Manitoba

Manitoba Agriculture, Food and Rural Initiatives

Economic Development Initiatives Branch

Beef Processing In Manitoba: Feasibility Analysis

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TABLE OF CONTENTS

APPENDICES:

Executive Summary

Manitoba has an extensive cattle industry, with the third largest breeding stock in the country. There is, however, very limited beef processing capacity, resulting in the majority of cattle being exported live to other provinces or the U.S. for processing. The reliance on U.S. markets, particularly for live cattle, has magnified the impact on Manitoba of trade restrictions imposed by the U.S. in the wake of a reported case of Bovine Spongiform Encephalopathy (BSE) in May 2003.

This study examines the potential and feasibility of expanding the beef processing industry in Manitoba. It is intended to provide general information on the industry, markets and operational considerations and does not replace the need for development of specific and comprehensive business plans for potential expansion or development of new facilities. If anything, the findings of this study emphasize the importance of careful planning in a very challenging sector.

In 2002 total Canadian cattle production marketed for slaughter or export was just under 5 million head. Total slaughter in Canada in 2002 was approximately 3.5 million head[1] or approximately 70% of total production. The meat packing industry in Canada is highly consolidated, with the top four processors located in Alberta slaughtering 89% of federally inspected cattle in the country. The balance of Canadian cattle production was exported live for processing, mainly in the U.S.

In 2003, Canada consumed approximately 2.2 billion pounds of beef, or the equivalent of approximately 4 million head. This included imports of approximately 490 million pounds beef. Canadian export markets have traditionally been concentrated in the U.S. Markets in Mexico and Asia have become increasingly important, providing over ten years of consistent growth prior to the BSE crisis.

The impact of the reported case of BSE in Canada in May 2003 has been a significant imbalance in the industry, as the domestic supply significantly exceeds processing capacity. Export markets for boneless beef have somewhat normalized with the resumption in trade in late 2003 to the U.S. and Mexico. Continued restrictions on the movement of live cattle, however have resulted in depressed cattle prices. This is particularly the case for cattle over 30 months of age as neither the meat nor the animals are eligible for export, and Canadian processors have focused production capacity on fed cattle under 30 months for which export markets can be found.

As a result of this imbalance, the industry has responded with plans to increase production capacity significantly by the end of 2005. In June 2004, total domestic processing capacity was reported to be approximately 3.95 million head annually. By the end of 2005, total capacity is expected to increase to approximately 4.6 million head, or approximately 92% of total cattle production.

"Conventional beef" or sub-primal cuts from fed cattle produced through the normal supply chain, represents the very large majority of product, whether exported or consumed in Canada. Markets are characterized by very strong relationships among the major processors and national grocery chains. Price and marketing power are extremely important to be successful in these relationships. Manufactured beef, largely 85% lean beef for grinding, represented approximately 15% of total beef consumption, and is a highly price-sensitive, commoditized market. Emerging market segments include organic beef, natural beef and case-ready beef. Organic and natural beef have a very small but rapidly growing market share, particularly in the wake of increasing health concerns among consumers. Price premiums of 20-30% can

[1] Cattle Statistics 2004, Vol. 3, No. 1, Statistics Canada http://www.statcan.ca/english/freepub/23-012.XiE/free.htm

often be achieved for middle cuts of organic or natural beef, increasing the average value of a carcass by approximately 10%. Case-ready beef is a means of marketing products that are pre-packaged for the consumer versus being cut and packaged at the point of sale. This approach also increases the value of the product, but also requires capital investment in technology and higher packaging expense.

Meat packing as an industry is characterized by high capital costs and low margins, making economies of scale extremely important. Current market conditions, with fairly strong beef prices and low cattle prices, are unusual and cannot be expected to continue under normal trade conditions. This situation is exaggerated for cow beef. The suspension of supplementary imports in April 2004 has resulted in a tighter supply in this market, resulting in fairly firm prices. As processing capacity expands in Canada, however, the price differential between live cattle and product price can be expected to narrow.

Because the meat packing and food retail industries are highly consolidated, and beef is for the most part a commodity and a perishable product, effective placement of product requires a very effective cost structure, the ability to provide a stable supply of consistent product, a high degree of marketing expertise, and potentially market development for niche products.

Operating challenges include labour and waste management. Wastewater treatment systems can add in excess of $2 million to capital costs. Disposal charges for by-product, including blood, bones and inedible offal, can increase operating expenses by as much as $20 per head depending on location in the province. The industry is characterized by a high degree of employee turnover, often among a limited labour pool.

Capital requirements for a plant with capacity to slaughter and process 50,000 head are estimated at approximately $15 million. Based on current market conditions, break even for a plant handling fed cattle would be achieved at approximately 26,000 head. This is based on a margin of approximately $275 per head on the animal itself and $160 in direct processing costs. Pre-BSE prices for slaughter steers and heifers do not provide sufficient margin to cover even direct processing costs without achieving a higher value for the product, greater production efficiencies, or both.

Under current market conditions for manufactured beef, a margin of as much as $630 can be achieved on the cost of the animal, with direct processing costs estimated at approximately $175 per head. This compares to margins of approximately $155 on animal cost prior to May 2003, and processing costs of approximately $160 per head. While live cow prices are not likely to return to pre-BSE values, the margin on the animal can be expected to narrow considerably with increased processing capacity in this highly price-sensitive, commoditized market.

In summary, there are potential areas of opportunity in the beef processing industry, particularly in niche markets that provide higher product value, and manufactured beef, which has lower input costs. Current market conditions are highly unusual and cannot be expected to continue, so the historical emphasis on cost structure can also be expected in the future. The importance of a well-planned marketing approach that avoids direct competition with the major players cannot be overemphasized in this challenging sector.

Introduction

Manitoba has an extensive cattle industry, with the third largest breeding stock in the country. There is, however, very limited beef processing capacity, resulting in the majority of cattle being exported for processing, and the majority of beef consumed being imported either inter-provincially or from the U.S. The reliance on U.S. markets, particularly for live cattle, has magnified the impact on Manitoba of trade restrictions imposed by the U.S. in the wake of a reported case of Bovine Spongiform Encephalopathy (BSE) in May 2003.

This study examines the potential and feasibility of expanding the beef processing industry in Manitoba. It is intended to provide general information on the industry, markets and operational considerations and does not replace the need for development of specific and comprehensive business plans for potential expansion or development of new facilities. If anything, the findings of this study emphasize the importance of careful planning in a very challenging sector.

Market Analysis

General Overview and Trends

Each year, Canada produces approximately 3 billion pounds of beef. In 2003, Canada consumed approximately 2.2 billion pounds domestically and exported approximately 714 million pounds, valued at $1.5 billion[2]. Canada also imported 489 million pounds of beef[3], the majority from the U.S. Beef production contributed $21 billion to Canada's economy in 2003, down from approximately $30 billion in 2002.

The drop in value and a corresponding crisis in the beef industry was a result of trade restrictions placed on Canadian beef following the report of a single case of Bovine Spongiform Encephalopathy (BSE) on May 20, 2003. The impact of BSE in Canada has resulted in a significant imbalance in the industry, which was heavily reliant in exports of live cattle to the U.S. for processing. Details regarding the impact of BSE are provided later in this report.

Once normal trade resumes, emerging new markets like Japan, Mexico, South Korea and China, offer new opportunities in the retail, food service, processed beef and beef offal market sectors.

Two major retail trends relevant to the beef industry include retailer consolidation and branding programs. There will likely be fewer but larger players in the next decade. In the U.S., the top five supermarket chains are responsible for almost 50% of all grocery industry sales. In Canada the top five represent 77% of total sales. This trend is also increasingly visible in Mexico. The concentration of sales through national chains means that these chains can also place greater demands on suppliers, including consistent volumes and marketing power that can be provided by major processors. Major processors also tend to actively defend markets with price, as necessary. The combination of these factors makes it extremely difficult for smaller processors to place conventional product with national chains.

Branding programs are rapidly becoming an essential part of the North American meat business, offering consumers significantly more information about the meat they purchased[4]. Consumers are demanding

[2] Canada's Beef Industry Fast Facts, Beef Information Centre, www.beefinfo.org
[3] Ibid.
[4] *Market for Case Ready Beef,* by Hodgins & Company for Saskatchewan Agriculture Food and Rural Initiatives, June 2002.

safe, high quality and consistent beef products that take the environment and animal welfare into consideration. Industry is responding to consumer concerns with on-farm quality assurance programs as well as branded, case ready and certified products. Convenience is also becoming a big market. Heat-and-serve beef entrees and meat snacks are becoming increasingly popular[5].

Product Segments

The vast majority of beef sold in domestic and international markets would be considered "conventional" beef. This is meat sold fresh or frozen in primal or sub-primal cuts. There are, however, a number of niche markets for specialty products, reflecting either how the animal was raised (organic, natural, etc.) or how it is packaged (case-ready). The following provides information on these market segments.

Certified Organic Beef

Organic is a registered term and is defined as product that has been certified organic by a certifying body. "In Canada, organic sales amount to $135 million and growth is expected to be 20% per year into the foreseeable future. There appears to be a developing opportunity for production of certified organic beef."[6] Whether certified organic beef is a grass fed or grain-finished animal, all the feed must be certified organic. Other requirements are stipulated by the chosen certifying body, which in Manitoba is the Organic Producers Association of Manitoba. Currently, most certified organic beef is being sold directly to consumers through local markets or farm stores.[7]

A 2000 Export Study by the Organic Trade Associations identified that organic markets worldwide are expanding at a fast pace, with an average growth rate of 15% to 20% per year. European markets, in particular, are characterized by fast growth. Conventional supermarket chains are gaining an increasingly growing share of organic retail sales, as high as 80% in Denmark, 70% in the UK and 50% in France. As of January 1, 2005, the EU will only allow imported organic products from countries with a credible accreditation and certification standard. This means that all organic products entering Europe must meet the internationally recognized standard, ISO 65-certified product[8].

In the U.S., organic foods have shown fairly consistent annual growth rates of 17% to 21% from 1997 to 2003, compared to growth of total food sales of 2% to 4%. In the U.S., organic food sales were about $7.5 billion in 2003. Organic meat (including fish and poultry) represented only 1% of organic sales to consumers in 2003 at approximately $75 million, but was the category with the highest growth, increasing by 77.8% in 2003.[9] The Organic Trade Association estimated cash register receipts will surge at a 30% annual clip through 2008[10].

Other reports confirm these findings and attribute the dramatic growth in organic meat products to concerns related to BSE. The latest report from Organic Monitor shows that sales of organic meat products in

[5] AC Bueksibm December 2000, as cited in Beef Overview 2002, Saskatchewan Agriculture Food and Rural Revitalization.
[6] Prairie Organic Beef Costs and Returns Study, Koller Agri-Food Development Ltd. (for Agriculture and Agri-Food Canada, March 1999)
[7] Commercial Beef Niche Market Alternatives, Alberta Agriculture, Food and Rural Development, February 2001.
[8] Overview of the EU Regulatory System for Organic Agriculture, Simon Weseen, University of Saskatchewan, October 6, 2003.
[9] OTA 2004 Manufacturer Survey Overview, Organic Trade Association. www.ota.com
[10] "Retailers, Consumers Hungry for Organic Beef, U.S.A Today, June 30, 2004

Canada expanded by 35% in 2003, and projects that sales of organic beef in the U.S. could double in 2004 if suppliers can get sufficient volume into the retail trade.[11] The report indicated that organic beef had a mere 0.02% share of the U.S. beef market in 2003.[12]

The surge has prompted producers to boost production to meet growing demand from major grocers, such as Whole Foods Market, which have been unable to obtain an adequate supply of organic beef to keep their shelves stocked. Organic cattle ranchers often have fewer livestock and, because the animals are not given growth-enhancing hormones, it can take up to 2 years to prepare them for market. When demand floundered a few years ago, the organic beef market did not foresee stepping up production to meet the current boom.[13]

As more consumers opt for organic meat, retail food chains have begun to stock their shelves with the meat. In January, Canada Safeway introduced organic beef in 240 of its 1,700 stores and reported promising early sales numbers. Whole Foods, the largest U.S. natural foods and organic retailer, said the single factor preventing it from carrying the specialty meat in all its 150 stores is that it cannot find a single supplier large enough.[14] In the U.S., organic beef prices are reported as between $4 and $6 a pound, about double that of conventional ground beef[15].

Natural Beef

The definition of natural varies from producer to producer and is not a registered term. Natural tends to designate beef that has not been implanted with hormonal growth implants or treated with antibiotics. In many cases these cattle are finished on grass during the summer months. At other times of the year, animals are fed forages and a small amount of grain. These rations differ from producer to producer. Grass-fed beef can be marketed as natural or organic.[16]

In the U.S., consumers perceive organic beef to be very similar to natural beef, which is widely available in the natural food shops. One of the leading natural beef organizations in the U.S. is Laura's Lean Beef. Incorporated in 1985, Laura Freeman established her niche as "the healthy beef." Twenty years later, Laura's Lean Beef Company is the most successful natural lean beef company in the U.S., with fresh beef in more than 4,700 grocery stores nationwide. 2003 projected sales were over $110 million. Krogers is one of the retailers distributing Laura's Lean Beef.

Natural beef is an emerging market in Canada. In 2002, this market was believed to still be small, but rapidly expanding[17]. In Canada, a number of producers are marketing natural beef on the Internet or through specialty stores, including Top Meadow Farms in Ontario, Tee Creek in Saskatchewan, Windover Ranch in British Columbia, and Bar 7 in Alberta. Highland Feeders Ltd. in Alberta brought together a processor, cow/calf breeders, a computer technology firm, and a consulting firm to participate in a pilot project aimed at creating a higher value market for their brand, Spring Creek Premium Natural Beef. The alliance explored markets in Europe, New York and Canada. Changes in the exchange rate and the result

[11] The North American Market for Organic Meat Products, Organic Monitor, January 30, 2004 as cited by Nutra U.S.A Ingredients.com "BSE in U.S. to accelerate organic beef growth" May 1, 2004.
[12] Ibid.
[13] "Retailers, Consumers Hungry for Organic Beef, U.S.A Today, June 30, 2004
[14] Ibid.
[15] Ibid.
[16] Commercial Beef Niche Market Alternatives, Alberta Agriculture, Food and Rural Development, February 2001.
[17] "Specialist Says Natural Beef Market Growing", November 9, 2002, The Times Herald (Moose Jaw)

of the September 11, 2001 tragedy were found to impact export markets for the premium beef, however new markets appeared to be opening in eastern Canada[18].

Pricing information obtained from websites suggests natural beef may command a premium of between 5% and 10% to the producer, and result in market premiums for middle cuts of as much as 50%. Indication from distributors is that retail premiums are more generally in the 20% to 30% range for middle cuts, with the remaining cuts less reliably achieving a premium.

In 1989, the EU banned the use of hormonal growth promotants (HGP), cutting off exports of beef products from North America. In 1996, the EU approved the Canadian Program for Certifying Freedom from HGPs. The program is designed to guarantee that eligible beef animals have never been treated with HGPs. Animals certified free of HGPs are eligible for export to the EU. This program is administered by the CFIA. Some producers market meat as natural hormone-free beef and are not certified. However, meat that is not certified is not acceptable for export to Europe[19].

The World Trade Organization (WTO) has agreed with Canada's view that beef from cattle treated with growth hormones in accordance with approved methods is safe and that the EU ban on the importation of beef from such cattle is not based on science and therefore contravenes the provisions of the WTO Agreement. The EU lost a WTO Panel and appeal in this case, yet has still refused to lift the hormones ban. While Canada continues to press the EU to remove its ban, a hormone-free cattle (HFC) program was developed to accommodate Canadian industry interested in exporting beef to the EU[20]. In the HFC program, the owner must record the use and purchase of HGPs in accordance with Canadian requirements. The use of HGPs must be declared at the time of enrolment. The HFC program provides for the registration of animals. Owners must keep a register if tags are used. In the event that an animal is implanted the tag must be removed prior to implantation and this must be recorded in the inventory of tags. CFIA does undertake testing of animal tissue in support of the hormone-free beef program[21].

Case-Ready Beef

From: The Market for Case Ready Beef, June 2002, by Hodgins and Company, for Saskatchewan Agriculture, Food and Rural Revitalization:

> The meat industry has been evolving over the last thirty years from carcass to boxed beef to case-ready meat. In many instances, carcases are still often delivered to retailers for cutting according to the needs of their customers. The industry norm in the last few decades, however, has been for meat packers to provide boxed beef (box filled with primal cuts) to processors for further cutting or directly to retailers. Trained meat cutters/butchers at the retail outlets then cut the boxed primal parts into portions demanded by their customers.
>
> In 2002, case-ready represented about 15% of the retail market currently in the U.S., although predominantly in poultry. Only about 8% of outlets offer case-ready ground beef and less than 1%

[18] Agriculture and Food Council. http://www.agfoodcouncil.com/serve/chainstory5.html
[19] Commercial Beef Niche Market Alternatives, Alberta Agriculture, Food and Rural Development, February 2001.
[20] Canadian Food Inspection Agency Fact Sheet: Canada's Control Of Chemical Residues In Live Animals And Animal Products, www.inspection.gc.ca/english/anima/meavia/eu/eufs2e.shtml, February 2, 2001.
[21] Canada's Response to European Commission Mission Carried out to Evaluate the Control of Residues in Live Animals and Animal Products, December 2000, www.hc-sc.gc.ca/vetdrugs-medsvet/eu_canada_response_e.html

offer case-ready whole muscle cuts. The total amount of beef produced for the retail and food service industry in the U.S. in 2001 was reported as 18 billion pounds, and that by 2005, 40% of all beef would be centrally packaged.[22]

While the case-ready concept is not new, it has been more prevalently introduced in the last few years. Wal-Mart has been the major catalyst in case-ready acceptance by other retailers.

Producing product for the case-ready market involves high capital costs and ongoing investments in technology, including advanced monitoring systems for proper cold chain management and packaging innovations. Category management expertise and proximity to market (within 8 to 10 hours) are also critical success factors. These factors are believed to limit the opportunity to large processors.

The major processors of case-ready beef include Cargill Foods (a subsidiary of Excel Corporation), IBP, Canada West (now Vantage Foods), Pennexx (a division of Smithfields) and PM Specialty Foods. Smaller players include Quality Beef and Better Beef in Ontario and Salsa City, and Shank Packing in the state of Washington. What each player has in common is a retail chain strategic partner and a market that is in close proximity to the processor.

It appears that only the national and regional chains are introducing the programs into their stores since processors are only willing to convert/establish case-ready facilities upon long-term contractual commitments from a retailer. Even the large chains have been faced with challenges in introducing case-ready programs, including lack of cooperation from unions, problems with visual appeal, and consumer desire for fresh meat that they associate with in-store meat cutters. The appearance issue has been resolved through new technology in packaging, however the other two are not so easily solved.

Cow Beef

Meat from non-fed cattle (cows and bulls) is often referred to as manufacturing beef, because so much of the meat from these animals is typically further processed. Up to 80% of the meat is generally sold for processing or manufacturing in one form or another, predominantly grinding. The primary product from the cow is usually an 85% lean beef trimming, either fresh or frozen. Some cuts are also sold, typically ribs and loins, however would not achieve the same price as fed cattle beef.

The major cow slaughterers in Canada have been Lakeside Packers (Brooks, AB), Levinoff Meat Products (Montreal, PQ) and XL Foods (Calgary, AB and Moose Jaw, SK). The primary users of manufacturing beef are patty processors. These include Caravelle Foods (Alberta and Ontario), Cardinal Meats (Ontario), Centennial Foods (Alberta) as well as JD Sweid, Better Beef, Cara, Lucerne and others across the country. These patty manufacturers use approximately 70% of the product. Other users include major processors such as Maple Leaf, Olymel, Premium Brands, etc. [23]

This sector of the industry has traditionally been very price sensitive, the ultimate in commodity marketing. Purchase decisions are primarily based on price and lean content.

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[22] Brody, Aaron, "Case-Ready Fresh Red Meat: Is it Hear or Not?", Food Technology, Vol. 56, No. 1, January 2002, as cited in The Market for Case-Ready Beef, by Hodgins & Company for Saskatchewan Agriculture, Food and Rural Revitalization, June 2002.

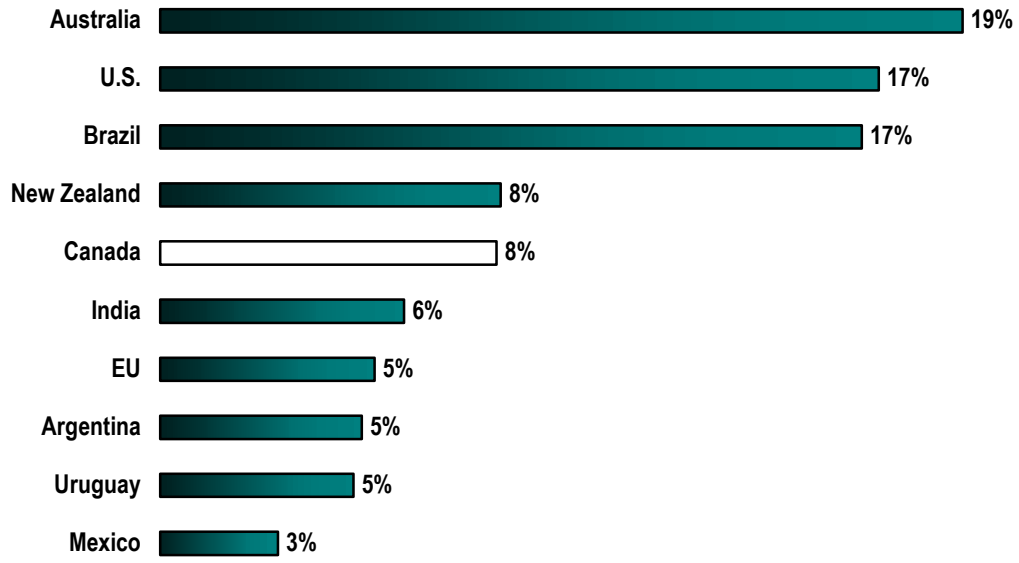
[23] *Cow Beef,* Canadian Cattle Buyer, February 13, 2004.

Australia, a normal source of grinding beef, is now supplying more beef to Japan in place of Japan's previous supply from Canada and the U.S. The ironic result is that there appears to be a shortage of manufacturing beef in Canada relative to the demand, resulting in relatively high ground beef prices[24].

Export Markets

In 2003, Canada ranked fifth in world exports of beef, dropping from third prior to the BSE crisis. Markets were primarily in the U.S. and Mexico.

World Top Beef & Cattle Exporters - 2003

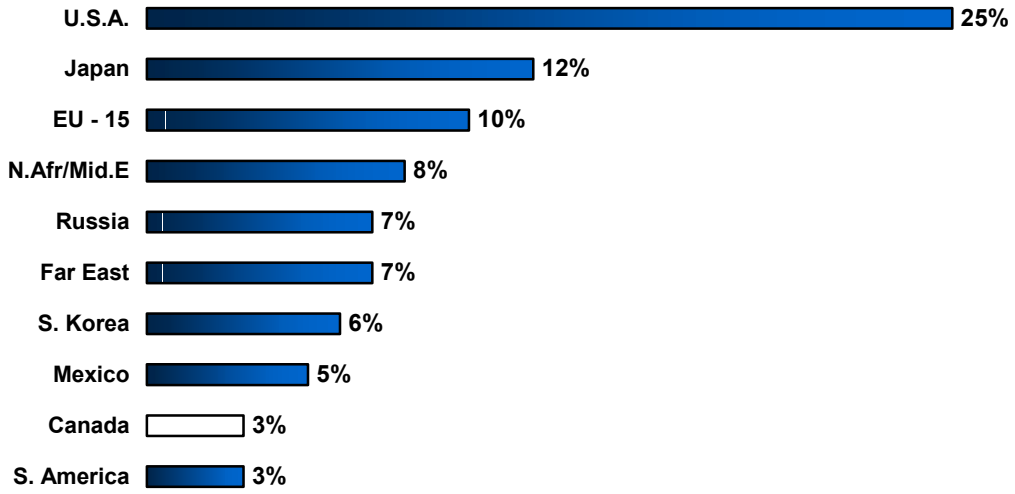


Source: Canada's Beef Industry Fast Facts, Beef Information Centre www.beefinfo.org

[24] Beef Pricing and Other Contentious Industry Issues, George Morris Centre, March 16, 2004.

The U.S., Japan and EU were the top importers of beef and beef products in 2003 from all exporting countries. Canada ranked ninth.

World Top Beef Importers - 2003



Source: Statistical Briefer, CanFax Research Services, May 2004.

In March 2003, the Canadian Beef Export Federation (CBEF) reported the 11th straight year of growth in key markets in Asia and Mexico, including gains of 83% in Korea, 35% in Taiwan and 9% in Mexico. The U.S., Australia and New Zealand were the primary suppliers to these markets in 2003.

Overall gains were approximately 10% over the prior year, in spite of a drop of 18% in exports to Japan. Along with policy factors affecting the beef market, Japanese people in general are consuming less beef, replacing it with chicken and pork, a trend that pre-dated the impact of Japan's 2001/02 domestic cases of BSE.

An analysis of exports prior to BSE identifies potential increases for Canadian beef exports of 15% over 2002 levels by 2010. This included a reduction of approximately 20% in exports to the U.S., replaced by growth in Asian and Mexican markets. Exports to Taiwan and Hong Kong received the highest prices in 2003. See table below.

Canadian Beef Exports[25]

Country	2002 Actual Tonnes	2003 $ per kg	2010 Goal Tonnes	2010 Goal $'000
Japan	23,982	4.98	62,000	308,760
South Korea	17,254	4.63	47,000	217,610
Taiwan	4,026	5.24	13,000	68,120
Hong Kong	570	5.21	7,000	36,470
China	2,494	2.46	38,000	93,480

[25] Canadian Beef Export Federation, sourced from CANFAX and Statistics Canada, March 2003

Canadian Beef Exports[25]

Country	2002 Actual Tonnes	2003 $ per kg	2010 Goal Tonnes	2010 Goal $'000
ASEAN	2,204	0.88	6,000	5,280
Mexico	75,809	3.89	105,000	408,450
U.S.	373,432	4.69	298,000	1,397,620
Other	20,372	2.12	25,000	53,000
Total	520,143	$4.41 (world average)	601,000	$2,588,790

Note: Volume of exports is shown for 2002 as the latest full year indicator of exports under normal trade conditions. The value per kilogram information is shown for 2003 as the latest available pricing.

While long-term results are as difficult to predict as the timing of the border opening, it is reasonable to expect that it will take longer to achieve growth in the identified markets than originally predicted, and some may be permanently affected as consumer preferences switch to other protein products.

The final report of the Japan-U.S. BSE Working Group makes clear that the U.S. is not pursuing trade access on a harmonized North American basis with Canada. Instead, the U.S. is claiming "provisionally free" BSE status and is advocating for its own market access on that basis[26]. On October 23, 2004, Japan and the U.S. agreed to resume imports of some U.S. beef, halted since December 2003 after a case of BSE in Washington State but did not set a date for restarting trade.[27] Japan would permit imports of beef from cattle under 21 months of age, however tracking systems are not currently sufficient to confirm age on most cattle raised in the U.S. Canada is currently interpreting the agreement to apply to all North American production, however is not projecting exports to Japan to resume in 2004.

From Canada Beef Export Federation, Inside the Marketplace, August 2004:

- The absence of North American beef from Japan's meat market has seen both Australia and New Zealand reap the benefits. Both countries are taking advantage of the situation and are actively seeking to position their product in the eye of the Japanese consumer. North American beef, however, remains the beef of choice, and its absence is being felt both from considerations of quality and taste, as well as a factor in import market economics.
- The Korean Government will not resume trade for Canadian beef until all inventories of stranded product – product which had either arrived in Korea after the trade ban in May 2003 or had arrived but not passed inspection – have been returned to Canada or destroyed. The CBEF is working to facilitate the liquidation of the remaining 238 metric tonnes of stranded product. Beef prices are currently high, driven less by consumer demand than by speculation that there will be a shortage of product in the latter part of 2004, leading importers to warehouse product. Importers are also contributing to this shortage by slowing their purchase of Australian beef, not wanting to miss the opportunity if North American beef again becomes available in the short term.

[26] From Canada Beef Export Federation, Inside the Marketplace, August 2004
[27] CNN Money Magazine. "Japan to resume some U.S. Beef Imports". October 23, 2004. http://money.cnn.com/2004/10/23/news/international/bc.trade.japan.beef.reut/

- In spite of an upward economy, the reduced demand for beef in Taiwan has caused some importers to abandon the market altogether.
- As of August 2004, the U.S. continued to allow only those Canadian beef products for which the U.S. itself has opened its borders to be transhipped across the continental U.S. to Mexico. Efforts to ship product direct to Mexico by ocean vessel is resulting in a loss of competitiveness for the Canadian industry in the Mexican market.
- Mexico's economy has been on shaky ground, suffering from a rising exchange rate that is impacting the price of imported goods, including beef. Several large retail chains have seen beef sales drop significantly, with some retailers having to freeze their beef shipments due to lack of sales. Other changes in the Mexican retail sector are also expected to impact exporters to Mexico. Wal-Mart Mexico has been a dominant player in the Mexican retail sector with a 27% market share and sales 80% higher than its next competitor. To improve competitiveness, three retail chain stores are establishing Services Sinergy, a joint venture to handle purchasing operations for the group as a whole. The CBEF office in Mexico advises this will have a definite effect on Canadian exporters as it appears only large-sized export companies will be able to supply the required volumes and meet the credit terms and prices for which Services Sinergy will require.

Specific targets have not been identified for EU markets in the Canadian Beef Exports table above. In 1989, the EU banned the import of all beef products using growth hormones, and there is particular interest in the EU in food safety and quality. EU disposable income is high, and once there is access to the market, it extends to all EU countries. While attractive, these markets can be challenging to access, and include importer certification and labeling requirements. The demand in this market has been historically too fragmented and diverse for large companies to benefit from their scale – Europe has about 230,000 traditional retailers and 1.7 million food service outlets with needs and buying habits that differ according to size, business models and national preferences, among other factors. Some consolidation, particularly in food service – such as international catering companies, restaurant chains and hotel chains – is occurring, and by 2010, large scale operators are expected to account for about 40% of food service sales in Europe[28]. This will increase central buying, and attractiveness of the market to larger suppliers. According to CanFax, 34% of Brazil's exports are destined for the E.U. This was not identified as a major market for the U.S., Australia or New Zealand in 2003[29].

Impact of BSE

In May 2003, a single case of mad cow disease or BSE (Bovine Spongiform Encephalopathy) was confirmed in an Alberta, Canada cow. Since then, one other case of BSE has been confirmed in the U.S., which was traced back to a Canadian herd.

Border closures following the BSE announcement in May 2003 reduced exports of beef and cattle to the U.S. from 60% of total Canadian production to 34%. A recovery began during the autumn, after the U.S. allowed imports of Canadian boneless beef from animals younger than 30 months. Canada's exports of boneless beef to the U.S. have recovered almost completely, and similar exports to Mexico are now nearly double what they were a year ago. That still left beef exports for 2003 at $2.1 billion, 50% below 2002 levels. In 2003, Canada's beef and cattle exports to the U.S. were approximately 957 million pounds,

[28] "A Wholesale Shift in Europe", Grocery Trade Review, George Morris Centre, April 2003.
[29] Statistical Briefer, CanFax Research Services, May 2004.

including 584.8 million pounds of beef. Over the same period, Canada imported 203.4 million pounds of beef from the U.S. alone.[30]

Globally, Canada dropped from the third to the fifth largest beef exporter in the world at 8% of the total.[31] Export Development Canada[32] is forecasting growth in beef export volumes of about 20% in 2004, but with prices likely to weaken significantly due to oversupply, export revenues are projected to increase only 2%.

Since the BSE crisis, Canada has also significantly reduced beef imports, reserving more of the domestic market for domestic beef. Lower live cattle prices have also made Canadian meat more competitive. An extra domestic market has already been created for over 50,000 tonnes of domestic beef.[33] Each tonne of displaced offshore beef represents a market for approximately four older cattle, since offshore beef is usually very lean and similar to beef from cows.[34] This translates into an increased domestic market for approximately 200,000 older cattle.

Since the BSE incidents, Canada and the U.S. have increased their BSE testing. Canada's surveillance target for 2004 is 8,000 samples, increasing to 30,000 samples in 2005. Manitoba's 2005 target will be 3,335 samples. Manitoba is the first jurisdiction in North America to surpass its 2004 target for BSE surveillance. To date, Manitoba has tested 913 cattle samples for BSE this year, exceeding the required target of 889. All samples were negative.[35]

Canada is now categorized as a country or zone with a "moderate risk for BSE" versus "BSE-free" prior to May 20, 2003.[36] Under the current guidelines of the Organization Internationale des Epizooties (OIE) a country with a native born BSE case requires 7 years to demonstrate no additional BSE cases to regain its BSE-free status. These guidelines are under review, however, and may change, with shorter periods to demonstrate BSE freedom, and to better reflect the differences in BSE preventative programs and surveillance of countries. To date, no country has regained BSE-free status having once lost that status, and no such country has re-established normal trading relationships with BSE-free countries. Canada does not currently permit the importation of cattle or beef products from non-BSE free countries.

The market is still highly sensitive to reports of cases of BSE, causing market price fluctuations. Following a July 2004 report of a suspected case of BSE in the U.S. (later cleared), prices for cattle futures dropped approximately $50 per head on the Chicago exchange.[37]

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[30] Canada's Beef Industry Fast Facts. Beef Information Centre – www.beefinfo.org June 2004.
[31] Ibid.
[32] http://edc.ca/docs/ereports/commentary/weekly_commentary_e_1924.htm
[33] Agriweek Extended Access E-Mail Edition, July 12, 2004. *Supply Management – Cattle organizations are talking about downsizing: mandatory downsizing.*
[34] Manitoba Co-operator, Vol.62, No. 28, Winnipeg, July 8, 2004. *Slaughter houses pushed to limit: Canada needs more cattle-slaughter capacity.*
[35] Manitoba Co-operator, Vol.62, No. 28, Winnipeg, July 8, 2004. *Manitoba surpasses BSE testing target.*
[36] Manitoba Farm and Rural Stress Line. New Item: BSE Update: Bovine Spongiform Encephalopathy (Mad Cow Disease), July 23, 2004. http://www.ruralstress.ca/news/2003/07_23.html
[37] Agriweek Extended Access E-Mail Edition, July 12, 2004. *Fumbling in the Dark – The U.S. agriculture department is anxious. to do its best, but does it know what it is doing?*

Domestic Markets

Per capita, the average Canadian consumes 51.5 pounds of beef products per year[38], resulting in a total Canadian market of 2.1 billion pounds in 2002[39]. Overall consumption of beef has generally remained stable in the last ten years, however since studies indicate that beef consumption decreases with age, as the population ages it could mean a decrease in overall consumption in the future.[40] Total consumption of beef in Canada increased in 2003 by approximately 5% over 2002 levels[41], attributed by some to increased support for the beef industry by Canadian consumers in the wake of the BSE crisis, and likely impacted by some reductions in retail price over the same period.

In addition to the domestic supply, Canada imports beef as part of the country's tariff rate quota and supplementary import permits. Canada's global minimum access commitment for beef and veal at a low duty rate is 76.4 million kilograms (168.4 million pounds), within which there are two country specific reserves – 29.6 million kilograms (65.3 million pounds) from New Zealand and 35 million kilograms (77.2 million pounds) from Australia. To October 28, 2004, these imports included 21.8 million kilograms (48.1 million pounds) of grinding beef and 25.7 million kilograms (56.7 million pounds) of beef cuts. Goods imported under supplementary import permits totaled 55.6 million kilograms (122.6 million pounds) of beef in 2003. Effective April 2004, the federal government provided notice that applications for supplementary imports would normally be denied if domestic products were available at competitive prices. This, combined with market factors, has resulted in approximately 65 million kilograms (143.3 million pounds) less imported beef on the Canadian marketplace, including 37.7 million kilograms (83.1 million pounds) of grinding beef and 27.3 million kilograms (60.2 million pounds) of beef cuts. Food sales in Canada are approximately two-thirds retail (consumption at home) and one-third food service (consumption away from home) at $55.8 billion and $29.9 billion respectively in 2000[42]. Food service sales are split approximately 75% commercial, including licensed and unlicensed restaurants, catering, take-out and delivery, and 25% non-commercial, including accommodation, institutional, vending, and other[43].

Approximately 87% of total retail food sales in Canada are through supermarkets and grocery stores, including 4% through warehouse clubs. Eight percent of sales occurred through specialty food stores[44]. While supermarket chains made up only 5% of the total number of stores, they captured 46% of total traditional food sales. Independents, including voluntary groups and unaffiliated stores, achieved a total market share of 41% (35% and 6% respectively). Specialty food stores held a 7% total market share[45].

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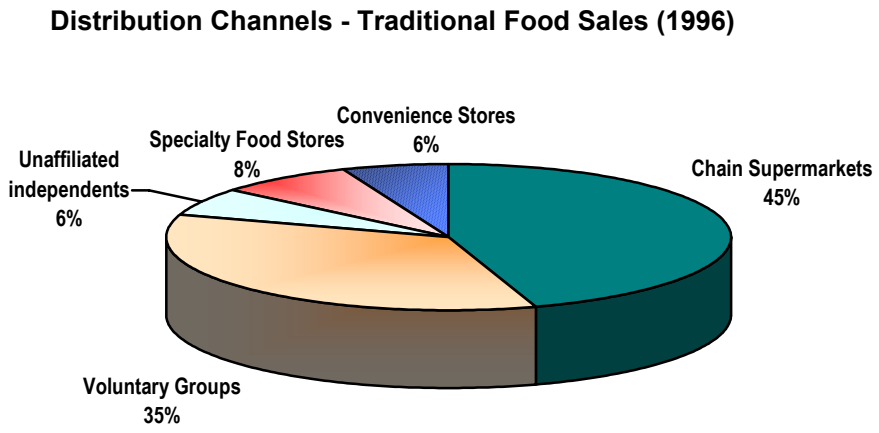
[38] Statistical Briefer, CanFax Research Services, May 2004. Per Capita Meat Consumption 2003. http://www.canfax.ca
[39] Canada's Beef Cattle Industry. Beef Information Centre – www.beefinfo.org Accessed July 22, 2004.
[40] *Market for Case Ready Beef,* by Hodgins & Company for Saskatchewan Agriculture Food and Rural Initiatives, June 2002.
[41] Food Consumed by Commodity, Canadian Food Statistics, Statistics Canada – Cat. No. 21-020-XIE
[42] Agriculture and Agri-Food Canada, Food Value Chain Bureauhttp://www.agr.gc.ca/misb/fb-ba/index_e.php?s1=cons&s2=cancons&page=intro
[43] The Food Marketing and Distribution Sector in Canada, Market and Industry Services Branch, Agriculture and Agri-food Canada, April 1999
[44] Food retail channel share (1996), Table 3. The Food Marketing and Distribution Sector in Canada, Market and Industry Services Branch, Agriculture and Agri-food Canada, April 1999
[45] ibid.

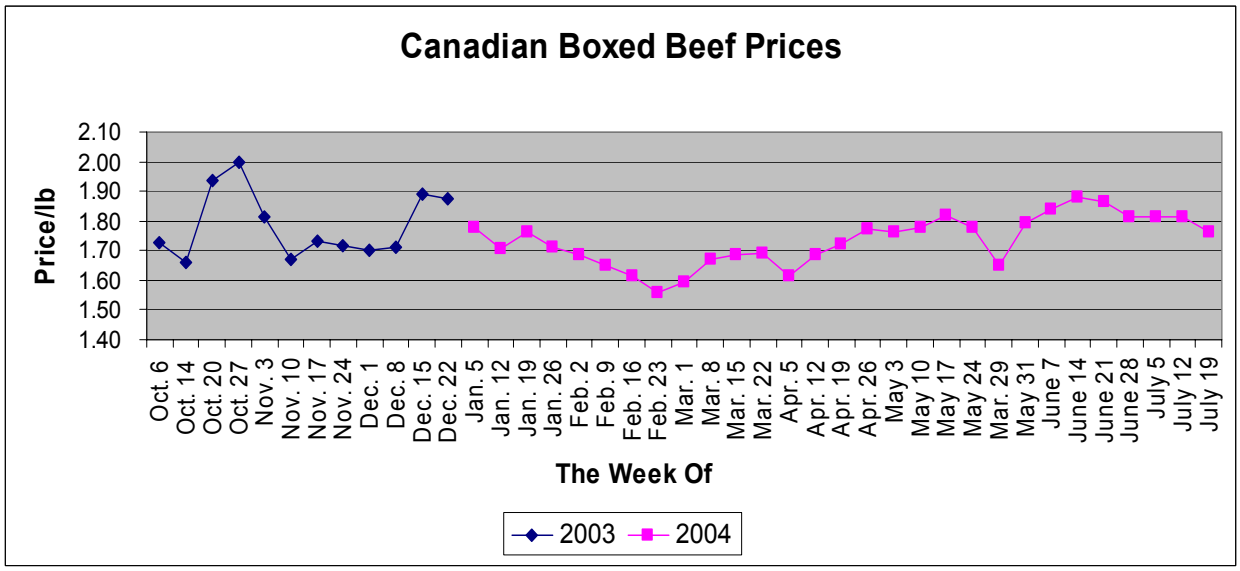


Retail sales data[46] for 2003 indicates the total value of retail beef products purchased in Canada was approximately $2.4 billion, of which approximately $2.1 billion was fresh beef and veal. Frozen meat patties make up approximately 39% of remaining products, which also include frozen prepared dinners, jerky and meat sticks.

Although over 70% of the cow-calf farms are in Western Canada, Eastern Canada is still an important meat producer and represents most of the Canadian beef market.

Pricing

Canadian Boxed Beef Prices have fluctuated around $1.70 to $1.75 per pound between early October 2003 and mid-July 2004. The average price per pound in the period of October 2003 to July 2004 is $1.75. See chart below.



[46] Retail Sales Data 2003, Agriculture and Agri-food Canada.

A sampling of prices for Canadian Boxed Beef Cut Product in the first week of each quarter in 2004 indicated an average cost per pound ranging from a low of $1.93 to a high of $2.25. See Appendix 1 for detail on the cut out prices. Prices advertised by Cargill Foods for cut beef products in August 2004 results in an average price of $2.70 per pound[47], applying the yield of boneless boxed beef cuts from a beef side from the 1993 National Beef Carcass Cut Out Study.

From Review of Pricing in the Beef Industry, Alberta Agriculture, Food and Rural Development, March 2004:

- Market prices throughout the beef supply chain are highly integrated. In the case of fed weight cattle, prices depend on the value of the beef carcass once the cattle have been processed in the packing plant and the relevant packing plant cost structures.
- The BSE crisis created a situation where fed cattle prices were under pressure as a result of three factors: a lower overall demand for beef products in export markets; an excess supply of domestically produced beef; and higher costs associated with the production of beef due to new regulatory and testing standards.
- The beef carcass produces numerous cuts for the retail, export and food service industry. Packers also receive value for by-products – the hide, variety meats, offals, rendering materials, blood meal, tallow and other items. All of these parts contribute to overall carcass value.
- The closure of export markets had a significant impact on carcass value. For some, but not all beef cuts, the value that can be attained in the export market is higher than the value in the domestic market. The Canadian Beef Export Federation estimates that the value of select cuts in Asian markets can represent over $190 more per head than what could be achieved in the domestic market. A portion of this value is being recovered through sales into Mexico, however a minimum of $100 is lost with our current market situation.
- Canadian beef cuts moving into the U.S. traditionally experience a discount ranging from 4 to 6 cents per pound compared to similar cuts of U.S. beef. This is largely due to differences in the beef grading systems in Canada and the U.S. and American loyalty to U.S.D.A. labeled product. According to industry representatives, this discount increased to 25 to 30 cents a pound after May 20, 2003 as Alberta beef was then considered at a much lower grade and value in the U.S, but has again somewhat equalized with the reported case of BSE in the U.S. to more normal discount levels.
- As the Canadian dollar appreciates in relation to the U.S. dollar, the value for beef being exported into the U.S. will decline in terms of the Canadian dollar equivalent. In 2003, the value of the Canadian dollar appreciated by over 20% against the U.S. currency. This means that exporters received 20% less for their product.
- Since 2002, consumers have enjoyed a 20% decline in the average price of beef in retail stores in Alberta from a high of $10 per kilogram (in May 2002 to $8 per kilogram in December 2003. The most significant declines in price occurred in cheaper cuts of meat such as ground beef and chuck. The opening of the U.S. and Mexican border to certain cuts of beef has increased the demand for some of the cheaper cuts such as chuck, resulting in some stabilization of prices.

[47] Cargill Foods West-Can Price List – Manitoba August 2 – 7/04

- Fresh beef prices at retail outlets are determined by a combination of retail merchandising strategies and level of competition. Retailers like to maintain the integrity of the meat case, meaning that the consistency of price and quality of all proteins is important. If prices are temporarily downgraded, it is difficult to recover to previous pricing levels. Over time, competition among grocery or alternate sales channels keeps price changes to a minimum.

- In-store features or sales are planned weeks, if not months, in advance. The normal buying cycle actually begins five to seven weeks before the product gets to the shelves. Consumer perception of the beef meat case typically revolves around steaks and ground beef. The demand for steak cuts, such as top sirloin, is high year-round.

Prices for hanging beef are not widely reported. Local Manitoba information suggests prices in an approximate range of $1.40 to $1.50 per pound at live cattle prices of approximately 65 cents per pound. In August 2004, hinds of beef sold to grocery stores through a local broker were priced at $2.24 per pound, including cross shipping.

Edible beef by-products, including liver, heart, tongue, ox tail, etc. from a 650 pound dressed carcass generally weigh approximately 50 to 60 pounds. These by-products have in the past generated additional revenues of up to $65 per head. The market for by-products has typically been in the U.S. or overseas, and has collapsed with the BSE crises. More recent values are approximately $0.55 per pound where markets can be found.[48] Larger processors typically account for this revenue as a credit against the processing cost of the animal. The hide can range in value from $30 to $50 per animal.

Manitoba

Manitoba Agriculture reports the market for retail beef in Manitoba is 58 million pounds (or 52 pounds per capita), which is consistent with national averages.[49] Much of the beef consumed in Manitoba comes from Alberta or the U.S. In 2002, Manitoba imported 43.8 million pounds of fresh and processed beef from other provinces, and 5.9 million pounds from other countries.

National chains will typically purchase meat only from federally licensed suppliers as meat is distributed through central commissaries that serve stores across provincial boundaries. Based on the estimate that 77% of grocery sales occur through the top 5 chains in Canada, the remaining market within the province would be calculated at approximately 13.3 million pounds. In Manitoba, the national chains are concentrated in Winnipeg and some of the larger communities in southern Manitoba, resulting in a potentially higher market share for independent stores in rural and northern areas. Current Manitoba production is estimated at 8 to 10 million pounds per year.

The majority of beef processed in provincial abattoirs is sold as quarters or sides to local butcher shops or meat wholesalers. Meat wholesalers, such as Fleishers Wholesale Meats in Winnipeg, in turn market the beef through distributors to grocery stores, restaurant and institutional customers. Traditionally, each abattoir has had its own set of customers that regularly would purchase its beef. Recently, abattoirs appear to be crossing into each other's markets, possibly suggesting the market for beef from a provincial facility is becoming saturated.

[48] Cargill Foods West-Can Price List – Manitoba August 2 – 7/04
[49] Cattle and Beef Sector Profile. http://www.gov.mb.ca/agriculture/statistics/pdf/aac02s01.pdf

Beef is generally marketed through distributors to the food service industry and grocery stores. Beef distributors in Manitoba include Pratt's Wholesale, Mariner-Neptune, Preferred Meats (Winkler Meats), Toledo Foodservices and Northern Meat Service, among others. Sysco and Bridge Brand (Gordons Food Service) specialize in distributing to the foodservice industry.

Distributors typically purchase on a daily basis, and generally purchase boxed beef that is vacuum-packed, block ready (not retail cuts). Pratt's Wholesale, believed to be the largest distributor in Manitoba, reports purchasing an average of 4,000 kilograms (approximately 8,800 pounds) of beef per day. All wholesalers/distributors purchase from federally regulated plants, and typically purchase based on price first, then quality. Wholesalers/distributors in Manitoba sell to chain stores, independent grocery stores and co-operatives based in Manitoba, northwestern Ontario and Thunder Bay. One distributor indicated no interest in purchasing natural or organic beef for their current distribution market, further indicating these markets are typically only in areas such as Toronto and large centres in British Columbia.

Specialty food stores in Manitoba do tend to prefer marketing premium or specialty meats, and may respond more positively to a branded or certified program.

Marketing beef products ranges in complexity from securing a contract to provide a dressed carcass in the manner of Plains Processors' (Carman, Manitoba) arrangement with Fleishers Wholesale Meats, to sale of Hotel/Retail/Institutional (HRI) cuts to multiple customers across the country. Marketing HRI cuts requires extensive and proactive marketing by an experienced individual, including daily pricing adjustments to place the beef. Freight is variable on HRI cuts, as distribution often must extend inter-provincially to market cuts that are currently in less demand.

As noted above, distributors make purchase decisions on price, and will focus on specific cuts of interest depending on demand at a particular time of year. Vacuum-packed HRI cuts involve more labour and cost, however provide significantly more flexibility in timing and placement of the product. A vacuum-packed cut can be aged significantly longer than larger, bagged block ready cuts, and can also be frozen, reducing waste.

Industry Analysis

Canada

The slaughter industry in Canada includes both federally inspected and provincially inspected facilities. Meat from provincially inspected facilities can only be sold within the province, while meat from federally inspected facilities can be shipped outside the province and outside the country. Both facilities follow the same basic food safety rules and regulations.

The slaughter sector underwent considerable structural changes in the 1990's. Today, Canada has thirteen federally regulated packing companies. Of these, four companies slaughter 89% of federally inspected cattle in the country. Two companies in Alberta, Cargill Foods and Tyson/IBP Inc., dominate the industry with a combined slaughter capacity of approximately 60% of the total capacity in Canada. Alberta

has increased its share of the total Canadian beef processing industry from 40% in 1984 to 68% in 2000.[50] Most of the cattle are finished in Manitoba, Saskatchewan and Alberta.[51]

In 2002 total Canadian cattle production marketed for slaughter or export was just under 5 million head. Total slaughter in Canada in 2002 was approximately 3.5 million head.[52]

Cattle Slaughter – '000 head[53]		
	2002	**2003**
Alberta	2,368	2,100
Ontario	636	649
Quebec/Atlantic Provinces	231	205
BC/Sask/MB	223	201
Canada	**3,458**	**3,155**

Virtually all (99.6%) of Canada's exports of live cattle in 2002 were shipped to the U.S.[54] The volume of live cattle exports is due to a number of factors, including shipping distances, pricing when supply is tighter in the U.S., and the potential for a higher value carcass. Slaughter and trim methods vary between Canada and the U.S. In the U.S., the kidney fat is not trimmed so the same carcass will dress out at a higher percentage in the U.S. than in Canada. On average, the difference is 2% to 3% higher. The processing industry in the U.S. also has significantly greater capacity for handling processed meat (hamburger, etc.) from older cows, which are often completely segregated from plants focusing on higher value cuts, as is the case in Canada.

The ban on exports of live cattle to the U.S. has created a significant imbalance in the industry as domestic supply considerably exceeds packer capacity. Prior to BSE, Canadian cattle marketings were usually around 90,000 head per week or less. Of that, approximately 20,000 were shipped south as live cattle. From May 20, 2003 onward, those live cattle that were normally exported each week had to find a marketing channel in Canada.

The excess supply problem is far worse for cows than it is for finished steers and heifers. Older cows are generally used for manufacturing (grinding or ground) beef, and are often not processed in the same plants as steers and heifers. Movement of older cows and the beef from them (over 30 months old) is much more restricted than younger cattle. Prior to May 20, 2003 approximately 40% of Canadian cows were shipped to the U.S. for slaughter, and a further 30% of total production was exported as beef. Following May 20, 2003 neither cows nor cow beef could be shipped from Canada to the U.S. or most other markets. Even with the suspension of supplementary imports, with current tariff rate quota (TRQ), Canadian cow beef production exceeds domestic demand by approximately 350,000 head.

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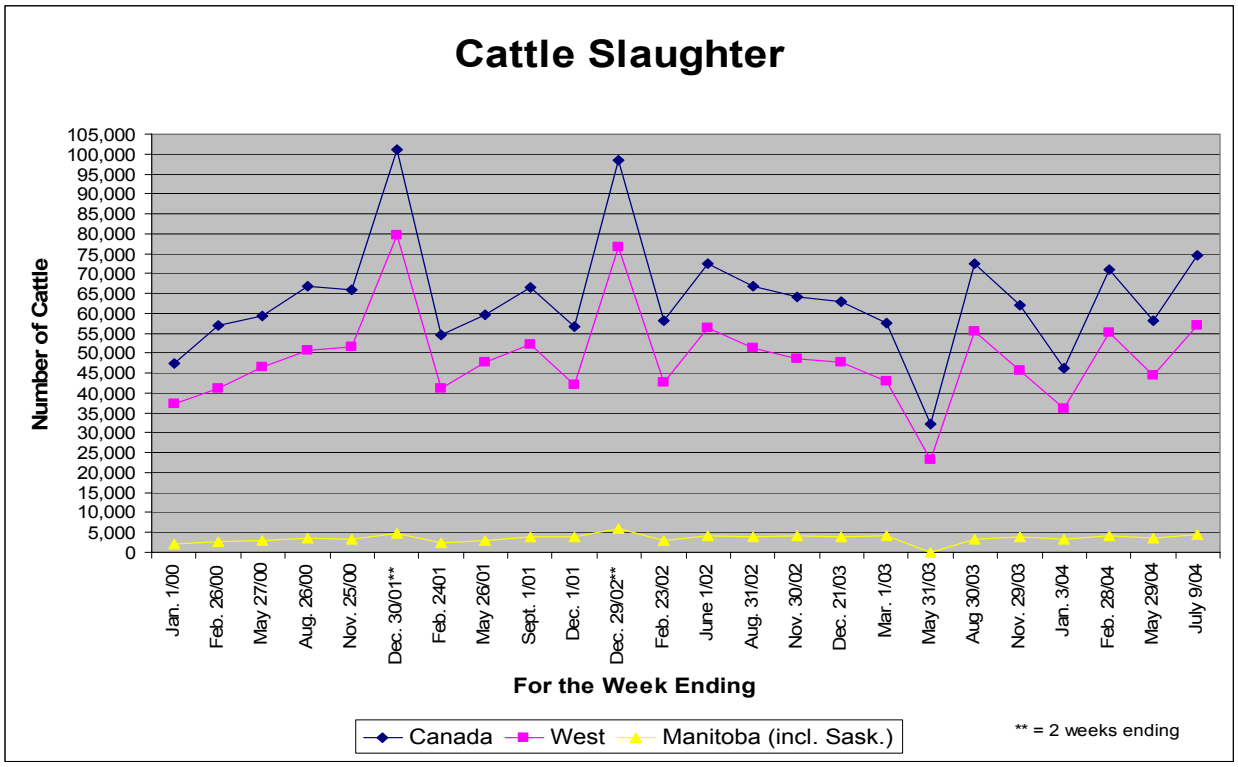
[50] http://www.albertabeef.org/04beef.html
[51] Manitoba Agriculture, Food and Rural Initiatives. Rural Organization. *Manitoba Women's Institute Educational Program. How Do we Know Our Food is Safe?* October 2003. http://www.gov.mb.ca/agriculture/organizations/wi/mwi15s01.html Accessed July 21, 2004.
[52] Cattle Statistics 2004, Vol. 3, No. 1, Statistics Canada http://www.statcan.ca/english/freepub/23-012.XiE/free.htm
[53] Statistical Briefer, CanFax Research Services, May 2004.
[54] Statistics Canada. Mad Cow Disease and Trade. http://www.statcan.ca/english/research/11-621-MIE/11-621-MIE2003005.htm

Supply and Demand for Non-Fed Boneless Beef (prior to May 2003)[55]	
Total non-fed boneless beef production in Canada	180,000 MT
Less exported live (40%)	-72,000
Net slaughtered in Canada	108,000
Less exported beef (60%)	-64,800
Canadian boneless beef consumed in Canada	43,200
TRQ Imports	76,409
Supplementary Imports	55,000
Total Imports	131,409
Plus Canadian consumption of domestic	43,200
Total Canadian Consumption of Boneless Beef	174,209

Canadian packers are currently processing about 75,000 cattle a week, 19% more than 2003 and 5,000 to 10,000 more per week than they did before May 20, 2003, when the U.S. imposed its ban.[56] Major plants are already operating six days a week and still cannot keep up.



Manitoba Agriculture – Manitoba Markets- Livestock. Program & Policy Analysis. Manitoba Markets. Livestock. Internet Edition. From January 7, 2000 to July 16, 2004. http://www.gov.mb.ca/agriculture/news/markets/livestock/07012000index.html to http://www.gov.mb.ca/agriculture/news/markets/livestock/20040716index.html

[55] *Cow Beef,* Canadian Cattle Buyer, February 13, 2004.
[56] Manitoba Co-operator, Vol.62, No. 28, Winnipeg, July 8, 2004. *BSE tests for all cattle called red herring.*

Even with higher kill levels, reports suggest Canada will have 190,000 fed cattle and 360,000 mature cattle that will not find hook space in 2004.[57]

Some companies are making modest improvements and expansions to existing facilities, and construction of some new facilities could add about 5,000 to weekly kill. Cattle prices have fallen and are erratic because offerings exceed the ability of the plants to process them. The first-come needs of the large packers in Alberta are being filled by cattle from feedlots they control or with which they have contract arrangements.[58]

According to the Canadian Cattlemen's Association[59], the industry is responding with expansions that will come on stream within the next three years, increasing capacity from 70% to over 95% of Canadian production by the end of 2006:

- **In June 2004** Canada's current federally inspected slaughter is approximately 75,300 head per week. Of this, approximately 8,000 head per week is "normally" devoted to slaughtering non-fed beef. Provincially inspected slaughter adds another 3,600 head per week. Provincially inspected plants are thought to be operating at capacity limits and it is unlikely that additional capacity will arise through this channel. Adding provincially and federally inspected slaughter capacity together provides a total Canadian capacity of 78,900 per week or approximately 3.95 million head annually.

- **Capacity October/November 2004** By November 2004 new capacity will be available at plants owned by Rangeland Beef Processors, British Columbia; XL Foods, Alberta; Gencor Foods Inc., Ontario; Colbex/Levinoff, Quebec; and Atlantic Beef Products Inc., Prince Edward Island. It is estimated that these plants will add an additional 6,100 head per week to Canadian slaughter capacity. This will increase overall weekly, federally inspected slaughter capacity to 81,400 head. Combined with existing provincially inspected slaughter (3,600 head per week), the annual kill in Canada would exceed 4.25 million head.

- **Capacity 2005** There are a number of other planned expansions that will increase 2005 capacity. Several of these will be online early in the year as Rangeland Beef, Gencor Foods Ltd. and Atlantic Beef Products Inc. should be fully operational after their 2004 start up. The scale-up of these plants would increase capacity by 2,000 head. Tyson Foods Ltd. announced a $17 million expansion to their plant in Brooks, Alberta that will increase that plant's capacity by 1,000 head per day to approximately 5,000 head per day and add 300 full time jobs to their workforce. The expansion is planned to be online by fall 2005. The additional 7,000 head capacity increases weekly federally inspected capacity to 88,400 head and total Canadian capacity to 92,000 or 4.6 million annually.

- **Capacity 2006** There are many other proposals that are being discussed. Included among these are the Alberta-based Ranchers Beef initiative, potential expansion at Better Beef Ltd, Ontario and a new plant in Quebec. Combined, these may add an additional 6,250 head per week to federally inspected kills later in 2006 to total 4.9 million annual slaughter capacity.

Economies of scale are important to this sector. Plants are moving towards round-the-clock operation, and if they do not operate near full capacity, the fixed cost per head of cattle slaughtered can be high. The

[57] Manitoba Co-operator, Vol.62, No. 28, Winnipeg, July 8, 2004. *BSE tests for all cattle called red herring.*
[58] Agriweek Extended Access E-Mail Edition, July 12, 2004. *Supply Management – Cattle organizations are talking about downsizing: mandatory downsizing.*
[59] Annex, A Strategic Plan for the Canadian Cattle Industry, August 20, 2004.

result of the increase in production capacity should be an increase in the price of live cattle as processors compete for supply. If or when the U.S. border again opens to exports of live cattle, this situation will be exacerbated as U.S. packers work to again fill their plants to capacity and meet pent up demand.

Gross margins (boxed beef cut out composite plus by-products less live cost) as reported by George Morris Centre (GMC), Guelph, Ontario were approximately $540 per head in July 2004. Operating cost estimates for kill, cut and packaging were $150 per head prior to the BSE crises. BSE related costs such as specified risk material procedures and other compliance requirements have likely pushed costs significantly higher. The current GMC operating costs estimate is $170 to $200 per head[60].

Specific impacts of the BSE situation on packer costs, include:[61]

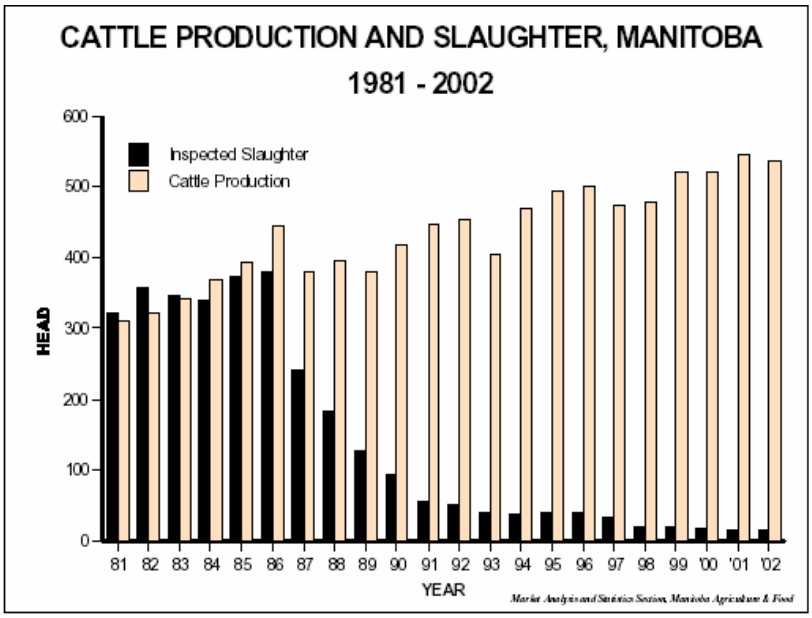
- Extra labour costs associated with segregating cattle "over thirty months" of age to meet age-related export requirements. Industry representatives indicated that there have been an unforeseen number of youthful cattle with mature teething that classified them as over thirty months. In such cases, the carcass is downgraded and the packing plant must absorb the lost revenue and costs associated with these cattle.
- Operational adjustments for export markets to ensure there is no cross contamination from the slaughter of cattle over thirty months old with those under thirty months. In some cases, this requires extra storages costs since cows must be killed at different times of the work shift. Also, meat that is extracted from the beef carcass by mechanical separation machines is no longer permitted into export markets.
- Changing product mix from 70% boneless to 100% boneless to meet export requirements requires more labour to produce the same amount of output.
- Costs associated with removal and disposal of Specified Risk Materials (SRM) from cattle aged over thirty months and intestine - distal ileum from cattle of all ages. This has the effect of slowing line speeds and reducing efficiency.

Other changes impacting the industry include the 2002 U.S. Farm Bill, which authorized a Country of Origin Labelling (COOL) program that is intended to specifically identify domestic and imported food products at the retail consumer contact point. The 2002 Bill established mandatory labels and records to support them throughout the vertical supply chain by September 30, 2004. All production stages of the beef supply chain would be expected to experience a significant cost burden, ranging from $5 per head for the cow-calf producer/backgrounder, $3.75 to $5.75 per head for feedlots and $15 to $18 per head for packers as a result of the need to segregate cattle and beef products during the slaughter and fabrication stage of production[62]. Concerns over the cost of the program have resulted in a proposed new bill that would allow the program to remain voluntary. The proposed Food Promotion Act of 2004 would make labelling a market driven response to consumer demand in markets where customers show a legitimate interest.

[60] Canadian Boxed Beef Report, July 19, 2004. George Morris Centre, Guelph.
[61] Review of Pricing in the Beef Industry, Alberta Agriculture, Food and Rural Development, March 2004.
[62] COOL Cattle Costs, Canadian Cattle Buyer, April 11, 2003.

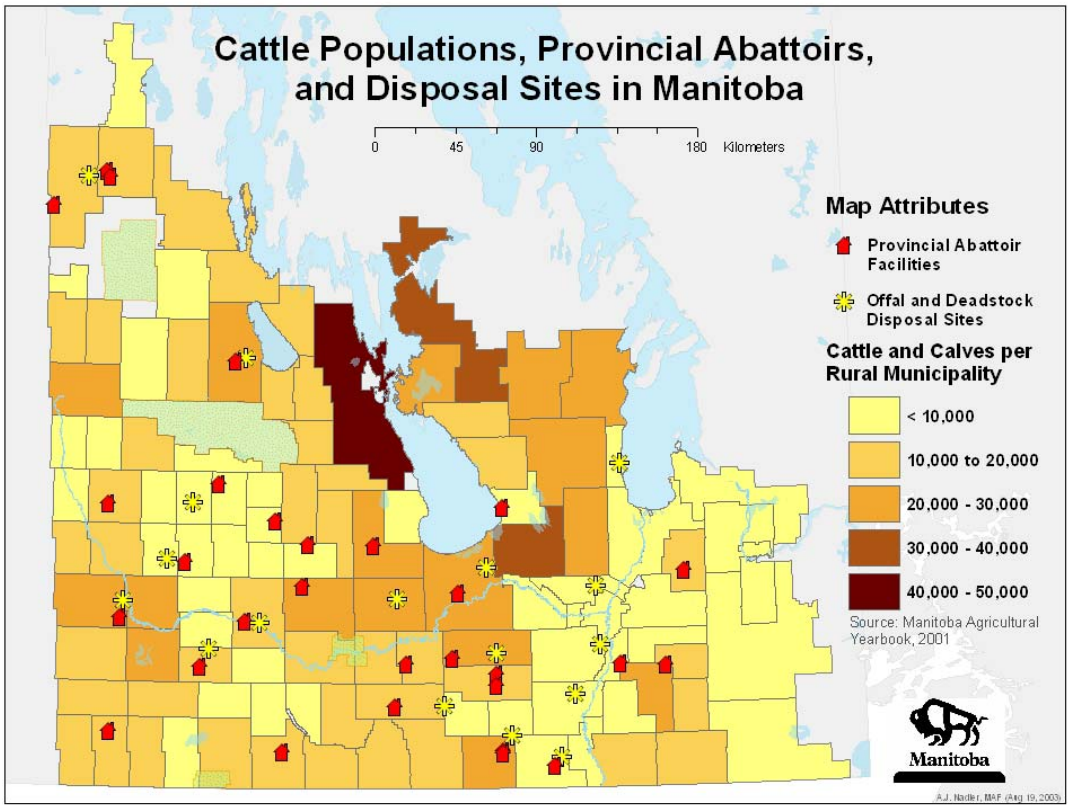
Manitoba

Technological changes in animal slaughter and meat production have contributed to the rationalization of the meat packing industry over the years. The total number of cattle slaughtered in Manitoba packing plants peaked at 581,000 head in 1976. The closing of five cattle slaughter facilities in Manitoba since 1979 reduced local slaughter activity to approximately 16,400 head in 2002[63], producing 9.8 million pounds retail. Two small federally inspected plants slaughtered about 6,663 cattle in 2002, while 9,710 head were killed in 24 provincially inspected plants in Manitoba.



Most Manitoba plants are located in rural areas consistent with the concentration of cattle production in the province. See map below. A listing and addresses for Manitoba facilities are also contained in Appendix 2.

[63] Manitoba Agriculture and Food. 2002 Manitoba Agriculture Yearbook. Pages 48 and 55. http://www.gov.mb.ca/agriculture/statistics/yearbook2002/aaa16s02.pdf Accessed August 20, 2004.



In 2004, Winkler Meats is the only federally inspected beef slaughter/processing facility in Manitoba, however two plants – BJ packers in Beausejour and Plains Processors in Carman – have previously held federal registration and may be capable of regaining this registration with some capital investment. A newly constructed provincially regulated abattoir at McCreary, Manitoba came on stream in April 2004, with capacity for approximately 2,500 to 3,000 head per year. Some provincial plants were listed under OPAM for processing organic meat, however chose to de-list because of economics and the lack of standardized animal traceability.

Six federally registered plants are listed in Saskatchewan that may also compete for supply of Manitoba cattle. Two of the larger plants include XL Beef in Moose Jaw and Centennial Foods in Saskatoon.

Manitoba Agriculture personnel report slaughter in Manitoba in 2003 reached approximately 20,000 to 21,000 head, including cows, bulls, steers and heifers, resulting in approximately 10 million pounds of beef. With the addition of the McCreary plant, production for 2004 is expected to be approximately 25,000 head. This is believed to be the maximum capacity of the existing facilities, and may not be sustainable at this level given the additional burden on owners and personnel.

In September 2003, the Government of Manitoba announced a $2 million program to increase provincial slaughter capacity. One million dollars was to be spent on equipment and employees at the smaller processing plants in Manitoba. The funding is to be flexible and could be used to add shifts, purchase new equipment or train new workers. BJ Packers reported its intent to hire up to 20 employees and double its production to 100 cattle per day. Overall, provincial officials estimate the program could allow Manitoba slaughterhouses to process an additional 10,000 cattle per year.

The federal government has also recently announced significant programs to support the cattle and beef industry in Canada. For processing plants, the major emphasis is on loan guarantee programs to enable access to financing in a challenging environment.

Barriers to expansion of existing plants include:

- Availability of skilled personnel. Most abattoirs are located in small rural communities with a limited labour pool. The nature of the employment is such that it is difficult to attract employees from outside the area. Typically, the same individuals will handle the kill functions and then later cut and wrap.
- Physical capacity is largely constrained by cooler space. Adding cooler space is costly, and may not be possible depending on the layout of the plant.
- The cost of inedible offal disposal, or "tankage charges", is another significant barrier. In Manitoba, the lack of a rendering industry for beef by-products puts the entire industry at a disadvantage, as the processor not only does not receive revenue for these by-products, but also must pay for disposal. There is very little market within the province for edible or inedible offal, further increasing disposal costs.
- Environmental regulations have become significantly more stringent since the provincial plants were initially built. Any changes that trigger environmental licensing review may prove cost prohibitive as significant investment would be required to bring waste treatment systems up to current standards.
- The environmental licensing process also includes a period of time for public review. Community concerns can lengthen and add cost to the environmental licensing process, creating further challenges for proposed expansions or new plants.

Current market conditions have caused more attention on the potential for new processing facilities in Manitoba. One of the largest groups, Ranchers Beef Co-op, has been working to raise capital to establish a cow beef processing facility in the province. This group has most recently announced its intentions to locate a plant in Dauphin, Manitoba.

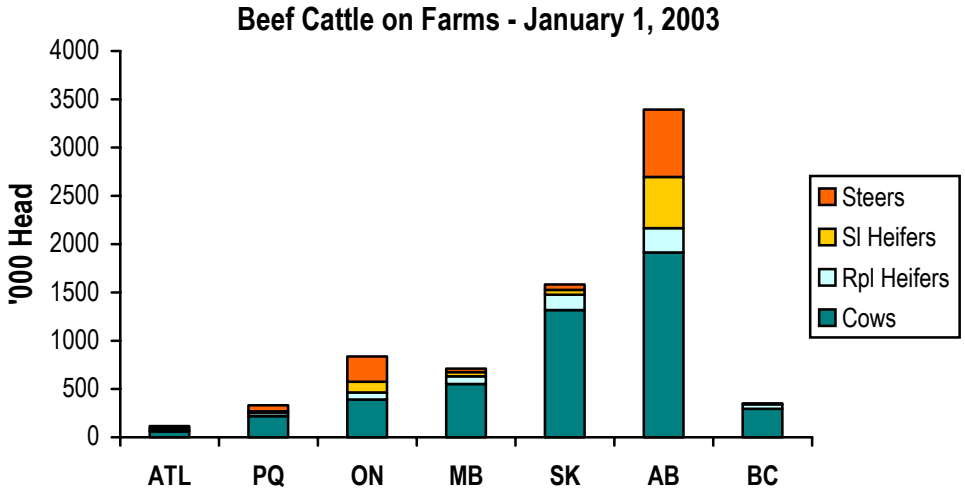
A 2002 study of the Manitoba beef industry[64] cited a number of challenges, including a lack of knowledge about finishing cattle, a small processing industry, lack of uniformity regarding the numbers and quality of cattle produced, and limited government support. One of the authors of the report was cited as saying there needs to be more education and training for producers, better financing, programs to promote more consistency in the cattle, and a more friendly attitude toward livestock expansion by government. Grass-fed or natural beef was identified as another option, as well as opting into some of the existing branded beef programs.

Supply

In January 2004, Canada ranked 13th in terms of world cattle inventories, with a total of 14.8 million head. India, Brazil and China top the list, accounting for 57.9% of the world cattle inventory. The U.S. ranks fourth with 95.4 million head and the EU fifth with 78.4 million head.[65]

[64] Manitoba Beef Industry Told Opportunities Await, Western Producer, December 2002.
[65] Statistical Briefer, CanFax Research Services, May 2004.

Manitoba has Canada's third largest beef cow herd, after Alberta and Saskatchewan. As evident in the chart below, however, the population of slaughter heifers and steers is concentrated in the two provinces with the most significant slaughter capacity, Alberta and Ontario[66].



In basic terms, the industry is made up of cow-calf operators and feedlots. A cow-calf operator -- usually a small rancher with a herd of cows -- breeds calves for sale to a feedlot. Typically, these producers have set their operations up so that their cows give birth toward the end of winter to early spring and the calves can then be sold at market in the fall. These calves, usually weighing around 600 to 800 pound, are sold to a feedlot operator. Feedlot operators finish cattle to slaughter weight, typically by feeding a high protein ration. Feedlots then sell these slaughter weight cattle to a packer or other buyers at market. In a typical beef herd, approximately 10% of cows will be culled annually and sold for slaughter.

Cull cows from dairy operations also feed into the slaughter and processing industry. Cull rates for dairy operations can be as high as 30% per year. In July 2004, there were approximately 45,000 milk cows on farms in Manitoba.

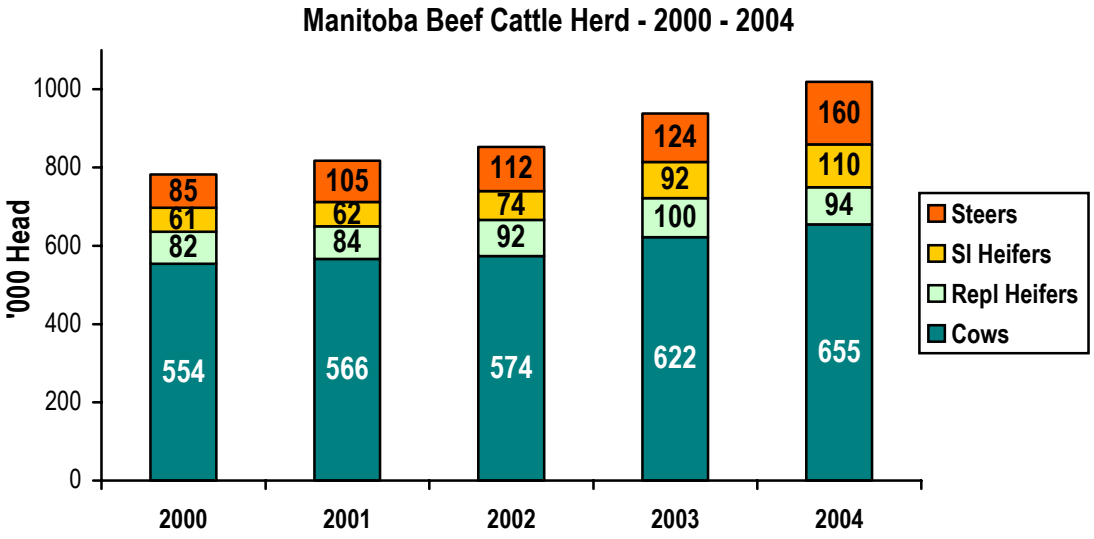
In 2003, the southwest region of Manitoba had 27% of the beef farms and 31% of the beef cattle in Manitoba.[67] About 98% of commercial beef cattle operations were cow-calf, with many producers retaining and/or buying calves for further feeding to be sold as "stockers", "short-keeps" or for slaughter. The remaining 2% of commercial operations were feedlots, the largest of which had a capacity of 6,500 head.[68]

Because of the limited processing capacity within the province, most of the beef cattle produced in Manitoba are sold out of province. In 2002, Manitoba's 10,500 beef cattle producers marketed about 530,000 head for slaughter or sale out of the province (including as feeder cattle). 41,900 head of Manitoba origin were slaughtered elsewhere in Canada (approximately 32% to Ontario/Quebec and 65% to Alberta/Saskatchewan), with 262,000 head exported to the U.S. in 2002. [69] These exports included

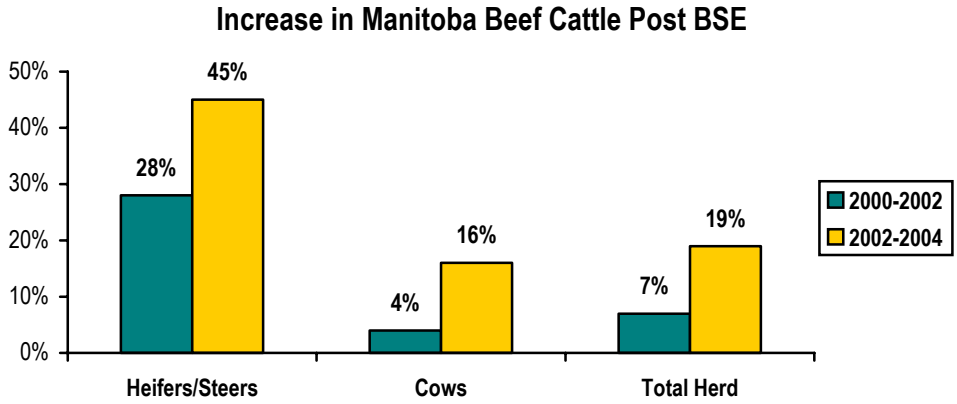
[66] Cattle Statistics, Statistics Canada, Agriculture Division, Catalogue number 23-012-XIE
[67] CNG Southwest Region Consulting Report, March 2003. Covering New Ground Manitoba's Agricultural Sustainability Initiative. Presentation. Southwest Region. Overview of Regional Resources. http://www.gov.mb.ca/agriculture/research/covering/pdf/cng03s15p.pdf. Accessed August 20, 2004.
[68] Cattle and Beef Sector Profile. http://www.gov.mb.ca/agriculture/statistics/pdf/aac02s01.pdf
[69] Ibid.

103,400 finished cattle, an equal number of cull cows and bulls, 54,000 feeder cattle and 700 others. The majority of cattle exports to the U.S. go to Nebraska, Minnesota and Wisconsin.

Over the years, the size of Manitoba's cattle herd has been influenced by factors such as North American beef supply and demand and the variable profitability from cattle production.



Manitoba's beef cattle herd increased significantly following the closure of the U.S. border in 2003[70], even compared to the impact nationally. From July 2002 to July 2004, Manitoba's total beef cattle and calves increased 19.4%, compared to 8.7% in Canada as a whole for the same period[71]. Slaughter heifers and steers increased 45.2% in Manitoba, compared to an overall increase of 10.4% in Canada for the same period.



[70] Livestock Numbers on Farms. July 1, 2002 – 2004.
[71] Includes: Bulls, beef cows, beef heifers-breeding, beef heifers-slaughter, steers and calves Excludes: Dairy cows and dairy heifers.

As of July 2004, Manitoba reported 270,000 head beef slaughter steers and heifers, 655,000 beef cows and 630,000 calves[72]. Normally, Manitoba finishes only about 25% of its calf crop, shipping the balance of calves and finished animals for finishing and slaughter in Alberta and areas of the U.S. such as Wisconsin, Nebraska and Minnesota. Based on 2004 inventories, Manitoba will finish about 157,500 calves and ship about 472,500. This is up about 19% from 2002 calf numbers.

Industry sources indicate about 10% of beef cows are culled annually, however the growth in the cow herd is largely believed to be because previous year culls have not occurred. Based on an annual cull of approximately 55,000, the total supply of cull cows for 2004, if a market or slaughter capacity were available, could be as high as 138,000 (based on 10% of 2002 cows, plus the growth in subsequent years). Dairy cows could be expected to add another 15,000 to the total cull supply.

Based on historical percentages, Manitoba would typically finish about 223,000 calves and culls per year. Manitoba Agriculture estimates Manitoba's total feedlot capacity is about 100,000 head. This indicates current Manitoba feedlots would need to turn inventory an average of 2.3 times in the year to finish available calves and culls.

Manitoba Agriculture indicates that increasing Manitoba's feedlot capacity would be slow and costly. Increasing feedlot capacity requires significant investments in cattle inventories and feed, and financing may be difficult to secure. Due to the high inventory investment costs, a feedlot could reasonably increase by 2% to 3% over four to five years. Manitoba Agriculture estimates an efficient feedlot operation would have 2.5 to 3 turns per year, with $10 to $20 margin per head. Options to consider for increasing Manitoba's feedlot capacity may include custom finishing feedlots, where the producer owns the cattle rather than the feedlot, reducing the feedlot's investment requirements.

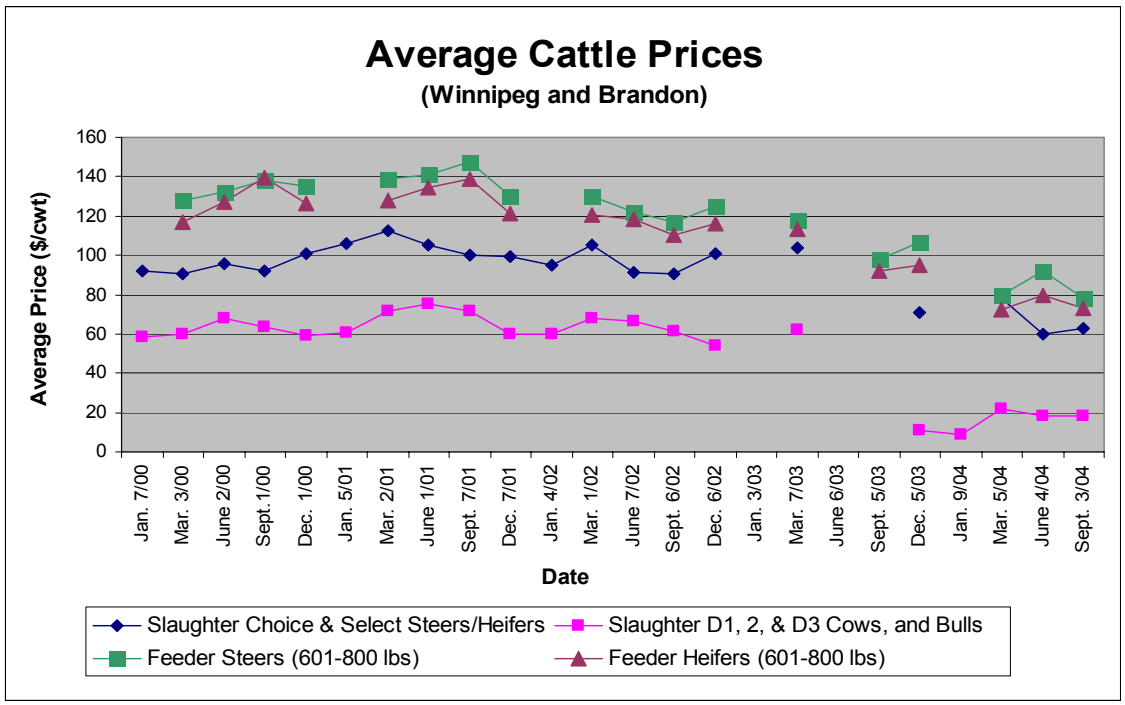
A natural, hormone free or organic beef product would also require a traceability and production management system that extends through the supply chain.

Cattle Prices

Canadian cattle prices continue to be low as marketings of cattle whose meat is eligible for export (under 30 months of age) continued to pressure domestic packing capacity.[73]

Pre-BSE, from January 7, 2000 to March 7, 2003, the average price for choice and select steers and heifers in Winnipeg and Brandon, Manitoba was CDN$98.85/cwt. Post-BSE, from June 6, 2003 to September 3, 2004 was CDN$68.60/cwt, a price drop of over 30%. See Winnipeg and Brandon chart below.

[72]Livestock Numbers on Farms. July 1, 2002 – 2004.
73 Agriweek Extended Access E-Mail Edition, July 12, 2004. Supply Management – Cattle organizations are talking about downsizing: mandatory downsizing.



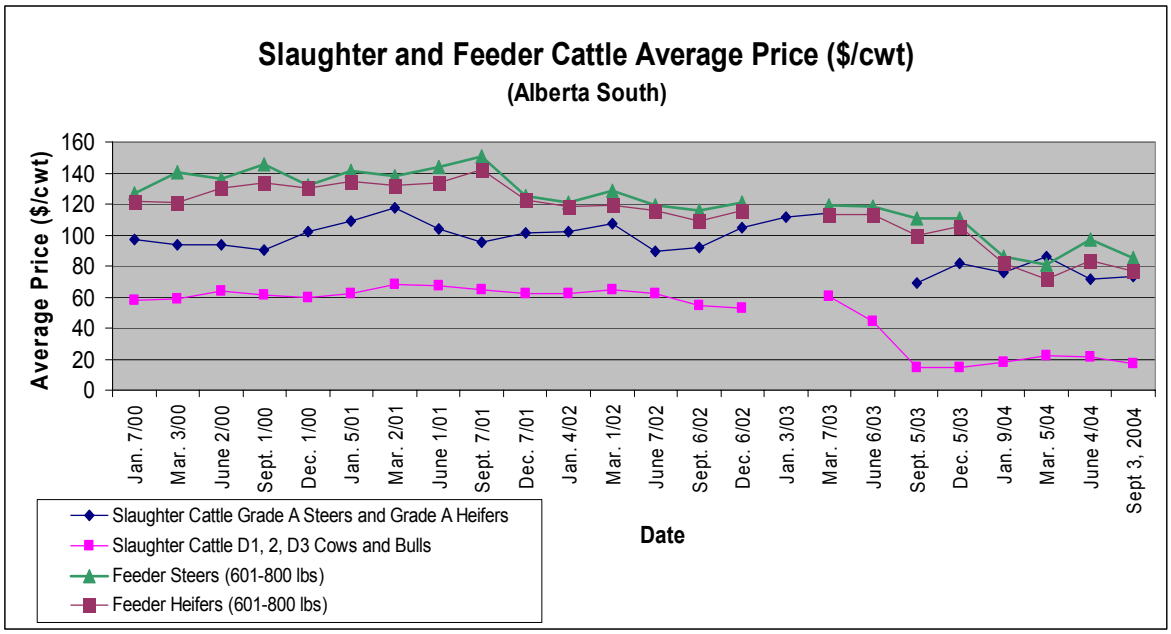
Manitoba Agriculture – Manitoba Markets- Livestock. Program & Policy Analysis. Manitoba Markets. Livestock. Internet Edition. From January 7, 2000 to July 16, 2004. http://www.gov.mb.ca/agriculture/news/markets/livestock/07012000index.html to http://www.gov.mb.ca/agriculture/news/markets/livestock/20040716index.html

Pre-BSE, from January 2000 to March 2003, average prices for feeder steers and heifers FOB Winnipeg and Brandon was CDN $130.93/cwt. and $124.02/cwt respectively. Post-BSE, from June 2003 to September 2004, average prices were CND$ 92.37 /cwt and $82.86 respectively, a drop of approximately 30%.

D1, 2 and 3 cows and bulls at Winnipeg and Brandon suffered the greatest drop in price, from an average price of $63.72/cwt for January 7, 2000 to March 7, 2003, to an average of $15.93 from June 6, 2003 to September 3, 2004, a 75% drop in price. This is largely the result of the inability to move older cows (over 30 months old) to the U.S. for processing. Older cows are typically used for manufacturing beef, such as grinding and ground beef, and are not often processed in the same plants as finished steers and heifers that are used for steaks and roasts. Prior to BSE, most older cows were shipped to the U.S. for slaughter and processing because there is very little plant capacity for these animals in Canada.[74]

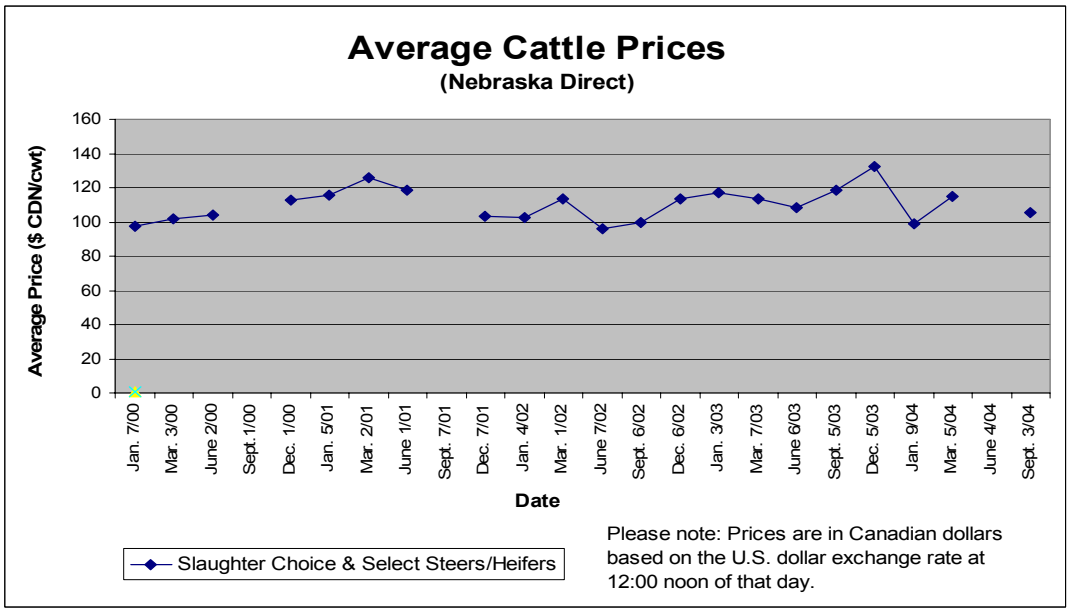
Pre-BSE, from January 7, 2000 to March 7, 2003, the average price for choice and select steers and heifers FOB Alberta South was CDN$101.40/cwt, 2.5% higher than Manitoba. For the same post-BSE period, FOB Alberta South shipments were CDN$76.18/cwt, 11% over Manitoba prices. See Alberta South chart below. Slaughter cattle prices for Alberta south region are relatively similar to those of Manitoba prices, however, both are FOB Calgary, resulting in net lower prices for Manitoba producers because of the added freight expense.

74 Grier, Kevin and Larry Martin, George Morris Centre. Special Report: Beef Pricing and Other Contentious Industry Issues. March 16, 2004.



Manitoba Agriculture – Manitoba Markets- Livestock. Program & Policy Analysis. Manitoba Markets. Livestock. Internet Edition. From January 7, 2000 to July 16, 2004. http://www.gov.mb.ca/agriculture/news/markets/livestock/07012000index.html to http://www.gov.mb.ca/agriculture/news/markets/livestock/20040716index.html

Pre-BSE, from January 7, 2000 to March 7, 2003, the average price for choice and select steers and heifers FOB Nebraska, U.S. was CDN$108.90/cwt, 10% higher than Manitoba. For the same post-BSE period, FOB Nebraska shipments were CDN$114.70/cwt, 67% over Manitoba prices. See Nebraska chart below. Freight to Nebraska is estimated to be $1,911 per load or about $47.78 per head[75].



Manitoba Agriculture – Manitoba Markets- Livestock. Program & Policy Analysis. Manitoba Markets. Livestock. Internet Edition. From January 7, 2000 to July 16, 2004. http://www.gov.mb.ca/agriculture/news/markets/livestock/07012000index.html to http://www.gov.mb.ca/agriculture/news/markets/livestock/20040716index.html

[75] Freight estimated based on 637 miles from Winnipeg to Omaha, Nebraska at approximately $3.00 per mile.

Pre-BSE, from January 7, 2000 to March 7, 2003, the average price for choice and select steers and heifers FOB Nebraska, U.S. was 7.4% higher than FOB Alberta shipments. For the same post-BSE period, direct Nebraska shipments were 67% over FOB Alberta shipments. Pre- and post-BSE, FOB Nebraska prices are more attractive than Alberta. Further, Alberta is nearly 200 miles further from Winnipeg than Omaha, Nebraska increasing the freight costs for Alberta shipments.

Once the U.S. border opens to live cattle under 30 months, prices are expected to resume to pre-BSE levels. There may be a period when price premiums are paid as U.S. processors regain supply and market share.

Regulations and Permits[76]

In Manitoba, no one can sell any red meat or meat products unless the meat has been inspected and approved in a federally or provincially registered slaughterhouse. The provincial government is a partner in ensuring the safety of food. In Manitoba, *The Public Health Act* is the enabling legislation for food and food handling establishments including abattoirs within Manitoba. The Food and Food Handling Establishments Regulation 339/88R regulates food service establishments, retail food stores, food processing plants, temporary food service establishments, meat processing plants, slaughterhouses, warehouses or any place, including vehicles, where food is manufactured, processed, prepared, packaged, stored or handled. Manitoba Conservation and Manitoba Health enforce this regulation. *The Public Health Act* is currently being reviewed and rewritten.

Federal registration allows a manufacturer, distributor or importer to sell their product within Manitoba, within Canada or they can export their product to another country, if they meet the requirements of the importing country. The Canadian Food Inspection Agency (CFIA) is the inspection body of the federal government.

The Food and Drugs Act and *The Consumer Packaging Labelling Act* apply to all food manufacturers in Canada, not just federally registered establishments.

The Meat Inspection Act regulates the import, export, and inter-provincial trade of meat and meat products. It covers the registration of establishments, the inspection of animals and meat products and the standards for establishments, for animals slaughtered and meat products.

The Canada Agricultural Products Act is designed to establish national standards and grade for agricultural products and to regulate the marketing of agricultural products in import, export and inter-provincial trade. These products include meat, eggs, poultry products, manufactured dairy products, fresh and processed vegetables, fruit, honey, maple syrup and their products. It provides for the licensing of dealers in agricultural products, the inspection, grading, labelling and packaging of regulated products, the registration of establishments and standards governing the construction, maintenance and operation of establishments as well as mechanisms to settle disputes over transactions between fresh fruit and vegetable dealers.

In the wake of the BSE crises, CFIA regulations can be expected to evolve, particularly with respect to handling of cattle over 30 months of age, and potentially similar to U.S. requirements that over and under 30 month cattle be segregated and processed separately.

[76] http://www.gov.mb.ca/agriculture/livestock/abattoir/bac10s02.html

Operational Requirements

Facilities and Equipment

As noted earlier, the slaughter industry in Canada includes both federally inspected and provincially inspected facilities. Meat from provincially inspected facilities can only be sold within the province, while meat from federally inspected facilities can be shipped outside the province and outside the country. Both facilities follow the same basic food safety rules and regulations.

In Manitoba, all provincial abattoirs must be registered with Manitoba Health. CFIA is contracted to do the inspection. Inspectors look for proper and adequate sanitation of premises and equipment before operations begin and during the operation of the plant, proper handling of meat as well as adequate equipment (lighting, ventilation, water supply, cooling facilities).[77]

There are several options to facility design, including one or two storey building, with partial basement for inedible by-products. As well, there are several options to the flow of the process, including straight line, U-shaped or S-shaped. The major requirement is that the path of the process does not cross. Facilities must have complete separation between the kill and processing functions. Within the plant, the only access between these functional areas is through the cooler, used to move the hanging sides of beef to processing. All other movements must be external to the processing area and subject to sanitary restrictions in each area. A sample generic plant layout design for a red meat abattoir and processing plant is provided in Appendix 3.

A federal plant requires a minimum of three coolers – one chill cooler, one transitional cooler, and one cooler to grade and hold processed meat and meat products prior to shipping. Estimated cooling space is approximately 9 square feet per carcass. A plant with a custom kill service typically requires additional cooler space.

The Meat Inspection Regulations (1990) (MIR) specify the basic requirements for the design and construction of equipment used for slaughter of food animals and handling of meat products in registered establishments. The Meat Hygiene Manual of Procedures (MOP) currently requires prior approval by CFIA of equipment used in federally registered establishments. While industry is advocating removal of this requirement, it is still in effect at the time of this study[78].

According to the CFIA, the process for registering federal establishments involves completion of registration and licensing forms and submitting full blueprints for CFIA review. The forms and requirements for blueprints and construction are found in Chapter 2 of the Meat Hygiene Manual of Procedures[79]. Major requirements for new or expanded construction include approval of blueprints, including approved water supply and waste disposal; environmental and municipal/provincial approvals or any other federal

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[77] Manitoba Agriculture, Food and Rural Initiatives. Rural Organization. *Manitoba Women's Institute Educational Program. How Do we Know Our Food is Safe?* October 2003. http://www.gov.mb.ca/agriculture/organizations/wi/mwi15s01.html Accessed July 21, 2004.

[78] Canadian Food Inspection Agency. Consultation Paper on Elimination of Prior Approval Requirements for Equipment Intended for Slaughter of Food Animal and Handling of Meat Products Used in Establishments Registered Under the *Meat Inspection Act and Regulations*. http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/chap2/consulte.shtml. Accessed July 22, 2004.

[79] Meat Hygiene Manual of Procedures Chapter 2: Construction and Equipment in Registered Establishments http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/mane.shtml

approvals required; review of physical facility once construction is complete to ensure it meets approved blueprints; label approval for products to be produced; approval of sanitation and pest control programs, employee training program, equipment approval and maintenance, transportation and storage, and premise control and recall programs.

Applications are processed by the regional office up to the point when the blueprints and all the necessary documents are ready to be sent to the Meat and Poultry Products Division for review, acceptance and registration[80]. For a federally regulated facility, the design and approval process can take six to eight months, and approximately 12 to 18 months to construct. Industry estimates suggest federally registered plants typically require 20 to 28 facility design drawings, with each drawing estimated to cost approximately $1,000.

An option for facility construction is to construct a building shell then add internal walls and specific requirements. This helps mitigate the risk of having an obsolete building if the beef processing plant becomes unviable. A basic structure has been quoted locally at $40 per square foot. This building estimate included a floating foundation with a six inch curb, sealed; 18'x8" insulated all panels; roof insulation R-40 cellulose blown in, completely supplied and installed. It does not include air handling, lighting or other specific requirements.

A slaughter facility also requires holding pens for two to three days' slaughter. A 200 head per day facility would, therefore, require holding and sorting pens for 400 to 500 head. Based on approximately 50 to 60 square feet per animal[81], approximately 25,000 to 30,000 square feet of pen space would be required. The addition of crowding pens and chutes would result in a space requirement of approximately one acre.

Labour

Production workers in meat packing plants and processing plants are semi-skilled. Example wage rates are shown below:

Slaughter plant	
General labour (pens, custodial)	$8 -10 per hour
Kill, prepare carcass	$10 -12 per hour
Processing plant	
Senior cutter	$15 -20 per hour
Cutting assistants	$12 -15 per hour
Packaging	$8 - 10 per hour

It typically requires one man-hour to kill and one man-hour to dress a carcass (basic breakdown). Breaking a carcass into HRI cuts requires three hours cutting time plus one hour packing.

[80] Canadian Food Inspection Agency. Meat Hygiene Manual of Procedures. Chapter 2: Construction of and Equipment in Registered Establishments. http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/chap2/2.1-5e.shtml#2.1
[81] Cattle Handling Faciities, Cattle Plan Service, Plan M-1800

Hazard Analysis Critical Control Point (HACCP) requires one person to manage and one person to act as the impartial 'checker' to review the plant for compliance.

Recruiting and retention are major issues in the meat processing industry. Many positions involve work with dangerous equipment like knives and power tools in unpleasant conditions. The industry rate of illness and injury per 100 workers is very high compared to the general economy. Rates of turnover of 25% to 30% per year are not uncommon. Combined with rural locations for most plants, ensuring a stable labour force can be a significant challenge.

Quality and Inspection Systems

A Hazard Analysis Critical Control Point (HACCP) plan is required for each food production line in a federally registered establishment and tailored to its individual product processing and distribution conditions.[82] Detailed requirements for sanitation and food safety are contained in CFIA Meat Hygiene Manual of Procedures (MOP).

Provincially regulated facilities require a CFIA inspector onsite during the killing process to inspect the cattle before and after the kill (ante- and post-mortem). The cost for this inspection is approximately $36 per hour, per inspector, and is paid by Manitoba Health.

Federally regulated facilities require a CFIA inspector and a veterinarian onsite at all times to inspect all processes. Under federal inspection, slaughter plants are invoiced approximately $2,500 per inspection station, per quarter. The number of inspectors varies with the volume of production, from 2 stations (one inspector and one veterinarian) for plants killing up to 30 head per hour, up to 7 stations (6 inspectors and one veterinarian) for those operating at 139 per hour[83]. CFIA estimates the minimum inspection fees for a federal slaughter facility would be $10,000 per year and about $2,500 per year for processing inspection.

Shipping

Major truck transportation companies in Manitoba and northern Ontario have fleets of refrigerated trailers ranging from 80 to 1,030 in operation year round. Major routes include between Brandon, Portage la Prairie and Winnipeg, across Canada, to the U.S. and Mexico. The average capacity of refrigerated trailers operating across Canada are 44,000 to 58,000 pounds for tandem and tri-axel trailers, and 44,000 to 44,500 pounds for tandem shipments to the U.S. and Mexico. Cross Canada shipments are typically between Alberta and Ontario and Quebec.

Base freight rates are estimated at approximately $2.00 to $2.50 per loaded mile plus freight service charges, and are dependent on freight flow, backhauls, and fuel prices. As examples, refrigerated freight transportation from Winnipeg, Manitoba to selected destinations is shown below:

Destination	Road Miles	Full Load Freight	Freight per Pound
Toronto	1,305	$2,610- $3,275	$0.059 – $0.074
Montreal	1,471	$2,942 - $3,678	$0.067 - $0.084
Vancouver	1,453	$2,906 - $3,633	$0.066 - $0.082

[82] Canadian Food Inspection Agency. Canadian Food Inspection Agency FSEP Implementation Manual Volume 1 - General Policy 2nd Edition. Chapter 3 - FSEP Program, Section 1 – Program Description. http://www.inspection.gc.ca/english/fssa/polstrat/haccp/manu/vol1/3-4e.shtml#ch3 Accessed July 22, 2004.
[83] Inspection Manager, CFIA.

Truck transportation companies indicate there is a high unmet demand for shipments by truck. One company suggests adding 200 trailers to a fleet would still not meet the demand. All companies interviewed indicated they would increase the capacity of their refrigerated fleets if a stable arrangement were established with a customer.

Some of the major constraints for trucking companies, particularly those seeking to increase capacity, include recruiting and maintaining qualified drivers and dispatchers, large capital investment and low return on capital, fuel prices, new border initiatives and administrative requirements, and insurance requirements and costs.

The high demand for truck transportation combined with the major constraints of the industry suggest refrigerated shipments from a slaughter/processing plant in Manitoba would likely require considerable advanced booking and regular shipments to secure capacity with transporters.

Waste Management

By-Product Waste

There is an estimated 59%[84] yield from live weight to carcass weight. Of the remaining 41%, approximately 6% is the weight of the hide, and a further approximately 5% can be sold as by-product for human consumption or pet food. The balance, including blood, becomes inedible offal.

The hide can range in value from $30 to the current high of $40 per quality hide. There are expenses of approximately $2 per hide (labour/salt) to store the hide until pick up, and a separate building is generally required. A processor typically requires 160 hides in storage before they are picked up.

Solid or by-product waste typically consists of inedible offal, blood, paunch manure, blood, hides, and trimmings. Inedible offals must be properly stored to prevent contamination of edibles. Disposal of inedible offal is generally arranged through contract. Solid waste averages approximately 400 pounds per animal.

The BSE situation has also significantly impacted the bovine rendering business. Since the BSE crisis, solid waste from plants that slaughter ruminant animals is shipped direct to landfills at the cost of the abattoir. The Canadian Beef Export Foundation estimates the increased rendering costs to be approximately $20 per head.[85]

Rothsay, a subsidiary of Maple Leaf Foods, is one of Canada's largest renderers. Rothsay recycles animal and poultry by-products into a broad range of commercial tallow and protein products. Prior to the BSE crisis, Rothsay regularly picked up by-product throughout the province, including areas in the northwest such as Dauphin, Swan River and Benito. Post-BSE, Rothsay picks up only as far north as Neepawa, the eastern side of the province, and the southwest.

Disposal fees for abattoirs range from $40 to $120 per metric tonne based on their distance from Winnipeg where Rothsay currently disposes of specified risk material (SRM) and by-products. Up to 2001, two years prior to BSE, Rothsay paid abattoirs $0.02 per pound to pick up beef by-products.

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[84] Alberta Government. Agriculture, Food and Rural Development. Exporting Live Cattle to the United States. <http.//www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sis931>

[85] A Review of Pricing in the Beef Industry, Alberta Agriculture, Food and Rural Development, March 2004.

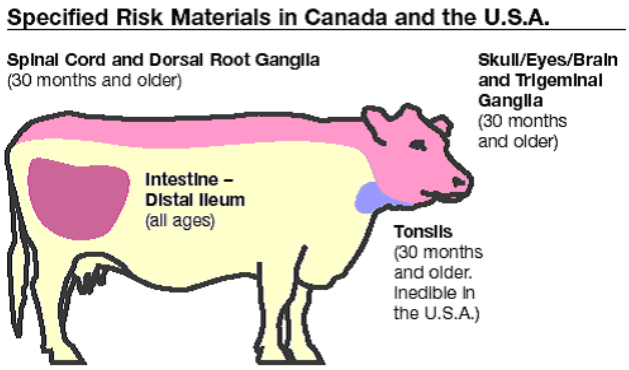
Rothsay provides stainless steel tubs to abattoirs, butchers and processors for disposal products. Rothsay picks up the disposal tubs, dumping the contents into a stainless steel trailer for transport to disposal or rendering in Winnipeg. Pick up schedules are dependent on slaughter volume and distance, and are generally matched to the plant requirements and kill schedules.

Disposal of inedible offal in landfills is not considered a long-term solution in Manitoba, particularly if cattle slaughter and processing increases in the province. Industry sources indicate two alternatives to dispose of SRM and by-products include composting and/or incineration. Some research is being done on ruminant carcasses as a source for biodiesel fuel[86] using incineration. All options are currently more expensive than landfill disposal and are still experimental.

Specified Risk Material (SRM)

A portion of by-products in over 30 month cattle is designated as specified risk material (SRM). SRM is defined as tissues that, in BSE-infected cattle, contain the agent that may transmit the disease[87].

Canada announced a specified risk material (SRM) ban from the human food chain effective July 24, 2003. All SRM's (includes brain, spinal cord, skull, trigeminal ganglia, dorsal root ganglia, intestine - distal ileum, eyes, and tonsils) must be removed from cattle 30 months of age and older slaughtered in any Canadian establishment as of July 24, 2003. The terminal ileum (last segment of the small intestine) will also be removed from all cattle slaughtered under 30 months of age. Canada will also increase inspection and compliance.



SRM. http://www.bseinfo.ca/english/home/srm.asp

Wastewater

Wastewater and sludge result from washing carcasses and surfaces, and can include blood, tissue, fat, urine, manure, dirt, feed, hair, sanitizers and cleaning agents. Fats, oils and grease (FOG) can cause problems for waste treatment systems (coating and clogging pipes) and generally must be removed through a pre-treatment system. Blood in particular has a very high Biochemical Oxygen Demand (BOD), meaning that as it breaks down, it uses high quantities of oxygen.

Conservation Requirements

A meat processing plant is subject to licensing requirements of the Province of Manitoba. A water license is required for demand volumes that exceed 25,000 litres per day. An environmental license is required for the discharge of any pollutants. This process includes a detailed application, which is reviewed by the government and is also subject to a public review process, which may include public hearings. Some aspects of this process may not be required where a plant is able to connect with an existing industrial waste treatment system that is already licensed with sufficient capacity to handle the additional effluent. Such capacity currently exists in very limited locations in Manitoba.

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[86] Agriweek Extended Access E-Mail Edition, July 12, 2004. Miscellany. *The mad-cow situation.*
[87] Health Canada. Fact Sheet. Specified Risk Material. July 2004.
http://www.hcsc.gc.ca/english/media/releases/2003/bse_factsheet.htm

According to Manitoba Conservation, typical process related limits (maximum levels) for discharge are:

30 mg/l Biochemical Oxygen Demand (BOD)
30 mg/l Total Suspended Solids (TSS)
200 maximum count fecal choliform by MPN method

The anaerobic breakdown of matter creates ammonia, which in concentrated amounts is toxic to the environment. Simply put, the waste treatment system used by a processing plant must be able to reduce the BOD, TSS and fecal choliform levels and convert the resulting ammonia into non-toxic substances or nutrients.

The Manitoba government has also committed to a nutrient reduction program for the Lake Winnipeg watershed area, which covers most of southern Manitoba. While not currently mandatory, it is likely that facilities will require nutrient removal in the future. Maximum nutrient levels, based on an annual average, are:

10 mg/l Nitrogen
1 mg/l Phosphorous

The system for monitoring nutrient levels may evolve to a rolling 30 day average rather than an annual average to permit more meaningful compliance monitoring.

Wastewater Systems

There are several wastewater solutions available depending on the requirements of the effluent discharge. Outlined below is an example of wastewater treatment requirements for a processing plant.

Wastewater is pumped from a collection pit, through a solid materials filter to a pre-treatment system such as a dissolved air floatation (DAF) unit. Pre-treatment systems such as DAF process units are used in the slaughter industry to remove fat, oil and grease (FOG). Adding acid chemical crushing to the influent stream of the DAF unit will remove blood protein, which otherwise creates high Biochemical Oxygen Demand (BOD) in the waste stream. Pumping from a collection pit, the DAF unit must be capable of handling the maximum peak flow of wastewater.

Alternatively, if the water is treated by a DAF unit with acid chemical crushing and with a tertiary treatment such as coagulation/flocculation/pH control, an equalization or balance tank with a mixer/aerator is used prior to transfer to the DAF unit. The equalization tank ensures a consistent load all day and the most economical way to dose chemicals. The tertiary treatment reduces the influent pollution load.

The DAF process produces a sludge that is removed from the DAF process unit by a conveyor or positive displacement pumps to a dewatering process to lower the water content. Dewatering process typically includes a centrifuge and belt press process unit. From the dewatering stage, the sludge is transferred to the storage or hauling trench. The sludge is then shipped to a rendering facility or to an approved landfill.

Depending on the pollution load levels, wastewater is then transferred to a city or municipal industrial waste/sewage treatment facility, or an aerobic lagoon system for future disposal (i.e., land irrigation).

An aerated lagoon system is designed based on the parameters of the effluent and method of final disposal. Generally, the effluent is aerated through three cells with a total holding time of approximately 50

to 75 days if pre-treatment is done prior to discharging to the lagoon. If the final disposal method is land irrigation, a general accepted practice is to have at least one year's storage capacity.

A number of factors influence the type and costs of waste management system, including a) the method of discharge (i.e., near a river for continuous discharge or held for 230 days in a lagoon system), b) soil type (sandy soil and/or high water table may require a geo-membrane lagoon liner), c) pre-treatment and resulting sewer strength, d) effluent treatment parameters required for release, and e) location in the province (environmental concerns and contractor mobilization).

For purposes of this report cost estimates for waste management systems have not been provided due to the complexity and process required for manufacturers and engineers to provide estimates. A listing of industry consultants is attached as Appendix 4 for site-specific analysis. General information indicates costs may range upward of $2 million for total systems, including a minimum of approximately $500,000 for pre-treatment systems.

Financial Analysis

Capital Requirements

Capital cost estimates for construction of a federal facility are approximately $300 per square foot. Specific examples with associated capacity are shown below[88]:

Facility Size	Capacity	Estimated Cost
6,000 sq. ft.	20 head per day (5,000 per year)	$1.8 million
10,000 sq. ft.	40 head per day (10,000 per year)	$3 million
18,000 sq. ft.	120 head per day (30,000 per year)	$5.4 million

All estimates are based on single shift operation. Capital cost estimates include slaughter and processing areas, coolers, freezer, welfare areas, office, and so forth, but excludes cattle pens and equipment.

[88] Sperling Industries, August 2004.

Example Capital Costs for a *Slaughter Only* Facility:	
Capacity	200 head per day, single shift
Plant area	14,000 square feet, includes slaughter facilities, cooler, shipping areas, office and welfare areas
	6,500 square foot basement for offal, bones, hide handling, etc.
Plant	$5 million[89]
Equipment	$1.5 million
Earthwork and Pens	$100,000 - $150,000
Waste Treatment	$500,000 pre treatment
	$1.5 - $2 million aeration and lagoon system (may range higher depending on site/soil conditions)
Total	**$8.6 - $9.2 million**

Operating Requirements

The following are estimated revenues and direct costs per head for a combined slaughter and processing plant for under 30 month cattle:

	Price/Cost	Pounds/Units	Per Head
Revenue			
Boneless boxed beef cut product	2.13 per pound	525 pounds	1,118.25
Offals	$.0 per pound	55 pounds	0.00
Hide			40.00
			1,158.25
Direct Expenses			
Cattle	$0.70 per pound	1200 pounds	840.00
Disposal	$100 per tonne	400 lbs	18.20
Freight	$5 per cwt	525 lbs	26.25
Labour	Avg $15.90 per hour	3.5 hours	55.65
Materials	$.10 per pound	525 lbs	52.50
Waste water	$0.75/Cum	2.3 m^3	1.70
Water	$0.005 per gallon	500 gallons	2.50
			996.80
Gross Profit, before fixed expenses		**14%**	**161.45**

Notes and Assumptions:

1. Price for boneless beef cut product is based on an average of prices reported in the Canada Boxed Beef Report in the first week of each quarter of 2004 (FOB Alberta), applied to a cut out assuming

[89] Sperling Industries, August 2004.

a 59% carcass weight yield and a 75% boneless cut product yield on a 1200 pound animal, with a calculated freight equalizer of 3 cents per pound.

2. No revenue is included for offal as export markets are important to this product category. Where markets are available, additional revenue of up to $30 per head may be achieved.
3. Cattle prices are based on the average live weight price for fed cattle since May 2003.
4. Freight is based on approximately 150 kilometres shipping to central distribution from Winnipeg.
5. Labour is based on an average wage of $13.50 per hour plus benefits.
6. The plant would pre-treat its effluent prior to discharge into a municipal/industrial wastewater treatment plant and water would be drawn from a municipal system.

The above example shows the potential for a 14% gross margin based on current cattle prices and boxed beef cut product prices. Gross profit will be quickly and significantly affected by an increase in live cattle prices as would be expected to occur with either increased domestic capacity or an open border. At current beef prices for basic cut product, gross profit is erased at 83 cents per pound live weight. Pre-BSE slaughter cattle prices averaged approximately 98.95 cents per pound live weight. A higher value product, significant operational efficiencies, or both would be required for a sustainable operation under normal trade conditions.

Greater value can be obtained by processing the meat into HRI cuts, through value-added processing (marinating, convenience foods, etc.) or premium grade meats for niche markets. Estimated additional value in HRI cuts is approximately $315 per head, with approximately $45 in additional processing costs, primarily packaging and labour, and potentially $30 to $50 per head additional shipping costs. Price premiums in niche markets (branded, natural, organic), particularly for middle cuts, have been reported to be as high as 50% for some, however may reasonably be expected in the 20% to 30% range.

Applying the standard example above (fed cattle/conventional beef) to a 50,000 head combined kill/processing facility results in the following:

50,000 Head Combined Slaughter/Processing Plant	Per Head	50,000 Head	
Revenue	$1,158	$57,900,000	
Direct Expenses	997	(49,850,000)	
Gross Profit	**$160**	**$8,050,000**	**14%**
General Expenses		(4,200,000)	
Operating profit before tax		$3,850,000	8%
Estimated taxes		(1,400,000)	
Net Profit After Tax		**$2,450,000**	**4%**

The above assumes a total capital cost of $14.7 million, financed by approximately equivalent debt and equity. See Appendix 5 for detail.

Break Even Analysis

Based on a 14% gross margin and overhead of $4.2 million, a plant with capacity to process 50,000 head per year would break even at approximately 26,000 head.

Overhead ÷ Gross Margin = Break Even Revenue
$4.2 million ÷ 14% = $30.2 million

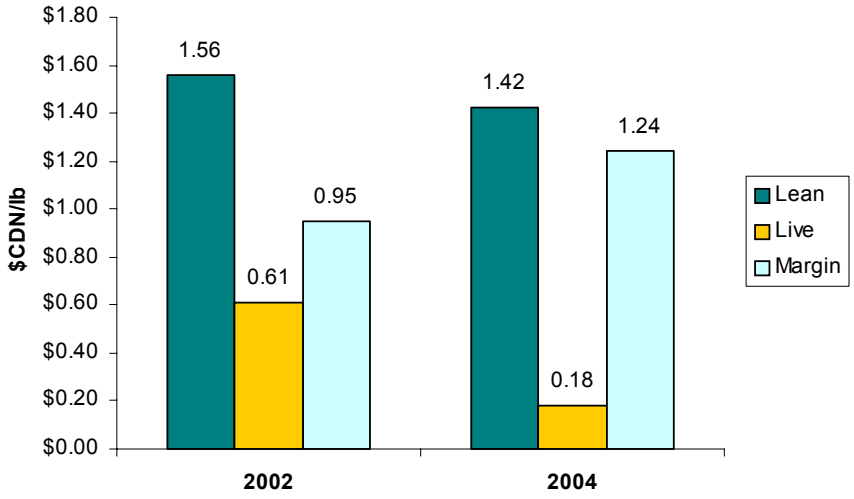
Break Even Revenue ÷ Revenue Per Head = Required Volume
$30.2 million ÷ $1,160 = 26,034 head

Cull Cow Processing

Gross margins are currently unusually strong in the cull cow sector. Because of the current shortage of processing capacity, live weight prices for cull cattle have been as low as $10/cwt live, averaging at $16 since the closure of the U.S. border. Because supplementary imports have been suspended, demand for manufactured beef has kept prices fairly firm.

As shown in the chart below, the average margin from live weight price to 85% lean boneless beef price was approximately $1.42 per pound in 2004 after supplementary imports were suspended, versus approximately 95 cents per pound for the same period of 2002.

Comparison - Live vs Lean Prices



While live cattle prices are lower, some processing expenses, including waste disposal and inspection can be expected to be higher in the post BSE environment, as estimated below. This results in a gross margin before fixed expenses of over 50% in the current environment, versus less than 5% pre-BSE.

Cull Cow Example		Pre-BSE		Post-BSE
Revenue per head		$935		$852
Direct expenses		$890		$395
Live Cattle per head	$730		$220	
Labour/Other per head	$160		$175	
Gross Profit (before fixed expenses)		$45 (4.8%)		$457 (54%)

As the potential for export of live cattle over thirty months is considered very low in the foreseeable future, live prices are likely to remain below pre BSE levels. However, live prices will rise to some degree and lean prices may fall with increased processing capacity in Canada, suggesting margins will not continue at this level on a long term basis. As noted earlier, this market is highly price sensitive. In Manitoba, with an average cull of approximately 60,000 to 75,000 head per year, a cull cow plant with capacity for this volume becomes non-economic (does not achieve break even) over approximately 51 cents per pound live weight, unless beef prices increase or greater value can be obtained for middle cuts or through value added processing.

Further challenges include achieving the quality and consistency standards required by the secondary processors purchasing this product to maintain the restriction on supplementary imports.

Summary / Conclusions

Market Opportunity

- Cattle production in Canada currently exceeds processing capacity by approximately 1 million head per year. While production also exceeds consumption by approximately 800 million pounds, in 2003 Canada also imported approximately 500 million pounds. Export markets are significantly important to the Canadian industry.
- The majority of Canada's exports have in the past been destined for the U.S. Emerging export markets in Mexico and Asia present significant potential for Canadian beef under normal trade circumstances.
- Border closures in response to the reported case of BSE in Canada in May 2003 have resulted in a significant imbalance in the industry. This has resulted in low prices for fed cattle, and an almost complete loss of value and significant build up in cull cattle. Manitoba has been particularly impacted because of its past reliance on shipments of live animals to the U.S.
- The processing industry is responding with the construction and expansion of facilities. Total capacity is expected to exceed 90% of domestic production by the end of 2005. There is a general belief that the U.S. border will again open to live cattle under 30 months, likely in the near term. This suggests that, in contrast to the current situation, in the near term there will again be competition for supply of under 30 month cattle.
- There is also a general belief that live cattle over 30 months will *not* be exported in the near future. The segregation of cattle required by the U.S. has resulted in an even greater focus on under 30 month cattle in domestic plants, leaving little processing capacity for older cattle. The suspension of

supplementary import quotas resulted in an increase in domestic demand for approximately 120,000 head of cow beef.

- The beef processing and food retail industries are dominated by a small number of very large players. The power of the participants in this supply chain and intense price competition create significant barriers to entry. Demand for conventional beef is also declining. This suggests that there is little opportunity for new entrants to effectively compete in conventional products and markets.

- There is a significant increase in demand for organic and natural beef products that consumers perceive to be safer and of higher quality. The traceability systems involved in production of these products is currently considered a barrier to the large processors, creating an opportunity for smaller participants in the industry. While increasingly seen in mainstream grocers, organic and natural beef products are also distributed in regional chains and specialty stores that are more accessible to smaller suppliers. European markets, where there is particularly rapid growth in organic products, are also more fragmented, reducing the attraction to larger suppliers. These higher value products also allow smaller operations to effectively compete, in comparison with commodity products where the economies of scale available to the major packers are necessary to survive.

- Potential demand in Manitoba for product from provincial facilities is very nearly met with existing capacity. The supply chain for the majority of beef consumed in the province involves the national supermarket chains, which purchase only from federally registered facilities. While some limited niche market opportunities exist within the province, the demand necessary for an economic federal facility will require access to markets outside of the province, and potentially outside the country. Manitoba is at a disadvantage in terms of distance to major markets, particularly in comparison to Alberta and Ontario.

Financing and Operational Considerations

- Manitoba has historically finished approximately 225,000 head annually. Based on feedlot capacity of 100,000 head and industry expectations for 2.5 to 3 turns per year, the maximum size processing industry that can be supported within the province with current production is therefore approximately 250,000 head. Existing processing capacity is approximately 20,000 head, suggesting potential for an additional 230,000 head, including approximately 65,000 cull cattle. While a cull cattle facility may successfully secure most of the cull cattle supply, there will be more competition for fed cattle, and therefore processing capacity for fed cattle at some value less than total production is more reasonable.

- Securing a stable supply, particularly for plants processing fed cattle, is critical to success. A Manitoba plant must be able to offer competitive prices for live cattle to withstand the pull of future cross-border demand. U.S. prices have, in the recent past, exceeded the freight differential. This situation is highly subject to the value of the Canadian dollar relative to U.S. currency, and creates an added risk.

- Whether for natural, organic or “conventional” beef, the demand for animal traceability, particularly in export markets, can be expected to increase supply chain costs and management requirements.

- Secondary processors and purchasers of manufactured beef have previously sought supplementary import quotas as the imported product more consistently provided the required characteristics at a competitive price. Accessing these markets for cow beef may require changes in production practices for cull cows, and resulting increases in costs.

- There are limited areas within the province that have existing industrial waste treatment plants with capacity to support the addition of a meat processing facility of any size. Stand alone waste treatment systems can add in excess of $2 million to capital costs, creating barriers to expansion of existing plants as well as a cost disadvantage for new construction.
- The lack of a rendering industry for beef by-products in Manitoba places the province as a whole at a disadvantage. Disposal of animal by-product can increase direct processing costs (excluding cattle) by as much as 14%, and current practices of disposal in land fill may not be sustainable in the long term.
- While a common problem across the industry, recruitment and retention of labour can be expected to be a particular challenge in Manitoba, especially in rural areas. There is a general lack of national-level experience within Manitoba in this industry.
- The beef industry can be quite volatile, particularly for commodity markets. Competition for supply, when it occurs, can quickly dissolve packer margins. Operating profits in stable circumstances are modest, and require skilled management to achieve both production efficiency and maximum value for a perishable product. Because of the variability in the industry, sustainability demands fairly conservative debt levels, however facility and regulatory requirements create high capital costs. Attracting investment may be challenging, particularly from outside of the cattle industry, where vertical integration has some potential to concentrate value in the supply chain. Attracting investment from within the industry may currently be limited by the significant financial pressures on cattle producers since May 2003.

Conclusions

- Expanded beef processing in Manitoba is challenging. The greatest potential opportunities relate to cow beef and niche markets, from both a market access perspective and in terms of cost structure.
- Because of the importance of economies of scale, existing processors are more likely to consider expansion of their existing facilities than development of new ones in Manitoba.
- Both cow beef and niche markets require market development beyond the province. Because of the high capital costs associated with a processing plant and the perishable nature of the product, long ramp up periods may not be possible financially. Clearly defining the product, establishing a market, and confirming suitable supply prior to major capital investment will be important to increase the likelihood of success.
- In addition to market development, significant expertise is required to effectively manage a federal facility and profitably market product. Securing this expertise early in the process of establishing a plant will be fundamental to the success of the project.
- Over the long term, alternatives for by-product disposal must be developed to enable a sustainable beef processing industry in Manitoba.

Appendix 1

Primal Yields

Chuck	28.94%
Rib	9.42%
Full Plate	12.42%
Shank	3.78%
Hip	25.21%
Loin	15.48%
Flank	4.77%
	100.00%

CANADIAN BOXED BEEF CUT PRODUCT - 2004

Source: CanFax Boxed Beef Reports and Model Cut Yield

Chuck Primal - Boneless Chuck 2 pc style

Components	% of Primal	% of Total	Pounds*	Jan 5 Price	Apr 5 Price	Jul 5 Price	Oct 4 Price
Boneless Chuck 2 piece	64.29%	18.6%	130.2	1.99	1.19	1.48	1.55
Pectoral Muscle	2.33%	0.7%	4.7	2.75	1.98	2.29	2.17
Boneless Neck & Shoulder	2.14%	0.6%	4.3	1.99	1.19	1.48	1.55
85% Trim	11.35%	3.3%	23.0	1.46	1.35	1.66	1.39
			162.26				

Rib Primal - Lip-on Ribeye 2X2 style

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Lip-on Ribeye 2x2	34.77%	3.28%	22.93	6.13	6.43	7.12	6.19
Blademeat	12.17%	1.15%	8.02	2.81	2.12	2.26	2.24
65% Trim	3.40%	0.32%	2.24	0.57	0.23	0.61	0.52
50% Trim	7.50%	0.71%	4.95	0.57	0.56	0.61	0.52
			48.26				

Loin Primal - HRI Loin Heavy style

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Striploin 0x1 13up	20.06%	3.10%	21.73	4.33	5.64	6.85	5.25
Top Butt 13up	20.76%	3.21%	22.49	2.78	3.34	4.23	2.93
Tenderloin 5up	9.81%	1.52%	10.63	11.54	10.56	10.86	9.81
Tri-tips	2.35%	0.36%	2.55	1.45	1.35	1.66	1.39
85% Trim	7.08%	1.10%	7.67	1.45	1.35	1.66	1.39
65% Trim	5.63%	0.87%	6.10	0.57	0.56	0.61	0.52
50% Trim	6.08%	0.94%	6.59	0.57	0.56	0.61	0.52
			77.74				

Hip Primal - HRI Hip with Flat and Eye style

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Inside Round	22.41%	5.65%	39.54	2.36	2.32	2.05	2.07
Flat (Outside)	14.68%	3.70%	25.90	2.27	1.45	1.65	2.17
Eye of Round	6.89%	1.74%	12.16	2.55	2.10	2.25	2.62
Peeled Knuckle	11.56%	2.91%	20.40	2.50	1.85	2.26	2.23
Hind Shankmeat	6.44%	1.62%	11.36	1.46	1.35	1.66	1.39
Tri-tips	1.53%	0.39%	2.70	1.46	1.35	1.66	1.39
85% Trim	4.95%	1.25%	8.73	1.46	1.35	1.66	1.39
65% Trim	5.05%	1.27%	8.91	0.57	0.56	0.61	0.52
50% Trim	1.98%	0.50%	3.49	0.57	0.56	0.61	0.52
			133.19				

Primal Full Plate

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Brisket	20.33%	2.52%	17.67	1.67	1.33	1.39	1.45
Inside Skirt	1.50%	0.19%	1.30	3.49	2.94	2.92	2.58
Outside Skirt	2.28%	0.28%	1.98	5.28	2.51	2.27	2.29
60% Trim	44.20%	5.49%	38.41	0.57	0.56	0.61	0.52
			59.36				

Primal Front Shank

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Boneless Front Shankmeat	61.85%	2.34%	**16.37**	**1.46**	**1.35**	1.66	**1.39**

Primal Flank

Components	% of Primal	% of Total	Pounds*	Jan Price	Apr Price	Jul Price	Oct Price
Flank Steak	10.51%	0.50%	3.51	4.08	4.49	5.38	3.74
65% Trim	58.72%	2.80%	19.61	0.57	0.56	0.61	0.52
50% Trim	3.28%	0.16%	1.10	0.57	0.56	0.61	0.52
			24.21				

Total			**521.40**				
Total average price per pound				2.25	1.93	2.19	2.06

* Weight calculated based on 700 lb carcass weight

Appendix 2

June 2004

DOMESTIC/CANADA APPROVED MEAT AND POULTRY PLANTS

Man 01
Herman Meuller
Valley Meat Packers
Box 746
Swan River MB R0L 1Z0
Phone: 525-4201
Fax: 525-4895

Man 02
Harvey Dyck
Dauphin Meat Processors
Box 98
Dauphin MB R7N 2T9
Phone: 638-6016
Fax: 638-3213

Man 03
Lee Perreault or Mr. Murray Simpson
Prairie Abattoir
Box 105
Portage la Prairie MB R1N 3B2
Phone: 857-7120
Fax: 857-7100

Man 04
Robert Jowett
Country Meats and Sausage Ltd.
Box 250
Blumenort MB R0A 0C0
Phone: 326-3252
Fax: 326-7732

Man 05
Pat Haywood
B J Packers
Box 609
Beausejour MB R0E 0C0
Phone: 268-3056
Fax: 453-2255

Man 06
Bernie Penner
Pioneer Meats Ltd.
Box 998
Altona MB R0G 0B0
Phone: 324-5454
Fax: 324-1759

June 2004

DOMESTIC/CANADA APPROVED MEAT AND POULTRY PLANTS

Man 07
Gerry or Donald Delaquis
Swan Lake Abattoir
Box 70
Swan Lake MB R0G 2S0
Phone: 836-2467
Fax: 836-2199

Man 08
Jim Holmes
Carman Meats
Box 447
192 Main Street North
Carman MB R0G 0J0
Phone: 745-2763
Fax: 745- 2037

Man 09
Ed Schon
Interlake Packers Ltd.
Box 10
St. Laurent MB R0C 2S0
Phone: 646-2172
Fax 646-2151

Man 10
Mr. Norbert Picton
St. Claude Abattoir
Box 182
St. Claude MB R0G 1Z0
Phone: 379-2157

Man 11
Gilbert Kohlman
Oak Ridge Meats
Box 178
McCreary MB R0J 1B0
Phone/Fax: 835-2365

Man 12
John Jenkinson
Jenkinson's Meat Market and Locker Plant
Box 112
Treherne MB R0G 2V0
Phone: 723-2306
Fax: 723-2000

June 2004

DOMESTIC/CANADA APPROVED MEAT AND POULTRY PLANTS

Man 14
Larry Danyluk & Monica Skelton
Souris Valley Processors (1998)
Box 460
Melita MB R0M 1L0
Phone: 522-8210
Fax 522-8210

Man 15
Derek Shamray
Oak River Quick Freeze (1994) Ltd.
Box 58
Oak River MB R0K 1T0
Phone: 566-2385
Fax: 566-2175

Man 16
Mr. L. Austin
Birtle Abattoir
Box 177
Birtle MB R0M 0C0
Phone: 842-3262

Man 18
Mr. Brian R. Lenton
Plains Processors Ltd.
Box 1259
Carman MB R0G 0J0
Phone 745-3068
Fax: 745-6105

Man 19
David & Wendy Page
Benito Meats
Box 248
135 Railway Avenue
Benito MB R0L 0C0
Phone: 539-2218
Fax: 539-2736

Man 21
Ray Madill
Madill Meat Processing
Box 1650
Minnedosa, MB R0J 1E0
Phone: 865-2282

DOMESTIC/CANADA APPROVED MEAT AND POULTRY PLANTS

Man 22
Lynne & Brian Renard
Renard's Meat Services
Box 1387
Virden MB R0M 2C0
Phone: 748-1889
Fax: 748-2879

Man 23
James Berscheid
Berscheid Meats
Box 629
The Pas MB R9A 1K7
Phone: 623-3930
Fax: 623-1512

Man 24
Brian Bernard
Killarney Meats Ltd.
Box 999
Killarney MB R0K 1G0
Phone: 523-4308
Fax: 523-7727

Man 25
Jake & Frank Peters
Family Choice Meats
102 – 8th Street South
Winkler MB R6W 2N6
Phone: 362-0294
Fax: 325-0661

Man 26
Marc Bellon
Prairie Rose Meat Ltd.
Box 1349
Souris MB R0K 2C0
Phone: 483-2765
Fax: 483-2765

Man 27
Cal Fairbairn or Rob Wrightson or Gene Traill
East 40 Packers Ltd.
700 Grandview Street
Brandon MB R7A 7L2
Phone: 727-3163
Fax: 727-3452

DOMESTIC/CANADA APPROVED MEAT AND POULTRY PLANTS

Man 28
Garth or Marjorie Jarvis
Jarvis Meats Ltd.
Box 107
Gladstone MB R0J 0T0
Phone: 385-2506
Fax: 385-3203

Man 29
Leven Koltusky
Sandy Lake Locker Plant
Box 115
Sandy Lake MB R0J 1X0
Phone: 585-2671

Man 30
Fred De Bruin
Trail Meats (1984) Ltd.
Box 1326
Neepawa MB R0J 1H0
Phone: 476-3366
Fax: 476-3092

Man 32
Joey Waldner
Westman Processors Ltd.
General Delivery
Brookdale MB R0K 0G0
Phone: 354-2318
Fax: 354-2344

Man 33
Harry Waldner
Waldner's Meats
Box 511
Niverville, MB R0A 1E0
Phone: 388-4562
Fax: 388-5165

Man 34
Harry Dyck
Winkler Meats Ltd.
Box 759
Winkler, MB R6W 4A8
Phone: 325-9593
Fax: 325-5735

Appendix 3

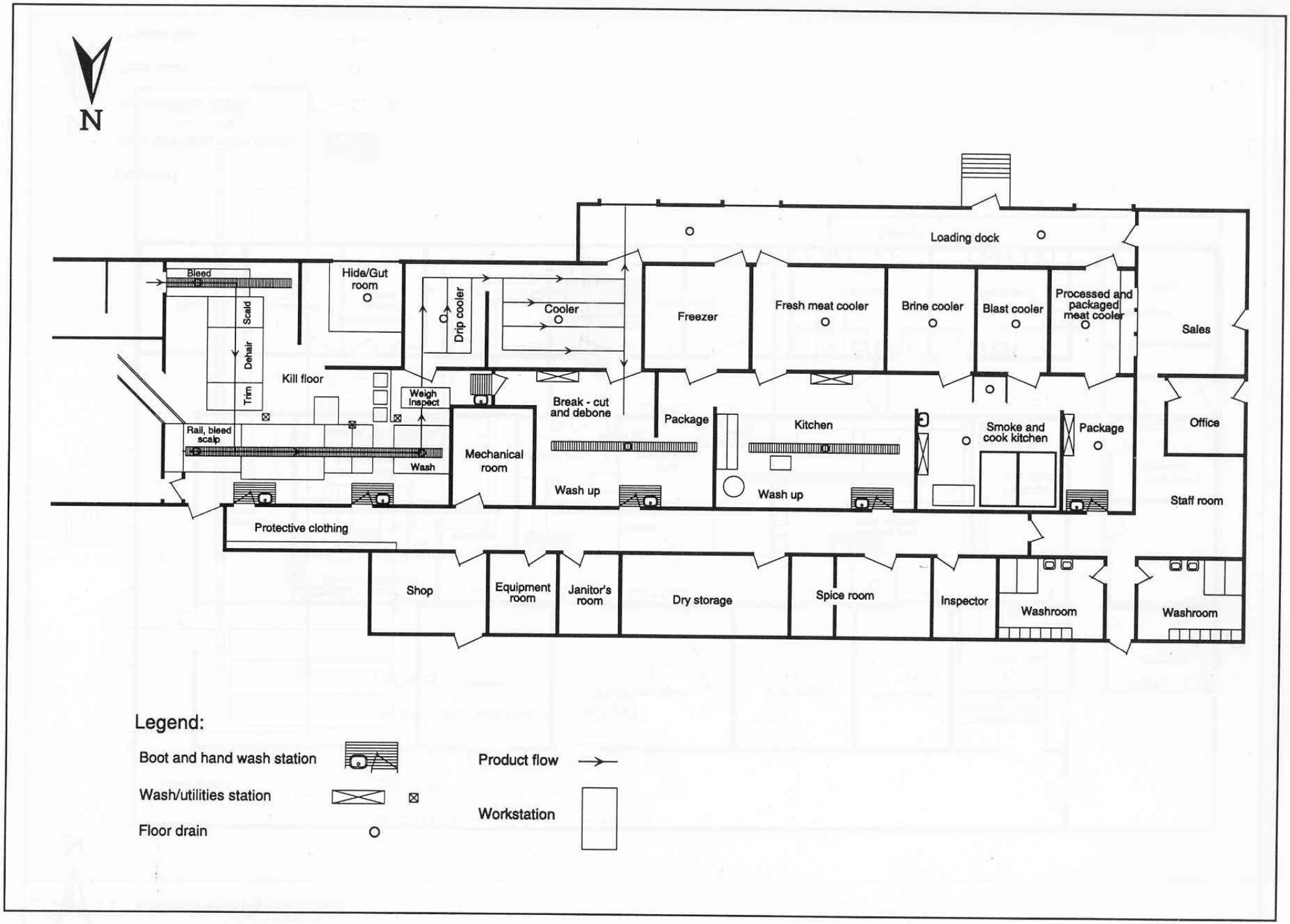


Figure 9. Red meat abattoir and processing plant (access to all sides)

Appendix 4

Consultant References

Firms and consultants able to assist in the development of new plants:

Stork-MPS Meat Processing Systems
Jan Bos, General Sales Manager
Lichtenvoorde-the Netherlands
Phone: (+31)544 390628
Fax: ((+31)544 375255
Email: j.bos@mps-group.nl
Mr. Jason Richter
Lenexa, Kansas, USA
Phone: 1 913 310 0055
Fax: 1 913 310 0088
Email: jrichter@stork-mps-usa.com
www.mps-group.nl

J.R.Cousin Consultants Ltd.
Mr. Jerry Cousin, P.Eng.
Winnipeg, Manitoba
Phone: 204.489.0474
Fax: 204.489.0487
www.jrcc.ca

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Appendix 5

APPENDIX 5

Example Revenue and Expenses - 50,000 Head Slaughter/Processing Facility

Revenue		Per head	50,000 head
Boneless boxed beef cut product	$	1,118.25	$55,912,500
Offals		$0	0
Hide		40.00	2,000,000
			$57,912,500
Direct Expenses			
Cattle		$840.00	42,000,000
Disposal		18.20	910,000
Freight		26.25	1,312,500
Labour		55.65	2,782,500
Materials		52.50	2,625,000
Waste water		1.70	85,000
Water		2.50	125,000
			49,840,000
Gross Profit			$8,072,500
General Expenses			
Advertising and promotion			579,125
Amortization[1]			977,610
CFIA Inspection			20,000
Insurance			103,275
Interest[2]			510,000
Management and admin salaries and benefits			864,800
Miscellaneous			25,000
Professional fees			15,000
Property taxes			650,000
Repairs and Maintenance			147,125
Training			36,473
Uniforms			25,000
Utilities			250,000
			$4,203,408
Operating profit before tax			$3,869,092
Estimated taxes			(1,401,519)
			$2,467,513

Notes/Assumptions:

1. Capital Cost:

Building	24,000 sq. ft. @ 300 per sq ft		$7,200,000
Equipment			3,000,000
Waste treatment			500,000
Taxes		14%	1,498,000
Design		11%	1,177,000
Contingency		10%	1,337,500
			$14,712,500

2. Amortization is based on an expected useful life for the building (including utility systems) of 15 years and equipment 10 years.
3. CFIA Inspection is based on two stations.
4. Interest is based on first year interest for term debt of $6.1 million over a term of 15 years at 7% per annum.
5. Insurance is based on $6 per $1,000 asset coverage, plus $5 per $1,000 liability with $3 million liability coverage
6. Management and administration salaries include:

General Manager	125000	1	125,000
Marketing Manager	75,000	1	75,000
Sales	50,000	2	100,000
Production Manager	75,000	1	75,000
Supervisors	42,000	6	252,000
Administration	25,000	5	125,000
			677,000
Benefits	15%		112,800
Total			$ 864,800

6. Taxes are estimated at an overall average of 38%.

Appendix 6

References

A

A Strategic Plan for the Canadian Beef Cattle Industry. August 20, 2004

Agriculture and Food Council. Value Chain Initiative. Value Chains in Action Success Stories. Accessed July 26, 2004. http://www.agfoodcouncil.com/serve/chainstory5.html

Alberta Agriculture, Food and Rural Development. Commercial Beef Niche Market Alternatives. February 2001

Alberta Agriculture, Food and Rural Development. Review of Pricing in the Beef Industry. March 2004.

Agriculture and Agri-food Canada. Retail Sales Data 2003.

Agricultural Marketing Service. Market News Reports. Accessed October 25, 2004.
http://www.ams.usda.gov/mnreports/lm_ct180.txt
http://www.ams.usda.gov/mnreports/lm_ct170.txt

Ag Ventures. Agriculture Business Profiles. Commercial Beef Niche Market Alternatives. Canada Alberta Farm Business Management Initiative and Alberta Agriculture, Food and Rural Development. February 2001.

B

"BSE Tests For All Cattle Called Red Herring". Manitoba Co-operator. Vol.62, No. 28. Winnipeg. July 8, 2004

Brody, Aaron. "Case-Ready Fresh Red Meat: Is it Hear or Not?" Food Technology, Vol. 56, No. 1, January 2002, as cited in The Market for Case-Ready Beef, by Hodgins & Company for Saskatchewan Agriculture, Food and Rural Revitalization, June 2002.
Bridge Brand. Meat and Poultry. Accessed July 26, 2004. http://brdgebrand/meatand.htm

BSEinfo. Accessed September 29, 2004. http://www.bseinfo.ca

Beef Information Centre. Canada's Beef Industry Fast Facts. March 2004 and June 2004.
www.beefinfo.org

Beef Information Centre. Canada's Beef Cattle Industry. Accessed July 22, 2004
www.beefinfo.org

C

COWI Consulting Engineers and Planners. Cleaner Production Assessment in Meat Processing. www.agrifood-forum.net/publications/guide/m_chp2.pdf.

Come and Get It!mmmmmmm Manitoba Beef. Manitoba Agriculture, Food and Rural Initiatives. October 2003 and February 2004.
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_central.html
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_nw.html
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_rest.html
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_ei.html
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_sw.html
http://www.gov.mb.ca/agriculture/livestock/beef/mb_beef_buyer_wpg.html

Canada's Beef Cattle Industry. Beef Information Centre. Accessed July 22, 2004. www.beefinfo.org

Canfax.ca.Statistical Briefer. Per Capita Meat Consumption 2003 (Carcass equivalent). http://www.canfax.ca

Canadian Food Inspection Agency. Canadian Food Inspection Agency FSEP Implementation Manual Volume 1 - General Policy 2nd Edition. Chapter 3 - FSEP Program, Section 1 – Program Description. Accessed July 22, 2004.
http://www.inspection.gc.ca/english/fssa/polstrat/haccp/manu/vol1/3-4e.shtml#ch3

Canadian Food Inspection Agency. Consultation Paper on Elimination of Prior Approval Requirements for Equipment Intended for Slaughter of Food Animal and Handling of Meat Products Used in Establishments Registered Under the Meat Inspection Act and Regulations.
http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/chap2/consulte.shtml.
Accessed July 22, 2004.

Canadian Food Inspection Agency. Registered Establishment List. Accessed July 26, 2004.
http://active.inspeciton.gc.ca/active/reglst/RegResults.asp?1=E

Canadian Food Inspection Agency. Canada to Enhance BSE Feed Controls. July 9, 2004. Ottawa. Accessed October 15, 2004.
http://www.inspection.gc.ca/english/corpaffr/newcom/2004/20040709e.shtml

Cattle and Beef Sector Profile. http://www.gov.mb.ca/agriculture/statistics/pdf/aac02s01.pdf

Covering New Ground Manitoba's Agricultural Sustainability Initiative. Presentation. Southwest Region. Overview of Regional Resources. CNG Southwest Region Consulting Report. March 2003. Accessed August 20, 2004.
http://www.gov.mb.ca/agriculture/research/covering/pdf/cng03s15p.pdf.
http://www.albertabeef.org/04beef.html

Cargill Foods West-Can Price List – Manitoba. August 2 – 7, 2004

Cargill Limited. Beef Processing. Accessed October 15, 2004.
http://www.cargill.ca/business/beef.htm

Canadian Boxed Beef Report. July 19, 2004. George Morris Centre. Guelph.

Canadian Beef Export Federation, sourced from CANFAX and Statistics Canada Statistical Briefer, CanFax Research Services, May 2004.

Cattlehome. Meat Packing and Processing. Accessed June 9, 2004. http://www.cattlehome.com/pk.html

Canadian Council of Grocery Distributors. CCGD Distributor and Foodservice Member Companies. Accessed July 26, 2004. http://www.ccda.ca/en/2_3.html

Canadian Cattleman's Association. Daily Update. October 14, 2004. Accessed October 15, 2004. http://www.info-cca.ca

Canadian Meat Council. Industry Statistics. Canadian Livestock and Meat Industry – Executive Summary. Accessed October 15, 2004. http://www.cmc-cvc.com/english/industry_statistic_e.asp.

"Canadian Beef Cattle Industry Overview: Canadian Beef – World's Finest: It Just Doesn't Get Any Better!" Canada Beef Export Federation. Home Page: Publications/Other/Industry. http://www.cbef.com/CBEF_int.htm

D

DVL Publishing Inc. Atlantic Beef. Accessed May 31, 2004. http://www.countrymagazines.com/abg.html

E, F

"Fumbling in the Dark – The U.S. agriculture department is anxious to do its best, but does it know what it is doing?" Agriweek Extended Access E-Mail Edition. July 12, 2004.

Foodservice.Com. Market Reports. Beef, Veal and Lamb Report. July 23, 2004. http://www.foodservice.com/marketprices/beef/072304.cfm

Fuchshofen, Dr. Winfried and Silke Fuchshofen. Organic Trade Association's Export Study for U.S. Organic Products to Asia and Europe. Organic Insights, Inc. December 2000.

G

Grier, Kevin and Larry Martin. Special Report: Beef Pricing and Other Contentious Industry Issues. George Morris Centre. March 16, 2004.

Grier, Kevin. "Market Analysis for the Cattle and Beef Industry". Canadian Cattle Buyer. Guelph. George Morris Centre.

Goodon Food Service. Accessed July 26, 2004. http://www.gfs.com

H

Health Canada. Diseases and Conditions. Frequently Asked Questions. May 22, 2004. Accessed October 15, 2004. http://www.hc-sc.gc.ca/english/diseases/bse/faq.html

Health Canada. Food Program. Food Directorate Policy on Specified Risk Material (SRM) in the Food Supply. Accessed October 15, 2004. http://www.hc-sc.gc.ca/food-aliment/fpi-ipa/e_policy_srm.html

Health Canada. Fact Sheet. Specified Risk Material. July 2004. Accessed October 15, 2004. http://www.hc-sc.gc.ca/english/media/releases/2003/bse_factsheet.htm

Health Canada. Federal Regulations Amended to Enhance BSE Controls by Preventing Specified Risk Material from Entering Human Food Supply. July 24, 2004. Ottawa. http://www.hc-sc.gc.ca/english/media/releases/2003/2003_59.htm

Haney, Ted. "Inside the Export Marketplace." Canada Beef Export Federation. August 2004.

I, J

JIV Daya Digest. Rendering Plants. Recycling of Dead Animals and Slaughterhouse Wastes. Accessed October 12, 2004. http://www.jivdaya.org/rendering_plants.htm

K

Kienholz, John (ed.). Meat Processing Facilities in Alberta. Alberta Agriculture, Food and Rural Development Engineering Services Branch. Edmonton. June 1995.

Koller Agri-Food Development Ltd. (for Agriculture and Agri-Food Canada.) Prairie Organic Beef Costs and Returns Study. March 1999.

L

Lakeside Packers. Accessed October 15, 2004. http://www.lakesidepackers.com/main.htm

M

Mcewen, Dr. Thomas J. and Dr. Richard C. Rounds. Issues Relating To Value-Added Processing of Agricultural Products in Manitoba. Rural Development Institute Brandon University. Brandon. 1994.

Manitoba Health. Manitoba Provincial (Domestic) Standards for Plants Engaged in Slaughter and Primary Processing of Meat Animals: Manitoba Health. June 2001.

Manitoba Conservation. Environmental Stewardship Division. Environmental Approvals Branch. Publications and Forms. Accessed October 22, 2004. http://www.gov.mb.ca/conservation/envapprovals/publs/index.html

Manitoba Agriculture, Food and Rural Initiatives. Provincial Beef Abattoirs. January 2003. Accessed September 8, 2004.
http://www.gov.mb.ca/agriculture/livestock/abattoir/bac00s01.html

Manitoba Agriculture, Food and Rural Initiatives. Manitoba Markets Livestock. September 2, 2004. Accessed May 3, 2004.
http://www.gov.mb.ca/agriculture/news/markets/livestock/index.html.

Manitoba Agriculture, Food and Rural Initiatives. Manitoba Markets Livestock. April 30, 2004. Accessed September 8, 2004.
http://www.gov.mb.ca/agriculture/news/markets/livestock/index.html.

Manitoba Agriculture, Food and Rural Initiatives. Agriculture Statistics. Profitability Profiles for the Beef Cattle Industry in Manitoba. Accessed September 8, 2004.
http://ww.gov.mb.ca/agriculture/statistics/aac09s01.html.

Manitoba Agriculture, Food and Rural Initiatives. Agriculture Statistics. Manitoba Beef Industry Facts. October 2002. http://ww.gov.mb.ca/agriculture/statistics/aac13s00.html.

Manitoba Agriculture, Food and Rural Initiatives. Livestock. Meat Inspection in Manitoba Provincial and Federal Legislation. March 2001.
http://www.gov.mb.ca/agriculture/livestock/abattoir/bac10s02.html

Manitoba Agriculture, Food and Rural Initiatives. Rural Organization. Manitoba Women's Institute Educational Program. How Do we Know Our Food is Safe? October 2003. Accessed July 21, 2004. http://www.gov.mb.ca/agriculture/organizations/wi/mwi15s01.html

Manitoba Agriculture. Manitoba Markets- Livestock. Program & Policy Analysis. Internet Edition. From January 7, 2000 to July 16, 2004.
http://www.gov.mb.ca/agriculture/news/markets/livestock/07012000index.html to
http://www.gov.mb.ca/agriculture/news/markets/livestock/20040716index.html

Manitoba Agriculture, Food and Rural Initiatives. Agriculture Statistics. Statistics Factsheet. – Livestock Prices, 1997-2002, Manitoba. June 2003.
http://www.gov.mb.ca/agriculture/statistics/aac10s11.html

Manitoba Agriculture, Food and Rural Initiatives. Agriculture Statistics. Statistics Factsheet. – Federally/Provincially Inspected Livestock Slaughtered in Manitoba, 1997-2002. June 2003.
http://www.gov.mb.ca/agriculture/statistics/aac10s10.html

Manitoba Agriculture, Food and Rural Initiatives. Agriculture Statistics. Industry Facts – Beef. October 2002. http://www.gov.mb.ca/agriculture/statistics/aac13s00.html

Mariner Neptune. Accessed July 26, 2004. http://www.marinerneptune.com

"Manitoba Beef Industry Told Opportunities Await". Western Producer. December 2002.

Manitoba Agriculture and Food. 2002 Manitoba Agriculture Yearbook. Pages 48 and 55. http://www.gov.mb.ca/agriculture/statistics/yearbook2002/aaa16s02.pdf Accessed August 20, 2004.

"Manitoba Surpasses BSE Testing Target". Manitoba Co-operator, Vol.62, No. 28. Winnipeg. July 8, 2004.

Manitoba Farm and Rural Stress Line. BSE Update: Bovine Spongiform Encephalophathy (Mad Cow Disease). July 23, 2004. http://www.ruralstress.ca/news/2003/07_23.html

Market for Case Ready Beef, by Hodgins & Company for Saskatchewan Agriculture Food and Rural Initiatives, June 2002.

Manitoba Farm and Rural Stress Line. BSE Update: Bovine Spongiform Encephalopathy (Mad Cow Disease). July 23, 2003. Accessed October 12, 2004. http://www.ruralstress.ca/news/2003/07_23.html

N

The North American Market for Organic Meat Products, Organic Monitor, January 30, 2004 as cited by Nutra USA Ingredients.com "BSE in US to accelerate organic beef growth" May 1, 2004.

O

O'Carroll, Colm and Alan Jones. Wastewater Treatment Process for the Meat, Poultry and Fish Industries. E-Chem Epsilon Chemicals Ltd.

Organic Trade Association. TA 2004 Manufacturer Survey Overview. http://www.ota.com

P

Preston, Dr. Allan. "What's the Story on Deadstock Disposal?" Cattle Country. June 2003. http://www.gov.mb.ca/agriculture/livestock/dstock/bca01s01.html

Province of Manitoba. "Slaughter Capacity Needed to Reduce Inventories: Wowchuk" News Release. August 19, 2004. http://www.gov.mb.ca/chc/press/top/2004/08/2004-08-19-01.html

Province of Manitoba Ruminant Task Force. Final Report to the Minister of Manitoba Agriculture, Food and Rural Initiatives on Farmer and Industry Consultations. June 2004.

Province of Manitoba. Information Bulletin. The Environmental Assessment and Licencing Process Under the Manitoba Environment Act. No.:97-01E. April 1997.

Pratts Wholesale Limited. Download Printable Profile. http://prattsonline.com

Poulin, Denis and Attah K. Boame. Statistics Canada. Mad Cow Disease and Beef Trade. http://www.statcan.ca/english/research/11-621-MIE/11-621-MIE2003005.htm

Poloz, Stephen S. Export Development Canada. Mad Cow, One Year After. April 7, 2004 http://edc.ca/docs/ereports/commentary/weekly_commentary_e_1924.htm

Q, R

"Retailers, Consumers Hungry for Organic Beef". USA Today. June 30, 2004.

S

Statistics Canada. "Livestock Estimates". The Daily.August 19, 2004. http://www.statcan.ca/Daily/English/040819/d040819b.htm

"Supply Management – Cattle organizations are talking about downsizing: mandatory downsizing". Agriweek Extended Access E-Mail Edition. July 12, 2004.

Statistics Canada. Cattle Statistics 2004, Vol. 3, No. 1, http://www.statcan.ca/english/freepub/23-012.XiE/free.htm

"Slaughter houses pushed to limit: Canola need more cattle-slaughter capacity". Manitoba Co-operator. Vol.62, No. 28. Winnipeg. July 8, 2004.

Statistical Briefer. CanFax Research Services. Per Capita Meat Consumption 2003. May 2004. http://www.canfax.ca

"Specialist Says Natural Beef Market Growing". The Times Herald (Moose Jaw). November 9, 2002.

Sysco Corporation. Accessed July 26, 2004. http://www.sysco.com

Saskatchewan Agriculture, Food and Rural Revitalization. Market Intelligence – Organic Beef. Saskatoon. Hodgins & Company. March 2002.

Saskatchewan Agriculture, Food and Rural Revitalization. The Market For Case-Ready Beef. Saskatoon. Hodgins & Company. June 2002.

T,U,V

The Environmental Impact of the Animal Product Processing Industries. Accessed September 9, 2004. http://www.fao.org/WAIRDOCS/LEAD/X6114E/x6114e03.htm

Verheijen, L.A.H.M., D. Wiersema, L.W. Hulshoff Pol. Management of Waste from Animal Product Processing. The Netherlands. January 1996. http://www.fao.org/WAIRDOCS/LEAD/X6114E/X6114E00.htm

"These are good times for local abattoirs". Agriweek Extended Access E-Mail Edition. July 12, 2004. Miscellany.

"The mad-cow situation". Agriweek Extended Access E-Mail Edition. July 12, 2004. Miscellany. Statistical Briefer, CanFax Research Services, May 2004.

The Food Marketing and Distribution Sector in Canada. Market and Industry Services Branch. Agriculture and Agri-food Canada, April 1999.

Tee Creek Premium Meats. Accessed July 26, 2004. http://www.premiumbeef.ca

W, X, Y, Z

Webb, Tom. "Canada's Co-op Atlantic – Showing the Way to Cooperation Among Cooperative." Cooperative Grocer. From #108. September-October 2003. Accessed July 22, 2004. http://cooperativegrocer.coop/articles/index.php?id=472