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# U.S. Swine Health Improvement Plan: Background, Benefits, and How to Enroll

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By definition, foreign animal diseases, known as "FADs," are not currently found within the United States. Numerous diseases listed by the World Organization for Animal Health are considered by the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA) to be foreign. Some of these diseases, including brucellosis, foot and mouth disease, and vesicular stomatitis, can affect multiple livestock species including swine. If these diseases find their way into the U.S., they could seriously impact the livestock industry and the food supply chain.

The FADs specific to swine are African swine fever (ASF), classical swine fever (CSF), Nipah virus encephalitis, porcine cysticercosis, and swine vesicular disease (Animal and Plant and Health Inspection Service 2022), with ASF and CSF as most concerning to the U.S. pork industry. Historically called hog cholera, CSF emerged in the U.S. (in Ohio) in 1833. The last outbreak of CSF in Virginia occurred in 1973. After a 16-year-long eradication program, the USDA declared the U.S. free of CSF in 1978. In contrast, there has never been a case of ASF in the U.S.

Emergence of a foreign animal disease in the U.S. would result in enormous monetary losses for pig farmers caused by death of animals due to the disease itself or by culling to halt it from spreading. Moreover, introduction of such a disease would immediately stop the export of pork from the U.S. Nearly 30% of pork produced in the U.S. is exported to other countries, with 2021 exports being valued at over $8 billion (Pork Checkoff 2022). Even with deaths of swine due to disease or culling, the loss of export markets would result in a glut of domestic pork resulting in depressed prices for pig farmers.

The U.S. Swine Health Improvement Plan, known as SHIP, is a project sponsored by USDA Veterinary Services that has support and endorsement from many state and pork industry partners, including the U.S. Animal Health Association, American Association of Veterinary Laboratory Diagnosticians, National Pork Board, National Pork Producers Council, and the North American Meat Institute. The principal objectives of SHIP are to develop and implement an ASF- and CSF-monitored certification program modeled after the very successful H5/H7 avian influenza-monitored certification program of the National Poultry Improvement Plan, of which more than 99% of U.S. commercial poultry operations participate.

The SHIP ASF- and CSF-monitored certification program focuses on mitigating the risks of disease introduction but also provides an approach for demonstrating freedom of disease on farms outside of foreign disease control areas (or "hot spots"). This would allow continuation of interstate commerce and create a pathway toward the resumption of international trade after the disease response and recovery periods.

The objective of this fact sheet is to briefly describe the consequences to the national and Virginia pork industries if a foreign animal disease enters the U.S., as well as provide information on the importance of SHIP and what Virginia pig farmers need to do to enroll and become certified in the program.

## Consequences of the Introduction of an FAD on Pig Farmers

The initial focus of SHIP is to prevent the introduction of ASF and CSF into the U.S., but also to provide a framework for continuation of interstate commerce and ultimately the restoration of international trade after the emergence of an FAD in the U.S. Those who doubt that a FAD could ever emerge in the U.S. need only look back to 2013 for an indication of what might happen. That year, porcine epidemic diarrhea virus (PEDV) emerged in the U.S., likely introduced from China via contaminated feedstuffs. Although PEDV, which causes diarrhea, vomiting and death loss of 100% in nursing piglets, is not listed by APHIS as an FAD, U.S. swine had never encountered the pathogen before. During a one-year epidemic period, PEDV caused the deaths of over 8 million newborn pigs across many hog-producing states, including Virginia (Lee 2015).

The viruses that cause ASF and CSF affect domestic, wild, and feral swine but not humans. Once infected, swine transmit disease to other swine by direct contact. Moreover, the viruses are very hardy and can persist for extended periods in uncooked pork products, animal feedstuffs, and garbage fed to pigs. Thus, indirect transmission plays an important role in spreading the diseases. As shown in table 1, clinical signs of ASF and CSF are very similar.

Table 1. Comparison of clinical signs of African swine fever (ASF) and classical swine fever (CSF) in swine.

| Clinical Signs[1]: | ASF | CSF |
|---|---|---|
| High Fever[2] | √ 104 – 107.6 °F | √ 105 – 107 °F |
| Abdominal pain | √ | |
| Abortions | √ | √ |
| Constipation | √ | √ |
| Diarrhea | √ | √ |
| Discharge from eyes and nose | √ | √ |
| Drowsiness | | √ |
| Huddling | | √ |
| Labored breathing | √ | √ |
| Lethargy | √ | |
| Loss of appetite | √ | √ |
| Loss of hindquarter movement | | √ |
| Lying down | √ | |
| Neurological dysfunction | √ | √ |
| Purple or blue skin on ears, tail, etc. | √ | √ |
| Reddening in patches of skin | √ | √ |
| Vomiting | √ | √ |
| Weakness | √ | √ |

[1]As reported by Spickler, 2015 and 2019.

[2]Normal body temperature in swine is 102.5 F.

The mortality rates associated with ASF and CSF depend on the harmfulness of the particular strain of virus and the age of animal affected. Mortality rates tend to be greater in younger pigs compared with adult sows and boars. For ASF, mortality rates range from less than 5% all the way to 100% but tend to be greater when the virus moves into areas previously free of the disease (Spickler 2019). Harmful strains of the CSF virus that caused outbreaks with 100% mortality were once common. However, less severe strains cause most outbreaks today, and some strains are responsible for mortality rates of only 20% (Spickler 2015).

African swine fever and CSF currently exist in many countries on the African, European, Asian, and South American continents. In North America, ASF emerged in Haiti and the Dominican Republic in 2021. Areas of Central America and the Caribbean have CSF. Newly introduced or endemic ASF or CSF severely affects the economies of countries with large commercial swine industries. The diseases often kill many swine, and during an outbreak, producers must cull many more animals to stop disease spread. For example, ASF emerged in China in August 2018 and in that year alone, 43.5 million pigs died due to ASF virus infection, culling to stamp out the virus, or a consequence of other ASF-related impacts (You et al. 2021).

The U.S. exports nearly 30% of pork it produces, with 2021 exports being valued at over $8 billion (Pork Checkoff 2022). Emergence of a foreign animal disease in the U.S. would result in an immediate reduction in U.S. live hog prices of 40% to 50% (Carriquiry et al**.** 2021). The price reduction would be a consequence of surplus pork caused by the immediate loss of export markets. Eradicating the disease would be costly. Eradication of CSF from the U.S. in 1978 cost $140 million. Introduction of ASF to the U.S. today would cost an estimated $15 billion if eradicated in only two years, and $50 billion if eradication required 10 years. The 10-year scenario would result in the loss of 140,000 jobs nationwide (Carriquiry et al. 2021).

# The U.S. Swine Health Improvement Plan

The U.S. Swine Health Improvement Plan (2022) represents an industry, state and federal partnership that consists of industry stakeholders and subject matter experts, program administrators, official state agencies, and the program participants. Industry stakeholders and subject matter experts include producers, packers, veterinary medicine organizations, veterinarians, diagnosticians, microbiologists, and other professionals who define and continually update the program. Program administrators facilitate the program and maintain documents and records. Official state agencies adopt and administer the program to meet the needs of their state. Finally, program participants include producers and packers who implement the program and become certified. The program is for all types of pig farmers, including large vertically integrated producers, contract growers, large and small independents, niche market farmers and youth swine

exhibitors. The SHIP will provide nationwide technical standards and producer and packer certification recognized across the country that focuses on biosecurity and disease prevention, but also on the steps necessary to demonstrate freedom of disease outside of FAD-control areas in the event of an FAD emergence. Enabling Virginia pig farmers and packers to conduct the necessary testing to demonstrate freedom of disease during the recovery phase after an FAD incursion will support animal health and continued commerce and trade.

There is precedent for trading partners to recognize specific areas of an affected country as being free of a specified disease, which could lead to a more rapid return of export markets. The poultry industry's H5/H7 avian influenza-monitored certification held by poultry growers and packers has helped sustain interstate commerce and access to export markets by unaffected regions of the U.S. during outbreaks of avian influenza.

## How Do Virginia Pig Farmers Enroll in the U.S. SHIP?

To enroll in U.S. SHIP, pig farmers should first contact the official state agency of the state in which their farm is located. The Official State Agency in Virginia is the Virginia Department of Agriculture and Consumer Services (VDACS):

Dr. Carolynn Bissett
Virginia Department of Agriculture and Consumer Services
804-937-7531
Carolynn.bissett@vdacs.virginia.gov

Next, if they do not already have one, pig farmers should obtain a "premise identification number," or PIN, for where their operation is located. Obtain premise identification numbers by contacting VDACS:

Richard Odom
Virginia Animal Identification Program
804-692-0600
Richard.odom@vdacs.virginia.gov

To obtain a premise identification number, farmers need to provide:

1) Premise owner name(s).
2) Complete street address where pigs are located.
3) Contact phone number (in case of an emergency).
4) Type of livestock (i.e., swine) at the premises.
5) Type of operation (i.e., breeding herd, farrow-to-finish, growing pig, etc.).

Provide information by phone (804-692-0600) or by email (prem.id@vdacs.virginia.gov).

The pig farmer will acknowledge understanding of and compliance with requirements for certification and need to complete a short, 10-question, online "Biosecurity Enrollment Survey" (https://iastate.qualtrics.com/jfe/form/SV_6A5XQgynILXuLsO). Farmers can view the questions before entering information and learn more about the survey by downloading a PDF (https://bit.ly/3q7ru9q).

## Requirements for Certification in U.S. SHIP

Once enrolled, the pig farmer will be contacted by VDACS to begin the certification process. At this point, the pig farmer must demonstrate the ability to provide records of at least 30 days of pig movement to VDACS in a timely manner. The SHIP provides downloadable Microsoft Excel templates for pig movement records (https://usswinehealthimprovementplan.com/program-documents/).

Pig movement information must be supplied to VDACS electronically as a comma separated values (CSV) file. Each line of the CSV file is a data record, and commas separate the various fields of information. Table 2 shows an example of pig movement records entered in the Microsoft Excel template referenced earlier that can then be saved by Excel as a CSV file. Once competency in providing pig movement information is demonstrated, VDACS confers certification.

Table 2 Example of pig movement records.

| Date of movement | Head or number of semen units in movement | Animal Type in Movement | Origin Premises ID | Origin State | Destination Premises ID | Destination State |
|---|---|---|---|---|---|---|
| 1-21-2022 | 112 | Feeder | ABCD007 | VA | ABCD138 | VA |
| 2-16-2022 | 96 | Feeder | ABCD007 | VA | ABCD117 | VA |
| 4-1-2022 | 45 | Slaughter | ABCD007 | VA | ABCD149 | VA |

MS Excel data above appearing as a saved CSV file:
1-21-2022,112, Feeder,ABCD007,VA,ABCD138,VA
2-16-2022,96,Feeder,ABCD007,VA,ABCD117,VA
4-1-2022,45,Slaughter,ABCD007,VA,ABCD149,VA

## Maintaining Certification in the U.S. SHIP

Maintenance of certification for the U.S. SHIP requires meeting or exceeding program requirements (https://usswinehealthimprovementplan.com/program-standards/) Below is an abbreviated list of the standards for ASF-CSF Monitored Certification for Virginia Pig Farmers:

- ✓ Participating farm site is enrolled with VDACS in the U.S. SHIP.
- ✓ Farm maintains a valid veterinary-client-patient relationship.
- ✓ Premises-level demographic information is on file with VDACS.
- ✓ Farm maintains records of all swine movement in and out of premises.
- ✓ Farm demonstrates competence in providing to VDACS at least 30 days of pig movements in a CSV file in a timely manner.
- ✓ Farm complies with existing state and federal animal/group/lot identification.
- ✓ Farm prohibits feeding of "swill," garbage, or table waste with potential for including meat products.
- ✓ Five-day down time and personal protective equipment (PPE) is required for visitors that have recently been exposed to livestock, wild pigs, or slaughter facilities in ASF/CSF/foot and mouth disease positive areas/regions.
- ✓ Farm completes biosecurity survey at enrollment.
- ✓ In the event of an FAD outbreak, farm maintains compliance of ASF/CSF sampling and testing requirements as directed by state and federal veterinarians. In the absence of an introduction of ASF/CSF, no sampling or testing is required.

## References


Animal and Plant Health Inspection Service. 2022. "Notifiable Diseases and Conditions." U.S. Department of Agriculture. https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Animal-Health-Emergency-Management/Notifiable-Diseases-and-Conditions.

Carriquiry, M.A. Elobeid, D. Swenson, and D. Hayes. 2021. "Analysis of an African Swine Fever Outbreak in the United States: Implications on National and Iowa Agriculture." Paper presented at t he Annual Meeting of the Agricultural and Applied Economics Association, Austin, Texas. https://ageconsearch.umn.edu/record/312921/files/Abstracts_21_07_02_14_43_15_42__179_26_209_123_0.pdf.

Lee., C. 2015. "Porcine Epidemic Diarrhea Virus: An Emerging and Re-emerging Epizootic Swine Virus." *Virology Journal* 12:193. https://doi.org/10.1186/s12985-015-0421-2.

Pork Checkoff. 2022. "U.S. Pork Exports." National Pork Board, Des Moines, Iowa. https://porkcheckoff.org/markets/us-pork-exports/.

Spickler, A.R. 2015. "Classical Swine Fever." Center for Food Security and Public Health, Iowa State University. https://www.cfsph.iastate.edu/Factsheets/pdfs/classical_swine_fever.pdf.

Spickler, A.R. 2019. "African Swine Fever." Center for Food Security and Public Health, Iowa State University. https://www.cfsph.iastate.edu/Factsheets/pdfs/african_swine_fever.pdf.

U.S. Swine Health Improvement Plan. 2022. https://usswinehealthimprovementplan.com/.

You, S., T. Liu, M. Zhang, X. Zhao, Y. Dong, B. Wu, Y. Wang, J. Li, X. Wei, and B. Shi. 2021. "African Swine Fever Outbreaks in China Led to Gross Domestic Product and Economic Losses." *Nature Food* 2:802-808. https://doi.org/10.1038/s43016-021-00362-1.



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