



African Swine Fever – Frequently asked questions

General

What is African swine fever (ASF)?

African swine fever affects only porcine species of all breeds and ages. It appears in domestic (farm) and feral pigs (warthogs, wild boars, wild pigs, bush pigs, giant forest hogs and peccaries).

It is a viral disease caused by a complex DNA virus of the *Asfarviridae* family. The virus is particularly resistant in the environment, with no cure nor vaccines known to this date, and up to 100% mortality rate in pig farms. For this reason, ASF outbreaks are taken very seriously by health authorities and the pork industry.

Numerous resources exist about the disease and how to control ASF (<http://www.cfsph.iastate.edu> has good information about ASF).

Does ASF affect humans or other animal species?

It does not affect humans or other animal species other than porcine species. Yet, humans and animals can play an important role in the spread of the disease.

In which countries is ASF present?

ASF is endemic to sub-Saharan Africa. Over the past several decades, the disease has emerged, and then been eliminated, in parts of Europe, the Caribbean and Brazil. More recently, it has arrived in Georgia from Africa in 2007, and reached the European Union via Russia, Belarus and Ukraine in 2014, then Romania and Poland in 2017, where infected wild boars and pig farms are reported on a regular basis. In September 2018, several wild boars infected with the ASF virus were found in Belgium, in an isolated forest area near the French and Luxembourg border, emphasizing the need for high vigilance and strict biosafety measures across Europe. Pig farms infections have been also signaled in the summer 2018 across several provinces of China, raising a global concern about the onset of a pandemic in Asia. New cases are reported almost every day. To access the latest information on the occurrence of ASF worldwide, see <http://www.oie.int/wahis/public.php?page=home>.

What are the clinical signs of ASF?

The incubation period for ASF is between 5-15 days, with death occurring 6-13 days post onset of illness, at a rate that may be as high as 100%. Signs include high fever, hemorrhages in the skin and internal organs. Other clinical signs may include loss of appetite, depression, redness of the skin of the ears, abdomen, and legs, respiratory distress, vomiting, bleeding from the nose or rectum and sometimes diarrhea. Abortion may be the first event seen in an outbreak. Moderately virulent forms of the virus produce less intense symptoms though mortality can still range from 30-70%. Chronic disease symptoms include loss of weight, intermittent fever, respiratory signs, chronic skin ulcers and arthritis.

How is ASF diagnosed?

ASF is clinically indistinguishable to Classical swine fever and must be differentiated with laboratory tests. Diagnosis can be either by identification of the virus by direct antigen detection by immuno-fluorescence, tissue culture inoculation, or detection by polymerase chain reaction (PCR). Serological tests such as an indirect



antibody fluorescent test, or ELISA can identify anti-ASF antibodies in blood samples taken 8-21 days post-infection.

Epidemiology

How is ASF transmitted?

Transmission of ASF is complex and involves multiple factors, however, the main routes of transmissions are well known: people travelling to and from potential high risk areas and people transporting contaminated food from infected areas, for long distance transmission, and contact between sick wild boars and/or domestic pigs for short distance transmissions. Other transmission factors are soft ticks in sub-tropical areas, contaminated river water, contaminated feedstuff and feed trucks, in a similar way as other viruses. Controlling these risk factors is at the core of biosafety.

2 ways of transmission

- Directly:
 - o Contact with infected wild boars or domestic pigs
- Indirectly:
 - o Fresh grass and seeds could be potentially contaminated by secretions from infectious wild boars (see '*What biosafety measures to implement at farm level?*' below).
 - o Pork meat products: the ASF virus is resistant to production processes; frozen, salted meat, smoked meat and sausage products can be infectious to domestic and feral pigs for a long time. Therefore, avoid feeding pigs with these products as well as food leftovers or swills that may contain these products. Discard food waste in sealed waste containers.
 - o Contaminated pig tissues (blood, semen, serum..) and food waste, contaminated premises, vehicles, equipment or clothing.
 - o Via vectors (ticks in sub-tropical areas or biting flies).

Can feed and feed ingredients be vectors to spread ASF?

The risk of contamination via feed comes mainly from kitchen waste, food residues and meat products from infected pigs and wild boars. The ASF virus is highly resistant and [can survive several months in uncooked infected pork products, even longer in frozen products](#).

In ASF risk areas, such as Eastern Europe, infection via complete feed or contaminated feedstuff has not been established and is considered as a very low risk when compared to human activities or direct contaminations between pigs. See the scientific opinion published in the EFSA Journal 2014;12(4):3628 for a detailed risk assessment. <http://www.efsa.europa.eu/en/efsajournal/pub/3628>

The ASF virus withstands moderate heat and acidity. Unheated roughages, such as corn cobs silage and hay, straw bedding or sun/dried grains from risk areas should not be used.

One recent study ([Dee et al., 2018](#)) suggests that the ASF virus can survive an in-vitro simulated 30 days transport in dried ingredients such as soybean meal or certain feed additives. These findings have not yet been repeated



by another research team, and the authors are using an extremely high contamination as starting point (1 log₁₀ TCID₅₀ ASF virus / g ingredient).

However, the risk has to be taken into account and the focus shall be on preventing contamination at any point of the production chain; from infected pig tissue, or other contaminated material.

What are the risks linked to transport?

As the ASF virus is highly resistant, there is a great risk of contamination via transport vehicles returning from ASF-affected areas. Therefore, it is recommended that prior to entering the non-contaminated areas, cleaning and disinfection takes place at the external border.

Can humans be vectors to spread ASF?

- Human interventions is the major risk in the case of spreading over large distances, for instance by carrying contaminated pork products (eg. dried sausages) or materials (eg. hunting gears) from ASF epidemic areas.
- Farmers and farm workers: special focus should be placed on biosecurity; avoid direct/indirect contact of pigs with food leftovers. In the event that clinical signs are observed (see [clinical signs ASF](#)), this should be immediately reported to the competent authorities. As prevention, movement of animals, semen and embryos out of the premises should also be avoided.
- Any external visitors coming from areas with known ASF outbreaks shall follow strict biosafety procedures.

Prevention

How to inactivate the virus?

- Temperature: can be inactivated by temperature treatment :+60°C/30 min, based on OIE recommendations.
- pH: Inactivated by pH <3.9 or >11.5 in serum-free medium. Serum increases the resistance of the virus, e.g. at pH 13.4 – resistance lasts up to 21 hours without serum, and 7 days with serum
- Chemicals/Disinfectants: Susceptible to ether and chloroform. Inactivated by 8/1000 sodium hydroxide (30 minutes), hypochlorite – 2.3% chlorine (30 minutes), 3/1000 formalin (30 minutes), 3% ortho-phenylphenol (30 minutes) and iodine compounds. Virkon S is commonly mentioned as a commercial disinfectant effective against ASF virus.

What measures are taken by health authorities to prevent ASF from spreading?

Until now there is no cure nor vaccination against ASF. Therefore, the following measures are the only way to prevent and control the disease

- 1- Accurate epidemiology surveillance. Conduct systematic epidemiological investigation in case of outbreaks, with tracing of possible source (up-stream) and possible spread (down-stream) of infection
- 2- Strict biosafety measures adapted to specific target groups (feed mill, pig farms, hunters, truck drivers, etc.)



- 3- Strict control of the supply chain, with a focus on preventive measure to avoid any contamination with infected material and temperature treatments
- 4- Avoid contacts between domestic pigs and wild boar, more broadly with soft ticks and wildlife: importance of fencing the farm premises, disinfecting and pest control
- 5- Standstill and movement control of pigs, semen, ova and embryos should be implemented to avoid further disease dissemination
- 6- Setting up a control zone around any infected premises and monitoring movement of pigs within the zone. Culling of pigs in contaminated farms. Note that hunting of feral pigs is not recommended as it creates more risk of contaminations.
- 7- Carcasses of sacrificed animals are disposed of either by burning or burial and the premises of the infection should be thoroughly disinfected with adequate disinfectants

For more detailed information, please review <http://www.fao.org/3/a-i7228e.pdf>.

What biosafety measures to implement at farm level?

- Avoid contact (direct or indirect) of pigs with feral pigs or wild boars, or pigs coming from other facilities
- Review the logistic arrangements for entry of new animals into the farm
- Wild birds, vermin and other animals should be kept away from animal sheds and from animal feed and water supplies
- Use only dedicated work clothing and footwear
- Change clothes and boots on entering and leaving the stable.
- Don't wear boots and clothes used in pig farm when visiting feed factories, grain storage, offices or other agricultural facilities.
- Sharing equipment among farms/villages should be discouraged. If needed, proper cleaning and disinfection should take place
- Establish the clean/dirty areas for personnel
- In general, avoid any contact with other pigs or hunting activities 48 h prior to being in contact with pigs.
- Depending on the veterinarians, it is recommended to follow a downtime of 5 to 10 days after visiting a pig farm in an ASF infected area, and before visiting another pig farm.
- Avoid the entrance of unauthorized persons/transport to the pig facility
- All vehicles entering the farm should be properly disinfected and should not have visited another farm before
- Disinfection should be performed at the entrance of the holding and the stable; using EPA approved disinfectant (see [how to inactivate the virus – chemicals/disinfectants](#))
- In problem areas, avoid the use of local crops, grass or straw unless treated to inactivate ASF virus. Make sure they are stored (out of reach of wild boars) during sufficient time. In case of doubt on raw materials, please consult your local government authority.
- Avoid the contact (directly or indirectly) with animal by-products and food wastage
- Stock proof fencing in the stables and premises where feed and bedding are kept
- Pigs should not be returned to the farm from live-animal markets. However, if they do return, they should be put in quarantine for 14 days before mingling with other pigs