

# Cattle traceability system in Japan for bovine spongiform encephalopathy

Katsuaki Sugiura<sup>(1)</sup> & Takashi Onodera<sup>(2)</sup>

## Summary

To promote consumer confidence in the safety of beef and to ensure the proper implementation of eradication measures against bovine spongiform encephalopathy (BSE), the Cattle Traceability Law was approved by the Diet in June 2003 and a cattle traceability system has been in operation in Japan since December 2003. The system enables tracing the cohort and offspring animals of a BSE case within 24 h of its detection. The traceability database system also provides distributors, restaurants and consumers with information on the cattle from which the beef that they sell, serve and consume originate.

## Keywords

Beef, Bovine spongiform encephalopathy, Cattle, Food safety, Traceability, Japan.

## Sistemi di tracciabilità negli allevamenti bovini in Giappone in relazione ad encefalopatia spongiforme

### Riassunto

*Per promuovere la fiducia dei consumatori sulla sicurezza della carne bovina e garantire una corretta implementazione delle misure di eradicazione dell'encefalopatia spongiforme bovina (BSE), nel giugno 2003 è stata approvata dall'Assemblea Legislativa la legge sulla Tracciabilità dei Bovini, diventata pertanto operativa in Giappone dal mese di dicembre 2003. Il sistema permette di tracciare la coorte di nascita e la*

*prole di un caso di BSE entro 24 ore dal riconoscimento. Una banca dati, inoltre, fornisce informazioni ai distributori, ristoranti e consumatori sul capo di bestiame dal quale proviene la carne che vendono, servono e consumano.*

### Parole chiave

Bestiame, Carne bovina, Encefalopatia spongiforme bovina, Giappone, Sicurezza degli alimenti, Tracciabilità.

## Introduction

The detection of the first case of bovine spongiform encephalopathy (BSE) in September 2001 raised concerns over the safety of beef among Japanese consumers, resulting in a decline in the consumption of beef by 60%. The detection of beef mislabelling cases by Snow Brand Foods Company the following year led to a further deterioration in Japanese consumer confidence in beef.

After the detection of the first case of BSE, the Japanese government introduced the following measures to prevent the spread of BSE:

- the mandatory removal and incineration of specified risk materials (SRM) from all cattle slaughtered for human consumption from 27 September 2001
- a ban on the domestic use of ruminant protein for ruminant feed implemented on 18 September 2001, followed by a ban on the domestic use and importation of all processed animal proteins for the production of feed for ruminants, pigs and chickens and fertilizer, effective from 4 October 2001
- enhancement of BSE surveillance, involving

(1) Food and Agricultural Materials Inspection Centre, 2-1 Shintoshin, Chuo-ku, Saitama-shi, Saitama 330-9731, Japan  
katsuaki\_sugiura@nm.famic.go.jp

(2) Department of Molecular Immunology, University of Tokyo, Bunkyo-ku, Tokyo 113-8657, Japan

mandatory reporting and investigation of all clinical BSE suspects, testing of fallen stock and all cattle slaughtered for human consumption.

In addition to these measures, to regain consumer confidence in beef, the Japanese government decided to accelerate the implementation of the cattle traceability system which was then in place on a trial basis for dairy farmers. Under the cattle traceability emergency establishment project, all bovines (totalling 4.5 million head) were identifiable by ear tag by 31 March 2003.

In June 2003, the Law for Special Measures Concerning the Management and Relay of Information for the Individual Identification of Cattle (Law No. 72, 2003) was approved by the Diet. In accordance with this law, cattle traceability has been in force since 1 December 2003, enabling all cattle to be traced back to their farms of origin from the identification number on their ear tags and beef traceability has been in operation since 1 December 2004, enabling all beef to be traced back to the cattle from which it originates from the identification number on its container or on the packaging.

The authors describe how the cattle traceability system was introduced in Japan, how it functions and how it is overseen.

### Emergency project to accelerate the establishment of the cattle traceability system

In April 1997, a project was initiated to establish a traceability system for dairy cattle. After a feasibility study and coordination between different organisations that would be involved in maintaining the system, a traceability system was initiated on a trial basis with dairy cattle in six prefectures (Hokkaido, Akita, Shizuoka, Ehime, Kumamoto and Okinawa) being identified by ear tags by March 2002 (Fig. 1). In June 2001, a Central Conference for the Preparation of Establishment of a Cattle Traceability System (in which 19 agricultural organisations and 5 prefecture governments participated), agreed to proceed with the attachment of ear tags to

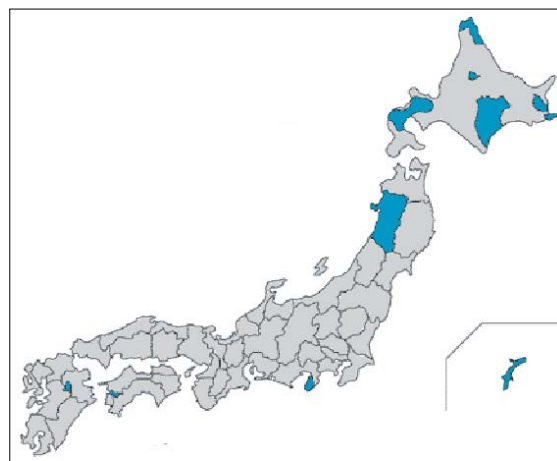


Figure 1  
Location of prefectures in which a cattle traceability system was introduced on a trial basis

all dairy and beef cattle by the end of the 2004 fiscal year.

After the detection of the first case of BSE, it took nearly two months to identify its cohort (all cattle which, during their first year of life, were reared with the BSE case) with intense efforts of prefecture and municipal governments and agricultural cooperatives. An emergency project was initiated to accelerate the establishment of a cattle traceability system and, by March 2003, all 4.5 million bovines in Japan had an ear tag attached with a unique identification number. An example of the ear tag is shown in Figure 2. During this period, a database was established in the National Livestock Breeding Centre (NLBC). In October 2002, information on each bovine animal was available on the Internet. Thus, the cattle traceability system was virtually established before the Cattle Traceability Law was enacted in December 2003.

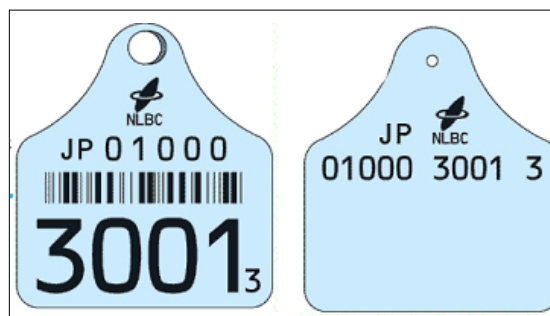


Figure 2  
An example of the ear tag used in the cattle traceability system in Japan

## Law for Special Measures Concerning the Management and Relay of Information for Individual Identification of Cattle (Cattle Traceability Law)

The objective of the law is to give consumers confidence in the safety of beef and to ensure the proper implementation of measures to prevent the spread of BSE by identifying cohort animals expeditiously (1).

The law defines the cattle that are subjected to the cattle traceability system, which include all bovine animals that are born in Japan, except those that died immediately after birth, and all imported bovine animals, except those slaughtered immediately after importation.

To ensure the proper management and relay of information for the individual identification of cattle, the law defines the roles of the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the obligations of cattle owners, importers, exporters and others involved in transactions of cattle and people involved in marketing beef. To ensure the proper implementation of the law, it also prescribes the penalties that apply to those who breach the law.

The obligations of cattle owners, importers, exporters and others involved in transactions of cattle during the production stage have been enforced since 1 December 2003. The obligations of people involved in marketing beef, including wholesalers, retailers and caterers have been enforced since 1 December 2004.

The approximate numbers of people with reporting obligations under the Cattle Traceability Law are shown in Figure 3.

### Obligations of cattle owners

Since 1 December 2003 (date of enforcement of the Cattle Traceability Law), all cattle owners (or cattle keepers who do not necessarily own the cattle but tend to them) have been obliged to attach an ear tag with a unique identification number, provided by the NLBC, to every bovine animal. After that date, cattle owners are obliged to attach an ear tag to any newborn calves, showing an identification number, with the following information provided to the NLBC:

- date of birth
- sex
- identification number of maternal parent
- breed.

Cattle owners who transfer or sell their cattle to others are obliged to immediately provide the following information to the NLBC:

- identification numbers of the cattle transferred/sold
- name and address of the person to whom they have transferred/sold the cattle
- date of transaction.

Cattle owners who have purchased cattle from others are obliged to immediately provide the following information to the NLBC:

- identification number of the cattle purchased
- name and address of the person from whom they have bought the cattle
- date of transaction.

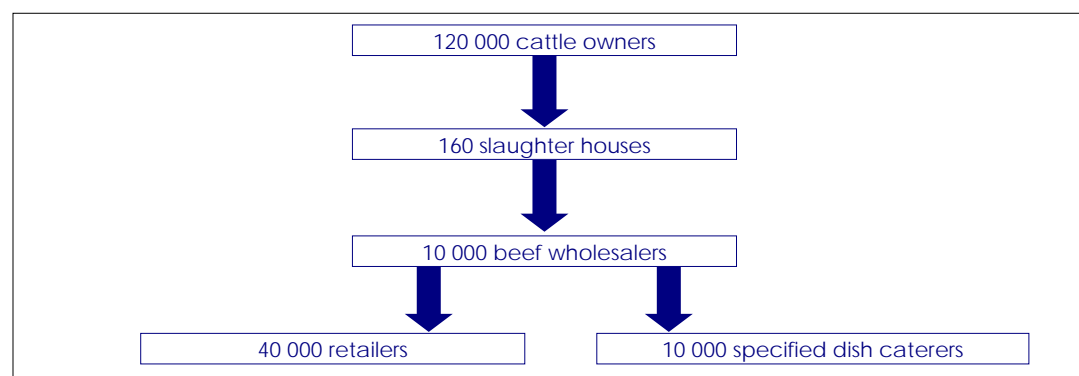


Figure 3  
Approximate number of people with reporting obligations under the Cattle Traceability Law

Cattle owners who have cattle that have died are obliged to immediately provide the following information to the NLBC:

- identification number of the cattle that have died
- date of death.

### Obligations of cattle importers

Cattle importers who have imported cattle are obliged to immediately provide the following information to the NLBC and attach an ear tag with an identification number provided by the NLBC:

- date of import
- breed.

Cattle importers who have sold their cattle to others are obliged to immediately provide the following information to the NLBC:

- identification number of the cattle they have sold
- name and address of the person to whom they have sold the cattle
- date of transaction.

### Obligations of cattle slaughterers

Cattle slaughterers who have slaughtered cattle are obliged to immediately provide the following information to the NLBC:

- identification number of the cattle they have slaughtered
- date of slaughter.

When they delivering beef to other people, cattle slaughterers must provide the identification number of the bovine animal from which the beef is derived.

Cattle slaughterers are obliged to keep a record of the beef that they have delivered, in accordance with the ministerial order issued by the Minister of Agriculture, Forestry and Fisheries.

### Obligations of cattle exporters

Cattle exporters who have exported cattle are obliged to immediately provide the following information to the NLBC:

- identification number of the cattle they have exported
- date of export.

### Obligations of beef distributors

Beef distributors, when they sell their beef to other people, have to display on the container, packaging, invoice or in the shop, the identification number of the cattle from which the beef is derived.

Beef distributors have to keep a record of the beef that they have sold and purchased, in accordance with the ministerial order issued by the Minister of Agriculture, Forestry and Fisheries.

### Obligations of specified dish caterers

Specified dish caterers are the restaurants and caterers who serve Yakiniku, Sukiyaki, Shabushabu dishes or beef steaks as their main business (Fig. 4). Specified dish caterers, when serving one of these dishes, have to display on the dish or at a place that is visible to customers, the identification number of the cattle from which the beef is derived.

Specified dish caterers have to keep a record of the beef that they have served, in accordance with the ministerial order issued by the Minister of Agriculture, Forestry and Fisheries.

## Cattle traceability database

The Minister of Agriculture, Forestry and Fisheries has entrusted the NLBC with the task of maintaining a database for cattle traceability. For every bovine animal that exists in Japan or has been slaughtered or died in the past three years, the following information is recorded and updated upon submission of reports by cattle owners, importers and others involved in transactions of cattle:

- identification number
- date of birth or importation
- sex
- identification number of maternal parent
- name and address of cattle owner or importer
- date from which ownership started
- date of slaughter, death or export
- other information (breed, name and address of the abattoir).

This information (except for the name and address of the owner or importer) is available



a) Steaks



b) Sukiyaki



c) Shabushabu



d) Yakiniku



Figure 4  
Specified dishes

on the public domain website with the agreement of cattle owners.

Since 1 March 2008, 13.3 million bovine animals (4.4 million live animals and 8.9 million animals that had died or been slaughtered) have been registered in the database, including those that were recorded before the Cattle Traceability Law was enforced.

By the end of March 2008, over 50 million reports had been submitted to the NLBC by cattle owners, importers and others involved in transactions of cattle. Reports are submitted online or using facsimile, telephone or through agricultural cooperatives and other supporting organisations which are equipped for a collective reporting system.

### Overseeing of the cattle traceability system

Officials of the regional MAFF offices conduct on-site inspections of farmers, distributors and caterers (premises that cater Yakiniku, Sukiyaki, Shabushabu dishes and/or beef steaks), to ensure that the cattle are correctly identified and the information properly relayed to retailers and caterers.

In addition, a meat sample is taken from every carcass and kept in a Livestock Improvement Association of Japan (LIAJ) storage facility so that samples collected from retailers or caterers can be DNA tested to ensure that they originated from the cattle with the same identification number. The MAFF head office and regional offices and NLBC collaborate

closely to ensure that the Cattle Traceability Law is observed (3).

In accordance with the Cattle Traceability Law, the Minister of Agriculture, Forestry and Fisheries issues warnings or orders to slaughterhouses, distributors and specified dish caterers to take the necessary measures when they do not observe their obligations under the law. Penalties apply if they fail to observe the orders given by the Minister. Figure 5 shows the different organisations involved in overseeing the efficient operation of the cattle and beef traceability system. In the 2006 fiscal year, 67 291, 32 328 and 6 411 on-site inspections were conducted on farms, of distributors and specified dish caterers, respectively, by officials from the MAFF regional offices (Table I).

Since the enactment of the Cattle Traceability Law in December 2003, four farmers have been placed on trial and convicted for replacing an ear tag with a false identification number and for reporting a false date of movement. Since December 2004, when beef traceability was enforced, 21 distributors (5 retailers and 14 wholesalers and 2 specified dish caterers) were found to be contravening the law (indicating an incorrect identification number); they received warnings from the Minister of Agriculture, Forestry and Fisheries (2).

Table I  
Number of on-site inspections conducted by officials from regional offices of the Ministry of Agriculture, Forestry and Fisheries in the 2006 fiscal year

People inspected	Number of on-site inspections
Farmers	67 291
Wholesalers and retailers	32 328
Specified dish caterers	6 411

### Tracing of cohort animals in the event of the detection of bovine spongiform encephalopathy cases

In Japan, in accordance with the provisions of the *International terrestrial animal health code* of the World Organisation for Animal Health (*Office International des Épizooties*: OIE) (4), all BSE cases, as well as offspring of female BSE cases (offspring born within two years prior to, or after the clinical onset of disease) and birth cohort animals (all cattle which were reared with the BSE cases during their first year of life) are identified and destroyed. When the first case of BSE was detected in September 2001, it took nearly two months to identify the cohort animals. Since the cattle traceability

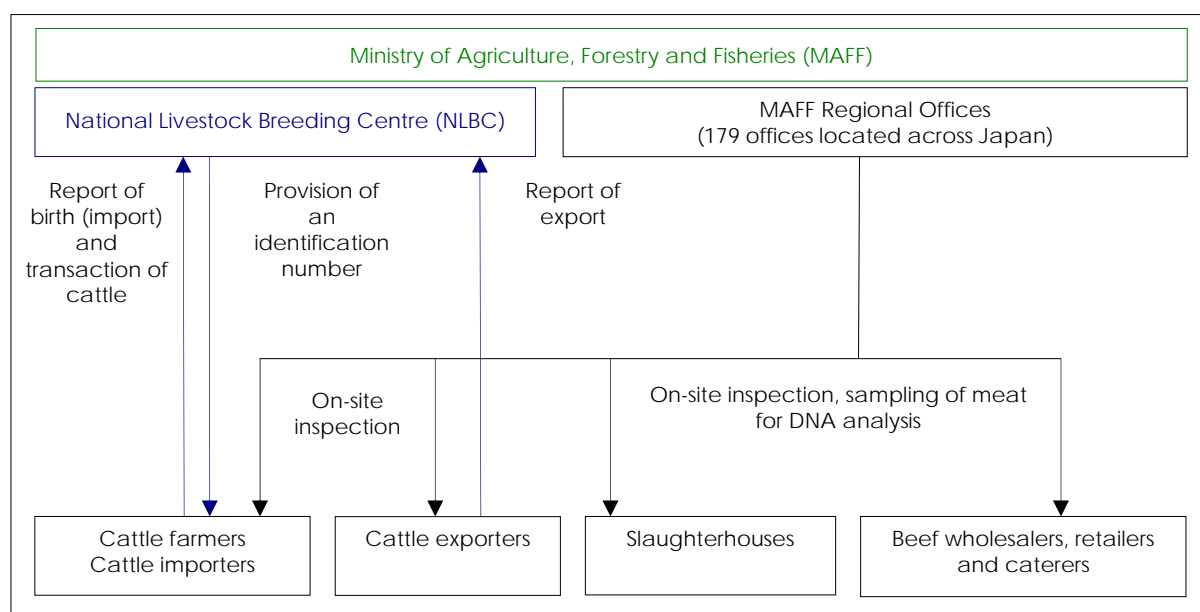


Figure 5  
Organisations involved in cattle and beef traceability in Japan

system has been established, the NLBC, upon request from the MAFF, traces eligible offspring of female BSE suspects using data from the Cattle Traceability System within 24 h of the detection of a BSE case. Eligible cohort and offspring animals are subjected to

movement restrictions. If BSE is confirmed, the cohort and offspring animals are slaughtered. If BSE is not confirmed, the movement restrictions are lifted. Table II shows the number of cohort and offspring animals identified for each of the 35 BSE cases detected

Table II

Date of diagnosis, date of birth, type of cattle and number of cohort offspring animals identified for the bovine spongiform encephalopathy cases detected by the end of March 2008 in Japan

No.	Date of diagnosis	Date of birth	Cattle	Number of	
				Cohort animals <sup>(a)</sup>	Offspring <sup>(b)</sup>
1	10 Sep 2001	26 March 1996	Dairy cow	58	1
2	21 Nov 2001	4 April 1996	Dairy cow	81	0
3	2 Dec 2001	26 March 1996	Dairy cow	96	0
4	13 May 2002	23 March 1996	Dairy cow	52	0
5	23 Aug 2002	5 Dec 1995	Dairy cow	37	0
6	20 Jan 2003	10 Feb 1996	Dairy cow	33	0
7	23 Jan 2003	28 March 1996	Dairy cow	17	0
8	6 Oct 2003	13 Oct 2001	Holstein steer	116	0
9	4 Nov 2003	13 Jan 2002	Holstein steer	134	0
10	22 Feb 2004	17 March 1996	Dairy cow	0	0
11	9 March 2004	8 April 1996	Dairy cow	14	2
12	13 Sep 2004	3 July 1999	Dairy cow	4	1
13	23 Sep 2004	18 Feb 1996	Dairy cow	8	0
14	14 Oct 2004	8 Oct 2000	Dairy cow	61	1
15	26 Feb 2005	5 Aug 1996	Dairy cow	4	2
16	27 March 2005	23 March 1996	Dairy cow	1	0
17	8 April 2005	11 Sep 2000	Dairy cow	10	1
18	12 May 2005	31 Aug 1999	Dairy cow	31	0
19	2 June 2005	16 April 1996	Dairy cow	6	1
20	6 June 2005	12 Aug 2000	Dairy cow	18	0
21	10 Dec 2005	13 Feb 2000	Dairy cow	8	1
22	23 Jan 2006	1 Sep 2000	Dairy cow	43	2
23	15 March 2006	8 July 2000	Dairy cow	18	1
24	17 March 2006	10 Feb 1992	Beef cow	1	2
25	19 April 2006	18 April 2000	Dairy cow	10	1
26	13 May 2006	11 Aug 2000	Dairy cow	12	1
27	19 May 2006	20 Aug 2000	Dairy cow	7	2
28	11 Aug 2006	21 Nov 1999	Dairy cow	18	1
29	28 Sep 2006	24 June 2000	Dairy cow	24	2
30	13 Nov 2006	28 June 2001	Dairy cow	17	0
31	8 Dec 2006	12 Nov 1999	Dairy cow	15	0
32	5 Feb 2007	26 Aug 2001	Dairy cow	29	1
33	2 July 2007	21 June 2000	Dairy cow	7	1
34	21 Dec 2007	1 July 1992	Beef cow	2	1
35	24 March 2008	12 Oct 2000	Beef cow	7	0

Source: Ministry of Agriculture, Forestry and Fisheries

a) all cattle that, during their first year of life, were reared with the BSE cases during their first year of life

b) offspring born within two years prior to or after the clinical onset of disease

in Japan by the end of March 2008. The BSE control guideline was amended in February 2008 and offspring animals are exempt from destruction on condition that they are traced using the traceability system, because experimental and epidemiological evidence does not indicate male and female reproductive tissues to be a risk factor in transmitting the BSE agent.

## Conclusion

---

Since its establishment in December 2003, the cattle traceability system in Japan has

successfully provided consumers with confidence in the safety of beef and enabled prompt identification of cohort animals in the event of the detection of a BSE case. With the cooperation of cattle farmers, exporters and others involved in the transaction of cattle and beef, and through a nationwide overseeing system using the MAFF regional offices and a traceability database maintained by the NLBC, the system functions relatively well and without many violations.

## References

---

1. Ministry of Agriculture, Forestry and Fisheries (MAFF) 2003. Law for Special Measures Concerning the Management and Relay of Information for Individual Identification of Cattle (Law No. 72, 2003). MAFF, Tokyo, 13 pp ([www.maff.go.jp/j/syouan/seisaku/trace/pdf/beef\\_trace18.pdf](http://www.maff.go.jp/j/syouan/seisaku/trace/pdf/beef_trace18.pdf) accessed on 8 June 2008).
2. Ministry of Agriculture, Forestry and Fisheries (MAFF) 2007. List of violation cases of the Japan Agriculture Standard Law and Cattle Traceability Law, MAFF, Tokyo [in Japanese] ([www.maff.go.jp/www/council/council\\_cont/sougou\\_syokuryou/touronkai/h190803/siryu5.pdf](http://www.maff.go.jp/www/council/council_cont/sougou_syokuryou/touronkai/h190803/siryu5.pdf) accessed on 8 August 2008).
3. Sugiura K., Yamamoto M., Motomura S., Negishi T., Shinakawa S. & Oishi K. 2007. Creation of the Animal Products Safety Division in the Ministry of Agriculture, Forestry and Fisheries of Japan. *Vet Ital*, **43** (1), 55-64.
4. World Organisation for Animal Health (*Office International des Épizooties*: OIE) 2007. Bovine spongiform encephalopathy, Chapter 2.3.13. *In* International terrestrial animal health code, 16th Ed. OIE, Paris.