bulletin
#2020–1

PANORAMA

Thematic portfolio

African swine fever: responding to the global threat

PERSPECTIVES | # DOSSIER | # AROUND THE WORLD

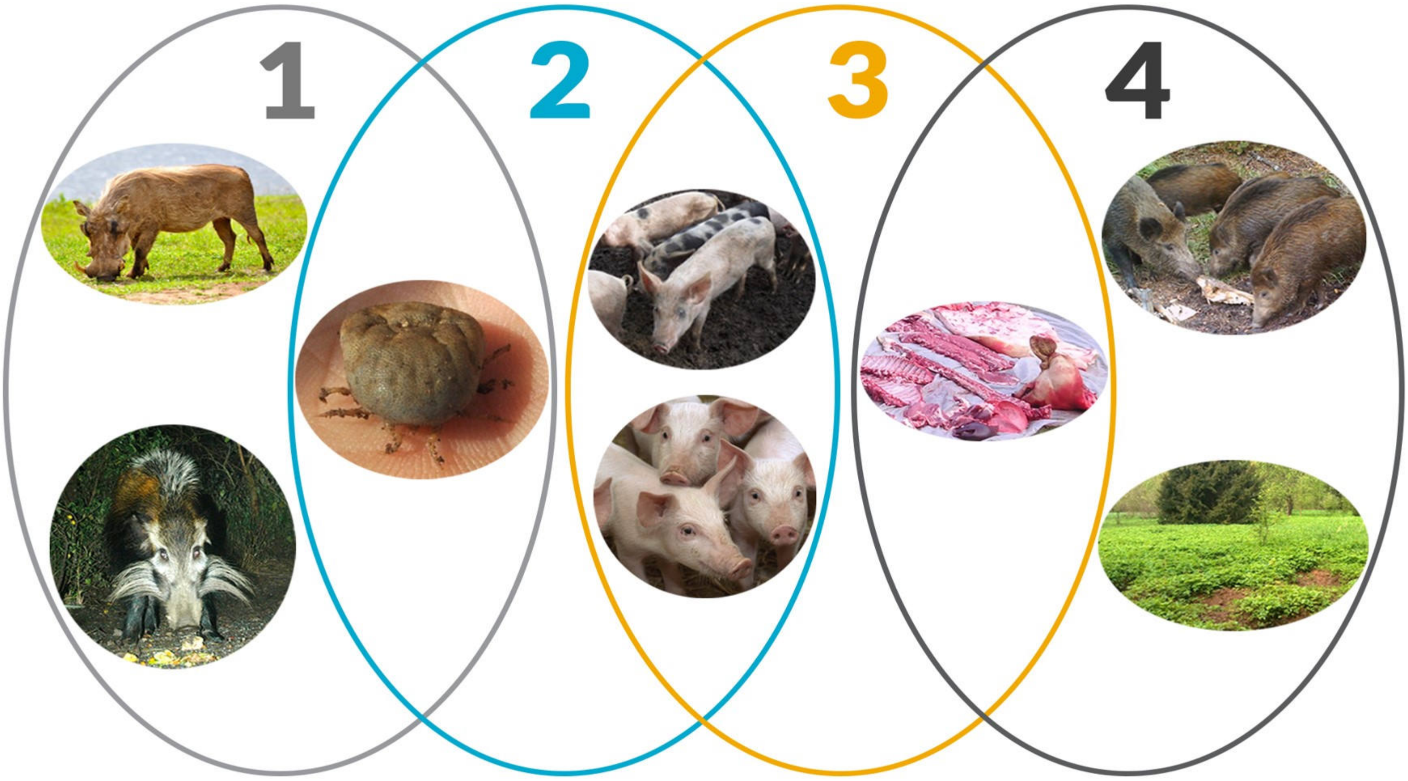
www.oiebulletin.com

OIE WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

African swine fever (ASF) is a viral disease of domestic and wild pigs, characterised by a high fatality rate and relatively low contagiousness [1]. These qualities lead to a slow spread of the disease within pig populations and the initial low mortality rate makes disease prevention and early detection particularly challenging. In the current ASF epizootic in Europe and Asia, a separate epidemiological cycle of ASF (Fig. 1) has been described [5], in which virus circulation is maintained within wild boar populations and their habitat.

The anthropogenic factor

Humans are recognised as the main driver of long-distance ASF spread and virus introduction into disease-free populations of domestic and wild pigs. Identifying the anthropogenic or 'human factor' is of enormous importance in understanding the pattern of ASF spread. If we consider only the biological characteristics of the disease (e.g. contagiousness, resistance to inactivation and case fatality rate) and neglect the human aspects, we will be unable to control this epizootic [1].



1) Sylvatic cycle: common warthog (*Phacochoerus africanus*), bushpig (*Potamochoerus larvatus*), and soft ticks of *Ornithodoros* spp. The role of the bushpig in the sylvatic cycle remains unclear.
2) Tick–pig cycle: soft ticks and domestic pigs (*Sus scrofa domesticus*).
3) Domestic cycle: domestic pigs and pig-derived products (pork, blood, fat, lard, bones, bone marrow, hides).
4) Wild boar–habitat cycle: wild boar (*S. scrofa*), pig- and wild boar-derived products and carcasses, and the habitat.

Fig. 1. The four transmission cycles of ASF with the main transmission agents depicted. *Source: [1, 5].*

The early detection dilemma

ASF may go unnoticed until mortality becomes significantly raised several weeks after being introduced into domestic pig and wild boar populations, as observed under field conditions [2, 3]. However, improved passive surveillance, including targeted sampling and testing of dead animals, has been shown to promote early detection of ASF [3]. Paradoxically, effective surveillance that enables early detection of ASF before the occurrence of a large number of pig deaths, in combination with the rather low contagiousness, creates a dilemma in justifying the drastic culling of all animals. As a result of this dilemma, and building on an improved understanding of ASF epidemiology and biosecurity, partial stamping out has been discussed, and used under specific circumstances. Fit-for-purpose surveillance and control strategies are therefore essential.

Persistence triangle

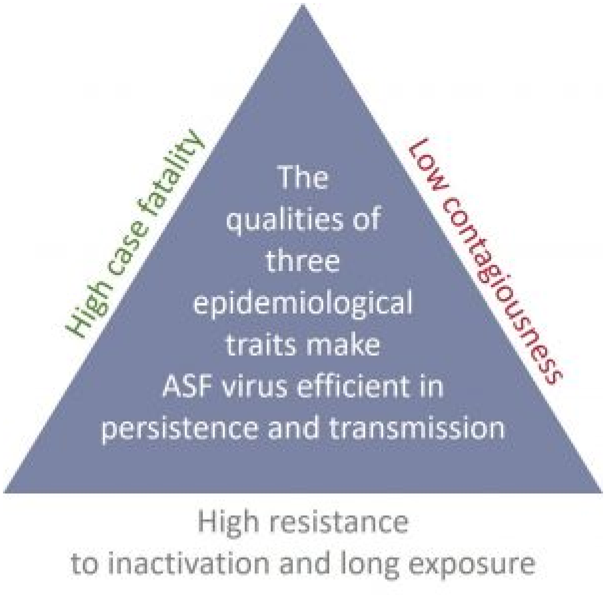


Fig. 2. The persistence triangle

The combination of a high case-fatality rate and resistance to inactivation ensures long-term virus persistence in animal carcasses and the environment; meanwhile, the relatively low contagion rate prevents complete depopulation of the host population (Fig. 2). The interaction of these three parameters maximises both local persistence and constant geographical spread, making the eradication of ASF in natural habitats challenging in the absence of other control tools, e.g. vaccination [1].

http://dx.doi.org/10.20506/bull.2020.1.3121

PERSPECTIVES

OPINIONS AND STRATEGIES

African swine fever and the dilemma of a relatively low contagiousness

KEYWORDS

#African swine fever (ASF), #diagnosis, #epidemiology, #wild boar.

AUTHORS

K. Depner [(1)]*, K. Dietze [(1)], A. Globig [(1)], L. Zani [(1)], T. Mettenleiter [(1)] & E. Chenais [(2)]

(1) Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany.
(2) National Veterinary Institute, Uppsala, Sweden.

* Corresponding author: klaus.depner@fli.de


© www.bazardelbizzarro.net

REFERENCES

1. Chenais E., Depner K., Guberti V., Dietze K., Viltrop A. & Ståhl K. (2019). – Epidemiological considerations on African swine fever in Europe 2014–2018. *Porc. Health Manag.*, **5** (1), 6. https://doi.org/10.1186/s40813-018-0109-2.
2. Lamberga K., Seržants M. & Oļševskis E. (2018). – African swine fever outbreak investigations in a large commercial pig farm in Latvia: a case report. *Berl. Münch. Tierärztl. Wochenschr.* https://doi.org/10.2376/0005-9366-18031.
3. Zani L., Dietze K., Dimova Z., Forth J.H., Denev D., Depner K. & Alexandrov T. (2019). – African swine fever in a Bulgarian backyard farm: a case report. *Vet. Sci.*, **2019** (6) 94. https://doi.org/10.3390/vetsci6040094.
4. Oļševskis E., Guberti V., Seržants M., Westergaard J., Gallardo C., Rodze I. & Depner K. (2016). – African swine fever virus introduction into the EU in 2014: experience of Latvia. *Res. Vet. Sci.*, **105**, 28–30. https://doi.org/10.1016/j.rvsc.2016.01.006.
5. Chenais E., Ståhl K., Guberti V. & Depner K. (2018). – Identification of wild boar-habitat epidemiologic cycle in African swine fever epizootic. *Emerg. Infect. Dis.*, **24** (4), 810–812. https://doi.org/10.3201/eid2404.172127.

The OIE is an international organisation created in 1924 with a mandate from its 182 Members to improve animal health and welfare. Its activities are permanently supported by 325 centres of scientific expertise and 12 regional offices with a presence on every continent.

Follow the OIE: www.oie.int

@OIEAnimalHealth

World Organisation for Animal Health - OIE

OIEVideo

World Organisation for Animal Health

World Organisation for Animal Health (OIE)

Digital version: **www.oiebulletin.com**

WORLD ORGANISATION FOR ANIMAL HEALTH

Protecting animals, preserving our future

12, rue de Prony - 75017 Paris, France

Tel.: +33 (0)1 44 15 18 88 - Fax: +33 (0)1 42 67 09 87 - oie@oie.int