

2 Domestic animal infectious disease surveillance

2-1 Brucellosis (cattle)

What is Brucellosis?

Brucellosis is a disease of cattle, goats, sheep, pigs, buffaloes, deer, and wild boar caused by *Brucella* species (*Brucella abortus*, *B. melitensis*, *B. suis*), designated as a Domestic animal infectious disease in Japan. It is also recognized as a zoonotic disease because the pathogen is also infective to humans. In pregnant cows, the disease is characterized by abortions and stillbirths caused by placentitis, and mastitis and arthritis may also be observed. In the case of bulls, orchitis and epididymitis may be observed.

Japan confirmed the free status of this disease in cattle herds through the nationwide surveillance conducted during FY2018-2020.

Objectives and methods of surveillance

Since cattle herds in Japan have already been qualified as free from the disease, the surveillance is now

Table2-1-1 Number of brucellosis cases

	2020	2021	2022
(farms)	0	0	0
(animals)	0	0	0

Table2-1-2 Brucellosis surveillance of cattle in FY2022

Target cattle	# of cattle tested	# of negative	# of positive
Imported cattle	255	255	0
Bulls subject to seed-stock inspection	700	700	0
Cows experienced abortion or stillbirth*	270	270	0

* Numbers indicated here are total numbers of samples since some animals experienced more than one abortion or stillbirth during the same fiscal year

being conducted aiming to maintain free status. Target animals for surveillance are imported cattle, bulls subject to seedstock inspection, and cattle that have experienced abortion or stillbirth. In case a positive result is obtained by a screening test, confirmatory tests will be conducted.

(1) Surveillance of imported cattle

Cattle that have been imported at least one year ago for the sake of breeding and/or milking are tested.

(2) Surveillance of bulls

Bulls used for breeding or semen collection and subject to seedstock inspection stipulated in the Act on Improvement and Increased Production of Livestock are tested. Note that the bulls that were targeted for the surveillance in the previous year were excluded.

(3) Surveillance of cattle that experienced abortion or stillbirth

Cattle that have experienced abortion or stillbirth are tested. When possible, aborted fetuses are also tested.

Surveillance results

In FY2022, 255 imported cattle, 700 bulls subject to seedstock inspection, and 270 cows that experienced abortion or stillbirth were tested, and all results were negative.

2-2 Tuberculosis (cattle)

What is Tuberculosis?

Tuberculosis is a chronic respiratory infectious disease caused mainly by *Mycobacterium bovis* (*M. bovis*) and is designated as a Domestic animal infectious disease of cattle, goats, buffalo, and deer. *M. bovis* has a wide host range, including humans; thus, the disease is recognized as a zoonosis. The disease's incubation period ranges from several months to several years, and infected animals generally do not show any particular clinical signs until the disease progresses. In advanced cases, animals show respiratory symptoms such as coughing and dyspnea, and their general condition deteriorates, leading to death.

Japan confirmed the free status of this disease in cattle herds through the nationwide surveillance conducted during FY2018-2020.

Objectives and methods of surveillance

Since cattle herds in Japan have already been quali-

fied as free from the disease, surveillance is now being conducted aiming to maintain free status. The surveillance targets imported cattle and bulls subject to seedstock inspection. In case a positive result is obtained by the screening test, confirmatory tests will be conducted.

(1) Surveillance of imported cattle

Cattle that have been imported at least one year ago for the sake of breeding and/or milking are tested.

(2) Surveillance of bulls

Bulls used for breeding or semen collection and subject to seedstock inspection based on the Act on Improvement and Increased Production of Livestock are tested. Note that the bulls that were targeted for surveillance in the previous year were excluded.

Surveillance results

In FY2022, 251 imported cattle and 700 bulls subject to seedstock inspection were tested, and all results were negative.

Table2-2-1 Number of tuberculosis cases

	2020	2021	2022
(farms)	0	0	0
(animals)	0	0	0

Table2-2-2 Tuberculosis surveillance of cattle in FY2022

Target cattle	# of cattle tested	# of negative*	# of positive
Imported cattle	251	251	0
Bulls subject to seed-stock inspection	700	700	0

* Number of negatives includes cattle with a positive result in the screening test and a negative result in the confirmatory tests or definitive tests performed later.

2-3 Johne's disease (cattle)

What is Johne's disease?

Johne's disease is a disease caused by infection with *Mycobacterium avium subsp. Paratuberculosis* (MAP). The disease is designated as a Domestic animal infectious disease of cattle, sheep, and goats. The main clinical signs are chronic, persistent diarrhea, weight loss, and decreased milk production. The disease has a long incubation period and persists for several months to years without apparent symptoms until the onset of the disease. MAPs are excreted in the feces of infected animals and spread the disease in the herd. There is no vaccine or treatment available.

The disease is present in Japan, and efforts to prevent the spread of the disease are made following the guidelines on measures against bovine Johne's disease.

Objectives and methods of surveillance

Johne's disease is a contagious disease characterized

by a long incubation period, and the main countermeasures taken are to detect and cull infected cattle through periodic inspections. The target of the periodic inspections is breeding cattle that have been kept for a long period. For the farms where infection has been confirmed, follow-up tests to assess disease status and pre-transfer inspection are conducted on cattle before shipment from the farm.

(1) Periodic inspection

At least once every five years, periodic inspections are conducted on cows used for breeding and/or milking.

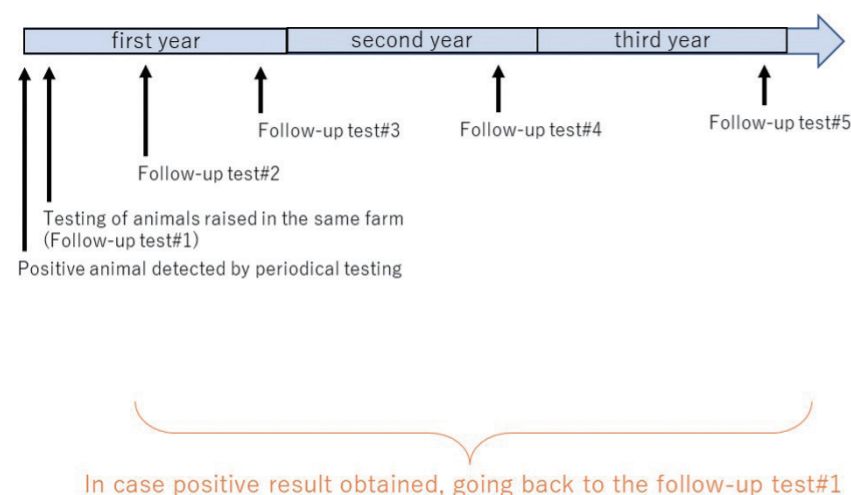
(2) Follow-up tests on infected farms

For farms where an infection has been confirmed, follow-up tests are conducted at least three times a year for the first year and then once a year for the following two years, which counts at least five times in three years.

(3) Pre-transfer inspection on infected farms

Tests are conducted before shipment when cattle are shipped from the infected farms.

Fig. 2-3-1 Time schedule for periodic inspection and follow-up tests



Surveillance results

Johne's disease surveillance is conducted through a combination of ELISA testing using serum, skin tests, real-time PCR of fecal samples, and fecal culture. A cumulative total of 684,206 cattle were tested for Johne's disease in 2022.

Figure2-3-2 Cattle with Johne's disease showing weight loss lower right: Cross-section of the intestinal tract of the cattle with Johne's disease (left) and healthy cattle (right)



Photo courtesy of NIAH, NARO

Table2-3-1 Number of Johne's disease cases

	2018	2019	2020	2021	2022
(farms)	321	380	399	446	519
(animals)	831	1,066	809	957	1,147

Table2-3-2 Johne's disease surveillance for cattle conducted in 2022

test type	total number of animals tested*
ELISA (serum)	561,229
Johnin reaction	1,016
Fecal PCR	30,968
Fecal culture	90,993
total	684,206

* Surveillance includes periodic inspection, follow-up tests, and pre-transfer inspection on infected farms. Multiple tests may be conducted on the same individual.



Photo courtesy of NLBC Niikappu station

2-4 Bovine spongiform encephalopathy (BSE)

What is BSE?

Bovine Spongiform Envcephalopathy (BSE) is a prion disease of cattle that was first identified in the United Kingdom in 1986, and the disease was first confirmed in Japan in September 2001. Cattle infected with abnormal prion protein develop the disease after a long incubation period of several years and show behavioral abnormalities and incoordination, leading to death after a lapse of two weeks to six months. The disease is transmitted to cattle via feed contaminated with abnormal prion protein. Thus a feed ban is implemented in order to prevent the feeding of potentially contaminated feed to ruminants. In Japan, no new outbreaks have been reported since January 2009, and in May 2013, Japan was officially recognized by WOA^H as a country with “negligible risk.”

Objectives and methods of surveillance

MAFF conducts BSE surveillance on cattle that have died on farms or the cattle exhibiting clinical signs to confirm the effectiveness of control measures such as

feed regulations and to maintain international recognition as BSE-free. The cattle to be tested are as follows;

- (1) Cattle that died at 96 months of age or older
- (2) Cattle 48 months of age or older that exhibited incoordination and difficulty in rising before death (downer cattle)
- (3) Cattle exhibit progressive behavioral changes or unexplained neurological symptoms prior to death, regardless of age (cattle with specific clinical signs)

At slaughterhouses, BSE screening tests are conducted on cattle aged 24 months or older that exhibit neurological symptoms and other relevant clinical signs. The results are published by the Ministry of Health, Labor and Welfare on its website.

https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryuu/shokuhin/bse/screening.html

Surveillance results

In FY2022, testing was conducted on 20,932 dead cattle and all results were negative.

Fig.2-4-1 Number of BSE cases by year

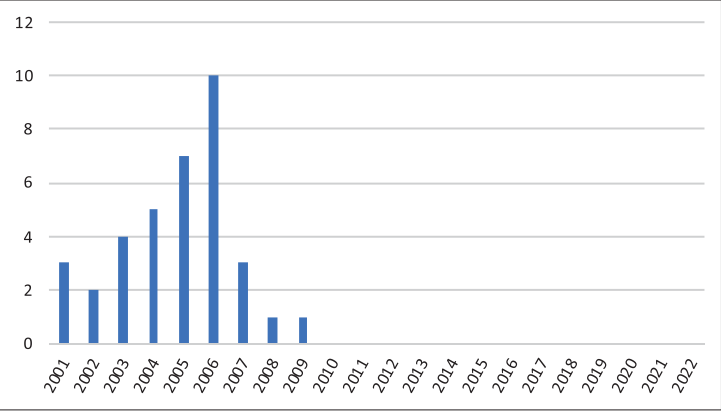


Table2-4-1 BSE surveillance conducted in FY2022

	# of tested
Ordinal dead cattle	13,573
Downer cattle	7,292
Cattle with specific clinical signs	67

2-5 Transmissible spongiform encephalopathy (scrapie)

What is transmissible spongiform encephalopathy?

Scrapie of sheep and goats, like BSE and chronic wasting disease of deer, is a prion disease caused by an abnormal prion protein. They are collectively called transmissible spongiform encephalopathy (TSE) in livestock and designated as a Domestic animal infectious disease. Scrapie in sheep and goats has been known for over 250 years, and sporadic outbreaks have been reported in Japan. Unlike BSE, which is transmitted through feed contaminated with abnormal prion protein, the route of transmission of scrapie is unknown.

Objectives and methods of surveillance

In order to detect infected sheep and goats on farms, TSE tests are conducted on dead or culled sheep and goats at 12 months of age and older and sheep and goats with specific clinical signs such as itching sensation.

Surveillance results

In FY2022, testing was conducted on 212 sheep and 436 goats and all results were negative.

