# On-going risk assessments on African swine fever

## Sixteen Meeting of the Standing Group of Experts on African swine fever in Europe under GF-TADs umbrella

**Sofie Dhollander**

Trusted science for safe food

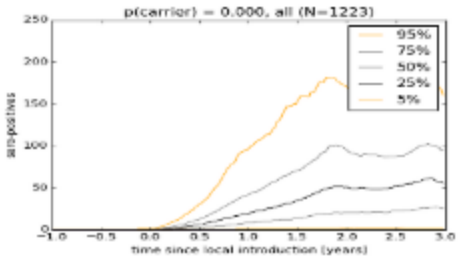
efsa
European Food Safety Authority

# EFSA's risk assessments on ASF

**Special issue on ASF: more than 30 EFSA outputs online at:**

https://efsa.onlinelibrary.wiley.com/doi/toc/10.2903/1831-4732.african-swine-fever

# On-going mandates on ASF






**Jan '21**

- Exit Strategy

**Mar '21**

- Matrices
- Epi 5 report

**Apr '21**

- Outdoor farming

**May '21**

Gap research:

ASF seasonality

**June '21**

Gap Research

ASFV transmission by wild boars

# ASF working groups

**ASF'SWG**
- Christian Gortázar, Spain (CHAIR)

**EPI-5 subgroup**
- Karl Stahl, Sweden (CHAIR)
- Christian Gortázar
- Hans-Hermann Thulke

**Exit strategy subgroup**
- Arvo Viltrop (CHAIR)
- Edvins Olsevskis
- Hans-Hermann Thulke
- Sandra Blome
- Simon More
- Vittorio Guberti
- Federica Loi

**Gap Analysis subgroup**
- Miguel Angel Miranda Chueca (CHAIR)
- Christian Gortázar
- Sandra Blome
- Anette Botner

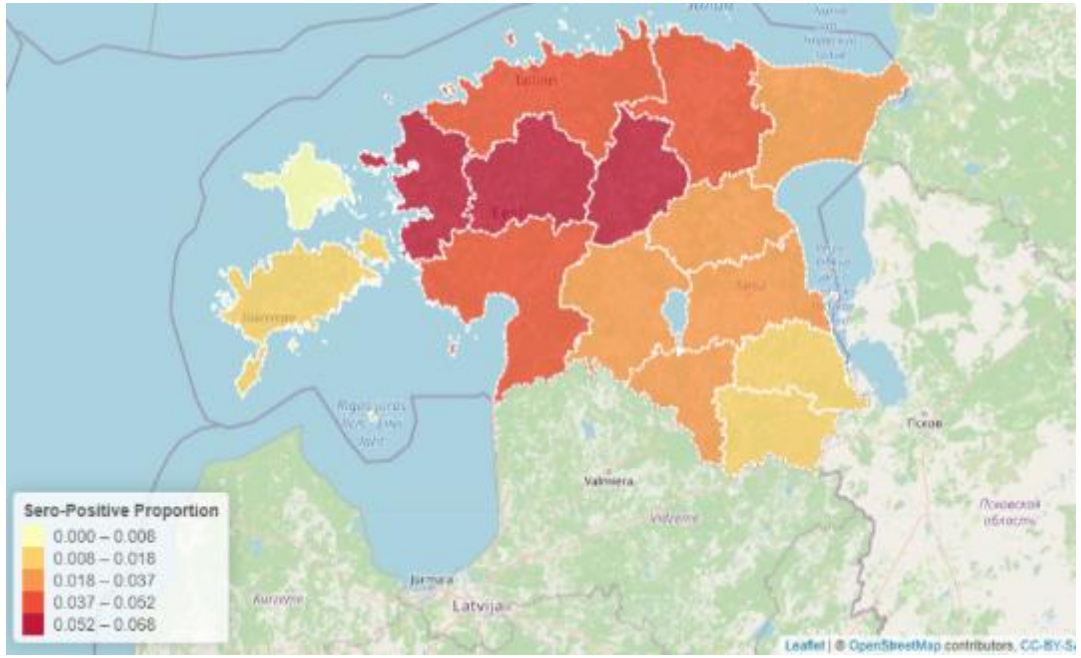
**Outdoor farming subgroup**
- Christian Gortázar (CHAIR)
- Sandra Blome
- Simon More

**Matrices subgroup**
- Helen Roberts (CHAIR)
- Anette Boklund
- Anette Botner

**EFSA-AHAW**
- Sofie Dhollander
- Andrea Gervelmeyer
- Yves Van der Stede
- Corina Ivanciu
- Elisabeth Dorbek-Kolin
- Alessandro Broglia
- Sotiria-Eleni Antoniou
- Gabriele Zancanaro

**EFSA-AMU**
- José Cortinas Abrahantes
- Olaf MOSBACH-SCHULZ

**EFSA-DATA**
- Alexandra PAPANIKOLAOU




# Exit strategy: EFSA-Q-2020-0042

< January 2021

# Exit Strategy

## Terms of Reference

1. Specific to Estonia and Latvia, EFSA should clarify

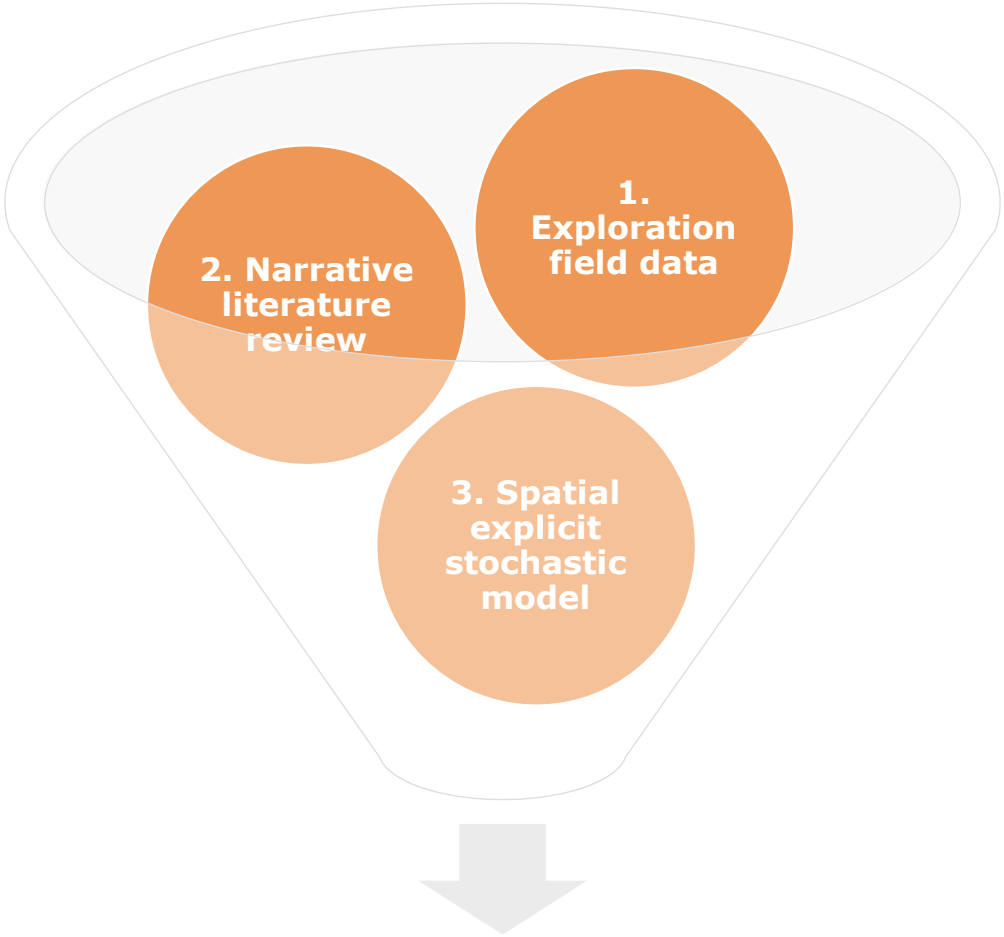
- (i) the risk factors possibly contributing to ASF **persistence** in affected areas over a number of years in wild boar populations. <April 2021
- (ii) the **role of seropositive wild boar** in the context of ASF infection, and in particular in areas with no current evidence of virus circulation.

2. EFSA should **define pathway(s) to ASF freedom in relevant areas** in accordance with the Strategic approach to the management of African Swine Fever for the EU and recommend criteria for defining an area as free from ASF in wild boar.

- In this task, EFSA should take into account the results of wild boar testing (in particular, antibody detection and virus identification) and the results in relation to the identification of wild boar carcasses (with differing time since death)

# Exit Strategy

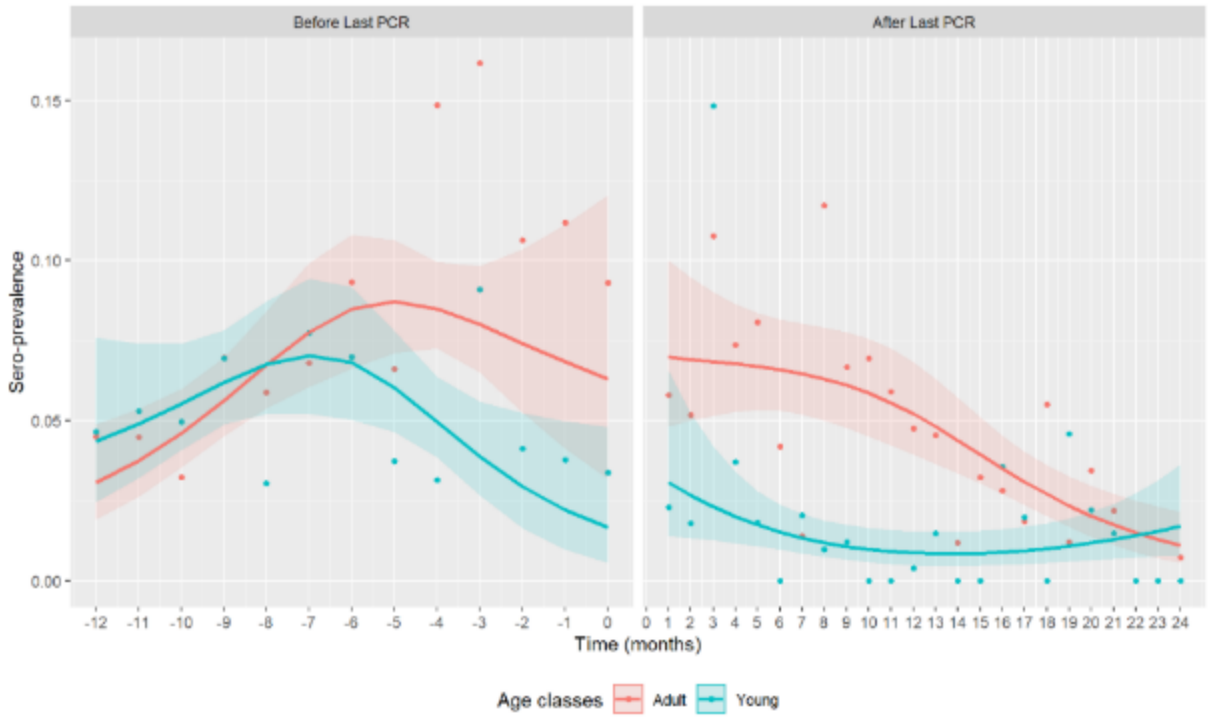
## Methodology:




Strategy to Freedom of ASFV circulation

European Food Safety Authority

# Exploration field data




- **E.g.: Exploration field data: ESTONIA**
  - Gradual decline of seroprevalence since the last PCR positive sample
  - Significantly smaller seroprevalence in young animals
  - Seroprevalence in young animals approaching zero
  - No oscillating patterns in seroprevalence indicating undetected virus circulation

Fading out epidemic?

But: PCR positive sample in Sep 2020: new introduction?

## Spatial explicit stochastic model

**Objectives**:

1) Identify different patterns of serological surveillance results given different scenarios associated with persistence of infection at low prevalence. These scenarios should consider the:

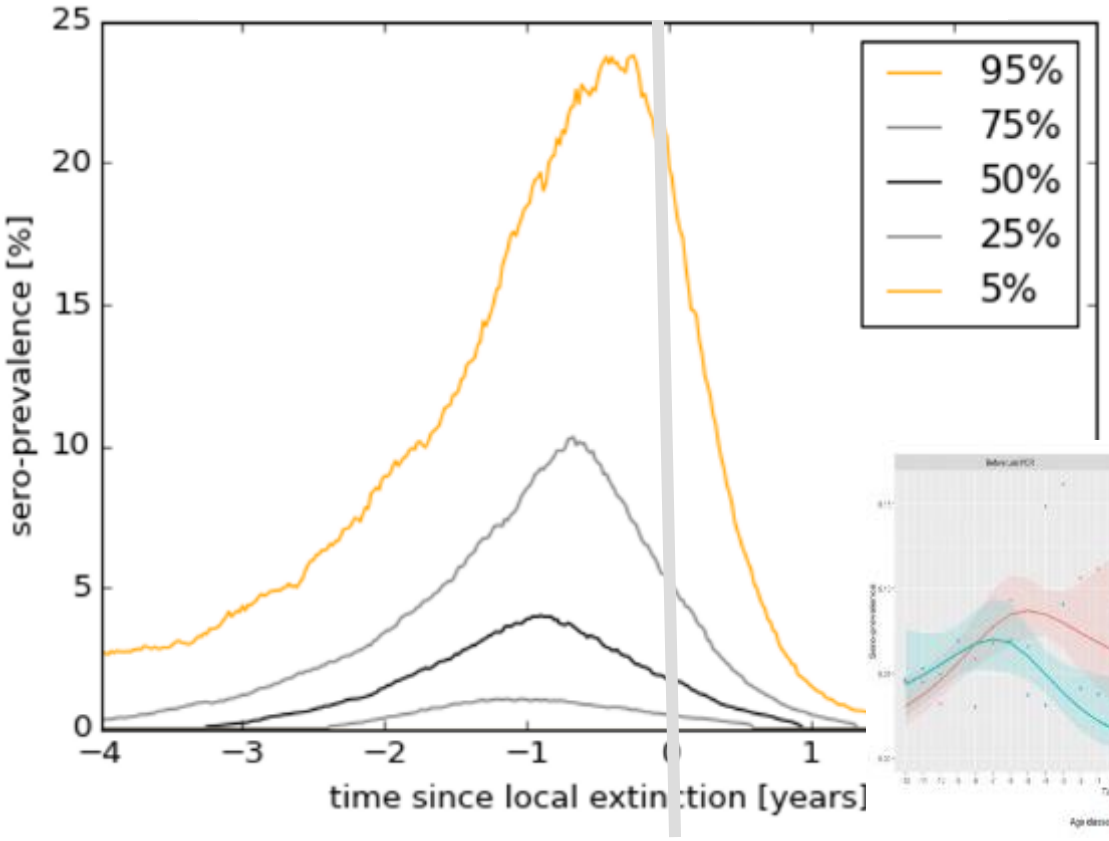
- Spatial clustering of infection
- Sampling procedures are not homogenous
- Different drivers of persistence (based on literature review outcomes: e.g. the presence of 'carriers' animals, duration of immunity, reduced case-fatality rate)
- On-going surveillance to detect ASFV circulation

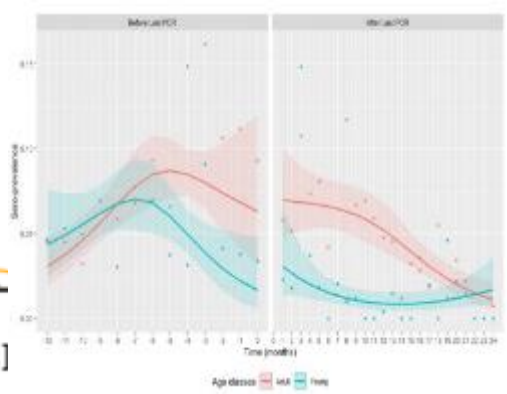
2) To predict patterns of surveillance results (virological, serological, combined) that could occur at the tail of the given a range of different epidemiological scenarios

# Exit Strategy

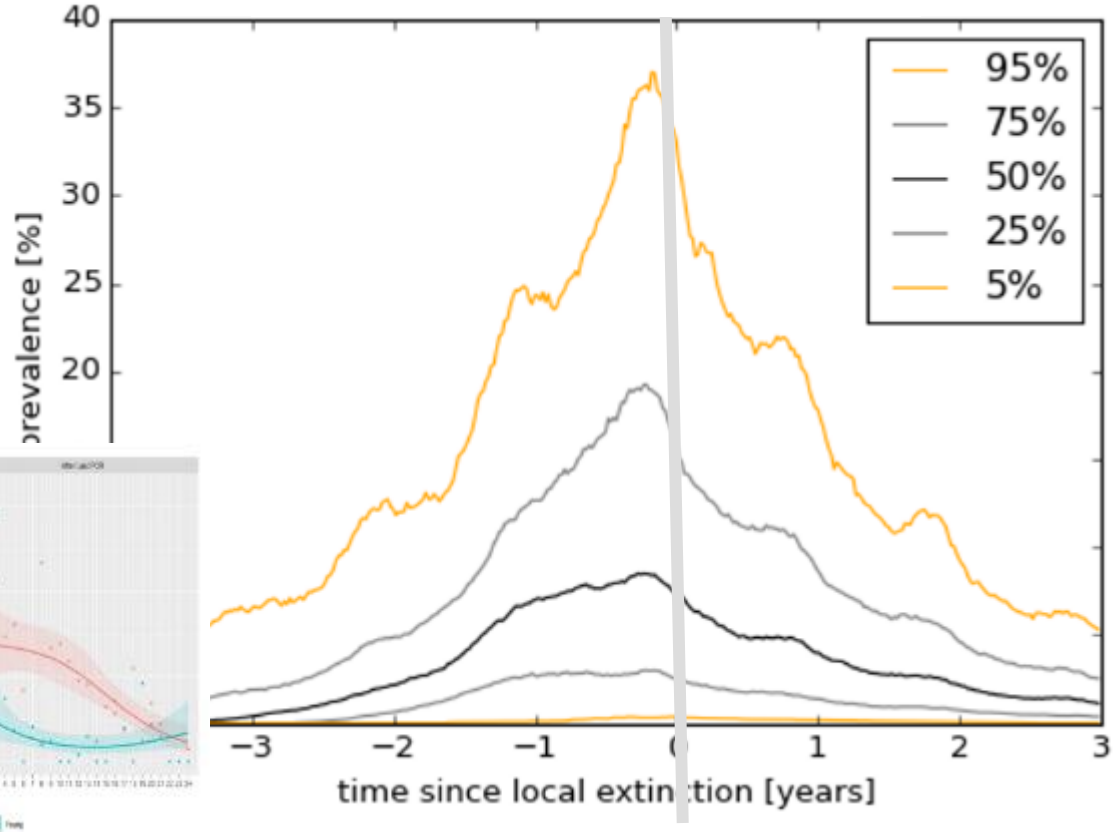
## Spatial explicit stochastic model

Young animals



Adult animals



# Exit Strategy



**Outcome model:**

Biological rationale for surveillance decisions

**To propose overall decision criteria to underpin stages of an exit strategy taking into account:**

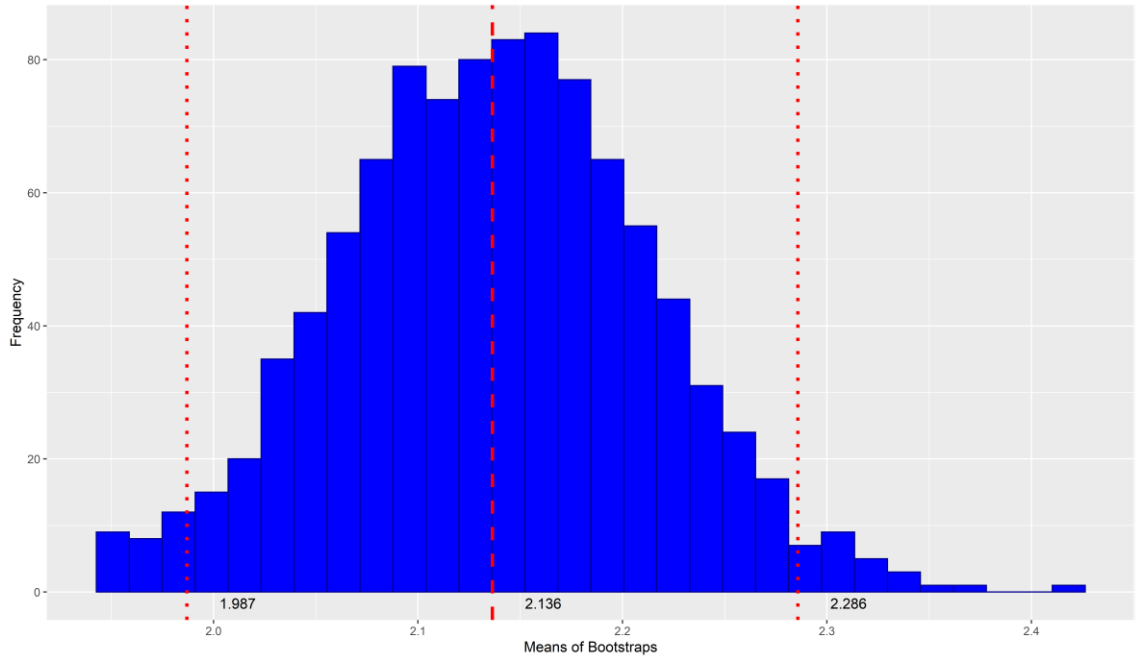
**-Different assumptions regarding persistence mechanisms and observed epidemiological scenarios**

**-Time component strategy**

**-Practicality of surveillance strategy**

# Epidemiological report (EPI-5/6)

< March 2021



# Epi-5 report



| Name | Country |
|---|---|
| Desmecht Daniel | Belgium |
| Gerbier Guillaume | France |
| Tom Petit | Luxembourg |
| GOGIN Andrey | Russia |
| GRIGALIUNIENE Vilija | Lithuania |
| HELYES Georgina | Hungary |
| KORYTAROVA Daniela | Slovakia |
| LOI Federica | Italy ( Sardinia) |
| MITEVA Aleksandra | Bulgaria |
| NEGHIRLA Ioana | Romania |
| OLSEVSKIS Edvins | Latvia |
| OSTOJIĆ Saša | Serbia |
| SUPEANU Alexandru | Romania |
| Staubach Christoph | Germany |
| Komitas Georgios | Greece |
| WALLO Richard | Czechia |
| WOZNIAKOWSKI Grzegorz | Poland |

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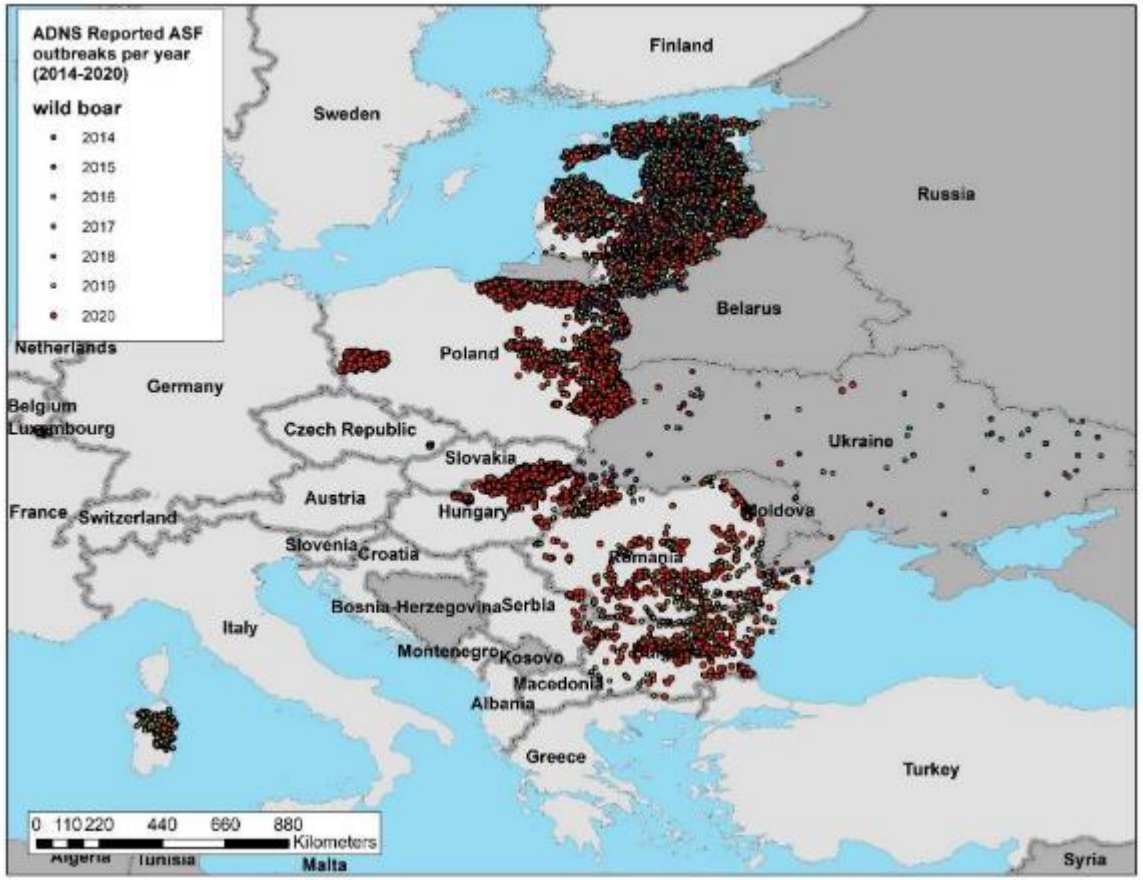
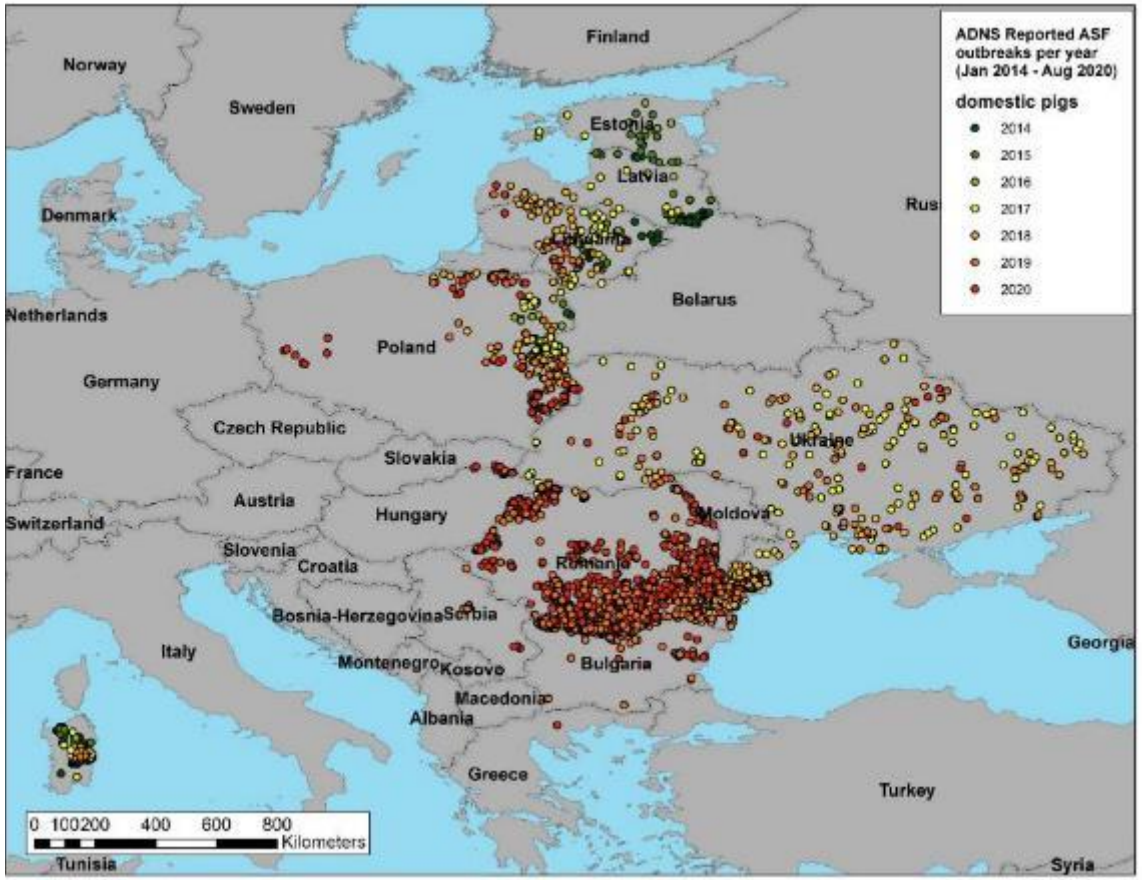
## Reporting period: 01 Sep. 2019 - 31 Aug 2020



## Terms of Reference

**1. Analyse the epidemiological data** on ASF from MS and non-EU countries affected by ASFV Genotype II

- Temporal and spatial patterns
- Ranges and speed of transmission
- Sources of introduction in pig holdings

**2. Risk factors involved in the occurrence, spread and persistence of the ASFV. In particular, risk factors involved in the occurrence of ASF in domestic pig farms in Romania should be identified**

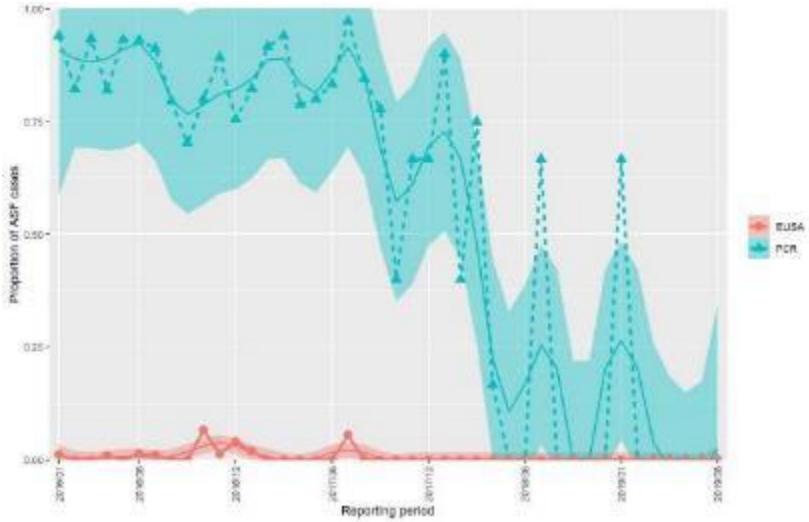
- wild boar population
- domestic/wildlife interface

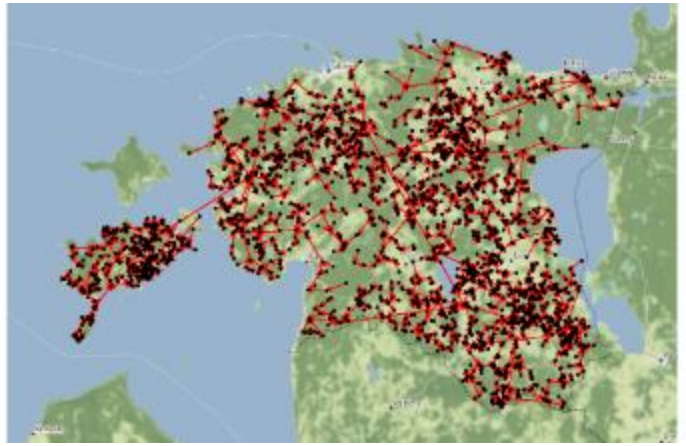
**3. Analyse the data and information on the geographical areas called white zones applied by free Member States (in particular France and Luxembourg at the border with Belgium) for preventing the spread of the disease in wild boar.**

- Assess the effectiveness of the measures and review scientific literature addressing these measures.
- Review and assess the robustness and effectiveness of the boundaries used for the determination/demarcation of these areas.

## Descriptive epidemiology:

- Narrative sections from affected MS and maps of outbreaks
- Proportions of PCR/ELISA positive samples (Loess smoothing)
- Consolidation findings of network analysis with spatial explicit model to relate local speed of propagation to local population and habitat characteristics
- Annual herd incidence rate
- Evolution yearly wild boar density
- Proxy for ‘secondary cases’ based on potential infection network

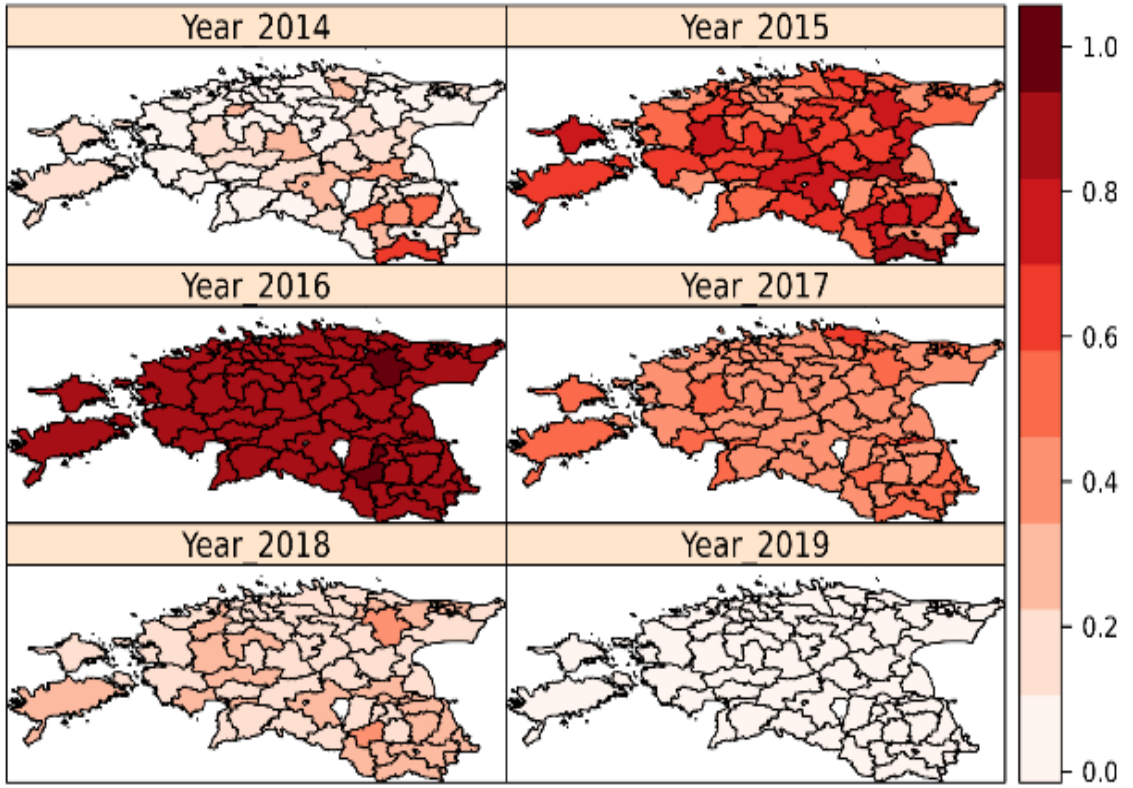


## Risk factor analysis

- WILD BOAR:
  - Generalised additive model to identify risk factors for ASF occurrence in wild boar in Estonia, Latvia and Romania.

- DOMESTIC PIGS:
  - Same model, considering some of the covariates used in the Estonian analysis (wild boar density, pig density, distance to nearest outbreak or case…)



## White zones

- Proposed analysis
  - **Step 1**:Detailed data collection of information about measures in white zone:

| Location white zone | Physical description barrier | Hunting measures | Carcass detection (data, modality, intensity) |
|---|---|---|---|
| Shape file | Date of construction and description of fence | Description of duration, intensity of hunting modality<br>Results of testing | Description of duration and intensity, carcass detection modality<br>Results of testing |

  - **Step 2**: evaluation specific measures with spatial explicit stochastic model to compliment model exercise carried out in EFSA 2015 and EFSA 2019


# Gap Research

< June 2021

## Follow up on European Commission Mar

- Request for scientific and technical assistance:
  - Identify the main research gaps to address the needs of risk managers involved in the prevention and control of ASF.
  - Research priorities that should be addressed in a short time frame (< 1 year).

https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2019.5811

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JOURNALS SUBJECTS

EFSA JOURNAL

Scientific Report | Open Access

Research gap analysis on African swine fever

European Food Safety Authority (EFSA), Julio Álvarez, Dominique Bicout, Anette Boklund, Anette Bøtner, Klaus Depner, Simon J More, Helen Roberts, Karl Stahl, Hans-Hermann Thulke ... See all authors

First published: 27 August 2019 | https://doi.org/10.2903/j.efsa.2019.5811

Correspondence: alpha@efsa.europa.eu

**Requestor:** European Commission
**Question number:** EFSA-Q-2019-00050
**Acknowledgements:** EFSA wishes to thank the Chief Veterinary Officers, Veterinary officers, officers of the Ministries of Agriculture, members of the Federation of Veterinarians of Europe, farmer's associations, forest official services, pig feed industry workers and hunting organisations that provided input into the online questionnaire that contributed to the content of this report.
Approved: 31 July 2019

SECTIONS PDF TOOLS SHARE

## Terms of reference

1. Design studies needed to evaluate:
   - (i) the **impact of reducing the wild boar population densities** in relation to transmission of African swine fever virus (ASFV);
   - (ii) the **natural behaviour of wild boar to improve wild boar population management**.

## Terms of reference

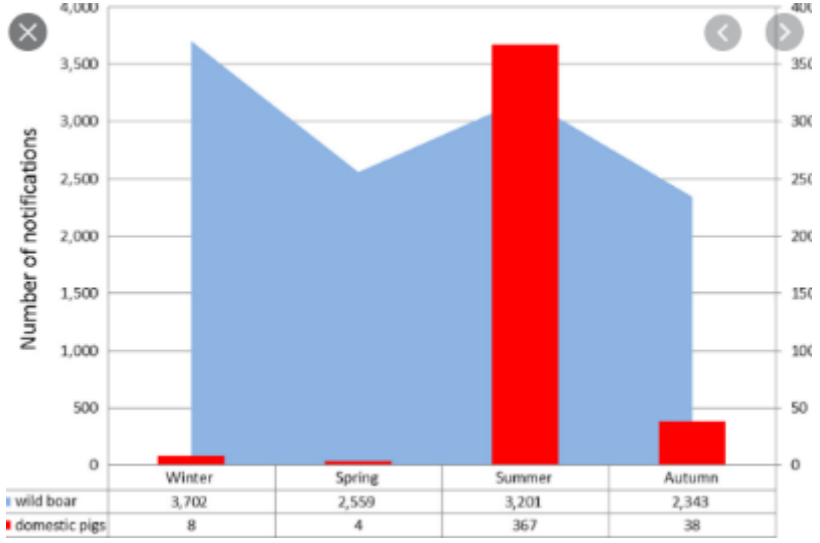
2. Studies needed to understand:
   - (i) the **role of arthropod vectors** in ASF transmission (biological and mechanical);
   - (ii) **ASF survival and transmission from contaminated environment** and
   - (iii) residual infectivity of **buried wild boar carcases**.

# Gap Research

## Terms of reference

3. The **patterns of seasonality** in wild boar and domestic pigs and identify main factors that determinate these patterns.

Provide recommendations in particular in relation to risk mitigation options to address these factors, where relevant.



# Gap Research

- **Step 1**: Identification of research objectives by working group:  example wild boar
- **Step 2**: Identification of research priorities by broader networks
- **Step 3**: Prioritization of research priorities
- **Step 4**: Development of calls for research proposals (short research protocols) for research priorities:

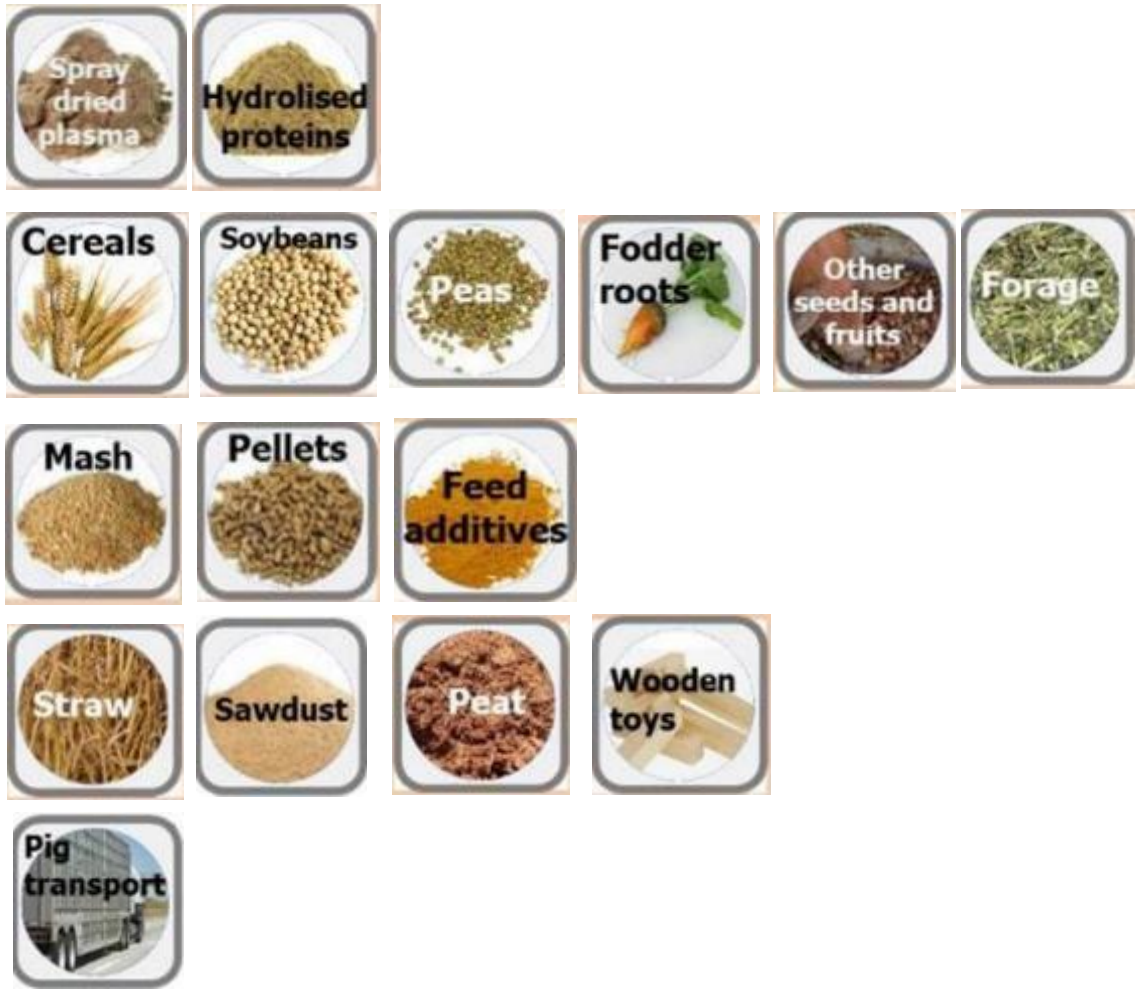
  - **Arthropods** EFSA-Q-2020-00431: 6 research proposals: Vectornet
  - **Wild boar** EFSA-Q-2020-00430: 14 research proposals: Enetwild
  - **ASFV survival in environment** EFSA-Q-2020-00429: 1 research proposal: ASF Working group
  - **Seasonality**: EFSA-Q-2020-00428: 2 research proposals: Copenhagen University

# MATRICES: EFSA-Q-2019-00618

# Matrices

- assess and rank different matrices according to the risk they pose to transmit ASFV
- matrices or products that can be traded or moved across borders between ASF-affected and non-ASF-infected areas and can legally be exposed to pigs in non-ASF-affected areas

1. animal by-products for use in feed derived from pigs
2. non-pig-derived feed materials that could be contaminated with ASFV
3. compound feed and feed additives
4. bedding and enrichment material
5. empty vehicles for live pig transport



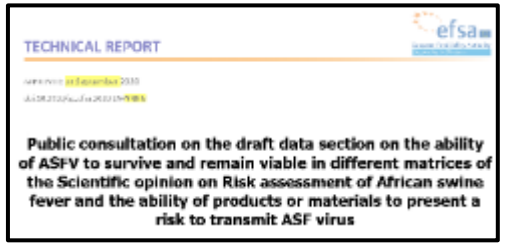
# Matrices

Review of peer-reviewed literature


Search strings

| Set | Query | Results |
|---|---|---|
| #4 | [illegible] Refined by: PUBLICATION YEARS: (2020) | 46 |
| #3 | [illegible] | 633 |
| #2 | TOPIC: [Survi* OR Persist* OR stability OR ingest* OR crude*] [illegible] | 5,678,095 |
| #1 | TOPIC: ['African swine fever' OR 'Warthog disease' OR 'Warthog fever'] [illegible] | 4,214 |

Public consultation of identified evidence


TECHNICAL REPORT

**Public consultation on the draft data section on the ability of ASFV to survive and remain viable in different matrices of the Scientific opinion on Risk assessment of African swine fever and the ability of products or materials to present a risk to transmit ASF virus**

Expert Knowledge Elicitation


**Expert Knowledge Elicitation (EKE) to assess the ability of matrices to transmit African Swine fever (ASF)**

**— 2nd Questionnaire (selected products) —**

European Food Safety Authority (EFSA)




Risk Assessment model

Probability of at least one infection of a pig in the overall non-affected area:

$$P_{\text{At least one infection event from area } i \text{ by product } j} = 1 - [(1 - q_s)^{r(i,j)*m(i,j,s=small)} (1 - q_l)^{(1-r(i,j))\, m(i,j,s=large)}]$$

where, $m_{i,j,small}$ and $m_{i,j,large}$ are the total number of units entering all small and large farms, while r is the proportion of consignments of *a specific product, j,* from *a specific region, i,* going to small scale farms, approximated as ratio of the number of pigs in small scale farms by the number of all pigs in the non-affected areas of EU.

# Matrices

## Experts involved in expert knowledge elicitation

| Contamination EKE |
| --- |
| Sandra Blome |
| Dirk Pfeiffer |
| Daesung Yoo |
| Mark Decoux |
| Cassandra Jones |
| Natalia Mazur-Panasiuk |
| Giovanni Santucci |
| Javier Polo |

| Trade EKE |
| --- |
| David Goodier |
| Lourens Heres |
| Javier Polo |
| Pawel Fiedorow |
| Lisbeth Harm Nielsen |
| Carsten Pohl |
| Arno van Gorp |

| Farm Exposure EKE |
| --- |
| David Goodier |
| Merel Postma |
| Christine Leeb |
| Rachel Cummins |
| Maria Gellermann |
| Felix Ardelean |

# Outdoor farming: EFSA-Q-2020-00425

# Outdoor farming

European Commission (EC) Strategic approach provides for a general recommendation for a prohibition of outdoor keeping of pigs at least in the areas covered by Decision 2014/709/EU (=affected by ASF)

Some EU Member States proposed to derogate from ban and to set biosecurity criteria to allow for derogations

Scientific Opinion on

- the infection risks associated with keeping of pigs outdoors in ASF-affected areas,
- the characterization and categorization of keeping of pigs outdoors in the Member States
- efficient biosecurity measures that might allow to minimize African swine fever virus (ASFV) introduction into and ASFV spread from pigs kept outdoors

# Outdoor farming

1) Animals are held in woodlands/forests without any fence

3) Animals are held in fields or on pastures without any fence

5) Animals are held in open buildings which are fenced

2) Animals are held in woodlands/forests which are fenced

4) Animals are held in fields or on pastures which are fenced

6) Animals are held in closed buildings with access to a fenced concrete outside run/yard

# Outdoor farming

- Questionnaire survey to competent authorities of MS and Farmers’
- Information from the EU Animal Disease Notification System (ADNS) and SCoPAFF presentations of affected MS
- Expert Knowledge Elicitation: categorization of outdoor pig farms in EU MS according to their risk of ASFV introduction and spread
- Expert Knowledge Elicitation: proposing control and biosecurity measures

# STOP ASF CAMPAIGN

**Objective**: Increase awareness of ASF and the reporting procedures to follow.

**Target countries:** those at risk from the spread of ASF, as identified in EFSA's 2019 risk assessment.

# Audiences and communication objectives

- Audiences

**Pig farmers and livestock operators:** regular contact with pigs

**Hunters:** contact with wild boar

**Checkpoint staff, border police, rangers:** enforcement of the rules

**Travellers:** transport of pork products

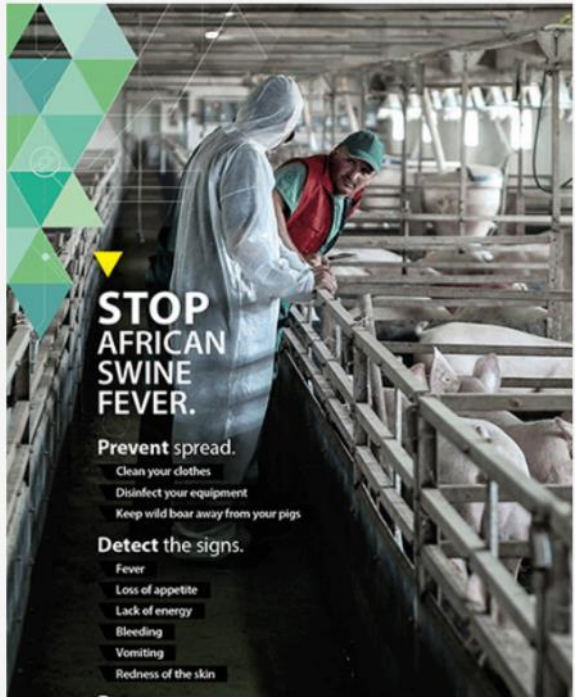
- Objectives

Prevent the spread

Detect the signs

Report suspicious cases

# Prevent, detect and report




https://www.efsa.europa.eu/en/StopASF#/
#StopASF

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