

2023

Annual Report on Animal Infectious Disease Surveillance in 2023

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Animal Health Division, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries

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Photo courtesy of NLBC Ibaraki station

Preface

In order to protect Japan's livestock industry and ensure a stable supply of safe livestock products to the public, as well as to export high-quality Japanese livestock products overseas, it is of utmost importance to control and eradicate livestock diseases and prevent their invasion. Historically, Japan's animal infectious disease control and eradication efforts, including those for diseases such as foot and mouth disease, classical swine fever and highly pathogenic avian influenza have been conducted in collaboration between producers, industry, and the government.

Regarding highly pathogenic avian influenza, in the 2022 winter season, we experienced the largest outbreak in our history, with 84 cases. In contrast, in the 2023 winter season, only 11 cases were reported, and in June 2024, we self-declared recovery of the free status to the World Organisation for Animal Health. In the 2024 season, a number of HPAI outbreaks were confirmed in the highly dense poultry production area and we are committed to preventing the spread of the disease by re-emphasizing the importance of early reporting and ensuring good animal husbandry and hygiene practices. As for classical swine fever, which occurred in Japan in September 2008 for the first time in 26 years, we are continuing our effort to control outbreaks in domestic pigs. While the classical swine fever outbreak in the wild boar population continues to expand, we are taking thorough measures to prevent the outbreaks in pig farms including vaccination and improving on-farm biosecurity. In November 2024, lumpy skin disease was confirmed for the first time in Japan, which had been alerted to the potential risk of its invasion following outbreaks in neighboring countries. We are doing our best to prevent the spread of the disease by sharing information with the relevant parties, setting up diagnostic capacity, and arranging vaccinations in the vicinity of the affected farms.

Meanwhile, it has been noted that outbreaks of transboundary animal diseases that are not prevalent in Japan, such as foot and mouth disease and African swine fever, continue to occur and spread throughout Asia and Europe. The number of foreigners entering Japan has increased compared to that before the spread of COVID-19, and the risk of the invasion of these diseases has also increased. Therefore, it is crucial to strengthen border control measures and maintain a high level of vigilance in Japan. In light of this, the Ministry of Agriculture, Forestry, and Fisheries has developed an annual surveillance plan to monitor the entry and occurrence of important livestock infectious diseases and conducts disease surveillance in cooperation with prefectural governments. The Annual Report on Livestock Infectious Disease Surveillance in 2023 aims to inform people in Japan and abroad about the current situation of livestock infectious diseases in Japan including information on disease incidence, surveillance results, and other recent topics. We hope this report will be useful to all those involved in livestock health.

Masatsugu Okita, Director, Animal Health Division, Consumer Affairs and Safety Bureau, Ministry of Agriculture, Forestry and Fisheries

Terms of Use

In principle, this document summarizes livestock infectious disease surveillance and other activities conducted in the fiscal year 2023 (April 1, 2023 to March 31, 2024). Since some disease outbreaks and surveillance results are required to be reported on a fiscal year basis, while others are required to be reported on a calendar year basis, the charts, including figures and tables in this report, are aggregated based on either the fiscal year or the calendar year, depending on the item. Please note that charts aggregated on a calendar year basis are marked with “year”, and charts aggregated on a fiscal year basis are marked with “fiscal year.”

Please also check Ministry of Agriculture, Forestry and Fisheries (MAFF) website for the latest information on disease outbreaks. The URLs and QR codes of the websites mentioned in this document are current as of the publication of this report and may be changed or deleted in the future.





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Highly pathogenic avian influenza outbreaks for four consecutive seasons

An excerpt from the Report on the epidemiological investigation of the highly pathogenic avian influenza outbreaks during the 2023-2024 Season

The 2023-2024 season (hereinafter referred to as “the season”) marked the four consecutive seasons of outbreaks of highly pathogenic avian influenza (HPAI). The number of outbreaks in wild birds was the second highest, following the last season, while outbreaks in domestic poultry were limited to 11 cases in 10 prefectures.

Outbreaks in domestic poultry

This season, the first outbreak was confirmed on November 25, 2023, at a layer farm in Saga Prefecture. A total of 11 cases (10 cases of H5N1 and 1 case of H5N6) were confirmed at the premises for layers, broilers, breeders, and multiple poultry species, including domestic ducks and geese in 10 prefectures until the last case was confirmed on April 29, 2024, and a total of approximately 860,000 birds were destroyed. Although both the number of outbreaks and the number of birds destroyed were lower than the previous season’s record of 84 outbreaks in 26 prefectures, which was the largest epidemic on record, this was the first

time that HPAI outbreaks occurred in Japan for four consecutive seasons since the 2020-2021 season. Following the first outbreak reported in Kyushu region (Saga Prefecture), outbreaks have been observed nationwide in Kanto region (Ibaraki, Saitama, Gunma, and Chiba Prefectures), Kyushu region (Kagoshima Prefecture), Tokai region (Gifu Prefecture), Chugoku region (Hiroshima and Yamaguchi Prefectures), and Shikoku region (Kagawa Prefecture) (Chart S 1-1). Only two cases occurred within the same prefecture. In those cases, the farms were located 70 km or more apart, suggesting that there was no farm-to-farm transmission in neighboring farms.

Out of these 11 cases, layers farms accounted for the largest number of cases (8), followed by broilers (1), breeders (1), and multiple poultry species (1). The largest farm size was about 360,000 birds in the fifth case, which occurred in Gunma Prefecture, while the other cases involved farms with less than 100,000 birds. In the previous season, four of the 61 outbreaks among layer farms occurred on large-scale farms with more than 1 million birds, but there were no outbreaks on such large-scale farms this season. As in the past, many

of the affected farms had ponds, rivers, waterways, or rice paddies around which ducks and other waterfowl could gather. Additionally, many farms had woods where crows and other wild birds and wild animals could be based. In some cases, HPAI viruses (HPAIV) have been detected in dead crows found in the vicinity of the affected farm or on the farm property, and it is considered that crows may have been the source of infection.

In all cases, the national and prefectural governments, relevant agencies, organizations, municipalities, and the Self-Defense Forces cooperated to implement prompt control measures. All measures were completed on May 4, 2024, and all movement restrictions were lifted on May 26. Subsequently, Japan submitted a self-declaration of disease-free status for HPAI to WOA on June 2, 2024.

HPAI cases in wild birds

The first report of HPAIV infection in wild birds was in a large-billed crow recovered in Bibai City in Hokkaido on October 4, 2023, followed by a case in Eastern buzzard collected in Kushiro, Hokkaido on October 18.

156 HPAI cases in wild birds were confirmed in 64 cities in 28 prefectures until the last case confirmed in a large-billed crow in Sapporo city, Hokkaido on April 30, 2024. These cases were confirmed with not only the samples collected from carcasses of wild birds, but also includes 5 cases with fecal matter from ducks and other birds, and environmental water samples, and one case with a blow fly sample. H5N1 was identified in 123 cases, H5N5 in 31 cases, and H5N6 in one case. Additionally, both H5N1 and H5N5 HPAIV were simultaneously detected in one case. The first case was found in early October, and the number of cases began to increase gradually, peaking in mid-November to mid-December. The next peak was observed from mid-February to mid-March (Chart S1-2). These peaks coincide with the arrival of migratory birds in Japan during the fall migration and the spring migration from wintering grounds to breeding grounds. In terms of bird species, there were 38 cases of 8 species of waterfowls, 14 cases of 5 species of waterbirds other than waterfowls, 20 cases of 7 species of birds of raptors, and 74 cases of 3 species of crows.

Chart S1-1 Location of the confirmed HPAI cases in poultry and wild birds during the 2023-2024 season

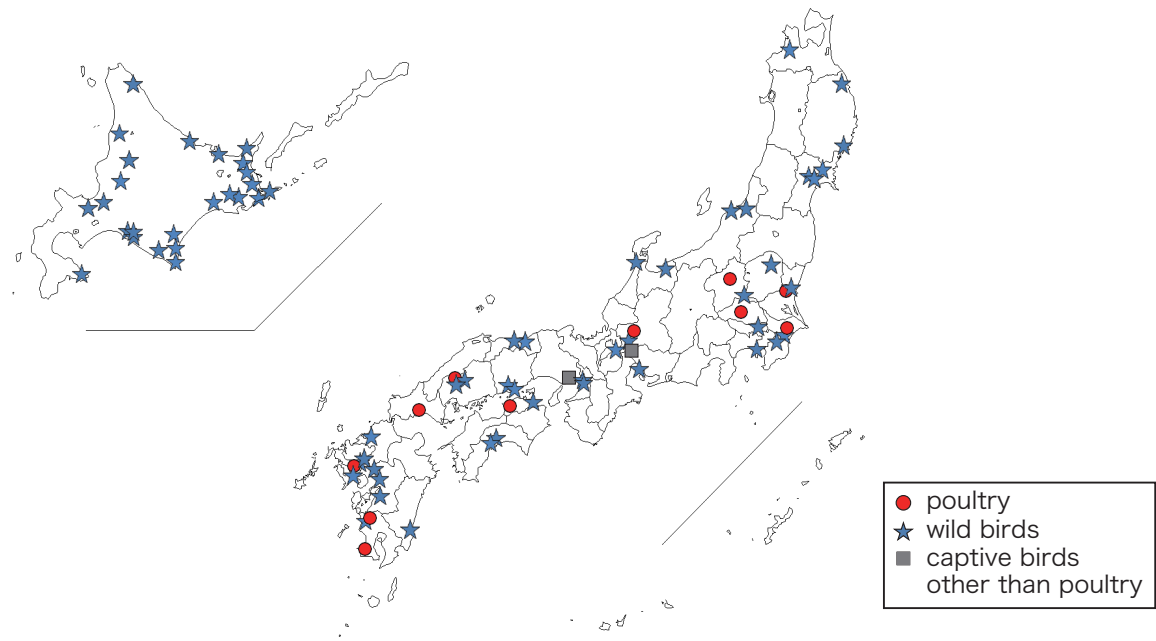
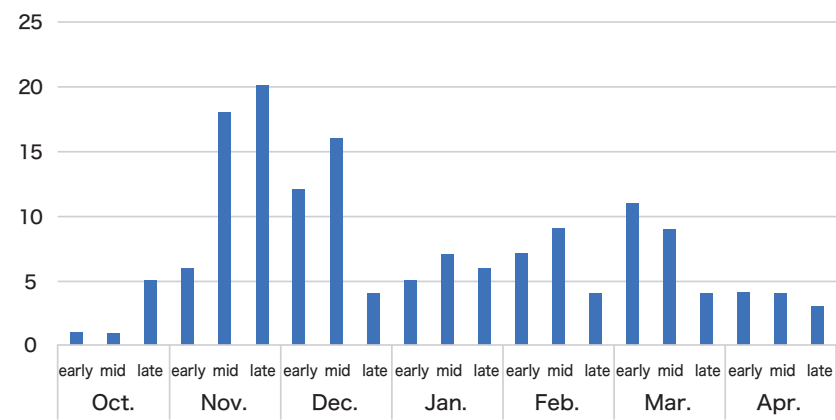


Chart S1-2 Number of HPAI cases in wild birds



Characteristics of the HPAIV isolated in this season

Of the 11 outbreaks in poultry this season, H5N6 HPAIV was isolated only in the ninth case, and H5N1 HPAIV was isolated in the rest of 10 cases. Based on the genomic analysis of the HA gene segment of the HPAIVs, all HPAIVs isolated from poultry cases in this season belonged to Clade 2.3.4.4b. The HA genes were classified into two groups: The H5N1 subtype was classified as a group closely related to the 2021-2022 European isolates (G2d), and the H5N6 subtype was classified as a group closely related to the 2021 West Siberian and Central and Southern Chinese isolates (G2c). On the other hand, HA genes of the H5N5 subtype detected only in wild birds were classified into two groups: a group closely related to the 2020-2021 European isolates(G2a) and G2d.

Further classification based on a combination of eight gene segments of HPAIV isolated from poultry cases resulted in two groups of HPAIV, which were clas-

sified as G2d-0 and G2c-12, respectively. G2a-2 and G2d-4 were detected in HPAIV isolated from wild birds and environmental samples in addition to the two genotypes detected in poultry. In summary, a total of four types of reassortment viruses, G2a-2, G2d-0, G2d-4, and G2c-12, have intruded into Japan this season (Chart S1-3).

The G2d-0 virus, which was detected in most cases in poultry this season, was also detected in poultry in the 2021-2022 and 2022-2023 seasons. However, since it is unlikely that the virus was maintained in wild birds and poultry during the summer with high temperatures, it is plausible to consider that the virus prevalent this season was reintroduced into Japan by migratory birds.

Since the G2c-12 virus possessed gene segments derived from avian influenza viruses circulating among wild waterfowl, it is thought that the G2c virus was brought to breeding and stopover sites in Siberia during the northward migration of migratory birds and

spread among migratory birds at these sites, caused reassortment with viruses circulating among waterfowl (Chart S1-4, Chart S1-5).

The viruses obtained from crows that died on or near the farm premises at the three outbreak farms, from environmental samples including flies, and from the carcass of a black rat found in the poultry shed on the affected premises showed a high degree of genetic similarity to the H5N1 HPAIV isolated from the poultry on the respective case farms. While this suggests that these animals may have been a source of virus introduction to the farms, it is also possible that wild birds and small animals on or near the outbreak farms may have become infected with HPAIV as a result of spill-over from the affected farms. All chickens inoculated intranasally with high doses of two different viruses (H5N1 and H5N6) isolated from poultry cases in this season died within a few days. In fact, the number of dead chickens in the HPAI outbreaks actually increased over time. These findings suggested that increased

mortality in poultry is a good indicator for early detection and early reporting of HPAI outbreaks.

For more information, please see the Report on epidemiological investigation of the highly pathogenic avian influenza outbreaks in the 2023-2024 Season.

https://www.maff.go.jp/j/syoutan/douei/tori/attach/pdf/r5_hpai_kokunai-153.pdf

Chart S1-4 Estimated route of HPAIV introduction into Japan

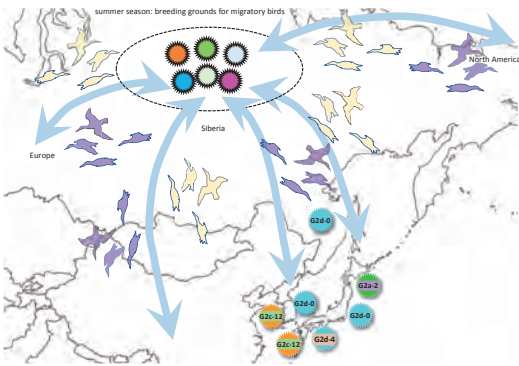


Chart S1-3 Genetic diversity of HPAIV of H5N1, H5N5 and H5N6 HPAI virus based on phylogenetic analysis targeting 8 segments

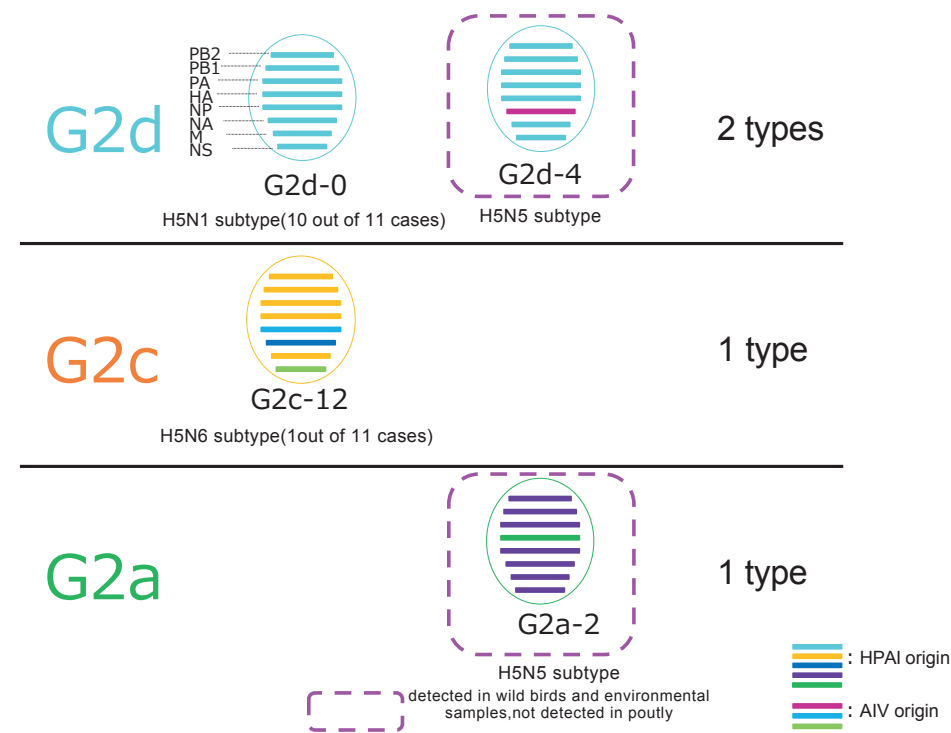
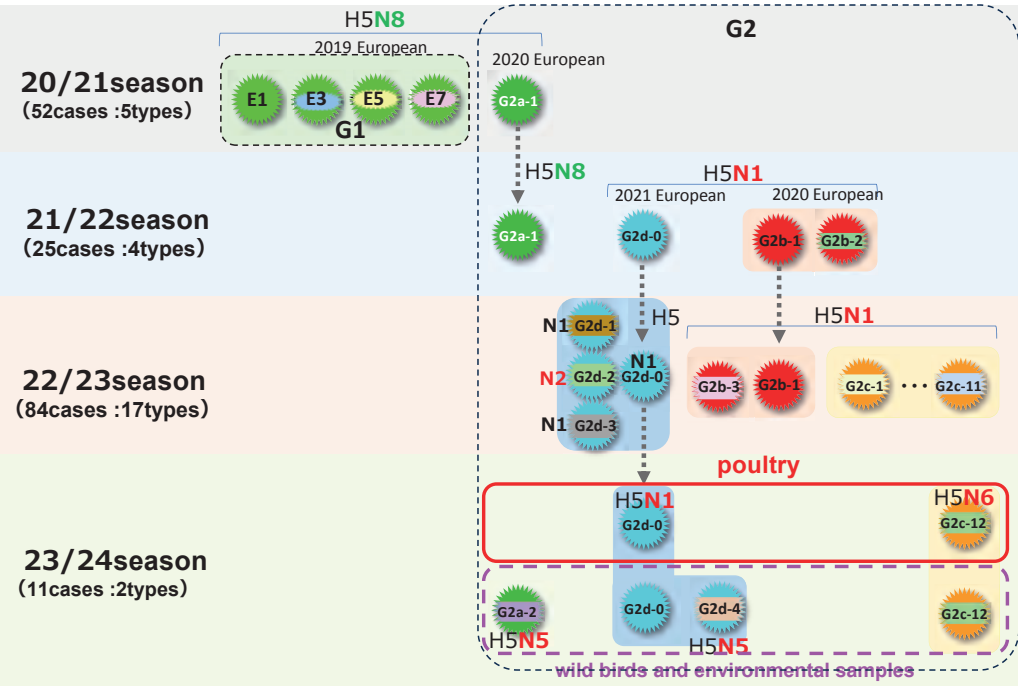


Chart S1-5 Transition of genotypes of HPAIV recovered in 2020-2021, 2021-2022, 2022-2023, 2023-2024 seasons



Source: Report on epidemiological investigation of the highly pathogenic avian influenza outbreaks in the 2021-2022, 2022-2023, 2023-2024 season

Countermeasures against Johne's Disease

Johne's disease is a bacterial infection of cattle and other ruminants caused by infection with *Mycobacterium avium* subsp. *Paratuberculosis* (MAP). The disease causes a significant decrease in productivity due to chronic persistent diarrhea, decreased milk production, and weight loss. In cattle, an incubation period is as long as several months to several years between infection and disease onset, making early detection of infected cattle and prevention of disease spread within a farm extremely difficult. Since there is no effective vaccine or treatment, detection of infected cattle through periodic testing and culling of infected cattle is conducted to achieve disease-free.

Surveillance on Johne's disease

Johne's disease was designated as a Domestic animal infectious disease under the Act on Domestic Animal Infectious Disease Control (Act No. 166 of 1951, hereinafter referred to as "the Act") in 1971. At the time of designation, outbreaks of the disease occurred sporadically in imported cattle, but since the 1980s, domestic cases have increased. In 1986, the number of cases detected per year exceeded 100, and in 1997, it exceeded 500. Even after 1998, when nationwide surveillance and culling of infected cattle were initiated based on the Act, several hundred to a thousand cattle were confirmed as infected and culled every year (Chart S2-1). In 2023, 1,060 cattle in 20 prefectures were confirmed as infected cattle (Chart S2-2).

Chart S2-1 Number of cases of Johne's disease

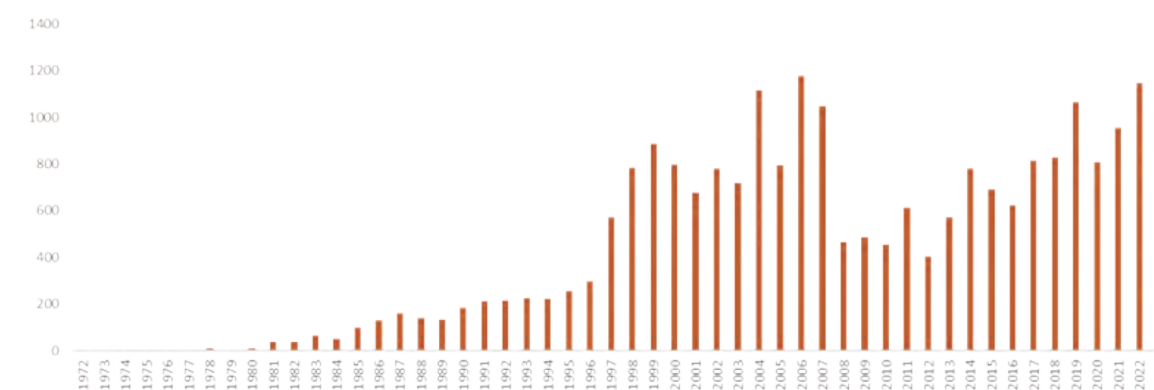
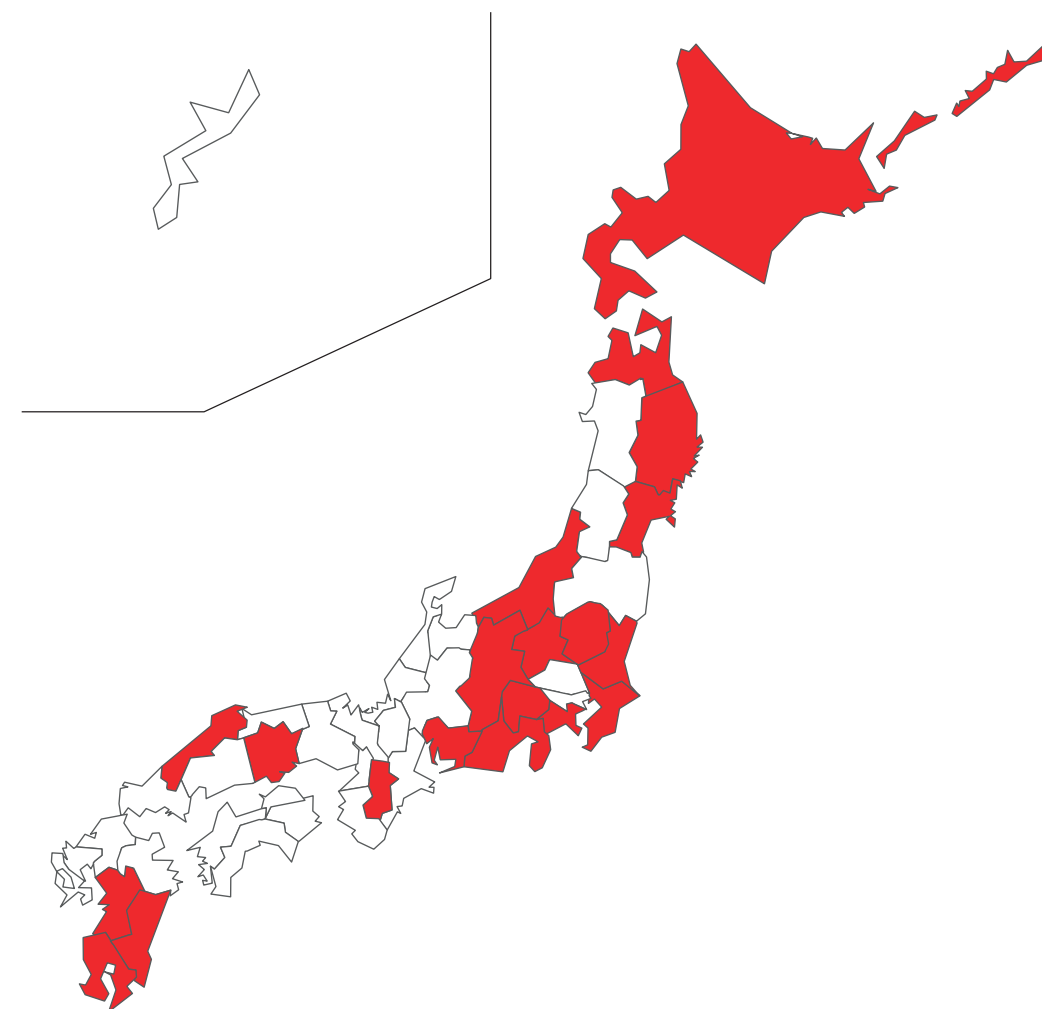


Chart S2-2 Prefectures with confirmed Johne's disease cases in 2023

The red color indicates the prefectures in which Johne's disease was confirmed.



Control measures

Since Johne's disease is spread by MAP in the feces of infected cattle, and no treatment or vaccines are available, Japan has been carrying out the detection of the infected cattle through periodic testing, and culling of infected cattle. However, the increase in the number of infected cattle has not been halted, and in order to promote comprehensive measures for prevention, early detection, and control of the spread of the disease, the "Guidelines for Quarantine Measures against Bovine Johne's Disease" (hereinafter referred to as "the guideline") was released in 2006. In addition to the detection and culling of the infected cattle through periodic testing, the guideline recommends additional measures that include testing of cattle to be newly introduced into the farm, awareness raising, ensuring appropriate biosecurity measures, enhancing control measures on affected farms, and promoting voluntary

culling of suspected cattle.

Preventive measures

Since Johne's disease is transmitted by oral ingestion of MAP excreted in the feces of infected cattle, it is necessary not to introduce infected cattle to a farm. Therefore, in the guideline, it is recommended to introduce cattle from farms other than Johne's disease positive farms. If there is no option but to introduce cattle from Johne's disease-positive farm, testing should be conducted to ensure the cattle are free from Johne's disease. In addition, since it is known that susceptibility to Johne's disease is higher in calves, the guideline recommends farmers keep calving pens clean, separate calves from the adults, and feed colostrum obtained from Johne's- disease-free cows or use colostrum substitutes.

Measures for early detection

In Japan, periodic testing of breeding cattle is conducted under Article 5 of the Act for early detection of Johne's disease. Primarily, a screening test is conducted by antibody testing (ELISA) using blood samples or a preliminary PCR using fecal samples. When the screening test results come up positive, a diagnostic PCR test using fecal as a confirmatory test is conducted (Chart S2-3).

Ensuring farm biosecurity and disease preparedness

On farms where infected cattle are detected through surveillance or other means, in addition to culling the infected cattle and disinfecting the farm, the other cattle in the same premises are also tested. Such tests are conducted multiple times after detecting the first case at least 5 times within 3 years. The farm regains free status if a new case is not detected in any of these tests. In case a new case is detected, the testing diagram should be followed from the beginning again. Since Johne's disease has a long incubation period, repeated testing over several years is expected to detect infected cattle on affected farms efficiently.

Chart S2-3 Testing diagrams for Johne's disease

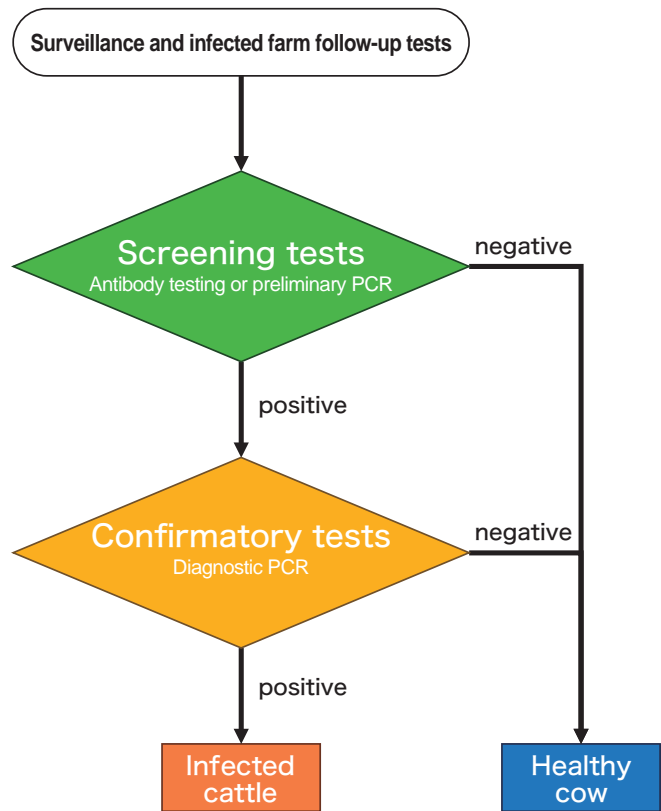




Photo courtesy of NLBC Ibaraki station

1 Occurrence of animal infectious diseases in Japan

In Japan, under the Act, 28 diseases of particular importance for the livestock sector, including foot and mouth disease (FMD), classical swine fever (CSF), and HPAI, are designated as “Domestic animal infectious diseases.” In addition, 71 relevant infectious diseases following domestic animal infectious diseases are designated as “Notifiable infectious diseases,” and their occurrences are monitored by mandatory notification. Concerning the Domestic animal infectious diseases, in 2023, HPAI occurred from autumn to the following spring, making four consecutive seasons (see → Special Feature 1). As for CSF, which occurred in Japan in September 2018 for the first time in 26 years, the number of outbreaks has decreased, but sporadic outbreaks continue to be reported. As for FMD and ASF, which

continue to occur in Asia, Japan remained disease-free. Surveillance of bovine tuberculosis and brucellosis has continued after disease-free status was achieved, and no new outbreaks have occurred. Occurrences of Johne’s disease have been continuously reported. Among Notifiable infectious diseases, the number of bovine leukosis cases has remained high. The WOAHP grants official disease status for certain diseases upon request from the member countries, and Japan is officially recognized as free from FMD, BSE, and African horse sickness as shown in chart 1-1. The charts 1-2 and 1-3 show the annual number of cases of major Domestic animal infectious diseases and Notifiable infectious diseases.

Chart 1-1 Official recognition of specific disease status by WOAHP

FMD	Free country without vaccination (2011)
BSE	Negligible risk (2013)
African horse sickness	Free country (2014)

Chart 1-2 Number of reported major domestic animal infectious diseases outbreaks (year)

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Foot and mouth disease	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Enzootic encephalitis (Swine)	# of farms	6	2	5	0	0	0	1	0	1	2
	# of animals	8	3	17	0	0	0	2	0	1	4
Brucellosis (Cattle)	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Tuberculosis (Cattle)	# of farms	1	0	0	0	0	0	0	0	0	0
	# of animals	1	0	0	0	0	0	0	0	0	0
Johne's disease (Cattle)	# of farms	326	327	315	374	321	380	399	446	519	471
	# of animals	783	691	624	817	831	1066	809	957	1147	1060
Bovine spongiform encephalopathy	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Scrapie (Sheep)	# of farms	0	0	1	0	0	0	0	0	0	1
	# of animals	0	0	1	0	0	0	0	0	0	1
Equine infectious anemia	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Classical swine fever*	# of farms	0	0	0	0	6	45	10	15	9	4
	# of animals	0	0	0	0	9	102	23	43	29	11
African swine fever	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Highly pathogenic avian influenza*	# of farms	4	2	5	5	1	0	33	25	66	38
	# of animals	18	13	27	33	8	0	113	152	255	94
Low pathogenic avian influenza	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Newcastle disease	# of farms	0	0	0	0	0	0	0	0	0	0
	# of animals	0	0	0	0	0	0	0	0	0	0
Foulbrood	# of farms	57	59	42	30	42	33	39	33	26	16
	# of animals	168	130	89	74	135	104	127	110	106	56

*Only animals diagnosed in accordance with relevant regulations are included in this table (i.e. animals culled as a result of outbreak response are not included in this table)
There were no outbreaks of the following infectious diseases between 2014 and 2023.
Rinderpest, Contagious bovine pleuropneumonia, Rabies, Vesicular stomatitis, Rift valley fever, Anthrax, Hemorrhagic Septicemia, Glanders, African horse sickness, Peste des petits ruminants, Fowl cholera, Avian salmonellosis, Swine vesicular disease.

Chart 1-3 Number of reported major notifiable infectious diseases outbreaks

		2014	2015	2016
Bluetongue (Cattle)	# of Farms	0	0	0
	# of Animals	0	0	0
Akabane disease (Cattle)	# of Farms	2	3	2
	# of Animals	2	3	2
Malignant catrrhal fever	# of Farms	1	1	0
	# of Animals	1	1	0
Lumpy skin disease	# of Farms	0	0	0
	# of Animals	0	0	0
Bovine viral diarrhea	# of Farms	134	158	222
	# of Animals	259	310	406
Infectious bovine rhinotracheitis	# of Farms	19	14	15
	# of Animals	105	129	648
Bovine leukosis	# of Farms	1683	2023	1998
	# of Animals	2415	2869	3125
Bovine ephemeral fever	# of Farms	0	11	0
	# of Animals	0	22	0
Bovine genital campylobacteriosis	# of Farms	0	1	1
	# of Animals	0	1	1
Trypanosomiasis	# of Farms	1	0	0
	# of Animals	1	0	0
Equine influenza	# of Farms	0	0	0
	# of Animals	0	0	0
Equine rhinopneumonitis	# of Farms	19	25	26
	# of Animals	54	42	59
Aujeszky's disease	# of Farms	0	1	0
	# of Animals	0	5	0
Swine transmissible gastroenteritis	# of Farms	14	0	1
	# of Animals	469	0	63
Porcine reproductive and respiratory syndrome	# of Farms	19	34	29
	# of Animals	39	131	82
Porcine epidemic diarrhea	# of Farms	836	217	87
	# of Animals	3885	1088	420
Avian infectious bronchitis	# of Farms	13	12	21
	# of Animals	1058	4717	3029
Avian infectious laryngotracheitis	# of Farms	4	5	1
	# of Animals	15	21	5
Avian mycoplasmosis	# of Farms	3	6	16
	# of Animals	14	23	58
Nosemosis of bees	# of Farms	0	0	5
	# of Animals	0	0	8

							(year)
2017	2018	2019	2020	2021	2022	2023	
1	0	1	0	0	0	0	0
2	0	1	0	0	0	0	0
0	0	0	1	0	1	6	
0	0	0	1	0	1	14	
0	1	0	1	0	0	1	
0	1	0	1	0	0	1	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
221	230	207	148	109	76	70	
380	382	359	265	235	119	172	
13	4	9	5	12	4	7	
54	7	44	11	36	12	23	
2227	2323	1944	2075	2179	2182	2317	
3453	3859	4113	4197	4375	4334	4493	
0	0	4	0	0	0	0	
0	0	7	0	0	0	0	
3	1	1	0	0	0	0	
3	1	1	0	0	0	0	
0	1	1	0	0	0	1	
0	1	1	0	0	0	1	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
18	24	17	19	13	18	9	
34	31	21	37	18	25	10	
1	0	0	0	0	0	0	
4	0	0	0	0	0	0	
0	0	1	0	2	0	0	
0	0	4	0	8	0	0	
23	27	25	19	18	28	9	
58	80	58	34	72	72	50	
66	33	137	35	34	6	24	
251	173	764	242	202	32	127	
25	27	15	25	28	19	24	
545	153	127	705	1417	96	136	
10	2	1	7	8	16	9	
13	8	20	16	27	74	43	
2	6	7	7	1	5	5	
8	13	25	28	2	15	13	
2	2	3	0	1	1	1	
2	4	4	0	1	8	1	