

## African Swine Fever

African swine fever (ASF) was first identified in Kenya in the 1920s and is a highly infectious viral disease of domestic and wild pigs and their relatives including wild boar, warthogs and bushpigs. It is an OIE reportable disease (notifiable in the UK). ASF:

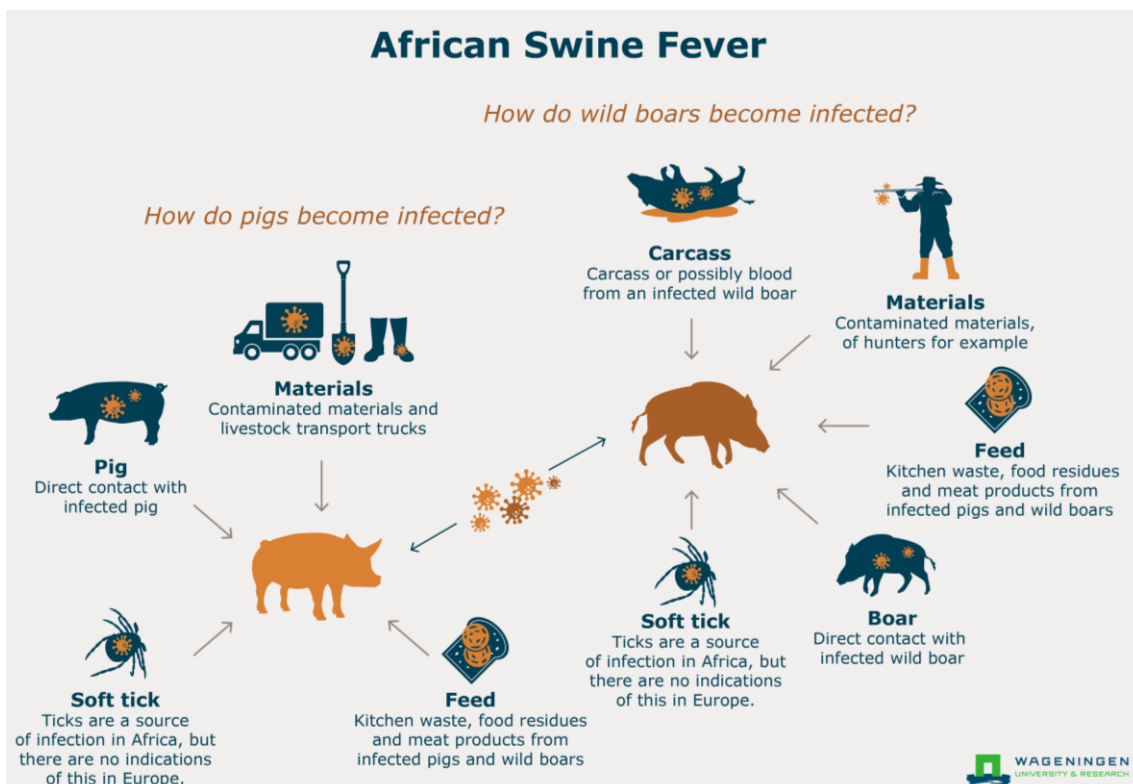
- Is highly contagious in domestic and feral pigs, also wild boar<sup>1</sup>
- Is NOT a human health risk
- Does not affect other animal species
- has no preventative (vaccine), nor effective treatment.

Mortality in domestic pigs can vary between 30 - 100% (within 4-19 days post-infection) depending on virulence of the ASF virus (ASFv) strain. Animals that survive may remain infectious for up to 6 months or more.

Where the disease is endemic in Africa, warthogs and bushpigs (natural hosts that have co-evolved with the virus) rarely show clinical signs and may transmit the virus directly or via soft-bodied ticks.

### Transmission

The sources of virus are blood, tissues, secretions and excretions of sick and dead animals, carrier animals (especially African wild suids and domestic pigs in endemic areas) and soft ticks.



<sup>1</sup> Evidence suggests wild boar are more likely to catch ASF from domestic pigs, not vice versa

Transmission of the virus can occur from:

- contact with infected domestic or wild pigs
- ingestion of contaminated material (food waste, feed or garbage)
- contact with contaminated materials (vehicles, clothes, equipment etc)
- via soft ticks – where present

Animals which have recovered from either acute or chronic infections may become persistently infected, acting as virus carriers, especially in African wild suids, and in both domestic pigs and wild boar in endemic areas.

Some ASF figures:

- Transmission through direct contact between domestic pigs can occur for up to 30 days after infection (or for eight weeks in the case of contact with blood products, e.g. during fighting or mating).
- ASFv can persist in tissues for several months and the exposure of domestic pigs to poorly disposed-of carcasses or the feeding of frozen or insufficiently cooked or cured pork products can result in infection
- ASFv has been shown to survive for 30 days in pepperoni and salami sausages, and for more than 100 days in Iberian-cured pork products and Parma hams. In frozen meat it could survive for years.
- It can remain infectious for 3–6 months in uncooked pork products. Curing or smoking pork products does not always destroy the virus.
- ASFv can be destroyed by heat (>60C), acid (pH<4), alkali (pH>11.5) and by some disinfectants.
- ASFv can persist in the environment for up to 3 days allowing transmission by fomites (clothing, equipment and vehicles)

Symptoms - Pigs experience some or all of the following:

High fever	Haemorrhages in the skin
Weakness	Coughing
Loss of appetite	Difficulty breathing
Vomiting	Miscarriage and still births
Diarrhoea, sometimes bloody	Lethargy

## Prevention

Prevention in countries free of the disease depends on implementation of appropriate import policies and biosecurity measures, ensuring that neither infected live pigs nor pork products are introduced into areas free of ASF. This includes ensuring proper disposal of waste food from aircraft, ships or vehicles coming from affected countries and policing illegal imports of live pigs and pork products from affected countries.

The OIE has built a hub with guidelines<sup>2</sup> on preventing introduction/spread of the disease. Some examples are:

<sup>2</sup> <https://trello.com/b/GloiZoik/african-swine-fever-oie>

Pig farmers: <https://trello.com/c/X77F8RzH>

Hunters: <https://trello.com/c/YBW630w4>

Hunting pressure may be counter-productive, since it may increase the size of the home-range and force long distance movements. In addition, hunting management does not always reduce the population of wild boar<sup>3</sup>.

### Biosecurity in outdoor farms<sup>4</sup>

The European Commission has banned outdoor keeping of pigs in specified areas surrounding an ASF outbreak<sup>5</sup>. Although prevention becomes challenging in outdoor and semi-extensive pig production, several preventive measures exist that can ensure good biosecurity levels:

- **Double fences** at least 2 metres high, of which 50cm should be under the ground, to avoid entrance and direct contact with wild boar, feral pigs, and other domestic pigs, as well as people and vehicles.
- Outdoor farms should be **separated from other outdoor farms** by at least 1 kilometre to reduce the risk of ASF introduction through direct or indirect contact. This distance may vary according to national and local regulations.
- ***Ornithodoros* ticks (soft ticks) can be a risk factor** dependent on the region (for example the Iberian Peninsula). Pig buildings should be kept in good repair to minimise cracks where ticks can survive. Where ticks are present, chemical control with methylene bromide may be applied to the facilities, or pigs treated with ivermectin. Additionally, preventive measures should be put in place such as the use of nets on animal facilities; establishment of pest control programs on farms; use of carbonic dioxide traps to check the presence of *Ornithodoros* ticks and change of boots before entering the farm and units. Nevertheless, it should be noted that eradication of *O. erraticus* ticks is extremely difficult due to the long life of ticks, long survival without feeding, presence of accidental hosts, and possibility of penetrating into cracks and surfaces not accessible to acaricides.

### Control

Measures to consider if an outbreak occurs:

- Humane killing of pigs on infected farms, with proper disposal of carcasses and waste, followed by cleaning and disinfection
- Tracing possible contact farms, followed by quarantine
- Tightening biosecurity measures
- Transport ban on pigs and pork products
- Zoning/compartimentalisation and movement controls
- Improving surveillance in the region where the outbreak occurred.

<sup>3</sup> <http://www.fao.org/3/a-ak718e.pdf>

<sup>4</sup> For more information on the references, please see:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5912175/>

<sup>5</sup> [https://ec.europa.eu/food/sites/food/files/animals/docs/ad\\_control-measures\\_asf\\_wrk-doc-sante-2015-7113.pdf](https://ec.europa.eu/food/sites/food/files/animals/docs/ad_control-measures_asf_wrk-doc-sante-2015-7113.pdf)

### Humane slaughter for disease control

Humane killing of the animals through effective stunning and killing should be ensured.

When animals are killed for disease control purposes, methods used should result in *immediate death or immediate loss of consciousness lasting until death*; when loss of consciousness is not immediate, induction of unconsciousness should be non-aversive or the least aversive possible and should not cause avoidable anxiety, pain, distress or suffering in animals.

[OIE Terrestrial Animal Health Code, CHAPTER 7.6. Killing of animals for disease control purposes](#)

### Preventive culling depends on the situation

As the African swine fever virus spreads much less readily via indirect contact than does for instance classical swine fever virus, the extent to which preventive culling may be effective or justified is unclear. Based on circumstantial evidence, preventive culling related to neighbourhood contacts (undetermined contacts within a radius of e.g. 500 or 1000 meters around an infected herd) is likely to be ineffective and therefore difficult to justify. Preventive culling in other situations may depend on the specific circumstances of the actual contact with the infected herd.

Wageningen University 2019

### Potentially humane killing methods for pigs with ASF

With all methods, it is important to understand pig behaviour and correct handling for killing on farm. Please see technical note by World Animal Protection on [pig behaviour and handling](#) for advice on this.

#### Preferred method:

**Electric tongs** – two stage application of electric tongs: to head then chest

- + One of the most humane methods of killing at scale in disease control
- + Cheap and portable
- + No blood loss
- + Restraint device not needed, only smaller pen or race

Where electric tongs are not available the following methods may be suitable, if performed correctly:

**Captive bolt** followed by pithing

- + Cheap and portable
- + Simple raceway suitable for restraint
- Target area is very small in pigs and can be difficult to accurately locate
- Pig brain lies deep in the head making it harder to reach with captive bolt
- Older sows and boars may have a ridge of bone down the forehead which can prevent penetration
- Only suitable for limited numbers due to worker fatigue and equipment overheating

### Firearm with free projectile

- + If done correctly, should cause immediate unconsciousness and death
- Target area is very small in pigs and can be difficult to accurately locate. The pig's brain lies deep in the head with a mass of sinuses lying between the frontal bone and the brain cavity
- Older pigs and exotic breeds often have foreheads of thick bone which can prevent penetration
- Requires more skill than electric tongs
- Requires firearm license and safety considerations
- Blood loss

It is essential to select the appropriate firearm and ammunition in order to kill instantly – see [Humane Slaughter Association guide](#) for information

### Repopulating

Repopulating should follow EU Council Directive 2002/60/EC<sup>6</sup> or outside the EU the OIE guidelines<sup>7</sup> should be used as a minimum. Main points from EU Council Directive:

1. Reintroduction of pigs should not take place until at least 40 days after completion of the cleansing, disinfection and, if necessary, disinsectisation process.
2. After point 1 is complete, in farms where the infection was not connected with vectors (e.g. soft ticks and fomites such as clothing or boots):
  - a. Outdoor farms- sentinel pigs from ASF-free holdings shall be introduced first. They should have access to the entire holding and be tested for ASF antibodies 45 days after being introduced on farm. Only if they test negative may the farm be repopulated and the sentinel pigs moved.
  - b. Indoor farms- sentinel pigs may be introduced as per point a), alternatively a new herd of pigs from ASF-free holdings may be introduced; the total herd must arrive within a period of 20 days. These pigs should be tested for ASF antibodies at least 45 days after the introduction of the last pig. No pig may leave the farm until negative results are received.
3. If the outbreak is linked to vectors, repopulation must not happen until at least 6 years after ASF was diagnosed at the farm unless vectors have been eliminated. Please see the EU Council Directive<sup>8</sup> for more information.

### Humane and Sustainable Food Systems

Research indicates that ASF is likely to wipe out as much as a quarter of the global pig population<sup>8</sup>. Whilst it is devastating to see such a dramatic reduction in the herd due to disease, rather than planned policy, decisions on repopulation should take into account the global need to reduce the production and consumption of meat<sup>9</sup>. Moving away from meat-heavy diets, towards those based

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<sup>6</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02002L0060-20080903>

<sup>7</sup> [https://www.oie.int/index.php?id=169&L=0&htmfile=chapitre\\_asf.htm](https://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_asf.htm)

<sup>8</sup> <https://veterinaryrecord.bmj.com/content/185/18/556>

<sup>9</sup> <https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/>

more on plants, with a limited amount of animal products sourced from regenerative farming systems would have a transformational impact on human health and the environment.<sup>10</sup>

Compassion in World Farming is calling for a global agreement and action plan, to catalyse this transformation of our food system, through policy measures. We have written to the World Health Organisation, UN Food and Agriculture Organisation, UN Environment Programme, World Bank, International Finance Corporation, World Organisation for Animal Health and many other policy institutions calling for action. Before we build the pig herd back to its original scale, with equal or greater reliance on unsustainable and damaging intensive farming, we must consider whether this fits with the future food system we must create to support our health, the environment and the well being of farmed animals worldwide.

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<sup>10</sup> <https://www.ciwf.org.uk/research/policy-economics/the-need-for-a-global-agreement-on-sustainable-agriculture/>