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Self-declaration of the freedom from avian influenza in poultry by Chile

Declaration sent to the OIE on 1 April 2020 by Dr Oscar Videla Perez, OIE Delegate for Chile, Agriculture and Livestock service (SAG), Ministry of Agriculture from Chile.

1 Introduction

In accordance with the provisions of Chapter 10.4. of the *Terrestrial Animal Health Code (Terrestrial Code)* of the World Organisation for Animal Health (OIE), avian influenza (AI) is classified as a mandatory notification disease in Chile, has a case definition in the pathology data sheet, and a contingency plan that is activated when cases of infection are detected.

Chicken and turkey production in Chile reached a total of 280 and 8 million birds, respectively, in 2019. Production areas are distributed in the north of the country and in the central zone. The production of laying hens stands at 16 million. According to the current census, 300,000 farm holdings reported having 10 or more birds.

2 Avian influenza situation

2.1 History

A Low Pathogenic Avian Influenza (LPAI) occurred on 26 December 2016 in Chile¹ and ended, after cleaning, disinfection and verification of absence of viral circulation in March 2017, after recording two additional outbreaks in January 2017. The outbreak was detected following routine surveillance of fattening turkeys by the production company. Diagnostic confirmation and stamping out were undertaken within 24 hours. All of the birds were slaughtered and disposed of. Control and eradication measures were implemented that allowed the country to recover the freedom of disease in June 2017. The most likely hypothesis was that (the flock had been) exposed to viruses transmitted by wild fowl.

Four cases of LPAI H7N6 were registered in Chile in 2019, in four epidemiological units of fattening turkeys pertaining to the same company. The last case was detected on 12 October 2019. All cases

¹ [WAHIS report – Reference OIE: 24038](#)

were eliminated and reported to the OIE Information System (WAHIS) ². The first outbreak was subjected to stamping out, while the remaining three cases were slaughtered in an authorised slaughterhouse/abattoir. All cases were dealt with within the first 72 hours of detecting the infection. Containment measures were gradually applied according to the evolution of the epidemiological situation. The four establishments involved were cleaned, disinfected and subjected to viral circulation tests in the environment using PCR. These processes concluded on 17 December 2019.

2.2 Control and enhanced surveillance for obtain AI freedom

In response to the outbreak, Chile implemented an intensified control and surveillance programme to gain AI freedom in poultry and put in place an effective early detection system in the affected area. This programme was conducted under the responsibility of the Veterinary Authority of Chile, which corresponds to the Servicio Agrícola y Ganadero (SAG).

2.3 Control and intensified surveillance in response to the outbreak

The strategic actions for the eradication of the disease and the control of the four outbreaks were implemented by SAG and included the measures used by the European Union in Directive 2005/94/EC, all of which were executed. A restriction area of 1 km was established around the outbreak of infection and a second (surveillance) area of 1 km was set up around the first area, providing a total of 2 km for each of the first two outbreak and a single contiguous area, with the same distances implemented for restriction and surveillance zones for the third and fourth outbreak foci, given that the separation between both epidemiological units was minimal (Map 1). The measures applied were the stamping out and burial of corpses in the property in the first case, and slaughter in the slaughterhouse/abattoir for the following 3 outbreaks. In all cases guano (seabird excrement) and contaminated organic material were buried, along with the cleaning and disinfection of facilities. A sanitary emergency was declared in the country and in the three affected areas quarantine was established for the four positive epidemiological units, implemented through a regional ruling. In addition, movement restriction was established for the company's poultry, which led to obligatory serological and molecular tests to be carried out prior to any movement of live poultry, increased biosecurity measures and the development of hygiene measures for all personnel, vehicles and materials.

Mapa 1. Distribution of LPAI outbreaks H7N6, Chile, 2019.



In addition to the aforementioned, work brigades made up of a Veterinary and an Official Livestock Technician were established for visits, surveys and sampling in non-commercial establishments in areas placed under restriction and surveillance. Furthermore, a programme of clinical surveillance and weekly sampling was implemented for avian influenza during the first 15 days and then biweekly on

² [WAHIS report – Reference OIE: 32729](#)

two occasions, until completing two incubation periods for all poultry in the restriction and surveillance zones, and for all the epidemiological units belonging to the company. The clinical surveillance and sampling programme was defined as follows

- Sampling of all of the company's epidemiological units, given their epidemiological link, using 30 cloacal and tracheal swabs, along with 30 blood samples.
- Census and sampling of all poultry establishments in the restriction and surveillance zones, which only included poultry from non-commercial establishments. Furthermore, 9 tracheal and cloacal swabs and 9 blood samples were taken from chickens or turkeys when there were 20 or more birds, along with 5 tracheal and cloacal swabs plus 5 blood samples from chickens or turkeys when there were 20 or fewer birds.
- Monitoring of epidemiological links (contractors and company workers) that entered the affected sectors on dates associated with the probable dates of infection.

The results showed (Tables 1 and 2) that, except for the cases detected, there were no additional cases in backyard poultry or in other epidemiological units of the company during the surveillance period.

Samples were analysed in a laboratory belonging to the company, the Avian Pathology laboratory of the Faculty of Veterinary and Livestock Sciences of the University of Chile, and the Livestock Laboratory at SAG's headquarters in Lo Aguirre. The analyses of the two unofficial laboratories were supervised by SAG officials. After the outbreak, no additional cases were reported or detected through surveillance.

During the follow-up of contacts with epidemiological linkages, 90 people were interviewed, their homes were visited and samples were taken when poultry was found to be present. All the results were negative.

It should be noted that during 2019 and until April 2020, 96,910 serological analysis were performed for avian influenza using the indirect ELISA technique (Chicken Kit) and 2,636 using the indirect ELISA technique (Chicken/Turkey kit) for the different surveillance objectives (active surveillance, export certification, additional monitoring for outbreak follow-up, attention to complaints), including outbreak monitoring and control (Annex 1). Of the total analyses performed by the indirect chicken kit ELISA test, 17 sera (1.75 x 10,000) were submitted to the confirmatory IDAG test, with a negative final result. There were no reactors to the Chicken/Turkey Kit.

Table 1-Results-in restriction and surveillance zones in backyard premises, Chile, 2019

Outbreak / Units	Sampling units	N° Birds	Samples for IDAG	PCR tests (5 sample Pool)
Outbreak 1	104	2669	1841	253
Outbreak 2	48	1189	860	158
Outbreaks 3 and 4	26	672	469	193
Total	178	4530	3170	604

¹ All results were negative.

Table 2. Results in establishments of the affected company, Restriction and surveillance zones, Chile

Production type	Sampled Units	Serological samples	PCR test (5 sample pool)
Breeding birds	18	-	690
Fattening	33	5227	1249
Total	51	5227	1939

¹ All results were negative.

3 Surveillance programme and early detection system

Chile has a comprehensive surveillance programme that is carried out each year with the aim of detecting the viral circulation of AI as soon as possible and providing guarantees for the absence of the disease to those markets to which the country exports its poultry meat products. The official authority administers and implements the programme and, in the case of non-industrial plants, collects samples. This sampling process has been carried out continuously since the 1990s. The programme includes elements such as the following:

3.1 Passive surveillance

In Chile, AI is a mandatory notification disease. All notifications for death or disease of poultry received by SAG are addressed within a period not exceeding 24 hours. In the great majority of cases, samples are collected for AI according to the legal framework established by Decree 65/2019.

The system dealing with outbreak reports is a passive type of surveillance, which is based on the current Animal Health Law (Decree RRA 16, 1963³), which includes the animal health obligations of all the inhabitants of the territory (affected) and penalties for non-compliance. The main contribution to this system is through communications by third parties or entities, regarding animal issues that are occurring in any part of the country, especially mandatory notification diseases (mandatory notifying disease or EDO⁴), which fall under Executive Decree 65 / 2019. The latter includes OIE-listed diseases and those that awareness about is of national importance. Notification is mainly provided through reports made by animal owners and veterinary personnel, along with slaughterhouses/abattoirs or veterinary diagnostic laboratories.

The programme has an established procedure known to all the livestock professionals of the Service, guiding the steps that need to be followed for a correct and timely response. Notwithstanding the aforementioned, the programme is constantly being reviewed and updated. Consequently, at the end of 2015 a new version of the programme was updated, which specified issues with respect to time periods, interventions and communications, mainly in terms of events that lead to the suspicion of an exotic disease within the country.

SAG deals with reports of mortality and/or morbidity, both affecting poultry and wild birds. To facilitate the work of professionals, and with respect to all EDO mandatory notification diseases, technical guidelines exist that include disease descriptions and case definitions.⁵

In the case of notifications of poultry, in all cases samples include serum, oral and cloacal swabs, and organs or dead birds. The analyses are Agar Gel Immunodiffusion (AGID) for serum samples, RT-PCR and virological culture in embryonated eggs for samples of swabs, organs and/or dead birds. In the case of dead birds, necropsies and histopathological analyses are also carried out. All analyses are undertaken in accordance with the *OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (Terrestrial Manual)*.

3.2 Strengthening programmes

Surveillance strengthening programmes are carried out on an on-going basis with veterinary doctors and producers. This includes regular meetings, training workshops, courses and seminars. Furthermore, the country has a technical body consisting of professionals from the different areas of poultry production who periodically meet to analyse the sanitary situation, the progress of official programmes and to discuss various issues associated with such production. Additionally, when

³ [Decree RRA-16](#)

⁴ [Mandatory notifying diseases \(EDO\)](#)

⁵ [Ficha técnica IA - SAG](#)

outbreaks of infectious diseases do occur, SAG provides periodic reports that update the sanitary situation and establish recommendations for producers. These reports are daily and an epidemiological report is sent weekly to update the information on control and eradication actions.

3.3 Serological and molecular surveillance

Active surveillance aims to support the country's sanitary condition with respect to the absence of diseases and provide information for adequate decision-making in animal health, as well as to facilitate the certification processes of animals, products and by-products to the different markets. This surveillance is based on an annual programme and on the sampling carried out for the animal health export certification of poultry meat.

The national AI surveillance annual plan has been implemented throughout the country since the 1990s and has been constantly updated. The plan includes the strata of birds to be sampled with a programmed annual total of more than 16,000 samples to be collected in 821 establishments at the countrywide level. These strata are as follows:

1. Industrial stock of grandmothers, breeders and broilers (≥ 500 birds).
2. Industrial breeding stock and fattening turkey stock (≥ 500 birds).
3. Industrial breeding stock and layers (*Gallus gallus*) (≥ 500 birds).
4. Hatcheries for smaller poultry populations such as quail, pheasants, geese, ducks and other species (≥ 500 birds).
5. Ratite facilities (ostriches, emus) (≥ 3 birds).
6. Backyard poultry (≥ 10 birds).
7. Fighting cock facilities (≥ 5 birds).
8. Poultry marketing centres such as live bird markets and pet stores (≥ 5 birds).
9. Full or partial industrial rearing of poultry outdoors (Free range).
10. Zoos, educational farms, rescue and/or rehabilitation centres, ornamental bird farms (≥ 10 birds).
11. Wetlands (wild birds): Linked to catches made by RENARE (Renewable Natural Resources), NGOs, Universities or other agencies, being the responsibility of the sector, but not necessarily collecting the samples directly.

This sampling is based on the risk assessment according to a two-stage statistical design that defines the number of facilities and the number of animals to be sampled. The plan is recognised and validated by the European Union, was rated highest in the OIE PVS assessment, and has never received any comments in country auditing reports.

Risk factors for poultry surveillance are as follows:

- Medium to high probability of effective contact with migratory wild fowl (anseriformes, ciconiiformes and charadriiformes) and/or resident fowl with poultry ($\leq 1K$ from natural and artificial wetlands – reservoirs, crops, lagoons, etc.; joint rearing of wild birds with poultry such as zoos, educational farms, pet stores, bird breeding or rehabilitation centres).
- Background regarding the smuggling or interception of birds or poultry by-products in the area ($\leq 5K$).
- Close proximity to border posts, quarantine centres or international routes with a high volume of traffic ($\leq 3K$).
- Close proximity to slaughterhouses/abattoirs or rendering plants (≤ 3 km).
- Shared equipment between farms and/or introduction of poultry from other facilities.
- Distance between farms: ≤ 500 m., 5 or more industrial poultry establishments/km², farms in areas with a density of $\geq 100,000$ birds / km² or a density of $\geq 10,000$ people/km².

The samples collected are serum and swabs according to the productive stratum and the analyses carried out are those mentioned in the point referring to diagnosis. The results of the sampling for 2019 and what has been done to date in 2020 have not shown reactants or positives for AI in the country (Annex 1). During the emergency, there were no positive reactors in the infected premises because there were no collection of blood samples in the infected premises.

3.4 Animal health certification for poultry meat exports to Mexico

The export of poultry meat to Mexico has as a requirement the sampling for avian influenza of all the production batches of chicken and turkey for fattening prior to their dispatch to the slaughterhouse/abattoir. The total number of samples for each sector of a chicken and turkey fattening farm is 59. This sampling represents about 60,000 additional samples per year for AI and has been carried out since 2002.

3.5 Diagnostic tests

Diagnosis of the samples of birds collected within the surveillance framework in the non-industrial sector that exports poultry meat, is carried out at the SAG Livestock Laboratory in Lo Aguirre. Serum samples are analysed through the use of ELISA and AGID, while oral and cloacal swab samples are analysed using RT-PCR. Sampling of industrial export plants is carried out in authorised laboratories. These laboratories are subjected to proficiency tests coordinated by the Livestock Laboratory.

Samples found reactive through serology are subjected to serological tests by SAG for Hemagglutinin and Neuroaminidase, along with samples for virological culture, RT-CRP and in vivo pathogenicity tests.

3.6 Review of recent programmes and results of the surveillance of wild fowl.

In Chile, the hypotheses of the origin of the viruses that have caused outbreaks in poultry have been generally linked to wild fowl. Given the above, SAG undertakes a continuous process involving the characterisation and census of birds in bodies of water, lagoons and lakes near the two zones and nearby non-commercial farm holdings. During the surveillance carried out during the outbreak, a positive sample was obtained for avian influenza in wild birds, but without being able to determine the serotypes.

4 Measures to maintain AI freedom

In Chile, all imports of day-old birds and fertile eggs must be covered by an animal health certificate in accordance with Chapter 5.1. of the OIE *Terrestrial Code*. They must enter through authorized border posts and comply with a quarantine process prior to their entry into the country. Additionally, there are specific regulations for the admission of recreational birds, poultry meat, processed poultry meat and processed meat products and eggs for human consumption.

Furthermore, in Chile, biosecurity in commercial establishments has been gradually improved to reduce the probability of introduction of AI viruses from wild birds. Biosecurity includes access restrictions, change of clothing, the chlorination of water, preventing the entry of animals and pests, management of litter and guano after the end of production cycles, management of corpses, management of everything inside and outside of the facilities, the monitoring of poultry health and the collection of samples when a disease is suspected. In addition to the above, surveillance is more effectively directed each year at areas considered at risk, and studies are carried out that allow for greater targeting.

5 Conclusion

Considering that:

- The last case of LPAI H7N6 occurred on 12 October 2019 and was quickly eliminated on 18 October 2019.
- Stamping out and slaughter measures were applied in an approved abattoir, including cleaning, disinfection and environmental sampling to verify the absence of viral circulation in the affected farms, and were completed on 17 December 2019.
- The epidemiological investigation established exposure to the virus, through wild birds, as a hypothesis for entry.
- It has been confirmed that avian influenza virus infection in poultry has not been reported for more than 3 months since the completion of cleaning and disinfection actions, in accordance with Chapter 10.4. of the *Terrestrial Code*
- Surveillance has been conducted in accordance with Articles 10.4.27. to 10.4.33. of the *Terrestrial Code*.

The Delegate of Chile to the OIE declares that the country has complied with all the requirements to declare freedom from avian influenza in poultry as of 26 March 2020, in accordance with Chapter 1.6. and Article 10.4.3. of the OIE *Terrestrial Code* and consistent with the information provided to the WAHIS system.

Yo, el abajo firmante, Oscar Videla

Delegado de La República de Chile ante la Organización Mundial de Sanidad Animal (OIE), asume la responsabilidad de la autodeclaración de ausencia de Influenza aviar en aves de corral

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Annex 1. Samples collected and analyzed for AI according to year, month, sample type and analysis, 2019 -2020

Month/year	Test	Sample	N° of samples tested	Result
January 2019	ELISA Indirect	Serum	2976	Negative
	IDAG	Serum	350	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	4	Negative
	Virus cultivation	Tracheal/cloacal swabs	4	Negative
February 2019	ELISA Indirect	Tracheal/cloacal swabs	4	Negative
	IDAG		488	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	6	Negative
March 2019	ELISA Indirect	Serum	2993	Negative
	IDAG	Serum	883	Negative
	ELISA Chicken/Turkey Indirect	Serum	60	
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	22	Negative
April 2019	Virus cultivation	Tracheal/cloacal swabs	8	Negative
	ELISA Indirect	Serum	3442	Negative
	IDAG	Serum	1444	Negative
	ELISA Chicken/Turkey Indirect	Serum	180	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	25	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	9	Negative
	Virus cultivation	Tracheal/cloacal swabs	2	Negative
May 2019	ELISA Indirect	Serum	3100	Negative
	IDAG	Serum	1323	Negative
	ELISA Chicken/Turkey Indirect	Serum	120	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	5	Negative
	Virus cultivation	Tracheal/cloacal swabs	8	Negative
June 2019	ELISA Indirect	Serum	2920	Negative
	IDAG	Serum	1286	Negative
	ELISA Chicken/Turkey Indirect	Serum	120	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	23	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	5	Negative
	Virus cultivation	Tracheal/cloacal swabs	15	Negative
July 2019	ELISA Indirect	Serum	3043	Negative
	IDAG	Serum	1040	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	20	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	7	Negative
	Virus cultivation	Tracheal/cloacal swabs	9	Negative
August 2019	ELISA Indirect	Serum	2863	Negative
	IDAG	Serum	1204	Negative
	ELISA Chicken/Turkey Indirect	Serum	120	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	15	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	4	Negative
	Virus cultivation	Tracheal/cloacal swabs	5	Negative
Fecha	Técnica	Tipo de muestra	N° de muestras analizadas	Resultado
September 2019	ELISA Indirect	Serum	2815	Negative
	IDAG	Serum	1075	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	13	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	2	Negative
October 2019	Virus cultivation	Tracheal/cloacal swabs	12	Negative
	ELISA Indirect	Serum	2794	Negative
	IDAG	Serum	1516	Negative

	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	19	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	4	Negative
	Virus cultivation	Tracheal/cloacal swabs	6	Negative
November 2019	ELISA Indirect	Serum	5104	Negative
	IDAG	Serum	1680	Negative
	ELISA Chicken/Turkey Indirect	Serum	240	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	14	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	1	Negative
	Virus cultivation	Tracheal/cloacal swabs	6	Negative
	December 2019	ELISA Indirect	Serum	5058
IDAG		Serum	859	Negative
ELISA Chicken/Turkey Indirect		Serum	180	Negative
RT-PCR Real time IA Matrix Tipo A (Wild fowl)		Tracheal/cloacal swabs	27	Negative
RT-PCR Real time IA Matrix Tipo A (Poultry)		Tracheal/cloacal swabs	9	Negative
January 2020	ELISA Indirect	Serum	5684	Negative
	IDAG	Serum	360	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	4	Negative
February 2020	ELISA Indirect	Serum	5272	Negative
	IDAG	Serum	764	Negative
	ELISA Chicken/Turkey Indirect	Serum	120	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	5	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	6	Negative
March 2020	ELISA Indirect	Serum	5338	Negative
	IDAG	Serum	773	Negative
	ELISA Chicken/Turkey Indirect	Serum	120	Negative
	RT-PCR Real time IA Matrix Tipo A (Wild fowl)	Tracheal/cloacal swabs	10	Negative
	RT-PCR Real time IA Matrix Tipo A (Poultry)	Tracheal/cloacal swabs	6	Negative
Abril 2020	ELISA Indirect	Serum	3953	Negative