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# **APHIS Evaluation of the Classical Swine Fever Status of Chile (Site Visit Report and Risk Assessment)**

**Animal and Plant Health Inspection Service**

**Veterinary Services**

**January 2003**

# APHIS Evaluation of the CSF Status of Chile

<b>Executive Summary .....</b>	<b>3</b>
<b>Introduction .....</b>	<b>4</b>
<b>Section I—Site Visit .....</b>	<b>5</b>
<b>Conclusions.....</b>	<b>20</b>
<b>Summary.....</b>	<b>22</b>
<b>Recommendations for Improvement.....</b>	<b>23</b>
<b>Possible Introduction Pathways.....</b>	<b>24</b>
<b>Mitigation Measures.....</b>	<b>26</b>
<b>Section II—Risk Assessment.....</b>	<b>27</b>

# APHIS Evaluation of the CSF Status of Chile

## Executive Summary

The Animal and Plant Health Inspection Service (APHIS) cites the following factors as relevant to the situation in Chile:

- No new classical swine fever (CSF) outbreaks have been detected since August 1996.
- Surveillance and investigations performed by the Servicio Agrícola y Ganadero (SAG) appear sufficient and have not detected animals affected with CSF.
- A number of potential risk factors exist. Specifically:
  1. Chile's diagnostic laboratory capabilities are limited;
  2. Chile allows cross-border movement of empty live-haul trucks that may not be adequately cleaned and disinfected;
  3. Wild boar residing in Chile might become infected with CSF;
  4. Chile imports live swine from a region that the United States does not consider to be free of CSF;
  5. Chile's import requirements for some cured hams are less restrictive than those of the United States; and
  6. Chile shares common land borders with countries/regions that APHIS does not recognize as free of CSF.

Several of these risks are negligible, while the remaining ones can be mitigated through appropriate measures. APHIS could identify no additional risk factors that should prevent Chile from being added to the list of regions recognized free of CSF.

# **APHIS Evaluation of the CSF Status of Chile**

## **Introduction**

In 2000, Chile requested that APHIS grant it authorization to export swine, pork, and pork products to the United States. To accomplish this goal, APHIS conducted an evaluation of Chile's CSF status to assess the risk of opening trade with Chile. This report presents the results of the site visit and the assessment of the risk associated with the initiation of trade in CSF susceptible animals and animal products between the United States and Chile.

The team's site visit observations, documentation provided by Chile, and information from OIE constitute the supporting documentation for this evaluation [1-30], which consists of two sections. Section I contains observations made by APHIS during its site visit in Chile, which occurred August 5 - 8, 2002. Section II identifies the risk factors that might allow the introduction of CSF into the United States through trade in susceptible animals and products. Existing mitigations of those factors are discussed, and additional mitigations are recommended.

Documentation provided by Chile indicates that CSF has been eradicated in that country. In fact, Chile has not reported a case of CSF since August 1996. The period of time since Chile's last reported outbreak exceeds the period that the Office International des Epizooties (OIE) recommends for a disease-free period. The OIE recommends that a country may be considered free from CSF when it has been shown that CSF has not been present for at least the past 2 years.

It should be noted that APHIS considered information provided by Chile prior to, during, and after the site visit. APHIS also considered OIE reports and other technical sources. Finally, APHIS used all the information gathered in its evaluation to identify risk factors that might be presented by Chilean exports. This evaluation will address each of the possible risk factors and the measures that might serve to mitigate those risks.

# APHIS Evaluation of the CSF Status of Chile

## SECTION I—Site Visit

### Administrative details:

The site visit took place August 5 - 8, 2002. The team members were:

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### Legal Basis:

Title 9, Code of Federal Regulations (9 CFR), Section 92.2

### Background:

Classical swine fever has not been detected in Chile since 1996. In 1999, Chile requested the United States to recognize it as free of CSF. This is the first evaluation of Chile by the United States for CSF freedom. Animal health officials in Chile submitted documentation to support their request for CSF-freedom. APHIS conducted an evaluation of the documentation and requested authorization to conduct a site visit to Chile to verify and complement the information in the documentation.

### Main Findings:

Authority, Organization and Infrastructure [5, 21, 28, 31]

Chile has an infrastructure that allows for detection and diagnosis of CSF and the implementation of field programs, including emergency response to contain and eradicate an outbreak. At the time of the site visit, Chile reported freedom of all List A diseases, except highly pathogenic avian influenza. CSF and the other “red” diseases of swine (a highly febrile disease that may manifest itself in white pigs as red or inflamed skin) are reportable. All accredited and regulatory veterinarians are required to report any suspicious disease conditions to SAG veterinary personnel within 24 hours. (SAG translates roughly into the Agricultural and Livestock Service.)

The basic authority for animal health activities in Chile is the Animal Sanitation Law (DFLRA No.16, 1963) [21]. This law provides adequate authority for import controls, movement controls, animal quarantine, reporting of animal disease, disease control measures, seizure, depopulation, cleaning and disinfection, access by government, identification of cattle and horses, and compliance. The Organic Law (Law No. 18,755, 1989) defines the structure of SAG [28]. Regulations for eradication of CSF are covered under a specific regulation (CSF regulation, No. 32, 1996 [5, 21]). This regulation, among other things, prohibits the feeding of food wastes of animal origin to swine, unless by expressed and founded resolution authorized by SAG.

## **APHIS Evaluation of the CSF Status of Chile**

These food wastes include those from slaughterhouses, restaurants, hospitals, cafeterias, other such establishments, and trash dumps. Team members were informed that penalties exist for not reporting suspected exotic disease, and for noncompliance with animal health regulations.

Within the Ministry of Agriculture, SAG is a partially decentralized, semi-autonomous organization. It is organized in three levels: a normative central branch based in Santiago, the regional organization (an integral part of the decentralized Ministry of Agriculture structure), and an operative level at the section level within each Region.

The headquarters organization is divided into five technical departments: Agriculture Protection, Livestock Protection, Protection of Renewable Natural Resources, Seeds, and Laboratories and Quarantine Stations. Six other departments provide oversight to the Ministry: Judicial, Planning and Studies, Internal Controls, International Affairs, General Secretariat, and Administration and Finances.

Within SAG, the Livestock Protection Department (Departamento de Protección Pecuaria, or DPP) manages animal health programs. This includes border ports, animal health laboratories, and animal quarantine centers. The DPP Director serves as the Chief Veterinary Officer. SAG veterinary staff consists of approximately 174 people. Approximately 213 official technicians are assigned to support the veterinary staff throughout the country.

The DPP Director has five sub-departments: Epidemiological Monitoring, Livestock Protection, Livestock Projects, Livestock Technology and Industry, and Livestock Foreign Trade. The Epidemiological Monitoring Sub-Department manages epidemiological surveillance, risk analysis, endemic disease monitoring, and exotic disease response. The Livestock Protection Sub-Department manages barriers and quarantines. The Livestock Projects Sub-Department includes bovine brucellosis, establishments under the Program for Certification of Herds under Official Control (Planteles Bajo Control Oficial, or PABCO), export certification, and regional projects.

Chile is divided from north to south into 13 regions identified as Regions I to XII, and the Metropolitan Region. The Metropolitan Region is located between Regions V and VI and includes Santiago. Regions I to XII are also known by their regional capitals. (For instance, Region VI is known as the Valparaiso Region.) Directors are responsible for delivery of SAG programs within each region. Regions are further subdivided into sections, of which there are a total of 62. Section administrative directors manage SAG program implementation within each section.

The Regional Livestock Veterinarian-in-Charge (RLVIC) reports to the Ministry of Agriculture's Regional Director and to the DPP headquarters. A variety of animal health activities occur within a given region. These functions include animal health support to 99 slaughter plants (ranging from 1 to 16 per region). Four of these slaughter plants are used for export, while four are used as export meat storage facilities. (Two of these export meat storage facilities are located in the Metropolitan Region, and two are located in Region VI). Other functions include management of PABCO, surveillance for swine, poultry and ruminant diseases; disease eradication (brucellosis program); and international port activity.

On the plant health side, a similar structure exists. As an example, the Regional Director in Region VI is an agronomist.

## **APHIS Evaluation of the CSF Status of Chile**

A region has two to ten sections, and each is managed by an administrative director. In addition, at least one sectional SAG veterinarian is assigned. Northern regions (Regions I, III, and IV) have three governmental veterinary medical officers (VMO's), and Region II has one VMO. The number of official government veterinarians assigned (and thus the number of government veterinarians per swine population) may be quite low.

Other regions will have several sections with international border posts and will, therefore, have a larger number of veterinarians --no matter how large or small the swine population might be. The country has 72 control points including ports, sea ports and border ports. The governmental veterinary staff is supported in some of these functions by accredited veterinarians.

Chile has four government and several private veterinary schools. The country has a significant veterinary accreditation program. There are approximately 570 accredited veterinarians throughout Chile, with over half of these working in Region X. Accreditation is managed by DPP's Sub-Department of Planning. Official governmental functions of accredited veterinarians are generally brucellosis eradication or PABCO, as well as notification of notifiable diseases. Notification of suspected exotic disease to an official government veterinarian in the section is required by law within 24 hours.

The Program for Certification of Herds under Official Control is a voluntary program that is managed by SAG, DPP Livestock Projects Sub-Department. However, participation is obligatory for interregional and international commerce. This program operates under norms developed by DPP. The program is supervised by Regional and Section VMO's and is carried out by accredited veterinarians on the farm. For example, PABCO with Agrosuper farms in Rancagua (Region VI) was observed by team members and explained by the RLVIC, Section VMO, and company veterinarians. Quality records (production and health) are maintained on the farm by the accredited veterinarian for the farm. These records are reviewed periodically by the Section VMO.

Export certification is managed by a SAG, DPP Livestock Projects Sub-Department VMO under enabling legislation (Decree 682, 1942; Law 18,755, 1989) and regulations (Resolution 2931, 1999). The managing SAG VMO will only certify animals and animal products that comply with program standards. These standards include that farms of origin must be under PABCO and specifically approved for export. Slaughterhouses and processing plants must also be approved and under animal and public health inspection programs for diseases and residue monitoring. Only animals and animal products from PABCO farms may be certified for export.

Animal health controls (ante- and post-mortem) in slaughterhouses are directly supervised by the Ministry of Health. Quality control supporting animal health and public health is managed by DPP section personnel who work alongside Ministry of Health veterinarians. Different from the Ministry of Agriculture, Ministry of Health personnel are managed as a completely decentralized service, with approximately 27 agencies. These are based from Ministry of Health Regional Offices. Ministry of Health personnel are required to report any suspicious case of disease to the Section SAG veterinarian, who responds via an investigation within 24 hours of notification.

Chile currently has few programs for swine diseases. However, porcine respiratory and reproductive syndrome (PRRS), which was detected recently, was mentioned. Pseudorabies has not been described. Chile also is considered free of swine brucellosis and transmissible gastroenteritis.

## APHIS Evaluation of the CSF Status of Chile

While Chile is affected by trichinosis, there is no formal program for control and eradication other than checks at slaughter (as mandated by importing countries). In fact, it is illegal for a farmer to slaughter pigs on his or her farm, even family farms, because Chile is attempting to monitor for trichinosis.

Budget information was provided for surveillance and emergency response. This information is divided into four line items identified as surveillance and data management for exotic and endemic diseases, early response, building at the field and headquarters level, and preparation and management of emergency plans for List A diseases.

Team members were able to confirm the functioning of this veterinary infrastructure during site visits to headquarters in Santiago (Metropolitan Region), a regional office in Rancagua (Region VI), a section office in Los Andes (Region V), a farm visit (Agrosuper, Rancagua, Region VI), a slaughtering facility (Rosario, Region VI), a national animal quarantine center and laboratory (Complex Lo Aguirre, Metropolitan Region), a privately owned quarantine facility (Agrosuper, Rancagua, Region VI) and a trash-handling facility (Region VI). Details concerning the team's visits to these sites are provided later in this document.

Waste feeding is prohibited in Chile, and there was no evidence found of illegal feeding of garbage. On February 19, 1996, the CSF Eradication Rule was published [21]. This rule requires pig owners to keep their animals confined on their property, and prohibits the feeding of pigs with food or other wastes of animal origin from slaughter plants, restaurants, hospitals, casinos, garbage dumps, or other establishments. Garbage from international carriers and at border ports is prohibited and incinerated. In the regions visited (Region V, Metropolitan Region, Region VI), there were very few small farms, and these are decreasing in number. No backyard free-roaming pigs were observed. This is considered typical.

A larger number of backyard or family farms exist in Regions VII to XII. Family farms are visited by Section VMO's periodically to ensure compliance with the prohibition on feeding food wastes from outside the immediate family. Though waste feeding is prohibited, the feeding of family pigs with the family's table waste is not regulated. Team members asked about enforcement of regulations against garbage feeding and were informed of the legal mechanisms that further facilitate compliance.

In Region VI, the site visit team learned that SAG veterinarians visit restaurants approximately once per year to check on their waste and garbage disposal methods. The VMO also conducts surveillance for animal diseases, including CSF.

The site team visited Relleno Sanitario in Colihues in Region VI to observe a garbage dump. Eleven municipalities contracted with this company to pick up the garbage. The facility receives 400 tons of trash per day and is expected to exist for 30 years. The facility was fenced in and topped with barbwire. A guard was at the front gate. Only official garbage dumps are permitted to operate. They must be isolated and have one layer of garbage, one layer of dirt, and so on. By law, the garbage layer must be covered every night so that nothing is exposed. Also, water generated by the dump is treated so that it will not contaminate the water table. This was the only dump in the region, and there were no unofficial dumps observed. The site visit team did not observe animals (dogs, cats, or pigs) in the dump area.

A good relationship appears to exist between the government and the swine industry. This relationship is reinforced by the PABCO system and through regular visits by Section VMO's. A basic level of communication exists between the central, regional, and section levels. Communication by telephone,

## APHIS Evaluation of the CSF Status of Chile

radio, and fax is available and is utilized to communicate epidemiological reports, as well as coordination of animal movements to port operations.

Disease status in the region [21, 22, 26-28, 31, 32]

The most recent diagnosis of CSF in Chile occurred in July 1996. Prior to this date, the last outbreak occurred in May 1995. The same premises were affected in the 1995 and 1996 outbreaks. The affected premises were family farm operations that raised swine for self-consumption, without possibility of providing products to commercial establishments. Also, the premises were more than 1000 km from industrial production areas. The 1995 outbreak was detected when the owner of the pigs notified authorities. The 1996 outbreak was detected during a routine inspection by SAG personnel at one of the sites from the 1995 outbreak. The probable source of the 1995 infection case is not clear, but two possibilities exist.

The first possibility is the introduction of pigs (from Region I) that originated from a chronically infected farm not detected by SAG. The second possibility is through waste brought to the town. The probable source of the 1996 infection was a female carrier that cohabited with the pigs in 1995. In 1995, all of the pigs on the affected premises were not slaughtered due to a lack of authorization. By the time the 1996 outbreak occurred, SAG had authorization to slaughter all animals on an affected premises. In 1995 and 1996, the number of pigs involved was 21 and 17, respectively.

In 1995, sanitary controls to address the outbreak included quarantine, the slaughter of affected or diseased pigs, ring vaccination of the remainder of the herd, and surveillance until November 1995. In 1996, sanitary controls to address the outbreak included quarantine and stamping out of all the pigs, disinfection, and surveillance until December 1996.

Status of adjacent regions [31, 32, 33]

The Animal and Plant Health Inspection Service considers Peru, Bolivia, and Argentina as affected with CSF [33, 34]. Peru had outbreaks in 2002. No reports of CSF were made in 2002 to the Office International des Epizooties (OIE) by Bolivia and Argentina as of October 2002 [32].

Extent of an active disease control program [21, 22, 28, 31]

Chile has control programs for brucellosis, tuberculosis, and PRRS. Chile is free of all OIE List A diseases, except for high pathogenic avian influenza.

While the purpose of the site visit was to evaluate Chile's CSF status, there was some discussion of Chile's avian influenza outbreak. This interest focused on the overall issue of effectiveness of control measures. On May 24, 2002, Chile reported a high pathogenic avian influenza outbreak. The outbreak was confirmed on May 26 and 27, and reported to OIE on May 29, 2002. There were two foci. One was in breeding hens, and the other in breeding turkeys. The birds were depopulated. There have been no new cases since June 19, 2002, through the date of the site visit.

The origin of the infection is not known. However, there were several theories presented to the site visit team: 1) wild birds; 2) importation of genetics; 3) the mutation of a low pathogenic strain that was present in Chile in April 2002; 4) unauthorized live vaccine for avian influenza; or 5) contaminated inclusion body hepatitis vaccine of foreign origin.

## **APHIS Evaluation of the CSF Status of Chile**

Vaccination status [21, 22, 28, 31]

Vaccination for CSF has been prohibited since October 6, 1997. On certain farms, there are still some vaccinated sows that show positive antibody titers to CSF during surveillance activities.

Separation from adjacent regions

Chile is separated from Peru and Bolivia by the Atacama Desert and from Bolivia and Argentina by the Andes Mountains. On the west, Chile is bounded by the Pacific Ocean.

Movement controls and biosecurity [8, 12, 17-22, 28, 31]

At the time of the site visit, Chile was routinely importing live swine for reproduction, swine semen, tanned skins, bristles, and cured hams. (The hair of the swine is washed, disinfected, and steam-treated at origin in preparation for industrial use. The tanned skins are imported tanned and are for industrial use.) However, Chile has implemented a resolution for the importation of chilled or frozen pork [12]. The country of origin must be pronounced free of foot-and-mouth disease (FMD), African swine fever (ASF), bovine fever, swine vesicular disease (SVD), Teschen's disease, and CSF by the OIE (sic). Among other things, the slaughter facility must be approved by SAG and authorized to export into Chile by the competent official health authority.

Chile also has implemented a resolution that allows the importation of processed meat products, including raw processed or fresh raw delicatessen, raw matured or acidified processed, long cure/maturation, and processed cooked meat products or cooked sausages [8]. (Long cure/maturation products are hams that undergo salt curing and maturation for at least 8 months.) The countries must be officially pronounced free of FMD, bovine fever, ASF, SVD, Teschen's disease, and CSF by the OIE (sic) to export any of the products to Chile. However, countries that have been regionalized (countries that contain certain regions that are free of the listed diseases) can export only products of long cure/maturation and processed cooked meat or cooked sausages. For these countries, the animals from which the meat products are derived must come from regions free of the diseases. In addition, the abattoir and processing plants must be located in these disease-free regions, and these regions must have been evaluated and recognized by SAG. Countries that cannot fulfill the listed requirements can only export into Chile processed cooked meat or cooked sausages. All of the above indicated imports must be accompanied by an official certificate issued by the competent animal health authority in the country of origin.

For meat exported from Chile, all physical inspection of the product occurs at the slaughter facility. A SAG veterinarian at the slaughter facility must observe the meat being loaded and crated for export. An official SAG seal must be placed by the SAG veterinarian. The shipment must also be accompanied by a sanitary health certificate. Only an official SAG veterinarian can sign and stamp the paperwork for meat export.

When the shipment arrives at the port, a SAG veterinarian must ensure that the seal agrees with the seal number on the paperwork. The container is then connected to a refrigeration unit. The shipment is required to be present 2 days before the ship arrives. A SAG veterinarian completes the certificate at the central office.

Chile has export slaughter facilities and municipal slaughter facilities. Export slaughter facilities accept pigs only from farms meeting biosecurity measures. There are four slaughterhouses for the export of swine products. They are Friosa, Agrosuper (two sites), and AASA. Friosa and AASA only slaughter

## **APHIS Evaluation of the CSF Status of Chile**

pigs from their respective commercial members. Each of these members functions in the same manner as Agrosuper (described in this document). The export slaughter facilities have a veterinarian from public health and a veterinarian from SAG.

Family farm pigs are taken to municipal slaughter facilities or slaughtered at the farm. Slaughter of the pigs on the farm is illegal because of trichinosis concerns. However, if the pigs are slaughtered at a municipal facility, the farmer must pay. (Farmers appear reluctant to pay for this service.) The municipal facilities have a public health veterinarian present. Meat produced at these facilities is for national consumption and not for export.

Chile has 76 border control points. These are distributed among 13 airports, 24 ports, and 39 land crossings.

### **Quarantine Facilities**

Chile has national and privately owned animal quarantine centers. SAG has a quarantine facility, but it is for birds and reptiles (exotic animals). A private quarantine facility must be authorized by SAG prior to each use. These quarantine facilities do not have blanket approval.

Live swine imports enter privately-owned centers only. When operating, these facilities are under SAG supervision via the Sector VMO. The site visit team visited one such facility owned by Agrosuper. It is located in Itahue, in Region VI. Agrosuper's quarantine facility was separate from other animals. Site team members were unable to enter the facility due to strict biosecurity and an on-going quarantine.

For testing during quarantine, SAG takes all samples and performs tests, but Agrosuper personnel manage the animals. The facility was located in a valley and isolated from other animals and farms. It was fenced in, and a sign on the fence warned that access was restricted. Fencing also surrounded the quarantine area within the facility, which provided a second barrier. The bottom of the second fence had a cement base. Feed is brought in for the animals at the time the animals enter the facility. Additional feed is brought in at a sentinel entry (explained later in this document). Two people are in the facility during the day and one at night. Personnel who work in the quarantine facility can only work in that facility.

Only one of the Agrosuper veterinarians enters the facility, and must have the Sector VMO's permission to do so. The Agrosuper veterinarian cannot return to another Agrosuper facility until the recognized time of 3 days has elapsed to ensure no contact with other animals. The people stationed at the facility and the Sector VMO are the only ones who are authorized to pass through the gate into the facility. Workers are allowed to bring their own food, but pork products are not permitted.

A system is in place for spraying vehicles that are brought into the facility. The quarantine building is a shower-in facility, and work clothes are put on. Agrosuper receives approximately three shipments of animals per year. At the completion of quarantine, Agrosuper places older sows and 70-day-olds into the house with quarantined animals. This serves as a sentinel system. The animals are housed together for 2 months. SAG officials stated that, in general, animals in quarantine that are diagnosed with a disease are sacrificed and not returned to the country of origin.

### **Seaport**

The site visit team visited the seaport of Valparaíso in Region V. From November to April, an average of 32 cruise ships arrive with a total of 32,000 passengers. The ships are mainly from England, France, Germany, Latin America, and North America. Passengers are advised not to disembark with agricultural

## **APHIS Evaluation of the CSF Status of Chile**

products. Passengers are notified of this precaution by the crew and with brochures and posters provided to the passengers by SAG. Crew members instruct passengers that disembarking with meat, fruit, vegetables, and chicken is prohibited. A declaration form must be completed by the passengers. Approximately 10 percent of the passengers are checked.

Passengers caught disembarking with food items are confronted and could be threatened with retainment of their passport or a fine. SAG also sets up a quarantine area near the ship to process the passengers and their luggage. Fruit or meat products that are confiscated are destroyed by SAG. Fruit is autoclaved and meat products are sent to a slaughterhouse 15 kilometers away for rendering.

Food wastes cannot be offloaded from the ship. Food wastes must be disposed of in the sea at least 12 miles from shore. Some cruise ships process their garbage. Private yachts and ships do not enter at Valparaíso. Fruit ships are prohibited from emitting garbage at the port, and passengers who disembark are checked.

### **Land Border \***

The site visit team visited a land border crossing in Region VI, which is the region immediately north of the Metropolitan Region (i.e., north of Santiago). This is the only border crossing in Region VI. Border crossing controls and functions are controlled administratively and staffed by personnel from the sector office in the town of Los Andes, which is approximately 60 km from the actual border crossing. The border check point, Los Libertadores, is located on a two-lane highway over the Andes Mountains, approximately 5 km from the border of Argentina.

While visiting the sector office, the team received an overview of border control activities and routine surveillance and control functions performed in the section. Personnel from the town of Los Andes have a significant role in the implementation of movement controls, which are coordinated among three separate sites. These are the sector office in Los Andes, the actual border crossing near the Argentine border, and the “port” located in Los Andes (but separate from the sector office). This port is the facility where the contents of commercial trucks are inspected. The sector office provides staff for Los Libertadores and the port. Personnel rotate among the three locations on a regular schedule.

The volume of traffic and trade passing through Los Andes/Los Libertadores is greater than that of any other border station in Chile. The station is also the oldest official station in the country. Team members had the opportunity to view detailed manuals describing standardized procedures to guide import and export decision-making. These are issued by SAG and are applicable at the national level.

### **Los Libertadores**

The Andes form an effective physical boundary for vehicular movement control between Chile and Argentina. The mountains line the entire eastern border of Chile. Since there is only one road over the mountains in Region VI, all traffic between the Region and Argentina goes through Los Libertadores. The veterinary border control measures observed by the team were strict and appeared to be effective. The team was informed that the procedures were similar at other land border ports.

\*(Note: In the seizure records, K.N. means net kilograms.)

## APHIS Evaluation of the CSF Status of Chile

### *Traffic entering Chile*

A single two-lane highway goes through Los Libertadores. A permanent inspection station building, located approximately 5 km from the border with Argentina, is large enough to accommodate the physical inspection of cars, buses, and passengers. Traffic through this facility includes commercial trucks. However, these vehicles are inspected physically at the port located in the town of Los Andes.

Every car, bus, and truck is stopped at Los Libertadores. All cars are searched thoroughly by checking the passenger compartment, the trunk, under the seats, and the glove compartment. All luggage is opened and inspected by Customs and agriculture personnel.

All bus passengers must disembark. All luggage on buses is removed and examined by special x-ray equipment designed to detect organic material (illegal animal products). Fruits, vegetables, meat, and honey from cars and buses are confiscated. Vegetables are observed for pests in a dedicated room. Confiscated agricultural materials are destroyed. Honey is confiscated because its entrance is prohibited. (Honey can contain a bacterial pathogen for bees.) Samples are subjected to testing, and the product is destroyed.

Animals (e.g., birds) without the appropriate supporting paperwork may also be confiscated. In this regard, the site review team observed a parrot that had been confiscated because it arrived at the border without the required documentation. The bird was being maintained at the station until arrangements could be made to return it to the point of origin.

Supporting paperwork for commercial trucks is inspected at Los Libertadores. Trucks are allowed or refused entry at Los Libertadores after a review of the certification and manifests presented to border station personnel. If the supporting paperwork is in order, the truck proceeds to the port in Los Andes where its contents are inspected by both customs and agriculture personnel.

Since Los Libertadores is approximately 60 km from Los Andes and the road is treacherous (containing a series of 23 switchbacks in the lower section and an additional 4 in the upper section), inspection personnel reside on-site, usually for 7 days at a time. While residing at the border station, inspectors work in 12-hour shifts. During summer months, there are 24 inspectors on the site. Twelve of these represent Customs (1 supervisor and 11 inspectors), and 12 represent SAG. In the winter, 12 individuals reside at the site. The relationship between SAG and Customs is close. Inspectors from each unit refer relevant observations to the others readily. SAG inspectors also implement CITES requirements.

Very few live animals are imported through Los Libertadores. This is because Chile has strict criteria for the importation of live animals. No live swine or pork enter the country through this facility. However, the few swine that enter are allowed only from countries that Chile considers free from swine pathogens, including PRRS, as explained later in this document. Those animals that are imported arrive by air, primarily into Santiago. In fact, most of the animals entering Chile through Los Andes are horses and pets (e.g., dogs and cats).

Large volumes of beef enter Chile through Los Libertadores. In fact, 98 percent of the meat coming from Argentina, Brazil, Paraguay, and Uruguay enter through this point. Some beef also enters through border stations in Region X. For reference, 3,940 trucks carrying commercial shipments of meat crossed the border in 2001.

## **APHIS Evaluation of the CSF Status of Chile**

On a busy day, 350 trucks, 400-500 cars, and 30-40 buses may arrive at the border. The crossing is open 24 hours in the summer and 12 hours in the winter. For reference, 87,861 commercial trucks entered Chile from Argentina in 2001. Traffic from Argentina may be closed for bad weather with a roadblock located in Argentina. Road closings are coordinated with a corresponding roadblock in Chile.

The site visit team raised a concern regarding the potential for empty live haul trucks to carry CSF into Chile. The team learned that empty trucks --regardless of their travel history-- are visually inspected. If they appear relatively clean, they are washed but not completely cleaned and disinfected. If they appear dirty, they are returned to Argentina. However, this situation is of concern because, in 1997/1998, the CSF outbreak in The Netherlands was initiated by an empty contaminated live-haul truck that transited from a CSF-affected area in Germany.

### *Traffic exiting Chile*

On the Chilean side, the station may be closed by a roadblock located between Los Libertadores and Los Andes at the foot of the mountains. When the roadblock is in place, no trucks are allowed on the highway. If the road is closed due to bad weather, trucks are prohibited but private vehicles with chains may be allowed to pass if conditions allow. Los Libertadores stays open during periods when car traffic is allowed.

When the road is closed, commercial trucks on both sides of the border must wait along the roadway. Sometimes the road is closed for several days at a time, in which case the trucks must wait in line until the road re-opens.

### *Truck port in Los Andes*

The port contains offices and truck bays for the offloading of cargo. The port is only open 12 hours each day. Trucks that are not inspected during this 12-hour period will not be inspected until the following day. Many commercial companies maintain permanent parking facilities for this purpose. Computer communications provide a check to ensure that all trucks crossing the border actually appear at the inspection station. Construction of a new station is planned in 2-3 years.

Truck drivers request inspection from Customs, and SAG officials perform inspections if there are animal or plant health issues. All trucks are inspected using a standardized procedure based on random sampling. Consequently, trucks carrying beef are emptied to the point where the 42 boxes randomly selected to represent the entire contents of the truck have been offloaded. A larger number may be selected if there is reason for concern. Once the truck is unloaded, samples are taken from three of the 42 boxes. This sampling procedure was based on a procedure defined by SAG. The primary animal commodity at issue is beef and veterinary biological products such as vaccines. Pork is not imported through land border ports.

Meat inspections include a pH check and temperature checks of shipments from all countries, regardless of animal health status. Meat must have a pH of less than 5.9. The temperature of fresh beef must be 4°C and frozen meat must be -12°C.

### *Cargo transiting Chile*

## **APHIS Evaluation of the CSF Status of Chile**

Cargo transits Chile to seaports such as Valparaíso or San Antonio for shipment to other countries. The cargo must comply with all Chilean regulations, even if the ultimate destination is a different country. The team was informed that this policy may change in the future to accommodate in-transit shipping to the port of Valparaíso. This would require the use of in-bond sanitary and phytosanitary safeguarding procedures.

### **Airport**

#### *Passenger baggage*

Santiago is one of several international airports in Chile, but the restrictions and approaches are similar at all. Passengers arriving on commercial flights are asked to declare whether they are carrying plant or animal products. Amnesty bins are available throughout the airport to allow passengers to dispose of prohibited materials before they enter Customs. When fresh fruit or meat that is not processed according to specifications is discovered in the baggage of passengers arriving from areas that SAG considers as high risk, they are confiscated or destroyed.

Two beagles are used by SAG in Santiago to inspect during high risk commercial flights. Santiago is the only international airport in Chile that uses these dogs. SAG considers fruit from Bolivia, Colombia, and Peru --as well as meat from Argentina, the European Union, Bolivia, and Peru-- as high risk commodities. It considers inadequately processed meat from Argentina, Bolivia, the European Union, and Peru as high risk.

In addition to using beagles, passenger luggage on high risk flights entering the Santiago airport is x-rayed before leaving the airport. The airport also uses x-ray machines that are specific for locating organic material. Passenger luggage is opened for inspection if agricultural products are suspected. The team was informed that not every airport has x-ray machines. However, physical inspections of high risk luggage are performed instead.

Food waste containing animal products from commercial flights is collected and heat treated until the virus is destroyed. This function is carried out by commercial enterprises. In Santiago, SAG representatives meet private planes and inspect.

### **Commercial shipments**

All live pigs have come into Chile through the Santiago airport since 2001. All imported pigs are intended for use as genetic stock. Other commercial animal or animal product shipments entering the Santiago airport include semen, horses, vaccines, embryos, chicks, and fertile eggs. Little (almost no) meat arrives through the Santiago airport.

In fact, Chile has implemented a resolution regarding the importation of live swine for reproduction [14]. These swine must originate from countries pronounced free of ASF, Teschen's disease, SVD, bovine fever, vesicular stomatitis, and CSF by OIE (sic) and also recognized by Chile as free of these diseases.

The area of origin must be pronounced free of FMD without vaccination and vesicular stomatitis by OIE (sic) and recognized as such by Chile. The farm of origin must be free of brucellosis, tuberculosis, transmissible gastroenteritis, corona respiratory virus, swine epidemic diarrhea, and pseudorabies without vaccination. In addition, the farm of origin must not have clinical cases or positive serological diagnosis

## APHIS Evaluation of the CSF Status of Chile

of PRRS. Additional requirements are in place for the farm of origin, neighboring farms, and the pigs themselves. Lastly, the animals must be accompanied by an official health certificate.

Live swine were imported from France in 1998, from Belgium and the United States in 1999, from Canada, France, and the United States in 2000; and from Canada during 2001 to November 2002 [24]. Importation of pigs from the United States is no longer allowed because of PRRS. The number of shipments per year was very small, ranging from a minimum of 12 to a maximum of 177.

Several days before the arrival of live animals, a broker must submit an application to SAG so that a quarantine may be authorized, should it be required. Pigs are placed in quarantine facilities. Quarantine facilities are privately owned and operated, but they are inspected by SAG. Only a limited number of commercial operations in Chile receive shipments of live pigs. Records reviewed by the team indicated that these were large commercial operations familiar to SAG. The team observed that there were only four importers who received live pigs through the Santiago airport since 1998. Each of these was known to SAG officials [31].

The situation is similar for porcine semen. Swine semen is only imported from countries free of FMD without vaccination, ASF, SVD, Teschen's disease, bovine fever, and CSF [11]. In addition, no vaccination must have been performed for these diseases. There are also requirements for the semen production center and donor. Swine semen imported into Chile must be accompanied by an official certificate issued by the competent health authority. From 1998 through 2001, imported semen originated from Canada and/or Belgium [29].

Pigs for export are inspected by the sector veterinarian at the farm of origin when they are loaded on the truck. They cannot be inspected at the airport because there is no containment area. When pigs are imported, they arrive in crates that can be opened so the pigs can be verified and moved to the truck.

### Livestock demographics and marketing [15, 28]

In 1997, Chile had more than 1,700,000 pigs held by 105,665 pig holders [15]. Of this number, 105,376 were backyard/family premises that were in possession of only 31 percent of the total pigs in the country. Commercial pig populations are located primarily in the Metropolitan Region and Region VI. Family farm areas are located primarily in Regions VIII, IX, and X. At the time of the site visit, there were 100 commercial facilities in Chile.

Agrosuper is one of the biggest of these facilities with 92,000 sows. The other facilities do not import pigs but purchase them from the Pig Improvement Company (PIC) in Chile. PIC has purchased pigs from Belgium, France, and the United States. PIC has a quarantine station in the Metropolitan Region similar to Agrosuper's. The facility has SAG monitoring and oversight.

The number of small family farms has dramatically decreased in the last 5 years due to companies purchasing the land to plant fruit trees. Also, there is a law that people must have the pigs slaughtered at a slaughterhouse. The owners must pay for transport to the slaughterhouse, as well as pay the slaughterhouse for slaughtering the pigs. In addition, owners can no longer collect food waste to feed the pigs, so the cost of feeding is higher.

No detailed information exists concerning the distribution of javelins (*Sus scropha*) --wild boar. These animals moved into Chile in 1975 to 1978 over the mountains from Argentina. They are mainly located in the southern part of the country, high in the mountains. Their range and the domestic pig production

## APHIS Evaluation of the CSF Status of Chile

areas are separated by forests. The wild boar normally do not enter these forests because their food is not located there. No hunting restrictions are in place for wild boars, and Chileans in the south hunt and eat them.

At this time, it is unknown if the wild boars are infected with CSF, or if they are carriers of the disease. There is also at least one captive wild boar farm of which the site visit team was made aware. The team did not immediately receive information as to controls or testing done with these free-range animals. However, information was received at a later date [16].

The site visit team visited a family farm located in Region VI. There were no other pig farms located on the road to the farm. There were eight pigs (small piglets not counted) confined in stalls under roofing. The sides were open to the outside. There were also rabbits, chickens, cows, horses, and dogs on the premises. The farmer said that he did not feed wastes from restaurants to his pigs because fish bones may be present and are dangerous. He said that he feeds the pigs his family's food waste. He advised the site visit team that he purchases pork, but added that he would not feed pork meat to his pigs because of the fat. The farmer was then asked if he knew what the signs of CSF were, and what his course of action would be if he discovered that one of his pigs was sick. He replied that his pigs have never been sick, but that he would call a veterinarian if they were.

The farmer advised the team that he was not sure what CSF was nor what the signs of the disease were. He said that he did not slaughter his own pigs because there is a certain disease in pigs that he does not want to get. Also, he has raised the pigs from the time they were piglets, and does not want to be the one to kill them. When questioned as to whether any of the pigs had escaped, he said that it did not happen very often and, when it did, the pigs were easy to recover because of the fencing in the area.

The site team also visited a fattening facility at a commercial farm called Agrosuper. The facility happened to be one that accepts fattening pigs from grandparent stock. Pigs arrive from a facility that handles pigs that are 21-70 days of age, and from a facility that handles pigs from birth to 70 days. There were footbaths upon entry to and exit from each barn on the facility. There was a disinfectant bath and spray for vehicles entering the facility. Clothing and boots had to be changed upon entering the facility.

For movement control, two forms are used at the facility. One is an official movement permit that contains stamps from various control points that the pigs must pass enroute from one facility to another. The stamps are used for revenue collection (tax stamps). The second form is an Agrosuper invoice/control certificate that contains internal company information such as the types and numbers of animals being moved, the farm of origin, average weight of the animals, the specific barn in the facility that a group of animals will enter (animals are grouped by compartments in the truck), seal number on the vehicle, the total weight of the shipment, the truck number, the license plate number, and identification of the driver.

Each barn on the farm has two record sheets. The first sheet includes the barn number, the date animals were received, their point of origin, the number of the control sheet (from above), the weights of the animals, and the ages of the animals. The second sheet contains a summary of information from the invoice.

Pigs of the same "sanitary" type are grouped together in the barns even if they arrive on different trucks from different farms due to differences in vaccine programs used for various animals. Therefore, feed (as an example) can be managed and any management problems can be identified. Pigs are also divided in

## APHIS Evaluation of the CSF Status of Chile

the barns by gender for feed management. Normally, there will be 50 percent males and 50 percent females --except in the case of fattening pigs from grandparent stock-- which are predominantly male. Each barn on the facility handles 1,090 pigs.

Feed medication is applied to the animals by herd or "sanitary" type, and records are maintained. The records have a prescription number, quantity fed, and duration of feeding the medication. They also record the reason for using a specific medication. When the pigs have completed their medicated feed, they return to their regular feed ration. Only one prescription (oxytetracycline) is used for incoming pigs. The company has guidelines for the age of the pig and dose they will use of injectable medications due to the withdrawal periods. The pigs are slaughtered at 180 days of age. Therefore, medications are not given after 140 days. Medications are also delivered by water and a record of these is maintained.

As to medications, there are five different conditions for which the company uses six different preparations that are specific to dose and age. Instructions are provided for when treatment is to be discontinued or when treatments must be logged. Treatments are logged when they are given beyond 120 days of age. The company veterinarian and SAG provide certification that no antibiotic was used in the pigs after "x" days.

Mortality sheets are kept with codes for the cause of death. The farm chief is trained by the company veterinarian and performs postmortem examinations. If the farm chief sees anything unusual, he or she calls the company veterinarian. The most common causes of mortality at this facility are gastric ulcers, torsions, and heart attacks. A thermometer is available at the facility but has not demonstrated much disease because there is not much disease present. The facility maintains a high health quality.

The fattening pigs are identified by farm of origin. No tags or tattoos are used. Breeder pigs have a unique identification by farm from 1 to approximately 14,000. The identification has a farm number and the unique animal number. Overall, the company has 92,000 sows in production, and this number is holding steady. The company is out of its growth phase primarily because Chile has reached its import quota with Japan. The company sends special cuts to Japan, and the duty has risen from \$3.5 to \$4.25/kilogram.

The facility also keeps a control sheet for the PABCO quality assurance program, which includes a questionnaire on biosecurity, any observations on the pigs, and SAG approval. There is also a sheet for cleaning and disinfecting the facility, as well as a checklist.

Observations are kept on individual barns, including the minimum and maximum temperature. Chemical rodent control is used. There is manure treatment equipment on site that creates a powdered product used to fertilize orchards.

### Disease surveillance [21, 22, 28, 31]

In 1998, Chile conducted an enzyme-linked immunosorbent assay (ELISA) survey of 2,551 fattener pigs and obtained negative results. The pigs represented 7 of the 13 regions. The statistical plan considered a prevalence of 0.5 percent with a confidence level of 99 percent. In 2000 and 2001, ELISA testing was done on 321 family farms, covering all 13 regions. The number of samples totaled 1,705. There was one positive result in Region II from an aged sow from the previously affected area. The sow had no CSF clinical symptoms.

## APHIS Evaluation of the CSF Status of Chile

For 2002, there has been surveillance performed using ELISA and immunofluorescent detection (the fluorescent antibody test, or FAT). The origin of testing was from monitoring activities and vigilance. All results were negative. Chile has also performed surveillance at slaughterhouses nationwide.

In a presentation provided on the first day of the site visit, the team noted that surveillance was particularly targeted to Region VIII. In fact, the level of surveillance was higher than appeared to be justified based on the swine population in the region. Also, the surveillance data differentiated between “monitoring” and “surveillance” samples. The reports demonstrated a relatively equivalent number of monitoring samples in the first half of 2002 (on par with 2001), but a marked reduction in the number of surveillance samples between 2001 and 2002. (Monitoring is testing of “at risk” animals. “At risk” herds are those that are fed food wastes by their owners, or that are located close to ports, airports, border crossing points, land barriers and garbage sites. Surveillance is sampling of industrial pig herds that have historical positive serology due to the presence of past vaccinates.)

### Diagnostic laboratory capabilities [28, 31]

The Official Diagnostic Laboratory of Agricultural and Livestock Service in Santiago does not isolate the virus that causes CSF because it is not a Biosafety Level (BL) 3 laboratory. The battery of tests currently used is not sufficient to confirm the diagnosis of CSF in Chile. Chile uses the Centro de Investigación en Sanidad Animal - Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (Animal Health Research Center – National Institute for Food and Agriculture Technology and Research, or CISA), located in Spain, as the reference laboratory when the presence of CSF virus must be confirmed. As a result, Chilean veterinary authorities are limited as to the test procedures used to confirm a CSF diagnosis.

The biosecurity level of the laboratory is not sufficient to allow use of live virus, so the appropriate positive controls requiring live virus cannot be used. In addition, the turn-around time for results reported from Spain is 2 weeks.

The laboratory must also accumulate samples until it has enough to run an entire ELISA plate. Therefore, laboratory personnel wait until they receive 100 samples. As a result, the laboratory does not test samples as soon as they are received.

### Emergency response capability [21-23, 28]

Chilean veterinary authorities estimate that the shortest time to detect clinical signs compatible with CSF and obtain a diagnosis would be 3 days, but added that 5 days was the most probable period. The time for samples to be delivered to the lab from any area of Chile is on the same day as collection. Chilean veterinary authorities stated that the exportation of live pigs and pig products could be stopped within 24 hours. Commercial partners would be alerted immediately after confirmation of CSF.

In addition, Chile has a document entitled, “Contingency Manual for Classical Swine Fever” [23]. This document, which contains a section entitled, “Emergency System,” describes response procedures for when CSF is detected.

## APHIS Evaluation of the CSF Status of Chile

### Conclusions:

#### 1. Authority, Organization and Infrastructure

Chile has the veterinary infrastructure to adequately monitor and control the occurrence of CSF.

#### 2. Disease status in the region

Chile's last CSF outbreak occurred in July 1996. There is no reason to believe that Chile currently has CSF-infected swine.

#### 3. Status of adjacent regions

At this time, there is no evidence that CSF has passed from any of the surrounding regions to Chile.

#### 4. Extent of an active disease control program

It appears that Chile is free of all OIE List A diseases, except highly pathogenic avian influenza. However, there have been no new cases since July 16, 2002. It appears that Chile has this outbreak (which occurred in May 2002) under control.

#### 5. Vaccination status

Chile began prohibiting vaccination for CSF on October 6, 1997.

#### 6. Separation from adjacent regions

At this time, there is no evidence that CSF has passed from any of the surrounding regions to Chile.

#### 7. Movement controls and biosecurity

Chile appears to have adequate controls to prevent the introduction of CSF-infected swine, pork, and pork products. However, empty live-haul truckers are allowed to move from Argentina and other potentially CSF-affected regions into Chile without thorough cleaning and disinfection. The CSF outbreak in The Netherlands in 1997/1998 was initiated by an empty contaminated live-haul truck that transited from a CSF-affected area in Germany.

#### 8. Livestock demographics and marketing

Swine, pork, and pork products that could be exported to the United States would be from commercial entities and slaughterhouses approved for export. Sufficient controls appear to be in place at these facilities to ensure that CSF-infected swine, pork, and pork products would not be exported to the United States. However, there is a question as to the CSF status of wild boar in Chile. There is no evidence to date that wild boar in Chile are infected with CSF, but it must be noted that --at the time of the site visit-- Chile did not have CSF surveillance data on the wild boar population.

#### 9. Disease surveillance

Chile currently conducts active surveillance for CSF. However, there were inconsistencies noted as to the number of surveillance samples tested in 2001 and 2002. In addition, the level of surveillance was higher in Region VIII than appeared to be justified based on the swine population in the region when compared to the surveillance levels in other regions of the country. SAG has recorded reports of suspicion of CSF. Between January and December 2002, SAG tested 50 blood samples by ELISA or FAT with negative

## **APHIS Evaluation of the CSF Status of Chile**

results. (Please see surveillance information under Recommendations for Improvement.) Reports of suspicion of red diseases, which include CSF, have been investigated by SAG and found to be maladies such as food poisoning and vitamin or mineral deficiencies.

### *10. Diagnostic laboratory capabilities*

The Official Diagnostic Laboratory of Agricultural and Livestock Service in Santiago is not a BL-3 laboratory. Therefore, it does not isolate the virus that causes CSF. Chile uses CISA (in Spain) as the reference laboratory when the presence of CSF virus must be confirmed. The spectrum of test procedures currently used by Chile's laboratory is not sufficient to confirm diagnosis in Chile, and the problem is compounded by the fact that the biosecurity level of the laboratory is not sufficient to allow use of live virus. Therefore, the appropriate positive controls requiring live virus cannot be used in Chile. Since samples must be sent to Spain for confirmatory testing, final diagnosis could require several weeks, during which time disease might spread. If there is a positive sample, there could be a delay in detection.

### *11. Emergency response capability*

Chile appears to have the capability of alerting, in a timely manner, its trading partners and OIE in the event of a CSF outbreak. However, as stated above for the laboratory, a delay could occur in detecting CSF due to the laboratory's inability to use live virus in its testing. It should be noted that Chile has an emergency plan in place in the event of an outbreak.

## APHIS Evaluation of the CSF Status of Chile

### Summary:

#### Strong points

There was no evidence to suggest that CSF exists in Chile. Based on surveillance data provided for commercial and family farms, it appears that the likelihood of CSF presence in Chile is low.

Chile has an adequate veterinary infrastructure in place. The country demonstrated its ability to control and eradicate CSF. In fact, Chilean veterinary authorities have been successful in keeping FMD out of their country. This is an accomplishment, considering Chile's neighbor, Argentina, recently experienced a large outbreak.

As to disease introduction into Chile, vaccination against CSF was prohibited as of October 6, 1997. Veterinary officials appear to have adequate control over the ports of entry for commercial and legal importation. Chile prohibits the importation of live swine from countries affected with ASF, Teschen's disease, SVD, bovine fever, vesicular stomatitis, and CSF, and areas not free of FMD without vaccination. Chile allows the importation of fresh or cooked pork and processed meats from countries free of various diseases --including CSF. As to swine products, Chile currently imports bristles, live swine for reproduction, swine semen, processed hides, and cured ham.

In addition, the swine, pork, and pork products that would be imported into the United States from Chile would come from large slaughter establishments that receive swine raised under commercial settings.

#### Weak points

##### Diagnostic testing

Although the laboratory has adequate preliminary screening tests for CSF, the team expressed concern regarding the laboratory's capability to confirm diagnosis of CSF in a timely fashion. The spectrum of test procedures currently used is not sufficient to confirm diagnosis in Chile, and the problem is compounded by the fact that the biosecurity level of the laboratory is not sufficient to allow use of live virus. Consequently, the appropriate positive controls requiring live virus cannot be used in Chile. Since samples must be sent to Spain for confirmatory testing, final diagnosis could require several weeks, during which time disease might spread. If there is a positive sample, there could be a delay in detection, which could lead to a delay in informing trading partners.

##### Surveillance

The team noted that surveillance was particularly targeted to Region VIII. In fact, the level of surveillance was higher than appeared to be justified based on the swine population in the region when compared to the surveillance levels in other regions of the country. Chile must provide APHIS with further information regarding this situation.

In addition, Chile's surveillance data differentiated between "monitoring" and "surveillance" samples. The reports demonstrated a relatively equivalent number of monitoring samples in the first half of 2002 (on par with 2001), but a marked reduction in the number of surveillance samples between 2001 and 2002. Chile must provide APHIS with further information regarding this situation.

## APHIS Evaluation of the CSF Status of Chile

It must also be noted that the laboratory concerns are tied to surveillance. If the tests are not valid, then the monitoring and surveillance results could be considered invalid.

### Movement of empty live-haul trucks

The team noted that empty live-haul trucks are allowed to move from Argentina and other potentially CSF-affected regions into Chile without thorough cleaning and disinfection. We consider this practice of concern because of the events that occurred in The Netherlands during its CSF outbreak in 1997-1998. This very severe outbreak was initiated by an empty contaminated live-haul truck that transited from a CSF-affected area in Germany. In fact, the truck had been subjected to cleaning and disinfection procedures, but procedures were not adequate.

### Theoretical risk of CSF transmission from infected wild boar to domestic swine

Chilean veterinary authorities stated during conversations that wild boar reside in certain regions of Chile. An area of potential concern is transmission of CSF to domestic swine as a result of exposure to CSF-infected wild boar. On the one hand, we recognize that there is no evidence to date that wild boar in Chile are infected with CSF. On the other hand, no CSF surveillance data have been collected from wild boar, and infected animals might cross the Chilean border from adjacent affected countries.

### Recommendations for Improvement:

During the final meeting with SAG officials on the last day of the site visit, APHIS delivered the following recommendations:

- For laboratory diagnosis, we suggested the inclusion of additional, OIE-recommended tests in the program to conclude CSF diagnosis, such as the fluorescent antibody test (FAT) with proper control parameters, virus isolation, PCR, and virus neutralization peroxidase linked assay. We also would be willing to invite a representative from Chile to the Foreign Animal Disease Diagnostic Laboratory for consultation.
- For surveillance, we requested an explanation for the relatively high level of surveillance in one region and, more generally, an explanation for the sampling levels in the country as a whole. We also requested an explanation of the distinction between “monitoring” and “surveillance” samples as well as the reason for the marked reduction in surveillance samples in 2002.
- For the movement of empty live-haul trucks, we recommended that Chile review this procedure to ensure that it does not pose a risk of introducing CSF into Chile from affected adjacent regions. We requested a summary of the results of that review.
- For the wild boar issue, SAG suggested that a surveillance study of CSF in wild boar in Chile was under consideration. We encouraged them to initiate that study and requested the opportunity to review any results they might have available in the near future.

Section II of this evaluation incorporates SAG’s responses to all of the recommendations, except the issue of surveillance. The surveillance issue was not included in Section II because the request was for clarification and additional information. Therefore, the surveillance issue was not classified as a risk factor.

## **APHIS Evaluation of the CSF Status of Chile**

However, the following information has been submitted by SAG in an effort to address the surveillance issue [16]. From January to December 2002, ELISA testing was done on 195 premises. The number of samples totaled 1,900. All of the results were negative. Chile's surveillance program includes surveillance of herds that are considered "at risk" (monitoring) and surveillance of industrial pig herds that have historical positive serology due to the presence of past vaccinates. "At risk" herds are those that are fed food wastes by their owners, or that are located close to ports, airports, border crossing points, land barriers and garbage sites.

Concerning the number of surveillance samples in Region VIII, SAG stated that surveillance was targeted to Region VIII because the area contained a large number of "at risk" swine herds. All test results reported for Region VIII were negative. In addition, SAG provided revised serological data [16] that identified the corrected number of herds and samples tested for all regions, including Region VIII.

The surveillance information provided by SAG also included a table consisting of test results generated for suspicious reports of CSF from family and industrial herds. Samples were tested by either IFD or ELISA. The results were negative.

### **Possible Introduction Pathways**

Upon completion of the site visit, APHIS identified possible introduction pathways into Chile for CSF infection and possible introduction pathways for CSF infection from swine and swine products from Chile that are imported into the United States. These are outlined below.

#### Possible Introduction Pathways into Chile

At this time, Chile imports live swine for reproduction, swine semen, tanned skins, bristles, and cured hams. (The hair of the swine is washed, disinfected, and steam-treated at origin in preparation for industrial use. The tanned skins are imported tanned and are for industrial use.)

##### 1. Importation of cured hams

Cured ham imported into Chile that is not adequately processed could be a risk of CSF introduction if it is fed to pigs. However, Chile requires cured hams to originate from regions and/or countries free of CSF. In addition, the feeding of food waste is prohibited in Chile.

Practically speaking, commercial facilities are not likely to feed wastes to their pigs because of the potential for disease introduction. If an owner feeds food wastes to his or her pigs, it is most likely to be an owner of a family farm. However, if family farm pigs show signs of CSF or any other red disease, the owners may call their private veterinarian --or most likely a government veterinarian-- since there is not a charge. In addition, SAG performs CSF surveillance of domestic swine depending on the risk presented. Therefore, the likelihood is low that CSF-infected pigs would not be detected.

##### 2. Importation of CSF-infected live swine

Chile imports live swine only from countries that are CSF free. In addition, Chile requires the quarantine of live animals prior to their introduction into a herd. The facilities that import live swine into Chile are

## **APHIS Evaluation of the CSF Status of Chile**

usually commercial facilities with strict biosecurity measures. Prior to importation into Chile, the animals are required to undergo a pre-transit quarantine of 45 days in the country of origin. Upon arrival in Chile, the live swine are quarantined and monitored for at least 30 days. During the quarantine in Chile, animals are destroyed if signs of disease are seen. Therefore, the likelihood is low that CSF-infected swine would be imported into Chile and placed, undetected, into a commercial facility.

### **3. Importation of CSF-infected semen**

Chile imports semen only from countries that are CSF free. In addition, donor animals must have been kept in the semen production center for at least 6 months before the collection of semen occurs. Also, donor animals must have had negative results to diagnostic tests such as leptospirosis, pseudorabies, brucellosis, transmissible gastroenteritis, coronavirus, and PRRS within 6 months prior to semen collection and 30 to 60 days after. Animals resident in the center must have no clinical signs of infectious or contagious diseases for a period of 12 months before the first collection, and for 40 days subsequently. Therefore, the chances are low that semen would be collected from CSF-infected donors and exported to Chile.

### **4. Illegal importation of swine products in passenger baggage of Chilean travelers**

Illegal importation of swine products in passenger baggage of returning Chilean travelers could be a potential pathway if the products are CSF infected and fed to pigs. Commercial entities are not likely to feed waste of food origin to their pigs due to the possibility of disease transmission. This would be a most likely scenario for family farm owners. However, due to the economic status of most farm owners in Chile, the chances of them traveling abroad are low. Also, it is not likely that people who have family farms are going to go out of the country to buy pork. Though Argentina is a neighbor of Chile's, it is not likely that family farmers are going to go there to buy pork. People cross the border of Chile, but most traffic is south in Patagonia –where there are no pigs. In addition, Argentina has not reported a case of CSF. Therefore, the chances are very low that CSF would be introduced into Chile because of the illegal importation of swine products via passenger baggage.

## **Possible Introduction Pathways into the United States**

1. Transmission of CSF from wild boar to domestic swine destined for export to the United States  
Chile has free-ranging wild boar populations in its mountainous southern regions.

Their range and the domestic pig production areas are separated by forests. The wild boar normally do not enter these forests because their food is not located there. At this time, Chile has not initiated a surveillance program for free-ranging wild boar. However, mainly family farms are concentrated in the regions that have free-ranging wild boar.

At this time, there is no evidence of CSF in the wild boar population and no evidence that domestic swine have contracted CSF from wild boar. Commercial entities that are approved by Chile to slaughter swine (for the purpose of producing products for export) obtain their live swine from other commercial entities -not family farms. In addition, commercial entities have strict biosecurity measures that would prevent the exposure of live swine in these facilities to wild boar.

However, if a family farm pig contracted CSF from a CSF-infected wild boar, there would be a very low risk of introduction into the United States. These pigs, if sold for slaughter, are sold to municipal

## **APHIS Evaluation of the CSF Status of Chile**

slaughter facilities. Municipal slaughter facilities are approved to produce products for national consumption only.

2. The feeding of CSF-infected meat to live swine destined for export to the United States or production of pork and pork products destined for the United States

Currently, Chile imports cured hams. For reasons stated previously, this is not considered to be a significant risk. The only live swine destined for export to the United States would be those that originate within commercial facilities. These are unlikely to have been fed infected meat. In addition, pork and pork products prepared for export to the United States would originate from swine from commercial facilities and be produced only in export slaughter facilities. Pigs from family farms, which might present some risk, can only be slaughtered by municipal facilities that prepare pork meat for national consumption.

Finally, the likelihood that family farm pigs and commercial pigs will co-mingle is low due to the biosecurity measures in place at the commercial facilities.

In addition, the chances of CSF-infected pigs not being detected at slaughter is low because there would be a large number of pigs from the same commercial facility due to an all-in and all-out standard. If CSF was present in those pigs, some --if not all-- would be exhibiting signs of sickness at various stages of the disease and would be noticed antemortem. In addition, some lesions would be noticed during slaughter.

3. The export of live swine and semen to the United States.

If Chile exports live swine or semen to the United States, the swine or semen would be a risk only if CSF infected. However, the probability that either would be infected is low. Swine imported into the United States would originate from commercial facilities in Chile and, as indicated above, the probability of these animals being exposed to CSF is low.

### **Mitigation Measures**

Though we found the risks of the above pathways of CSF introduction into the United States to be low, Chile does trade with countries/regions that the United States does not recognize as free of CSF. In addition, some of the cooking requirements for pork products are not as restrictive as those of the United States. As a result, APHIS would have mitigations in place for the origin of live swine, pork, and pork products and to ensure that live swine and pork and pork products imported into Chile are not commingled with those live animals and products destined for export to the United States. These mitigations will be explained in Section II of this evaluation.

## **APHIS Evaluation of the CSF Status of Chile**

### **SECTION II – Risk Assessment: CSF Status of Chile**

#### **Summary and Approach to Evaluation of Risk Factors**

The Animal and Plant Health Inspection Service identified risk factors based on observations made during the site visit and information provided by SAG [1-30].

During its review, APHIS identified the following possible risk factors:

1. Chile's diagnostic laboratory capabilities are limited;
2. Chile allows cross-border movement of empty live-haul trucks that may not be adequately cleaned and disinfected;
3. Wild boar residing in Chile might become infected with CSF;
4. Chile imports live swine from a region that the United States does not consider to be free of CSF;
5. Chile's import requirements for some cured hams are less restrictive than those of the United States; and
6. Chile shares common land borders with countries/regions that APHIS does not recognize as free of CSF.

The risk presented by these factors is explained below:

#### *1. Diagnostic Laboratory Capabilities*

The Official Diagnostic Laboratory of Agricultural and Livestock Service (Santiago) is the laboratory primarily responsible for confirmation of CSF. A review of records at this laboratory showed that the facility has adequate preliminary screening tests for CSF. However, the laboratory does not have the capability to confirm a CSF diagnosis in a timely fashion. Currently, Chile uses ELISA for detection of antibody, FAT for detection of antigen in tissues and virus cultures, and virus isolation in PK 15 cells. However, these tests alone cannot provide an ultimate diagnosis for CSF because they cannot discriminate between CSF-pestivirus and non-CSF pestivirus.

Non-CSF pestivirus antibodies (ruminant pestivirus) are regularly observed in pigs. When positive, a screening test such as an ELISA must be followed by a confirmatory test that is CSF-specific; namely, neutralizing peroxidase-linked assay. The site visit team also observed that the FAT is run in the laboratory without the necessary positive control to validate the test. Consequently, the virus isolation and antigen detection in tissues are considered to be invalid tests for detection of CSF virus. Valid tests would necessitate the use of CSF pestivirus.

## **APHIS Evaluation of the CSF Status of Chile**

The biosecurity level of the laboratory is not sufficient to allow use of live virus. The highest level of biosecurity in the laboratory is BL-2, whereas BL-3 conditions are necessary to handle live CSF virus safely. As a result, the appropriate positive controls that require live virus cannot be conducted in Chile. Samples for confirmatory tests requiring the use of live virus must be sent out of the country to CISA (in Spain). CISA serves as the reference laboratory when confirmatory tests for CSF virus are considered necessary.

Therefore, the final diagnosis of CSF could require several weeks, during which time disease could spread.

Limitations in laboratory capabilities also impact the efficacy of surveillance programs. Chile currently has a program of active surveillance. However, the capability of the program to detect disease is directly dependent on the spectrum of laboratory tests available as well as the speed with which disease can be confirmed. Basically, if the laboratory tests cannot confirm disease quickly and with certainty, the surveillance program may not be adequate.

### *2. Movement of Empty Live-Haul Trucks*

Chilean officials indicated that empty live-haul trucks are allowed to move from Argentina and other potentially CSF-affected regions into Chile without thorough cleaning and disinfection (See Section I). This practice was questioned in view of the role of contaminated live haul trucks in the serious CSF outbreaks that occurred in The Netherlands in 1997-1998. This very severe outbreak was initiated by an empty contaminated live-haul truck that transited from a CSF-affected area in Germany. In fact, the truck had been subjected to cleaning and disinfection procedures, but the procedure was not adequate. Without adequate cleaning and disinfection, trucks could introduce CSF into Chile from affected regions.

### *3. Theoretical Risk of CSF Transmission from Infected Wild Boar to Domestic Swine*

Wild boar reside in certain regions of Chile. An area of theoretical concern is transmission of CSF to domestic swine as a result of exposure to CSF-infected wild boar. At the time of the site visit, Chile had not performed active surveillance of the wild boar population.

### *4. Imports of live swine from high risk regions*

At the time of the site visit, Chile imported live swine for reproduction, swine semen, tanned skins, bristles, and cured hams. The swine hair is washed, disinfected, and steam treated at origin in preparation for industrial use. The tanned skins are imported already tanned and are for industrial use. Therefore, these imports do not pose a significant risk.

Chile only imports live swine from countries that are considered free of ASF, Teschen's disease, SVD, bovine fever, vesicular stomatitis, and CSF [14]. Although Chile considers the OIE status of foreign animal disease, SAG officials conduct an independent evaluation to confirm official status. In fact, the area of origin must be pronounced free of FMD without vaccination by OIE as well as recognized by Chile.

## **APHIS Evaluation of the CSF Status of Chile**

### *5. Import requirements for pork and pork products*

Chile allows the importation of processed meat products, including raw processed or fresh raw delicatessen, raw matured or acidified processed, long cure/maturation, and processed cooked meat products or cooked sausages [8]. The countries must be officially pronounced free of FMD, bovine fever, ASF, SVD, Teschen's disease, and CSF by the OIE to be eligible to export any of these products to Chile.

However, countries with only certain regions free of the listed diseases can export only products of long cure/maturation and processed cooked meat or cooked sausages. Abattoirs and processing plants must be located in such regions, as evaluated and recognized by SAG. Countries that cannot fulfill the listed requirements can only export processed cooked meat or cooked sausages to Chile.

Long cure/maturation products are products that undergo salt curing and maturation for at least 8 months. These products include Serrano ham, Spanish-style ham, Iberian ham, Parma ham, and others. These products can be imported into Chile from countries with certain regions free of the listed diseases. Chile's requirement for the length of curing and maturation is not as long as the APHIS curing and maturation requirement for some of these products. At this time, Spain and certain regions of Italy are considered by APHIS to be affected with CSF. As a result, Iberian and Italian hams, depending on the region of origin, must meet the requirements in 9 CFR 94.17 for importation into the United States. Section 94.17 requires, among other things, that Italian-type hams be placed for curing in a chamber for a minimum of 314 days. Iberian hams require a 365-day minimum curing process.

In addition to long cure/maturation products, Chile has cooking requirements for processed cooked meat and cooked sausages. The cooking temperature is 68°C for 30 minutes. According to 9 CFR 94.9, pork and pork products from regions where CSF exists must follow the listed requirements. One of the requirements allows the importation of pork or pork product if all bones were completely removed prior to cooking and the pork or pork product was heated --by other than a flash-heating method-- to an internal temperature of 69°C (156°F) throughout.

### *6. Common land borders*

Chile shares land borders with Argentina, Bolivia, and Peru. The United States does not recognize these countries as free of CSF. According to OIE, Argentina and Bolivia have not had a case of CSF since 1999. Peru has reported cases of CSF every year since 1996. In fact, Peru reported cases of CSF in May, June, October, and November 2002.

## **Mitigation of Risk Factors**

### *1. Diagnostic Laboratory Capabilities*

APHIS does not consider the limitations of the laboratory to constitute a major risk factor because control procedures are in place. In the event of a suspect CSF case, the official veterinarian of SAG will place the premises and animals under a prediagnostic quarantine until diagnostic results from the laboratory are received. At this time, necropsies would be performed and blood and organ samples would be taken. The prediagnostic quarantine should prohibit the movement of animals to other farms, fairs, or slaughterhouses --except those with a high biosecurity level.

## **APHIS Evaluation of the CSF Status of Chile**

If there are no clinical signs of disease, animals are moved to a municipal slaughterhouse and not an export slaughterhouse facility. The municipal slaughterhouses are those that would ensure the presence of adequate veterinary inspection and biosecurity procedures.

Officials of SAG stated that a preliminary diagnosis of CSF can be made within 24 hours and that the legal authority to impose a quarantine based on this diagnosis provides sufficient precautions to contain the spread of CSF. The prediagnostic quarantine is official when a SAG veterinarian or authorized individual detects clinical or pathological signs compatible with CSF and obtains positive laboratory results to direct immunofluorescence or viral isolation in PK-15. The prediagnostic quarantine remains in place until a definitive diagnosis occurs.

The shortest time to detect clinical signs compatible with CSF and perform the diagnosis is 3 days. However, 5 days is the most probable period. Once the diagnosis is confirmed, it is possible for Chile to suspend the export of live swine and swine products within 24 hours.

Implementation of a prediagnostic quarantine upon observation of clinical signs should be sufficient to contain suspect disease. Since this approach allows action to be taken relatively quickly, the time necessary to receive confirmation of results from CISA may not be a significant issue.

APHIS does not consider the limitations in laboratory capability to be insurmountable. However, improvements in laboratory capabilities should reduce the risk level even further. As to improvements in laboratory capabilities, APHIS suggested that Chile include additional tests that are recommended by the OIE to conclude CSF diagnosis, such as FAT with proper control parameters, neutralizing peroxidase-linked assay, virus isolation, and polymerase chain reaction. APHIS also recommended that a BL-3 facility be added to the Chilean laboratory. The surveillance concern regarding detection of an outbreak would be addressed by the laboratory changes.

### *2. Movement of Empty Live-Haul Trucks*

Chile indicated that, in Region V (the region with the largest volume of traffic crossing the border with Argentina), any empty vehicle that enters Chile and is used to transport cargo must be cleaned and washed. SAG inspectors verify the condition of the vehicle by visual inspection. If the cleanliness of the vehicle is not satisfactory to the inspectors, the vehicle is turned back. Similar controls are also applied at other land border crossings. SAG officials also stated that the possibility of trucks returning empty from places far away such as Buenos Aires, Paraguay, or Uruguay is very minimal. This is because the trucks would be hired to transport cargo other than animals or animal products on the return trip.

An empty live-haul truck could pose a potential disease risk if not thoroughly cleaned and washed, and a visual exam may not be adequate to assess the thoroughness of the cleaning. Therefore, to address the risk presented by empty live-haul trucks entering Chile from Argentina and other potentially CSF-affected regions without thorough cleaning and disinfection, Chile should provide certification of the transport conditions. Chile would be required to certify that the equipment or materials used to transport the swine, if previously used for transporting swine, have been cleaned and disinfected in accordance with the requirements of 9 CFR Part 93.

## **APHIS Evaluation of the CSF Status of Chile**

### *3. Theoretical Risk of CSF Transmission from Infected Wild Boar to Domestic Swine*

Although wild boar reside in Chile, CSF has never been detected in the country's wild boar population. Though the country does not have a surveillance program for free-ranging animals, SAG appreciates the potential problem. Chile has identified breeding operations that originated from wild swine, and that are under official monitoring and control by the Department of Natural Resources (not SAG). Chile is conducting surveillance in these facilities because the animals originated as wild animals, even though they may have been in captivity for several generations.

By December 2002, SAG had tested 127 blood samples from 10 wild boar operations [16]. Samples representing a 25 percent sampling (10 of 40 herds) tested by ELISA yielded negative results. However, as of December 2002, sampling had not been performed on free-ranging wild boar. SAG is designing a study to survey domestic swine located near the foothills of the area where wild boar are located. In fact, family farms rather than commercial farms are usually concentrated in regions with a concentration of wild boars.

In addition, there is no evidence of CSF in the wild boar population, and no evidence that domestic swine have contracted CSF from wild boar. Even if CSF was present in the wild boar population, it is unlikely that CSF would be transmitted from wild boar to commercial swine facilities because of their biosecurity measures.

### *4. Imports of live swine from high risk regions*

Chile has imported live swine --primarily breeding animals—from a country (France) that the United States does not currently recognize as CSF-free. As such, the animals that originated from France do not appear to constitute a significant risk because they are quarantined at entry, tested, and handled with high levels of biosecurity. However, because Chile trades with a country that the United States does not recognize as CSF-free, Chile would be required to provide the following certification regarding the origin of the swine:

- (a) The swine have not lived in a region designated in 9 CFR 94.9 and 94.10 as affected with CSF;
- (b) The swine have never been commingled with swine that have been in a region designated in 9 CFR 94.9 and 94.10 as affected with CSF; and
- (c) The swine have not transited through a region designated in 9 CFR 94.9 and 94.10 as affected with CSF unless moved directly through the region to their destination in a sealed means of conveyance, with the seal intact upon arrival at the point of destination.

### *5. Import requirements for pork and pork products*

Chile's requirement for the length of curing and maturation is not as long as the APHIS curing and maturation requirement for some of these products. This can be considered a risk factor if ham imported into Chile is shipped to the United States or commingled with pork or pork products destined for importation into the United States. Therefore, if Chile is recognized by the United States as free of CSF, Chile should provide certification regarding the origin of the pork or pork products. The certification should identify the exporting region, and should identify the region of origin of the pork or pork products

## APHIS Evaluation of the CSF Status of Chile

as a region designated in 9 CFR 94.9 and 94.10 as free of CSF at the time the pork or pork products were in Chile. The certification must state the following:

(a) The pork or pork products were derived from swine that were born and raised in a region designated in 9 CFR 94.9 and 94.10 as free of CSF and were slaughtered in such a region at a Federally inspected slaughter plant that is eligible to have its products imported into the United States under the Federal Meat Inspection Act (21 U.S.C. 601 et seq.) and the regulations in 9 CFR 327.2 under the direct supervision of a full-time salaried veterinarian of the Government of Chile;

(b) The pork or pork products have never been commingled with pork or pork products that have been in a region designated in 9 CFR 94.9 and 94.10 as affected with CSF;

(c) The pork or pork products have not transited through a region designated in 9 CFR 94.9 and 94.10 as affected with CSF unless moved directly through the region to their destination in a sealed means of conveyance with the seal intact upon arrival at the point of destination; and

(d) If processed, the pork or pork product was processed in a region designated in 9 CFR 94.9 and 94.10 as free of CSF in a Federally inspected processing plant that is under the direct supervision of a full-time salaried veterinary official of Chile.

In addition to long cure/maturation products, Chile has cooking requirements for processed cooked meat and cooked sausages. Though the required cooking temperature is 1°C lower than that required for the importation of these products into the United States, it is believed that --more than likely-- the cooking temperature will be more than a few degrees above 68°C to ensure that the temperature stays at the required level for 30 minutes. In addition, U.S. cooking requirements do not provide a defined minimum cooking time. As a result, Chile's cooking requirements appear to be more restrictive than those of the United States, if all bones have been removed from the product prior to cooking. However, if the cooked meat and cooked sausage is not processed in accordance with 9 CFR requirements (removal of all bones and cooking other than a flash-heating method), the cooked meat and cooked sausage could be considered a risk. This risk can be mitigated based on the above certification requirements.

As for fresh pork, Chile has implemented a resolution for the importation of chilled or frozen pork [12]. The country of origin must be pronounced free of FMD, ASF, bovine fever, SVD, Teschen's disease, and CSF by OIE (sic). In addition to requirements for the animals from which the meat is derived, there are additional requirements for the meat --including a maturation process. Chile's requirements for the importation of chilled or frozen pork could be assumed to be more restrictive than those of the United States. This is because APHIS currently does not have requirements for the maturation of chilled or frozen pork that is imported into the United States from countries/regions that the United States considers free of FMD, CSF, and SVD.

### *6. Common land borders*

At this time, there is no known evidence that CSF has passed from any of the surrounding regions to Chile. In fact, Chile's geographical barriers are significant and include the Atacama Desert, the Andes Mountains, and the Pacific Ocean.

## **Conclusions**

## **APHIS Evaluation of the CSF Status of Chile**

The Animal and Plant Health Inspection Service cites the following factors as relevant to the situation in Chile:

- No new CSF outbreaks have been detected since July 1996;
- Surveillance and investigations performed by SAG appear sufficient and have not detected animals affected with CSF; and
- Although laboratory capabilities for confirming virus could be improved, surveillance and control programs based on clinical observations appear sufficient.

### **Risk Evaluation**

The Animal and Plant Health Inspection Service could identify no additional risk factors, currently applicable to Chile, that should prevent Chile from being added to the list of regions recognized free of CSF.

## APHIS Evaluation of the CSF Status of Chile

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