



*Illinois Pork Producers.
Generations of Commitment.*



How to Mitigate the Risk of

AFRICAN SWINE FEVER

A PUBLICATION FOR ILLINOIS PORK PRODUCERS

AFRICAN SWINE FEVER: WHAT YOU NEED TO KNOW

Will African swine fever (ASF) reach the United States? That's the billion dollar, trade-limiting question as this foreign animal disease (FAD) continues to decimate Chinese supply and causes even the boldest risk takers to break a sweat.

ASF has always had the attention of the swine industry because it's a complex global threat. It can spread through a variety of routes; it's hardy and can survive in extreme environments; and there's no vaccine.

It first appeared in Africa in the early 1900s, hence the name. But, in August 2018, when Chinese officials confirmed the first case in the world's largest pork-producing country, renewed attention focused on the disease and its spread.

African swine fever is a viral disease that infects only pigs and cannot be transmitted from pigs to humans. It's not a human health concern, and consumers may continue safely eating all pork products.

However, with no clear path to contain ASF, producer groups like State Pork Associations, the National Pork Board and the National Pork Producers Council, along with the state and federal government agencies charged with animal health, are working together to prevent ag industry wide devastation.

CHINESE OUTBREAK SPARKS DISCUSSION

"In a mere six months, the virus spread throughout all provinces in China."



Data from 68 Chinese outbreaks revealed three major routes of transmission: 46 percent by vehicles and workers without disinfection, 34 percent by swill feeding and 19 percent by transportation of live pigs and their products across regions, according to China's Ministry of Agriculture and Rural Affairs (MARA).

Dr. Scott Dee, veterinarian and director of Pipestone Applied Research, believes contaminated feed could be a key transmitter of ASF in Chinese swine herds. Producers here talk with their feed suppliers and have a clear understanding of not only feed sources, but vitamin and supplement sources and how their supplier manages those to prevent ASF contamination.

Dr. Chris Rademacher, associate director of the Iowa Pork Industry Center (IPIC), says that in China, farming culture vastly differs from the U.S. When Chinese producers are faced with abnormal and unexplainable livestock deaths, they will sell the surviving herd.

"In the United States, producers have strong relationships with their veterinarians and implement stronger biosecurity practices," says Rademacher. Instead of selling pigs and further

spreading the virus, responsible producers would immediately report the case to their veterinarian.

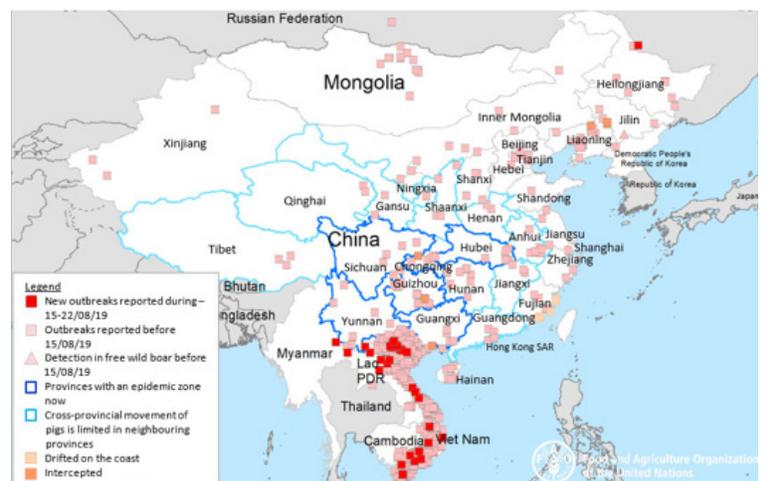
Additionally, world experts believe Chinese producers and the Chinese government underreported the amount of cases. Their actions further contributed to the spread of the virus.

After the initial August 2018 Chinese outbreak, it's now traveled across borders to Laos, Vietnam, Cambodia, Mongolia and North Korea. Not only did China fail to contain the virus within provinces, they continue to struggle with repopulating since ASF remains active in extreme environments from months to years.

ASF POSITIVE IN OVER 40 COUNTRIES WORLDWIDE

According to the World Health Organization (OIE), more than 40 countries have reported the deadly virus either in wild or domestic pigs during the past five years (It's over 50 countries without this caveat). Of course, not all of these countries are significant pork producers, but the diversity of ASF's geographic spread shows how easily the virus can spread.

- | | | |
|--------------------------|---------------|--------------|
| Belgium | Guinea-Bissau | Russia |
| Benin | Hungary | Rwanda |
| Burkina Faso | Italy | Senegal |
| Bulgaria | Kenya | Serbia |
| Burundi | Laos | Sierra Leone |
| Cabo Verde | Latvia | South Africa |
| Cambodia | Lithuania | South Korea |
| Cameroon | Madagascar | Slovakia |
| Central African Republic | Malawi | Tanzania |
| Chad | Moldova | Timor-Leste |
| China | Mongolia | Togo |
| Congo | Mozambique | Uganda |
| Cote D'Ivoire | Myanmar | Ukraine |
| Czech Republic | Namibia | Vietnam |
| Estonia | Nigeria | Zambia |
| Gambia | Philippines | Zimbabwe |
| Ghana | Poland | |
| | Romania | |



ECONOMIC IMPACT

An FAD outbreak will cause industry-wide economic consequences. The reduction in pork supply caused by ASF would also lead to billions in revenue loss for other commodities according to a 2011 economic impact study conducted by Dermot Hayes, an ag economist at Iowa State University.

An estimated **\$8 billion loss in the value of pork** leads to inexpensive pork flooding the domestic market. Beef would then reduce its prices to remain competitive, leading to a **\$3 billion loss**. With fewer pigs in the market to consume corn and soybeans, those prices drop, too, by **\$4 billion and \$1.5 billion**, respectively.

PORK = \$8 Billion Loss

CORN = \$4 Billion Loss

BEEF = \$3 Billion Loss

SOYBEANS = \$1.5 Billion Loss



DETECTING ASF

Quickly recognizing and reporting ASF is the difference between controlling the impact of the disease and a devastating national collapse of the industry.

Rademacher says that initially, African swine fever moves slowly through a herd compared to other diseases. Symptoms can be difficult to detect because the virus can initially appear similar to other diseases such as salmonella or PRRS. Additionally, it may take 5-21 days for even experienced producers to recognize the virus' signs.

Signs may include pigs going off feed, becoming lethargic, and a few deaths but nothing above the farm mortality threshold. Other characteristics include high fever, hemorrhages in the skin and internal organs and bloody diarrhea.

Rademacher says "It's called African swine fever for a reason. An early tell-tale sign is an unusually high fever between 105 and 108 degrees." Rademacher recommends carrying a thermometer to quickly check a pig's health status.

Abortions may be the first signs of an outbreak on a sow farm, and mortality rates may be 100 percent.

Producers who notice any of these signs should immediately contact their local veterinarian and stop any transportation on and off the site.

The national economic consequences are too dire to not plan and implement greater biosecurity measures.

ASF HAS EXPORT ROLE

By year end, ASF will reduce Chinese pork production by 25 to 35 percent, according to Rabobank, a world leading financial services provider for the food and agribusiness sector. Their prediction estimates that ASF will affect 150 to 200 million pigs in China. For comparison, the United States produces 115 million pigs annually.

If a case occurred in the U.S., producers would not only lose a portion of pigs from the disease and depopulation, but they'd immediately lose their export markets, which account for 25 percent of U.S. pork sales. Countries with confirmed ASF cases are subject to international trade restrictions aimed at reducing the risk of spreading the disease through trade.

GLOBAL TRADE PLANNING

As ASF spreads throughout Europe and Asia, the goal is to keep the tenacious virus out of the North, Central and South Americas regions. Over 150 government and industry leaders from 15 countries gathered recently to share their ASF experience and create a unified strategy.

There was an International ASF Forum in Ottawa, Ontario, Canada on April 30 and May 1. Attendees at the Forum shared experiences, so others could learn to better prevent the entry of ASF or any FAD. Conducting economic trade talks are crucial to business continuity.

After the forum, Dr. Jack Shere, U.S. Chief Veterinary Officer (CVO), and Dr. Jaspinder Komal, Canada's CVO, released a joint statement and announced that both countries would "continue trade in approved disease-free zones in the event of an ASF outbreak." The agreement marked a major success for business continuity.

Conducting and envisioning these measures prior to an outbreak is necessary. It's a much better alternative to experiencing the uncertainty and financial pain like Chinese producers and others in the supply chain.

Officials are acting at a national level to combat the virus' spread, but it remains the producer' responsibility to prevent infection on their operation. Preparedness efforts are important to staving off a virus with an unknown arrival date.

NO VACCINE FOR QUICK SOLUTION

Despite decades of research, it's estimated that a safe and effective vaccine is years out. The problem lies in the size of the ASF virus.

A typical virus may have 10 to 12 proteins, and the **ASF virus contains 170 proteins**. Scientists face difficulty in creating a vaccine that covers all of them.

**170
PROTEINS**

Producers can't rely on a vaccine to solve this global issue, and that's why organizations focus on improved prevention and preparation methods.

WHAT IF FAD WAS DETECTED IN OUR COUNTRY?

If a confirmed case of African Swine Fever (ASF) or any other Foreign Animal Disease (FAD) occurs in the U.S., the USDA has indicated there will be a **stop movement for at least 72 hours across the country.**

“A national stop movement for up to 72 hours would be to find out where the diseased animals were moved and how widespread that infection could be, so we can respond without endangering the rest of the herds in the United States,” says Dr. Jack Shere, USDA Chief Veterinary Officer.



“We would immediately quarantine the infected herd and stop movement of all in contact or localized animals. If there were movements from that herd, we would trace those animals out and stop movements of those animals also, so we could control or stop the spread of the disease as quickly as possible.”

In this case, Illinois would obey the 72 hour stop movement and keep a close watch for trucks entering and exiting roadways on our borders. Vehicles that are in movement at the time of the announcement have a **grace period of 12 hours to reach their final destination.** However, their destination state and end location have the power to reject them, for the sake of biosecurity and threat of infection.

CONTROL AREA

If there is an outbreak identified in our state, that site will be the center of a 10-kilometer (radius) “control area.” Other farms with pigs in the control area will be identified and immediately notified. Notification may be achieved by phone calls to those with a PremisesID on file with IL Department of Agriculture (IDOA), or farm visits by local emergency management staff.

To ensure biosecurity protocols are in place, a note will be left in a plastic bag at the farm entrance for neighbors surrounding the infected site. If questionable whether you are in a control zone or not, contact IDOA.

PERMITTING

Transportation deemed necessary will be granted access to the zone. This includes, but is not limited to, feed trucks and personnel related to testing and animal management. Movement in and out of this zone will be limited and granted access only with a permit. A PDF of the movement permit can be found online at <https://www2.illinois.gov/sites/agr/>.

Once a permit has been applied for, IDOA and ultimately the IL State Veterinarian, will determine permissions. In order to apply for a movement permit, the following criteria must be met: Origin and destination contact and information, PremisesID for both locations, reason for movement, and if moving animals, three negative PCR test results.

KEY FACTS ABOUT ASF

ETIOLOGY

African swine fever results from infection by African swine fever virus (ASFV), an enveloped virus in the genus *Asfivirus* and family *Asfarviridae*. More than 20 genotypes of ASFV have been identified, many from wildlife cycles in Africa. Some of these viruses also occur in domesticated pigs. The virus introduced in 2007 into the Caucasus belongs to genotype II, while a virus that has been endemic in Sardinia (Italy) since the 1960s is of genotype I. ASFV isolates differ greatly in virulence, from highly pathogenic viruses that kill most pigs to strains that result only in seroconversion. The genotype II virus currently circulating in Eurasia is highly virulent and remains the predominant strain, though less virulent viruses have been reported sporadically during this outbreak.

PORK IS SAFE TO EAT.

- African swine fever is a viral disease impacting only pigs, not people - so it is not a public health threat nor a food-safety concern, according to the USDA.
- As with any food product, you should always follow safe handling and cooking instructions to protect your family's health.

AFRICAN SWINE FEVER IS A VIRAL DISEASE IMPACTING ONLY PIGS, NOT PEOPLE

- ASF only affects members of the pig family.
- ASF can be transmitted to pigs through feeding of food waste containing contaminated pork products. The Swine Health Protection Act regulates the feeding of food waste containing meat to pigs to ensure that it is safe.
- ASF is transmitted to pigs through direct contact with infected pigs, their waste, blood, contaminated clothing, feed, equipment and vehicles, and in some cases, some tick species.

THE USDA DOES NOT ALLOW IMPORTATION OF PIGS OR FRESH PORK PRODUCTS INTO THE U.S. FROM AREAS OR REGIONS OF THE WORLD THAT ARE REPORTED POSITIVE FOR THE ASF VIRUS.

- Restrictions are based on USDA's recognition of the animal health status of the region and are enforced by the Animal Plant Health and Inspection Service.
- International travelers should be diligent in following all rules and regulations related to the U.S. Customs and Border Patrol reentry declarations.



WHAT DO YOU NEED BEFORE AN OUTBREAK?

1 DO YOU KNOW YOUR PREMISES ID NUMBER?

Even though you may already have a Premises ID number for your farm, keep in mind that the information is *only effective if it is up-to-date*.

You need a separate PIN for each **production site** separated by more than a quarter of a mile. If there are multiple species on a single production site, you only need one PIN for that site.

To register a PIN or make any address changes, transfer of ownership, or updates to the species currently associated with your existing PIN, you can easily and at no cost by reaching **Sandy Gilmore** at 217-782-4944, Sandy.Gilmore@illinois.gov or download the form at www.agriculture.illinois.gov.

HOW CAN I VALIDATE MY PREMISES ID AND OBTAIN BARCODE LABELS OF EACH PIN NUMBER?

Go to <https://lms.pork.org/Premises> and follow these steps:

1. Enter your Premises ID (PIN) and have the system perform the validation.
2. Verify that the address returned is correct.
3. Select the style of label to use and generate a PDF barcode file.

WHY IS A PREMISES ID SO IMPORTANT?

In the case of a FAD outbreak, those who are trying to enter or exit control zones will be required to list their PIN when applying for a permit. If you do not have a PIN at the time of permitting, you will have to go through the approval process, which will be lower on the priority list. Those who have met all the necessary requirements will be granted permits first, which will promote continuity of business.

Those with a PIN on file with the Illinois Department of Agriculture (IDOA) will be the first ones notified if an outbreak occurs their site is in an infected zone. This excels communication and helps quickly identify where nearby pigs are who may be at risk.

PIN information is confidential and only used by IDOA. Be proactive and apply for, or update, your PIN today so that you are prepared in the case of an animal emergency.

2 AM I READY TO FILE AN INDEMNITY CLAIM?

If a producer plans to file an indemnity claim for animals infected with a FAD they must make sure the indemnity is **approved by USDA before the animal is euthanized** – indemnity only applies to **LIVE** animals. USDA will not approve claims for dead animals if the producer did not apply and get tge indemnity claim approved in advance.

The federal government is authorized to pay up to 100% of fair market value. This means they may not cover the total value, so producers need to understand that when applying. To speed the approval process along it is good to keep your current database of daily mortalities up to date.

WHAT DO I NEED TO FILE AN INDEMNITY CLAIM?

To apply for an indemnity claim, producers must have a Dun and Bradstreet Data Universal Numbering System (DUNS) number and be currently registered in the System for Award Management (SAM) database to receive an indemnity payment from USDA APHIS.

***The DUNS number can be applied for one time.
The SAM registration needs to be updated annually.***

Case 1: If the same entity owns multiple sites and all the animals on those sites, they only need 1 DUNS and 1 SAM number. (Example: Farmer Jones owns 6 premises and owns all pigs on those 6 sites. Therefore, the farmer only needs 1 DUNS number and 1 SAM registration.)

Case 2: Each separate business entity involved with a group of swine needs to have their own DUNS number and SAM registration. (Example: Farmer Smith owns no premises, but has contract growers at 6 locations, each location owned by a different person - Farmer Smith needs a DUNS number and a SAM registration. Each of the 6 contract growers needs their own DUNS number and SAM registration. Each of the 6 Premises owners needs a DUNS number and SAM registration.)

There is no cost to apply for a DUNS and SAM. However, you must apply for the DUNS number first. You should apply for your DUNS number and SAM now!

Link to register at Dun and Bradstreet (MUST DO THIS FIRST)
<https://www.dandb.com/#>

Link to register at SAM (MUST BE UPDATED ANNUALLY)
<https://www.sam.gov/SAM/>

Make sure to use **SAM.GOV site... not **SAM.COM**. The **SAM.Com** site is a private site that mirrors the actual site but will charge you for the service.*

BIOSECURITY CHECKLIST

RECOMMENDATIONS FOR BIOSECURITY

Each self-assessment checklist item has three possible responses, described below. Implementation of each component is essential to prevent virus entry and protect the health and well-being of the animals on the site.

- **IN PLACE:** All items are addressed in the biosecurity plan and are, or are capable of being, implemented on the pork production site as evidenced by visual inspection or by signed and/or dated documentation, as applicable, or as described.
- **IN PROGRESS:** Some, but not all, of the items are addressed in the biosecurity plan and are, or are capable of being, implemented on the pork production site as evidenced by visual inspection or by signed and/or dated documentation, as applicable, or as described.
- **NOT IN PLACE:** The items have not been addressed in the biosecurity plan or are not capable of being implemented on the pork production site.

1. BIOSECURITY MANAGER AND WRITTEN PLAN

A Biosecurity Manager is identified for the site. This individual is responsible for developing the biosecurity plan with the assistance of the herd veterinarian (if the Biosecurity Manager is not a veterinarian) and ensuring biosecurity training of, or communicating biosecurity measures with, all individuals who enter the site. The Biosecurity Manager has the written authority to ensure compliance with biosecurity protocols and take corrective action as needed.

IN PLACE IN PROGRESS NOT IN PLACE

A site-specific, written, enhanced biosecurity plan has been developed and implemented by the Biosecurity Manager. It is reviewed at least annually and whenever the site goes through a change that affects biosecurity (expands, adds a new aspect of the business, etc.). The biosecurity plan clearly defines the scope of the operation and includes biosecurity for other susceptible species kept on the premises. The biosecurity plan includes a premises map labeled with the site entry, Perimeter Buffer Area (PBA), Line of Separation (LOS), access point(s), cleaning and disinfection (C&D) station(s), designated parking, and carcass disposal/pickup location. The map indicates vehicle movements (animal transport vehicles, deliveries, etc.) and carcass removal pathways. The Biosecurity Manager ensures that all individuals entering the site frequently (weekly or more often) have access to a copy of the biosecurity plan.

IN PLACE IN PROGRESS NOT IN PLACE

2. TRAINING

The Biosecurity Manager(s) and essential personnel are trained at least annually about the biosecurity measures necessary to keep an FAD out of the herd; training is documented. The Biosecurity Manager(s) informs individuals entering the site of the biosecurity measures they are to follow in a language they understand. Individuals are aware of the biosecurity concepts

and procedures that apply to their specific areas of responsibility. The biosecurity plan describes the training required before entering this site.

IN PLACE IN PROGRESS NOT IN PLACE

3. PROTECTING THE PIG HERD

SITE ENTRY

Entry to the pork production site is restricted by a limited number of entry points. Each entry point is protected with a gate or suitable barrier (e.g. cable) which is locked when the facility is not attended. If a locked barrier is not possible at the site entrance (such as when a house uses the same driveway), a barrier must be present restricting access of unauthorized vehicles to the pork production facilities within the site. Signage at the site entry conveys access is restricted.

IN PLACE IN PROGRESS NOT IN PLACE

DESIGNATED PARKING AREA

There is a clearly marked, designated parking area outside of the PBA, away from animal areas, for vehicles that will not enter the PBA and have not been cleaned and disinfected.

IN PLACE IN PROGRESS NOT IN PLACE

PERIMETER BUFFER AREA (PBA)

The site has a PBA(s), which is established to serve as an outer control boundary around the buildings to limit movement of the virus near animal housing. The PBA is established so that individuals can perform duties within the PBA during the course of their daily tasks and so that routine deliveries occur outside of the PBA as much as possible. The PBA is clearly defined in the biosecurity plan and is clearly marked around animal buildings on the premises.

IN PLACE IN PROGRESS NOT IN PLACE

PBA ACCESS POINT(S)

Entry to the PBA is restricted to a limited number of controlled PBA Access Points. Each PBA Access Point is clearly marked with a sign and protected with a suitable barrier (e.g. cable, gate, rope). Vehicles moving through the PBA Access Points must be cleaned to remove visible contamination and then disinfected. All individuals and equipment moving through PBA Access Points are required to follow specific biosecurity measures.

IN PLACE IN PROGRESS NOT IN PLACE

CLEANING AND DISINFECTION (C&D) STATION

There is an operational, clearly marked, and equipped C&D station with the means to remove visible contamination and then disinfect vehicles, equipment, and items needing to enter the PBA at a PBA Access Point. The C&D station is operated by individuals who have received documented training in proper selection and use of personal protective equipment and the principles of C&D. Runoff from the C&D station is managed following state and local regulations, ensuring it does not enter waterways, animal housing, or on-farm traffic areas. The biosecurity plan contains contingency plans for vehicle and equipment C&D in inclement weather.

IN PLACE IN PROGRESS NOT IN PLACE

LINE OF SEPARATION (LOS)

The site has one or more LOS, which is established as a control boundary to prevent movement of virus into areas where susceptible animals can be exposed. In many situations, the walls of the building housing the animals form the LOS. The LOS is clearly defined in the biosecurity plan and is clearly marked on the premises. Animals, people, or items only cross the LOS through clearly marked and controlled LOS Access Points(s), following appropriate biosecurity measures. Areas contaminated after loading/unloading animals are cleaned and disinfected according to the biosecurity plan.

IN PLACE IN PROGRESS NOT IN PLACE

LOS ACCESS POINT(S)

Crossing the LOS is restricted to a limited number of controlled LOS Access Points. Each LOS Access Point is clearly marked with a sign in a language understood by all entering. Equipment, people, and items crossing through the LOS Access Points follow specific biosecurity measures. While the load-out area is a LOS Access Point, it should not serve as an entry point for personnel when possible. All movements (animals, equipment, people) across the LOS are recorded and available for review upon request.

IN PLACE IN PROGRESS NOT IN PLACE

SECURING THE BUILDINGS

Buildings are locked when no one is present.

IN PLACE IN PROGRESS NOT IN PLACE

4. VEHICLES AND EQUIPMENT

VEHICLES AND EQUIPMENT (NON-ANIMAL)

All vehicles and equipment (not containing live animals) are cleaned and effectively disinfected prior to entering the PBA. Sharing of equipment with other sites is minimized.

IN PLACE IN PROGRESS NOT IN PLACE

LIVESTOCK TRUCKS/TRAILERS (ANIMALS)

All empty animal transport vehicles that enter the PBA are effectively cleaned and disinfected prior to arrival at the site (outgoing loads) or before animals are loaded for delivery to the site (incoming loads).

IN PLACE IN PROGRESS NOT IN PLACE

5. PERSONNEL

PRIOR TO ARRIVING AT THE SITE

Access is limited to individuals who are essential to the operation of the production site. Everyone crossing the LOS arrives at the site having showered and wearing clean clothing and footwear since last contacting susceptible animals. All individuals crossing the LOS have a signed agreement on file agreeing to follow these instructions.

IN PLACE IN PROGRESS NOT IN PLACE

ENTRY LOGBOOK

Everyone crossing the LOS Access Point(s) completes the entry logbook, unless they are a scheduled worker. The entry logbook is monitored by an individual working on the site to

ensure accurate completion. The contact information and work schedule records for workers are maintained.

IN PLACE IN PROGRESS NOT IN PLACE

BIOSECURE ENTRY/EXIT PROCEDURES

All individuals entering the PBA or crossing the LOS at a controlled Access Point follow a biosecure entry and exit procedure as specified in the biosecurity plan.

IN PLACE IN PROGRESS NOT IN PLACE

6. ANIMAL AND SEMEN (IF APPLICABLE) MOVEMENT

INCOMING ANIMALS AND SEMEN

Pigs and semen (if applicable) come from sources with documented, enhanced biosecurity practices and no current or recent evidence of an FAD infection. Semen is transported in containers whose exteriors can be cleaned and disinfected effectively to minimize the risk of virus transmission.

IN PLACE IN PROGRESS NOT IN PLACE

PRE-MOVEMENT ISOLATION PERIOD

No animals from a regulatory Control Area are introduced onto the site for at least 7 days prior to moving any animals to another pork production site with susceptible animals.

IN PLACE IN PROGRESS NOT IN PLACE

CONTINGENCY PLAN FOR INTERRUPTED ANIMAL MOVEMENT

A plan exists to manage pigs in a biosecure manner on-site in the event animal movement is stopped for several weeks.

IN PLACE IN PROGRESS NOT IN PLACE

LOADING ANIMALS

Animals leaving the production site only move in one direction across the LOS at an Access Point at any one time. Areas contaminated by individuals or animals after loading/unloading are effectively cleaned and disinfected according to the biosecurity plan.

IN PLACE IN PROGRESS NOT IN PLACE

7. CARCASS DISPOSAL

Dead animals are disposed of in a manner that prevents the attraction of wildlife, rodents, and other scavengers. Rendering trucks and other vehicles hauling dead animals to a common disposal site do not enter the PBA.

IN PLACE IN PROGRESS NOT IN PLACE

8. MANURE MANAGEMENT

Manure is stored and removed in a manner that prevents exposure of susceptible animals (either on or off the premises of origin) to disease agents and meets state, local, and Responsible Regulatory Officials' requirements.

IN PLACE IN PROGRESS NOT IN PLACE

A plan exists for storing manure on-site in the event it cannot be permitted to move off-site during an outbreak.

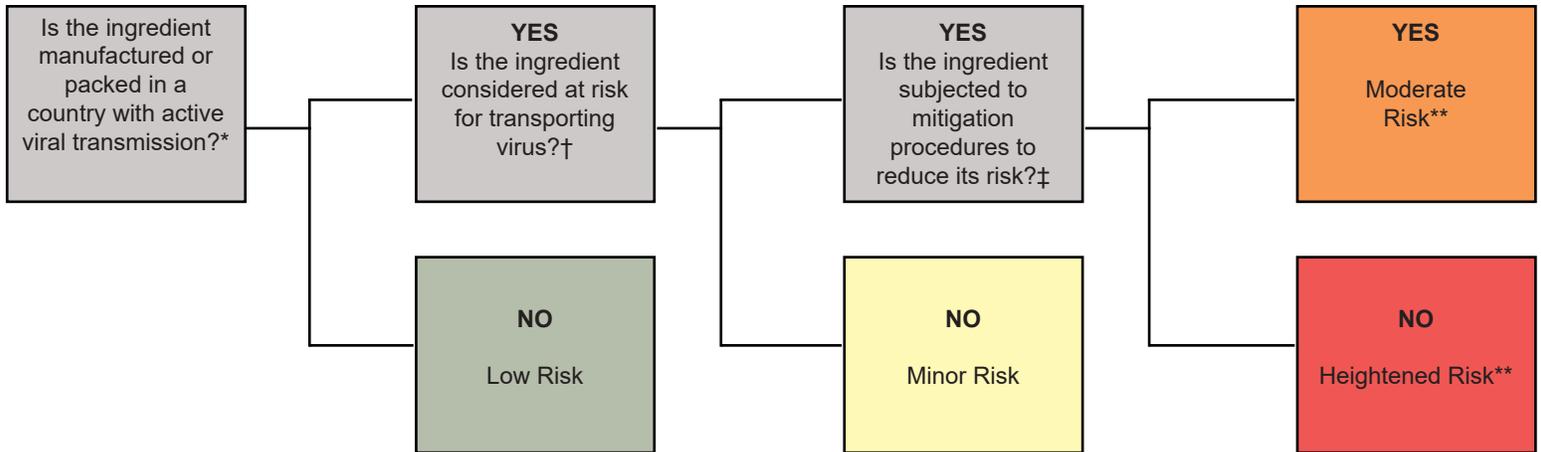
IN PLACE IN PROGRESS NOT IN PLACE

BIOSECURITY CHECKLIST

FEED INGREDIENT SAFETY FLOWCHART

Research has demonstrated the ability for certain feed ingredients to support viral survival during conditions modeled after either trans-Atlantic or trans-Pacific shipping to U.S. ports and on to locations likely to manufacture feed for swine. This has increased interest in assuring feed ingredient safety from viruses. The below decision tree and questions were developed to help pork producers work with their feed suppliers to minimize risk from feed ingredients.

Decision Tree Matrix to Minimize Viral Transmission Risk from Feed Ingredients



These questions are designed to start the discussion about feed ingredient safety. Some questions will apply to producers' immediate feed suppliers and some will apply to feed ingredient suppliers.

- Describe the facility's biosecurity program to minimize the spread of pathogens from people, vehicles, and ingredients.
- Describe the facility's employee training on feed safety.
- Describe the facility's pest control program.
- Describe the facility's traceability program.
- Describe the facility's supplier approval program.
- Is the facility certified by a 3rd party certification body for food safety? Third party certification programs may include FAMI-QS, ISO, SQF, Safe Feed/Safe Food, etc.
- Does the facility utilize ingredients that were manufactured or packaged outside the United States?
 - If yes, was the ingredient imported following the FDA Foreign Supplier Verification Program to help control risk?
 - If yes, does the supplier consider the risk of swine viruses potentially transported in feed ingredients, such as foot and mouth disease virus, classical swine fever virus, African swine fever virus, and pseudorabies virus?
 - What mitigation strategies are used for ingredients sourced from countries of heightened viral risk to prevent or minimize risk of transmission?
 - Are there alternative suppliers and/or ingredients available?

*The Swine Health Information Center maintains and publishes monitoring reports for diseases on its Swine Disease Matrix, on www.swinehealth.org, which includes: foot and mouth disease virus, classical swine fever virus, African swine fever virus, and pseudorabies virus. Official country-specific disease status is also available from the World Organization for Animal Health (OIE) at <http://www.oie.int>.

**Considerations to further reduce risk: Consider excluding, sourcing from a country without active viral transmission, or mitigating‡ risk prior to receiving (if bulk) or unpackaging (if tote or bagged).

†The science on viral transmission through feed and feedstuffs is still relatively young, but one study has shown the theoretical ability for pathogenic swine viruses to survive transport to the United States in imported feedstuffs. The feedstuffs studied that have shown the potential to support virus survival include: conventional soybean meal¹, DDGS¹, lysine hydrochloride¹, choline chloride¹, vitamin D¹, pork sausage casings¹, dry and moist dog food¹, organic soybean meal¹, soy oil cake¹, moist cat food¹, and porcine-based ingredients². There may be other feed ingredients that were not tested that could support survival of pathogenic viruses. Scientific study and proof-of-concept work in this area continues. To date, without an organized surveillance program, pathogenic swine viruses have not been identified in imported feedstuffs.

‡Mitigation research is ongoing and available data is limited and depends upon both the ingredient and mitigation, but options may include: extended storage times, irradiation, thermal processing, or chemical treatment (formaldehyde-or medium chain fatty acid-based liquids, etc.).

HOLDING TIME CALCULATIONS FOR FEED INGREDIENTS

The science on viral transmission through feed and feedstuffs is still relatively young, but it has yielded some interesting and potentially useful information on mitigating the spread of costly viruses, such as African swine fever (ASF). One study has shown the theoretical ability for pathogenic swine viruses to survive transport to the United States in imported feedstuffs.¹ Another one has shown the ability for ASF to infect pigs via feed and normal feeding activities.² Results such as these have increased interest in viral mitigation processes for feed ingredients, and more studies are expected.



Imported feedstuffs are not all manufactured and handled in the same way. Consideration should be given to the manufacturing conditions and how these products are handled and transported. Feedstuffs manufactured, sealed, handled and shipped under biosecure conditions that produce a product that is free of pathogens and that prevents post-processing contamination are not a risk to animal health. However, a feedstuff can pose an animal health risk if it is not produced under biosecure conditions, if it is produced under unknown conditions or if it is not sealed to prevent post-processing contamination. This is where holding time offers an opportunity for viral contaminants to naturally degrade.

Ingredients are transported either in sealed or secure containers (examples - Vitamins, Amino Acids, etc.) or non-sealed or non-secure containers, totes, etc. (examples soybean meal, DDGS).

1. Produced under biosecure conditions

- a. Confirm with the product supplier that product safety steps and compliance are in place **or**
- b. Use the FDA Foreign Supplier Verification Program and/or blockchain to confirm manufacturing conditions or handling.

2. Produced under non-biosecure or unknown conditions

- a. Hold the product prior to use under the appropriate time and temperature conditions to decrease risk from potential contamination
- b. Add a feed-ingredient mitigant to the product preshipping, which may shorten, but not eliminate, the holding time **or**
- c. Consider not sourcing from regions/countries where FADs are present

The information in the table is for general informational and educational purposes only and is not to be construed as recommending or advocating any specific course of action.

Adding more holding time will give additional assurances of further viral degradation because variations of the same feed components might cause variations in holding time confidence. For example, according to research using Seneca Valley A, suggested to have the longest holding time of viruses studied, adding 30% to holding times would provide the opportunity for 99.999% degradation of contaminating viruses. More research is needed to confirm that the results could be extrapolated to other feed ingredients in like classes to those studied.

Mean Holding Time for 99.99% Degradation	Days at 4°C (39.6°F)	Days at 15°C (59°F)	Days at 30°C (86°F)
Conventional SBM	143	52	26
DDGS	494	182	26
Vitamin D	39	26	26
Lysine	78	13	13

The transit time to the United States of a potentially contaminated feed ingredient can be applied to the total holding time after the “born on date” if the ingredient is transported in such a way that would prevent further contamination.

For example:

If Vitamin D in an overseas shipment took 14 days in transit to reach the United States and you need 26 total days of holding (beyond the “born on date”), then 12 more days of holding time will be needed before the feed is used.

Talk with your feed suppliers and ask for the “born on date” for all imported feed products. Detailed information about research leading to the holding time calculation can be found at swinehealth.org in a document authored by the American Feed Industry Association, U.S. Pork Industry Organizations Provide “Options” for Handling Imported Feed Ingredients. The document contains a definition for biosecure feed manufacturing facilities.

¹Dee., S., F. Bauermann, M. Niederwerder, A. Singrey, T. Clement, M. DeLima, C., Long, G. Patterson, M. Shehan, A. Stoian, V. Petrovan, C.K Jones, J. De Jong, J. Ji., G Spronk, J. Hennings, J. Zimmerman, B. Rowland, E. Nelson, P. Sundberg, D. Diel, and L. Minion. 2018. Survival of viral pathogens in animal feed ingredients under transboundary shipping models. PLoS ONE. 13(3): e0194509. <https://doi.org/10.1371/journal.pone.0194509>

²Megan C. Niederwerder, Ana M.M. Stoian, Raymond R.R. Rowland, Steve S. Dritz, Vlad Petrovan, Laura A. Constance, Jordan T. Gebhardt, Matthew Olcha, Cassandra K. Jones, Jason C. Woodworth, Ying Fang, Jia Liang, and Trevor J. Hefley. Infectious Dose of African Swine Fever Virus When Consumed Naturally in Liquid or Feed. Volume 25, Number 5. May 2019. https://wwwnc.cdc.gov/eid/article/25/5/18-1495_article

MORTALITY MANAGEMENT PLANNING

This information is to help make contingency plans for large-scale mortality events caused by a foreign animal disease (FAD). While the risk of a large-scale mortality at any given swine facility is very small, having a plan for mortality management could save time, reduce frustration, avoid mistakes, and minimize costs. Every site needs its own plan.

Should a catastrophic loss of animals due to disease occur, a decision flow chart will be used to prioritize disposal method, depending on the nature of the disease. Your veterinarian and the State veterinarian will be the primary points of contact and will assist you in choosing acceptable carcass disposal methods.

One of the roles as a producer will be to identify where animal carcasses can be handled and disposed of, and the equipment and other resources that could reasonably be made available. Much of this planning can be done well in advance of an actual emergency.

An IL NRCS Conservation Practice Standard, Code 368, Emergency Animal Mortality Management, has many useful items for plan guidance. Spreadsheets devised by USDA/APHIS are available to help with estimating materials and costs of various options.

ABOVE GROUND BURIAL

Above ground burial is not fully researched or understood. There are ongoing, small-scale experiments and demonstrations. The knowledge gained from these experiments may lead to a better understanding of the efficacy and potential environmental impacts of this method. An impermeable base may need to be supplied, to prevent leachate from escaping to the environment.

PROS:

- Greater separation from SHWT
- Rapid method of disposal

CONS:

- Few studies with concrete information
- Requires suitable field space on property
- Could require groundwater monitoring

BELOW GROUND BURIAL

On-site burial may be the method of choice for most carcass disposal scenarios. Consider the disposal area site and extent, access by excavation equipment, soils suitability, and environmental impacts (especially groundwater contamination) for the two types of burial: trench burial and mass burial.

MASS BURIAL refers to a lined trench method that includes leachate collection and disposal.

TRENCH BURIAL is simpler than mass burial, but it may not be allowed in some soils or where the seasonal water table is too close to the surface.

Two screening questions for burial are: (1) what site(s) on or near the facility property will work, and (2) is there enough space in the workable area for burying all the carcass material?

To answer (1), a helpful tool for initial screening is the USDA/NRCS Web Soil Survey. Once the boundaries of the farm site are identified, the “Disaster Recovery Planning” tab in the Soil Data Explorer section--Soils Suitabilities and Limitations for Use--shows what areas are limited by various features: wetness, slope, bedrock, coarse soils, etc.

NOTE: even though the Web Soil Survey shows an area to be suitable, the final determination is made when the need for burial arises, using soil sampling that extends at least two feet below the intended bottom of the burial excavation. If the soil samples indicate the water table is within two feet of the excavation bottom, another site may have to be found, or another disposal method used.

To answer (2), an estimate of the space requires advance knowledge of the type of trenching equipment, the shape of the trench, and the practical ratio of total trench volume to carcass volume. Four feet of trench depth is a practical starting limit, which will allow two layers of carcasses, a 2-foot layer of soil between layers, and a minimum two-foot layer of soil over the top, mounded to avoid ponding. Leave at least three or four feet of undisturbed soil between trenches. Trench depth more than four feet is a potential safety problem for people and equipment, and more depth makes the operation more complex.

EXAMPLE: using a D9 tractor with 14.7 foot bulldozer blade, excavating a series of four-foot-deep trenches (“slot excavating”), a trench volume to carcass volume ratio of 4:1 allows about 260 200-pound carcasses to be buried in a 100 foot long trench. Total footprint for a 2,400 head finisher: about 0.4 acres.

COMPOSTING

Composting is the method that may be best suited for large numbers of swine carcasses since it stabilizes and reduces carcass biomass and inactivates the ASF virus. This option is viable on a large scale only if the carcass particle size is reduced through pre-processing (i.e. grinding) so that the compost cycle time is acceptable to the industry and regulatory agencies.

Building windrows of carbon source material with carcasses

require space not only for the windrows but also space between windrows for the machinery needed to turn the compost. Windrow compost turning machinery will be required, and the size of the machinery determines the windrow width and height. Self-propelled turners need less space between windrows than tractor-pulled turners.

Example: Depopulating a 2,400 head finisher with 200-lb pigs; 14 ft wide by 7 ft high windrows (requiring a large size turner), with 6 ft spacing to allow a self-propelled compost turner to work the windrows. (Note that, in some disease scenarios, APHIS may not allow any turn until they are sure that all carcasses are reasonably heat-treated.) Three turns of the windrows will be required if whole carcasses are composted; two turns required if carcasses are ground and mixed with carbon source material.

Approximately one cubic yard of carbon source (wood chips) will be needed per 200-pound finishing pig carcass, making a total windrow length of about 1,500 feet for a 2,400 head finishing barn with average 200-pound pigs. Space required for this example would be about 0.7 acres, plus space around the perimeter for fencing and traffic.

INCINERATION

Incineration is a method that may be best suited for relatively small farms, or farms with smaller animals, as there are limited numbers of portable incineration units and throughput is limited. Incineration could be considered for disposal of composted carcasses.

Burning carcass material on-site will require a special permit from IEPA Bureau of Air. The best control of combustion products and odors is obtained using air curtain burning, as compared to open-air “pyre” burning.

In air-curtain burning, combustible materials, such as timber, and the carcass material will be continually added either to a trench in the soil (soil conditions permitting), or in a refractory-lined box. A powered blower and air distribution device provide controlled airflow into the combustion area. Equipment for air curtain burning would be rented.

A soil evaluation would be required to find a site suitable for trench burning and for disposal of the ash to be periodically removed during operations. Solid fuel ratio, fuel:carcass, may range from 1:2 to 1:1.

PROS:

- Destroys ASF virus
- Significant volume reduction

CONS:

- Requires a significant fuel source (or requires transport to an incinerator)
- Limited availability of mobile units that meet emissions standards

LANDFILL

Disposing of carcasses in a Subtitle D landfill may be the fastest and most secure method in some scenarios, in some parts of the state. However, producers must not assume landfills will take a large number of carcasses, if any, infected carcasses.

While landfilling carcasses is allowed under Illinois regulations, individual landfill operators generally decide whether to accept carcass material; and landfill owners have little to gain by cooperating with a large-scale livestock depopulation event

A map of the active Subtitle D landfills in Illinois can be found online at the Illinois Environmental Protection Agency, “Landfill Locations Map.”

PROS:

- Relatively high throughput
- Viable at a large scale

CONS:

- Requires carcasses to be transported off-site
- Does not inactivate pathogens
- Landfills indicate they won’t accept infected materials

RENDERING

Rendering is a viable option if the carcasses are uninfected and can be delivered to the rendering facility within 24 hours of death.

The few remaining Midwestern rendering companies that collect dead animals will have limited daily capacity for taking carcasses; but depending on the cause of death, they may be able and authorized to take on some of the load.

As a component of your plan, it is a good idea to contact a renderer to find out transportation and plant intake capacity, and other logistical information.

PROS:

- Creates a usable product
- Destroys ASF virus

CONS:

- May not be a market for end-product
- Rendering plant may not be willing to accept carcasses from a control area

MORTALITY MANAGEMENT CUSTOM WORKSHOPS

A large-scale mortality plan for your swine facility is a risk management tool that costs little to develop. Set up a time for a personal planning session (3 hours min.) to create a custom plan for your farm with industry professionals and advice. Courtesy of IPPA and Ted Funk.

Contact Ted Funk, 217-369-7716 funkt@illinois.edu or Nesli Akdeniz, 217-300-2644 neslihan@illinois.edu.

INSURANCE POLICIES REGARDING ASF

The following insurance companies carry policies specifically related to African swine fever and FAD.

Howalt+McDowell Insurance, a Marsh & McLennan Agency LLC Company

Jennifer Ferris, Esq.
300 Cherapa Place, Suite 601, Sioux Falls, SD, 57103
jennifer.ferris@marshmma.com
800-584-7054
marshmma.com

Farley Insurance Agency

Chad Farley
PO Box 357, Newton, IL 62448
chad@farleyinsurance.com
618-562-4424
farleyinsurance.com



Thorn Creek Insurance Services Inc.

Troy Alexander
troy@thorncreekinsurance.com
3261 S Meadowbrook Rd, Ste 100
Springfield, IL 62711
217-503-4111
thorncreekinsurance.com



POTENTIAL SUPPLY LIST

In the case of any large-scale mortality event, the following supplies will be necessary. During an outbreak, these items will likely be in short supply. To best prepare your farm, it may be a good idea to start collecting these items now, to have on hand at the farm.

This is just a suggested list, compiled by the Illinois Pork Producers Association, Illinois Department of Agriculture and swine veterinarians. Quantities of each item will be determined by the size of your herd.

GET
pork industry
TEXT ALERTS

text **PorkCrisis** to
97296

to opt-in for the Pork Checkoff's new
Emergency/Crisis News texting system.

**This Emergency/Crisis news text service
will only be used in the event of a
MAJOR PORK INDUSTRY CRISIS.**



*MESSAGE AND DATA RATES MAY APPLY. 2 MSGS/YEAR.
TEXT HELP TO 97296 FOR HELP. TEXT STOP TO 97296 TO CANCEL.
FOR TERMS: www.pork.org/crisistext. FOR PRIVACY: www.pork.org/crisistext

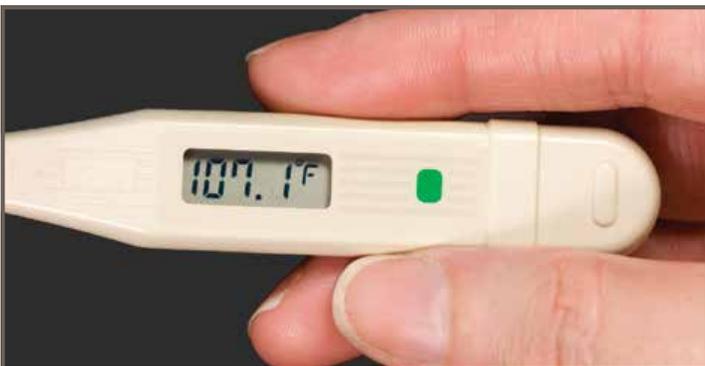
SIGNS OF AFRICAN SWINE FEVER



HIGH DEATH LOSS



ABORTION



HIGH FEVER



PILING



DIARRHEA



SKIN DISCOLORATION

Pigs infected with ASF may look similar to animals infected with several domestic and foreign animal diseases including classical swine fever (hog cholera), acute porcine reproductive and respiratory syndrome (PRRS), porcine dermatitis and nephropathy syndrome (PDNS), erysipelas, salmonellosis, actinobacillosis, *Haemophilus parasuis* infection (Glasser's disease) and pseudorabies. When observing animals showing the clinical signs above, suspect ASF.

IF YOU SUSPECT A FOREIGN ANIMAL DISEASE:

If you suspect an ASF infection, quarantine your herd. Contact your State or Federal Animal Health Official to report your concerns. Contact information can be obtained by calling (866) 536-7593. You can also call the USDA APHIS Veterinary Services National Center for Animal Health Emergency Management at (800) 940-6524 (24 hours) for assistance.

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