PRB 03-01E

MAD COW DISEASE AND THE BOVINE INDUSTRY IN CANADA

Frédéric Forge
Science and Technology Division

Jean-Denis Fréchette, Principal
Economics Division

22 May 2003
Revised 2 September 2003

PARLIAMENTARY RESEARCH BRANCH
DIRECTION DE LA RECHERCHE PARLEMENTAIRE

The Parliamentary Research Branch of the Library of Parliament works exclusively for Parliament, conducting research and providing information for Committees and Members of the Senate and the House of Commons. This service is extended without partisan bias in such forms as Reports, Background Papers and Issue Reviews. Analysts in the Branch are also available for personal consultation in their respective fields of expertise.

CE DOCUMENT EST AUSSI PUBLIÉ EN FRANÇAIS

TABLE OF CONTENTS

Page

CANADA

LIBRARY OF PARLIAMENT
BIBLIOTHÈQUE DU PARLEMENT

MAD COW DISEASE AND THE BOVINE INDUSTRY IN CANADA

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 is now testing 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 a case of BSE in May 2003, as well as the measures that have been proposed to improve the existing system. The last section discusses the consequences of closing 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 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

(1) *The BSE Inquiry Report*, 2000. The report can be found at the following Web address: http://www.bseinquiry.gov.uk/.

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; environmental transmission is not possible in the case of BSE, but 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 butcher 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 entitled "Consequences for the Bovine Industry," below.

Nevertheless, 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:

- destruction of the herd in which a case is diagnosed;
- destruction of the herd in which the diseased animal was born;
- destruction of the birth cohort of the diseased animal;
- destruction of animals with the same lineage (mother and descendants); and
- destruction of 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 butcher cow 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 because of pneumonia. Under the

---

(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).

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 originate from the period that preceded the 1997 ban on feeding cattle ruminant-derived meat meal and bone meal. They believe that if a new case is discovered, it is more likely to occur in a butcher 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.

CONSEQUENCES FOR THE BOVINE INDUSTRY

Even though further cases of mad cow disease cannot be discounted in the future, nothing indicates that Canada is experiencing a flare-up similar to what occurred in Europe. Domestic consumption of beef has remained relatively stable, and the additional health measures will only strengthen consumer confidence in the inspection system. With stable sanitary conditions and consumption within Canada, loss of export markets constitutes the greatest challenge for the cattle industry because Canada exports 60% of its production. Discovery of the second case of BSE in May 2003 led to the immediate closure of the American border to imports of beef and live cattle from Canada. Canadian exports of cattle and beef products totalled $4.5 billion in 2002, and 80% of those exports were to the United States. The closing of the border led to a major reduction in the price of beef paid to farmers. The industry estimates that it has lost close to $11 million each day in exports since the ban and almost $7 million per day because of the drop in price.(11)

(11) On 18 June 2003, the government announced a temporary national assistance program that would allow the Canadian cattle industry to continue operations while the borders remained closed. For more information, see the Agriculture and Agri-Food Canada Web site: http://www.agr.gc.ca/cb/news/2003/n30618ae.html. See also Appendix I for a description of the $460-million assistance program, which received an additional $36 million on 12 August 2003.

As previously mentioned, prior to the discovery of the second case of BSE, Canada was on the Office international des épizooties (OIE) [International Office of Epizootics] list of *provisionally BSE-free* countries. According to the OIE's BSE standards, a country may be:

- BSE-free
- Provisionally BSE-free
- Minimal BSE risk
- Moderate BSE risk
- High BSE risk

To be considered BSE-free, a country must have met certain criteria (such as prohibiting the use of meat meal and bone meal, etc., in ruminant feed) over the past seven years. Canada was considered provisionally BSE-free because it met all the necessary criteria to be BSE-free, but for a period of less than seven years. Imports from a country on the BSE-free list, or on the provisionally BSE-free list, cannot be banned for reasons linked to the disease. Due to the discovery of the second case of BSE, this status will be reassessed, but it is clear that in the future Canada will not meet the conditions to be officially considered BSE-free or provisionally BSE-free. If no further cases are detected and the disease remains rare in Canada, Canada could be placed on the list of *low-risk BSE* countries.

Now that Canada has lost its official status as a provisionally BSE-free country, Canadian authorities must try to convince our trading partners of the safety of Canadian products in order to reopen export markets. In particular, they must provide proof that the disease is extremely rare and that adequate measures have been taken to avoid any risk of transmission.

On 24 July 2003, the CFIA and Health Canada announced modifications to regulations(12) so that SRM would be removed from the human food chain. This measure avoids any contamination of meat by tissues (such as brain or marrow tissues) that may have been infected. According to the OIE, this is a condition that a country may impose when it wishes to import fresh meat and bovine meat-based products from a *low-risk BSE* country. Provided that no further cases are found, this measure should in principle suffice to reopen borders to Canadian beef products.

---

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

The question remains, however, regarding live cattle, which represent slightly more than 40% of the value of exports of Canadian beef and beef products, and which are destined almost entirely for the American market. North American beef production is very integrated: many Canadian and American cow-calf operators export their calves to feed lots across the border and the animals eventual re-cross the border for slaughter, cutting and packaging. This requires a certain degree of uniformity in terms of sanitary practices in both countries. Such uniformity already existed prior to the May 2003 BSE case, because both countries had identical status and similar measures regarding BSE. Authorizing live cattle exports once again without uniform sanitary conditions could lead to absurd situations: for example, requiring the removal of SRM from an animal slaughtered in Canada (whether or not it was raised in Canada), but not requiring it in the case of an animal that was raised in Canada, but slaughtered in the United States. Major differences between BSE measures in Canada and the United States would hinder the free movement of cattle across the border. Accordingly, Canada, the United States and Mexico made a joint request to the OIE on 25 August 2003, calling for the adoption of commercial practices based on science and internationally accepted principles.

A return to the pre-May 2003 situation would be the ideal scenario for the Canadian bovine industry, but this would seem unlikely to happen for some time. Following its own risk evaluation, the EU gave Canada a status similar to that of a *low-risk BSE* country under the OIE standard, and did not change its opinion following the case that was discovered in May 2003. Its BSE import requirements prohibit the import of live cattle from Canada, and specify certain conditions for beef imports from Canada, such as the removal of SRM. The American decision taken on 8 August, and Mexico's similar decision three days later, to open their borders to imports of boneless Canadian beef from animals younger than 30 months and boneless meat from calves 36 weeks or younger (at the time of slaughter), reflects the European approach. Notably, it confirms the fact that the Canadian bovine industry did not automatically return to pre-May 2003 conditions.

If this new status becomes the norm, a restructuring of the cattle industry may quickly take place. The number of cow-calf operations may decline, because they will no longer be able to export to American feedlots. Canadian feedlot operators could still be supplied from the United States, but could sell their production only to the Canadian packing industry, which in turn could expand.

CONCLUSION

The second case of mad cow disease in Canada, 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; the Canadian bovine industry will have to restructure itself to adapt to this new reality.

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.

On 8 August, the United States announces it will partially reopen its border to Canadian beef by limiting beef imports to boneless meat from cattle less than 30 months old and boneless meat from calves 36 weeks or younger at the time of slaughter. In addition, imports of boneless meat from sheep and goats less than 12 months old, and fresh or frozen beef liver, are allowed.

On 11 August, Mexico makes a similar announcement.

APPENDIX I

Source: Agriculture and Agri-Food Canada

June 27, 2003

The BSE RECOVERY PROGRAM

ISSUE:

Canada exports some 60 percent of its total annual production of beef and live cattle. Of this, approximately 80 percent of the beef and virtually 100 percent of the live cattle are sold into the US market. Following the discovery of one cow that tested positive for BSE, all of Canada's major export markets were closed on May 20, 2003. This has created a severe backlog of cattle throughout the Canadian beef system.

Previous to May 20, Canadian producers were marketing approximately 90,000 head per week. Of these 20,000 were sold to export markets and 70,000 were being slaughtered for domestic and export beef markets. With the loss of Canada's export markets, slaughter has dropped to 30,000 per week. The result is that between 50,000 and 60,000 head per week are backing up into the primary production system.

Beef slaughter-processing plants produce four general categories of products: high priced beef cuts, low priced beef cuts, trim (lean and fat) for grinding, and edible offal (organ meats, stomach, tongues etc.). Traditionally, export markets absorbed the majority of lower valued beef cuts (e.g., fat trim). As these markets have been lost, sales of these lower-value cuts have slowed thereby blocking the system and reducing Canada's effective slaughter capacity.

OBJECTIVE:

The primary objective of this program is to help reduce the pressure in the production chain while the industry faces a completely closed border. It is the first phase of the efforts to manage the challenges of constricted market access and would end once there is a significant opening of the border. Once the border opens, even partially, the situation in the supply chain will shift significantly. Governments will continue to work with industry to determine what the second phase of action would encompass to help facilitate the recovery of the industry.

Specific objectives include the following:

1) Increase the current domestic slaughter rate of Canadian cattle (fed and non-fed cattle, veal calves) from 30,000 head to more than 50,000 head.

2) Moderate the further accumulation of inventory of slaughter cattle and calves.

3) Moderate the outflow of cattle or beef when the American border opens.

4) Increase the liquidity in the beef value chain.

5) The program is not intended to compensate all partners in the beef-value chain who may have suffered an income loss as a result of the BSE crises.

The program will have a fixed federal/provincial spending envelope of $460 million. This amount will be shared on a 60% - 40% federal-provincial cost share formula. This will be calculated on the basis of the province of origin of the animal slaughtered.

June 27, 2003

PART 1: SLAUGHTER PROGRAM

PROGRAM PRINCIPLES:

1) National in scope
2) Program is temporary and does not replace or disrupt the long-term safety net program.
3) Federal/provincial/industry cost sharing
4) Encourages market transparency
5) Encourages active packer bidding
6) Encourages sale of fed and non-fed slaughter cattle and veal calves at the best price

PROGRAM DESCRIPTION:

Coverage:

1) Fed (steers and heifers) and non-fed (cows and bulls) cattle and veal calves sold directly for slaughter in Canada.
1) Cattle must be delivered for slaughter within 14 days of sale.
2) Other ruminants or their products (e.g., sheep, deer, elk, bison, musk ox, cariboo) which have been affected by trade restrictions since May 20, 2003.

Time Period:

1) Payments are available for all cattle owned prior to May 20, 2003 and that have been subsequently sold for slaughter in Canada.
2) For fed cattle, and grain and milk fed veal, payments will be available for those that were on feed as of May 20, 2003, and will terminate once these cattle are sold to slaughter. Notwithstanding the foregoing, in the case of non-fed cattle and other ruminants, the program will terminate August 31, 2003.
3) The program will terminate at the close of business on the day the U.S. border is opened to muscle cuts or shipments of live cattle. (Cattle sold on or prior to this date would have to be slaughtered within 14 days of opening.)
4) Regardless of circumstances, if governments' costs reach the maximum $460 million, the program will terminate.

Payment Calculation:

1) Payment compensates producers when price per pound falls below a reference price.
2) Payment is based on live weight multiplied by an adjusted market loss differential. (Appendix 1)
3) The market loss differential is on a sliding scale designed to protect producer equity and encourage markets to operate (Appendix 2).
4) A western Canadian and eastern Canadian reference price will be calculated for all classes of animals and products covered by the program.
5) Payments are considered as farm income for support payment calculations and tax slips will be issued in the name of the producer.

Eligibility:

1) Producers raising and selling cattle in Canada
2) In cases where producers have used the service of a licensed cattle dealer or agent, the producer will receive the payment

Administration:

1) The preferred approach will be for provincial administration.

PROGRAM DISCIPLINES

In order to encourage the normal marketing of cattle, at the best possible price, the following criteria will apply:

1) Payment to producers will be based, not on individual sales by producers, but on the difference between the regional weekly, weighted average cattle price and the reference price. The weekly average price will not include any discounts that have been applied to individual animals (e.g., carcass size discounts).
2) The percentage of cost-sharing provided by government will decline if the price declines as per Appendix 2.
3) Animals, whose carcasses are condemned at the packing plant, do not qualify for payment.
4) Proof of slaughter means:
    a) a settlement statement from a licensed processor indicating the settlement date or the slaughter date, or:
    b) a sale receipt from an Auction market or a sale agent which contains a certification number for a statement kept by the auctioneer or the sale agent expressing the purchaser commitment to deliver the animal for slaughter within 14 days, or:
    c) a certificate by the purchaser that the animal has been purchased for slaughter within 14 days.

EQUITY OF ACCESS

For the program to function effectively, given the closed border, it is essential that animals and product move freely across provincial and territorial boundaries for slaughter and consumption, given the uneven distribution across Canada of slaughter facilities and markets. It is also important that individual producers have equitable access to the program so they can move cattle to market.

A regionally balanced committee comprised of producers, packers and governments has been established to regularly monitor market conditions and their impact on the program. The committee will make recommendations to Federal/Provincial Ministers on possible adjustments to the program or any further measures that may be needed to maintain the free movement of

animals and product and equitable access. The committee will be asked to pay particular attention to:

- equity of access by all producers to slaughter plants;
- equity in pricing;
- wholesale market dynamics; and
- changes in industry structure.

June 27, 2003

PART 2: INVENTORY AND PRICING INCENTIVE

OBJECTIVE:

The Inventory and Pricing Incentive Program is offered to encourage increased cattle slaughter by assisting packing plants in their efforts to clear the slowest selling items in inventory and to offer higher prices for cattle they purchase.

The key features of this proposal are:

1) Using the authority provided by the *Farm Income Protection Act, Section 12.5*, a contribution will be offered to owners of packing plants.

2) The contribution will be based on the by-products value of animals slaughtered.

3) The value of the by-products will be derived from prices paid in U.S. for similar products.

4) The payment to packers will be calculated by multiplying the estimated value of the by-products by the ratio of the market price to the reference price as calculated for the purpose of the slaughter program. Therefore, the contribution will increase as the price paid for cattle increases. A weekly calculation will be made for each class of ruminants supported under the program.

5) As market conditions will vary over the next few weeks, the federal government reserves the right to adjust the contribution from time to time.

Eligibility:

1) Any federally or provincially inspected/licensed packing plant.

2) By-products include, but are not limited to: hide, tallow, tongues, cheek meat, head meat, oxtail, heart, lips, livers, tripe, lungs.

3) By-products must have been produced from June 19, 2003 to August 31, 2003 (inclusive), or the date on which the USA border opens (partially or completely), whichever is earlier;

4) The program may terminate earlier if funds are depleted before the end dates for the program.

June 27, 2003

Program Operations:

With the understanding that the government contribution will be used to reduce inventory of surplus products and to encourage active bidding for cattle, a payment will be made to packers for cattle, calves and other ruminants purchased and slaughtered during the period when the program is offered.

Using by-products from fed cattle as an example, the payment will be calculated as follows:

Weekly average representative US value for similar by-products adjusted to Canadian dollars.

X Current week fed-cattle price divided by current week cattle reference price

= Government payment per head

The program requires that slaughter plants provide:

1) Proof of purchase and slaughter.
2) Province of Origin of the slaughter animals.
3) Other conditions may also apply.

The program will be administered by provincial governments.

An audit of the program will be undertaken as soon as the program terminates;

Ten percent of any contribution may be with held until audit of the slaughter establishment is completed;

Packers could be paid in more than one installment under the program.

Federal or provincial meat inspectors may be requested to verify information provided by a packer.

TOTAL PROGRAM COSTS:

Aggregate Government Cost:

Slaughter program	**$ 420 Million**
Inventory Incentive	**$ 30 Million**
Administration	**$ 10 Million**
Total	**$ 460 Million**

June 27, 2003

Detailed Program Costs:

Fed Cattle:

- 140,000 slaughtered May 20 to June 21
- estimated average slaughter 60,000 head/week
  - 10 week estimate
  - 600,000 head
- estimated maximum number of head 740,000
- **Total Government Cost: $365 million**

Non-Fed Cattle:

- 6,400 slaughtered May 20 to June 21
- estimated average slaughter 9,000 head/week
  - 10 week estimate
  - 90,000 head
- estimated maximum number of head 96,000
- **Total Government Cost : $25 million**

Veal Calves:

- 24,228 slaughtered May 20 to June 21
- estimated average slaughter 4,500 head/week
  - 10 week estimate
  - 45,000 head
- estimated maximum number of head 69,000
- **Total Government Cost: $15 million**

Other Ruminants:

- **Total Government Cost: $15 million**

June 27, 2003

APPENDIX 1:

MARKET LOSS CALCULATION:

Fed Cattle and Bison[1]:

	Weekly average US 5 market slaughter price (Texas-Oklahoma, Kansas, Colorado, Nebraska, Iowa-Minnesota). Lagged 4 weeks[2].
X	exchange rate (Bank of Canada - US dollar close, lagged weekly average)
=	US Price in Canadian dollars
–	fixed C$ 5 basis
=	**REFERENCE PRICE**
–	Actual Canadian plant weekly average price
=	Price Gap (cents per pound) "Market Loss Differential"
X	average deficiency payment rate on sliding scale (Appendix 2)
=	deficiency payment (cents per pound)
X	market weight
=	government payment per head

1. Bison data is very limited. As such a fed cattle price will be used as a proxy. Bison, prior to the onset of the BSE crises were trading at a small premium to fed cattle.

2. *Lagged 4 weeks.* The current weekly reference price will be compared to a US-based reference price from 4 weeks earlier. For example, Canadian prices for the week ending June 21 will be compared against the week ending May 24 US-based price. Where the current time is "t"; the lagged time is "t - 4 weeks".

3. The same methodology used for live fed cattle sales, for calculation of the deficiency payment, may also be used for fed cattle sold on a dressed basis. Where applicable, the live cattle price will be converted to a carcass price equivalent. This adjustment will be of use in those provinces where settlement is often done on a carcass basis.

June 27, 2003

Non-Fed Cattle (cull cows/bulls):

Weekly average US cull cow/bull price adjusted to Canadian dollars. Lagged four weeks[1].

–	adjust for the basis
=	Cash price in Alberta/E. Canada (derived from US Market)
–	Actual Canadian plant weekly average price (from AAFC)
=	Price Gap (cents per pound) "Market Loss Differential"
X	average deficiency payment rate on sliding scale (Appendix 2)
=	deficiency payment (cents per pound)
X	market weight
=	government payment per head

1. *Lagged 4 weeks.* The current weekly reference price will be compared to a US-based reference price from 4 weeks earlier. For example, Canadian prices for the week ending June 21 will be compared against the week ending May 24 US-based price. Where the current time is "t"; the lagged time is "t - 4 weeks".

2. The same methodology used for live non-fed cattle sales, for calculation of the deficiency payment, may also be used for non-fed cattle sold on a dressed basis. Where applicable, the live cattle price will be converted to a carcass price equivalent. This adjustment will be of use in those provinces where settlement is often done on a carcass basis.

June 27, 2003

Veal Calves (milk and grain fed):

Weekly US veal calf price adjusted to Canadian dollars. Lagged four weeks[1].

–	adjust for the basis
=	Cash price in Alberta/E. Canada (derived from US Market)
–	Actual Canadian plant weekly average price (from AAFC)
=	Price Gap (cents per pound) "Market Loss Differential"
X	average deficiency payment rate on sliding scale (Appendix 2)
=	deficiency payment (cents per pound)
X	market weight
=	government payment per head

1. *Lagged 4 weeks*. The current weekly reference price will be compared to a US-based reference price from 4 weeks earlier. For example, Canadian prices for the week ending June 21 will be compared against the week ending May 24 US-based price. Where the current time is "t"; the lagged time is "t - 4 weeks".

2. The same methodology used for live veal calf sales, for calculation of the deficiency payment, may also be used for veal calves sold on a dressed basis. As well where necessary/applicable, the live price will be converted to a carcass price equivalent. This adjustment will be of use in those provinces where settlement is often done on a carcass basis.

June 27, 2003

APPENDIX 2

The Sliding Scale Deficiency Payment

The deficiency coverage declines in a graduated fashion. This sliding scale balances several goals:

- high degree of equity protection for producers;
- as price declines, market signals begin to operate, enabling markets to reach a natural balance;
- balances risk sharing between governments and industry.

A table follows providing details of the deficiency payment calculation.

Reference Price A	Market Price as % of Reference Price B	Payment Rate as % of Market Price Decline C	Payment as % of Reference Price D	Producer Return as % of Reference Price B + D
100%	100%			**100.00%**
	95%	**90%**	4.5%	**99.50%**
	90%	**90%**	9.0%	**99.00%**
	85%	**90%**	13.5%	**98.50%**
	80%	**90%**	18.0%	**98.00%**
	75%	**75%**	21.8%	**96.80%**
	70%	**75%**	25.5%	**95.50%**
	65%	**75%**	29.3%	**94.25%**
	60%	**75%**	33.0%	**93.00%**
	55%	**50%**	35.5%	**90.50%**
	50%	**50%**	38.0%	**88.00%**
	45%	**20%**	39.0%	**84.00%**
	40%	**20%**	40.0%	**80.00%**
	35%	**10%**	40.5%	**75.50%**
	30%	**10%**	41.0%	**71.00%**
	25%	**10%**	41.5%	**66.50%**
	20%	**10%**	42.0%	**62.00%**
	15%	**10%**	42.5%	**57.50%**
	10%	**10%**	43.0%	**53.00%**
	5%	**10%**	43.5%	**48.50%**
	0%	**10%**	44.0%	**44.00%**

Deficiency Payment Calculation:

The following table provides guidance to program administrators in interpreting the payment rate schedule.

PAYMENT RATES - Price Bands	
Price as a Percentage of Reference Price	**Payment Rate (%)**
80 -100	90
60 - 79.9	75
50 - 59.9	50
40 - 49.9	20
0 - 39.9	10

APPENDIX II

Expected Distribution of Initial Federal Funding for BSE Compensation ($276 million)

	(in $)										
	NFLD	**PEI**	**NS**	**NB**	**QC**	**ON**	**MAN**	**SASK**	**ALTA**	**B.C.**	**TOTAL**
Feed Cattle (heifers & steers)	12,000	2,152,936	669,500	972,000	21,154,897	90,186,658	10,462,850	18,001,075	224,777,561	4,203,573	372,593,050
Veal Milk Fed			18,000		14,300,103	475,715					14,775,818
Veal Grain Fed					8,412,277	1,892,910				42,062	8,365,249
Cows & Bulls	210,000	56,565	549,000	372,000	4,627,076	1,163,803	2,398,744	1,400,567	3,925,715	630,589	15,334,059
Other (lamb, sheep, elk)	3,000	7,581	32,210		5,000,000	496,352	1,540,468	325,625	6,000,000		13,405,236
Packers Incentive	5,000	318,000	202,450	248,000	6,464,520	2,273,263	1,337,938	1,933,750	22,743,667		35,526,588
TOTAL BSE Compensation Costs	230,000	2,535,682	1,471,160	1,592,000	57,958,873	96,488,702	15,740,000	21,661,017	257,446,943	4,876,224	460,000,000
TOTAL Federal Share (60%)	138,000	1,521,049	882,696	955,200	34,775,324	57,893,221	9,444,000	12,996,610	154,468,166	2,925,734	276,000,000

Source: Agriculture and Agri-Food Canada, 29 August 2003.
Table by Parliamentary Research Branch, Library of Parliament

Note: The above numbers do not include an additional $36 million in funding announced on 12 August 2003.

APPENDIX III

BEEF, VEAL AND EDIBLE OFFAL EXPORTS*

2002 Beef, Veal and Edible Offal - Exports by Market

	Tonnes	Value $000
United States	409,909	1,838,075
Mexico	53,725	199,779
Japan	20,181	80,719
Korea, South	14,421	49,692
Taiwan	3,802	19,798
Hong Kong	607	2,872
Cuba	1,522	3,329
Russia	4,746	4,382
Saudi Arabia	444	5,857
Peru	2,680	2,284
China, P. Rep.	1,535	4,114
Chile	1,156	953
Other	7,417	15,776
TOTAL	**522,143**	**2,227,631**

2002 Beef, Veal and Edible Offal Exports by Province of Exit

	Tonnes	Value $ '000
Newfoundland	0	4
PEI	0	0
Nova Scotia	20	98
New Brunswick	817	1,388
Québec	36,961	185,591
Ontario	81,001	329,695
Manitoba	307	1,562
Saskatchewan	19,458	55,194
Alberta	382,082	1,649,486
British Columbia	1,497	4,606
NWT+Yukon	1	6
Nunavut	0	0
TOTAL	**522,143**	**2,227,631**

2002 Beef, Veal and Edible Offal - Exports by Major Province (tonnes)

	Alberta	B.C.	Sask	Manitoba	Ontario	Quebec
United States	283,032	450	18,534	303	73,473	33,410
Mexico	52,959	74	244	0	448	0
Japan	18,177	37	0	4	1,822	142
South Korea	10,488	429	18	0	3,416	70
Taiwan	3,598	44	0	0	142	17
Russia	3,971	0	25	0	267	484
Cuba	483	0	205	0	122	711
Colombia	914	46	102	0	140	0
Indonesia	263	71	99	0	147	24
Saudi Arabia	0	0	0	0	63	381
Other	8,196	347	232	0	962	1,722
TOTAL	382,082	1,497	19,458	307	81,001	36,961

2002 Beef, Veal and Edible Offal - Exports by Major Province ($ '000 Cdn)

	Alberta	B.C.	Sask	Manitoba	Ontario	Quebec
United States	1,301,729	1,846	53,954	1,546	306,488	171,297
Mexico	197,224	317	533	0	1,705	0
Japan	67,231	210	0	17	11,915	1,347
South Korea	42,646	1,715	89	0	5,144	92
Taiwan	18,788	186	0	0	675	150
Russia	3,650	0	20	0	227	485
Cuba	558	0	192	0	330	2,249
Colombia	822	54	92	0	105	0
Indonesia	357	61	112	0	125	14
Saudi Arabia	0	0	0	0	1,010	4,847
Other	16,481	218	203	0	1,971	5,110
TOTAL	1,649,486	4,606	55,194	1,562	329,695	185,591

Source: Statistics Canada - CATS database, March 2003

** Includes beef, veal and bison carcasses, cuts, offal, and cured product*

LIVE CATTLE EXPORTS

2002 Live Cattle - Exports by Province or Territory of Exit

	# Head	Value $Cdn
Newfoundland	455	114,453
PEI	1,550	2,170,913
Nova Scotia	368	507,453
New Brunswick	3,230	5,233,596
Québec	44,148	50,652,765
Ontario	294,603	355,026,477
Manitoba	264,061	273,209,183
Saskatchewan	438,883	389,318,346
Alberta	512,581	636,726,003
British Columbia	130,743	118,877,066
NWT	0	0
Yukon	0	0
Nunavut	0	0
CANADA	**1,690,622**	**1,831,836,255**

2002 Live Cattle - Exports by Destination

	# Head	Value $Cdn
United States	1,688,672	1,824,286,877
China, P. Rep.	1,186	6,061,153
Mexico	114	318,995
Japan	553	717,391
Korea, South	15	198,278
Brazil	16	132,084
France	20	62,700
Argentina	6	17,177
St Pierre-Miq.	18	19,600
Guatemala	22	22,000
Other	0	0
CANADA	**1,690,622**	**1,831,836,255**

2002 Live Cattle - Exports by Major Province (# head)

	BC	Alberta	Sask	Manitoba	Ontario
United States	130,742	512,339	437,897	264,061	294,449
China, P. Rep.	0	200	986	0	0
Mexico	0	0	0	0	26
Japan	0	0	0	0	98
Korea, South	1	0	0	0	14
Brazil	0	0	0	0	10
France	0	20	0	0	0
Argentina	0	0	0	0	6
St Pierre-Miq.	0	0	0	0	0
Guatemala	0	22	0	0	0
Other	0	0	0	0	0
Total	**130,743**	**512,581**	**438,883**	**264,061**	**294,603**

2002 Live Cattle - Exports by Major Province ($ Cdn)

	BC	Alberta	Sask	Manitoba	Ontario
United States	118,861,333	635,209,081	384,689,415	273,209,183	353,976,018
China, P. Rep.	0	1,432,222	4,628,931	0	0
Mexico	0	0	0	0	142,060
Japan	0	0	0	0	602,938
Korea, South	15,733	0	0	0	182,545
Brazil	0	0	0	0	105,739
France	0	62,700	0	0	0
Argentina	0	0	0	0	17,177
St Pierre-Miq.	0	0	0	0	0
Guatemala	0	22,000	0	0	0
Other	0	0	0	0	0
Total	**118,877,066**	**636,726,003**	**389,318,346**	**273,209,183**	**355,026,477**

Source: Statistics Canada - CATS database, March 2003

ALL OTHER CATTLE RELATED PRODUCTS*

2002 All Other Cattle Related Products
Exports by Market

	Quantity**	Value $000
United States		185,793
Taiwan		59,533
China		36,900
South Korea		22,766
Italy		17,040
Thailand		17,927
Hong Kong		14,468
Japan		10,565
Germany		6,585
France		6,117
United Kingdom		5,116
Other		20,747
TOTAL	**n/a**	**403,557**

2002 All Other Cattle Related Products
Exports by Province of Exit

	Quantity**	Value $ '000
Newfoundland		26
PEI		168
Nova Scotia		587
New Brunswick		355
Québec		52,139
Ontario		176,281
Manitoba		5,949
Saskatchewan		6,150
Alberta		152,900
British Columbia		8,845
NWT+Yukon		158
Nunavut		0
TOTAL	**n/a**	**403,557**

2002 All Other Cattle Related Products - Exports by Major Province ($ '000 Cdn)

	Alberta	B.C.	Sask	Manitoba	Ontario	Quebec
United States	33,976	4,987	5,008	5,687	107,851	27,046
Taiwan	39,726	623	0	0	18,717	468
China	27,993	798	1,142	0	3,887	3,081
South Korea	15,763	1,025	0	0	1,398	4,580
Italy	262	0	0	0	6,703	10,074
Thailand	14,278	199	0	0	1,884	1,565
Hong Kong	12,103	1,151	0	30	321	863
Japan	3,708	42	0	0	6,178	636
Germany	615	0	0	0	5,910	60
France	436	0	0	0	4,095	1,586
United Kingdom	315	19	0	0	4,722	60
Other	3,725	0	1	232	14,615	2,119
TOTAL	**152,900**	**8,845**	**6,150**	**5,949**	**176,281**	**52,139**

Source: Statistics Canada - CATS database, March 2003

** Includes waste, hides, semen, embryos, bonemeal*
*** Quantities are in various units and cannot be totalled*