmer participating in the second pool but not in the first, would gain by the additional revenue generated by the inventory carried in. For example, if 100,000 tonnes of feed barley is valued at year end by the CWB at $100 per tonne, is carried forward into the second pool and subsequently sold for $120 per tonne, there is revenue of $20 per tonne, or $2 million, in the second pool generated through means other than the sale of the grain being physically delivered into the second pool. If physical deliveries in the second pool totaled 50,000 tonnes, the treatment of inventory will have added $40 per tonne to the pool return for those making those deliveries[20]. In other words, those participating in the second pool will

[19] This is the price of value assigned to the unsold grain by the CWB for the purposes of finalizing the first pool.

[20] 100,000 tonnes of inventory is carried into the second pool valued at $100 per tonne and sold for $120 per tonne, for a profit of $20 per tonne or $2,000,000. Allocating this revenue to the 50,000 tonnes of deliveries into the pool adds $40 per tonne of revenue (2,000,000 / 50,000 = $40).

gain at the expense of those participating in the first pool only. This is clearly not an issue if all participating farmers are the same in every pool (crop year); however, in the more likely event that the participating farmers are not the same year after year, an inequity will have occurred.

Interest Revenue Allocation

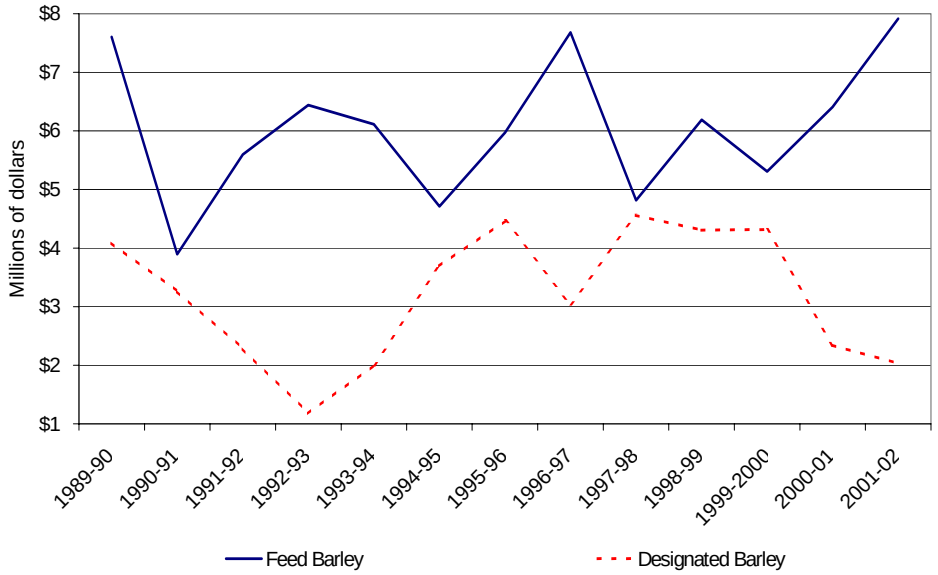
Through the normal course of business, the CWB earns interest revenue from two main sources; through the management of accounts receivable on credit sales and interest earned on positive pool account balances which are the product of the delay in distributing all sales proceeds owing to farmers until after the pool period. This interest revenue is allocated to the pool for the grain that created the revenue.

Appendix A-5 provides a detailed description of the allocation of net interest revenue from past credit sales. Section 4.2 below takes a closer look at net interest revenue as it relates to the barley pools.

4.2 Net Interest Revenue Allocation in the Barley Pools

Net interest revenues have become a significant component in the feed barley pool. Chart 4.1 below shows the amount of interest allocated to each of the barley pools since 1989-90. Net interest revenue in the feed barley pool has ranged from a low of $3.89 million in 1990-91 to a high of $7.19 million in 2001-02; interest revenue in the designated barley pool has ranged from a low of $1.18 in 1992-93 to a high of $4.56 in 1997-98.

Chart 4.1 Total Interest Revenue Allocations to Barley Pools



The vast majority of the interest revenue comes from credit sales made in previous years. Of the countries eligible for credit under the Credit Grain Sales Program (See Appendix A-5) only USSR (Russia), Poland and Iran have bought significant quantities of barley from Canada since 1970; although most of this occurred in the 80's, Russia last bought Canadian barley in 1990/91 (1.2 mmt). See Chart 4.2 below. Therefore, practically speaking, interest generated in the current feed barley pool (between $7 and $8 million) is from sales made during the late 70's and 80's.

Chart 4.2 Feed Barley Exports to Countries Eligible for CGSP Credit

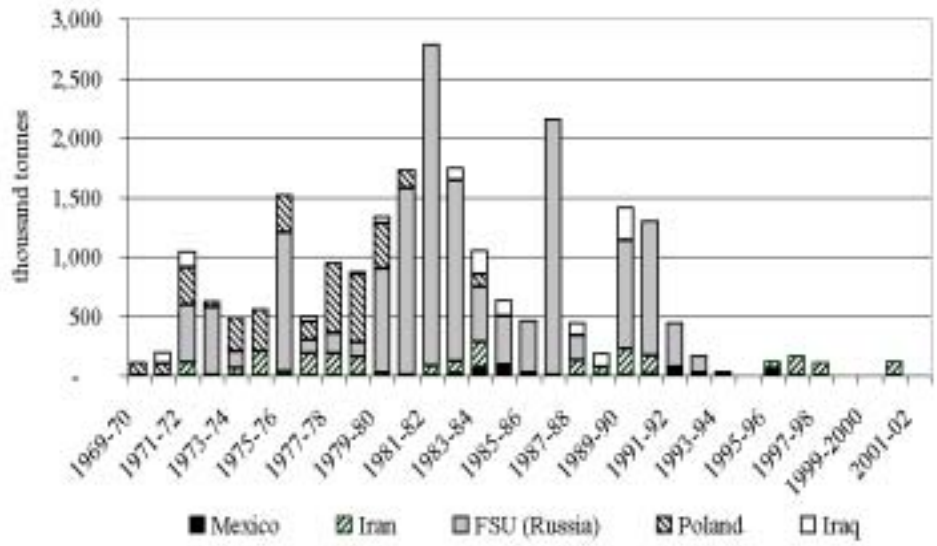
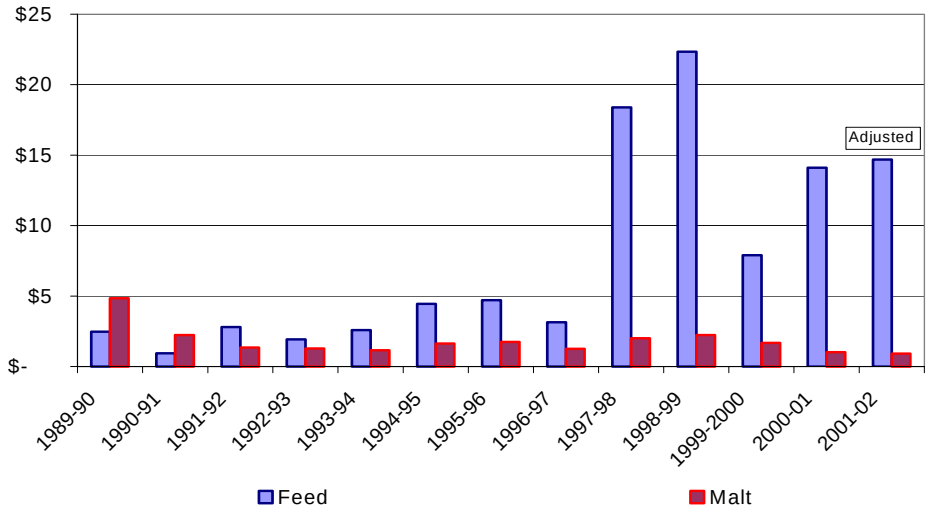


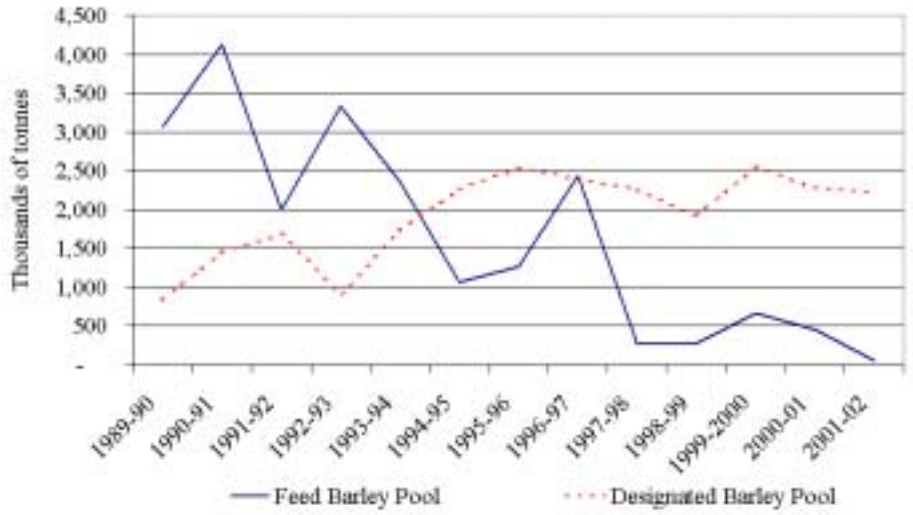
Chart 4.3 below shows the net interest revenue allocations to the barley pools on a per tonne basis since 1989-90. Interest revenue in the malt pool has been fairly stable ranging from a high of $4.85 per tonne in 1989-90 and trending to a low of $0.92 per tonne in 2001-02. Conversely, the feed barley pool has seen more dramatic shifts in interest revenue on a per tonne basis, ranging from a low of $0.94 per tonne in 1990-91 to a high of $22.34 per tonne in 1998-99. In 2001-02 the interest allocated to the feed barley pool was originally $145.54 per tonne, but was adjusted to $14.69 per tonne by a decision by the CWB board of directors to transfer the equivalent of $130.85 per tonne ($7.1 million) to a contingency fund; this will be discussed in more detail below.

Chart 4.3 Interest Revenue Allocations to Barley Pools ($ per tonne)



Two factors have led to this situation. The main reason is that the feed barley pool has shrunk in size in recent years (see Chart 4.4 below), making the interest allocation exceedingly material on a per tonne basis. In addition, interest rates have dropped in recent years; lower interest rates contribute to wider spreads between the CWB's borrowing rates and the rates used on credit sales[21].

Chart 4.4 Size of Barley Pools: 1989-90 to 2001-02



[21] Prior to 1997-98, interest revenues averaged $2.88 per tonne when the average feed barley pool size was 2.5 mmt (about 2% of the value of the sales). Subsequently, the average pool size has dropped to about 344,000 tonnes and the average per-tonne interest allocation has increased to $15.49 per tonne. (If calculated on the interest allocation in 2001-02 prior to transferring most of it to the contingency fund, the average climbs to $41.66 per tonne.) Interest in this period has averaged about 26% of the value of the sales made (considering the total unadjusted interest allocation in 2001-02).

2001-02 – An Exceptional Year

In 2001-02, the domestic feed barley market was relatively strong due to a drought-reduced crop and steady demand from the domestic feed market. In this environment, the CWB found it increasingly difficult to attract barley to the feed barley pool (away from the domestic market). By the end of the year, the total feed barley pool was 54,373 tonnes; total CWB shipments were recorded to be 37,787 tonnes, of which the CWB indicated 30,000 tonnes were sold to the domestic feed market – over half the total sales that year. (For comparison, in 2000-01, the feed barley pool was 454,000 tonnes and the interest allocation was $14.11 per tonne.) Details of the 2001-02 feed barley pool are found in Table 4.1 below.

Table 4.1 CWB Feed Barley Pool Results: 2000-01 and 2001-02

	2001-02	**2000-01**
Receipts (tonnes)	**54,373**	**454,073**
Revenue	$174.82	$139.13
Operating Costs		
Direct Costs	$7.15	$8.26
Administrative Expenses	$2.69	$3.32
Grain Industry Organizations	$0.08	$0.08
Net Interest Earnings	($145.54)	($14.11)
	($135.62)	**($2.45)**
Earnings for Distribution	$310.44	$141.58
Less: Transferred to contingency fund	$130.85	-
Earnings Distributed to pool participants	**$179.59**	**$141.58**

The CWB must take into consideration the size of the pool before it can estimate the PRO since the lump-sum interest revenue allocation makes the per-tonne interest income inversely proportional to the size of the pool. With the 2001-02 feed barley pool exceptionally small at just over 54,000 tonnes, the interest revenue allocation of $7.9 million equated to $145.54 per tonne. Allocating this full amount to the pool would have raised the price substantially and dramatically. Further, if this revenue had been indicated in the PRO, there is no doubt that farmers would have delivered much more feed barley to the CWB, causing the pool price to drop due to smaller per-tonne interest revenue. The apparent solution was to allocate a portion of the interest revenue to a contingency fund. According to the CWB Annual Report,

> *In July 2002, the CWB board of directors announced that, given the size of the feed barley pool, only a portion of interest earnings would be paid to farmers through the pool account. This was done to avoid distorting the price relationship between feed and designated barley.*

This unprecedented situation created a significant stir within the farm community and placed a spotlight on the workings and pricing behaviour of the CWB.

A review of historical price data reveals that the CWB feed barley PRO is consistently below the Portland export price for feed barley (as reported by USDA), typically by about C$20.00 per tonne, but at times, by as much as $40.00 per tonne. (This is indicative of the CWB policy of setting the PRO conservatively in relation to the underlying market; a reasonable approach given the restrictions of the CWB pricing mechanisms.)

In 2001-02, the feed barley PRO began a sharp upward move (to C$160 per tonne) when the CWB released a special mid-month change to the feed barley PRO in July 2001, an increase of C$11 per tonne since the PRO released just two weeks earlier. (See Chart 4.5 below.) The CWB continued to increase the feed barley PRO each month following, peaking at C$180 in October 2001[22]. This created the unprecedented situation where the PRO exceeded the Portland price for practically the whole crop year – at times by a factor of more than C$20.00 per tonne.

Chart 4.5 shows a comparison of the CWB feed barley PRO (basis Red Deer, AB) to domestic feed mill prices at Red Deer and Portland export barley prices (adjusted to a Red Deer equivalent using Canadian freight and handling costs). The chart shows that the increases in the CWB PRO do not appear to be based upon export market signals. One conclusion is that the PRO was increased early in the crop year due to the realization within the CWB that, with a strong domestic market for feed barley, the CWB would not be able to originate feed barley for export; a more typical PRO (relative to the Portland export price) would prove to be uncompetitive with strong domestic prices.

Chart 4.5 Feed Barley Price Comparison 2001-02 Crop Year (Canadian dollars)
Basis Red Deer, Alberta

Sources: CWB PRO – CWB; Domestic Non-CWB feed mill prices - Alberta Grain Commission; Portland Cash Barley prices – USDA.

[22] In the PRO release, the CWB stated, "Global feed barley prices are slightly higher this month." This may have been true, however, the Portland price actually dropped in the same time frame.

The dilemma was clear – with the PRO below export values (and substantially below domestic values) where the CWB had set it leading into the crop year, it would attract minimal (if any) feed barley deliveries; minimal deliveries would mean higher interest revenue on a per-tonne basis, which eventually would force the CWB to raise the PRO (and the final price) on the basis of interest revenue alone. One solution would be to attract enough deliveries to mitigate the impact of the interest revenue on the pool price[23].

However, to do that, the CWB would need to compete with the domestic feed market for barley, which would mean raising the PRO significantly higher than the export market price. This would lead to the awkward situation where the CWB would be selling barley in the export market below the price paid to farmers (a definition of dumping). Alternatively, the CWB could sell feed barley delivered to it into the domestic feed market; indeed, the CWB indicated in its 2001-02 Annual Report that the majority of the barley it sold in that crop year was sold to domestic buyers.

If the CWB raised the PRO too much, it ran the risk of attracting too much barley (at prices exceeding export prices). Moreover, if a higher PRO caused an increase in deliveries, there would have been less interest on a per-tonne basis, which, in turn, would have forced the final pool value lower (eventually). But the CWB would not know how much barley would be delivered, making the per-tonne contribution by the interest revenue both volatile and uncertain.

Although net barley deliveries could be controlled through the CWB delivery contracting series, whereby the CWB could accept only a portion of barley that was contracted to it, this creates a further dilemma. How could the CWB set a PRO at a level that was competitive with the domestic market and then very possibly lower the PRO significantly by the end of the crop year, to a level that would have been unacceptable and uncompetitive in relation to the stronger domestic market earlier in the crop year? The CWB would be soundly criticized for enticing barley deliveries away from the high-paying non-CWB domestic market, and then ultimately paying lower prices.

Conclusions and Observations

- This analysis shows that the allocation of interest revenues from previous credit sales creates inequities among barley farmers. Through the application of government guarantees on CWB borrowings, interest revenue from credit sales made over twenty years ago is contributing to current pools. Farmers currently participating in the CWB pools are clearly benefiting financially from sales they did not make. Therefore, it can be argued that a few Western Canadian farmers are the beneficiaries of a government-

[23] In fact, the CWB potentially faced the absurd situation where the C$7.9 million in interest revenue allocated to the feed barley pool would have little or no barley to be allocated to.

sponsored program (guarantee) that contributes to or supports the prices received via the CWB pools.

- The application of the interest revenue to the pool creates an environment where the price shown to the farmer is quite likely not a fair representation of market value, rather price and pool volumes must be manipulated in an attempt to keep CWB prices from being market-distorting. The irony of this is that the process in which the CWB engages is itself distorting. Rather than focusing on selling grain on behalf of farmers, the CWB may instead have a focus on "managing" price by managing volumes sold. (In the absence of interest revenue allocations – and pooling – it can be argued that the CWB would take a different approach to marketing grain, where sales volumes are as important as price.)
- In 2001-02, the CWB was unable to show the farmer the true price of feed barley; the PRO was clearly a function of interest revenue and the manipulations to the price required to manage a difficult situation. It stands that other pools in other years had a similar fate, only to a lesser degree.
- Under current pool management processes, the need to manage the interest revenue as described in this section forces the CWB to be on the fringe of export feed barley markets. Ultimately, this prevents the CWB from being a meaningful marketing force in barley.
- A more equitable approach to interest revenues would pay interest earned from a particular pool period to those farmers delivering to that pool, even in the years following the actual sales. Interest revenues would then be matched to the farmers that contributed barley to the credit sales in the first place; some would still be receiving interest revenue today and the interest revenue would not be a distortion to pool prices.

4.3 Pool Return Outlooks

Historically the CWB has sold grain on behalf of farmers and pooled the returns. Payment has been made in the form of an Initial Payment upon delivery, periodic adjustment payments during the crop year (based on market conditions) and a Final Payment once the pool is closed (sometime after the end of the crop year). The 'Pool Return' is the sum of all these payments.

The CWB first released the Pool Return Outlook (PRO) in early 1993 as an effort to assist producers with seeding, marketing and financial decisions with the intention of providing a better sense of what to expect as a total return from CWB grains. In addition, it is meant to help farmers determine when to take advantage of non-CWB markets. Domestic feed barley buyers may also monitor the PRO to help gauge domestic barley values; a high PRO relative to domestic prices would lead to projections of higher domestic prices as well. Prior to the development of the PRO, farmers and the feeding industry had only the upcoming Initial

Payment and past experiences with Final Payments to use when comparing returns from various crops or CWB vs domestic feed barley values. Moreover, when selecting between crops for seeding in the spring, the Initial Payments often were not available.

Released each month beginning in February leading up to a crop year, the PRO is "a forecast based on the CWB's projection of world stocks, production, import demand, Canadian supply, exchange rates, sales experience and marketing and handling costs"[24]. The CWB also states all PROs are based on both confirmed and projected sales and prices; among other tools, futures markets are used as an aid in projecting future sales levels. Whereas PROs released late in a crop year reflect a substantial amount of confirmed sales, PROs released before the crop year begins can be, according to the CWB, "determined by almost 100 per cent of projected sales and forecasted market prices, and therefore, is significantly less certain".[25] It is also understood that the PRO is the CWB's combined projections of revenue and net operating costs which would include CWB administration, some handling and logistics costs and earnings from interest.

The "Early" PROs – Prior to the Beginning of the Crop Year

The CWB releases the first PRO of a crop year in February, prior to the beginning of the crop year. Every month thereafter the CWB updates the PRO, employing more recent market intelligence and improved estimates as actual sales prices are used in the forecast. It is the PROs released early in the process – prior to the beginning of the crop year – that are critical in terms of providing farmers with market signals to help in deciding which crops to grow and to provide forecasts for budgeting and financing.

Feed Barley

Chart 4.6 below demonstrates the difference between the PRO in the critical Feb to May period and the final pool return for each crop year since 1994-95. (Since the PRO may change monthly – sometimes significantly – it is depicted in these charts as a range of prices. The gray bands reflect the range of PROs during the time period, much like the high-low bars used in commodity price charts.) The Feb-May time period was selected, as this is when the PRO could be used as a guide to decide which crops to grow. Chart 4.6 below also shows as black bars the total final return in the feed barley pool, as announced after the end of each crop year.

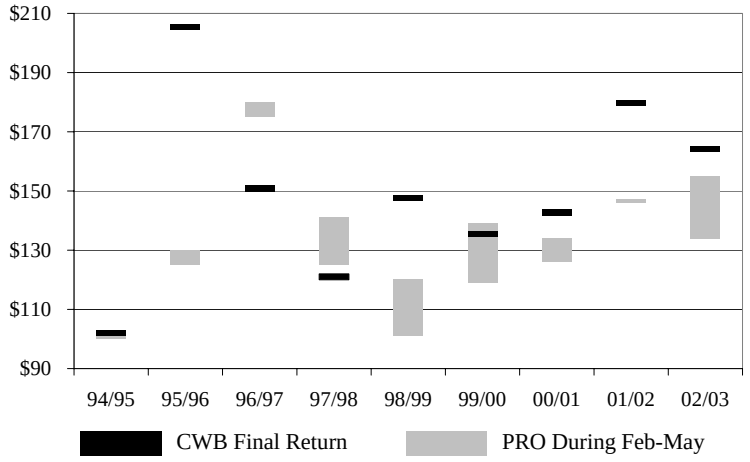
Since the 94-95 crop year, the final feed barley return has been within the range of the early PROs only once, in 1999-2000; in all other years, the final return (black bars) is either above or below the early PRO (gray bands). The final return was higher than the highest "early" PRO in six out of nine years; the most distant being in 95-96 when the final pool return was $75.50 per tonne above the high end of the range of early PROs. (In the chart, the range of

[24] Canadian Wheat Board, 1993-94 Annual Report, page 15.

[25] CWB website, http://www.cwb.ca/en/publications/farmers/july-aug-2002/07-08-02-08.jsp

early PROs in 94-95 is partially hidden by the bar showing the final return; that year the final was only $1.90 above the early PROs, which were constant at $100 per tonne.) In addition, the final return was lower than the lowest "early" PRO in two of the nine years; in 96-97, the final return in the pool was $24 per tonne lower than the lowest early PRO that year and in 97-98 the PRO was $4 per tonne lower.

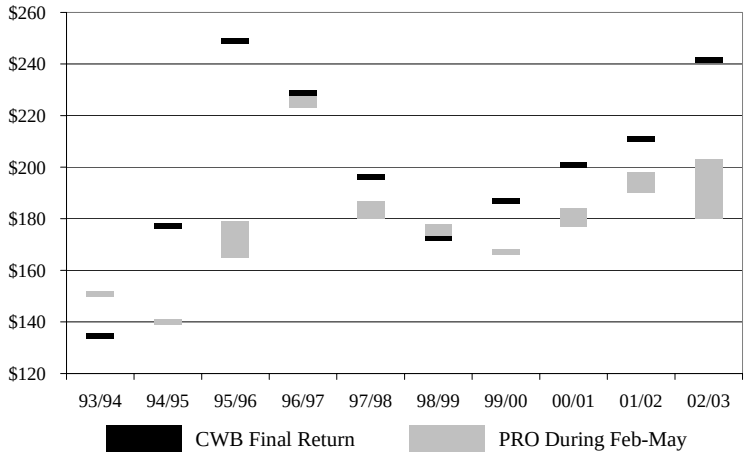
Chart 4.6 Feed Barley PRO During Feb-May Compared to the Final Return



Two-Row Malting Barley

Chart 4.7 below shows as gray bands the ranges of the "early" two-row malting barley PROs in the Feb to May period. This chart also shows as black bars the total return for two-row barley in the designated barley pool, as announced after the end of the crop year.

Chart 4.7 2-Row Malting Barley PRO During Feb-May Compared to the Final Return



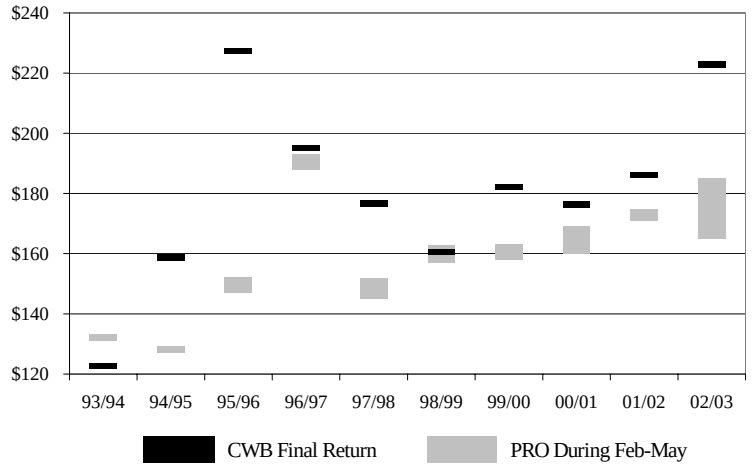
Since 93-94, the final return was within the range of the early PROs once in ten years; in 98-99. The final return was higher than the highest "early" PRO in eight of ten years; the most distant was in 95-96 when the final pool return was $70.00 per tonne above the high end of the range of early PROs. The final return for two-row designated barley was lower than the early PRO once in the last ten years; in 93-94 (lower by $16.38 per tonne).

Six-Row Malting Barley

Chart 4.8 below shows as gray bands the ranges of the "early" six-row malting barley PROs in the Feb to May period. This chart also shows as black bars the final return for six-row barley in the designated barley pool, as announced after the end of the crop year.

Since 93-94, the final return was within the range of the early PROs once in ten years; in 98-99. The final return was higher than the highest "early" PRO in eight of ten years; the most distant was in 95-96 when the final pool return was $75.31 per tonne above the high end of the range of early PROs. The final return for six-row designated barley was lower than the lowest "early" PRO once, in 93-94 by $9.32 per tonne.

Chart 4.8 6-Row Malting Barley PRO During Feb-May Compared to the Final Return



Comparing PROs to Total Payments: Wheat vs Barley

An important issue with respect to the CWB's treatment of barley is its pricing of barley relative to that of wheat. The "early" PROs are presented as a possible tool for farmers to gauge the expected return of different crops at seeding time; however, a look at how close the barley PROs are to the final and comparing it to the same measurement on wheat suggests that wheat is favoured with better forecasting that barley.

Table 4.2 below shows the difference between the April PRO and the total return for each of #1 CWRS 13.5%, #1CW Barley, Special Select Two-Row Barley, and Special Select Six-Row Barley. Each figure shows the difference between the April PRO and the total return

for that crop year; a negative number means the total return was less than the PRO; a positive number means the total return was higher than the PRO.

Table 4.2 Spread Between Apr PRO and Final Return

	Wheat	Feed	Two Row	Six Row
94-95	$ 60.38	$ 1.94	$ 37.17	$ 30.64
95-96	$ 74.75	$ 75.49	$ 74.99	$ 80.31
96-97	$ (26.13)	$ (29.03)	$ 0.82	$ 2.26
97-98	$ 15.68	$ (15.98)	$ 9.32	$ 24.54
98-99	$ 4.54	$ 46.50	$ 0.36	$ 3.73
99-00	$ (22.57)	$ (2.62)	$ 20.87	$ 24.21
00-01	$ 7.58	$ 16.86	$ 24.01	$ 14.40
01-02	$ (6.98)	$ 32.56	$ 12.74	$ 11.01
02-03	$ 39.20	$ 20.11	$ 57.59	$ 53.98
Average	**$ 10.72**	**$ 16.20**	**$ 26.43**	**$ 27.23**

Source: CWB

In all cases, the data suggest that the final payment is, on average, higher than the April PRO. The larger average spreads on barley suggest that the CWB is somewhat better at projecting wheat prices than it is projecting barley prices, especially malt barley; the total return for both types of designated barley averaged more than $25.00 per tonne over the April PRO. The net result of this is that the Western Canadian farmer gets poor price signals on from the CWB at seeding time, particularly on malting barley. If more accurate price signals were provided, there is the possibility that the net crop mix could be somewhat different.

The "Later" PROs – During the Crop Year

Whereas the PRO might be used in the spring and early summer as an aid in crop planning for the year, it may also be used during the crop year to assess marketing choices. This is particularly true with barley. Since barley producers have the choice of selling to the CWB or selling to the domestic feed market, getting a clear signal from the CWB regarding the final pool return is vital. Moreover, feed grain buyers in the livestock industry could potentially use the PRO to gauge future barley costs for their operations.

During the crop year, the information contributing to the PRO becomes increasingly more "firm" as actual sales take the place of projections and a greater understanding of both domestic and world markets is possible. For this reason, the PRO becomes increasingly accurate as a forward indicator of the final pool, albeit with a shorter time horizon. A review of the feed barley PROs since inception shows that the PRO in the last half of the crop year (Feb through July) tends to be relatively stable and within $7.50 per tonne of the final return about 80% of the time. Moreover, the Two-Row and Six-Row PROs in the Feb to July period of the crop year tend to be within $4.00 per tonne from the final pool return.

Observations and Conclusions

- Since the inception of the PROs, the PROs provided in the spring before the crop year begins (the "early" PROs) have not provided farmers with an accurate or useful price signal that can be used at seeding decision time to aid in deciding which crops to grow. Evidence indicates that the Western Canadian farmer gets a poor signal on malting barley prices from the CWB at seeding time. If more accurate price signals were provided, there is the possibility that the net crop mix could be somewhat different.
- Generally speaking, the barley PROs are not dependable indicators of the final return to be expected. However, toward the latter part of the crop year, the PRO improves in terms of accuracy, but becomes increasingly less important as the time frame of the forecast shrinks.
- The variable impact on the ultimate pool returns from interest revenues allocated to each pool, as discussed in the previous section, decreases the PRO's reliability as a market signal, particularly with feed barley. After effecting market decisions based on the PRO mid-season, the final PRO and pool return may be materially more or less than what was earlier anticipated, due to non-market related activities by the CWB (i.e. interest revenue).

4.4 CWB Producer Payment Options

Since the 1998 amendments to the Canadian Wheat Board Act, the CWB is able to offer a variety of payment options aimed at providing increased flexibility for producers, collectively referred to as Producer Payment Options (PPOs). In 2003-04, the CWB offered the following for barley (See Appendix A-6 for more complete details of these contracts):

Guaranteed Delivery Contract

This contract (GDC) allows participating farmers to deliver 100% of contract calls by a specified date. Deliveries under the GDC are pooled as before and participants receive all subsequent payments as part of the pool. The benefit of this contract for the farmer is it takes out the mystery of how much grain the CWB will take and when during the crop year it will be called. The CWB also benefits as it can concentrate marketing efforts in a smaller time frame and they are more assured of receiving the grain. This contract is not offered on malting barley.

In addition, those participating in this program have the option of receiving a greater portion of the total payment through an Early Payment Option (EPO).

Early Payment Option

The Early Payment Option (EPO) of the GDC provides farmers with the option of receiving incrementally more that the Initial Payment upon delivery – payment can be set at either 80%

or 90% of the PRO (only 90% on malting barley) when they sign up for a GDC. Depending on the level of payment selected, a discount representing primarily risk to the CWB (in the event that the PRO moves lower, the CWB is at risk that it may have paid too much under this program) and the time value of money, is applied to the payment.

Fixed Price Contract (FPC)

For the last three crop years, the CWB has offered a Fixed Price Contract (FPC) on feed barley with which farmers could have locked in a price at some point between the release of the year's first PRO (typically in February) and July 31st – prior to the beginning of the crop year. Farmers who enter into a FPC with the CWB receive an Initial Payment for their barley upon delivery with a top up to the daily posted cash price selected, forwarded directly from the CWB within two weeks of delivery.

By entering into an FPC with the CWB, farmers relinquish further payments from the pool. Table 4.2 below shows the average of all FPC prices quoted by the CWB in each of the three years it has been offered on feed barley and compares it to the final pool return (01-02 and 02-03) or the December PRO (03-04). In addition, this table compares the highest FPC price quoted by the CWB to the final pool returns. Each year that the FPC has been offered, the average available price has been at a distinct discount to the final pool return. At one point during the FPC contracting period for the 02-03 crop year, the FPC was higher than the final PRO by $2.39 per tonne.

Table 4.2 Average Feed Barley FPC Prices vs. Final Pool Return

	01-02	02-03	03-04
Pool Return (01-02 & 02-03) or PRO (03-04)	179.59	164.11	159.00
Average FPC	133.85	137.28	121.62
Difference	(45.74)	(26.83)	(37.38)
Highest FPC	147.00	166.50	135.05
Difference	(32.59)	2.39	(23.95)

Source: CWB

Although the CWB indicates that the FPC is based on the PRO, evidence indicates that the pricing schedule actually tracks WCE December Western Barley futures closely. The FPC is adjusted daily to maintain a fixed relationship with the futures market unless it appears that the FPC may exceed the PRO on PRO release date[26]. Once adjusted on a PRO release date,

[26] In 2001-02, the first year offered, the FPC was adjusted to always be lower than the PRO. Since then, the CWB policy is to keep the FPC below the PRO only on PRO release date.

the new spread between futures and the FPC remains constant at the new level until the next PRO is released. See Appendix A-6.2 for a more detailed look at the FPC price behaviour.

Comparisons to Forward Contracts

The purpose of these contracts is to provide farmers with pricing and/or delivery flexibility similar to that enjoyed in the non-CWB markets. Although for the most part these efforts appear to somewhat mirror open market forward contracts, there are some significant differences.

Of all the CWB contracts for barley, the GDC most closely resembles a traditional forward contract – it is for a known quantity, clearly defined delivery period, and 100% application (delivery) of the contracted amount is contemplated and expected by both parties. However, with a GDC the farmer remains in the pool, and therefore, payment is not complete at time of delivery, nor is the final amount known – it could be higher or lower than the PRO at time of delivery (or time of signup).

The FPC is also somewhat like a forward contract in that signing the contract locks in the final price (unlike the GDC, once signed, the FPC is outside of the pool). However, a major divergence from standard forward contracts is the fact that the price relationship is disjointed. Although the price is presented by the CWB as being based on the PRO, in practice during the sign-up period it follows the Western Barley futures market quite closely with the notable exception that on PRO release date, the FPC price must be below the PRO. This makes the pricing of this contract unique with no direct link with other markets; spreads to both PRO and to Dec futures are unpredictable and not based on market factors. Moreover, the limited sign up time (only up to July 31st) makes this contract limited in its attractiveness or value.

These contracts do more for delivery access for feed barley than they do for pricing flexibility. As they are both tied to the PRO and not related to specific downstream buying interest, they do not reflect true marketable value and are as flawed as the PRO. (See previous sections.)

Damages

Perhaps the most contentious issue with CWB contracts is the treatment of non-compliance (non-delivery) in the event that a farmer wants to pursue exiting the contract.

For any changes made to a contract due to non-performance, administration costs of $15 per transaction are charged; this is similar to open market contracts. In addition, CWB contracts contain a performance clause that states that a farmer may be assessed two types of liquidated damages for no fulfilling a contract.

Pricing damages are assessed on any shortfall of tonnage not applied to the contract by the end of the crop year. These damages are calculated using the contracted prices and the current “market”. Although pricing damages are expected when the underlying market prices

have moved higher, there have been experiences noted by farmers that indicate that the CWB also charges liquidated damages when the underlying market drops. This would not be accepted in a non-CWB contract and it appears has surprised some farmers who have contracted with the CWB with these contracts.

Observations and Conclusions

- To date prices offered under the Producer Payment Options on feed barley have generally not been attractive (or of any benefit) to farmers compared to remaining in the pool.
- The GDC provides for 100% delivery early in the crop year, making it an attractive alternative to the more traditional approach to pooling and pool periods.
- Although the EPO provides farmers with a greater proportion of the total payment from the pool, it comes with a cost beyond the discount for the time value of money – the discount for risk.
- The FPC price tracking Dec barley futures but also required to be below the PRO on announcement days creates a situation where the FPC is not related to either the PRO or the futures.
- Entering into a FPC forces an early commitment at a time in the crop cycle (spring/early summer) when most farmers are uneasy about making sales commitments. In addition, evidence indicates that, over the last three years, committing to an FPC would have proven to be a poor decision relative to staying in the pool (See Table 4.2 above).
- Liquidated damages are a factor in any commercial contract. However, as the CWB acts to ensure these contracts cannot be used to speculate, the damages charged to farmers who need to liquidate a contract are not market or value based. Therefore these damage charges may be punitive beyond the commercial value of the contract (to either the farmer or the CWB). The risk of non-commercial, punitive charges must be factored into any decision to use these contracts; this alone could be enough to keep farmers from participating (notwithstanding the low relative prices).

Section 5 CWB Performance and Impact on Western Canadian Barley Markets

The CWB's involvement and actions in barley markets is of paramount importance to the industry. Although the feed barley market is dominated by the domestic feeding industry over which the CWB does not have a single desk mandate, the CWB's actions still have an impact on this market. Moreover, since the CWB is the malting industry's sole supplier, whether domestic or export, the CWB's actions clearly have an impact on that sector.

The CWB is often forced to defend its actions. And in defending itself the CWB often indicates that it's value is based on the notion that it has the ability to price discriminate and therefore, can capture better prices in some markets than others. For example, the CWB often suggests that Japan is a premium market, willing to pay prices higher than other markets. The CWB's argument has been that because of its single desk status, it has the ability to capture this premium whereas, left to the private trade, competition would push the prices lower relative to the other potential destinations, eroding the premium. However, experience in the canola market has shown many times that Japan is also a premium buyer of canola over other Canadian export destinations such as Mexico and China, whose demand is much more price elastic than Japan's. (For example, China only buys when the price is attractive whereas Japan is a consistent buyer even as prices rally.) This occurs without a single desk seller and suggests that premiums paid by Japan are more a function of Japan's buying style – being a consistent year-round buyer, even at market prices which would be rejected by other buyers – than due to the capabilities of a single desk seller. Another example of Japan's willingness to pay premiums is found in the feed barley market where it pays premiums for higher quality from Australia. This is covered in more detail in the following section.

Whether the CWB captures a premium over other exporters on any given day is not the focus of this analysis; without access to actual CWB contract sales information, we cannot provide an answer to that question. However, by measuring the CWB's performance in other ways, we can provide some insight into the CWB's sales performance in a crop year and over time.

Prices of commodities fluctuate over time, reacting to relative supply and demand balances, competition from other commodities (substitution), and outside forces such as currency exchange rates and policy decisions. An effective way to measure the performance of a single desk seller such as the CWB is to compare its sales for the year to the sales opportunities that the market presented. In other words, in each crop year, does the CWB sell above the average price in the market for that crop year, or does it sell below average?

The rest of this section provides the results of this form of analysis on feed and malting barley. In addition, the impact of these sales on the industry is also addressed.

5.1 CWB Feed Barley Sales vs Competitive Export Values

In the global barley market Canada competes primarily with Australia, the EU and the US. The majority of the barley exports from the US are shipped through the port of Portland and the majority of Canadian exports are through Vancouver. Table 5.1 below shows the dominance of the Pacific ports regarding US barley exports; of the Pacific coast ports, Portland is the dominant barley shipper.

Table 5.1 US Barley Exports (millions of bushels)

	Lakes	Atlantic	Pacific	Interior (1)	Total
97/98	14.6	0.0	42.3	2.8	59.7
98/99	2.2	0.0	20.6	2.1	24.9
99/00	1.9	3.1	19.3	1.1	25.4
00/01	4.7	1.8	46.8	0.6	53.9
01/02	1.4	0.3	14.2	0.3	16.2
02/03	**1.0**	**0.3**	**20.1**	**1.4**	**22.8**

Sources: USDA; Sparks projections in bold
(1) Source: Department of Commerce-Census Bureau

USDA collects and provides weekly export prices for #2 US barley, basis FOB Portland. This is considered by the trade to be a standard feed grade, comparable to #1 CW barley. Since 97-98, Japan has taken about 66% of all the barley shipments through US Pacific ports; Saudi Arabia is second, taking about 22% of all barley shipments in the same time frame.

Table 5.2 below shows the relative share of Canadian barley exports between the various port regions in Canada; demonstrating the Canadian pacific ports' dominance of Canadian exports of barley[27]. It should be further noted that these export figures include both feed and malting barley. Considering that the majority of shipments made through Thunder Bay and direct from the interior are of malting barley being shipped to the US, the dominance of the west coast in feed barley exports is underscored.

Table 5.2 Canadian Barley Exports (thousands of tonnes)

	T. Bay	St. Law	Pacific	Interior	Total
97/98	318	8	1,413	388	2,127
98/99	256	0	475	370	1,101
99/00	254	4	1,060	437	1,755
00/01	127	25	1,276	513	1,941
01/02	169	26	528	383	1,106

Source: Canadian Grain Commission

This export data supports the Portland barley market as a reasonable comparison to CWB export sales values represented by the pool return and the PRO.

[27] Canadian pacific ports include Vancouver and Prince Rupert.

FOB Portland vs Instore Vancouver (CWB) Prices

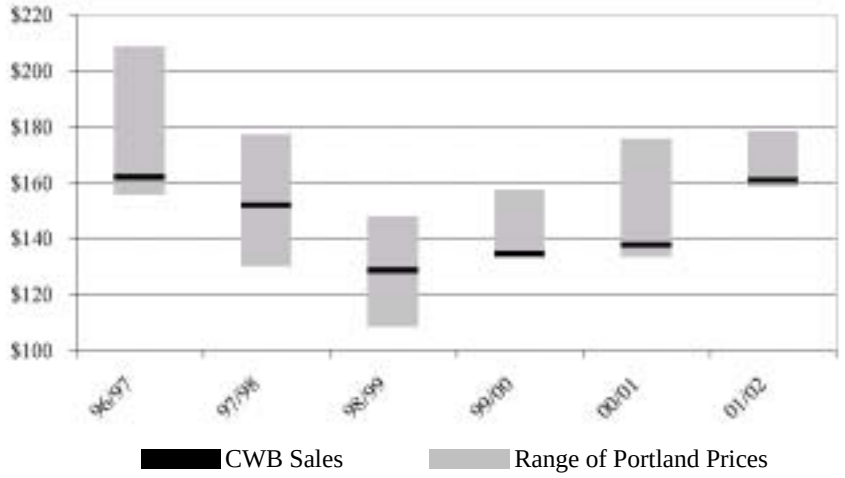
For the analysis that follows, FOB Portland prices are compared to CWB annual aggregate sales results provided by the CWB on the basis of instore Vancouver. Whereas "FOB" refers to the price or value of a commodity as it is loaded onto a vessel (FOB = free on board), "instore" refers to the price or value on the basis of the grain being in a terminal elevator, ready to be transferred to a vessel. To calculate a FOB value for Canadian barley, terminal elevation charges are added to the instore price; equal to about C$9.00 per tonne on barley currently.

Portland terminals do not charge elevation tariffs in the same fashion as Canadian terminals. However, there are a series of "port charges" that the shipper pays to the terminals in order to load. For a 30,000 tonne vessel loading in Portland, these costs would be in the range of US$5.50 to US$6.50 per tonne. After converting these costs to Canadian dollars for comparison, these port costs in Portland are quite close to the elevation costs in Vancouver. Therefore, it is reasonable to compare CWB "instore" Vancouver barley prices to "FOB" Portland barley prices to gauge CWB sales performance.

In the analysis to follow, the FOB Portland prices are provided by USDA and converted to Canadian dollars using the average exchange rate for the time. CWB prices used are the average prices for feed barley achieved by the CWB on sales made during each crop year. It should be noted that this is not the CWB pool price; rather this is simply the price provided by the CWB for actual sales made during the crop year.

Chart 5.1 below presents the comparison of CWB gross sales results (before administration and operating expenses are deducted) to Portland export price ranges for the crop years 96-97 to 01-02. In five of the six years presented, the CWB's average sales level lies below the average of the market opportunities presented. In 1998-99, the CWB sales were about average.

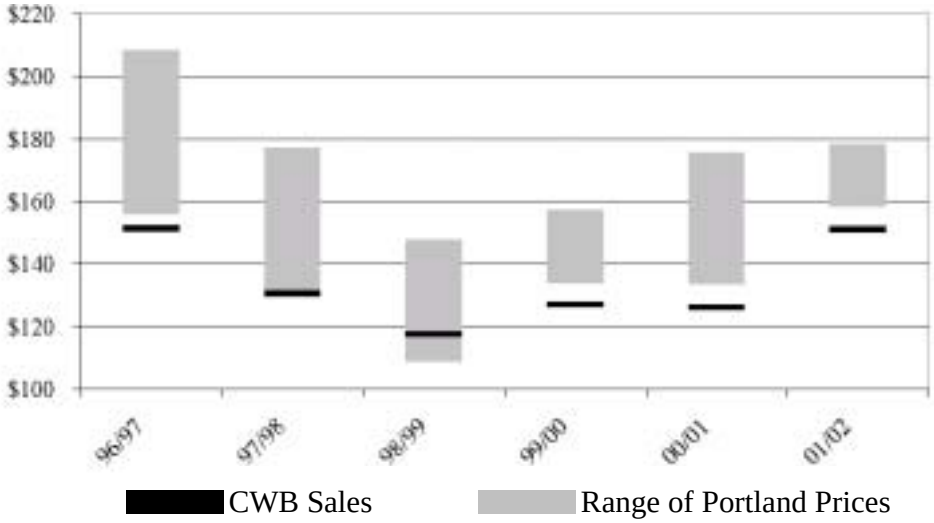
Chart 5.1 CWB Feed Barley Sales Results vs Export Value Ranges



Sources: CWB Sales – CWB Annual Reports; Portland Prices – USDA.

Chart 5.2 provides a similar comparison, with the added component of expenses. Interest revenue was not considered in this analysis since interest gained from previous years' sales is not part of the current year's sales performance. The objective here is to compare the CWB's net sales performance – including the cost of operations – to the underlying market. In four of the six years presented, the net results are actually lower than the lowest Portland price for that crop year.

Chart 5.2 CWB Feed Barley Sales Results Net of Expenses (Excluding Interest) vs Export Value Ranges



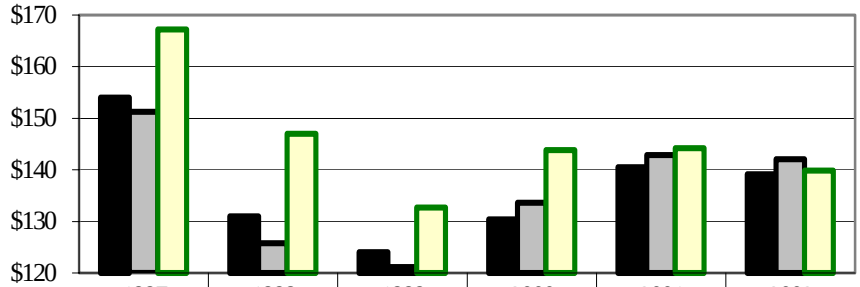
Sources: CWB Sales – CWB Annual Reports; Portland Prices – USDA.

CIF Japanese Sales and Prices

Chart 5.3 below represents average prices of feed barley sales on a CIF[28] Japan basis, provided by the Japanese Ministry of Finance. Over the six years reviewed, Canada has never enjoyed the best overall delivered price. Additionally, according to this data, the CWB does not appear to capture premium prices over the other suppliers. Moreover, in the last three years, the average Canadian price was the lowest average price of the three suppliers.

[28] CIF stands for Cost, Insurance and Freight, referring to a delivered value.

Chart 5.3 Feed Barley Price Comparisons Basis CIF Japan
(Calendar year averages, in US dollars per tonne)



	1997	1998	1999	2000	2001	2002
Canada	154.0	131.0	124.0	130.4	140.5	139.1
US	151.2	125.8	121.2	133.6	142.9	142.1
Australia	167.2	147.0	132.7	143.8	144.2	139.9

Chart 5.4 below compares the total volume of feed barley supplied to Japan by the major exporters during the same time frame as Chart 5.3 above, as reported by the Japanese Ministry of Finance. This chart shows that not only has Canada failed to obtain prices as high as Australia and the US on a consistent basis, the volume of Canadian barley sold to Japan is also disappointing in relation to other suppliers (especially Australia).

Chart 5.4 Annual Japanese Feed Barley Imports; by origin
(thousands of tonnes)

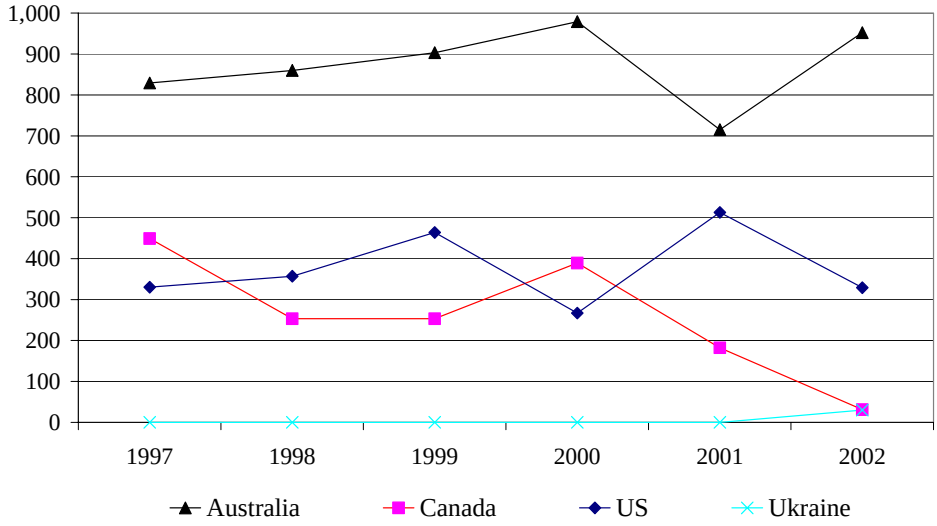
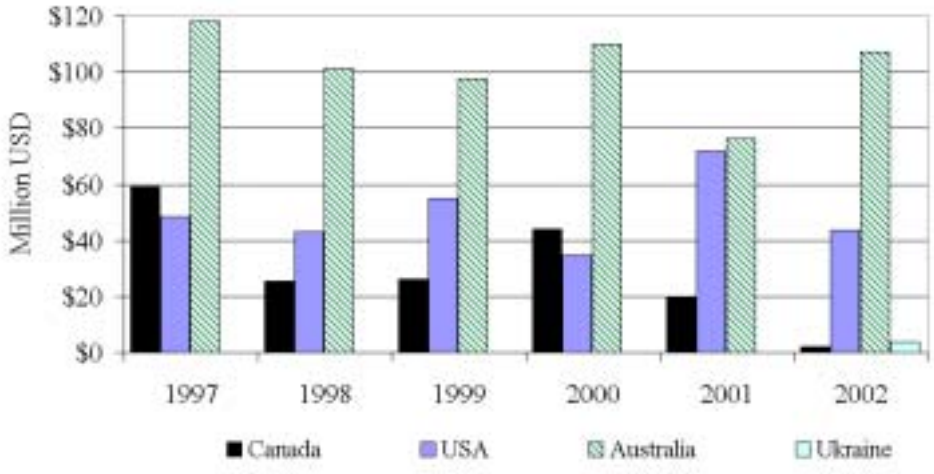


Chart 5.5 below combines the price data from Chart 5.3 with volume data from Chart 5.4, showing the total sales of feed barley made by each of the major suppliers, measured in US dollars. Based on this data, Australia has dominated this market over the time frame presented with the US taking second place most often.

The reason for this appears to be fairly straightforward. Japanese traders consider Australian barley as superior to U.S. and Canadian barley in both quality and consistency. Since feed barley is fed to *wagyu* (high-end Japanese cattle) for the development of desired marbling in beef (as in Kobe beef), the trade consistently pays premiums for the higher quality Australian barley. (This is known in the Japanese trade as the "Australian premium".)[29] In addition, until 3 or 4 years ago, Australian barley was marketed through quasi-governmental state trading firms (for each state). Over the years each developed very close ties with Japanese importers, and as a result each major importer has its regional territory in Australia from which it tends to source feed barley. Although the Australian state barley marketing agencies have since been privatized, these strong relationships with the Japanese importers remain. This contributes to not only quality assurance but also steady market share maintenance.

Chart 5.5 Total Japanese Feed Barley Sales Values by Supplier



Observations and Conclusions

- This analysis does not support the CWB's claim that it captures premiums in export markets in feed barley. Rather, it provides evidence suggesting that the average sales performance of the CWB typically lags the other suppliers to that market.
- Once expenses are included (excluding interest revenue), the CWB's sales results appear extremely low relative to the market opportunities over a crop year.
- Data from Japan indicate the CWB is not capturing premiums relative to other suppliers. Rather, the data indicate that Canada could be considered a residual supplier after Australia and the US. Moreover, although this analysis does not indicate whether Japan pays premium prices for Canadian barley over other destinations, it does indicate clearly

[29] Source: US Embassy in Tokyo.

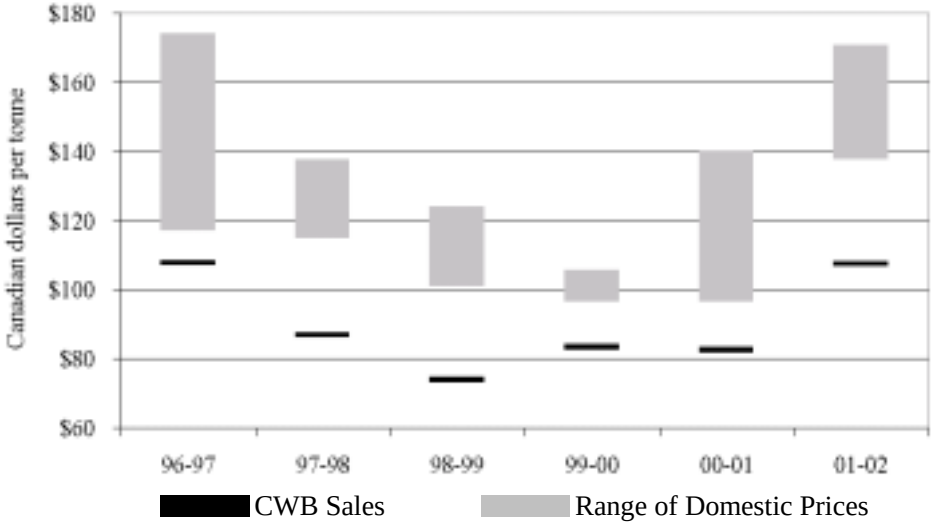
that, based on the CWB's sales performance in Japan, as compared to Australia and the US, any premiums the CWB may have captured are not due to its single desk status.

5.2 CWB Feed Barley Sales vs Domestic Feed Barley Prices

A comparison of CWB sales of feed barley to domestic market values over each crop year provides a sense of CWB sales performance relative to the domestic market. As in the previous section comparing CWB sales to export values, in this section, CWB gross sales for the year (net of inventory adjustments) are used, including all non-interest expenses. These prices are then adjusted by the appropriate freight and handling charges for CWB grains to provide a CWB sales price that reflects net value to local farmers. This value for each crop year was then compared to the range of domestic feed prices for the same crop year at the same location. Three locations were selected to provide provincial comparisons.

Chart 5.6 below shows the comparisons between CWB sales prices of feed barley with the domestic feed barley market in Red Deer, Alberta. In all years reviewed, the net CWB sales price was lower than the lowest domestic price.

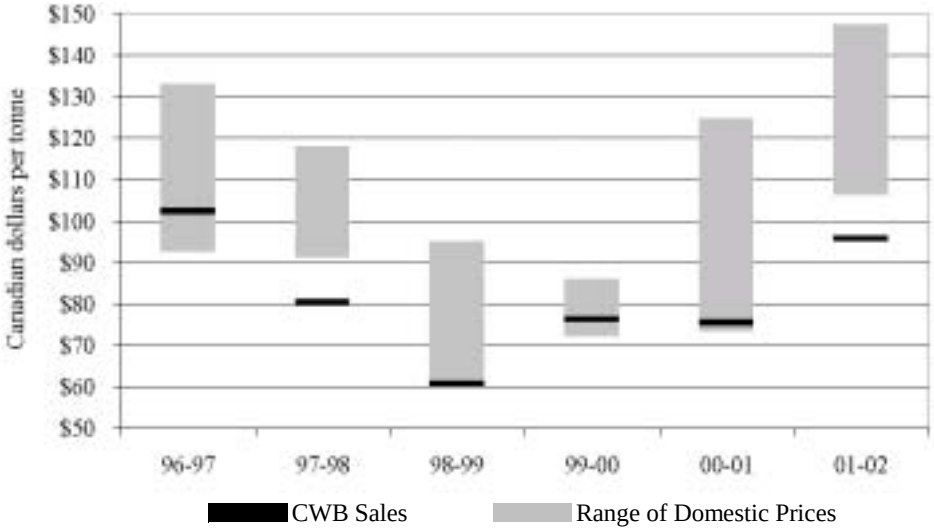
Chart 5.6 CWB Sales vs Domestic Prices, Basis Red Deer, Alberta



Sources: CWB Sales – CWB Annual Reports; Domestic Prices – Alberta Grain Commission (domestic feed mill bid prices).

Chart 5.7 below represents the CWB to domestic comparisons for Saskatchewan, based on domestic market prices for Saskatoon. In four of the six years reviewed, the CWB net sales values are in the low end of the domestic price ranges. In two of the years, the CWB sales prices are about $20 per tonne below the lowest domestic prices.

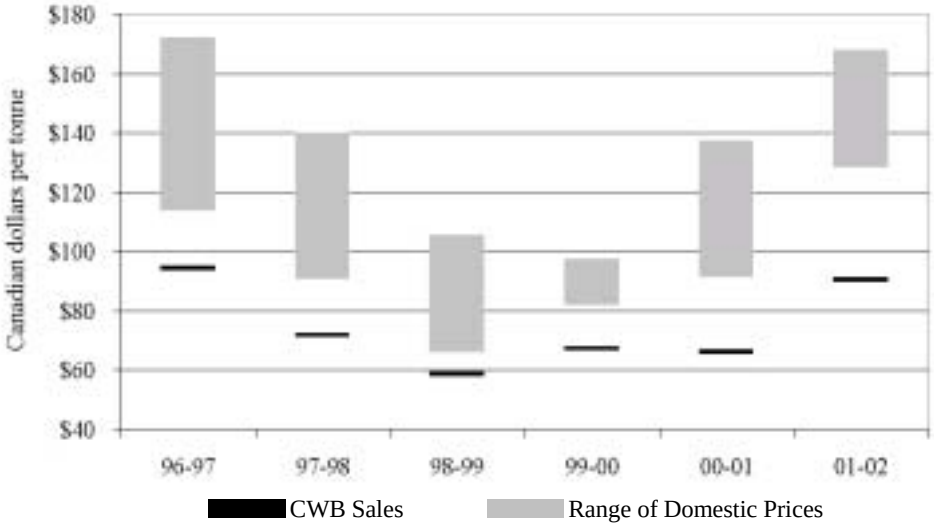
Chart 5.7 CWB Sales vs Domestic Prices, Basis Saskatoon, Saskatchewan



Sources: CWB Sales – CWB Annual Reports; Domestic Prices – Saskatchewan Agriculture and Food.

Chart 5.8 below represents the CWB to domestic comparisons for Manitoba, based on domestic market prices around Winnipeg. In each of the six years reviewed, the CWB net sales values are between $7.00 and $37.00 per tonne below the low end of the domestic price ranges.

Chart 5.8 CWB Sales vs Domestic Prices, Basis Winnipeg, Manitoba



Sources: CWB Sales – CWB Annual Reports; Domestic Prices – Livestock Feed Bureau (domestic feed mill bid prices).

Observations and Conclusions

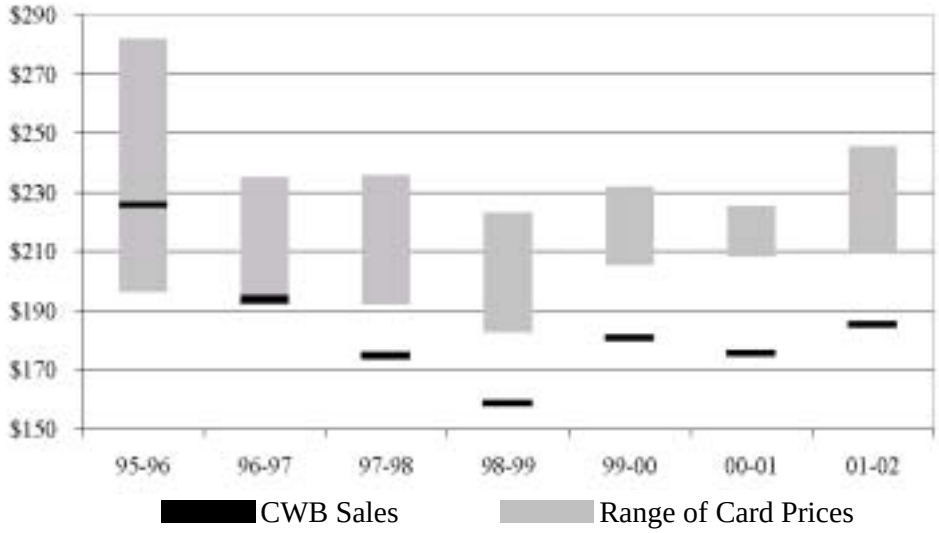
- When compared to comparable domestic markets, the CWB feed barley sales are at the bottom end of the range of prices or substantially below the lowest domestic prices reported.

5.3 CWB Malting Barley Sales

North America

According to the CWB, its malting barley prices for North America are based on a formula, the basis of which begins with the "to arrive" track market in Minneapolis, and is augmented with cash market pricing reports from brokers and other participants in the US malting barley trade. From these market indications, the CWB develops its offers for Canadian, US and Mexican malt and malting barley business. However, discussions with malt barley buyers in the US indicate that the majority of the malt barley bought from farmers in the Northern Plains is bought under contract at prices somewhat higher than the "open market" prices. Therefore, it is assumed that the prices used by the CWB are valid indications of the lower end of the US market prices.

Chart 5.9 Six-Row: CWB Net Sales vs Range of CWB Offers



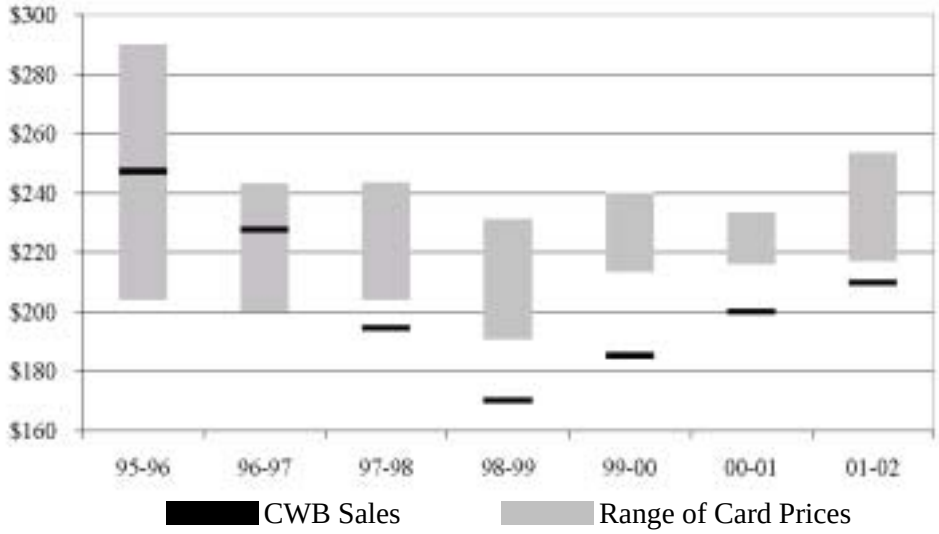
For crops years 1995-96 to 2001-02, Chart 5.9 represents the annual range of CWB card prices for Six-Row barley (gray bands) and the final sales prices contributing to the designated barley pool (black bands). The CWB sales prices used here are the CWB Final Return prices for Six-Row, including expenses but not including interest revenue. (Expenses

ranged from $0.48 per tonne in 95-96 to $5.50 in 01-02; these are applied to both Six-Row and Two-Row equally in the pool account.)

The CWB Net Sales prices were typically well below the offering price ranges, by as much as $32.63 per tonne (01-02). In 95-96, the CWB's net sales level was $29.55 per tonne above the lowest offer, although still below the midpoint of the range of offers.

Chart 5.10 below represents similar data for Two-Row barley. As with Six-Row, CWB Net Sales prices are typically well below the low end of the offer ranges, by as much as $28.06 per tonne in 98-99. In 95-96, the CWB's net sales level was $43.24 per tonne above the lowest offer, about the midpoint of the offering ranges.

Chart 5.10 Two-Row: CWB Net Sales vs Range of CWB Offers



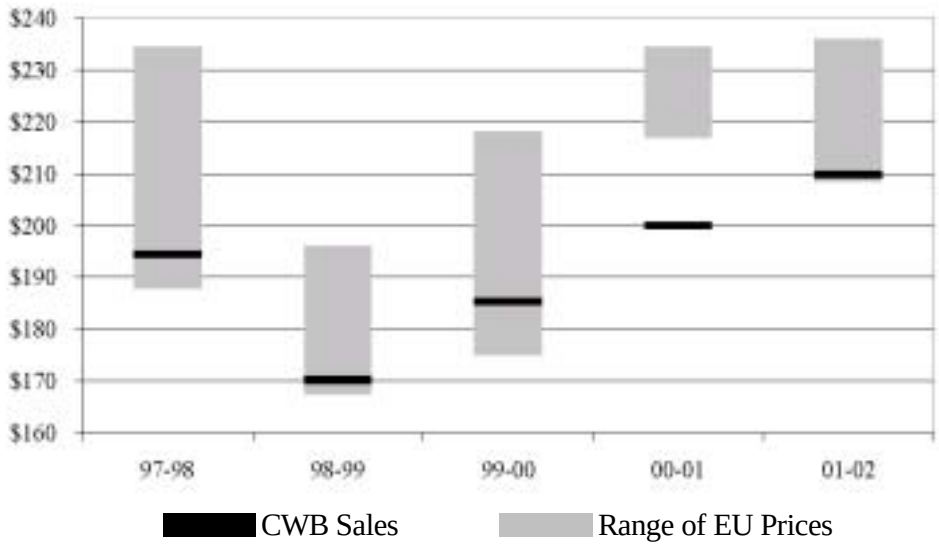
Offshore Exports

Offshore sales of malting barley are benchmarked by the CWB to EU malting barley prices. For crop years 97-98 to 01-02, Chart 5.11 below shows the range of EU Two-Row malting barley prices as gray bands and the CWB net sales prices for sales made during the year (including expenses but excluding interest) as black bars. The results show that the ultimate CWB selling price tends to be in the lower end of the market values for the crop year; in 00-01, the CWB net return was about C$17.00 per tonne below the lowest market quote for EU Two-Row barley.

There are valid reasons to expect individual sales prices to be below the CWB offers; offers are starting points for negotiations and sales would not be expected to be made above the offer. However, the fact the CWB net sales for a crop year (which is the weighted average selling price) appear to have a tendency to be materially below the offer prices – even below the lowest offers – suggests other factors are impacting CWB sales decisions and results.

CWB net sales prices are a function of all sales made into both North American and offshore markets. However, the CWB offers in Charts 5.9 and 5.10 are strictly North American domestic offers. Since the domestic market tends to trade at a premium to offshore markets, and since the CWB sells Two-Row barley into both these markets it is expected that the CWB net sales prices on Two-Row would be on the lower end of the range of domestic prices, reflecting the impact of sales made to offshore markets. Although this is a sound and logical argument, it cannot be said with certainty that this is in fact the sole reason the CWB net sales prices are so low in relation to the card price offers.

Chart 5.11 Two-Row Malting Barley: CWB Net Sales vs Range of EU fob Prices



As with Two-Row, CWB sales of Six-Row are markedly below the range of offers. However, unlike Two-Row, CWB sales of Six-Row are primarily focused on the domestic and US markets. Therefore, the impact of the lower priced offshore market cannot be considered a market influence on sales levels. If the card price for Six-Row is a true reflection of the domestic market (both Canadian and US), there must be other reasons for the large divergence between offers (at the market) and ultimate sales. One possible explanation comes from comments made from industry sources that have suggested that the CWB will materially discount prices on sales of large quantities of malting barley. Assuming that this is true, it helps explain the low sales prices relative to the offers. However, it would appear that these discounts are non-trivial and in aggregate, are greater than any premiums that the CWB might capture due to its status as a single desk seller. Moreover, discounting in this manner appears to go against the notion that the strength of the CWB's single desk selling is in holding grain off the market in order to force the buyers to bid higher for the grain.

Lower grades on sales are another potential factor to explain the low prices relative to the market. The CWB offers (in the charts) are for Special Select Two-Row and Six-Row, the

highest malting barley grades; any sales of grades below this would lower the average selling price, relative to the offers. However, sales of these grades would need to be substantial in order to have a material impact on net sales prices.

2002-03 – An Exceptional Year

During crop year 2002-03, due to drought in Western Canada, low quality production, and a substantial appetite for feed grains, the price of good quality malting barley increased dramatically in the first part of the year. By comparing CWB offering prices for Two-Row malting barley in recent years, Chart 5.12 demonstrates just how strong prices were in that period in relation to previous years.

Chart 5.12 CWB 2-Row Malting Barley Offers (2000-01 to ytd 2003-04) and 2002-03 Two-Row PRO

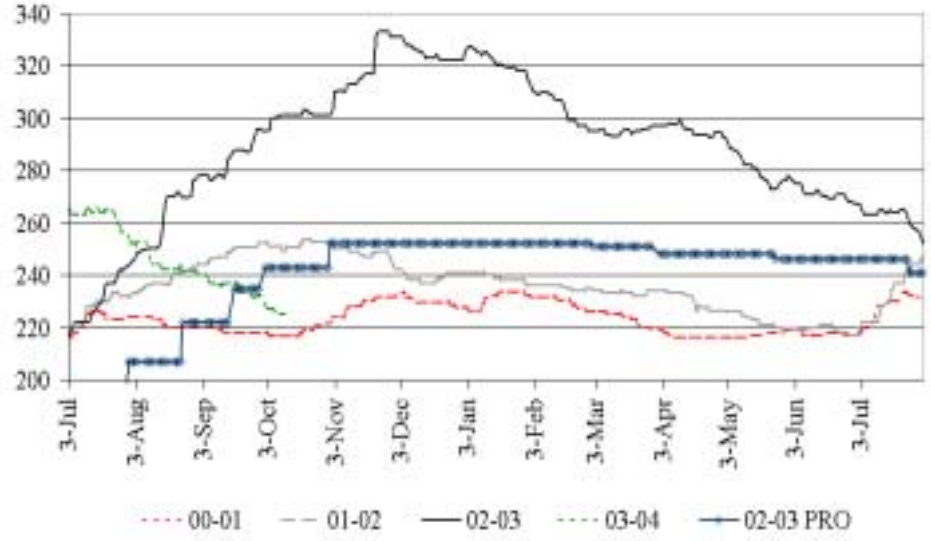


Chart 5.12 shows the CWB's daily offering price (the "card" price) for Two-Row designated barley for each year since 2000-01; it also shows the PRO for the 2002-03 crop year. Although the CWB's offering price in 02-03 was dramatically higher than previous years, it has been suggested by participants in the trade that the CWB had made lower priced sales early in the crop year (or even before the beginning of the crop year); because of these low priced sales, the CWB was unable to raise the PRO to prices more reflective of the current market. Further, because of the lower quality production that year and the strength in the domestic feed market, the CWB was unsure of its ability to attract the needed volumes of malting barley, even at higher prices.

The result of this was that the CWB was not attracting malting barley deliveries and was unable to assure the maltsters that it could source their requirements. This prompted two maltsters to import malting barley from Europe. This resulted in more than 100,000 tonnes

of European malting barley to be imported at an estimated price in excess of C$300 per tonne (C$6.53 per bushel).

Selections / cancellations

By the end of July there was 93,000 tonnes of malting barley selections that had been cancelled. Although every year there are some selections cancelled due to quality not being met upon delivery, this year was somewhat different. Because of the shortage of feed grains caused by the drought, the malting barley PRO (especially for Six-Row) was at times and in many regions, very close to the local feed barley price. When farmers sell into the feed market, they are paid in full and do not take on quality risks associated with trying to sell their barley for malt; many farmers have experienced having their barley selected as malt and told to store it until called only to have it rejected later when delivered. Rather than accept these terms, farmers were opting to sell into the feed barley market, even at slightly lower values. It can be argued that, had the maltsters been able to deal directly with farmers, the maltsters would have done all they could have to obtain the best barley available before going offshore for supplies.

This produced the absurd situation where maltsters were buying malting barley from offshore at extremely high prices, while western Canadian farmers that had barley meeting malt quality requirements sold it into the domestic feed channels (at prices below what the maltsters were paying) because of the perception that the malt market was not competitive. The CWB's marketing process and the PRO interfered with the maltster providing to farmers a relevant price.

If we assume that about 200,000 tonnes of barley of malt quality and variety was sold into the feed market at about $150 per tonne and that the imported barley was bought by the maltsters at $300 per tonne, and we further assume that the malt industry reduced its volume by 200,000 tonnes, we can then say that the CWB system's inability to respond to the industries needs –both farmer and maltsters – cost the industry in the neighbourhood of C$30 million dollars.

Section 6 Conclusions

The global barley market has changed substantially over the last couple of decades. Perhaps most significantly, from a Canadian perspective, is that the major export markets for Canada back in the 1970's and 80's are no longer customers – in fact, countries of the FSU which had once been large buyers of Canadian barley are now exporters, and poised to be major exporters of barley. And not only are they no longer customers of Canada's, but they are also better positioned to supply the major feed barley markets of North Africa and the Middle East – and are expected to continue as such.

The next largest buyer of feed barley is Japan, which is changing the manner in which it procures feed barley. Whereas all barley was at one time bought through the Ministry of Food (the Japanese Food Agency), increasingly Japan is adopting procedures that allow for private, commercial transactions. Moreover, it is clear from the research featured in this report that barley from Australia is favoured by the Japanese over all other sources.

China is expected to be the growth export market in malting barley over the next decade or so. Indeed, the CWB has announced that it sees China as the most important malting barley market for Canada and expects to develop this market for Canadian malting barley. However, from a Canadian perspective, China may not be the best market to develop; intense competition from Australia is expected as it has few more viable export options.

Rather than focus on China, analysis indicates that Canada would benefit more from developing and ensuring solid relationships with US and Mexican maltsters and brewers. Although Canada has lost valuable processing capacity to the US in the last year or so, there may be more yet to be built. It behooves the Canadian barley industry to encourage and attract any potential new construction to be built in Canada. Based on the research in this report, positioning for the North American market would require either wholesale changes to the CWB system with respect to barley or the total departure of the CWB from the malting barley market. Moreover, the Canadian industry needs to ensure that it is well positioned to supply the US maltsters with quality malt barley under the new terms of trade being developed.

The feed barley market in Western Canada is substantially different than the milling wheat market. Whereas the CWB dominates the milling wheat market, it is a small player in the feed barley market. The non-CWB domestic feed market has the institutions and structure to readily respond to impacts on price by shifting supplies and/or demand, such as the WCE barley futures contract as well as cash markets supported by an active brokerage community. Price signals are quickly and efficiently transmitted to interested parties who can then easily react and transact in the cash markets. The CWB has been forced to compete in this market for export tonnage, using tools that are specifically designed to function in a non-competitive, single desk environment. These tools – price pooling, Initial Payments and government guarantees – impede the CWB's ability to effectively market feed barley in and from Western

Canada. Moreover, the additional tools that the CWB has chosen to wield – the Producer Payment Options – have come up short in providing meaningful benefits to farmers and in allowing the CWB to attract more feed barley.

Although the malting barley market is dominated by the CWB as the sole marketer, the factors impacting the CWB's effectiveness in this market are quite similar to those in the feed barley market where the CWB is a fringe player. Since the domestic feed and malt markets tend to arbitrage to a certain degree at the farm level, the CWB systems (meant for a monopoly player) are ineffective in the malt market as well as in the feed barley market; price pooling and Initial Payments clearly interfere with the CWB's provision of meaningful price signals.

Getting proper prices, price signals and other terms that are competitive with the non-CWB market is key to Canadian participation in the export market for feed barley as well as the malting barley markets. Although the market institutions and infrastructure are in place to effectively provide this, evidence indicates that the presence of the CWB system interferes.

Alternatives

The following options would contribute to a more functional system:

Much shorter CWB pooling periods.

Much of the problems identified with the CWB marketing system in barley are directly related to its inability to provide market-relevant prices to farmers through Initial Payments and PROs. Utilizing pool periods that cover a whole crop year create a situation whereby CWB prices lag market prices in a higher-trending year and lead market prices in a lower-trending year; both scenarios allow only for CWB prices to be lower than the market prices. Moreover, in higher-trending years, lower priced sales made early in the year will not allow the PRO to fully reflect current market prices.

Acknowledging that the return (pooled price) of a specific, short pool will not likely get diluted with low priced sales over time nor will it necessarily vary much from current market (if the pool period is short enough), the CWB could provide more timely and competitive prices to farmers. In so doing, the CWB would be expected to be more effective in marketing barley, to both export buyers and domestic maltsters. Problems that would remain include the overhead costs of the CWB and the market distorting impact of interest revenue (particularly in feed barley). Also, it is not clear that shorter pool periods could be effective in allowing the CWB to improve its sales performance relative to market opportunities.

No CWB pooling.

The CWB could continue as the sole exporter of barley without employing the pooling process along with Initial Payments. The CWB could simply operate as a grain exporter, selling feed and malting barley offshore (or to the US) at market prices. In this scenario, the CWB could provide cash bids to farmers or grain merchandisers and offers to buyers, either

flat or on a basis relative to WCE barley futures. The CWB would be able to provide meaningful prices on the basis of export markets and WCE futures, effectively arbitraging export and domestic markets.; farmers and merchandisers would be able to respond as they saw fit.

The CWB would be forced to manage interest revenue quite differently as there would be no barley pools. Problems that would remain include the overhead costs of the CWB. Also, it is not clear that cash trading would allow the CWB to improve its sales performance relative to the market opportunities. Under a no-pooling regime, there is no apparent benefit for the CWB to be involved in the domestic malting barley market.

Marketing Choice / Voluntary CWB.

A third option would be to make the CWB a voluntary or optional merchandiser of feed and malting barley, regardless of the end destination. Market price signals would be current, competitive and relevant; both buyers and sellers could respond to these prices according to their needs. Farmers would be free to sell their barley to anyone they wished, for any use. Buyers would source barley from whichever farmer, firm or organization provided the best mix of price, service and quality. The CWB would act as a merchandiser of any barley that was sold to it; it could use traditional pooling, shortened pool periods, or no pooling.

The CWB would be forced to manage interest revenue quite differently as not all barley growers would be marketing their barley through the services of the CWB.

No CWB involvement in barley markets.

If the CWB system was eliminated from the barley market altogether, the grain industry would effectively arbitrage feed and malt values in both export and domestic markets. In times of surplus, barley would clear to export markets only as the market dynamics would allow; in times of tight supplies, barley would not be exported. The impediments to proper price signals (pooled prices, interest revenue allocation and Initial Payments) would no longer interfere with the market, particularly important to the domestic malting industry. The domestic malting industry would be able to deal directly with farmers and grain merchandisers, providing meaningful pricing at all times. Moreover, the overhead cost of the CWB would no longer be a burden to the farm community.

It is expected that the marketed export values of barley would improve, as competition among grain companies would not allow discounted sales. Contrary to the position often presented by the CWB, it is our view that elimination of the CWB will not depress prices due to farmers and/or grain companies competing with each other to sell grain. Competition between exporters will ensure that export sales are not made without assurances that the grain can also be originated (bought) at values that will provide a return to the exporter. The CWB recognizes this market dynamic as it has tried to market export feed barley while trying to compete with the domestic feed market. The CWB has stated that unless it can be assured it

will receive the barley stocks required to satisfy a sale (or has the inventory to draw from), it will not make the sale[30].

Exporters take a similar approach; they do not "undercut" or discount market prices to make sales; rather they work diligently to reduce their own marketing, transportation and handling costs and then market (sell) aggressively at prices at which they are confident will allow them to provide competitive prices to farmers.

Without CWB system impediments, the commercial grain system will arbitrage export values to domestic values and reduce risk through the use of futures.

Concluding Comments

Generally speaking, there are substantial opportunities being presented to the Western Canadian barley industry. Unimpeded, the industry could see improved arbitrage between offshore, US and domestic markets, fostering exports only as market forces allow, keeping barley at home when needed and importing only as required. With good market signals, the feeding industry would be better equipped to compete with US and foreign markets. Although some new capacity has been lost, the malt industry should see additional capacity and increased exports of malting barley and malt.

The main impediment to this scenario occurring is the presence of the CWB system in the barley market. However, on the basis of this research and analysis, there is no configuration or re-working of the CWB and its policies that would provide as much benefit to the Western Canadian barley industry as would the complete removal of the CWB system from the barley industry. Even if the pricing regime was changed in order for the CWB to be more responsive, the CWB still brings with it an overhead cost that is unnecessary and market price distortions. The main cause of the CWB's apparent poor sales performance as outlined in previous sections of this report remain unclear

The CWB has been shown to be ineffective in the feed barley export market, unable to compete with the dominant domestic feed industry. Moreover, this analysis has shown that CWB feed barley prices to farmers can at times be more a function of interest allocation than market prices. Net prices received from sales have been shown to be in the low end of market values and below domestic values in most areas much of the time. It can be argued that farmers, merchandising through the services of the private grain trade, would easily be able to achieve higher revenues through obtaining even average market prices and avoiding the overhead cost of the CWB.

In the malt sector, the CWB has been shown to be an impediment to both current malt commerce and to the further expansion of the malt industry in Western Canada. Notwithstanding the fact the Canadian malt industry has expanded somewhat in the past few

[30] This approach was apparent in 2002-03; the CWB withdrew from the wheat market during the summer due to uncertainty of supply brought about by the severe drought.

years, it appears clear from this report that the Western Canadian industry would actually have been much larger if the capacity being built in the Northern Plains of the US had been built in Canada. Also, as in the feed barley sector, the CWB salesprices appear to be lower than one would expect given the market opportunities presented; if there is value in the single desk in terms of better prices and more sales, it is not apparent from the analysis provided here.

It is beyond the scope of this report to determine a net cost or benefit of the CWB. However, this research has indicated that the CWB does not bring value to the barley sector; rather it exacts a significant cost. The key CWB issues as presented in this analysis are as follows:

- The CWB sales performance of both feed and malting barley appears poor in relation to market values over a crop year.
- Interest allocation distorts CWB prices. Managing the pool account by managing the volume of sales to mitigate the impact of the interest allocation creates situations where the CWB has incentives to sell below the price paid to the farmer, simply to get sales on the books to mitigate the interest impact.
- Pool account management of inventories can have a substantial impact on pool prices and creates inequity among participants.
- CWB contracts are a far cry from traditional open market contracts that have more to do with delivery access than to pricing or price risk management.
- CWB involvement in the malt industry has been instrumental in Canada losing new malting capacity.
- The CWB PRO system provides incentives to the CWB to stop selling in the event that further sales will dilute the pool value (lower it). Managing the PRO in this fashion goes counter to farmers' needs. Farmers will often consider moving as much grain as possible in a crop year in order to make room for the new crop but also to satisfy cash flow and financing needs.
- The CWB system has been proven to be impotent in the malting barley market under extreme market conditions, such as those seen in 2002-03.
- The CWB system has been proven to be impotent in the export feed barley market most of the time due to its inability to compete with the domestic market.

Appendices

Appendix A-1 Tables

Table A1.1 Global Barley Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
USA	11343	6314	8796	9188	10102	9908	8666	8162	7825	8544	7835	7667	6103	6935	5421	4942
Canada	13916	10326	11784	13441	11617	11032	12972	11690	13035	15562	13527	12709	13196	13172	10846	7283
Mexico	510	445	480	543	586	577	473	343	417	614	380	410	450	770	767	770
Brazil	185	140	248	210	110	150	110	110	100	245	345	310	300	283	283	280
Argentina	280	317	343	303	565	500	455	350	385	533	920	535	419	676	521	558
Other Latin America	509	543	624	542	579	707	596	634	628	662	583	547	431	549	453	545
EU-15	55388	58872	55967	56206	56909	47457	47039	43687	43713	51716	52608	51907	49076	51660	48360	48340
Other West Europe	842	973	1077	1185	1103	989	1174	947	986	1145	1015	1011	997	897	980	1052
Central Europe	11601	12738	13831	13713	14072	11531	10801	11124	11291	9523	11986	10696	9685	7462	9790	9312
Russia	26101	19418	22201	27235	22174	26989	26900	27000	15800	15900	20800	9800	10600	14100	19500	18700
Ukraine	12190	8751	10090	9168	8047	10106	13550	14508	9633	5725	7407	5870	6425	6872	10186	10350
Other Former USSR	15049	12376	12566	16171	11313	15198	14308	11924	7013	7733	7810	5410	5408	5510	6565	6216
FSU-15	53340	40545	44857	52574	41534	52293	54758	53432	32446	29358	36017	21080	22433	26482	36251	35266
Japan	353	399	371	346	268	286	271	225	218	233	193	144	205	214	206	217
Taiwan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	516	780	715	576	485	449	450	324	403	412	266	157	400	229	383	300
China	5096	5166	4852	4903	4622	4665	4327	4411	4089	4000	4000	2656	2970	2646	2893	2470
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	1669	1577	1722	1486	1640	1700	1510	1310	1730	1510	1462	1680	1470	1447	1432	1500
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	134	112	123	131	142	140	158	146	164	174	150	174	160	160	165	165
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	6000	7000	4900	6600	6800	6500	7300	6500	6900	7200	7300	7500	6600	7400	6900	7400
Other Asia	686	645	612	722	617	564	675	662	535	650	745	675	664	524	537	700
Australia	3477	3306	4121	4184	4606	5460	6956	2913	5823	6696	6482	5987	5032	6743	8423	3500
South Africa	280	137	291	262	170	265	230	275	300	176	182	215	91	124	157	183
North Africa & Middle East	7500	11831	8456	10043	11338	9426	9048	12330	9128	12974	6756	8129	5782	3138	5669	6259
Other Africa	1139	1218	1262	1308	1174	1414	1110	1471	1546	1720	1635	1397	1452	1707	1550	1542
TOTAL (million tonnes)	174.8	163.4	165.4	178.5	169.0	166.0	169.1	161.0	141.7	153.6	154.4	135.6	127.9	133.2	142.0	132.6

Table A1.2 Global Barley Trade Matrix

	Australia					Canada					EU-15					Others					Total			
	99/00	00/01	01/02	02/03	03/04	99/00	00/01	01/02	02/03	03/04	99/00	00/01	01/02	02/03	03/04	99/00	00/01	01/02	02/03	03/04	99/00	00/01	01/02	02/03
EU-15	---	**---**	**---**	**---**	**---**	---	0.00	0.01	---	**---**	N/A	N/A	N/A	**N/A**	**N/A**	0.04	0.04	0.65	**0.54**	**0.34**	0.04	0.04	0.66	**0.54**
Cyprus	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.17	0.03	0.00	**---**	**0.00**	0.05	0.06	0.25	**0.30**	**0.16**	0.22	0.08	0.25	**0.30**
Other West Europe	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.12	0.06	0.04	**0.05**	**0.05**	---	0.01	0.03	**0.07**	**0.05**	0.12	0.07	0.07	**0.12**
Poland	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.13	0.25	0.12	**0.08**	**0.05**	0.00	**---**	**---**	**---**	**---**	0.13	0.25	0.12	**0.08**
Romania	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.02	0.06	0.00	**0.03**	**0.00**	---	**---**	**---**	**0.02**	**0.01**	0.02	0.06	0.00	**0.05**
Other East Europe	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.10	0.31	0.02	**0.02**	**0.00**	---	**---**	**---**	**0.01**	**0.01**	0.10	0.31	0.02	**0.02**
FSU-15	---	**---**	**---**	**---**	**---**	0.00	---	---	---	**---**	0.28	0.23	0.22	**0.15**	**0.23**	0.01	0.22	0.15	**0.18**	**0.18**	0.29	0.45	0.37	**0.33**
Saudi Arabia	0.54	**0.70**	**0.81**	**0.39**	**0.60**	0.16	0.30	---	---	**0.40**	4.63	3.09	1.73	**2.20**	**1.65**	0.05	0.56	0.99	**1.39**	**0.82**	5.38	4.65	3.53	**3.98**
Japan	0.93	0.81	0.93	**0.40**	**0.60**	0.36	0.30	0.05	0.04	**0.25**	0.01	0.00	0.00	**---**	**---**	0.35	0.45	0.41	**0.38**	**0.40**	1.65	1.56	1.40	**0.82**
China	1.04	1.27	1.34	**0.80**	**0.98**	0.49	0.50	0.42	0.08	**0.40**	0.68	0.18	0.35	**0.80**	**0.30**	---	0.06	**---**	**---**	**0.05**	2.20	2.01	2.11	**1.68**
Israel	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.13	0.06	0.03	**---**	**---**	0.05	0.15	0.16	**0.17**	**0.15**	0.19	0.20	0.19	**0.17**
Taiwan	0.18	**0.13**	**0.15**	**0.10**	**0.05**	---	---	---	---	**---**	0.00	---	---	**0.00**	**---**	0.00	0.06	**---**	**0.00**	**0.00**	0.18	0.19	0.15	**0.10**
Jordan	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.60	0.45	---	**---**	**---**	0.05	0.05	**---**	**0.10**	**0.01**	0.65	0.50	---	**0.10**
Iran	---	**---**	**0.05**	**---**	**---**	---	0.11	---	---	**---**	0.64	0.74	0.12	**---**	**---**	0.00	0.15	0.30	**0.10**	**0.10**	0.64	1.00	0.48	**0.10**
Other Asia	0.31	**0.30**	**0.35**	**0.15**	**0.27**	0.06	0.01	0.01	0.01	**0.01**	0.70	0.54	0.06	**0.10**	**0.10**	0.09	0.16	0.10	**0.19**	**0.05**	1.16	1.01	0.52	**0.45**
Algeria	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.63	0.24	0.09	**0.01**	**0.05**	---	0.03	0.06	**0.15**	**0.05**	0.63	0.27	0.15	**0.16**
Libya	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.06	0.10	0.04	**0.01**	**0.05**	---	**---**	0.05	**0.15**	**0.05**	0.06	0.10	0.09	**0.16**
Tunisia	---	**---**	**---**	**---**	**---**	---	0.01	0.02	---	**0.01**	0.18	0.50	0.12	**0.10**	**0.10**	0.02	0.02	0.11	**0.25**	**0.14**	0.20	0.53	0.25	**0.35**
Morocco	---	**---**	**---**	**---**	**---**	---	0.02	---	---	**0.01**	0.64	0.42	0.29	**0.10**	**0.10**	0.02	0.10	0.10	**0.17**	**0.07**	0.65	0.53	0.39	**0.27**
Other Africa	---	**---**	**---**	**---**	**---**	---	0.03	0.05	0.09	**0.12**	0.09	0.09	0.05	**0.10**	**0.05**	---	0.03	**---**	**---**	**---**	0.09	0.15	0.10	**0.19**
United States	---	**---**	**---**	**---**	**---**	0.60	0.62	0.48	0.23	**0.25**	0.00	0.01	0.00	**0.10**	**0.00**	---	**---**	**---**	**---**	**---**	0.60	0.62	0.48	**0.33**
Mexico	---	**---**	**---**	**---**	**---**	0.10	0.03	0.01	0.00	**0.05**	0.01	---	---	**---**	**---**	0.10	0.11	0.07	**0.07**	**0.00**	0.22	0.14	0.08	**0.07**
Brazil	---	**---**	**---**	**---**	**---**	---	---	---	---	**---**	0.06	---	0.05	**0.04**	**0.05**	---	**---**	**---**	**---**	**---**	0.06	---	0.05	**0.04**
Other West Hemis.	0.11	**0.15**	**0.15**	**0.10**	**0.15**	---	0.01	0.06	0.00	**0.05**	0.22	0.20	0.33	**0.35**	**0.35**	0.03	0.03	0.09	**0.10**	**0.12**	0.35	0.39	0.63	**0.55**
Total	3.10	**3.36**	**3.78**	**1.94**	**2.65**	1.77	1.94	1.10	0.44	**1.55**	10.10	7.57	3.65	**4.24**	**3.13**	0.87	2.26	3.53	**4.34**	**2.76**	15.83	15.14	12.07	**10.96**
	Nov/Oct					Aug/Jul					Jul/Jun					Jun/May								
Carryin	0.47	0.39	0.98	**1.91**	**0.27**	2.74	2.84	2.52	1.90	**1.20**	13.73	10.47	8.22	9.41	**10.00**	1.41	1.67	3.49	6.29	**6.38**	18.35	15.37	15.20	**19.50**
Production	5.03	6.74	8.42	**3.27**	**6.70**	13.20	13.17	10.85	7.28	**12.03**	48.93	51.57	48.36	48.34	**46.70**	19.45	23.18	28.60	28.30	**24.30**	86.61	94.66	96.23	**87.19**
Imports (Crop Year)	0.02	0.00	**0.00**	**0.00**	**0.02**	0.03	0.04	0.10	**0.25**	**0.08**	0.04	0.04	0.66	**0.54**	**0.34**	0.90	0.48	0.26	**0.20**	**0.25**	0.99	0.55	1.02	**0.99**
Total Supply	5.51	7.13	**9.41**	**5.17**	**6.99**	15.97	16.05	13.46	**9.43**	**13.30**	62.70	62.08	57.24	**58.28**	**57.04**	21.76	25.32	32.35	**34.79**	**30.93**	105.94	110.58	112.45	**107.68**
Domestic Use	2.45	2.55	**3.61**	**3.90**	**3.32**	11.37	11.59	10.44	**7.83**	**10.39**	42.13	46.29	44.17	**44.05**	**46.91**	18.79	20.37	23.60	**24.60**	**24.13**	74.74	80.80	81.83	**80.37**
Exports (Crop Year)	2.68	3.60	**3.89**	**1.00**	**3.20**	1.76	1.94	1.12	**0.40**	**1.61**	10.10	7.57	3.65	**4.24**	**3.13**	1.30	1.46	2.45	**3.81**	**2.10**	15.83	14.57	11.12	**9.45**
Total Use	5.13	6.15	**7.50**	**4.90**	**6.52**	13.13	13.53	11.57	**8.23**	**12.00**	52.23	53.86	47.83	**48.28**	**50.04**	20.09	21.84	26.06	**28.41**	**26.23**	90.57	95.38	92.95	**89.82**
Carryout	0.39	0.98	**1.91**	**0.27**	**0.47**	2.84	2.52	1.90	**1.20**	**1.30**	10.47	8.22	9.41	**10.00**	**7.00**	1.67	3.49	6.29	**6.38**	**4.70**	15.37	15.20	19.50	**17.86**

Bold Numbers are Sparks Projections

September 5, 2003

Table A1.3 Global Barley Balance Sheet and Forecasts

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
PRODUCTION:																
WORLD TOTAL	141.7	153.6	154.4	135.6	127.9	133.2	142.0	132.6	138.2	145.5	147.3	149.0	150.8	152.6	154.3	155.8
USA	7.8	8.5	7.8	7.7	6.1	6.9	5.4	4.9	6.6	6.1	6.1	6.1	6.2	6.2	6.2	6.2
Canada	13.0	15.6	13.5	12.7	13.2	13.2	10.8	7.3	14.2	14.8	14.9	14.9	15.0	15.1	15.1	15.2
TOTAL FOREIGN	120.8	129.5	133.0	115.2	108.6	113.1	125.7	120.4	117.4	124.6	126.4	128.0	129.6	131.3	133.0	134.4
EU-15	43.7	51.7	52.6	51.9	49.1	51.7	48.4	48.3	49.5	49.6	49.8	50.0	50.1	50.2	50.4	50.5
Central Europe	11.3	9.5	12.0	10.7	9.7	7.5	9.8	9.3	8.4	9.3	9.3	9.3	9.3	9.3	9.3	9.3
FSU-15	32.4	29.4	36.0	21.1	22.4	26.5	36.3	35.3	29.3	34.5	35.6	36.7	37.7	38.8	39.9	41.1
Australia	5.8	6.7	6.5	6.0	5.0	6.7	8.4	3.5	6.7	7.3	7.5	7.8	8.1	8.3	8.6	8.6
ALL OTHERS	27.5	32.2	25.9	25.5	22.4	20.8	22.9	23.9	23.5	23.9	24.2	24.3	24.4	24.6	24.8	24.9
DOMESTIC USE:																
WORLD TOTAL	150.6	148.6	145.4	139.0	132.3	134.1	135.6	134.9	141.8	142.9	145.1	147.1	149.1	151.0	152.9	155.0
USA	7.7	8.5	6.9	7.2	6.7	6.4	5.6	5.5	6.2	5.8	6.2	6.2	6.3	6.3	6.3	6.4
CANADA	10.6	11.1	11.8	11.3	11.4	11.6	10.3	7.6	10.9	11.3	11.4	11.5	11.6	11.7	11.9	12.0
TOTAL FOREIGN	132.4	129.0	126.8	120.4	114.2	116.1	119.6	121.8	124.8	125.8	127.6	129.4	131.2	133.0	134.8	136.6
EU-15	43.3	44.1	43.9	43.2	42.1	46.3	44.2	44.1	44.9	44.3	44.4	44.5	44.6	44.6	44.6	44.6
CENTRAL EUROPE	11.7	10.7	11.5	11.2	9.9	8.4	8.9	8.9	9.2	9.1	9.1	9.0	8.9	8.8	8.7	8.6
FSU-15	36.2	29.1	29.4	23.9	21.7	23.7	27.1	28.4	29.2	30.4	31.4	32.5	33.6	34.8	36.0	37.2
N AFRICA & MIDDLE EAST	16.3	19.4	16.1	17.5	16.0	13.3	14.0	14.7	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
JAPAN	1.6	1.6	1.6	1.9	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
CHINA	5.6	5.7	5.6	5.2	5.2	4.9	4.5	5.0	5.2	5.2	5.4	5.6	5.8	6.0	6.2	6.4
ALL OTHERS	17.8	18.4	18.7	17.5	17.5	17.8	19.3	19.1	19.6	20.1	20.6	21.1	21.6	22.1	22.6	23.1
ENDING STOCKS	19.5	23.7	32.2	28.9	24.0	22.3	27.6	26.6	22.3	24.3	25.8	27.0	28.0	28.9	29.6	29.8
Import Summation	9.8	14.1	11.1	14.9	14.7	15.0	13.6	13.5	13.8	13.8	14.1	14.3	14.5	14.8	15.0	15.1
Net Trade (Exp - Imp)																
USA	0.5	-0.1	0.7	0.0	0.0	0.6	0.1	0.1	0.2	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
CANADA	2.6	3.3	2.2	1.1	1.7	1.9	1.0	0.4	2.1	2.7	3.5	3.4	3.4	3.3	3.3	3.2
EU-15	2.0	6.8	2.5	7.3	10.1	7.7	2.7	4.2	2.1	5.3	5.4	5.4	5.5	5.6	5.7	5.9
AUSTRALIA	3.4	3.9	3.0	4.2	2.6	4.0	4.3	1.0	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.4
MEXICO	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
CENTRAL EUROPE	-0.2	-0.7	-0.2	-0.1	0.0	-0.4	0.4	0.3	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7
FSU-15	1.5	0.5	2.1	1.0	0.5	1.3	5.5	6.8	4.1	4.2	4.2	4.1	4.1	4.0	4.0	3.9
JAPAN	-1.3	-1.4	-1.4	-1.7	-1.6	-1.5	-1.4	-1.3	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
CHINA	-1.4	-2.0	-1.2	-1.9	-2.2	-2.3	-1.9	-2.1	-2.3	-2.3	-2.5	-2.6	-2.8	-3.0	-3.2	-3.3
N AFRICA & MIDDLE EAST	-5.1	-8.3	-6.8	-10.0	-9.3	-9.4	-8.7	-8.7	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8

Shaded area is SCI estimate.

Jul 22, 2003

Table A1.4 Canadian Cattle Forecasts

CANADA	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cattle and Calves (000s)													
Inventory On January 1	13359.9	13211.3	13201.3	13608.2	13761.5	13453.6	**14888**	**14278**	**14078**	**13928**	**13768**	**13688**	**13838**
Calves Born	5435.3	5276.4	5500.3	5656.4	5756.9	**5803**	**5735**	**5650**	**5625**	**5600**	**5625**	**5650**	**5675**
Interprovincial Imports	1249.8	1528.4	1500.3	1614.6	1623.9	**1187**	**1300**	**1500**	**1500**	**1600**	**1500**	**1500**	**1500**
International Imports	89.1	234.8	321.9	234.5	89	**43**	**40**	**200**	**250**	**225**	**250**	**300**	**325**
Total Supply	20134.1	20250.9	20523.8	21113.7	21231.3	**20487**	**21963**	**21628**	**21453**	**21353**	**21143**	**21138**	**21338**
Slaughter	3755.2	3935.3	3836.1	3804.6	3836.7	**3261**	**3900**	**3900**	**3925**	**3950**	**3975**	**3975**	**3975**
Interprovincial Exports	1249.8	1528.4	1500.3	1614.6	1623.9	**1187**	**1300**	**1500**	**1500**	**1600**	**1500**	**1500**	**1500**
International Exports	1315.4	986.1	964.8	1307.2	1688.6	**505**	**1800**	**1500**	**1450**	**1400**	**1350**	**1200**	**1150**
Deaths and Condemnations	602.4	599.8	614.4	625.8	628.5	**645**	**685**	**650**	**650**	**635**	**630**	**625**	**630**
Total Disappearance	6922.8	7049.6	6915.6	7352.2	7777.7	**5599**	**7685**	**7550**	**7525**	**7585**	**7455**	**7300**	**7255**
Inventory On Dec 31	13211.3	13201.3	13608.2	13761.5	13453.6	**14888**	**14278**	**14078**	**13928**	**13768**	**13688**	**13838**	**14083**
(%change from year previous)													
Inventory On January 1	-0.4%	-1.1%	-0.1%	3.1%	1.1%	**-2.2%**	**10.7%**	**-4.1%**	**-1.4%**	**-1.1%**	**-1.1%**	**-0.6%**	**1.1%**
Calves Born	-1.4%	-2.9%	4.2%	2.8%	1.8%	**0.8%**	**-1.2%**	**-1.5%**	**-0.4%**	**-0.4%**	**0.4%**	**0.4%**	**0.4%**
Interprovincial Imports	5.3%	22.3%	-1.8%	7.6%	0.6%	**-26.9%**	**9.5%**	**15.4%**	**0.0%**	**6.7%**	**-6.3%**	**0.0%**	**0.0%**
International Imports	103.0%	163.5%	37.1%	-27.2%	-62.0%	**-52.0%**	**-6.3%**	**400.0%**	**25.0%**	**-10.0%**	**11.1%**	**20.0%**	**8.3%**
Total Supply	-0.1%	0.6%	1.3%	2.9%	0.6%	**-3.5%**	**7.2%**	**-1.5%**	**-0.8%**	**-0.5%**	**-1.0%**	**0.0%**	**0.9%**
Slaughter	3.4%	4.8%	-2.5%	-0.8%	0.8%	**-15.0%**	**19.6%**	**0.0%**	**0.6%**	**0.6%**	**0.6%**	**0.0%**	**0.0%**
Interprovincial Exports	5.3%	22.3%	-1.8%	7.6%	0.6%	**-26.9%**	**9.5%**	**15.4%**	**0.0%**	**6.7%**	**-6.3%**	**0.0%**	**0.0%**
International Exports	-4.7%	-25.0%	-2.2%	35.5%	29.2%	**-70.1%**	**256.2%**	**-16.7%**	**-3.3%**	**-3.4%**	**-3.6%**	**-11.1%**	**-4.2%**
Deaths and Condemnations	0.6%	-0.4%	2.4%	1.9%	0.4%	**2.7%**	**6.2%**	**-5.1%**	**0.0%**	**-2.3%**	**-0.8%**	**-0.8%**	**0.8%**
Total Disappearance	1.8%	1.8%	-1.9%	6.3%	5.8%	**-28.0%**	**37.3%**	**-1.8%**	**-0.3%**	**0.8%**	**-1.7%**	**-2.1%**	**-0.6%**
Inventory On Dec 31	-1.1%	-0.1%	3.1%	1.1%	-2.2%	**10.7%**	**-4.1%**	**-1.4%**	**-1.1%**	**-1.1%**	**-0.6%**	**1.1%**	**1.8%**

Source: Statistics Canada
Forecast 2003 onward by Sparks

Table A1.5 Canadian Hog Forecasts (without MCOOL)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
JAN-DEC TOTALS																	
Inventory at January 1	11588.0	11479.5	11985.3	12429.4	12904.4	13576	14367	**14667**	**14700**	**14800**	**15100**	**15300**	**15500**	**15500**	**15700**	**15800**	**15800**
Pig Crop (a)	18664.9	19911.0	22508.9	24716.0	25967.3	28198.6	29603.3	**30290**	**31567**	**32713**	**33821**	**34270**	**34498**	**34802**	**35119**	**35440**	**35706**
Interprovincial Imports	165.7	194.1	181.5	170.5	147.7	139.6	178.7	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**
International Imports	2.2	3.3	9.4	8.1	7.9	4.4	14.8	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Total Supply	30420.8	31587.9	34685.1	37324.0	39027.3	41918.1	44163.9	**45142**	**46452**	**47698**	**49106**	**49755**	**50183**	**50487**	**51004**	**51425**	**51691**
Slaughter	15177.9	15384.6	16942.5	18921.1	19684.4	20703.8	22117.9	**22848**	**23827**	**24673**	**25731**	**26180**	**26708**	**27012**	**27729**	**28350**	**28616**
Interprovincial Exports	165.7	194.1	181.5	170.5	147.7	139.6	178.7	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**
International Exports	2780.5	3180.5	4122.7	4137.3	4359.5	5344.5	5741.4	**6069.3**	**6300.0**	**6400.0**	**6500.0**	**6500.0**	**6400.0**	**6200.0**	**5900.0**	**5700.0**	**5500.0**
Deaths & Condemnations	817.2	843.4	1009.0	1190.7	1260.2	1363.1	1459.0	**1350.0**	**1350.0**	**1350.0**	**1400.0**	**1400.0**	**1400.0**	**1400.0**	**1400.0**	**1400.0**	**1400.0**
Output (6+7+8+9)	18941.3	19602.6	22255.7	24419.6	25451.8	27551.0	29497.0	**30442**	**31652**	**32598**	**33806**	**34255**	**34683**	**34787**	**35204**	**35625**	**35691**
Inventory at Dec 31	11479.5	11985.3	12429.4	12904.4	13575.5	14367.1	14666.9	**14700**	**14800**	**15100**	**15300**	**15500**	**15500**	**15700**	**15800**	**15800**	**16000**
pig crop/total inv.	1.61071	1.73448	1.87804	1.988511	2.012283	2.0772	2.0605	**2.06521**	**2.1474**	**2.2104**	**2.2398**	**2.2399**	**2.2257**	**2.2453**	**2.2369**	**2.243**	**2.2599**
JAN-DEC TOTALS (% change)																	
Inventory at January 1	2.6%	-0.9%	4.4%	3.7%	3.8%	5.2%	5.8%	**2.1%**	**0.2%**	**0.7%**	**2.0%**	**1.3%**	**1.3%**	**0.0%**	**1.3%**	**0.6%**	**0.0%**
Pig Crop (a)	0.3%	6.7%	13.0%	9.8%	5.1%	8.6%	5.0%	**2.3%**	**4.2%**	**3.6%**	**3.4%**	**1.3%**	**0.7%**	**0.9%**	**0.9%**	**0.9%**	**0.8%**
Interprovincial Imports	13.1%	17.1%	-6.5%	-6.1%	-13.4%	-5.5%	28.0%	**-2.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
International Imports	-29.0%	50.0%	184.8%	-13.8%	-2.5%	-44.3%	236.4%	**-32.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Total Supply	1.2%	3.8%	9.8%	7.6%	4.6%	7.4%	5.4%	**2.2%**	**2.9%**	**2.7%**	**3.0%**	**1.3%**	**0.9%**	**0.6%**	**1.0%**	**0.8%**	**0.5%**
Slaughter	-3.8%	1.4%	10.1%	11.7%	4.0%	5.2%	6.8%	**3.3%**	**4.3%**	**3.6%**	**4.3%**	**1.7%**	**2.0%**	**1.1%**	**2.7%**	**2.2%**	**0.9%**
Interprovincial Exports	13.1%	17.1%	-6.5%	-6.1%	-13.4%	-5.5%	28.0%	**-2.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
International Exports	59.1%	14.4%	29.6%	0.4%	5.4%	22.6%	7.4%	**5.7%**	**3.8%**	**1.6%**	**1.6%**	**0.0%**	**-1.5%**	**-3.1%**	**-4.8%**	**-3.4%**	**-3.5%**
Deaths & Condemnations	2.0%	3.2%	19.6%	18.0%	5.8%	8.2%	7.0%	**-7.5%**	**0.0%**	**0.0%**	**3.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Output (6+7+8+9)	2.6%	3.5%	13.5%	9.7%	4.2%	8.2%	7.1%	**3.2%**	**4.0%**	**3.0%**	**3.7%**	**1.3%**	**1.3%**	**0.3%**	**1.2%**	**1.2%**	**0.2%**
Inventory at Dec 31	-0.9%	4.4%	3.7%	3.8%	5.2%	5.8%	2.1%	**0.2%**	**0.7%**	**2.0%**	**1.3%**	**1.3%**	**0.0%**	**1.3%**	**0.6%**	**0.0%**	**1.3%**

Table A1.6 Canadian Hog Forecasts (with MCOOL)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
JAN-DEC TOTALS																	
Inventory at January 1	11588.0	11479.5	11985.3	12429.4	12904.4	13576	14367	**14667**	**14700**	**14800**	**14500**	**14300**	**14300**	**14400**	**14500**	**14600**	**14800**
Pig Crop (a)	18664.9	19911.0	22508.9	24716.0	25967.3	28198.6	29603.3	**30290**	**31567**	**31000**	**30500**	**30200**	**30000**	**30000**	**30000**	**30000**	**30000**
Interprovincial Imports	165.7	194.1	181.5	170.5	147.7	139.6	178.7	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**
International Imports	2.2	3.3	9.4	8.1	7.9	4.4	14.8	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Total Supply	30420.8	31587.9	34685.1	37324.0	39027.3	41918.1	44163.9	**45142**	**46452**	**45985**	**45185**	**44685**	**44485**	**44585**	**44685**	**44785**	**44985**
Slaughter	15177.9	15384.6	16942.5	18921.1	19684.4	20703.8	22117.9	**22848**	**23827**	**27660**	**27360**	**26860**	**26560**	**26560**	**26560**	**26460**	**26460**
Interprovincial Exports	165.7	194.1	181.5	170.5	147.7	139.6	178.7	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**	**175**
International Exports	2780.5	3180.5	4122.7	4137.3	4359.5	5344.5	5741.4	**6069.3**	**6300.0**	**2300.0**	**2000.0**	**2000.0**	**2000.0**	**2000.0**	**2000.0**	**2000.0**	**2000.0**
Deaths & Condemnations	817.2	843.4	1009.0	1190.7	1260.2	1363.1	1459.0	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**	**1350.0**
Output (6+7+8+9)	18941.3	19602.6	22255.7	24419.6	25451.8	27551.0	29497.0	**30442**	**31652**	**31485**	**30885**	**30385**	**30085**	**30085**	**30085**	**29985**	**29985**
Inventory at Dec 31	11479.5	11985.3	12429.4	12904.4	13575.5	14367.1	14666.9	**14700**	**14800**	**14500**	**14300**	**14300**	**14400**	**14500**	**14600**	**14800**	**15000**
pig crop/total inv.	1.61071	1.73448	1.87804	1.988511	2.012283	2.0772	2.0605	**2.0652**	**2.1474**	**2.0946**	**2.1034**	**2.1119**	**2.0979**	**2.0833**	**2.069**	**2.0548**	**2.027**
JAN-DEC TOTALS (% change)																	
Inventory at January 1	2.6%	-0.9%	4.4%	3.7%	3.8%	5.2%	5.8%	**2.1%**	**0.2%**	**0.7%**	**-2.0%**	**-1.4%**	**0.0%**	**0.7%**	**0.7%**	**0.7%**	**1.4%**
Pig Crop (a)	0.3%	6.7%	13.0%	9.8%	5.1%	8.6%	5.0%	**2.3%**	**4.2%**	**-1.8%**	**-1.6%**	**-1.0%**	**-0.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Interprovincial Imports	13.1%	17.1%	-6.5%	-6.1%	-13.4%	-5.5%	28.0%	**-2.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
International Imports	-29.0%	50.0%	184.8%	-13.8%	-2.5%	-44.3%	236.4%	**-32.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Total Supply	1.2%	3.8%	9.8%	7.6%	4.6%	7.4%	5.4%	**2.2%**	**2.9%**	**-1.0%**	**-1.7%**	**-1.1%**	**-0.4%**	**0.2%**	**0.2%**	**0.2%**	**0.4%**
Slaughter	-3.8%	1.4%	10.1%	11.7%	4.0%	5.2%	6.8%	**3.3%**	**4.3%**	**16.1%**	**-1.1%**	**-1.8%**	**-1.1%**	**0.0%**	**0.0%**	**-0.4%**	**0.0%**
Interprovincial Exports	13.1%	17.1%	-6.5%	-6.1%	-13.4%	-5.5%	28.0%	**-2.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
International Exports	59.1%	14.4%	29.6%	0.4%	5.4%	22.6%	7.4%	**5.7%**	**3.8%**	**-63.5%**	**-13.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Deaths & Condemnations	2.0%	3.2%	19.6%	18.0%	5.8%	8.2%	7.0%	**-7.5%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Output (6+7+8+9)	2.6%	3.5%	13.5%	9.7%	4.2%	8.2%	7.1%	**3.2%**	**4.0%**	**-0.5%**	**-1.9%**	**-1.6%**	**-1.0%**	**0.0%**	**0.0%**	**-0.3%**	**0.0%**
Inventory at Dec 31	-0.9%	4.4%	3.7%	3.8%	5.2%	5.8%	2.1%	**0.2%**	**0.7%**	**-2.0%**	**-1.4%**	**0.0%**	**0.7%**	**0.7%**	**0.7%**	**1.4%**	**1.4%**

Appendix A-2 Medium Term Livestock Projections

The outlook for the Canadian livestock industry was struck with a substantial blow on May 20th, 2003 with the discovery of BSE in one slaughter cow in Alberta, overshadowing all other market factors. The projections that follow in this section are substantially based on the immediate impact of the BSE event on the cattle industry and some assumptions on the downstream outlook for the cattle and hog industries in Canada, with particular attention to Western Canada.

Leading up to the BSE event, the Canadian livestock industry had undergone a variety of fundamental shifts in the previous decade or so. These resulted from changes in market demand (both domestic and international), federal and provincial policies, technology, transportation, environmental pressures and a host of other factors. One of the largest shifts is the transition of livestock production into Western Canada. The region's vast tracts of arable land and temperate climate make it ideally suited for producing low-cost feed grains. Additionally, the region has a small population base helping to reduce sensitivity to livestock-related odour complaints, as compared to other more densely populated areas such as southern Ontario and Quebec. (More recently, however, there is increasing local resistance to new hog operations, particularly large intensive livestock operations (ILOs)). Higher transportation costs for shipping bulk crop commodities also had encouraged livestock production on the prairies. Similarly, high costs for shipping livestock to urban-centered processing facilities encouraged the processing sector to locate in the west.

A-2.1 Hogs

In Western Canada, the hog industry is at a crossroads, following aggressive expansion in the late 1990s, particularly in Manitoba. After initial difficulties, Maple Leaf has brought their new processing plant in Brandon up to full single shift capacity. The Olymel plant in Red Deer, Alberta is also running close to single shift capacity although they would welcome a few more marketings. Both of these modern plants are capable of double shift production and at least one of them is likely to get to that level in the next 5 years. But with poor margins currently, Canadian packers are in no hurry to move to that level. In fact, the recent closure of one plant in Manitoba implies a move to lower, not increased, slaughter capacity in Western Canada. Part of the problem for Canadian packers is that pork exports overseas have also been struggling this past year, with the Canada/US exchange rate approaching the mid-70 level, compared to a sub-70 Canadian dollar during the period of rapid industry growth. The Canadian pork industry is much more export-dependent than the US, and begins to lose competitive advantage as the currency appreciates.

Facing difficult margins and uncertain prospects, Western Canadian packers have pulled in the reins as far as offering out new supply contracts. If producers wish to expand, in Saskatchewan and Manitoba at least, they may have to dedicate that production to live

exports, particularly isowean[31] pigs. Although isowean export has been a profitable venture on the whole, that path is highly risky, given the uncertainties surrounding Mandatory Country of Origin Labeling legislation (MCOOL)[32] in the US. The concerns about finding a market for their hogs, either domestically or in the US, could finally begin to put the brakes on a period of remarkable expansion in the Western Canadian swine industry.

The hog industry is also restructuring in Eastern Canada. Investment in large-scale farrow-to-finish units is underway, resulting in substantially fewer producers, lower production costs, increased feeding efficiency, improved herd health and higher product quality. As a result, the Eastern industry is emerging more competitive on a variety of fronts, and is still well positioned to supply its large urban markets and strengthen its focus on the export market. Quebec has recently placed a moratorium on hog production expansion, which is likely to stay in effect, much as the moratorium in North Carolina has remained in place. Moderate additional expansion and restructuring is likely to continue in Southern Ontario.

Forecasts

For the purposes of this analysis, we performed two forecasts. The first is the baseline forecast in which we assume MCOOL legislation is either revoked, not funded, or watered down, resulting in no material impact on live trade between US and Canada; we estimate the probability of this scenario as 65%. The second scenario assumes that MCOOL is implemented around January 1, 2005, and that the final legislation is not significantly different than the original voluntary guidelines posted for public comment; this we assume has a 35% probability of occurring.

Other assumptions in the models are as follows:

Baseline (no MCOOL) – See Table A1.5

- Eastern Canadian production is expected to plateau while Western Canada continues to grow, but at a slower rate than in the 1990s.
- The growth in the pig crop is expected to come on a combination of productivity gains and modest increases in sow herd.

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31 Isowean (isolated weaning) refers to the hog production process whereby piglets are removed from the breeding herd immediately after weaning; the process often also includes weaning pigs at an "early" age, usually less than 18 days old.

32 Recent Country of Origin Labelling (COOL) legislation passed in the US demands all livestock products must be born, raised and slaughtered in the US to carry the USDA's quality stamp; all imports must be labelled with the country of origin. Although currently voluntary, this program is set to become mandatory as of October 2004 (MCOOL). The USDA rules outline specific criteria that must be met to use the label "United States Country of Origin"; many other countries feel that this distinction will create an unfair marketing advantage for American goods and may be in breach of WTO rules.

- Live hog exports are expected to peak in the next five years around 6.5 million head, consisting of a mix of 75% feeders (primarily isoweans) and 25% slaughter hogs at that time.
- Slaughter is a calculated residual from our forecasts of production, inventories, and exports. We have slaughter trending steadily higher, but in reality the increases may be more erratic, depending on when one of three possible plants decides there are sufficient supplies to go double shift.
- If we have under-estimated live trade (if it continues to trend higher), that would also result in lower slaughter volumes than we are forecasting. The level of live trade is probably the most difficult factor to forecast, being the result of Canadian packer decisions (if and when to double shift), economic factors such as US corn prices and the exchange rate, and non-economic factors such MCOOL.

Alternate (with MCOOL) – See Table A1.6

- The result of the MCOOL legislation is an immediate and sharp reduction in feeder pig exports and a smaller reduction in slaughter hog exports. Within two years feeder exports drop to 500,000 head annually and slaughter to 1.5 million head, reversing the current proportions of feeder vs slaughter trade.
- Domestic slaughter and feeding increase sharply initially to accommodate the reduced exports, and then quickly level off, as Canadian pig crops begin to decline.
- The size of the Canadian industry, both east and west declines, with proportionately a slightly larger decline in the west. (Quebec has no live exports currently.) This happens as some isowean producers exit the business, and the basis between Canadian and US hogs widens dramatically.
- Eventually the industry stabilizes at a lower level of production. Late in the forecast horizon, as additional markets are found for the Canadian pork, we could begin to see cautious growth once again in the Western Canadian hog industry.

A-2.2 Cattle

Currently, the cattle sector is working through the severe impact of the detection of one case of BSE in Alberta on May 20th, 2003. The US border has been closed since that time to all cattle and beef products and has only recently been partially opened for boneless boxed beef. This has had the effect of increasing inventories as the whole value chain has “backed up”.

The following is an outline of the assumptions made in the development of these forecasts:

- Boxed beef trade with the US resumes in September
- Cattle trade with the US will resume on young cattle during the first quarter of 2004
- No trade in slaughter cows or cow beef for several years (same for bulls)
- No further incidences of BSE in Canada or the US over forecast period

- No major problems with feed and forage supplies over forecast period
- Increase inventory by end of 2003 due to lack of shipments to the US since May
- Price linkages with US market will take some time to be re-established through 2004
- Lingering problems of liquidity and increased shipments of feeder cattle to the US will lead to inventory decline next year
- Herd rebuilding will be delayed by declines in US and Canadian cattle prices in the middle part of the decade
- Price recovery in the latter part of the decade will encourage a return to expansion

Following modest herd reductions from 1997 through 1999, the Canadian cattle herd was again expanding in 2000 and 2001. Severe drought in Western Canada led to a reduction in the cattle herd in 2002. This was expected to be followed by a resumption of herd growth as forage supplies were replenished. However the impact of the BSE incident in stopping all cattle and beef trade and the resulting severe collapse in the cattle market has put the entire Canadian cattle industry in disarray. The effect of this crisis will have ongoing and far-reaching consequences. Even with financial aid from the Federal and Provincial governments, there will be a number of cattle producers who will not be able to survive.

Prior to May 2003, Canadian cattle producers were working within an integrated North American market for cattle and beef. With more than half of Canada's production being exported, Canadian prices were linked closely to the US market. Since May 20, there has been a "disconnect" in the market structure. With the loss of all export markets, Canadian beef processors scaled back slaughter and production dramatically to match the needs of the domestic market. As cattle prices deteriorated, packers were able to increase sales within Canada, albeit at severely discounted prices on certain items, particularly end meats (chucks and rounds). Seasonal demand for middle meats (ribs and loins) was strong through the summer, keeping prices on most of these items close to US equivalent. Processing activity increased, but there was still a "backlog" of slaughter cattle in the system. With the partial re-opening of the US border to trade in boneless boxed beef from youthful animals, cattle prices have improved, but remain at a substantial discount to US prices.

A return toward "parity pricing" will be dependent upon the resumption in the trade of live cattle (feeder cattle and fed cattle). Under the rule making process in the US, this will likely take several months. Thus we are not expecting a recommencement of live cattle trade until sometime during the first quarter of 2004. With the better financial status of US cattle feeders, large exports of feeder cattle are anticipated for next year. At the same time, Canadian beef plants will be somewhat disadvantaged by the cost of removal of Specified Risk Material (SRM)[33]. The spread between US and Canadian fed cattle prices, which can be volatile in the short run, will likely be wider on average than has been seen in recent years.

[33] Specified Risk Materials are those parts of the animal that have been determined to be the most likely to contain the specified pathogen, and that holds the greatest assumed risk of transferring the pathogen to the food chain.

This will encourage more exports of fed cattle to be processed in the US. Also, cattle trade will be limited to youthful animals, under 30 months of age. There were about 300,000 head of mature cows and bulls exported for slaughter in the US during 2002. These cattle will now have to be slaughtered and processed in Canada. The Canadian beef plants are expected to ramp up production as the industry works through the backlog of cattle and feedlot pens are replenished for next year.

The backlog of cattle due to lack of exports will result in a record large inventory of cattle and calves as of January 1, 2004. With the resumption of live cattle trade, increased domestic slaughter and increased exports will lead to a declining inventory going into 2005. The inventory is expected to continue declining past the middle of the decade as a result of weakening cattle prices in the US during 2005-2007. Herd growth is expected in the latter part of the forecast period. But the total inventory at the end of 2012 is forecast to be only 500,000 head more than at the end of 2001. See Table A1.4. Without the BSE incident, the inventory forecast would have been larger.

Exports to the U.S. and offshore markets have been a significant source of growth for the cattle sector. Exports of market-ready cattle into the U.S. have risen sharply from approximately 100,000 head in 1986, to close to 750,000 head in 1996 and over 1 million head in 2001 and 2002. However, now the outlook is 390,000 head for this year. Meanwhile, beef exports climbed from 102,000 tonnes to more than 300,000 tonnes over the same period. With the substantial increase in slaughter and further fabrication well underway, beef exports are projected to grow significantly in upcoming years.

Appendix A-3 Western Canadian Feed Grain Price Comparison

In the wake of recent large imports of corn from the US, there has been concern voiced over the ability of the livestock industry in Western Canada to compete with its counterpart in the US. The question is, how can Western Canada livestock interests compete with the US if they have become reliant on imported corn from the US, when the US livestock sector is using the same input but at lower cost?

The answer is that Western Canada has not, nor is it expected to become, reliant on US corn imports. In non-drought years with typical barley production, Western Canada will not require imports of US corn, nor is the price relationship between imported corn and local barley expected to sway in favour of corn.

Moreover, the relative cost of corn (or barley), albeit important, is not the sole determinant of relative competitiveness. Perhaps the most important measurement is the net cost of gain. This takes into consideration all aspects of livestock production costs such as:

- Labour
- Ration differences
- Temperature and weather impacts
- Disease control requirements (much higher in southern states)
- Logistics.

A more detailed comparison would need to take into consideration not just energy but protein and roughage as well. Rations should be compared on the basis of the same total energy levels (iso-coloric) and the same protein levels (iso-nitorgenous).

Although these are all clearly important factors and issues, this analysis will focus solely on the relative price of US corn delivered to the end-user. For this reason the focus of this analysis is on the relative feed grain competitiveness of the Alberta livestock industry in times of drought in Western Canada, forcing the importation of corn and shifting the relative importance of barley in the rations.

A-3.1 Price Comparisons

US Prices

To estimate local corn prices throughout the US, we assumed that the Posted County Prices (PCPs) collected and published by the Commodity Credit Corporation (CCC) are a reasonable reflection of the underlying cash market for corn at the county level throughout the US. Collected and published everyday, these prices are based on reports provided by local area grain merchants at numerous US terminal markets and then adjusted for each county.

In the analysis, each price was converted to a differential relative to the lowest PCP in the US; therefore the absolute price is not the measurement, rather just the differential.

Western Canadian Prices

The prices for US corn landed in various locations in Canada are based on the PCPs of the US counties from which this corn tends to be originated. To this, typical freight rates were added to estimate landed costs. For example, the Southern Manitoba market is serviced by truck from (primarily) Minnesota; as a result, the landed corn price was developed using truck freight. The landed US corn price for Alberta was developed using appropriate rail freight rates, also from Southern Minnesota.

Comparisons

On the basis of these estimates and calculations, the landed cost of US corn in Western Canada was compared to the local (or landed) cost of corn in each county in the US. As expected, the price of corn in the US corn belt was the cheapest, with values increasing with distance in each direction from there. Western Canadian prices were similar to US values in regions of roughly the same distance from the corn belt, primarily the most western and the most eastern states. See Map 1 below; corn price bands coincide with colour darkness increases. It should be noted that due to the use of discrete price bands for this map, the price differentials appear to jump from one region to another. In practice, the price changes over distance is more of a gradual shift, relative to freight.

A-3.2 Corn Prices Relative to Regional Livestock Populations

Further analysis included consideration of the feeding populations in each area to determine the proportion of the US livestock feeding industry with which Alberta was competitive with respect to delivered corn prices.

Table 1 below identifies US states with counties whose corn basis was greater than or about the same as the landed corn basis in Southern Alberta (i.e. demonstrated a similar or higher landed corn cost) along with recent USDA estimates of cattle and hog populations. It also shows the aggregate livestock populations in those counties[34]. The proportion of the total US cattle inventory in counties that had a corn basis similar to or greater than the corn basis in Southern Alberta was 10.3% or 9.9 million head. The proportion of US hog inventories of US counties that had a similar or higher corn price is less than 1% or approximately 549,000 head.

[34] For simplicity, the counties are not listed or identified separately.

Map A3.1 Corn Price Differentials

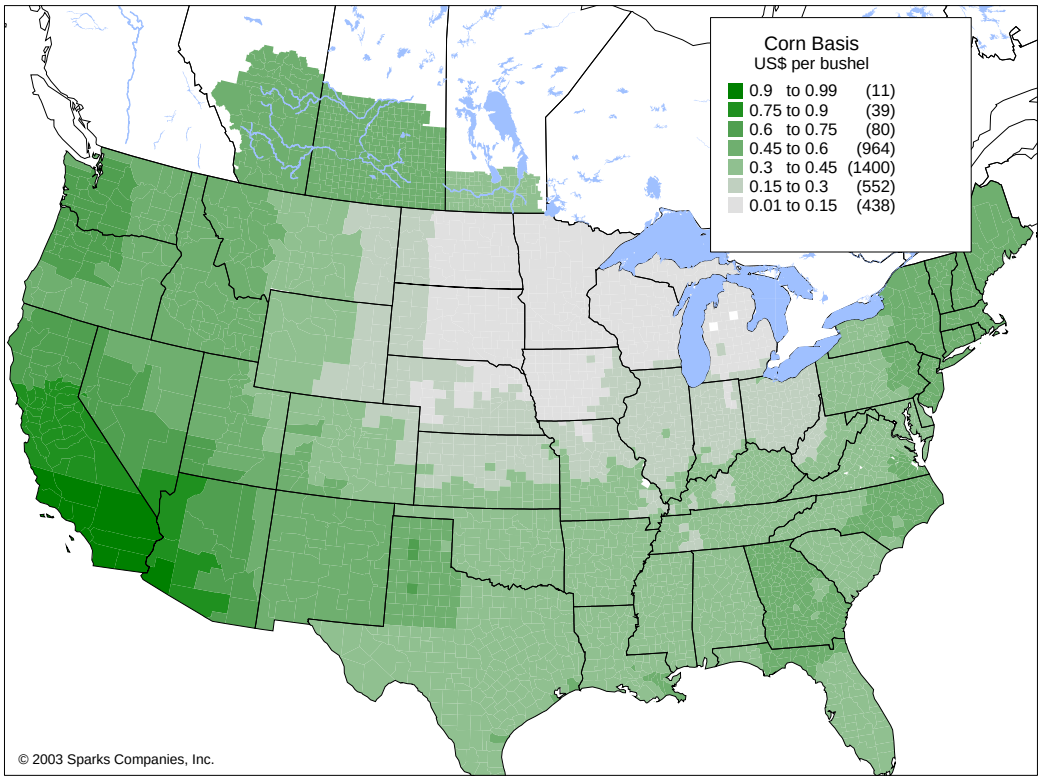

Table 3.1 Livestock Inventory Comparison

	Cattle Inventory	Cattle Percent	Hog Inventory	Hog Percent
Arizona	850,000	0.9%	9,052	0.0%
California	5,134,500	5.4%	202,234	0.3%
Georgia	7,000	0.0%	5,199	0.0%
Louisiana	16,500	0.0%	0	0.0%
Nevada	349,000	0.4%	1,146	0.0%
Oregon	701,000	0.7%	27,645	0.0%
Texas	1,532,000	1.6%	14,145	0.0%
Utah	232,000	0.2%	265,488	0.5%
Washington	1,065,500	1.1%	24,302	0.0%
Total	**9,887,500**	**10.3%**	**549,211**	**0.9%**

A-3.3 Conclusions

The conclusions from this analysis are not conclusive. This simply shows that the typical price of US corn places the Alberta feeding industry in the bottom 10% of all livestock operations in the US – on the basis of landed corn costs only. Other factors that contribute to the net cost of gain were not assessed here and therefore do not contribute to the analysis.

Appendix A-4 Detailed Pool Calculations

The factors contributing to the pool can be divided into three main sections: sales and revenue, costs, and interest revenue allocations. This section will use information from the Feed Barley Pool for crop year 2001-02 to describe in detail all the factors that contribute to the pool returns. Appendix A-5 provides a more detailed review of the interest revenue allocation process.

A-4.1 Sales and Revenues

The final 2001-02 feed barley pool results are used below to describe the details that go into determining the price used in the pool account (and the PRO).

Table A4.1 below is taken directly from the CWB 2001-02 Annual Report (page 56); the far right column was added for this presentation.

Table A4.1 Feed Barley Revenue Calculations, 2001-02

Line		tonnes	000's dollars	per tonne
1	Disposition of grain			
2	Shipped prior to July 31	37,787	$6,078	$160.85
3	Shipped subsequent to July 31	0	0	n/a
4	Weight losses in transit and drying	0	0	n/a
5	Total Disposition of grain	37,787	$6,078	$160.85
6	Add grain sold to subsequent pool account	23,944	$4,680	$195.46
7	Gross sales	61,731	$10,758	$174.27
8	Less sales used to value prior pool account	(10,728)	($1,686)	$157.16
9		51,003	$9,072	$177.87
10	Deduct cost of grain purchased from other than producers	3,370	$433	$128.49
11	**Revenue**	**54,373**	**$9,505**	**$174.82**

Source: Canadian Wheat Board

Lines 1 through 5: Disposition of grain.

These lines refers to grain that was sold or otherwise removed from the balance sheet of the current pool. It is divided into three self-explanatory line items: Line 2, Shipped prior to July 31 (the end of the crop year); Line 3, Shipped subsequent to July 31[35]; and Line 4, weight loss in transit and drying.

[35] At times, there is grain that is shipped in the period just following the end of the crop year and prior to the final determination of the results of the crop year (prior to "closing the books").

The CWB uses the term "shipped" as opposed to "sold" since some of the grain in this category may have been sold during one crop year, but not shipped until the following crop year. See descriptions of lines 6 and 8 below.

Line		tonnes	000's dollars	per tonne
1	Disposition of grain			
2	Shipped prior to July 31	37,787	$6,078	$160.85
3	Shipped subsequent to July 31	0	0	n/a
4	Weight losses in transit and drying	0	0	n/a
5	Total Disposition of grain	37,787	$6,078	$160.85

Line 5 is the sum of all the previous lines.

In 2001-02, the CWB shipped 37,787 tonnes of feed barley valued at $6.078 million, or an average price of $160.85 per tonne. All of this grain was shipped prior to July 31, 2002.

Line 6: Add grain sold to subsequent pool account.

Line		tonnes	000's dollars	per tonne
6	Add grain sold to subsequent pool account	23,944	$4,680	$195.46

This line item covers the grain that was bought from farmers during the crop year, but was not shipped as of the close of the crop year. Simply, this grain has either been sold (and not yet shipped), or it has not yet been sold (nor shipped); it will be recorded as shipped in the following pool period. In the event that it has been sold, it is valued as a sale in the current crop year, at sale price. If it has not yet been sold, the CWB estimates its market value for the purposes of inventory valuation. For the purposes of pooling, the CWB refers to it as being "sold" at this price to the next pool account. In the following year, this grain (and value) will be accounted for as "sales used to value prior pool account" (Line 8).

At the end of 2001-02, the CWB carried forward into 2002-03 crop year, 23,944 tonnes of feed barley at an estimated value of $4.68 million, or $195.46 per tonne. This is much higher than the value in line 5 ($160.85), which is the value of all shipments made prior to July 31st. Based on the severe shortage of feed barley in Western Canada at the time and based on discussions with the CWB, it is assumed that this barley was sold to the domestic market prior to July 31st but not delivered until after that time.

Line 7: Gross sales.

Line		tonnes	000's dollars	per tonne
7	Gross sales	61,731	$10,758	$174.27

This is the sum of line 5 (Total disposition of grain) and Line 6 (Add grain sold to subsequent pool accounts). This is considered to be the sum of all sales that contribute to the pool (both shipments made during the crop year and inventory carried forward.)

For the 2001-02 feed barley pool, the CWB recorded gross sales of 61,731 tonnes at a value of $10.758 million, or $174.27 per tonne.

Line 8: Less sales used to value prior pool account.

Line		tonnes	000's dollars	per tonne
8	Less sales used to value prior pool account	(10,728)	($1,686)	$157.16

This line item covers grain that was brought forward from the previous pool account (2000-01). Simply, it is inventory brought forward from the prior accounting period. The shipment of this grain has been accounted for in the first line item of this pool account, "Shipped prior to July 31". The sale of this grain may have occurred prior to the beginning of this crop year and it has not yet been shipped, or it may not be sold until the crop year it was carried into. Either way, this grain has already had a value placed on it in the previous pool account as it was accounted for as "grain sold to subsequent pool account" (see line 6 above). Therefore, the purpose of this line item is to remove this grain from the current pool account at the value at which it was brought in. (If this isn't done, this grain is accounted for twice, once in the previous crop year (as line 6) and once in the current crop year (in line 2).

Into 2001-02, the CWB carried forward 10,728 tonnes of feed barley valued at $1.686 million, or $157.16 per tonne. It is unknown when this was actually sold but it was shipped in 2001-02 (part of Line 2), recorded at a price of $160.85 per tonne.

Line 9.

Line		tonnes	000's dollars	per tonne
9		51,003	$9,072	$177.87

Line 9 is simply the sum of Lines 7 and 8. It represents the net sales for the crop year, once the amount carried forward is removed; this then is the amount of the current crop year deliveries that have been disposed of (sold or carried forward).

Line 10: Deduct cost of grain purchased from other than producers.

Line		tonnes	000's dollars	per tonne
10	Deduct cost of grain purchased from other than producers	3,370	$433	$128.49

From time to time, terminal operators offer to the CWB grain that has been reclaimed through the cleaning process (actual amounts are typically based on the results of a grain

audit, or "weigh-over" by the Canadian Grain Commission). In addition, there are times when an audit of a terminal or country elevator results in a shortfall of CWB grain; in this situation, the grain is accounted for as grain that is owed to the CWB. Either way, a value is placed on this grain and it is accounted for in this line. This tends to be a small component of the pool.

In 2001-02, the CWB was "owed" 3,370 tonnes of feed barley from members of the trade, at a value of $433,000, or $128.49 per tonne[36].

Line 11: Revenue.

Line		tonnes	000's dollars	per tonne
11	**Revenue**	**54,373**	**$9,505**	**$174.82**

This line refers to the revenue from all grain sales and inventory adjustments; put another way, the culmination of all dispositions of grain (sales/shipments and inventory carried forward) and "sources" of grain other than deliveries from farmers (inventory carried in, plus purchases from parties other than farmers) – the additions and deductions found in the previous lines. These are the "revenue" values used to calculate the final pool returns.

In 2001-02, the CWB shows total feed barley receipts as 54,373 tonnes valued at $9.505 million, or $174.82 per tonne.

A-4.2 Costs

The second section of the pool return calculation is the cost section. Table A4.2 below is taken directly from the CWB 2001-02 Annual Report, page 30.

Table A4.2 Summary of the 2001-02 Feed Barley Pool

Line		tonnes
1	Receipts	54,373
		per tonne
2	Revenue	$174.82
	Operating Costs	
3	Direct costs	$7.15
4	Administrative expenses	$2.69
5	Grain industry organizations	$0.0
6	Net interest earnings	$(145.54)
7	Total	$(135.62)
8	Earnings for distribution	$310.44
9	Less: Transferred to contingency fund	$130.85
10	**Earning distributed to pool participants**	**$179.59**

Source: Canadian Wheat Board

Line 1: Receipts.

1	Receipts	54,373

This refers to actual deliveries into this pool from farmers during the crop year. It is the same tonnage as found in line 11 of the revenue calculations found above.

In 2001-02, the CWB received 54, 373 tonnes of feed barley from prairie farmers.

Line 2: Revenue.

2	Revenue	$174.82

Line 2 is the per tonne revenue figure as calculated in the previous section on revenues.

In 2001-02, the per-tonne revenues earned from all feed barley sales (including inventory carried forward) was $174.82 per tonne (about $9,505,500 in total).

Line 3: Direct costs.

3	Direct costs	$7.15

Direct costs are all costs incurred by the CWB directly related to handling and moving feed barley. It includes allocation of charges for items such as country elevator carrying charges (storage and interest), terminal storage, net demurrage (despatch), additional freight charges, drying, and an allocation of the cost of maintaining the CWB hopper cars.

These costs are direct marketing costs paid directly by the CWB; this is in addition to the handling and transportation costs paid by farmers through cash ticket deductions.

In 2001-02, the CWB incurred costs of $388,767 to handle feed barley ($7.15 per tonne).

Line 4: Administrative expenses.

4	Administrative expenses	$2.69

Line 4 refers to the allocation to the feed barley pool of general overhead expenses of the CWB; items such as human resources (salaries and benefits), computer services, office services, facilities, travel, publications, etc[37]. This overhead cost is allocated among the four pools on the basis of tonnage.

In 2001-02, the CWB allocated administrative expenses to the feed barley pool equal to $2.69 per tonne; on the whole pool, this works out to $146,263.

[36] Personal communication, Canadian Wheat Board staff.

[37] A full listing is found in the CWB 2001-02 Annual Report on page 48.

Line 5: Grain Industry Organizations.

5	Grain industry organizations	$0.08

The CWB supports various grain industry organizations such as the Canadian International Grains Institute (CIGI). This expense is allocated to each pool roughly on the basis of tonnage.

Line 6: Net Interest Earnings.

6	Net interest earnings	$(145.54)

The CWB earns interest revenue mainly through the management of accounts receivable on credit sales and through interest earned on positive pool account balances. In addition, there are times in the regular course of business that the CWB will need to pay interest as well. For the purposes of accounting for interest in the pool, it is considered an expense. However, due to the fact that the CWB earns more interest than it incurs as a cost, the interest "cost" is accounted as a negative cost (i.e. revenue).

In 2001-02, the CWB allocated interest earnings of about $7.9 million to the feed barley pool, bringing the net interest earnings equal to $145.54 per tonne.

This factor is discussed in more detail in Section 4.2 and Appendix A-5.

A-4.3 Inventories

A potentially significant factor in the pool calculation is the amount of grain brought forward from the previous pool, the amount carried forward into the next pool account and the values attached to either.

Grain carried from one pool period into another is either sold (and yet to be shipped) or unsold. Grain that is sold and carried forward will have no impact on the subsequent pool; this is because it is transferred at the same price at which it was sold. However, inventory that is unsold and is carried forward at an estimated or forecasted price will have either a positive or negative impact on the net pool results depending on the price it was valued and the price at which it was ultimately sold.

For example, if 25,000 tonnes of barley inventory from one pool period (Pool 1) is carried into the subsequent pool (Pool 2) at $130 per tonne and sold and shipped to a customer at $150 per tonne, Pool 2 will have gained $20 per tonne on the 25,000 tonnes or $500,000.

On the other hand, if this barley is ultimately sold at $110 per tonne, a loss of $20 per tonne on 25,000 tonnes, or $500,000 is generated in Pool 2.

It is not possible from the CWB financial reports in its Annual Reports to determine how much unsold grain is carried from one pool account to the next as the figures related to grain being transferred from one pool to the next refer to both grain that has been sold and grain that has not been sold[38]. However unsold grain is indeed carried over between pool accounts.

For each of the last five feed barley pools, Table A4.3 below compares deliveries made into each of the last five feed barley pools with the total shipments, grain carried in from the preceding pool, and grain carried out into the subsequent pool.

Table A4.3 Analysis of Carryover Between Feed Barley Pool Accounts (000 tonnes)

	97-98	98-99	99-00	00-01	01-02
Size of the pool (deliveries)	261,960	277,100	671,703	454,073	54,373
Shipments (All)	763,401	220,114	626,326	614,948	37,787
Priced in prior pool (grain carried in)	548,089	48,646	121,893	167,357	10,728
Subsequent pool (grain carried forward)	48,646	121,893	167,357	10,728	23,944

Source: Canadian Wheat Board

From this table a number of observations can be made:

- Shipments made in a year have can be much larger than deliveries made into the pool in the same year. In 97-98, farmer deliveries totaled 261,960 tonnes but total shipments to customers in the same crop year totaled 763,401 tonnes (almost twice as much as what was delivered); in 01-02, deliveries of 54,373 tonnes were larger than the shipments that year of 37,787 tonnes (a factor of about 30%).
- The amount of grain carried into a pool has been as much as 72% of all shipments (97-98) and as small as 20% (99-00).
- The amount of grain carried forward from one pool account to the next has been as little as 2% (00-01) to as much as 44% (01-02) of the deliveries into the earlier pool.

[38] When requested, a representative of the CWB indicated that a breakdown to show how much grain is sold and how much is unsold is not available to the public.

Appendix A-5 Interest Revenue Allocation

Through the normal course of business, the CWB earns interest revenue from two main sources; through the management of accounts receivable on credit sales and interest earned on positive pool account balances which are due to the delay in distributing all sales proceeds owing to farmers until after the pool period. This interest revenue is allocated to the pool for the grain that created the revenue. The following is a detailed description of the process by which the interest is earned and allocated.

A-5.1 Credit Sales

A portion of CWB export sales are made on the basis of credit terms as defined in two main programs: the Credit Grain Sales Program (CGSP) and the Agri-food Credit Facility (ACF). To be eligible for credit under the CGSP, buyers must provide a sovereign guarantee of repayment from their central bank or ministry of finance. In addition, the Government of Canada guarantees repayment of 100% of the principal and interest of CGSP receivables. Countries currently eligible to purchase grain under the CGSP are Algeria, Brazil, Egypt, Ethiopia, Haiti, Iran, Jamaica, Pakistan, Peru, Poland, Russia and Zambia[39].

The payment terms under the CGSP call for payment in full within 36 months or less from time of shipment. However, under terms agreed to by the Government of Canada at the Paris Club, the CWB has periodically entered into agreements to reschedule receivables of all the above listed countries (with the exception of Iran), with new terms calling for payment of principal and interest over periods ranging from five to 25 years. This is not insignificant; of the $6.9 billion in receivables in the CGSP as of July 31, 2002, $5.9 billion (84%) represented those receivables for which payments have been rescheduled at various times over the years. The rescheduled receivables have steadily increased over the last decade, from about $3.6 billion (67% of total CGSP receivables) in 1990-91, to $5.9 billion (84% of total CGSP receivables) in 2001-02, taking the total receivables from $3.7 billion to $6.9 billion in the same time: see Chart A5.1 below. Without the reschedulings, the total receivables from credit sales (all programs) would be in the neighbourhood of $1 billion.

The AFC is a program through which the CWB sells grain on credit, directly or through accredited exporters, to commercial (non-government) customers[40]. The Government of Canada guarantees a declining percentage of the receivables under this program based on the repayment period, with the CWB assuming the risk on the portion that is not guaranteed. This program is much less significant than the larger CGSP, accounting for about $60 million in receivables in 2001-02 – about 0.9% of the total receivables on credit sales.

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39 Canadian Wheat Board, 2001-02 Annual Report, page 50.

40 Current accounts receivable under this facility include sales to customers in Indonesia, Mexico, and Peru.

Chart A5.1 CWB Credit Receivables and Reschedulings

Notwithstanding their different sizes in terms of outstanding receivables (and interest earnings), in recent years, the CWB has used these two programs in almost equal proportion; in 2001-02, the CWB made sales of $131.5 million in the CGSP and $114.7 million in the ACF. In addition to the two formal programs discussed above, additional credit is provided through partnership with other parties. In these arrangements, the other party assumes a portion of the risk of non-payment by the customer. In crop year, 2001-02, credit provided by other parties under these arrangements totaled $158.6 million.

A-5.2 CWB Borrowings

When the CWB makes sales under credit, it is forced to borrow funds sufficient to make payments to farmers and to cover ongoing operations[41]. All debt incurred by the CWB is unconditionally and irrevocably guaranteed by the Government of Canada, more specifically, the Minister of Finance. This government guarantee results in the CWB debt receiving top credit ratings from various financial rating services, such as Moody's Investor Service, Standard and Poor's Ratings Group, and Dominion Bond Rating Service. These excellent credit ratings allow the CWB to borrow funds at comparatively lower rates than it would be able to without the government guarantee, as well as below typical commercial rates that would be charged to credit customers. To illustrate, in the 2001-02 Annual Report, the CWB reports that the effective interest rate of its net borrowings was in the range of 1.52% to 3.08%. In every year since 1990-91, the CWB has earned interest revenue in excess of its cost of borrowings.

[41] The CWB is empowered by the Canadian Wheat Board Act to borrow money by any means, including the issuing, re-issuing, selling, pledging of bonds, debentures, notes and other evidence of indebtedness.

A-5.3 Net Interest Revenue

On $6.965 billion of credit sales receivables in 2001-02, the interest expense (from borrowings to cover these sales) was reported to be $187.9 million, equal to about 2.7% (within the range noted above); the interest revenue was reported to be $273.8 million, equal to about 3.9%. This spread of 1.2% between the borrowing cost and the interest rate charged on credit sales is responsible for the interest revenue of $85.9 million reported by the CWB in 2001-02. This represents 94% of the $91.6 million the CWB earned in total net interest. In 2000-01, $75.2 million was the total interest earnings, of which $70.5 million was from credit sales (94%).

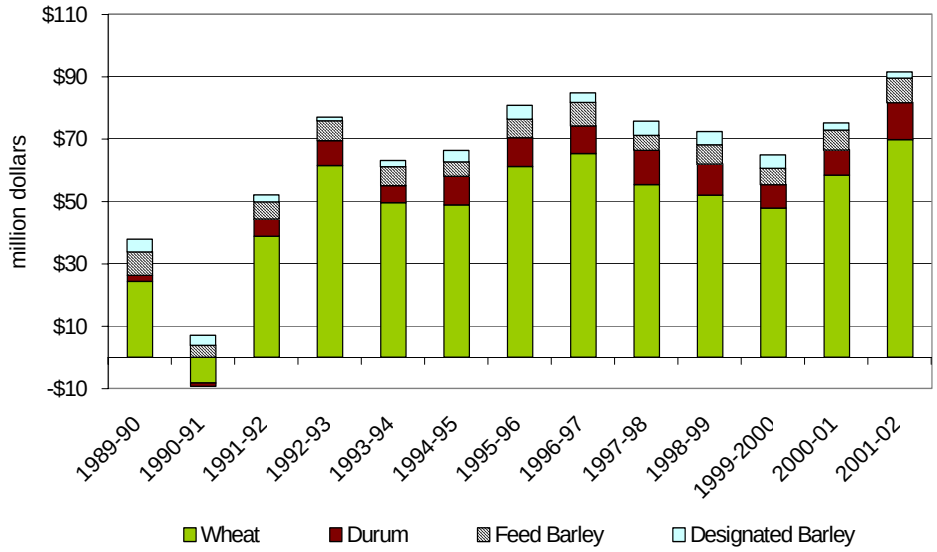
The other components of net interest earnings include:

- Interest income from pool account balances over the course of the crop year. This is due to only a portion of the revenues from sales being distributed to farmers as initial and interim payments; the CWB earns interest income on the excess until it is distributed as a final payment.
- Interest revenue from late payment by customers on non-credit sales.
- Financing costs such as treasury fees and bank charges.

The most significant of these is the interest income on pool account balances at $5.1 million, representing about 6% of the total ($6.3 million, or 8% of the total, in 2000-01)[42].

These revenues are distributed among the four pool accounts on the basis of which grain was sold on credit that generated the interest revenue (regardless of when the grain was sold) and by which pool accounts have positive balances through the year. Chart A5.2 below shows CWB interest revenue as allocated to each pool account since 1989-90.

Chart A5.2 CWB Interest Revenue by Pool Account



[42] The interest revenue from other sources in 2000-01 was a negative $1.6 million. All interest revenues and expenses in each account or program are combined to provide a net value.

Appendix A-6 CWB Producer Payment Options

A-6.1 Guaranteed Delivery Contract / Early Payment Option

The CWB offers on feed barley a Guaranteed Delivery Contract (GDC) with an Early Payment Option (EPO). Farmers who participate in this program receive 100% delivery calls by a specified date and have the option of receiving a greater portion of the payment through the EPO. Sign up deadline is Sept 30th.

The EPO provides farmers with the option of receiving either 80% or 90% of the PRO when they sign up for a GDC. Depending on the level of payment selected, a discount is applied to the payment; as of August 21st, these discounts were $1.00 for the 80% EPO and $3.75 for the 90% EPO.

This program provides for guaranteed movement and a greater proportion of the total payment, both early in the crop year. Participants remain in the pool.

A-6.2 Fixed Price Contract

For the last three crop years, the CWB has offered a Fixed Price Contract (FPC) on feed barley with which farmers could have locked in a price for feed barley at some point between the release of the year's first PRO and July 31st – prior to the beginning of the crop year. Farmers who enter into a FPC with the CWB receive full payment for their barley upon delivery and waive any rights to any interim and final payments.

Other relevant terms of this contract include the following:

- Farmers cannot enter into FPCs after July because, according to the CWB, "they can base their decision to participate in the pool by comparing the daily price to the pool. This pooling system could then be adversely affected by the operation of the Producer Payment Options"[43].
- Liquidated damages will be assessed for not fulfilling contract obligations (i.e. non-delivery). There are two types of liquidated damages: pricing and delivery (both discussed below).
- In the event that a farmer needs to reduce or eliminate his FPC contract, he can transfer his obligation to another farmer (with the appropriate documentation). Alternatively, he can buy out of the contract by paying the specified fees and charges.
- Pricing damages are assessed on any shortfalls of tonnage not applied to the contract. These charges take into consideration the contract price, the current market price and the PRO. These charges for non-delivery are intended to keep the FPC from being used for speculation; therefore the CWB assesses the potential value of switching back into the

[43] Producer Payment Options is a general term covering all optional pricing contracts such as the FPC.

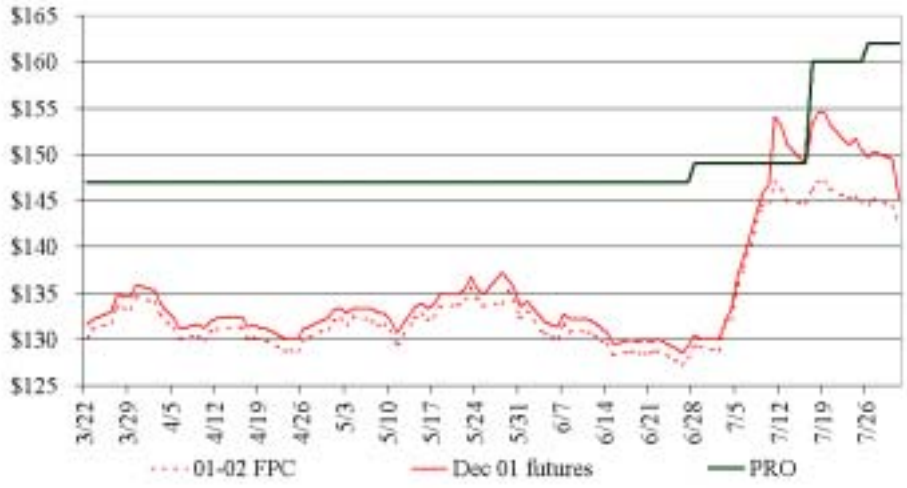
pool account and ensures that the farmer cannot capture this "benefit". In addition, the CWB indicates that any futures losses also need to be covered.

- Once contracted on a FPC, the barley is called for delivery in the usual fashion and therefore could be delivered at any time throughout the crop year. Delivery damages apply to grain committed but not delivered on delivery contracts. Since the FPC is coupled with a delivery contract, a farmer who buys out his FPC may risk defaulting on the associated delivery contract.
- The CWB provides incremental payments (interest and storage), depending on the month delivery takes place, to adjust for delayed shipments (and payments). Incremental payments increase over time; for example, there is no incremental payment on deliveries made in August, $0.035 per tonne is paid for Sept deliveries, $0.50 per tonne is made for Oct deliveries, and so on. In the event that barley on an FPC is delivered in July, an incremental payment of $1.55 per tonne is paid to the farmer.

According to the CWB, the FPC price is based on the PRO at the time the contract is entered minus factors for program administration, risk and the time value of money. A discount for the time value of money is included since the farmer using this contract is getting paid in full earlier than other farmers still participating in the pool. The CWB provides a separate daily pricing schedule with prices good until 7:30 am the following day.

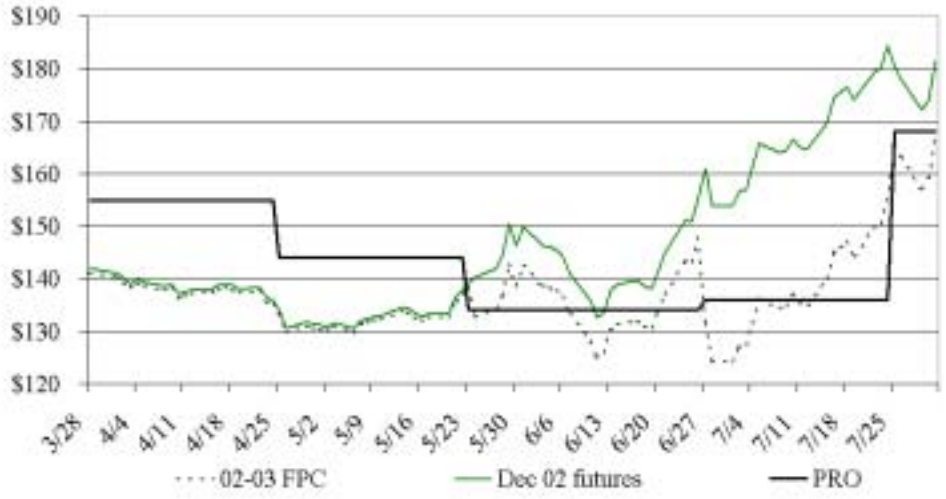
The three charts below (Charts A6.1, A6.2 and A6.3) show the daily FPC prices alongside the relevant December barley futures closing prices (up to July 31st each year, the termination of the FPC signup period). Rather than based on the PRO, it appears that the FPC is set at a discount to the Dec Western Barley futures contract. It is adjusted daily to maintain a relationship with the futures market unless it appears that the FPC may exceed the PRO.

Chart A6.1 2001-02 Barley FPC, Dec 01 Barley Futures and PRO



In 2001-02, the FPC was set as a basis below the Dec futures – around $1.25 under the futures and as much as $20 per tonne below the PRO. However, early in July the futures rallied sharply, approaching the level of the PRO. As the futures exceeded the PRO on July 11, the spread between the barley futures and the FPC was widened so that the FPC would not exceed the PRO. It remained around this widened level until the end of the signup period.

Chart A6.2 2002-03 Barley FPC, Dec 02 Barley Futures and PRO



In the following year – 2002-03 (Chart A6.2 above) – the CWB indicated that the FPC would be allowed to float above the PRO if following its pricing regime based on Dec barley futures indicated it should. There was one exception to this rule; on the day of a PRO announcement, the FPC price would be required to be below the newly announced PRO. This led to the FPC price "adjustments" on PRO release dates found in Table A6.1 below. (Prices from the day preceding the PRO release date are also shown to show the changes; FPC Basis is the difference (spread) between the FPC and Dec futures.) These were the only times the spread between the FPC price and the Dec futures price was changed.

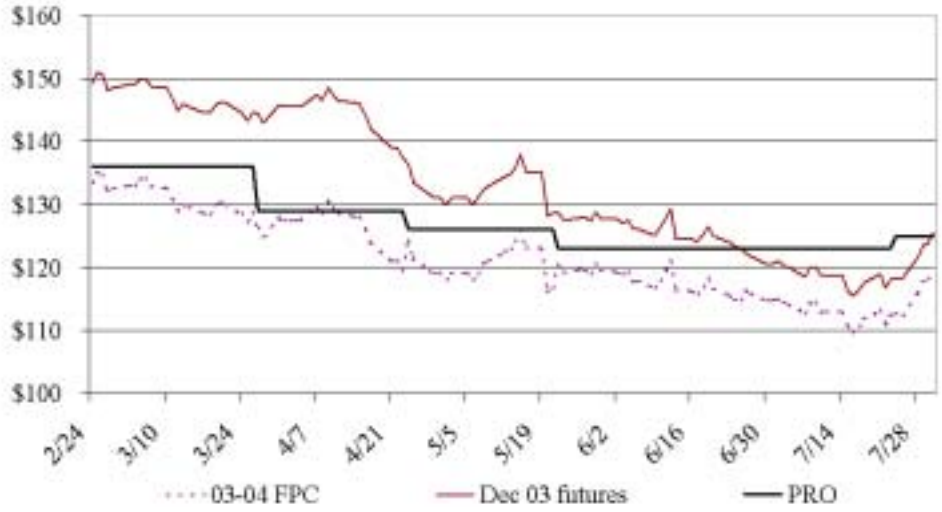
Table A6.1 FPC Changes on PRO Release Dates (2002-03)

Date	PRO	Change	FPC	Change	FPC Basis	Change
May 23	134.00	0	138.35	-5.70	-0.75	+6.90
May 24	134.00		132.65		-7.65	
June 26	134.00	+2.00	147.85	-16.95	-7.65	+21.95
June 27	136.00		131.50		-29.60	
July 24	136.00	+32.00	154.70	+10.60	-29.60	-14.70
July 25	168.00		165.30		-14.90	

- Although the PRO did not change on the May 24th release, the FPC was adjusted lower by $5.70, ensuring it was below the PRO (by $1.35 at the time). This also changed the relationship to Dec futures, widening the "basis" by $6.90 per tonne.

- On June 27th, the PRO was increased by $2.00 and the FPC was lowered by $16.95 per tonne. This made the FPC $4.50 per tonne below the PRO and $29.60 below the futures.
- On July 25th, the PRO was increased by $32.00 and the FPC was increased by $10.60 per tonne. This brought the FPC to within $2.70 of the PRO and $14.90 below the futures.

Chart A6.3 2003-04 Barley FPC, Dec 03 Barley Futures and PRO



As can be seen in Chart A6.3, the CWB maintained its posture of tracking the FPC price to the Dec futures for the 2003-04 FPC contract while also ensuring the FPC was below the PRO on PRO release date. As in 2002-03, this led to the spread between the December futures and the FPC price to change only on PRO release day.