



**MAD COW DISEASE
AND CANADA'S CATTLE INDUSTRY**

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INTRODUCTION

The epidemic of bovine spongiform encephalopathy (BSE), or mad cow disease, has been spreading steadily in Europe since the mid-1980s. The discovery of a case of mad cow disease in Alberta in May 2003 – the second such case in Canada; the first dates back to 1993 – tested the measures introduced over the past decade to prevent the introduction and spread of the disease in Canada.

This paper gives a brief overview of the disease, as well as the measures taken by the federal government to monitor and limit its spread. The paper also presents the results of the investigation following the discovery of the May 2003 case, as well as the measures that have been proposed to improve the existing system, and examines the North American aspect of the issue. The last section discusses how the industry has been affected by the closing of the border to Canadian beef exports, and the possibility of reopening it.

GENERAL INFORMATION ABOUT BSE

Mad cow disease is a transmissible spongiform encephalopathy, or TSE, that attacks the central nervous system of cattle. Other types of TSE include scrapie in sheep, chronic wasting disease (CWD) in deer, and Creutzfeldt-Jakob disease (CJD) in human beings. There is no treatment for the disease and no vaccine against it. The cause appears to be associated with a protein called a prion, which is naturally present in people and animals, and becomes infectious when it acquires an abnormal form and accumulates, notably in brain tissue.

In 2000, a report following an independent inquiry (the Phillips Report)⁽¹⁾ studied the British government's response to the emergence of the disease, and summed up current

(1) *The BSE Inquiry Report*, 2000 (<http://www.bseinquiry.gov.uk/>).

scientific knowledge about BSE. The report concluded that the exact origins of BSE would probably never be known. The most probable hypothesis is that the disease started in the 1970s following a genetic mutation that occurred within a single cow. Another hypothesis is that BSE was transmitted among sheep afflicted with scrapie.

There is, however, greater certainty regarding how the disease spread. The carcasses of diseased animals entered the feed chain, because at the time it was common practice to add meat products, notably rendered⁽²⁾ ruminants (cattle, sheep, goats, deer, elk, bison), to cattle feed. The disease spread at the end of the 1970s and in the early 1980s because of this feed process. The protein linked to BSE is heat-resistant, as well as resistant to other normal pathogen inactivation processes. This means that it will not necessarily be destroyed when going through the meat rendering process, which cooks carcasses at high temperatures. In 1988, the United Kingdom prohibited the use of rendered meat products in cattle feed, thus eliminating material from the feed chain that risked being contaminated. Consequently, the number of cases of BSE found in the United Kingdom has steadily decreased since the winter of 1992-1993.

Other possible methods of transmission are still being investigated, notably transmission from cow to calves prior to birth, and the spontaneous emergence of the disease in the animal. “Horizontal” transmission from one animal to another within the herd has not been proven; nor has environmental contamination (of water, ground, or fodder through saliva, urine or excrement).⁽³⁾

The amount of time between the exposure of an animal to BSE and the appearance of symptoms averages between three and six years. Animals with BSE may show a number of different symptoms, including nervous or aggressive behaviour, abnormal posture, lack of coordination or difficulty in rising from a lying position, decreased milk production, and weight loss despite an increased appetite. These symptoms can last from two to six months prior to the animal dying from the disease.

Contrary to other TSEs such as scrapie or CWD, which are species-specific, introducing BSE-infected animals into the human food chain constitutes a public health risk. It is increasingly recognized that a new form of Creutzfeldt-Jakob disease, discovered in the United Kingdom in recent years, could be caused by human exposure to BSE through the consumption of BSE-infected animal products.

(2) Rendering is the thermal treatment of inedible animal parts for industrial use. This produces transformed animal proteins and animal fat by-products, such as bone meal and meat meal.

(3) Each encephalopathy is unique in its mode of transmission; although it is thought that environmental transmission is not possible in the case of BSE, it is possible in the case of CWD in deer, and scrapie in sheep.

BSE IN CANADA BEFORE 2003

A. The 1993 Case

The first case of BSE diagnosed in Canada was a fed cow that had been imported from the United Kingdom in 1987 at the age of six months. Following the discovery of this first case, the diseased animal was destroyed and the government attempted to trace every other head of cattle imported from the United Kingdom between 1982 and 1990, at which date cattle imports from the United Kingdom were banned. According to a report by the European Commission's Scientific Steering Committee,⁽⁴⁾ Canada imported 160 head of cattle from the United Kingdom between 1982 and 1990. Of these 160 animals, 53 had been slaughtered and entered the food chain, 16 had died and been sent for rendering, and 11 had been exported to the United States. Of the remaining 80 head, 79 were found and removed from the production chain – culled, then incinerated, buried or returned to the United Kingdom. This means that 70 head of cattle (53 slaughtered + 16 dead + 1 that could not be traced) entered the human or animal food chain.

The European Union (EU) has developed a geographical BSE-risk scale. In 2000, the EU announced that it was giving Canada a rating of 2, meaning that it considered that even though BSE was not likely present in Canada, the possibility could not be excluded. The main reason for this decision was the introduction into the human or animal food chain of those 70 animals imported from the United Kingdom during the critical period between 1982 and 1990.

By giving Canada a rating of 2, the EU made it impossible for Canada to export live cattle, cattle embryos or cattle ova, among other products, to EU countries. Canada vigorously opposed this ruling because at that time, before the discovery of the second case, it was on the Office international des épizooties (OIE) [International Office of Epizootics] list of provisionally BSE-free countries.⁽⁵⁾ Imports from countries on that list cannot be restricted on grounds relating to BSE.

(4) European Commission, *Report on the Assessment of the Geographical BSE-Risk (GBR) of Canada*, July 2000.

(5) The OIE is an international body that monitors the emergence and development of animal diseases and sets standards for their monitoring and control. See the section of this paper entitled "Consequences for Canada's Cattle Industry," below.

In 2001, using the *Access to Information Act*, the press obtained a report from the Canadian Food Inspection Agency (CFIA).⁽⁶⁾ This report found that the risks of a BSE epidemic were low because no cases (of an epidemic) had been found in Canada and measures had been put in place to stop any spread of the disease emanating from the United Kingdom. But the report also said that the possibility of an outbreak of the disease in Canada could not be dismissed: given the long incubation period, most beef cattle would have been slaughtered before symptoms appeared.

B. BSE Monitoring

BSE has been a reportable disease since 1990; any suspected case of BSE must be reported to a federal veterinarian. Since 1992, there has also been a national monitoring program that requires testing for any cow showing any signs of carrying the disease. In addition, every animal suspected of having rabies, but found not to have rabies, must be tested for BSE. Since the discovery of the first case of BSE in 1993, the number of tests administered each year, except for 1995, has surpassed the number recommended by the OIE.⁽⁷⁾

Since the 1993 case, other measures have been put in place. Notably, there is a policy for eradication if a case is discovered. This policy includes the destruction of:

- the herd in which a case is diagnosed;
- the herd in which the diseased animal was born;
- the birth cohort of the diseased animal;
- animals with the same lineage (mother and descendants); and
- embryos from the herds and animals involved.

(6) Canadian Press, “Report commissioned by Health Canada; Mad Cow Disease could be hiding in the food chain” [translation], *Le Devoir*, 2 April 2001.

(7) For a passive monitoring program to be effective, the OIE recommends 300 to 336 tests for a cattle population of between 5 and 7 million head that is over 24 months old. “Passive monitoring” means that the program relies on farmers and ranchers to report suspicious cases. “Active monitoring,” on the other hand, involves systematic screening for the disease in certain categories of animals even when they have no symptoms. See Table 1, below.

In 2001, the Canadian Cattle Identification Program for cattle and bison was introduced in support of this eradication policy. The program enables the movements of each animal to be tracked, from the herd of origin to the slaughterhouse.⁽⁸⁾

C. Measures to Prevent the Emergence of the Disease in Canada

Before 1997, there were no restrictions on using meat meal or bone meal in animal feed. Since 1997, it has been forbidden to feed ruminants with mammalian meat meal or bone meal – except for meal made exclusively from pork or horse. Meals that contain fish or chicken are still allowed in the cattle feed chain. Animal meals are still allowed for the feeding of poultry, pork and domestic animals. No other BSE-related measures apply to rendering plants.⁽⁹⁾

Canada also monitors its imports of products with a high risk of BSE. For example, Canada allows imports of live ruminants and their meat or meat products only from countries that it considers to be BSE-free. According to the CFIA, for more than a decade Canada has not imported from Europe any ruminant meat meal or bone meal for cattle feed. In December 2000, the CFIA suspended imports of rendered products from any species and from any country that Canada has not recognized as being BSE-free. Canada also restricts imports of animal products and by-products from countries where cases of BSE have been confirmed among the native animal herds. These animal products are evaluated on a case-by-case basis, and imports are authorized if it has been deemed that there is no risk of introducing BSE.

MAY 2003: A NEW CASE OF MAD COW DISEASE

On 31 January 2003, a fed cow (i.e., a cow being raised for slaughter) in Alberta was found lying down and incapable of rising. It was sent to a provincially controlled slaughterhouse in the Peace River district. The animal qualified for BSE monitoring under the national monitoring program, and the head was sent for testing. The carcass was condemned

(8) This system differs from the tracking system in place in Quebec. The Quebec system records all animal movements, which allows greater accuracy and timeliness when tracking an animal, as well as the other animals with which the diseased animal came into contact.

(9) For more information on this topic, see the CFIA Web site (<http://www.inspection.gc.ca/english/anima/feebet/rumin/ruminbge.shtml>).

because of pneumonia. Under the Canadian program, any carcass intended for human consumption subject to TSE testing must be withheld pending test results. Since the carcass was condemned and could not enter the human food chain, it was released and sent for rendering, where it entered the animal food chain. On 20 May 2003, the CFIA confirmed that the animal had BSE. As in 1993, the CFIA conducted a BSE investigation.⁽¹⁰⁾

A. Results of the Investigation

Following the confirmation of BSE, the CFIA launched an investigation to determine whether cattle herds might have come into contact with the infected cow and possibly become infected. The investigation followed three main paths: the infected cow's herds of origin (upstream from the infected herd), herd lineage (downstream from the infected herd), and tracking of feed products that could contain traces of the diseased animal's carcass. The CFIA's BSE disease investigation report was published on 3 July 2003.

As a result of upstream and downstream tracking of the infected herd, 15 farms were quarantined and 25 other herds were examined. These investigations led to the slaughter of more than 2,700 head of cattle. Among these, more than 2,000 that were older than 24 months (able to carry the disease) all tested negative for BSE. The carcass of the diseased animal was tracked throughout the slaughter line, to the rendering plant, feed plant and producer, and on to its direct distribution as domestic animal and poultry feed as well as retail distribution to 1,800 farms. Following this step, three farms were quarantined because the investigation could not conclude that the animals from these herds (63 head) had not consumed poultry feed that could have contained traces of the BSE-infected animal. The animals were slaughtered and tested for BSE. The test results were negative.

The report also summarized the hypotheses regarding the sources of exposure to the disease. Several possibilities exist and none have been singled out as yet. Theories of spontaneous emergence and transmission following joint herding with CWD-infected deer were rejected, as well as the possibility of BSE linked to scrapie. Among the possible sources of the disease, the report mentions the following:

(10) See the CFIA Web site (<http://www.inspection.gc.ca/english/corpaffr/newcom/2003/20030520e.shtml>).

- The contamination of feed by cattle imported from the United Kingdom, which included the BSE case identified in 1993. Some cattle ended up in the animal feed chain before the case was discovered. If they carried the disease, they could have infected the food chain prior to the 1997 ban on feeding ruminant meat meal and bone meal to other ruminants.
- Food contamination by CWD-infected deer prior to the 1997 ban.
- The contaminated food might have originated in the United States. Almost half the meat meal and bone meal used in Canada is imported from the United States, and BSE control measures in the United States are the same as in Canada. Therefore, feed imported from the United States is as susceptible to having been exposed to a TSE as feed produced in Canada.
- The animal might have been imported from the United States.

The true source of exposure will be known only if a thorough investigation is conducted. The report concludes, however, that the infected cow discovered in 2003 was probably born from one of the last birth cohorts to have been exposed to contaminated feed. In this case, given the structure of the cattle feed line and depending on whether the disease had spread, it is more likely that the disease would have spread to the northwestern United States than to eastern Canada. Epidemiologists believe that any new case discovered through increased monitoring would more likely originate from the period that preceded the 1997 ban on feeding cattle ruminant-derived meat meal and bone meal. It is also more likely to occur in a fed cow in the west (as opposed to a dairy cow in the east, for example).

B. Suggested Additional Measures

In addition to its investigation, the CFIA asked an international group of experts to review its BSE investigation, and evaluate the BSE protection measures. Their report, published on 26 June 2003, stated that the Canadian response had been excellent and that it was not necessary to conduct an in-depth investigation to determine the source of exposure since it had been prior to the ban on meat meal and bone meal. Significantly, the report states that it is reasonable to believe that *other cattle had been previously exposed to the disease, and that they are hosts for its incubation*. The authors of the report believe that this warrants the adoption of additional measures to limit the risks for human health and avoid the spread of the disease. The group of experts recommends, among other measures:

- The removal from the human and animal food chains of specified risk material (SRM) – brain tissue, bone marrow, etc., susceptible of carrying the infection – as well as measures for carcass processing techniques to avoid contamination of meat by infectious tissue (SRM).
- Increased monitoring. The proposed system is a balance between what is required in a provisionally BSE-free country (Canada, pre-May 2003) and what is required in a country that is heavily affected (United Kingdom). The Canadian monitoring program before the 2003 case applied only to suspected cases (showing signs of BSE) and to animals eradicated due to BSE. This type of monitoring, known as passive, is quite warranted when a country is BSE-free as defined by the OIE (or provisionally BSE-free, as was Canada). The monitoring conducted in Canada surpassed the international recommendations for this type of monitoring, and the group of experts noted that this led to the detection of the new case. Given the new situation, however, passive monitoring is no longer sufficient. The group proposed expanding the monitoring to animals at risk (including all animals that have died on the farm). The EU, for its part, monitors suspect animals, eradicated animals, animals at risk and all healthy animals older than 30 months (24 months in some countries) that are destined for human consumption (see Table 1).
- With regard to cattle feed, the group of experts did not make any specific recommendations. The group did suggest, however, finding a system that would avoid any cross-contamination in the processing plants and on the farm if non-ruminant meat meal and bone meal feeds continue to be used for cattle.

The group of experts also suggested other types of intervention such as improving the identification system, imports, exports, awareness, communications, veterinary infrastructures, etc.

Table 1
BSE Monitoring: Animal Categories Tested

	Suspect Animals (exhibiting signs of BSE)	Animals Eradicated Upon Discovery of BSE	Animals at Risk (e.g., dead on the farm)	Animals for Human Consumption (older than 30 months)
BSE-free countries (Canada before 2003)	X	X		
Proposal by international group of experts	X	X	X	
European Union (since 2001)	X	X	X	X

In the weeks that followed the discovery of the second case of mad cow disease, there were suggestions that Canada be “regionalized” if BSE emerges. Under regionalization, if a case is discovered in a specific region, that region is isolated. Other regions can thus continue exporting without suffering economically from an outbreak at the other end of the country. This is currently the case with bovine tuberculosis: Canada is considered free of bovine tuberculosis even though the disease has been discovered among the wild animals in Riding Mountain National Park. The region surrounding the park has been isolated for health reasons, and the cattle herds there are subject to additional measures to avoid transmission of the disease outside the area. According to the CFIA, however, BSE cannot be regionalized because it is not transmitted from one animal to another. Regionalization can be used in the case of diseases such as bovine tuberculosis or foot-and-mouth disease, which are contagious through direct contact or the environment. Given that BSE is transmitted through cattle feed, which is transported throughout the country, and that incubation can take three years or more, it is very difficult to ensure that the disease will remain contained within a given region. According to the CFIA, no country has succeeded in regionalizing its herds to contain BSE.

BSE: THE NORTH AMERICAN ISSUE

Since the North American Free Trade Agreement (NAFTA) came into effect, Canada, the United States and Mexico have applied independent but harmonized BSE risk-management strategies. These strategies are aligned with OIE guidelines (see the section “Measures to Prevent the Emergence of the Disease in Canada”). For example, Canada and the United States introduced measures banning the addition of meat meal and bone meal to animal feed intended for ruminants over the same period in 1997.

Given their geographic proximity, management practices and long history of integration, the American and Canadian cattle industries have an almost identical structure and share the same BSE risk factors.⁽¹¹⁾ In fact, major markets for North American beef, such as Japan and South Korea, continue to ban imports of beef products from both the United States and Canada.

(11) Government of Canada, *Technical Overview of BSE in Canada – March 2005*, 2005.

In light of the recognized effectiveness of the feed ban and the long incubation period of BSE, the number of BSE cases in North America might be expected to peak approximately six years after the 1997 feed ban, that is around 2003-2004.⁽¹²⁾ There is no evidence, however, that North America would face an outbreak like the one that occurred in Europe.

It was therefore no great surprise that, on 23 December 2003, a case of BSE was discovered in the United States. The infected cow was raised in Washington State, but DNA testing indicated it had been born in Alberta. However, the international group of experts that studied the U.S. BSE measures stated that this instance of BSE cannot be considered an imported case, and that the two cases discovered in 2003 in Canada and the United States must be recognized as being indigenous to North America.⁽¹³⁾ In the first half of 2005, two other cases were confirmed in Alberta, as well as the first case in the United States affecting a U.S.-born animal.⁽¹⁴⁾

Since 2003, Canada and the United States have strengthened their measures to limit the spread of the disease and ensure that human health is protected. These measures correspond to those suggested by the international groups of experts that studied the Canadian and American responses to the discovery of BSE cases (see the previous section of this paper). The measures include:

- The removal of SRM from the human food chain. This measure avoids contamination of meat by potentially infectious materials, such as brain tissue and bone marrow. The measure came into effect in Canada in August 2003⁽¹⁵⁾ and in the United States in July 2004.
- Increased monitoring, including the screening of non-ambulatory animals. In 2004, Canada surpassed its target of 8,000 samples and collected a total of 23,550 samples. In 2005, the minimum target of 30,000 was surpassed in early June.⁽¹⁶⁾ The United States, which has also had an improved program since March 2004, took samples from more than 176,000 animals in 2004 and close to 233,000 animals in the first half of 2005.

(12) *Ibid.*

(13) U. Kihm *et al.*, *Report on Measures Relating to Bovine Spongiform Encephalopathy (BSE) in the United States*, 2004.

(14) The cases were confirmed on 2 and 11 January 2005 in Canada, and on 24 June 2005 in the United States (although the sample was taken in November 2004).

(15) Two regulations were amended: the *Food and Drug Regulations* and the *Health of Animals Regulations*.

(16) On 9 January 2004, the federal government announced \$92.1 million in funding over five years to enhance measures for identification, tracking and tracing, and to increase BSE surveillance and testing.

In 2004, the Canadian and American governments announced their intention to require the removal of bovine SRM also from the animal feed chain. On 10 December 2004, the CFIA proposed regulations to this effect, to come into force in 2005.⁽¹⁷⁾ The U.S. government has yet to put forward such a measure, in large part because the American cattle industry is opposed to it.

Despite identical risk factors, similar protective measures and an integrated cattle industry, trade in beef products between Canada and the United States almost came to a standstill in May 2003 and has only partially recovered. The closing of the U.S. market had a severe impact on Canada's cattle industry.

CONSEQUENCES FOR CANADA'S CATTLE INDUSTRY

As stated previously, there is no evidence that Canada faces an outbreak similar to the one that occurred in Europe. Domestic beef consumption has remained relatively stable, and the additional health measures will further reinforce consumer confidence in the inspection system. With health conditions stable and national consumption levels more or less unchanged, the loss of export markets is the biggest challenge the cattle industry faces, given that 60% of Canadian cattle production is exported.

A. Resuming Export Trade

Since May 2003 and the ban on exports of Canadian beef products, Canada has had some success in reopening certain markets. On 8 August 2003, the United States announced a partial reopening of its border to some categories of beef products, but not to live cattle.⁽¹⁸⁾ On 30 November 2004, Hong Kong agreed to resume imports of Canadian boneless beef from animals under 30 months with all SRM removed. Cuba also reopened its border to a wide range of beef and beef products from Canadian cattle of any age. Cuba went further in March 2005

(17) For further information on animal feed policies, see F. Forge, *Canadian Feed Policy and BSE*, PRB 05-06E, Parliamentary Information and Research Service, Library of Parliament, Ottawa, July 2005.

(18) The United States allows imports of boneless meat from cattle less than 30 months old, and boneless meat from calves 36 weeks or younger. Mexico, Canada's second-largest market for beef, made a similar announcement on 11 August 2003.

and agreed to imports, under certain conditions, of Canadian cattle, sheep and goats, as well as bovine semen and embryos. On 8 July 2005, New Zealand, which is BSE-free, became the 15th country since May 2003 to reopen its border to Canadian beef.

1. The American Border

In March 2005, the United States completed a rule-making process to provide the necessary authority to reopen the border to certain classes of live ruminants and a broader range of ruminant products. This so-called U.S. “BSE minimal-risk rule” amends the requirements regulating the importation of animals and animal products, and creates a new category for regions in which BSE has been detected in the national herd but in which precautionary measures have been taken that reduce the risk of BSE being exported to the United States. The rule, which was scheduled to take effect on 7 March 2005, adds Canada to this new category. In February 2005, U.S. Agriculture Secretary Mike Johanns announced that the United States Department of Agriculture (USDA) would delay the effective date for allowing imports of beef from animals over 30 months, but the other provisions of the rule – notably those allowing the importation of live cattle under 30 months for slaughter – would be implemented as scheduled. The rule does not apply to cattle over 30 months or to breeding cattle and replacement dairy heifers. A separate rule is being developed to address these classes of animals.

On 3 March 2005, the U.S. Senate passed a resolution of disapproval of the rule.⁽¹⁹⁾ In order to keep the rule from going into effect, the resolution had to be passed by the House of Representatives and signed by President Bush. That same day, the White House issued a news release stating its support for an open border, praising the work of Canada’s scientists and government, and making it clear that President Bush, for the first time, would exercise his veto power should Congress demand that the border remain closed.

Independently of the congressional review, however, on 2 March 2005, a federal judge in Montana ordered a preliminary injunction to halt the implementation of the rule until the Court had the opportunity to review it. The preliminary injunction was obtained following a lawsuit filed by the Ranchers-Cattlemen Action Legal Fund United Stockgrowers of America (R-CALF USA). The USDA appealed the preliminary injunction decision. The U.S. Ninth Circuit Court of Appeals in San Francisco heard the appeal and overturned the injunction on

(19) Fifty-two senators voted in favour of the resolution of disapproval (including 13 Republicans) and 46 voted against it (including 4 Democrats).

14 July 2005, which permitted exports of live Canadian cattle to the United States to resume in late July 2005. However, the court case in Montana regarding the implementation of the rule is still pending, and the hearing initially scheduled for 27 July 2005 has been postponed indefinitely.

These events show that some stakeholders in the U.S. cattle industry are opposed to an integrated North American market. While the legal decisions have been in Canada's favour, the U.S. market cannot be taken for granted. There is a strong possibility that some industry stakeholders will pursue their cases in other areas, for example by making dumping allegations, to stop Canadian beef from crossing the border.

2. International Trade Rules: Complying with National Health Measures

Despite the health measures put in place and the fact that it quickly became evident that no scientific basis existed for restraining the movement of live cattle and beef products for BSE-related reasons, Canada has still not been able – a little over two years after the discovery in 2003 of the first case of BSE in a domestic animal – to reopen certain markets for its live cattle (United States) or beef (Japan and South Korea).

In September 2003, Canada, the United States and Mexico jointly requested the OIE to provide an internationally agreed-on, science-based trade response to BSE. The OIE issued a statement in January 2004 indicating that a science-based standard for resuming trade with BSE-infected countries exists, but that countries do not follow it:

the existence of valid up-to-date standards did not prevent major trade disruptions due to a failure by many countries to apply the international standard when establishing or revising their import policies.

It has become commonplace for countries, Canada included, to close their borders to all beef products from a country that has discovered a BSE case, without regard for the actual risk, existing health measures or the incidence of the disease in the country. The fact that trade barriers related to BSE have never been challenged under the World Trade Organization (WTO),⁽²⁰⁾ however, shows that there is a need to develop a more practical approach to resuming trade when the disease appears in a country.

(20) The WTO is the only organization that can enforce OIE standards, since it uses them in its rulings.

The U.S. “BSE minimal-risk rule” that was scheduled to take effect on 7 March 2005 (see the preceding section, “The American Border”) allows for a better harmonization of national import standards with the OIE’s science-based guidelines. After imposing restrictions on imports of U.S. beef following the discovery of a case of BSE in Washington State in December 2003,⁽²¹⁾ the federal government amended its regulations to further align Canada’s BSE policy on imports from the United States with science-based international guidelines. On 29 March 2005, import regulations came into effect that allow for a range of U.S. commodities that had been prohibited since the Washington State BSE case was detected in December 2003.⁽²²⁾ This was an important step towards a harmonized North American import standard for BSE.

By complying with international science-based standards and resuming trade with the United States and Mexico in all types of beef products, including beef from animals over 30 months of age, Canada is sending a clear message to its other trading partners. The NAFTA partners cannot expect other export markets, notably Japan, to support a science-based approach if they themselves do not support it likewise.

The OIE also updated its BSE standard during its annual general meeting in May 2005. New scientific knowledge was integrated into the policy, leading to the establishment of new BSE-status categories. The new policy has three categories (instead of the previous five), each listing the products that can be imported with minimal risk or with the implementation of specific health measures. For example, Canada should be able to export SRM-free boneless beef from animals “under 30 months of age.”

While the new OIE standard more clearly defines what can be imported without risk from BSE-affected countries, it is the countries themselves that ultimately decide whether to align their import policies with the international standard. For its part, Canada chose to move ahead and conduct an in-depth review of its import policy on animal products to prevent the introduction of BSE. The government held consultations on a draft policy between 18 May and 22 July 2005.

(21) Canada continues to import U.S. boneless beef from cattle less than 30 months old, live cattle destined for immediate slaughter, and dairy products, semen, embryos and protein-free tallow.

(22) Under the new import regulations, some of the commodities now allowed include: fed cattle less than 30 months of age; goats and sheep less than 12 months of age for feeding or immediate slaughter; and bulls destined for animal semen production centres. Bone-in meat from sheep and goats under 12 months of age is also now permitted.

The draft policy reflects both the new OIE three-category system for classifying bovine-trading countries, and those countries' BSE-risk management approach. The new policy would be less restrictive than the existing one. Canada's existing policy permits the importation of live ruminants, including cattle, sheep and goats, and products derived from them, only after the exporting country has been officially recognized by the CFIA as BSE-free, based on a risk assessment. In terms of current science, the "BSE-free" requirement is unnecessarily restrictive.

B. Repositioning the Industry⁽²³⁾

The discovery of a case of BSE in Canada in May 2003 immediately closed the U.S. border to imports of Canadian beef and cattle, as well as other major beef markets such as Japan and South Korea. Canadian exports of cattle and beef products were worth approximately \$4.5 billion in 2002, 80% of which was destined for the American market – more than 70% of all beef exports and almost 100% of all cattle exports. The inability to export led to a dramatic drop in the prices producers were paid for beef. At the time, the industry estimated losses at close to \$11 million a day in exports since the border closed, and around \$7 million a day because of the drop in prices.⁽²⁴⁾

Before the BSE crisis, Canadian farmers had access to both Canadian and American slaughterhouses, as well as to feedlots across the border. They thus benefited from greater competition when the time came to sell their livestock, which explains the growth of this sector over the past 20 years. In 2002, virtually all of Canada's exports of live cattle went to the United States. Canada typically exported approximately 1.1 million head of cattle to the United States each year.⁽²⁵⁾

The cattle industry on both sides of the border became increasingly vulnerable as the packing industry developed into an integrated North American trade. Although, due to a

(23) For further information on the economic aspects of the crisis, see J.-D. Fréchette, *Mad Cow Disease in Canada: An Economic Overview*, TIPS-116E, Parliamentary Information and Research Service, Library of Parliament, Ottawa, 5 July 2005.

(24) On 18 June 2003, the government announced a national program (the BSE Recovery Program) to provide temporary assistance to help the Canadian cattle and beef industry continue to operate while the borders remained closed. This \$460-million program was supplemented by a further \$36 million on 12 August 2003.

(25) Competition Bureau, "The Competition Bureau's Examination Into Cattle and Beef Pricing," News release, 29 April 2005.

number of production factors, the size of the U.S. cattle herd declined by 8% over the past nine years, a growing supply of Canadian cattle allowed U.S. slaughter plants to continue operating at capacity. By the same token, under-capacity for slaughtering in Canada made Canadian beef producers increasingly dependent on American slaughterhouses. This dependence proved to be a weakness once the U.S. border was closed to all live cattle.

The closure of the U.S. border to all live cattle and meat from animals older than 30 months created a huge oversupply of live cattle that could not pass through the bottleneck of Canada's domestic packing capacity, even though Canadian packers were slaughtering at a rate close to their maximum capacity during the fall of 2003 and the winter of 2004,⁽²⁶⁾ in response to the partial reopening of the U.S. and Mexican borders to some categories of beef. The country's cattle herd grew in size,⁽²⁷⁾ and cattle prices remained very low. Cow-calf and feedlot operators suffered a sharp loss of income and equity that reduced the availability of cash flow and access to financing.

The cattle industry reacted to the new market conditions mainly by increasing domestic slaughter capacity, which went from 3.5 million animals per year in 2003 to close to 4.5 million in 2005. Capacity was increased in part by expanding existing facilities through added shift work, slaughtering on Saturdays, and the systematic use of overtime. New slaughterhouses were also built.

On 10 September 2004, the federal government announced a strategy to reposition the Canadian livestock industry,⁽²⁸⁾ including by facilitating increased domestic slaughter capacity and sustaining the industry until capacity was reached. In making that announcement, the federal government seemed to recognize that a return to the pre-May 2003 situation was unlikely in the near future. The prediction was to some extent confirmed by the government's announcement, on 29 June 2005, that funds would be reallocated to "facilitate transformation of the cattle industry," mainly through measures that would meet the goal of "processing 100% of

(26) In May 2003, the industry had the capacity to slaughter about 70,000 cattle per week. After the discovery of BSE, the slaughter rate dropped to 30,000 cattle per week.

(27) Statistics Canada reported that, in January 2004, the Canadian cattle herd reached 14.7 million head, 1.2 million more than in January 2003.

(28) Federal funding for the strategy was initially budgeted at \$488 million, including \$66.2 million to increase ruminant slaughter capacity and \$384.7 million for industry support.

the country's livestock production."⁽²⁹⁾ Cattle industry stakeholders also seem to believe that returning to a huge dependence on the American slaughter infrastructure would be out of the question, even after the border reopens to live Canadian cattle.

In the United States, the impact of border restrictions was greater in regions where packing plants relied heavily upon Canadian cattle imports for capacity utilization. Canadian imports represented 30% of cattle slaughter in Utah, 19% in Washington State and 10% or more in Minnesota, Michigan and New Jersey. As a result, many U.S. slaughter plants are facing financial difficulties, and have stopped production and laid off workers.

The reopening of the U.S. border to live cattle exports from Canada in July 2005 will have an undeniable effect on the North American industry's efforts to reposition itself since May 2003.

CONCLUSION

The second case of mad cow disease in Canada in 2003, discovered almost 10 years after the first, has tested the ability of the industry and health authorities in Canada to respond to a public health crisis. Positive aspects include the fact that the Canadian monitoring system was successful in detecting the sick animal, and that the CFIA's response has been hailed by the industry and cited as a model by international experts. This isolated case has also led to additional sanitary measures that will make Canadian beef even safer.

Even though Canada is unlikely to experience a BSE flare-up such as occurred in Europe, this single case of mad cow disease was enough to jeopardize an industry worth more than \$7 billion annually. This event underlines the extent to which an industry is vulnerable when it is dependent on one market, namely, the United States. Now that the scientific aspects of this case of mad cow disease have been established, Canada is continuing to work towards the reopening of borders to Canadian beef and renewed access to the markets that existed prior to May 2003. As we have seen, however, despite the fact that the United States and Mexico have decided to partially reopen their borders, our trading partners remain on their guard. A return to "normal" conditions is still up in the air; Canada's cattle industry will have to restructure itself to adapt to this new reality.

(29) Agriculture and Agri-Food Canada, "Government of Canada Reprofiles Funds to Facilitate Transformation of the Cattle and Other Ruminants Industry," News release, Ottawa, 29 June 2005.

CHRONOLOGY

- 1986 First appearance of bovine spongiform encephalopathy (BSE) in the United Kingdom.
- 1987 Initial epidemiological studies conclude that the most probable hypothesis for the emergence of the disease is the presence of animal meals (essentially from sheep and cattle) in cattle feed.
- 1988 BSE is made a reportable disease in the United Kingdom.
- The U.K. Ministry of Agriculture, Fisheries and Food decides to ban the practice of feeding cattle with animal meals. However, exports of these meals are still permitted.
- 1990 First case of BSE in Switzerland.
- Canada bans imports of cattle from the United Kingdom. BSE is made a reportable disease.
- The European Community's Veterinary Committee concludes (based on what is then known) that animals with BSE are not dangerous to human health. A parliamentary report in the United Kingdom stresses the uncertainty of the transmission of BSE to human beings.
- 1991 First case of BSE in France.
- 1992 37,380 cases of BSE in the United Kingdom. The disease reaches its peak with almost 800 new cases a week.
- 1993 35,090 cases of BSE in the United Kingdom.
- First case of BSE in Canada, in an animal imported from the United Kingdom in 1987.
- Two U.K. dairy farmers, whose herds were diagnosed with BSE, die of Creutzfeldt-Jakob disease (CJD).
- 1994 First case of BSE in Portugal in a non-imported animal.
- In the United Kingdom, many cases of BSE are diagnosed in cattle born after the ban on animal meal for cattle feed (1988). The most probable cause is cross-contamination of feed in manufacturing plants and on farms. To prevent such cross-contamination, the United Kingdom in 1996 forbids the use of animal meals (except those made from fish) in all animal feed. The European Union (EU) extends this ban to its entire territory in 2001.
- 1995 A number of U.K. farmers come down with Creutzfeldt-Jakob disease, including two young persons. The latter two cases arouse suspicion that a new form of the disease has appeared, since prior to this date CJD apparently affected adults aged 60-65 almost exclusively.

1996 On 20 March, the U.K. Health Minister informs the public that 10 people have been diagnosed with the new form of Creutzfeldt-Jakob disease, known as variant CJD (vCJD), and that 8 have already died. He also announces that it is possible that BSE could be transmitted to human beings. This statement, which is widely reported in all the European media, causes a wave of panic throughout Europe.

New cases of vCJD are reported, including the first case in France.

The United Kingdom decides that no cattle over 30 months old may be used for human consumption.

A study indicates that sheep can contract BSE orally. While the two diseases are hard to tell apart, BSE is not the same as scrapie.

The United Kingdom bans the use of animal meals (except those made from fish) for all types of livestock.

1997 First cases of BSE in Belgium, Luxembourg and the Netherlands.

Canada bans the feeding of ruminants with mammalian animal meal – except for meals made exclusively from pork or horse.

1998 The number of cases of BSE in the United Kingdom drops to 3,235.

2000 First cases of BSE in non-imported animals in Germany, Spain and Denmark.

2001 First cases of BSE in non-imported animals in Austria, Greece, Finland, Italy, Slovakia, Slovenia, the Czech Republic and Japan.

The EU bans the use of animal meals (except those made from fish) for all types of livestock.

The EU makes screening mandatory for any animal over 30 months old that is destined for human consumption.

2002 First cases of BSE in non-imported animals in Poland and Israel.

1,144 cases detected in the United Kingdom.

2003 Second case of BSE discovered in Canada on 20 May 2003, exactly 10 years following the first case.

Case of BSE discovered in Washington State, United States, on 23 December 2003. The animal was born in Alberta.

For a detailed chronology of events and government initiatives in Canada from 2003 onwards, see Marc LeBlanc, *Chronology of BSE-related Events and Government Initiatives*, PRB 04-12E (In Brief), Parliamentary Information and Research Service, Library of Parliament, Ottawa, June 2005.

APPENDIX
BEEF PRODUCT EXPORTS

(Tables and figures drawn from the Web site of Agriculture and Agri-Food Canada
and based on data collected by Statistics Canada)

BEEF PRODUCT EXPORTS

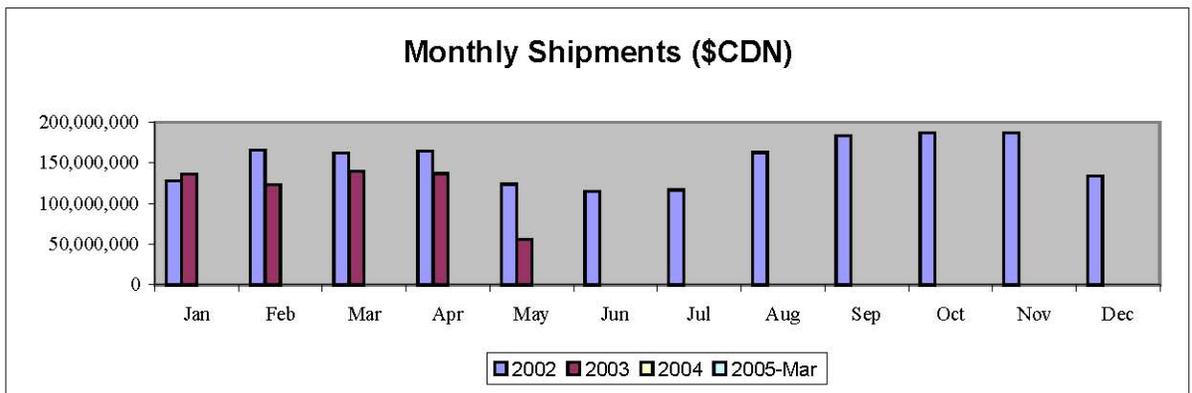
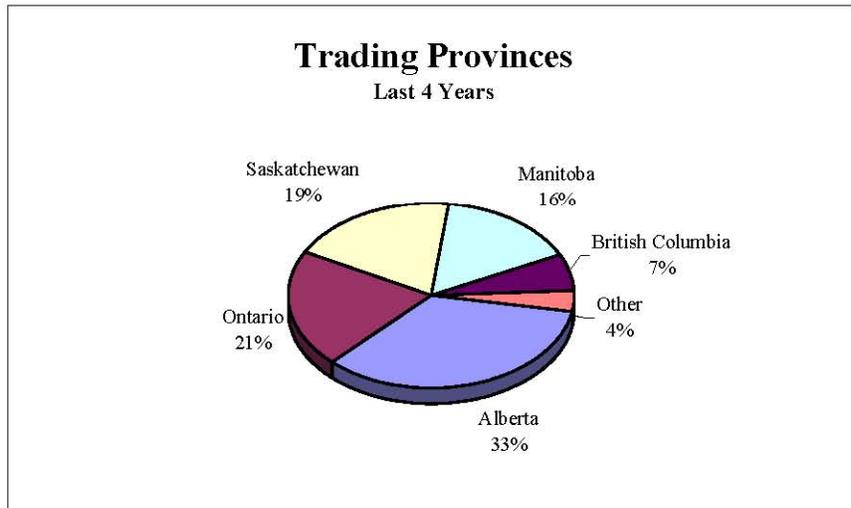
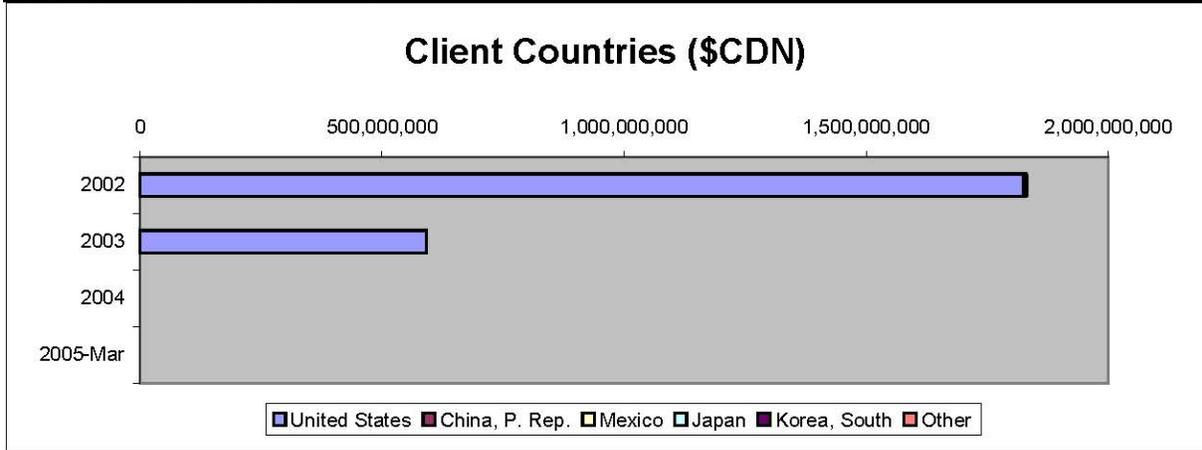


Canada's Live bovine animals

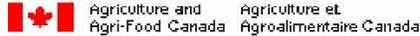
Exports to All Countries								
HS CODE:	VALUE (\$ Can)				QUANTITY (NUMBER)			
0102.	2002	2003	2004	2005-Mar.	2002	2003	2004	2005-Mar.
TOTAL:	1,831,721,802	591,965,774	0	0	1,690,167	506,683	0	0
United States	1,824,286,877	591,072,680	0	0	1,688,672	506,439	0	0
China, P. Rep.	6,061,153	0	0	0	1,186	0	0	0
Mexico	318,995	391,753	0	0	114	167	0	0
Japan	602,938	62,500	0	0	98	9	0	0
Korea, South	198,278	291,788	0	0	15	3	0	0
Brazil	132,084	82,407	0	0	16	50	0	0
France	62,700	0	0	0	20	0	0	0
Russia	0	42,946	0	0	0	2	0	0
St Pierre-Miq.	19,600	9,200	0	0	18	10	0	0
Guatemala	22,000	0	0	0	22	0	0	0
Argentina	17,177	0	0	0	6	0	0	0
Netherlands	0	12,500	0	0	0	3	0	0

BEEF PRODUCT EXPORTS (cont'd)

Exports to All Countries



BEEF PRODUCT EXPORTS (cont'd)



Canada's Beef and Veal Products

Exports to All Countries								
HS CODE:	VALUE (\$CDN)				QUANTITY (KGM)			
Various	2002	2003	2004	2005-Mar	2002	2003	2004	2005-Mar
TOTAL:	2,228,046,254	1,470,193,981	1,938,989,201	485,396,213	522,194,334	325,564,034	456,911,289	112,243,473
United States	1,838,074,714	1,253,810,253	1,587,096,664	401,941,826	409,909,491	267,897,861	362,492,888	90,639,822
Mexico	199,779,467	103,645,762	299,291,387	64,101,966	53,724,585	25,927,371	73,605,090	15,806,614
Japan	81,134,438	48,299,733	0	0	20,231,900	9,696,618	0	0
Korea, South	49,692,224	24,485,361	0	170,596	14,420,513	5,283,692	0	114,747
Taiwan	19,797,893	10,621,718	0	0	3,801,733	2,028,586	0	0
Macau	0	226,398	24,144,513	4,752,802	0	216,047	6,561,564	1,410,684
France	4,222,792	5,257,381	5,402,614	1,764,022	453,003	548,161	592,389	245,286
Hong Kong	2,871,981	734,146	790,023	8,828,200	606,606	138,840	107,021	2,074,621
Saudi Arabia	5,857,134	3,237,335	2,460,165	209,543	443,529	289,543	174,314	17,582
Russia	4,381,937	2,096,508	350,084	0	4,746,173	2,376,164	297,548	0
China, P. Rep.	4,114,301	1,434,604	229,200	0	1,534,586	582,550	52,031	0
Poland	25,440	2,349,099	2,850,362	39,508	10,905	1,944,892	2,727,184	49,947
Cuba	3,328,756	1,424,073	78,273	0	1,522,291	535,670	68,100	0
Surinam	1,006,255	1,273,698	1,974,929	487,113	392,832	433,716	698,382	162,446
Philippines	229,911	805,310	2,563,609	217,080	176,229	1,099,700	1,858,043	56,445
Peru	2,284,456	1,116,186	17,579	0	2,679,840	1,244,348	14,998	0
Germany	264,942	777,238	1,518,023	373,007	23,340	85,783	156,318	25,308
Neth. Antilles	123,334	563,461	1,409,626	322,098	25,040	99,252	158,033	42,334
Moldova	0	66,676	1,827,912	0	0	98,812	2,719,755	0
Italy	1,661,052	34,887	122,395	0	439,068	25,396	29,928	0
Malta	496,104	523,215	701,295	0	25,389	25,278	39,279	0
Indonesia	669,551	661,420	322,089	0	604,008	696,271	535,437	0
Chile	953,142	693,089	0	0	1,155,991	772,037	0	0
Bahamas	465,189	524,404	431,491	137,036	212,679	168,688	119,963	41,491
Colombia	1,072,835	395,818	9,679	0	1,202,402	475,610	2,508	0
Trinidad-Tobago	211,631	243,549	756,768	46,048	168,243	80,286	276,468	59,573
Barbados	171,891	181,058	715,911	76,267	53,421	40,064	134,242	32,449
United Arab Emir.	622,823	355,443	14,669	0	41,001	71,704	25,390	0
South Africa	688,424	195,509	0	19,632	959,385	278,755	0	49,390
Jamaica	534,815	363,862	0	0	456,751	101,836	0	0
Netherlands	70,597	416,153	224,934	138,775	39,457	138,854	103,383	36,272
Kazakhstan	0	0	811,500	0	0	0	1,247,571	0
Switzerland	176,901	270,228	263,827	63,893	8,448	11,503	9,977	2,375
Senegal	0	312,752	320,786	64,144	0	281,067	414,045	189,397
Azerbaijan	0	0	0	667,991	0	0	0	682,952
St Pierre-Miq.	31,499	268,072	265,115	29,761	3,587	39,613	40,498	5,220
Costa Rica	233,575	0	0	323,332	167,310	0	0	20,471
Cote-d'Ivoire	235,316	98,647	211,381	0	423,228	197,054	307,630	0
Grenada	100,641	191,181	192,690	52,655	28,989	48,610	47,098	12,779
Venezuela	272,997	125,916	54,361	0	277,626	123,759	129,490	0
Antigua-Barbuda	99,051	126,778	185,440	22,641	22,924	30,423	42,759	5,327
Macedonia	84,090	348,972	0	0	87,718	317,740	0	0
Ecuador	333,757	81,925	0	0	377,183	106,699	0	0
Georgia	0	345,302	45,381	0	0	248,036	27,113	0
Spain	253,751	69,208	0	0	132,699	46,000	0	0
Latvia	0	14,916	245,794	0	0	24,721	396,132	0
Guam	243,421	0	0	0	13,414	0	0	0
Turks Caicos Is.	194,454	10,598	23,131	10,492	24,149	4,023	10,623	7,169
Aruba Island	7,169	167,696	22,658	25,333	2,070	19,095	5,283	5,747
Uruguay	0	88,727	57,482	73,345	0	49,970	24,992	22,208
Singapore	69,698	9,849	138,967	0	14,738	1,994	30,508	0
Gabon	13,128	119,063	65,348	0	23,338	199,353	102,680	0
Cayman Islands	86,536	36,487	36,268	344	34,565	5,935	10,776	47
Guyana	53,574	52,955	36,247	10,275	15,562	23,170	10,368	3,000

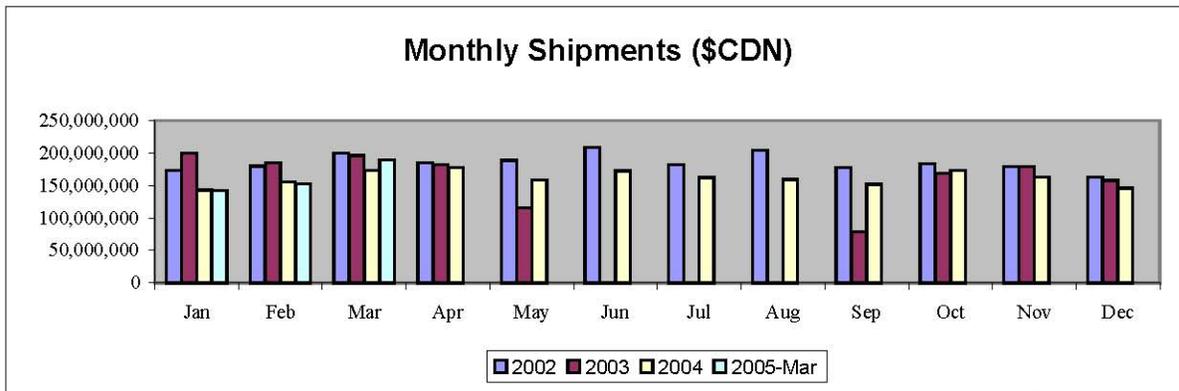
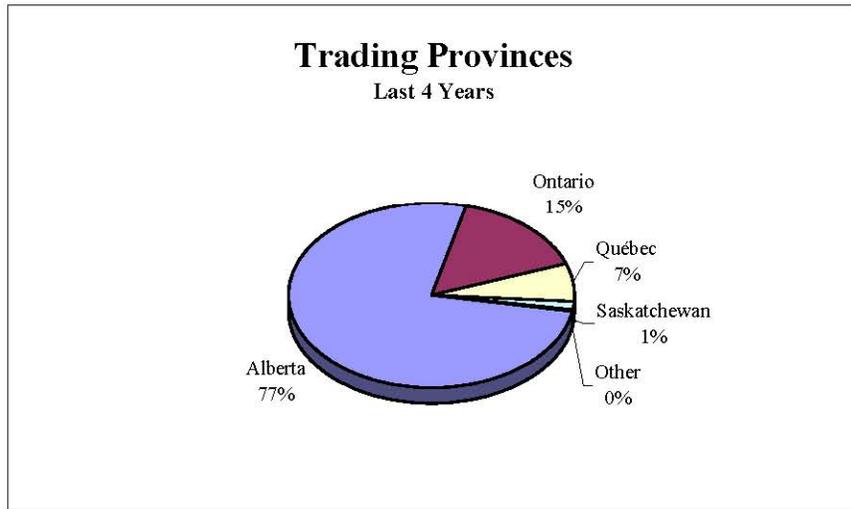
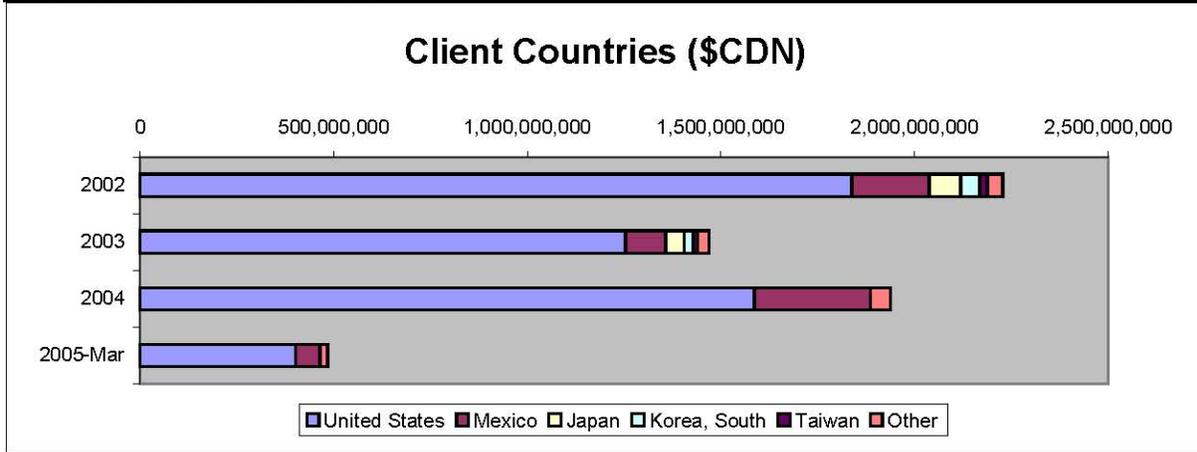
Canada's Beef and Veal Products

Exports to All Countries								
HS CODE:	VALUE (\$CDN)				QUANTITY (KGM)			
Various	2002	2003	2004	2005-Mar	2002	2003	2004	2005-Mar
Greece	0	22,048	8,852	106,011	0	24,498	24,864	22,052
Panama	99,498	0	25,153	0	134,563	0	18,522	0
Bulgaria	55,037	66,687	0	0	76,177	74,871	0	0
Uzbekistan	0	0	0	121,602	0	0	0	222,662
Br. Indian O. Ter	0	34,217	65,541	16,706	0	7,140	26,239	3,578
Greenland	83,438	26,220	4,006	202	8,538	3,000	496	27
Jordan	0	112,200	0	0	0	24,288	0	0
Guatemala	101,005	0	0	0	43,005	0	0	0
United Kingdom	0	0	96,922	0	0	0	61,840	0
Korea, North	11,262	74,155	0	0	21,696	18,150	0	0
Faeroe Islands	0	84,076	0	0	0	7,641	0	0
Australia	70,592	0	0	0	27,204	0	0	0
Afghanistan	0	0	69,335	0	0	0	19,044	0
Armenia	0	0	0	66,519	0	0	0	49,671
U.S. Outlying Is.	0	0	66,370	0	0	0	17,575	0
Lithuania	0	16,378	48,746	0	0	24,029	74,000	0
Egypt	64,012	0	0	0	72,422	0	0	0
New Zealand	60,984	0	0	0	17,952	0	0	0
Luxembourg	0	0	54,424	0	0	0	3,452	0
Dominican Rep.	30,656	22,397	0	0	24,032	24,498	0	0
Brazil	52,549	0	0	0	11,340	0	0	0
Congo	0	43,094	0	0	0	71,414	0	0
Belarus	0	0	42,836	0	0	0	74,721	0
Haiti	0	24,406	14,643	0	0	50,467	1,872	0
Guinea	0	0	27,102	10,660	0	0	55,874	25,859
Tanzania, Un. Rep	36,772	0	0	0	6,301	0	0	0
Sweden	33,923	0	0	0	18,383	0	0	0
St. Kitts-Nevis	5,079	8,083	0	20,559	1,266	2,092	0	1,402
Anguilla	14,360	12,295	2,349	568	6,175	3,385	773	572
Estonia	0	0	28,321	0	0	0	49,882	0
Kyrgyzstan	0	0	0	28,312	0	0	0	24,420
Hungary	0	8,858	18,915	0	0	656	1,967	0
Bermuda	0	0	10,163	17,116	0	0	2,285	2,563
Comoros	0	0	17,222	8,256	0	0	14,526	15,004
Belgium	0	0	23,868	0	0	0	1,448	0
Iraq	0	23,496	0	0	0	8,976	0	0
Angola	0	15,016	0	8,015	0	28,331	0	25,855
Honduras	0	0	22,085	0	0	0	23,596	0
Lebanon	0	9,732	10,524	0	0	728	611	0
St. Vincent Gren.	1,117	8,517	3,929	4,258	272	1,606	1,088	1,115
Bahrain	0	0	0	17,704	0	0	0	26,990
Romania	0	0	17,644	0	0	0	25,015	0
Saint Lucia	11,625	5,349	0	0	2,620	922	0	0
Denmark	0	0	16,732	0	0	0	673	0
Dominica	4,967	5,295	5,871	0	393	2,662	1,357	0
Belize	4,328	6,874	0	0	1,224	502	0	0
Swaziland	0	2,843	6,636	0	0	179	1,659	0
Br. Virgin Is.	2,016	4,181	0	0	564	1,614	0	0
Qatar	5,447	0	0	0	2,268	0	0	0
Norway	0	4,945	0	0	0	1,235	0	0
Djibouti	0	0	335	0	0	0	96	0
Iceland	0	0	106	0	0	0	14	0
Bolivia	0	0	1	0	0	0	1	0

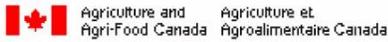
Source: Statistics Canada

BEEF PRODUCT EXPORTS (cont'd.)

Exports to All Countries



BEEF PRODUCT EXPORTS (cont'd)



Canada's Exports to All Countries

Beef and Veal Products

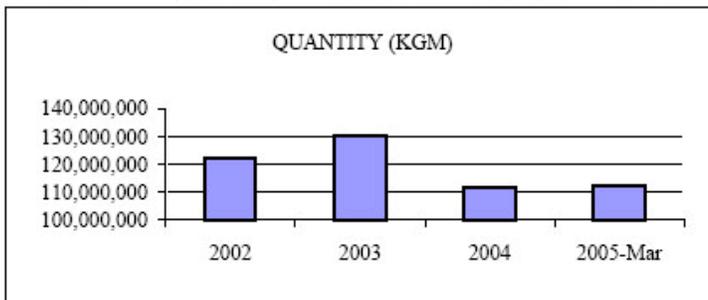
HS: Various Month	VALUE (Cdn\$)				QUANTITY (KGM)			
	2002	2003	2004	2005-Mar	2002	2003	2004	2005-Mar
Jan	173,243,038	200,339,161	143,319,495	142,116,922	39,634,683	44,307,982	33,748,247	33,638,920
Feb	180,335,085	185,350,250	155,921,027	153,158,263	39,173,552	41,281,992	37,034,439	34,844,864
Mar	199,620,724	196,454,376	173,253,903	190,121,028	43,672,042	45,093,166	40,916,427	43,759,689
Apr	185,741,951	182,375,376	178,343,893		41,238,266	41,831,457	39,339,110	
May	189,076,610	116,218,210	158,459,134		44,685,193	28,197,406	32,355,056	
Jun	209,355,410	933,906	172,490,290		51,297,359	202,814	41,170,717	
Jul	182,237,296	1,160,745	162,608,763		46,307,895	476,846	36,728,978	
Aug	204,221,496	1,181,220	159,538,318		49,777,517	505,118	36,853,888	
Sep	177,658,818	79,086,059	152,175,144		43,434,557	13,986,943	37,300,845	
Oct	183,985,533	169,484,530	173,546,045		44,414,656	35,062,431	42,724,692	
Nov	179,560,180	179,482,248	163,103,380		40,906,846	38,201,157	42,038,480	
Dec	163,010,113	158,127,900	146,229,809		37,651,768	36,416,722	36,700,410	
TOTAL	2,228,046,254	1,470,193,981	1,938,989,201	485,396,213	522,194,334	325,564,034	456,911,289	112,243,473

Provinces

Newfoundland	4,298	18,067	32,365	0	409	2,215	3,652	0
Nova Scotia	98,000	160	8,422	5,284	19,600	20	1,839	1,166
New Brunswick	1,387,585	148,281	421,181	0	816,971	95,391	177,401	0
Québec	185,590,883	91,414,962	108,008,820	27,703,037	36,960,512	17,265,444	18,378,354	5,110,123
Ontario	329,694,672	257,860,215	287,271,178	73,514,890	81,000,683	59,837,257	75,375,742	18,110,132
Manitoba	1,562,412	609,333	2,981,242	427,879	307,089	189,854	584,799	85,022
Saskatchewan	55,194,408	23,196,690	1,263,504	280,348	19,458,085	7,949,138	1,230,736	136,566
Alberta	1,649,901,428	1,094,856,526	1,537,120,654	383,070,880	382,132,655	239,572,175	360,625,305	88,738,211
British Columbia	4,606,387	2,089,747	1,881,835	393,895	1,497,471	652,540	533,461	62,253
NWT+Yukon	6,181	0	0	0	859	0	0	0

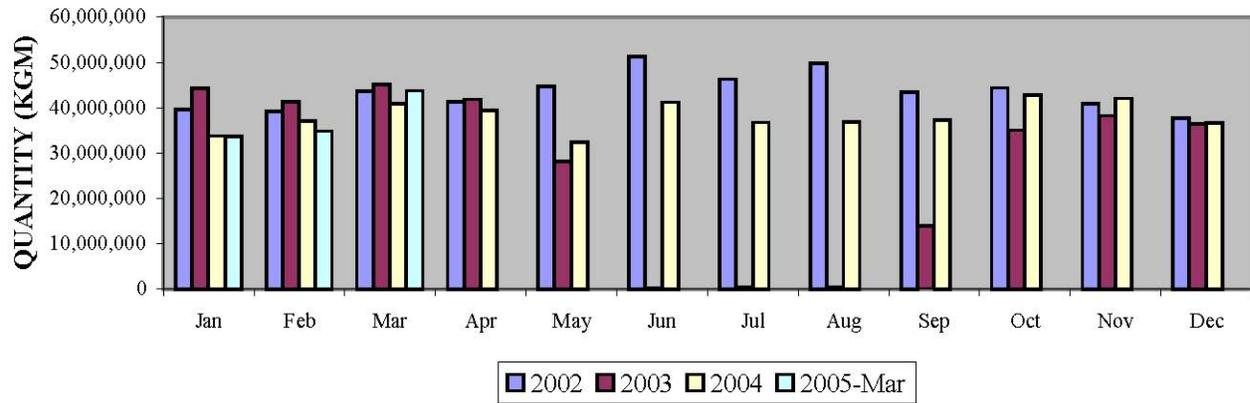
Year-to-date totals

	2002	2003	2004	2005-Mar
Value	553,198,847	582,143,787	472,494,425	485,396,213
Quantity	122,480,277	130,683,140	111,699,113	112,243,473



Value per unit based on reported value/quantity

	2002	2003	2004	2005-Mar
Jan	\$4.37	\$4.52	\$4.25	\$4.22
Feb	\$4.60	\$4.49	\$4.21	\$4.40
Mar	\$4.57	\$4.36	\$4.23	\$4.34
Apr	\$4.50	\$4.36	\$4.53	
May	\$4.23	\$4.12	\$4.90	
Jun	\$4.08	\$4.60	\$4.19	
Jul	\$3.94	\$2.43	\$4.43	
Aug	\$4.10	\$2.34	\$4.33	
Sep	\$4.09	\$5.65	\$4.08	
Oct	\$4.14	\$4.83	\$4.06	
Nov	\$4.39	\$4.70	\$3.88	
Dec	\$4.33	\$4.34	\$3.98	
Year	\$4.27	\$4.52	\$4.24	\$4.32

BEEF PRODUCT EXPORTS (cont'd)**Monthly Trade**

Source: Statistics Canada